APPENDIX 2.1-A

Ramboll Environ, *Greenhouse Gas Emissions Technical Report, Mission Village, Los Angeles County, California,* October 2016

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GREENHOUSE GAS EMISSIONS TECHNICAL REPORT

MISSION VILLAGE
LOS ANGELES COUNTY, CALIFORNIA

RAMBOLL ENVIRON

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ACC	Advanced Clean Cars
ACR	American Carbon Registry
AR4	IPCC's Forth Assessment Report
AR5	IPCC's Fifth Assessment Report
AvgHP	maximum rated average horsepower
BAAQMD	Bay Area Air Quality Management District
BAU	Business-As-Usual
BEV	battery-electric vehicles
bhp	break horsepower
BPS	Best Performance Standards
CalEEMod®	California Emission Estimator Model®
CalGreen	California Green Building Standards
CalRecycle	California Department of Resources Recycling and Recovery
CAPCOA	California Air Pollution Control Officers Association
CAR	Climate Action Reserve
CARB	California Air Resources Board
CCAP	Community Climate Action Plan
CCCC	California Climate Change Center
CCR	California Code of Regulations
CCRC	Continued Care Retirement Community
CDM	Clean Development Mechanism
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CEUS	Commercial End-Use Survey
CFC	Chlorofluorocarbon
CH_4	Methane
CNG	compressed natural gas
CO_2	Carbon Dioxide
CO_2e	CO_2 Equivalents

ACRONYMS AND ABBREVIATIONS

CPUC	California Public Utilities Commission
CVRP	Clean Vehicle Rebate Project
DC	Direct Current
DOE	Department of Energy
DOT	Department of Transportation
DWR	Department of Water Resources
E3	Energy + Environmental Economics
EDR	Energy Design Rating
EF	emission factor
EGU	electric generation units
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act of 2007
EMFAC	EMission FACtor Model
Ramboll Environ	Ramboll Environ US Corporation, formerly ENVIRON US Corporation
EO	Executive Order
ES	Executive Summary
EV	Electric Vehicle
EVSE	electric vehicle supply equipment
ft	feet
g	gram
GHG	Greenhouse Gas
GW	Gigawatt
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
hr	hour
ICEV	internal combustion engine vehicles
IPCC	Intergovernmental Panel on Climate Change
KW	Kilowatt
kWh	kilowatt-hour
lbs	Pounds

ACRONYMS AND ABBREVIATIONS

LCFS	Low Carbon Fuel Standard
LOS	level of service
LAX	Los Angeles International Airport
m	meter
MSW	Municipal Solid Waste
MT	Metric Tonnes
$MTCO_2e$	Metric Tonnes of CO_2 Equivalent
MT/year	Metric Tonnes per Year
MW	Megawatt
MWh	Megawatt-Hour
N_2O	Nitrous Oxide
NHTSA	National Highway Traffic Safety Administration
NRSP	Newhall Ranch Specific Plan
OFFROAD	Emissions Inventory Program model
OPR	Office of Planning and Research
PEV	plug-in electric vehicles
PHEV	plug-in hybrid electric vehicles
ppm	Parts Per Million
pop	population
PUP	Power/Utility Protocol
PV	Photovoltaic
RCP	Representative Concentration Pathways
RFS	Renewable Fuel Standard
RMDP	Resource Management and Development Plan
RPH	range of miles travelled per hour
RPS	Renewables Portfolio Standard
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District

ACRONYMS AND ABBREVIATIONS

SCE	Southern California Edison
SCP	Spineflower Conservation Plan
SCS	Sustainable Communities Strategy
SCVCTM	Santa Clarita Valley Consolidated Traffic Model
SEA	Significant Ecological Area
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLOAPCD	San Luis Obispo Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management
SRES	Special Report on Emissions Scenarios
SWP	State Water Project
TDV	Time Dependent Valuation
TAZ	Traffic Analysis Zones
TDM	Transportation Demand Management
TSF	thousand square feet
UCS	Union of Concerned Scientists
USDOE	US Department of Energy
USEPA	United States Environmental Protection Agency
VCS	Verified Carbon Standard
VMT	Vehicle Miles Traveled
VTTM	Vesting Tentative Tract Map
WRP	Water Reclamation Plant
yd	yard
ZEV	zero emission vehicles
ZNE	Zero Net Energy

EXECUTIVE SUMMARY

As described further in Section 1.1, Mission Village ("Project") would accommodate 4,055 homes (specifically, 351 single-family and 3,704 multi-family homes, including 351 homes located in a Continued Care Retirement Community (CCRC), 459 age-qualified homes and 300 affordable housing units) and 1,555,100 square feet of commercial (retail/office) uses. The Project also would include a 9.5-acre elementary school, 3.3-acre library, 1.5-acre fire station, 1.2-acre bus transfer station, and approximately 693 acres of open space (including parks, recreation areas, Santa Clara River area, and three spineflower preserves located on 85.8 acres). Mission Village would further include supporting facilities and infrastructure, including roads, the Commerce Center Drive Bridge, trails, drainage improvements, flood protection, potable and recycled water systems, a sanitary sewer system, and dry utilities systems.

The analysis provided in this report recommends the adoption of a number of mitigation measures to reduce Project-related greenhouse gas (GHG) emissions. The mitigation measures would achieve growth without increased GHG emissions (i.e., net zero GHG emissions) and thereby facilitate achievement of the state's GHG climate change policies. The recommended mitigation measures would result in the establishment of a planned community with zero net GHG emissions by placing high emphasis on on-site, innovative energy efficiencies and solar energy generation within the community's homes and buildings. Additionally, the transportation (mobile) emissions mitigation measures include an innovative, robust Transportation Demand Management (TDM) program that focuses on reducing vehicle miles traveled (VMT) and providing incentives to accelerate deployment of zero-emission electric vehicles. The details of these mitigation measures and their effectiveness at reducing Project emissions are presented in Section 5.

This Executive Summary includes a short description of the scope, methodology, and results of the analysis' assessment of GHG emissions from the Project. As shown in this analysis, the Project's GHG emissions total would be reduced from that reported in the previously certified 2011 Environmental Impact Report (EIR) with implementation of the recommended mitigation measures.

The GHG emissions inventory presented in Section 3 of this analysis includes the following sources of emissions: (1) area sources (e.g., landscaping-related fuel combustion sources); (2) energy use associated with residential and non-residential buildings; (3) water and wastewater treatment and distribution; (4) solid waste; (5) mobile sources (e.g., passenger vehicles); (6) construction; and (7) vegetation changes. The ongoing operational emissions consist of the first five categories, while the one-time emissions are associated with construction and vegetation changes. The typical types of GHG emissions resulting from mixed-use developments such as the Project are emissions of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). GHG emissions are typically measured in terms of tonnes of CO_2 equivalents (CO_2e), calculated as the product of the mass emitted of a given GHG and its specific global warming potential (GWP).

This analysis primarily utilized the California Emission Estimator Model version 2013.2.2 (CalEEMod®)[1] to assist in quantifying the GHG emissions in the inventories presented in this report for the Project. CalEEMod® is a statewide program designed to calculate both criteria and GHG emissions from development projects in California. Third-party studies were also relied upon to support analyses and assumptions made outside of CalEEMod®.

The analysis provided in this report evaluates the significance of the Project's GHG emissions by reference to the following questions from Section VII, Greenhouse Gas Emissions, of Appendix G of the California Environmental Quality Act (CEQA) Guidelines:

Threshold 1. Would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Threshold 2. Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

This report, relative to Threshold 2, addresses whether the Project would conflict with the statewide emission reduction targets for 2020, 2030 and 2050. Section 2.1, Global Climate Change and Greenhouse Gas Emissions, of the Project's additional environmental analysis also provides additional information regarding the Project's consistency with the County of Los Angeles' Community Climate Action Plan (CCAP), and the 2012 and 2016 Sustainable Communities Strategy plans adopted by the Southern California Association of Governments (SCAG). That analysis is supported – in part – by analyses completed by Meridian Consultants and Stantec.

To address Threshold 1, and as discussed in Sections 4.1 and 6.1, this report estimates the GHG emissions resulting from the Project. As documented in subsequent portions of this report and shown in **Table Executive Summary (ES)-1**, the Project site – in its existing condition – emits 369 metric tonnes (MT) of CO_2e per year, whereas the Mitigated Project will emit zero metric tonnes of CO_2 equivalent ($MTCO_2e$) per year (as shown in **Table ES-2**). The Project will not result in a significant impact to global climate change because there will not be an increase from existing GHG emission levels. As discussed in more detail below, for purposes of Threshold 2, because there will be no net increase in GHG emissions, the Project will not conflict with applicable plans, policies and regulations, including statewide policies for the reduction of GHG emissions in 2020, 2030 and 2050. **Table ES-3** shows the GHG reductions achieved by each of the recommended mitigation measure.

The report also compares the Project's emissions to an emissions inventory that excludes emissions associated with cars and light-duty trucks. As shown in **Table ES-4**, the Mitigated Project's emissions are less than zero, after excluding light-duty vehicle emissions from the emissions inventory, due to the continued application of the Project's GHG Reduction Plan.

While the recommended mitigation measures ensure that the Mitigated Project's emissions are reduced to zero, as presented in Sections 4.2 and 6.2, there also is evidence that the evolving regulatory framework and improving technologies will result in the Project's emissions inventory decreasing with time, consistent with the state's 2030 and 2050

[1] SCAQMD. 2013. California Emissions Estimator Model®. Available at: http://www.CalEEMod.com/. Accessed: September 2016.

targets for securing further reductions in California's GHG emissions level. In particular, in order to reach Executive Order S-3-05's 2050 goal, additional regulatory and technological advancements, such as decarbonization of the fuel supply, will need to occur.[2] Reducing the carbon content of motor fuels and fuels for electricity generation will reduce CO_2e emissions from this Project. Therefore, it is reasonable to expect the Project's emissions level to decline as the regulatory initiatives identified by California Air Resources Board (CARB) in the First Update are implemented, and other technological innovations occur. Stated differently, the Project's emissions total at build-out represents the maximum emissions inventory for the Project as California's emissions sources are being regulated (and foreseeably expected to continue to be regulated in the future) in furtherance of the State's environmental policy objectives. Given the Project's mitigating to zero emissions, as well as the reasonably anticipated decline in Project emissions from regulatory and technological advancements, the Project would not impede efforts by the state to meet Senate Bill (SB) 32's 2030 target or Executive Order S-3-05's 2050 target.

[2] California Energy Commission. 2007. State Alternative Fuels Plan. December. CEC-600-2007-011-CMF. Available at: http://www.energy.ca.gov/2007publications/CEC-600-2007-011/CEC-600-2007-011-CMF.PDF. Accessed: September 2016.

1. INTRODUCTION

The purpose of this technical report is to present the quantitative analyses that were used to evaluate the Project's greenhouse gas (GHG) emissions. Emissions during both construction and operation of the Project were quantified. For purposes of the latter category of emissions, both Unmitigated and Mitigated Project emissions were quantified in the Project's build-out year (2028). Legislation and rules regarding climate change, as well as the scientific understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventory in this report is a reflection of the guidance and knowledge currently available.

1.1 Project Description

Mission Village would implement one of five villages within the Newhall Ranch Specific Plan area, which was approved by the County of Los Angeles in 2003. The approved Specific Plan authorizes a large-scale mixed-used community located in unincorporated Santa Clarita Valley in northwestern Los Angeles County. The Specific Plan specifically will guide the long-term development and conservation of the 11,999-acre Newhall Ranch community, as approved to include a broad range of residential, mixed-use, commercial/retail uses within five interrelated villages. The Mission Village project site, inclusive of the tract map and off-site improvements, is situated on approximately 1,860 acres.

As approved by the County Board of Supervisors on May 15, 2012, Mission Village would accommodate 4,055 homes (specifically, 351 single-family and 3,704 multi-family homes, including 351 homes located in a Continued Care Retirement Community (CCRC), 459 age-qualified homes, and 300 affordable housing units) and 1,555,100 square feet of commercial (retail/office) uses. The project also would include a 9.5-acre elementary school, 3.3-acre library, 1.5-acre fire station, 1.2-acre bus transfer station, and approximately 693 acres of open space (including parks, recreation areas, Santa Clara River area, and three spineflower preserves located on 85.8 acres). Mission Village would further include supporting facilities and infrastructure, including roads, the Commerce Center Drive Bridge, trails, drainage improvements, flood protection, potable and recycled water systems, a sanitary sewer system, and dry utilities systems.

To facilitate development of the Mission Village tract map site (Vesting Tentative Tract Map 61105), several project-related improvements are proposed for construction outside the tract map boundary. These off-site, project-related improvements include a utility corridor, the extension of Magic Mountain Parkway roadway and related improvements, a water quality basin, three water tanks, a Southern California Edison (SCE) electrical substation, and two debris basins. Additional off-site development would include work associated with the Lion Canyon drainage, grading associated with construction of the northerly extension of Westridge Parkway and the southerly extension of Commerce Center Drive, and miscellaneous grading to tie proposed grades into natural grades. The project's development/grading footprint is 1,134.6 acres, and the total amount of grading (for the tract map and off-site improvements) is estimated at 28.9 million cubic yards.

As demonstrated in this technical report, the project, if reapproved, would include additional mitigation measures to reduce the project's greenhouse gas emissions impacts from that reported in the previously certified Environmental Impact Report (EIR).

In 2012, when Mission Village was approved, the County Board adopted the following project approvals: (a) Vesting Tentative Tract Map (VTTM) 61105, (b) Significant Ecological Area (SEA) Conditional Use Permit No. RCUP-2005-00080, (c) Conditional Use Permit RCUP-2005-00081, (d) Oak Tree Permit Nos. 2005-00032 (project site) and 2005-00043 (off-site extension of Magic Mountain Parkway), (e) Parking Permit RPKT 2005-00011, and (f) Substantial Conformance No. 2010-00001 for grading and hillside management guidelines. There are no proposed changes with regard to the Mission Village project's discretionary project approvals.

Figure 1-1, Mission Village Land Use Plan, depicts the Mission Village land use plan approved by the County Board of Supervisors in May 2012. This plan remains the same as when it was approved in May 2012. **Table 1-1**, Mission Village Tract Map Statistical Summary, identifies the Mission Village individual land use types; the corresponding acreages; and the total units or square footage. This summary also presents the same Mission Village project data as approved in May 2012. This data provides the basis for the analysis of greenhouse gas emissions associated with the Mission Village project.

1.2 Regulatory Framework Compliance

As a matter of law, the Project will comply with applicable Federal, State, Regional, and County requirements. Many of the applicable regulatory standards are summarized in **Table 1-2** and apply to different GHG-generating activities/sources, including construction, landscaping equipment, building energy, passenger vehicles, medium- and heavy-duty trucks, solid waste, water usage, and vegetation. **Table 1-2** notes whether the emissions reductions resulting from implementation of the regulatory standards are quantified in the Project's unmitigated and mitigated emissions inventories. As illustrated in **Table 1-2**, several regulatory standards were not incorporated due to the difficulty associated with modeling and quantifying the reductions. Incorporating these regulations would further reduce Project emissions; as such, the emissions estimates presented in this report provide a conservative representation of Project emissions.

1.3 Mitigation Measures

Mitigation measures are recommended to reduce the Project's emissions to levels below significance for purposes of California Environmental Quality Act (CEQA). The Project mitigation measures create a new paradigm in land use planning and achieve growth without increased GHG emissions, establishing a precedent-setting milestone consistent with the state's GHG/climate change policies.

The mitigation measures recommended for the Project place high emphasis on and prioritize on-site, innovative energy efficiencies and renewable energy generation within the community's homes and buildings. Additionally, the transportation (mobile) –oriented mitigation measures include the implementation of a robust Transportation Demand Management (TDM) Plan that focuses on reducing vehicle miles traveled and provide incentives to accelerate the deployment of various categories of zero-emission electric vehicles (EVs). The details of these mitigation measures and their effectiveness at reducing Project emissions are presented in Section 5.

1.4 Existing Condition

The Project site is generally comprised of vacant land, some agricultural uses, water wells, abandoned oil wells, and associated access roads. The area for agricultural uses is approximately 224.4 acres; for purposes of this analysis, it is conservatively assumed that the agricultural acreage would be permanently eliminated due to Project buildout. The Project site is periodically leased to the movie industry for set locations. All existing emission sources would be eliminated during Project buildout. **Appendix A** of this report describes in detail the existing land use and associated GHG emissions from those existing on-site land uses. The existing condition emissions inventory is estimated at 369 Metric Tonnes (MT) CO_2e per year, as shown in **Table Executive Summary (ES)-1**. If any existing emissions (e.g., from agricultural uses) are permanently removed due to the Project development, the GHG emissions associated with those existing operations could be considered permanently removed from the global GHG emissions inventory.[3]

[3] This analysis does not quantitatively account for the Project's elimination of some existing sources of GHG emissions located within the Project site's development footprint. This analytical approach is conservative because, as recognized by the Bay Area Air Quality Management District, if a proposed project involves the removal of existing emission sources, the existing emissions level should be subtracted from the emissions level estimated for the new proposed land uses in order to accurately quantify the change to environmental conditions. See BAAQMD, 2012. California Environmental Quality Act Air Quality Guidelines. Page 4-5. Available at: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/baaqmd-ceqa-guidelines_final_may-2012.pdf?la=en. Accessed: September 2016.

2. SCIENTIFIC BACKGROUND, REGULATORY BACKGROUND, AND SIGNIFICANCE THRESHOLDS

This section will present the scientific and regulatory frameworks associated with global climate change and GHG emissions, and discuss the significance thresholds used to evaluate the Project's GHG emissions.

2.1 Scientific Background

2.1.1 Science of Global Climate Change

There is a general scientific consensus that global climate change is occurring, caused in whole or in part by increased emissions of GHGs that keep the Earth's surface warm by trapping heat in the Earth's atmosphere, in much the same way as glass traps heat in a greenhouse. The Earth's climate is changing because human activities, primarily the combustion of fossil fuels, are altering the chemical composition of the atmosphere through the buildup of GHGs. GHGs allow the sun's radiation to penetrate the atmosphere and warm the Earth's surface, but do not let the infrared radiation emitted from the Earth escape back into outer space. As a result, global temperatures are predicted to increase over the century. In particular, if climate change remains unabated, surface temperatures in California are expected to increase anywhere from 4.1 to 8.6 degrees Fahrenheit by the end of the century. Not only would higher temperatures directly affect the health of individuals through greater risk of dehydration, heat stroke, and respiratory distress, the higher temperatures may increase ozone formation, thereby worsening air quality. Rising temperatures could also reduce the snowpack, which would increase the risk of water shortages. Higher temperatures along with reduced water supplies could reduce the quantity and quality of agricultural products. In addition, there could be an increase in wildfires and a shift in distribution of natural vegetation throughout the State. Global warming could also increase sea levels and coastal storms resulting in greater risk of flooding.

Emissions of carbon dioxide (CO_2) are the leading cause of global warming, with other pollutants such as methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons, and sulfur hexafluoride also contributing. The magnitude of the impact on global warming differs among the GHGs. For example, HFCs, perfluorocarbons, and sulfur hexafluoride have a greater "global warming potential" than CO_2. In other words, these other GHGs have a greater contribution to global warming than CO_2 on a per mass basis. The effect each GHG has on climate change is measured as a combination of the volume of its emissions, and its global warming potential (GWP), and is expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically measured in terms of megagrams or MT of CO_2e (CO_2 equivalents). CO_2 has the greatest impact on global warming because of the relatively large quantities of CO_2 emitted into the atmosphere.

Globally, CO_2 concentrations, which ranged from 265 parts per million (ppm) to 280 ppm over the last 10,000 years, only began rising in the last 200 years to current levels of 399 ppm[4], a 43 percent increase.

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[4] Global annual mean CO_2 concentration for 2015 obtained from: ftp://aftp.cmdl.noaa.gov/products/trends/co2/co2_annmean_gl.txt. Accessed: September 2016.

In 2014, the United States emitted about 6.9 billion MT of CO_2e[5] or about 20.5 MT/person/year, calculated by dividing by the U.S. Census Bureau 2014 population estimate.[6] This represents a 7 percent reduction below 2005 total emission levels. Of the four major sectors nationwide - residential, commercial, industrial and transportation - transportation accounts for the highest fraction of GHG emissions (56 percent of emissions from these four sectors); these emissions are entirely generated from direct fossil fuel combustion. Sixty percent of the transportation emissions resulted from passenger car and light-duty truck use. The remaining emissions came from other transportation activities, including the combustion of diesel-fuel in medium- and heavy-duty vehicles and jet fuel in aircraft. According to Inventory of U.S. Greenhouse Gas Emissions and Sinks,[7] from 2005 to 2014 transportation emissions dropped by 8 percent due, in part, to increased fuel efficiency across the U.S. vehicle fleet, as well as higher fuel prices, and an associated decrease in the demand for passenger transportation. However, from 1990 to 2014 as a whole, transportation emissions from fossil fuel combustion rose by 14 percent, of "due in large part, to increased demand for travel with limited gains in fuel efficiency for much of this time period".[8]

In 2013, California emitted approximately 459 million tonnes of CO_2e, or about 7 percent of the U.S. emissions.[9] California's percentage contribution is due primarily to the sheer size of California, as compared to other states. For example in 2012 (the most recently compiled data available), California had the eighth lowest per capita GHG emission rates in the country (including Washington DC)[10], due to the success of its energy-efficiency and renewable energy programs and commitments that have lowered the State's GHG emissions rate of growth.[11] Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states.

The California Energy Commission (CEC) found that transportation is the source of approximately 37 percent of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 20 percent, and industrial sources at 20 percent. Residential and commercial activities comprised approximately 9 percent of the inventory. Agriculture and forestry is the source of approximately 8 percent of the State's GHG emissions.

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5 USEPA. 2016. Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014. Available at: https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2016-Main-Text.pdf. Accessed: September 2016.

6 U.S. Census Bureau. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2014 (NST-EST2012-01). Accessed: September 2016. Available at: http://www.census.gov/popest/data/national/totals/2014/index.html . Accessed: September 2016.

7 USEPA. 2016. DRAFT Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2014. Available at: https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2016-Main-Text.pdf. Accessed: September 2016.

8 Ibid.

9 CARB. 2015. California Greenhouse Gas Inventory: 2000-2013. Available at: http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed: September 2016.

10 World Resources Institute, CAIT 2.0, 2014. Climate Analysis Indicators Tool: WRI's Climate Data Explorer. Washington, DC. Available at: http://cait2.wri.org/. Accessed: September 2016.

11 The Center for Resource Efficient Communities. 2013. Residential Energy Use and GHG Emissions Impact of compact Land Use Types. Report to ARB, Contract No. 10-323. Available at: http://www.arb.ca.gov/research/apr/past/10-323h.pdf. Accessed: September 2016.

The construction and operation of land use developments cause GHG emissions. Operational phase GHG emissions result from energy use associated with heating, lighting and powering buildings (typically through natural gas and electricity consumption), pumping and processing water, fuel used for transportation, and decomposition of waste associated with building occupants. New development can also create GHG emissions in its construction and demolition phases, including the use of fuels in construction equipment, creation and decomposition of building materials, vegetation clearing, natural gas usage, electrical usage, and transportation.

However, it is important to acknowledge that new land use development does not necessarily create entirely new GHG emissions, since most of the persons who will visit or occupy new development will come from other locations where they were already causing such GHG emissions. Further, because climate change is occurring on a global scale, it is not meaningfully possible to quantify the scientific effect of new GHG emissions caused by a single project. It has not been demonstrated that new GHG emissions caused by a local development project can affect global climate change, or that a project‘s net increase in GHG emissions, if any, when coupled with other activities in the region, would be cumulatively considerable.[12]

2.1.2 Effects of Human Activity on Global Climate Change

Globally, climate change has the potential to impact numerous environmental resources through anticipated, though uncertain, impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. At the end of the 21st century, global surface temperature change is likely to exceed 1.5°C (relative to 1850-1900 levels) in all of the four assessed climate model projections but one.[13]

The understanding of GHG emissions on global climate trends is complex and involves varying uncertainties and a balance of different effects. In addition to uncertainties about the extent to which human activity rather than solar or volcanic activity is responsible for increasing warming, there is also evidence that some human activity has cooling, rather than warming, effects, as discussed in detail in numerous publications by the Intergovernmental Panel on Climate Change (IPCC), such as the Fifth Assessment Report (AR5) Synthesis Report.[14],[15] Nonetheless, when all effects and uncertainties are considered together, there is a strong scientific consensus is that human activity has contributed significantly to global warming. As stated in the AR5 discussion of Attribution of climate

[12] CAPCOA, 2008. CEQA & Climate Change. p. 35. January. Available at: http://www.capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-White-Paper.pdf. Accessed: September 2016.

[13] Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Climate Change 2014: Synthesis Report. 2014. SPM.2.2. Available at: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf. Accessed: September 2016.

[14] The IPCC was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme to assess scientific, technical, and socio-economic information relevant for the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC has produced a series of Assessment Reports comprised of full scientific and technical assessments of climate change. The first assessment report (FAR), was developed in 1990. The Fifth Assessment Report was completed in November 2014 with the Synthesis Report.

[15] Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Climate Change 2014: Synthesis Report. 2014. Figure SPM.3. Available at: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf. Accessed: September 2016.

changes and impacts, "The evidence for human influence on the climate system has grown since AR4 [the Forth Assessment Report]….it is extremely likely to have been the dominant cause of the observed warming since the mid-20th century."[16]

Acknowledging uncertainties regarding the rate at which anthropogenic GHG emissions would continue to increase (based upon various factors under human control, such as future population growth and the locations of that growth; the amount, type, and locations of economic development; the amount, type, and locations of technological advancement; adoption of alternative energy sources; legislative and public initiatives to curb emissions; and public awareness and acceptance of methods for reducing emissions), and the impact of such emissions on climate change, the IPCC devises emission scenarios which utilize various assumptions about the rates of economic development, population growth, and technological advancement over the course of the next century. For the AR5, Representative Concentration Pathways (RCPs) were developed to describe four different 21st century scenario of greenhouse gas emissions, atmospheric concentrations, air pollutant emissions, and land use. RCPs are based on a combination of integrated assessment models, simple climate models, atmospheric chemistry and global carbon cycle models. The four RCPs include a mitigation scenario, two stabilizing scenarios, and one scenario with very high GHG emissions. "The RCPs cover a wider range than the scenarios from the Special Report on Emissions Scenarios (SRES) used in previous assessments, as they also represent scenarios with climate policy."[17]

The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects, according to the IPCC.[18]

- It is *very likely* that the Arctic sea ice cover will continue to shrink and thin and that Northern Hemisphere spring snow cover will decrease during the 21st century as global mean surface temperature rises. Global glacier volume will further decrease.
- It is virtually certain that there will be more frequent hot and fewer cold temperature extremes over most land areas on daily and seasonal timescales as global mean temperatures increase. It is very likely that heat waves will occur with a higher frequency and duration. Occasional cold winter extremes will continue to occur.
- Global surface temperature change for the end of the 21st century is likely to exceed 1.5°C relative to 1850 to 1900 for all RCP scenarios except the mitigation scenario. It is likely to exceed 2°C for the highest forcing scenario and one stabilizing scenario, and more likely than not to exceed 2°C for the remaining stabilizing scenario. Warming will continue beyond 2100 under all RCP scenarios except the mitigation scenario.

[16] Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Climate Change 2014: Synthesis Report. 2014. Section 1.3. Available at: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf. Accessed: September 2016.

[17] Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Climate Change 2014: Synthesis Report. 2014. Box 2.2. Available at: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf. Accessed: September 2016.

[18] Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Climate Change 2013: Working Group I Report: The Physical Science Basis. Summary for Policymakers. Available at: http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf. Accessed: September 2016.

- The global ocean will continue to warm during the 21st century. Heat will penetrate from the surface to the deep ocean and affect ocean circulation.
- Climate change will affect carbon cycle processes in a way that will exacerbate the increase of CO_2 in the atmosphere (*high confidence*). Further uptake of carbon by the ocean will increase ocean acidification.
- Changes in the global water cycle in response to the warming over the 21st century will not be uniform. The contrast in precipitation between wet and dry regions and between wet and dry seasons will increase, although there may be regional exceptions; Global mean sea level will continue to rise during the 21st century.
- Cumulative emissions of CO_2 largely determine global mean surface warming by the late 21st century and beyond (see Figure SPM.10). Most aspects of climate change will persist for many centuries even if emissions of CO_2 are stopped.

Potential secondary effects from global warming include global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

2.1.3 Potential Effects of Climate Change on State of California

According to the California Air Resources Board (CARB), some of the potential impacts in California of global warming may include loss in snowpack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years.[19] The California Climate Change Center (CCCC) has released three assessment reports on climate change in California, the most recent in 2012.[20] Per California's Third Climate Change Assessment, by 2050, the state is projected to warm by approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century.

Below is a summary of some of the potential effects reported in an array of studies that could be experienced in California as a result of global warming and climate change.

2.1.3.1 Air Quality

Higher temperatures, conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. For other pollutants, the effects of climate change and/or weather are less well studied, and even less well understood. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. Studies have been conducted to evaluate the potential impacts of climate change on wildfire frequency based on lower and higher emissions scenarios. Per California's Third Climate Change Assessment, under a higher emissions scenario, increases in the number of large wildfires statewide could range from 58 to 128 percent above historic levels by 2085.[21] The estimated burned area is projected to increase between 57 and 169 percent,

[19] California Air Resources Board (CARB), 2006. Public Workshop to Discuss Establishing the 1990 Emissions Level and the California 2020 Limit and Developing Regulations to Require Reporting of Greenhouse Gas Emissions, Sacramento, CA. December 1.

[20] California Climate Change Center, 2012. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California. CEC-500-2012-007. July 2012.

[21] California Climate Change Center, 2012. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California. CEC-500-2012-007. July 2012.

depending on location. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the State.[22] It is estimated that over the next decade, higher temperatures could increase the demand for electricity by 1 Gigawatt (GW) during summer months, which would require purchase of costly peak power from external sources or the construction of one new large power plant in California.[23] During periods of extreme heat, efficiency of electricity generation is reduced at natural gas plants, hydropower generation is reduced, increased losses occur at substations, all while electricity demands are increased. These factors are projected to result in more than 17 GW, or 38 percent of additional capacity, needed by 2100. Additionally, transmission lines lose 7 to 8 percent of transmitting capacity in higher temperatures, which also results in a need for increased power generation.[24]

2.1.3.2 Water Supply

Uncertainty remains with respect to the overall impact of global climate change on future water supplies in California. For example, models that predict drier conditions suggest decreased reservoir inflows and storage, and decreased river flows, relative to current conditions. By comparison, models that predict wetter conditions project increased reservoir inflows and storage, and increased river flows.[25]

A July 2006 technical report prepared by the California Department of Water Resources (DWR) addresses the State Water Project (SWP), the Central Valley Project, and the Sacramento-San Joaquin Delta. Although the report projects that, "[c]limate change will likely have a significant effect on California's future water resources … [and] future water demand," it also reports that, "there is much uncertainty about future water demand, especially those aspects of future demand that will be directly affected by climate change and warming. While climate change is expected to continue through at least the end of this century, the magnitude and, in some cases, the nature of future changes is uncertain. This uncertainty serves to complicate the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood".[26] DWR adds that "[i]t is unlikely that this level of uncertainty will diminish significantly in the foreseeable future."[27] Still, changes in water supply are expected to

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[22] California Climate Change Center (CCCC), 2006. Our Changing Climate: Assessing the Risks to California, CEC500-2006-077, Sacramento, CA. July. Available at: http://meteora.ucsd.edu/cap/pdffiles/CA_climate_Scenarios.pdf. Accessed: September 2016.

[23] California Climate Change Center, 2012. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California. CEC-500-2012-007. July 2012.

[24] Ibid.

[25] Brekke, L.D., et al, 2004. ―Climate Change Impacts Uncertainty for Water Resources in the San Joaquin River Basin, California.‖ Journal of the American Water Resources Association. 40(2): 149–164. Malden, MA, Blackwell Synergy for AWRA.

[26] California Department of Water Resources (DWR), 2006. Progress on Incorporating Climate Change into Management of California Water Resources, Sacramento, CA. July.

[27] California Department of Water Resources (DWR), 2006. Progress on Incorporating Climate Change into Management of California Water Resources, Sacramento, CA. July.

occur, and many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows.[28]

California's Third Climate Change Assessment outlines the state's urgent water management challenges brought on as a result of climate change. These include increasing demand from a growing population as temperatures rise, earlier snowmelt and runoff, and faster-than-historical sea-level rise threatening aging coastal water infrastructure and levees in the Sacramento-San Joaquin Delta.[29] Additionally, they predict that competition between urban and agriculture water users and environmental needs will increase due to effects on water supply and stream flows.

2.1.3.3 Hydrology

As discussed above, climate change could potentially affect the following: the amount of snowfall, rainfall and snowpack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. Sea level rise can be a product of global warming through two main processes -- expansion of sea water as the oceans warm and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could also jeopardize California's water supply. In particular, saltwater intrusion would threaten the quality and reliability of the state's major fresh water supply that is pumped from the southern portion of the Sacramento/San Joaquin River Delta. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events. Assuming the rate of sea level rise continues to follow global trends, sea level along California's coastline in 2050 could be 10-18 inches higher than in 2000, and 31-55 inches higher by the end of this century.[30] Based on these current projections, the current 100-year storm could occur once every year. California's Third Climate Assessment projects that changes in stream flow in the Sacramento and San Joaquin valleys would result in critically dry years occurring 8 percent more frequently in the Sacramento Valley and 32 percent more frequently in the San Joaquin Valley, compared to the historical period between 1951 and 2000.

2.1.3.4 Agriculture

California has a $30 billion agricultural industry that produces half the country's fruits and vegetables. The California Climate Change Center notes that higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase, crop-yield could be threatened by a less reliable water supply, and greater ozone pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year that certain crops, such as wine grapes, bloom or ripen, and thus affect their quality.[31]

[28] Kiparsky 2003, op. cit; DWR, 2005, op. cit.; Cayan, D., et al, 2006. Scenarios of Climate Change in California: An Overview (White Paper, CEC-500-2005-203-SF), Sacramento, CA. February.

[29] California Climate Change Center, 2012. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California. CEC-500-2012-007. July 2012.

[30] Ibid.

[31] California Climate Change Center (CCCC), 2006, op. cit.

2.1.3.5 Ecosystems and Wildlife

Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. In 2004, the Pew Center on Global Climate Change released a report examining the possible impacts of climate change on ecosystems and wildlife.[32] The report outlines four major ways in which it is thought that climate change could affect plants and animals: (1) timing of ecological events, (2) geographic range, (3) species' composition within communities, and (4) ecosystem processes such as carbon cycling and storage.

2.2 Regulatory Setting

2.2.1 Federal

2.2.1.1 Clean Air Act

In *Massachusetts v. Environmental Protection Agency* (2007) 549 U.S. 497, the U.S. Supreme Court held that the U.S. Environmental Protection Agency (USEPA) has authority under the Clean Air Act to regulate CO_2 emissions if those emissions pose an endangerment to the public health or welfare.

In 2009, the USEPA issued an "endangerment finding" under the Clean Air Act, concluding that GHGs threaten the public health and welfare of current and future generations and that motor vehicles contribute to GHG emissions. These findings provide the basis for adopting national regulations to mandate GHG emission reductions under the Clean Air Act.

To date, the USEPA has exercised its authority to regulate mobile sources that reduce GHG emissions via the control of vehicle manufacturers, as discussed immediately below.

Pursuant to its regulatory authority under Clean Air Act, the USEPA adopted the Carbon Pollution Standards in August 2015 to set a national limit on GHG emissions produced from new, modified, and reconstruction power plants. In addition, in August 2015, President Obama and the USEPA announced the Clean Power Plan, which is targeted toward the reduction of carbon emissions from existing power plants. Under the Clean Power Plan, the USEPA set state-specific interim and final CO2 performance rates for two subcategories of fossil fuel-fired electric generation units (EGUs): Fossil fuel-fired electric steam generating units; and natural gas-filed combined cycle generating units. The Clean Power Plan then requires states to develop and implement plans that ensure that the power plants in their state – either individually, together or in combination with other measures – achieve the interim CO_2 emissions performance rates over the period of 2022 to 2029 and the final CO_2 emission performance rates, rate-based goals or mass-based goals by 2030. In February 2016, the U.S. Supreme Court stayed implementation of the Clean Power Plan pending judicial review.

2.2.1.2 Federal Plan to Reduce GHG Emissions by 2025

In 2015, the U.S. State Department submitted the nation's GHG emissions reduction target to the United Nations Framework Convention on Climate Change. The submission, referred to as Intended Nationally Determined Contribution, is a formal statement of the U.S. target to reduce the nation's emissions by 26 to 28 percent below 2005 levels by 2025.

The target is the culmination of a process that examined opportunities under existing regulatory authorities to reduce GHG emissions in 2025 from all sources in every economic

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[32] Parmesan, C. and H. Galbraith, Observed Impacts of Global Climate Change in the U.S., Arlington, VA: Pew Center on Global Climate Change, November 2004.

sector. Several U.S. laws, as well as existing and proposed regulations thereunder, are relevant to the implementation of the U.S. target, including the Clean Air Act (42 U.S.C. § 7401 et seq.), the Energy Policy Act (42 U.S.C. § 13201 et seq.), and the Energy Independence and Security Act (42 U.S.C. § 17001 et seq.).[33]

2.2.1.3 Federal Vehicle Standards

In response to the *Massachusetts v. Environmental Protection Agency* decision, the Bush Administration issued Executive Order 13432 in 2007 directing the USEPA, the Department of Transportation (DOT), and the Department of Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the National Highway Traffic Safety Administration (NHTSA) issued a final rule regulating fuel efficiency for and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the USEPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, President Obama issued a memorandum directing the same federal agencies to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the USEPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards are projected to achieve 163 grams/mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the USEPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles.

In August 2016, the USEPA and NHTSA adopted the next phase (Phase 2) of the fuel economy and GHG standards for medium- and heavy-duty trucks, which apply to vehicles with model year 2018 and later.[34] In response to the USEPA's adoption of the Phase 2 standards, CARB staff plan to propose a Phase 2 program for California, most likely in late 2016 or 2017.[35]

2.2.1.4 Energy Independence and Security Act

The Energy Independence and Security Act of 2007 (EISA) facilitates the reduction of national GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;

[33] The White House, FACT SHEET: U.S. Reports its 2025 Emissions Target to the UNFCCC (May 2015).

[34] USEPA. Available at: https://www3.epa.gov/otaq/climate/documents/420f16044.pdf. Accessed: September 2016.

[35] CARB, CA Phase 2 GHG webpage: http://www.arb.ca.gov/msprog/onroad/caphase2ghg/caphase2ghg.htm. Accessed: September 2016.

- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- Requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and
- While superseded by the USEPA and NHTSA actions described above, (i) establishing miles per gallon targets for cars and light trucks and (ii) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

2.2.2 State

2.2.2.1 Executive Order S-3-05

In 2005, former Governor Schwarzenegger signed Executive Order S-3-05, which established the following GHG emission reduction goals for California: (1) by 2010, reduce GHG emissions to 2000 levels; (2) by 2020, reduce GHG emissions to 1990 levels; and (3) by 2050, reduce GHG emissions to 80 percent below 1990 levels.

(To date, the Legislature has not adopted the 2050 horizon-year goal from Executive Order S-3-05.)

2.2.2.2 Assembly Bill 32

Assembly Bill (AB) 32 (Nunez, 2006), the California Global Warming Solutions Act of 2006, was enacted after considerable study and expert testimony before the Legislature. The heart of AB 32 is the requirement that statewide GHG emissions be reduced to 1990 levels by 2020 (Health & Safety Code §38550). In order to achieve this reduction mandate, AB 32 requires CARB to adopt rules and regulations in an open public process that achieve the maximum technologically feasible and cost-effective GHG reductions.

Of relevance to this analysis, in 2007, CARB approved a statewide limit on the GHG emissions level for year 2020 consistent with the determined 1990 baseline. CARB's adoption of this limit is in accordance with Health & Safety Code Section 38550.

Per Health & Safety Code Section 38561(b), CARB also is required to prepare, approve and amend a scoping plan that identifies and makes recommendations on "direct emission reduction measures, alternative compliance mechanisms, market-based compliance mechanisms, and potential monetary and nonmonetary incentives for sources and categories of sources that [CARB] finds are necessary or desirable to facilitate the achievement of the maximum feasible and cost-effective reductions of greenhouse gas emissions by 2020."

a) 2008 Scoping Plan

In 2008, CARB adopted the *Climate Change Scoping Plan: A Framework for Change* (2008 Scoping Plan) in accordance with Health & Safety Code Section 38561. During the development of the 2008 Scoping Plan, CARB created a planning framework that is comprised of eight emissions sectors: (1) transportation; (2) electricity; (3) commercial and residential; (4) industry; (5) recycling and waste; (6) high global warming potential gases; (7) agriculture; and, (8) forest net emissions.

The 2008 Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions from the eight emissions sectors to 1990 levels by 2020. In the Scoping Plan, CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of approximately 28.5 percent from the otherwise projected 2020 emissions level; i.e., those emissions that would occur in 2020, absent GHG-reducing laws and regulations (referred to as "Business-As-Usual" [BAU]).[36] For example, in further explaining CARB's BAU methodology, CARB assumed that all new electricity generation would be supplied by natural gas plants, no further regulatory action would impact vehicle fuel efficiency, and building energy efficiency codes would be held at 2005 standards.

To achieve the necessary GHG reductions to meet AB 32's 2020 target, CARB developed a series of reduction measures in the Scoping Plan covering a range of sectors and activities. Broadly, the reduction measures can be separated into capped sectors (i.e., covered by the Cap-and-Trade Program discussed below) and uncapped sectors. Emissions from capped sectors, which include the transportation, electricity, industrial, commercial, and residential sectors of the economy, were fixed under the rules of the Cap-and-Trade Program, and the majority of policy proposals developed by CARB and other State agencies pursuing GHG emissions-reducing strategies are designed to secure reductions from these sectors.

Multiple Scoping Plan measures broadly cover emissions associated with new residential and commercial land use development, including, but not limited to:

- *Energy Efficiency/Green Buildings.* The Scoping Plan highlights the importance of energy efficiency efforts in reducing GHG emissions from residential and commercial development and indicates that zero net energy (ZNE) should be the overarching and unifying concept for energy efficiency.
- *Regional Transportation-Related GHG Targets (SB 375)*. The Scoping Plan relies on Senate Bill (SB) 375, discussed below, as an important mechanism to reduce mobile GHG emissions by integrating land use planning and transportation planning at the regional and local level.
- *Vehicle Emissions.* The Scoping Plan relies on various engine, fuel and other efficiency improvement programs and increasing electrification of the vehicle fleet.
- *Cap-and-Trade Program*. The Scoping Plan identifies the Cap-and-Trade Program as a lynchpin, overarching strategy for California to reduce GHG emissions. As explained in the Scoping Plan, the program's implementing regulations provide assurance that California's 2020 limit will be met because the regulation sets a firm limit on 85 percent of California's GHG emissions.

In the 2011 *Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document* (2011 Final Supplement), CARB revised its estimates of the projected 2020 emissions level in light of the economic recession and the availability of updated information about GHG reduction regulations. Based on the new economic data, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of

[36] CARB, Climate Change Scoping Plan: A Framework for Change (December 2008), p. 12.

21.7 percent (down from 28.5 percent) from the BAU conditions. When the 2020 emissions level projection also was updated to account for newly implemented regulatory measures, including Pavley I (model years 2009–2016) and the Renewable Portfolio Standard (12 percent to 20 percent), CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of 16 percent (down from 28.5 percent) from the BAU conditions.

b) 2014 First Update to the Scoping Plan

In 2014, CARB adopted the *First Update to the Climate Change Scoping Plan: Building on the Framework* (2014 First Update).[37] The stated purpose of the 2014 First Update is to "highlight […] California's success to date in reducing its GHG emissions and lay[…] the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050."[38] The 2014 First Update found that California is on track to meet the 2020 emissions reduction mandate established by AB 32, and noted that California could reduce emissions further by 2030 to levels squarely in line with those needed to stay on track to reduce emissions to 80 percent below 1990 levels by 2050 if the State realizes the expected benefits of existing policy goals.[39]

In conjunction with the 2014 First Update, CARB identified "six key focus areas comprising major components of the State's economy to evaluate and describe the larger transformative actions that will be needed to meet the State's more expansive emission reduction needs by 2050."[40] Those six areas are: (1) energy; (2) transportation (vehicles/ equipment, sustainable communities, housing, fuels, and infrastructure); (3) agriculture; (4) water; (5) waste management; and (6) natural and working lands. The 2014 First Update identifies key recommended actions for each sector that will facilitate achievement of the 2050 reduction target.

Based on CARB's research efforts, it has a "strong sense of the mix of technologies needed to reduce emissions through 2050."[41] Those technologies include energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies.

As part of the 2014 First Update, CARB recalculated the State's 1990 emissions level using more recent global warming potentials identified by the IPCC. Using the recalculated 1990 emissions level and the revised 2020 emissions level projection identified in the 2011 Final Supplement, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of approximately 15.3 percent (instead of 28.5 percent or 16 percent) from the BAU conditions.

The 2014 First Update included a strong recommendation from CARB for setting a mid-term statewide GHG emissions reduction target. CARB specifically recommended that the mid-term target be consistent with: (i) the United States' pledge to reduce emissions 42 percent below 2005 levels (which translates to a 35 percent reduction from 1990 levels

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[37] Health & Safety Code Section 38561(h) requires CARB to update the Scoping Plan every five years.

[38] CARB, First Update to the Climate Change Scoping Plan: Building on the Framework (May 2014), p. 4.

[39] Id. at p. 34.

[40] Id. at p. 6.

[41] Id. at p. 32.

in California); and (ii) the long-term policy goal of reducing emissions to 80 percent below 1990 levels by 2050.

The 2014 First Update discussed new residential and commercial building energy efficiency improvements, specifically identifying progress towards zero net energy buildings as an element of meeting mid-term and long-term GHG reduction goals. The 2014 First Update expressed CARB's commitment to working with the California Public Utilities Commission (CPUC) and CEC to facilitate further achievements in building energy efficiency.

c) Anticipated 2016 Second Update to the Scoping Plan

Currently, CARB is moving forward with the development of a second update to the 2008 Scoping Plan. This update is expected to address Executive Order B-30-15 and Senate Bill 32, and specifically the statewide GHG emissions reduction target for 2030, as discussed below. Therefore, in the coming months, CARB is expected to develop statewide inventory projection data for 2030, and identify reduction strategies capable of securing emission reductions that allow for achievement of the 2030 target.

2030 Target Scoping Plan Update Concept Paper

In June 2016, CARB released a concept draft paper for the 2030 Target Scoping Plan Update.[42] The 2030 Target Scoping Plan Update Concept Paper includes four concepts for reaching the 2030 target:

1. Complementary Policies with a Cap-and-Trade Program.

   This concept includes enhancements to existing programs and implementation of SB 350. These enhancements include an increase in the Low Carbon Fuel Standard (LCFS), increased stringency of SB 375, and a four-percent annual cap decline in the Cap-and-Trade Program.

2. Ambitious Complementary Policies without Cap-and-Trade; a Focus on Industrial Sources.

   This concept implements similar policies to Concept 1 but does not include the Cap-and-Trade Program. Rather, entity-level GHG declining caps would be implemented for industrial sources.

3. Ambitious Complementary Policies without Cap-and-Trade; a Focus on Transportation.

   This concept is similar to Concept 2 except, rather than include a cap on industrial sources, it includes more ambitious targets for zero emission vehicles and SB 375.

4. Complementary Policies with a Carbon Tax.

   This concept would include the same enhancements to existing programs as in Concept 1, but would implement a carbon tax instead of a Cap-and-Trade Program.

CARB is currently soliciting comments on the draft concepts and will be conducting additional workshops through early 2017.

[42] CARB. 2016. 2030 Target Scoping Plan Update. Available at: http://www.arb.ca.gov/cc/scopingplan/document/2030_sp_concept_paper2016.pdf. Accessed: September 2016.

2.2.2.3 2015 State of the State Address

In his January 2015 inaugural address, Governor Brown identified key climate change strategy pillars, including: (1) reducing today's petroleum use in cars and trucks by up to 50 percent; (2) increasing from one-third to 50 percent our electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farm and rangelands, forests and wetlands so they can store carbon; and (6) periodically updating the State's climate adaptation strategy. As discussed below, the second and third pillars have been codified via recently enacted legislation (SB 350).

2.2.2.4 Executive Order B-30-15

In April 2015, Governor Brown signed Executive Order B-30-15, which established the following GHG emission reduction goal for California: by 2030, reduce GHG emissions to 40 percent below 1990 levels. This Executive Order also directed all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in Executive Order S-3-05 (see discussion above). Additionally, the Executive Order directed CARB to update its Scoping Plan (see discussion above) to address the 2030 goal.

2.2.2.5 2016 State of the State Address

In his January 2016 inaugural address, Governor Brown identified a statewide goal to bring per capita GHGs down to two tons per person. This goal reflects the Global Climate Leadership Memorandum of Understanding (Under 2 MOU), which established limiting global warming to less than two degrees Celsius as a guiding principle for the reduction of GHG emissions by 2050. The parties to the Under 2 MOU agreed to pursue emissions reductions consistent with a trajectory of 80 to 95 percent below 1990 levels by 2050 and/or achieve a per capita annual emissions goal of less than two metric tonnes by 2050. The Under 2 MOU has been signed or endorsed by 127 jurisdictions, including California, representing 27 counties and six continents.

2.2.2.6 Senate Bill 32 and Assembly Bill 197

Enacted in 2016, Senate Bill (SB) 32 (Pavley, 2016) codifies the 2030 emissions reduction goal of Executive Order B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40 percent below 1990 levels by 2030.

SB 32 was coupled with a companion bill: AB 197 (Garcia, 2016). Designed to improve the transparency of CARB's regulatory and policy-oriented processes, AB 197 created the Joint Legislative Committee on Climate Change Policies, a committee with the responsibility to ascertain facts and make recommendations to the Legislature concerning statewide programs, policies and investments related to climate change. AB 197 also requires CARB to make certain GHG emissions inventory data publicly available on its web site; consider the social costs of GHG emissions when adopting rules and regulations designed to achieve GHG emission reductions; and, include specified information in all Scoping Plan updates for the emission reduction measures contained therein.

2.2.2.7 Energy Sources

a) Renewable Portfolio Standard

As most recently amended via SB 350 (De León, 2015), California's Renewable Portfolio Standard requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 40 percent of total retail sales by 2024, 45 percent of total retail sales by 2027, and 50 percent of total retail sales by 2030.

b) Building Energy Efficiency Standards

Title 24, Part 6 of the California Code of Regulations (CCR) regulates the design of building shells and building components. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The California Energy Commission's 2016 Building Energy Efficiency Standards (2016 Building Standards), which become on effective January 1, 2017, are the most current version of these standards.

In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as CalGreen Building Standard (CalGreen), and establishes voluntary and mandatory standards pertaining to the planning and design of sustainable site development, energy efficiency, water conservation, material conservation, and interior air quality. CalGreen is periodically amended; the most recent 2016 standards will become effective on January 1, 2017. [43]

The California Public Utilities Commission, CEC, and CARB also have a shared, established goal of achieving zero net energy for new construction in California. The key policy timelines include: (1) all new residential construction in California will be ZNE by 2020, and (2) all new commercial construction in California will be ZNE by 2030. The ZNE goal generally means that new buildings must use a combination of improved efficiency and distributed renewable energy generation to meet 100 percent of their annual energy need; as specifically defined by the CEC:

> "A ZNE Code Building is one where the net of the amount of energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building, at the level of a single 'project' seeking development entitlements and building code permits, measured using the [CEC]'s Time Dependent Valuation (TDV) metric. A ZNE Code Building meets an Energy Use Intensity value designated in the Building Energy Efficiency Standards by building type and climate zone that reflect best practices for highly efficient buildings."[44]

c) Appliance Standards

The CEC periodically amends and enforces Appliance Efficiency Regulations contained in Title 20 of the California Code of Regulations. The regulations establish water and energy efficiency standards for both federally-regulated appliances and non-federally regulated appliances. The most current Appliance Efficiency Regulations, dated July 2015, cover 23 categories of appliances (e.g., refrigerators; plumbing fixtures; dishwashers; clothes washer and dryers; televisions) and apply to appliances offered for sale in California.

[43] CBSC. Available at: http://codes.iccsafe.org/app/book/toc/2016/California/Green/index.html. Accessed: September 2016.

[44] CEC, 2013 Integrated Energy Policy Report (2013), p. 36.

2.2.2.8 Mobile Sources

a) Sustainable Communities Strategy Plans

SB 375 (Steinberg, 2008), the Sustainable Communities and Climate Protection Act, coordinates land use planning, regional transportation plans, and funding priorities to reduce GHG emissions from passenger vehicles through better-integrated regional transportation, land use, and housing planning that provides easier access to jobs, services, public transit, and active transportation options. SB 375 specifically requires the Metropolitan Planning Organization relevant to the Project area (here, Southern California Association of Governments or SCAG) to include a Sustainable Communities Strategy in its Regional Transportation Plan (RTP) that will achieve GHG emission reduction targets set by CARB by reducing vehicle miles traveled from light-duty vehicles through the development of more compact, complete, and efficient communities.

For the area under SCAG's jurisdiction, including the Project Site, CARB adopted regional targets for reduction of mobile source-related GHG emissions by 8 percent for 2020 and by 13 percent for 2035.

b) Senate Bill 743

Public Resources Code Section 21099(c)(1), as codified through enactment of SB 743 (Steinberg, 2013), authorized the Office of Planning and Research (OPR) to establish "alternative metrics to the metrics used for traffic levels of service for transportation impacts outside transit priority areas." Per that authorization, in January 2016, OPR issued its *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA* (Revised SB 743 Proposal). Included in the Revised SB 743 Proposal is proposed new CEQA Guidelines Section 15064.3 and related revisions to Appendix G. Under the proposed new Guidelines, the analysis of transportation impacts in the CEQA context would shift from a level of service (LOS) metric to a vehicle miles traveled metric. In proposing the new approach, OPR noted the relationship between vehicle miles traveled (VMT) and greenhouse gas emissions. If adopted as issued by OPR in January 2016, application of the new CEQA Guidelines would be mandatory when assessing CEQA transportation impacts two years after adoption, which is anticipated in 2017.

c) Pavley Regulations

AB 1493 (Pavley, 2002) required CARB to adopt regulations to reduce GHG emissions from non-commercial passenger vehicles and light-duty trucks for model years 2009–2016. CARB obtained a waiver from the USEPA that allows for implementation of these regulations notwithstanding possible federal preemption concerns.

d) Low Carbon Fuel Standard

Executive Order S-1-07, as issued by former Governor Schwarzenegger, called for a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by CARB by 2020.[45] In response, CARB approved the LCFS regulations in 2009, which became fully effective in April 2010. Thereafter, a lawsuit was filed challenging CARB's adoption of the regulations; and, in 2013, a court order was issued compelling CARB to remedy substantive and procedural defects of the LCFS adoption

[45] Carbon intensity is a measure of the GHG emissions associated with the various production, distribution, and use steps in the "lifecycle" of a transportation fuel.

process under CEQA.[46] However, the court allowed implementation of the LCFS to continue pending correction of the identified defects. In September 2015, CARB re-adopted the LCFS regulations.

e) Advanced Clean Cars Program

In 2012, CARB approved the Advanced Clean Cars (ACC) program, a new emissions-control program for non-commercial passenger vehicles and light-duty truck for model years 2017–2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero emission vehicles. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

f) Zero Emission Vehicles

Zero emission vehicles (ZEVs) include hydrogen fuel cell electric vehicles and plug-in electric vehicles, such as battery electric vehicles and plug-in hybrid electric vehicles.

In 2012, Governor Brown issued Executive Order B-16-2012, which calls for the increased penetration of ZEVs into California's vehicle fleet in order to help California achieve a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. In furtherance of that statewide target for the transportation sector, the Executive Order also calls upon CARB, the CEC and the California Public Utilities Commission to establish benchmarks that will: (1) allow over 1.5 million ZEVs to be on California roadways by 2025, and (2) provide the State's residents with easy access to ZEV infrastructure.

Executive Order B-16-2012 specifically directed California to "encourage the development and success of zero-emission vehicles to protect the environment, stimulate economic growth, and improve the quality of life in the state."[47] The Executive Order established several milestones organized into three time periods:

By 2015:

- The State's major metropolitan areas will be able to accommodate zero-emission vehicles, each with infrastructure plans and streamlined permitting;
- The State's manufacturing sector will be expanding zero-emission vehicle and component manufacturing;
- The private sector's investment in zero-emission vehicle infrastructure will be growing; and
- The State's academic and research institutions will be contributing to zero-emission vehicle research, innovation, and education.

By 2020:

- The State's zero-emission vehicle infrastructure will be able to support up to one million vehicles;

[46] *POET, LLC v. CARB* (2013) 217 Cal.App.4th 1214.

[47] Executive Order B-16-2012. Available at: https://www.gov.ca.gov/news.php?id=17472. Accessed: September 2016.

- The costs of zero-emission vehicles will be competitive with conventional combustion vehicles;
- Zero-emission vehicles will be accessible to mainstream consumers;
- There will be widespread use of zero-emission vehicles for public transportation and freight transport;
- Transportation sector greenhouse gas emissions will be falling as a result of the switch to zero-emission vehicles;
- Electric vehicle charging will be integrated into the electricity grid; and
- The private sector's role in the supply chain for zero-emission vehicle component development and manufacturing State will be expanding.

By 2025:

- Over 1.5 million zero-emission vehicles will be on California roads and their market share will be expanding;
- Californians will have easy access to zero-emission vehicle infrastructure; and
- California's clean, efficient vehicles will annually displace at least 1.5 billion gallons of petroleum fuels.

In furtherance of those goals, in February 2013, the Governor's Interagency Working Group on Zero-emission Vehicles issued the *2013 ZEV Action Plan: A roadmap toward 1.5 million zero-emission vehicles on California* roadways *by 2025*.[48] The 2013 ZEV Action Plan identifies four broad goals for state government to advance ZEVs: 1) Complete needed infrastructure and planning; 2) Expand consumer awareness and demand; 3) Transform Fleets; and 4) Grow jobs and investment in the private sector. As part of these goals, some highlighted strategies and actions include i) support of ZEV infrastructure planning and investment by private entities; ii) enabling universal access to ZEV infrastructure for California drivers; iii) reducing upfront purchase costs for ZEVs; iv) promote consumer awareness of ZEVs; and v) help to expand ZEVs in bus fleets. The Action Plan discusses the challenges of ZEV expansion which includes the need to enable electric vehicle chargers in homes, increasing consumer awareness, addressing up-front costs, operational limitations, and that ZEVs are not commercially available for all categories of vehicles.

Additionally, in May 2014, the National Renewable Energy Laboratory issued the *California Statewide Plug-In Electric Vehicle Infrastructure Assessment* (Infrastructure Assessment report) prepared at the request of the CEC. In the Infrastructure Assessment report, the CEC noted that "can't miss" ZEV charging locations are residential and workplace areas.

California is incentivizing the purchase of ZEVs through implementation of the Clean Vehicle Rebate Project (CVRP), which is administered by a non-profit organization (The Center for Sustainable Energy) for CARB and currently subsidizes the purchase of passenger near-zero and zero emission vehicles as follows:

- Hydrogen Fuel Cell Electric Vehicles: $5,000;

[48] Governor's Interagency Working Group on Zero-emission Vehicles. 2013. Available at: https://www.opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf. Accessed: September 2016.

- Battery Electric Vehicles: $2,500;
- Plug-In Hybrid Electric Vehicles: $1,500; and
- Neighborhood Electric Vehicles and Zero Emission Motorcycles: $900.

CARB announced a grant solicitation for an administrator to implement CVRP and Increased Incentives for Public Fleets in Disadvantaged Communities for Fiscal Year 2016-2017, which also includes options for Fiscal Year 2017-2018 and 2018-2019.[49] The current funding available is $78 million for CVRP and up to $3 million for the Public Fleet Pilot Project.

Similarly, a federal incentive program recognizes the importance of home charging in the decision to purchase an EV. EV drivers can take a tax credit of 30 percent of the purchase of home charging equipment. This incentive has been renewed through the end of 2016.[50] Home charging hardware, or electric vehicle supply equipment (EVSE), typically costs around $1,500 (including installation), but can run below $1,000.[51]

Finally, in its 2014 First Update, CARB recognized that the light-duty vehicle fleet "will need to become largely electrified by 2050 in order to meet California's emission reduction goals."[52] Accordingly, CARB's ACC program – summarized above – requires 15 percent of new cars sold in California in 2025 to be a plug-in hybrid, battery electric or fuel cell vehicle.[53]

2.2.2.9 Solid Waste Diversion

The California Integrated Waste Management Act of 1989, as modified by AB 341 (Chesbro, 2011), requires each jurisdiction's source reduction and recycling element to include an implementation schedule that shows: (1) diversion of 25 percent of all solid waste by January 1, 1995, through source reduction, recycling, and composting activities; (2) diversion of 50 percent of all solid waste on and after January 1, 2000; and (3) source reduction, recycling and composting of 75 percent of all solid waste on or after 2020, and annually thereafter. The California Department of Resources Recycling and Recovery (CalRecycle) is required to develop strategies, including source reduction, recycling, and composting activities, to achieve the 2020 goal.

CalRecycle published a discussion document, entitled *California's New Goal: 75 Percent Recycling*, which identified concepts that would assist the State in reaching the 75 percent goal by 2020. Subsequently, in August 2015, CalRecycle released the *AB 341 Report to the Legislature*, which identifies five priority strategies for achievement of the 75 percent goal: (1) moving organics out of landfills; (2) expanding recycling/ manufacturing infrastructure; (3) exploring new approaches for State and local funding of

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49 Available at: (https://www.arb.ca.gov/lispub/rss/displaypost.php?pno=9760). Accessed: September 2016.

50 "On Friday, December 18, 2015, President Obama signed the Consolidated Appropriations Act of 2016 (H.R. 2029). Division Q, the Protecting Americans from Tax Hikes Act (PATH Act), retroactively extending the tax credit for EV charging infrastructure for 2015 and going forward for 2016 (www.afdc.energy.gov) Alternative Fuel Infrastructure Tax Credit. Section 182 extends the tax credit for alternative fuel infrastructure through December 31, 2016." Available at (http://www.plugincars.com/federal-and-local-incentives-plug-hybrids-and-electric-cars.html). Accessed: September 2016.

51 Drive Clean. Charging Equipment Cost. Available at (http://driveclean.ca.gov/pev/Costs/Charging_Equipment.php). Accessed: September 2016.

52 CARB, First Update to the Climate Change Scoping Plan: Building on the Framework (May 2014), p. 48.

53 Id. at p. 47.

sustainable waste management programs; (4) promoting State procurement of post-consumer recycled content products; and, (5) promoting extended producer responsibility.

2.2.2.10 CEQA Guidelines on GHG Emissions

In 2007, SB 97 was enacted and directed OPR and the California Natural Resources Agency to prepare amendments to the CEQA Guidelines addressing the analysis of GHG emissions under CEQA. Following formal rulemaking, a series of amendments to the CEQA Guidelines were adopted to provide the general framework for the analysis of GHG emissions, and became effective in 2010. The amendments do not provide a mandatory, quantitative rubric for GHG emissions analysis, but instead provide general guidance and recognize long-standing CEQA principles regarding the discretion afforded to lead agencies where supported by substantial evidence.

2.2.3 Regional

2.2.3.1 SCAG's Regional Transportation Plan/Sustainable Communities Strategy

As previously discussed, SB 375 requires SCAG to incorporate a Sustainable Communities Strategy into its RTP that achieves the GHG emission reduction targets set by CARB. As required by SB 375, CARB adopted year 2020 and 2035 GHG reduction targets for each metropolitan region. The SB 375 targets for the Southern California region under SCAG's jurisdiction in 2020 and 2035 are reductions in per capita GHG emissions of 8 percent and 13 percent, respectively.[54]

Pursuant to Government Code Section 65080(b)(2)(K), a Sustainable Communities Strategy does not: (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it.

a) 2012 Sustainable Communities Strategy

SCAG's first-ever Sustainable Communities Strategy is included in the *2012–2035 Regional Transportation Plan/Sustainable Communities Strategy* (2012 RTP/SCS), which was adopted by SCAG in April 2012. The goals and policies of the Sustainable Communities Strategy that reduce vehicle miles traveled (and result in corresponding GHG emission reductions) focus on transportation and land use planning that include building infill projects, locating residents closer to where they work and play, and designing communities so there is access to high quality transit service. SCAG's 2012 Sustainable Communities Strategy is expected to reduce per capita transportation emissions by 9 percent in 2020 and by 16 percent in 2035. In 2012, CARB accepted SCAG's determination that the 2012 Sustainable Communities Strategy would meet the region's GHG reduction targets.[55]

b) 2016 Sustainable Communities Strategy

In April 2016, SCAG adopted the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy: A Plan for Mobility, Accessibility, Sustainability and a High Quality of Life (2016 RTP/SCS). SCAG's 2016 Sustainable Communities Strategy is expected to reduce per capita transportation emissions by 8 percent in 2020, 18 percent in 2035, and 22 percent in 2040. In June 2016, CARB accepted SCAG's determination that the 2016

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54 CARB, *Executive Order G-11-024* (February 2011).

55 CARB, Executive Order G-12-039 (June 2012).

Sustainable Communities Strategy would meet the regions' GHG reduction targets for 2020 and 2035.[56]

In May 2016, the City of El Segundo filed a petition for writ of mandate challenging SCAG's adoption of the 2016 RTP/SCS under CEQA (L.A. County Superior Court Case No. BS162452). While the petition is focused on SCAG's alleged shortcomings relative to the aviation-related implications of the 2016 RTP/SCS for purposes of Los Angeles International Airport (LAX), some of the allegations broadly encompass more generally applicable components of SCAG's EIR for the 2016 RTP/SCS.

2.2.3.2 South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) is principally responsible for comprehensive air pollution control in the South Coast Air Basin, which includes Los Angeles, Orange, and the urbanized portions of Riverside and San Bernardino counties. SCAQMD works directly with SCAG, County transportation commissions, and local governments and cooperates actively with all federal and state government agencies to regulate air quality. Adopted Threshold for Stationary Source Projects

In 2008, SCAQMD's Governing Board adopted an interim CEQA GHG significance threshold of 10,000 metric tonnes of CO_2e ($MTCO_2e$) per year for industrial stationary source projects for which SCAQMD is the CEQA lead agency. When adopting its threshold, the Governing Board authorized the utilization of offsets as mitigation, provided the offsets reduce emissions over the course of the life of a project, as defined to be 30 years.[57]

a) Draft Threshold for All Other Project Types

For all other projects (i.e., non-stationary source projects), SCAQMD staff developed the following draft, multi-tier framework to assist with the CEQA significance evaluation:[58]

Tier 1: Determine if any CEQA exemption(s) is (are) applicable. If none, move to Tier 2.

Tier 2: Consider whether or not the proposed project is consistent with a locally adopted GHG reduction plan (often called a Climate Action Plan) that has gone through public hearings and CEQA review, which has an approved inventory that includes monitoring, etc. If not, move to Tier 3.

Tier 3: For all land use types, determine if the project emits less than 3,000 metric tonnes/year of CO_2e ($MTCO_2e$/yr). If not, move to Tier 4.

Tier 4: The proposed performance standards include three options:

1. Percent Emission Reduction Target

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[56] CARB, Executive Order G-16-066 (June 2016).

[57] SCAQMD. 2008. Staff Proposal for an Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. December 5. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2. Accessed: September, 2016.

[58] SCAQMD 2010. CEQA Significance Thresholds Working Group Meeting #15. September 28. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf?sfvrsn=2. Accessed: September 2016.

This target is typically defined as a percent reduction target that is based on consistency with AB 32, as it is based on the same numeric reductions calculated in the Scoping Plan to reach 1990 levels by 2020.

2. Early Implementation of Applicable AB 32 Scoping Plan Measures

3. SCAQMD Efficiency Target
   - 2020: 4.8 metric tonnes per year (MT/year) of CO_2e per service population (defined to include residents plus workers).
   - 2035: 3.0 MT/year of CO_2e per service population (same as above).

If none of the three performance standards is met, move to Tier 5.

Tier 5: Off-site mitigation for life of project (30 years); if this threshold is used, GHG emissions must be mitigated to less than the Tier 3 screening significance threshold.

Based on the above draft staff proposal, if a proposed project cannot meet any of the Tiers, it is presumed to result in a significant impact for purposes of GHG emissions.

As of September 2016, SCAQMD's Governing Board has not adopted the draft staff proposal. Therefore, no GHG significance thresholds are approved for use in the South Coast Air Basin by the applicable regional air district (i.e., SCAQMD).

b) Guidance from Other Air Districts and CAPCOA

(i) Bay Area Air Quality Management District

In June 2010, the Bay Area Air Quality Management District (BAAQMD) adopted thresholds of significance for GHG emissions to assist in the review of projects under CEQA. For purposes of project-level land use development, BAAQMD adopted a tiered significance threshold providing for a determination that impacts are less than significant if any one of the following three criteria are satisfied: (1) the project complies with a qualified GHG reduction strategy; (2) the project emits less than 1,100 MT of CO_2e per year; or, (3) the project emits less than 4.6 MT of CO_2e per year per service population.

(ii) Sacramento Metropolitan Air Quality Management District

The Sacramento Metropolitan Air Quality Management District (SMAQMD) maintains its *Guide to Air Quality Assessment in Sacramento Quality* (Guide) to provide methods for the analysis and review of impacts from land use development projects being considered within its jurisdictional boundaries. Chapter 6 of SMAQMD's Guide is titled, Greenhouse Gas Emissions; that chapter of the Guide was most recently revised in February 2016.

In Chapter 6, SMAQMD recommends that the significance of GHG emissions be evaluated relative to the two questions contained in the Environmental Checklist Form (Appendix G) of the CEQA Guidelines. For purposes of assessing significance under the first Appendix G question, SMAQMD's Guide identifies screening-level criteria for land use development projects; if a project's emissions are below the screening levels, no further CEQA analysis is required. For those projects that are not below the screening levels, SMAQMD's Guide identifies a GHG emissions construction and operational thresholds of 1,100 metric tonnes of CO_2e per year. If those thresholds are exceeded during the construction and/or operational phase, SMAQMD recommends the adoption of all feasible mitigation.

(iii) San Joaquin Valley Air Pollution Control District

In December 2009, the San Joaquin Valley Air Pollution Control District (SJVAPCD) issued its *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* (Guidance). In its Guidance, SJVAPCD recommends determining the significance of project-specific GHG emissions by using Best Performance Standards (BPS). Under the Guidance, a project's impacts on global climate change would be less than significant if the project implements BPS, or if the project reduces or mitigates its GHG emissions by 29 percent, consistent with the statewide GHG emission reduction targets established in the 2008 Scoping Plan.

Also, in June 2014, SJVAPCD released *APR – 2025, CEQA Determinations of Significance for Projects Subject to [CARB]'s GHG Cap-and-Trade Regulation* (APR – 2025). In APR – 2025, SJVAPCD concluded that GHG emissions increases that are otherwise covered under CARB's Cap-and-Trade Program (which is discussed at length below) cannot constitute significant increases in emissions under CEQA for two separate reasons: (1) the Cap-and-Trade Program is an adopted statewide regulation for reducing GHG emissions from targeted industries/sources; and, (2) GHG emissions addressed by the Cap-and-Trade Program are subject to an industry-wide, decreasing emissions cap. More specifically, SJVAPCD concluded that "all GHG emission increases resulting from the combustion of any fuel produced, imported, and/or delivered in California are mitigated under Cap-and-Trade. Therefore, GHG emission increases caused by fuel use (other than jet fuels) are determined to have a less than significant impact on global climate change under CEQA."

(iv) San Luis Obispo County Air Pollution Control District

In March 2012, the San Luis Obispo County Air Pollution Control District (SLOAPCD) issued its *Greenhouse Gas Thresholds and Supporting Evidence* report. Like BAAQMD, SLOACPD issued a tiered significance threshold providing for a determination that impacts are less than significant if any one of the following three criteria are satisfied: (1) the project complies with a qualified GHG reduction strategy; (2) the project emits less than 1,150 MT of CO_2e per year; or, (3) the project emits less than 4.9 MT of CO_2e per year per service population.

(v) CAPCOA 2008 CEQA & Climate Change White Paper

In January 2008, the California Air Pollution Control Officers Association (CAPCOA) published its *CEQA & Climate Change* white paper.[59] In the white paper, CAPCOA surveyed three options available to CEQA lead agencies for purposes of evaluating the significance of a project's GHG emissions, including no thresholds, zero thresholds, and non-zero thresholds. As to the non-zero thresholds, CAPCOA's white paper considered two approaches, one grounded in statue and executive order with four possible options, and one grounded in a tiered framework. As for the approach grounded in statue and executive order, CAPCOA identified four threshold concepts:

- Threshold 1.1: AB 32/S-3-05 Derived Uniform Percentage-Based Reduction;
- Threshold 1.2: Uniform Percentage-Based (e.g., 50 percent) Reduction for New Development;

[59] CAPCOA is a non-profit association of the air pollution control officers from all 35 local air quality agencies throughout California.

- Threshold 1.3: Uniform Percentage-Based Reduction by Economic Sector; and
- Threshold 1.4: Uniform Percentage-Based Reduction by Region.

For purposes of the tiered framework approach, a project's GHG emissions would result in a less-than-significant impact provided one of the following criteria were achieved: (1) compliance with a general or regional plan in alignment with AB 32; (2) application of a CEQA exemption; (3) inclusion on the "green list;" (4) consistency with a qualified GHG reduction strategy; or (5) demonstration that quantified GHG emissions are less than significant. Tables 4 and 5 of the white paper identified advantages and disadvantages associated with all of the options presented for consideration.

(vi) CAPCOA 2010 Quantifying Greenhouse Gas Mitigation Measures

In August 2010, CAPCOA published its *Quantifying Greenhouse Gas Mitigation Measures* report, which presents information and analysis regarding the quantification of project-level mitigation of GHG emissions associated with land use, transportation, energy use, and other related project areas. CAPCOA and its contractors conducted an extensive literature review in order to provide reliable and substantiated evidentiary bases for the quantification protocols presented in the report; as such, individual GHG reduction measures are accompanied by "fact sheets" that set forth the relevant parameters for the quantification calculations.

(vii) AEP Beyond 2020 White Paper

In March 2015, the Association of Environmental Professionals (AEP) released its draft *Beyond 2020: The Challenge of Greenhouse Gas Reduction Planning by Local Governments in California* (Beyond 2020) white paper.[60] In the white paper, AEP presented evidence showing that it is infeasible for a local jurisdiction to achieve Executive Order S-3-05's 2050 reduction target (i.e., 80 percent below 1990 levels) absent a real post-2020 State plan of action. As such, AEP recommended assessing project significance in relation to the 2050 reduction target by asking whether a project would "impede substantial progress in local, regional, and State GHG emissions reductions over time toward long-term GHG reduction targets."

(viii) AEP Beyond 2020 and Newhall White Paper

In April 2016, AEP released its draft *Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California* (Beyond 2020 and Newhall) white paper. In the white paper, AEP surveyed the following significance threshold concepts for utilization in CEQA-oriented GHG emissions analysis: consistency with qualified GHG reduction plans; bright line values; efficiency metrics; hybrid metrics that separate transportation and non-transportation emissions; best management practices; regulatory compliance; and percent reductions from business as usual. In doing so, AEP identified the present circumstances as a "transitional period" due to the absence of comprehensive State planning for post-2020, non-legislatively adopted, statewide targets.

2.2.4 Local

2.2.4.1 County of Los Angeles General Plan and Community Climate Action Plan

[60] AEP is a non-profit association of public and private sector professionals with a common interest in serving the principles underlying CEQA.

The Los Angeles County Board of Supervisors adopted the Los Angeles County General Plan 2035 in October 2015. The General Plan directs future growth and development in the County's unincorporated areas and establishes goals, policies, and objectives that pertain to the entire County.

As part of the General Plan's Air Quality Element, the County adopted a Community Climate Action Plan (Action Plan) to reduce GHG emissions associated with community (not municipal) activities in unincorporated Los Angeles County by at least 11 percent below 2010 levels by 2020. As the year 2020 approaches, the County intends to develop a reduction target for years beyond 2020 (such as 2035 and 2050), in order to continue the County's commitment to reducing its impacts on climate change. According to the Climate Action Plan, by December 31, 2021, the County will develop a substantial update to the existing plan that will take effect in 2022.[61]

The Action Plan addresses emissions from building energy, land use and transportation, water consumption and waste generation, and sets forth the County's path to a sustainable future that achieves identified GHG reductions. More precisely, the Action Plan includes 26 local actions that are grouped into five emissions reduction strategy areas: (1) green building and energy; (2) land use and transportation; (3) water conservation and wastewater; (4) waste reduction, reuse and recycling; and, (5) land conservation and tree planting.

The Action Plan includes an estimated GHG emissions inventory for the unincorporated areas. In 2010, the GHG emissions were approximately 7.9 million MT CO_2e, with building energy use as the largest source of emissions (49 percent). In 2010, transportation emissions from on- and off-road vehicles were the second largest source of emissions (42 percent). The third largest source was community waste generation (7 percent). The remaining sources were water conveyance and wastewater generation (2 percent), agriculture (0.4 percent), and stationary sources (0.02 percent). The Action Plan includes a reduction target of 11 percent below 2010 levels by 2020, consistent with the recommendations in the Scoping Plan. The Action Plan indicates that "as the year 2020 approaches, the County will develop a target for years beyond 2020 (such as 2035 and 2050) in order to continue the County's commitment to reducing its community climate change impact."

The Action Plan was reviewed to determine whether it allowed for the development of a region-specific BAU target. The data in the Action Plan, however, does not include a BAU emissions inventory. While it includes emissions projections for 2020 and 2035, and these projections are not characterized as a Business-As-Usual inventories.

The Action Plan provides that public agencies and private developers can use the Action Plan to comply with project-level review requirements pursuant to CEQA because the Action Plan accords to the tiering requirements established by CEQA Guidelines Section 15183.5(b)(1). As such, the Action Plan provides that project-specific environmental documents that incorporate applicable emissions reduction strategies can "tier off" the EIR certified for the County's General Plan (including the Action Plan) to meet project-level CEQA evaluation requirements for GHG emissions. Projects that demonstrate consistency

[61] Available at: http://planning.lacounty.gov/assets/upl/project/ccap_final-august2015.pdf. Accessed: September, 2016.

with applicable emissions reduction strategies can be determined to have a less-than-significant impact on GHG emissions and global climate change.

2.2.4.2 Santa Clarita Valley Area Plan: One Valley One Vision 2012

The Santa Clarita Valley Area Plan: One Valley One Vision 2012 (Area Plan) serves as a long-term guide for development in the Santa Clarita Valley (Valley) Planning Area over the next 20 years. The Area Plan ensures consistency between the General Plans of the County and the City of Santa Clarita (City) in order to achieve common goals. The primary GHG-related policy of the Area Plan is the requirement that the County create and adopt a Climate Action Plan; that effort is complete, as discussed above.

2.2.4.3 Green Building Standards

In 2013, in response to mandates set forth in CalGreen (discussed above), the County adopted the Los Angeles County Green Building Standards Code (Municipal Code Title 31), which adopts and incorporates by reference specified provisions of the 2013 CalGreen Code. The purpose of Title 31 is to facilitate sustainability via planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental air quality.

2.2.5 Carbon Markets

Carbon markets – both regulatory and voluntary – are a venue for the buying, selling and trading of carbon credits.

2.2.5.1 Cap-and-Trade Program

California's Cap-and-Trade Program (Cal. Code Regs., tit. 17, § 95800-96022) regulates the emissions of large electric power plants, large industrial plants, and fuel distributors (including transportation fuel and natural gas). These sources are responsible for about 85 percent of the State's total GHG emissions inventory.[62] As described by CARB:

> "Cap-and-trade is a market based regulation that is designed to reduce [GHGs] from multiple sources. Cap-and-trade sets a firm limit or cap on GHGs and minimize[s] the compliance costs of achieving AB 32 goals. The cap will decline approximately 3 percent each year beginning in 2013. Trading creates incentives to reduce GHGs below allowable levels through investments in clean technologies. With a carbon market, a price on carbon is established for GHGs. Market forces spur technological innovation and investments in clean energy. Cap-and-trade is an environmentally effective and economically efficient response to climate change."[63]

In the Cap-and-Trade Program, the State regulates the quantity of emissions by determining, in advance, how many allowances to issue—i.e., setting the "cap." Each allowance is essentially a permit issued by the State authorizing a certain quantity of GHG emissions. There are only a finite number of allowances, ensuring that covered entities may only lawfully emit a certain quantity of GHGs. If a covered entity wishes to emit carbon, it must obtain allowances to authorize those emissions.

Importantly, the Cap-and-Trade Program has been designed to provide a firm cap, ensuring that the 2020 statewide emissions limit identified by CARB in the 2008 Scoping

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[62] CARB, Overview of ARB Emissions Trading Program (February 2015).

[63] CARB, Cap-and-Trade Program. Available at: http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm. Accessed: September 2016.

Plan will *not* be exceeded.[64] Thus, for the emission sources covered by the Program, which are nearly all of the sources associated with land use development projects (see **Table 2-1**), compliance with AB 32's 2020 mandate is assured by the Cap-and-Trade Program.

2.2.5.2 Voluntary Markets

Like a stock or equity that represents a unit of ownership in a company, a carbon credit represents a unit of GHG emissions reductions. Each credit is essentially a certification that a certain quantity of GHG emissions have been avoided, prevented, or sequestered.

A carbon credit "project" may receive carbon credits for specific reductions in GHG emissions that occur as a result of a specific project activity. Examples of project activities that generate carbon credits include reforestation, the capture and destruction of methane emissions from livestock, or clean-burning cook stove replacement projects. A project can only receive offset credits if the project developer demonstrates what is known as the "environmental integrity" of the project.

The most common and generally accepted way for project developers to demonstrate the environmental integrity of an offset project is by complying with an established, standards-based "protocol." A "protocol" is a method of measuring emission reductions. A standards-based protocol accomplishes that fundamental goal by establishing the baseline emissions condition for a given activity and then providing the project developer a specific, defined methodology to quantify and verify emissions reductions that occur over and above that baseline condition.

Offset credits are issued by a neutral, third-party "registry" that has undertaken the responsibility of certifying that the emissions reductions have occurred. In what is known as the "voluntary market," registries review projects and issue recognized offset credits.

- **Climate Action Reserve (CAR):** The California Legislature established CAR in 2001 to encourage actions to reduce GHG emissions. CAR began as the California Climate Registry and developed protocols to track GHG emissions and reductions and have those emissions verified and publicly reported. The California Climate Registry was renamed as CAR and expanded in 2008 and now plays a leading role in the voluntary carbon market. CAR has developed over 15 separate protocols for quantification and verification of GHG emissions reductions and issued over 60 million offset credits, known as "Climate Reserve Tonnes" or "CRTs." CAR is based in Los Angeles and has been approved by CARB as an official offset project registry for the CARB Cap-and-Trade Program.
- **American Carbon Registry (ACR):** ACR was founded in 1996 as a non-profit enterprise of Winrock International, a non-profit organization. ACR is a CARB-approved offset project registry for the Cap-and-Trade Program and has also developed its own carbon-offset methodologies, such as methodologies for degraded wetlands and for avoided conversion of grasslands to crop production.
- **Verified Carbon Standard (VCS)**: VCS was founded in 2005 by the Climate Group, the International Emissions Trading Association, and the World Economic Forum. Project developers can list projects on the VCS registry using a variety of protocols,

[64] CARB, 2008. Climate Change Scoping Plan: A Framework for Change (December 2008), pp. 30-31.

including the CAR protocols. VCS is a CARB-approved offset project registry for the Cap-and-Trade Program and has also developed its own carbon offset quantification methodologies.

- **Clean Development Mechanism (CDM):** CDM is a carbon-offsetting program developed by the United Nations in accordance with the Kyoto Protocol. The CDM approves offset projects in conjunction with national authorities in countries that have signed onto the Kyoto Protocol. Projects registered with the CDM exist throughout the world, primarily in developing nations, including cookstove projects.

Under CEQA Guidelines Section 15126.4(c)(3)-(4), a project's GHG emissions can be reduced by "[o]ff-site measures, including offsets that are not otherwise required" and "[m]easures that sequester greenhouse gases." Therefore, the CEQA Guidelines allow projects to reduce GHG emissions by relying on voluntary market offsets that are not otherwise required, as well as other offsite and sequestration measures that result in GHG reductions.

Under AB 900, the Jobs and Economic Improvement Through Environmental Leadership Act, certain CEQA streamlining benefits were provided to "environmental leadership" projects that met the conditions of the bill. One of the key conditions was that the project offset all of its emissions to be GHG neutral.[65] The project applicant must submit to CARB documentation establishing that the project will not result in any net additional GHG emissions, and CARB then makes a determination on this issue for the Governor.[66] To date, five projects have been designated as AB 900 leadership projects that have made a commitment to purchase GHG credits from the voluntary carbon marketplace to ensure carbon neutrality, including the Qualcomm Stadium Reconstruction Project, the Event Center and Mixed Use Development at Mission Bay Blocks, and 8150 Sunset Boulevard.[67]

2.2.6 Significance Thresholds

The analysis provided in this report evaluates the significance of the Project's GHG emissions by reference to the following questions from Section VII, Greenhouse Gas Emissions, of Appendix G of the CEQA Guidelines:

Threshold 1. Would the Project generate GHG emissions, either directly or indirectly that may have a significant impact on the environment?

Threshold 2. Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

As previously discussed, relative to Threshold 2, this report addresses whether the Project would conflict with the statewide emission reduction targets for 2020, 2030 and 2050. Section 2.1, Global Climate Change and Greenhouse Gas Emissions, of the Project's additional environmental analysis provides additional information regarding the Project's consistency with the County of Los Angeles' Community Climate Action Plan (CCAP), and the 2012 and 2016 Sustainable Communities Strategy plans adopted by SCAG. That analysis is supported – in part – by analyses completed by Meridian Consultants and Stantec.

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[65] Pub. Resources Code, § 21183(c).

[66] Ibid.

[67] Information on current AB 900 leadership projects can be found at: Available at: https://www.opr.ca.gov/s_californiajobs.php. Accessed: September 2016.

In applying these thresholds, reference is made to CEQA Guidelines Section 15064.4(b)(1)-(3), which provides that a lead agency should consider the following factors, among others, when assessing the environmental significance of GHG emissions: (1) the extent to which a project increases or reduces GHG emissions as compared to the existing environmental setting; (2) whether project emissions exceed a significance threshold that the lead agency determines is applicable; and, (3) whether a project complies with regulations or requirements adopted to implement a statewide, regional or local plan for the reduction of GHG emissions.

In addition, CEQA Guidelines Section 15064(h)(3) provides that: "A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program … that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located."

3. GHG EMISSIONS INVENTORY

This section describes the methodology that Ramboll Environ US Corporation (Ramboll Environ) used to develop the GHG emission inventories associated with the Project, which include one-time emissions (construction emissions and emissions due to vegetation changes), and operational emissions. Sub-categories of GHG operational emissions include: **area sources, energy use**, **water supply and wastewater**, **solid waste,** and **mobile sources**. **Table 3-1** summarizes the land use approved for the Project area and the related California Emission Estimator Model® (CalEEMod®) modeling terms. **Table 3-2** summarizes the emission inventories discussed in this section.

3.1 Measurement and Resources

3.1.1 Units of Measurement: Tonnes of CO_2 and CO_2e

As discussed in Section 2.1, the term "GHGs" includes gases that contribute to the natural greenhouse effect, such as CO_2, CH_4, N_2O, and water, as well as gases that are only man-made and that are emitted through the use of modern industrial products, such as HFCs and chlorofluorocarbons (CFCs). GHG emissions are typically measured in terms of mass of CO_2e. CO_2e are calculated as the product of the mass of a given GHG and its specific GWP, as described in Section 2.1[68] GWPs of 25 and 298 were used for CH_4 and N_2O respectively for this analysis. In many sections of this report, including the final summary sections, emissions are presented in units of CO_2e either because the GWPs of CH_4 and N_2O were accounted for explicitly, or the CH_4 and N_2O are assumed to contribute a negligible amount of GWP when compared to the CO_2 emissions from that particular emissions category.

In this report, a tonne refers to MT (1,000 kilograms). Additionally, exact totals presented in all tables and report sections may not equal the sum of components due to independent rounding of numbers.

3.1.2 Resources

3.1.2.1 CalEEMod®

Ramboll Environ primarily utilized the CalEEMod® version 2013.2.2[69] to assist in quantifying the GHG emissions in the inventories presented in this report for the Project. CalEEMod® provides a platform to calculate both construction emissions and operational emissions from a land use development project. It calculates both the daily maximum and annual average for criteria pollutants as well as total or annual GHG emissions. The model also provides default values for water and energy use. Specifically the model aids the user in the following calculations:

- One-time short-term construction emissions associated with site preparation, demolition, grading, utility installation, building, coating, and paving from off-road construction equipment, and on-road mobile equipment associated with workers, vendors, and hauling.

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[68] CalEEMod®, the primary tool used to develop the emissions inventory uses GWPs from the IPCC Second Assessment Report, which is 310 for N_2O and 21 for CH_4. The GWPs in the IPCC Fourth Assessment Report have of 298 for N_2O and 25 for CH_4 have been manually incorporated to CalEEMod® output.

[69] SCAQMD. 2013. California Emissions Estimator Model®. Available at: http://www.CalEEMod.com/. Accessed: September 2016.

- One-time vegetation sequestration changes, such as permanent vegetation land use changes and new tree plantings.
- Operational emissions associated with the fully built out land use development, such as on-road mobile vehicle traffic generated by the land uses, off-road emissions from landscaping equipment, natural gas usage in the buildings, electricity usage in the buildings, water usage by the land uses, and solid waste disposal by the land uses.

CalEEMod® is a statewide program designed to calculate both criteria and GHG emissions from development projects in California. This model was developed under the auspices of the SCAQMD and received input from other California air districts, and is currently supported by numerous lead agencies for use in quantifying the emissions associated with development projects undergoing environmental review. CalEEMod® utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the USEPA AP-42 emission factors,[70] CARB's on-road and off-road equipment emission models such as the EMission FACtor model (EMFAC) and the Emissions Inventory Program model (OFFROAD), and studies commissioned by California agencies such as the CEC and CalRecycle.

As mentioned above, CalEEMod® is based upon the CARB-approved OFFROAD and EMFAC models. OFFROAD[71] is an emission factor model used to calculate emission rates from off-road mobile sources (e.g., construction equipment, agricultural equipment). The off-road diesel emission factors used by CalEEMod® are based on the CARB OFFROAD2011 program. EMFAC is an emission factor model used to calculate emissions rates from on-road vehicles (e.g., passenger vehicles). The emission factors used by CalEEMod® are based on the CARB EMFAC2011 program.

However, CARB has released EMFAC2014, which includes various updates, notably the incorporation of USEPA and CARB regulations and standards. The updates were in response to regulations enacted through California's ACC Program and NHTSA Phase 1. Therefore, to more accurately estimate Project emissions, EMFAC2014 information was incorporated into the analysis, in lieu of CalEEMod®'s default utilization of EMFAC2011 information.[72]

Notably, EMFAC2014 (unlike EMFAC2011) excludes GHG emission reductions from the Low Carbon Fuel Standard. The omission of LCFS-related emission reductions from EMFAC2014, which EMFAC2011 previously estimated would reduce GHG emissions from mobile sources by approximately 10% in 2020, results in a more conservative approach to estimate (i.e., over-estimation) the Project's emissions from mobile sources compared to if EMFAC2011 was used.

In addition, CalEEMod® contains default values and existing regulation methodologies to use in each specific local air district region. Appropriate statewide default values can be utilized if regional default values are not defined. Ramboll Environ used default factors for

[70] The USEPA maintains a compilation of Air Pollutant Emission Factors and process information for several air pollution source categories. The data is based on source test data, material balance studies, and engineering estimates. Available at: http://epa.gov/ttnchie1/ap42/. Accessed: September 2016.

[71] CARB. 2011. Off Road Mobile Source Emission factors. Available at: http://www.arb.ca.gov/msei/msei.htm. Accessed: September 2016.

[72] CARB. 2015. Release. Available at: https://www.arb.ca.gov/msei/msei.htm. Accessed: September 2016.

Los Angeles county area (within the SCAQMD jurisdiction) for the GHG emission inventory, unless otherwise noted in the methodology descriptions below.

CalEEMod® uses GWPs from the IPCC Second Assessment Report, which is 310 for N_2O and 21 for CH_4. Therefore, the GWPs in the IPCC Fourth Assessment Report of 298 for N_2O and 25 for CH_4 have been manually incorporated to CalEEMod® output as the Fourth Assessment Report is the basis for the GWPs in the 2014 First Update to the Scoping Plan.

3.1.2.2 Other Resources

Ramboll Environ directly or indirectly relied on emissions estimation guidance from government-sponsored organizations, government-commissioned studies of energy use patterns, energy surveys by other consulting firms, Project specific studies (e.g., ConSol Residential and Commercial Building Analysis,[73] Fehr and Peers Transportation Demand Management Program[74] and Stantec Traffic Signal Synchronization Analysis[75]), and emission estimation software as described above. In cases noted below, third-party studies were also relied upon to support analyses and assumptions made outside of the approach described above.

Details regarding the specific methodologies used by CalEEMod® can be found in the CalEEMod® User's Guide and associated appendices.[76] The CalEEMod® output files are provided for reference in **Appendix B** to this report.

3.1.3 Indirect GHG Emissions from Electricity Use

Project-related electricity use results in indirect emissions, due to electricity generation activities occurring at off-site power plant locations. For this Project, electrical power will be supplied by Southern California Edison. The indirect GHG emissions created as a result of Project-related electricity use are estimated through application of the following methodology.

For purposes of electricity use, intensity factors are GHG emission rates from a given source relative to the energy generation activities, and are expressed in terms of the amount of GHG released per megawatt (MW) of energy produced. The default electricity intensity factors for SCE in CalEEMod® for CO_2, CH_4, and N_2O are 641.26, 0.029, and 0.011 pounds (lbs) of GHG per megawatt-hour (MWh), respectively. The CO_2 default factor is based on SCE's 2007 Power/Utility Protocol (PUP) report.[77] The CH_4 and N_2O default factors are based on CARB's and E-Grid values. The SCE's PUP reports show that renewable energy sources do not result in any new CO_2 emissions

While CalEEMod®'s emission factors for CH_4 and N_2O conservatively were used for this Project, CalEEMod®'s CO_2 intensity factor was modified based on the SCE's 2006 and 2007 PUP reports, to account for the Renewables Portfolio Standard's (RPS) requirement for

[73] ConSol, 2016. Residential and Commercial Building Analysis.

[74] Fehr & Peers. 2016. Mission Village Project: Transportation Demand Management Plan Evaluation.

[75] Stantec. 2016. Newhall Ranch Mission Village – GHG Reductions from Traffic Signal Coordination.

[76] SCAQMD. 2013. California Emissions Estimator Model User's Guide. Version 2013.2.2. Available at: http://www.CalEEMod.com/. Accessed: September 2016.

[77] SCE Power/Utility Protocol (PUP) Report. Available at: http://www.climateregistry.org/tools/carrot/carrot-public-reports.html. Accessed: September 2016. The 2007 report is the most recent available data. For this analysis, the 2006 and 2007 PUP reports were both used to conservatively represent.

2027 (i.e., 45 percent RPS).[78] The 2006 and 2007 PUP reports, which identify the mix of renewable and non-renewable energy sources in SCE's energy supply, were both used to conservatively calculate the intensity factors for SCE's non-renewable energy.[79] The PUP data provides the basis for the estimate of the intensity factors for the non-renewable energy; and, this data is used to project what the intensity factors will be when the Project reaches build out in 2028. The intensity factor for CO_2 is calculated by multiplying the percentage of energy delivered by SCE from non-renewable energy resources with the intensity factor for non-renewable energy as calculated (see Section 3.3.2 below).

3.2 One-Time Emissions

One-time emissions are those emissions that are not reoccurring over the life of the Project. This includes emissions associated with construction and emissions associated with land use changes.

3.2.1 Construction

This section describes the estimation of GHG emissions from construction activities at the Project site. While the exact construction schedule and equipment mix may vary from the current analysis, the GHG emissions are not expected to be higher than that estimated given the conservative assumptions included in this analysis. The proposed plan for constructing the Project is shown in **Table 3-3**. The major construction phases included in this analysis are:

- Grading: involves the cut and fill of land to ensure the proper base and slope for the construction foundation. (During the grading phase, vegetation will be removed from the Project site. The construction emissions inventory presented here, in Section 3.2.1, accounts for the GHG emissions resulting from the construction equipment utilized during the grading phase. Section 3.2.2 below separately accounts for the GHG emissions associated with the removal of vegetation and subsequent revegetation of the Project site.)
- Trenching or Improvements: involves trenching and associated activities to install vital utilities.
- Paving: involves the laying of concrete or asphalt such as in parking lots or roads.
- Building Construction: involves the construction of structures and buildings.
- Architectural Coating: involves the application of coatings to both the interior and exterior of buildings or structures.

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[78] Public Utilities Code Section 399.15(b)(2)(B)

Note that the 45 percent RPS for 2027 is used throughout this report because it is the most proximate RPS demonstration year relative to the Project's build out year of 2028. As previously discussed, the state's adopted RPS for 2030 is 50 percent. In lieu of interpolating a 2028-specific RPS target, based on the 2027 and 2030 targets, the analysis conservatively utilizes the 2027 target.

The CH_4 and N_2O intensity factors from CalEEMod® are based on emissions from California's mix of power generation sources in 2009. As more renewable energy is integrated into the electricity grid, these intensity factors will also decrease.

[79] The CalEEMod® default electricity intensity factor for SCE is based on the 2007 PUP report. However, the CO_2 emissions for non-renewable energy is higher in the 2006 PUP report than the 2007 PUP report (e.g., the intensity factor was higher in 2006 than 2007). Averaging the 2006 and 2007 intensity factors results in a higher intensity factor, which is used in the Project calculations, than would be if only the 2007 data was relied upon.

GHG emissions from these construction phases are largely attributable to fuel use from construction equipment and worker commuting vehicles.[80]

Ramboll Environ used CalEEMod® version 2013.2.2 to quantify the construction emissions. The construction schedule, off-road equipment lists and equipment specifications are Project specific estimates, and consistent with the total level of construction equipment activity analysed in the *Draft EIR for Mission Village* GHG analysis.[81]

This analysis incorporated various updated assumptions including: the use of CalEEMod® version 2013.2.2 (which relies upon OFFROAD2011 and EMFAC2011) and an estimated construction schedule.[82] The construction-related assumptions are shown in **Tables 3-4, Table 3-5, and Table 3-6**. **Table 3-5** presents the CalEEMod® default worker, vendor, and hauling trip assumptions. However, CalEEMod®'s default parameters result in an over-estimation of the number of vendor and worker trips during the building construction and architectural coating phases due to the model's assumption that all buildings are constructed simultaneously during every year of construction activity. This Project proposes to phase development, such that construction-related activities will occur on various portions of the total development area from year-to-year. Therefore, **Table 3-6** calculates an adjustment factor that is used to correct CalEEMod®'s number of vendor and worker trips based on the estimated number of residential dwelling units and non-residential square footage being built and painted in each calendar year.

3.2.1.1 Emissions from Construction Equipment

The emission calculations associated with construction equipment are from off-road equipment engine use based on the equipment list and phase length, and on-road vehicle trips and phase length.

Since the majority of the off-road construction equipment used for construction projects are diesel fueled, CalEEMod® assumes all of the equipment operates on diesel fuel. The calculations associated with this screen include the running exhaust emissions from off-road equipment. Since the equipment is assumed to be diesel, there are no starting emissions associated with the equipment, as these are de minimis for diesel-fueled equipment. CalEEMod® calculates the exhaust emissions based on CARB's OFFROAD2011 methodology using the equation presented below.[83]

$$\text{Emissions}_{\text{Diesel}} = \sum_{i} \left(\text{EF}_i \times \text{Pop}_i \times \text{AvgHP}_i \times \text{Load}_i \times \text{Activity}_i \right)$$

Where:

EF = Emission factor in grams per horsepower-hour (g/bhp-hr) as processed from OFFROAD2011

[80] In addition to the worker and vendor trips, haul truck trips were added to the site preparation to account for the truck trips hauling vegetation waste.

[81] County of Los Angeles, *Draft EIR for Mission Village* (October 2010; SCH No. 2005051143), Volume XX – Appendix 4.23 [ENVIRON International Corporation, *Climate Change Technical Report: Mission Village* (August 2010)].

[82] Due to limitations with CalEEMod®, this was not updated to EMFAC2014.

[83] SCAQMD. 2013. California Emissions Estimator Model® User's Guide, Appendix A. Available at: http://www.CalEEMod.com/. Accessed: September 2016.

Pop = Population, or the number of pieces of equipment

AvgHp = Maximum rated average horsepower

Load = Load factor

Activity = Hours of operation

i = equipment type

The GHG emissions associated with off-road construction equipment are shown in **Table 3-7**.

3.2.1.2 Emissions from On-Road Construction Trips

Construction generates on-road vehicle GHG emissions from personal vehicles for worker and vendor commuting, and trucks for soil and material hauling. These emissions are based on the number of trips and VMT along with emission factors from EMFAC2011. As mentioned above, there will be no offsite soil hauling trucks for the Project. However, the analysis conservatively assumes that there will be 64 trips a day for hauling vegetation waste during the grading phase.

The emissions from mobile sources were calculated in CalEEMod® with the trip rates, trip lengths and emission factors for running from EMFAC2011 as follows:[84]

$$\text{Emissions}_{\text{pollutant}} = \text{VMT} * \text{EF}_{\text{running, pollutant}}$$

Where:

$\text{Emissions}_{\text{pollutant}}$ = emissions from vehicle running for each pollutant

VMT = vehicle miles traveled

$\text{EF}_{\text{running, pollutant}}$ = emission factor for running emissions

Starting and idling emissions were also calculated in CalEEMod® by multiplying the number of trips by the respective emission factor for each pollutant. The GHG emission from on-road vehicles associated with construction is shown in **Table 3-8**.

3.2.1.3 Total Construction Emissions

The total emissions from construction are summarized in **Table 3-9**. Total GHG emissions from all phases for off-road and on-road emissions are 17,014 and 8,296 $MTCO_2e$, respectively. Total GHG emissions from the construction activities are 25,310 $MTCO_2e$.[85] When amortized over 30-year project lifetime, the construction GHG emissions are 844 $MTCO_2e$/year.[86] Detailed emission inventory from the CalEEMod® output files are included in **Appendix B**.

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[84] SCAQMD. 2013. California Emissions Estimator Model® User's Guide, Appendix A. Available at: http://www.CalEEMod.com/. Accessed: September 2016.

[85] The up-to 18 on-site on-road vehicle emissions are included as on-road emissions.

[86] This approach to one-time construction and vegetation change GHG emissions is based on the GHG Threshold Working Group Meeting #13 Minutes from August 26, 2009. Available at: http://sfprod.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf?sfvrsn=2. Accessed: September 2016.

3.2.2 Vegetation Changes

This section presents the calculation of the positive and negative GHG emissions associated with vegetation removal and re-vegetation at the site. Permanent vegetation changes that occur as a result of land use development constitute a one-time change in the carbon sequestration capacity of a project site. In this case, undeveloped land will be converted to different land uses with landscaped areas with trees. This will result in an overall net loss of carbon sequestration once the vegetation reaches a steady state (i.e., new vegetation replaces dying vegetation). Consequently, vegetation change results in a GHG emissions increase.

3.2.2.1 Vegetation Change Emissions

CalEEMod® was used to calculate GHG emissions associated with the vegetation activities of land use change and the planting of new trees, as according to the IPCC protocol for vegetation. Overall Change in Sequestered CO_2e can be estimated with this equation:[87]

$$\text{Overall Change in Sequestered CO}_2 = \sum_i \left((\text{SeqCO}_2)_i \times \text{area}_i \right) - \sum_j \left((\text{SeqCO}_2)_j \times \text{area}_j \right)$$

Where:

$SeqCO_2$ = mass of sequestered CO_2 per unit area [$MTCO_2e$/acre]

area = area of land for specific land use type [acre]

i = index for final land use type

j = index for initial land use type

Conservatively, there is no reduction in GHG emissions associated with preservation of a land. The vegetation changes result in net loss of carbon sequestration. The detail is shown in **Tables 3-10a and 3-10b**.

3.3 Unmitigated Annual Operational Emissions

3.3.1 Area Sources

Area sources in CalEEMod® are direct sources of GHG emissions. The area source GHG emissions included in this analysis result from landscaping-related fuel combustion sources, such as lawn mowers. GHG emissions due to natural gas combustion in buildings, including hearths, are excluded from this section since they are included in the emissions associated with building energy use.

The resulting GHG emissions for the Unmitigated Project are shown in **Table 3-11.**

3.3.2 Energy Use

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions. Climate Zone 9 was selected based on the CEC forecast climate zone map shown in the CalEEMod® User's Guide.

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[87] SCAQMD. 2013. California Emissions Estimator Model User's Guide, Appendix A. Available at: http://www.CalEEMod.com/. Accessed: September 2016.

Table 3-12 identifies the emission factors for electricity (i.e., pounds of CO_2 per megawatt-hour delivered) used in this analysis. As illustrated in **Table 3-12**, an SCE-specific SCE emission factor that accounts for the 45 percent RPS required by 2027, as discussed in Section 3.1.3, was calculated.

In California, Title 24 governs energy consumed by the building envelope, including its mechanical systems, and some types of fixed lighting.[88] These so-called "regulated loads" are not the only source of building-related energy consumption. Instead, "unregulated loads", which are also sometimes referred to as "plug-in loads", also contribute to the total energy demand/consumption of the built environment.

The Unmitigated Project analysis assumes that the Project's residential and non-residential land uses accord to the 2016 Title 24 Standards, as that code cycle will be effective on January 1, 2017, before the Project's building construction activity commences.

To calculate the total residential building energy input for the Project (i.e., electricity use from the residential development's regulated and unregulated loads), and in lieu of using CalEEMod® default data, Ramboll Environ utilized residential building energy use data prepared by ConSol using the CEC-approved CBECC-Res 2016 software. The total residential energy use rates input to CalEEMod® are shown in **Table 3-13a**.

To calculate the total non-residential building energy input for the Project (i.e., electricity and natural gas use from the non-residential development's regulated and unregulated loads and natural gas), Ramboll Environ utilized default values provided in CalEEMod®, which are based on the Commercial End-Use Survey (CEUS),[89] in combination with building energy use data prepared by ConSol using CEC-approved building energy modeling software (EnergyPro 6.8 and 7.1). Since CalEEMod® is based on the 2008 Title 24 Standards, ConSol calculated percentage reductions for application to the relevant CalEEMod® default energy intensity factors to estimate the energy savings resulting from implementation of the 2016 Title 24 Standards. For non-residential buildings, changes in energy consumption from 2008 to 2016 that ConSol calculated were applied to the total of the default 2008 energy use factors. The total non-residential energy use rates input to CalEEMod® are shown in **Table 3-13b** (see also **Appendix C**).[90]

The swimming pools at the Project's private recreation centers are assumed to use electricity for filters and pumps, and natural gas for water heating for the Unmitigated Project as shown in **Table 3-14a**.

For the Unmitigated Project, CO_2e emissions from swimming pool energy were estimated to be 1,842 $MTCO_2e$/year, as shown in **Table 3-14a**. CO_2e emissions from the electricity demand and natural gas consumption of residential and non-residential buildings were estimated to be 7,345 and 3,232 $MTCO_2e$/year, respectively, or 10,577 $MTCO_2e$/year total, as shown in **Table 3-14b**.

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[88] Title 24, Part 6, of the California Code of Regulations: California's Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/. Accessed: September 2016.

[89] A detailed explanation how the CEUS data was processed for use in CalEEMod® is available in CalEEMod® User's Guide Appendix E.

[90] ConSol, Newhall Land & Farming Company Residential and Commercial Building Analysis (2016).

3.3.3 Water Supply, Treatment and Distribution

Indirect GHG emissions result from the production of electricity used to convey, treat, and distribute the Project's water and wastewater. The amount of electricity required to convey, treat, and distribute water depends on the volume of water as well as the sources of the water. Additionally direct CH_4 and N_2O emissions result from the treatment of wastewater. Water demand, recycled water usage, and waste water generation values were based on Project water demand estimates.[91]

The Unmitigated Project's estimated water usage reflects a demand reduction for indoor potable water that is based on compliance with applicable regulatory water conservation and recycled water requirements. Specifically, the Project will comply with the CalGreen Standards, which require a 20 percent reduction in indoor potable water use through the use of water saving fixtures and or flow restrictors.[92] The water demand totals are shown in **Table 3-15a**. The Unmitigated Project water usage also reflects that recycled water will be used to satisfy a portion of the outdoor, irrigation-related water demand, consistent with the State Water Resources Control Board's recycled water policy.[93] The recycled water totals, and subsequent emission reductions attributable to its use, are shown in **Table 3-15b.**

The CalGreen Standards, as well as the County of Los Angeles' Green Building Standards Code (Municipal Code Title 31) and previously adopted Newhall Ranch Specific Plan (NRSP) mitigation measures, and the local water purveyor (Valencia Water Company), will also require the incorporation of features to reduce the Project's outdoor water demand. The analysis conservatively does not reduce the Project's outdoor water usage to reflect these requirements.

For indirect emissions associated with the treatment and distribution of the Project's water, Ramboll Environ used CalEEMod® default assumptions for average embodied energy[94] for the treatment and distribution of water for Southern California, which are based on a study commissioned by the CEC.[95] (This study published recommended electricity intensities for the supply, treatment and distribution of water, as well as the treatment of wastewater, for Northern and Southern California.) Because the Project area will exclusively use locally-sourced groundwater, different factors were used to account for the energy embodied in the supply of water use. The different energy intensity factors associated with the Project's water supply sources are presented Note 2 in **Table 3-15c**. The CalEEMod® default embodied energy for the transportation of the wastewater for the Project is a conservative estimate since Mission Village will be serviced by the water reclamation plant (WRP) located

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[91] GSI Water Solutions, 2014. Updated Water Demand Projections for Mission Village. October.

[92] CSBC. 2010. 2010 California Green Building Standards. 4.303.1. Available at: http://www.documents.dgs.ca.gov/bsc/calgreen/2010_ca_green_bldg.pdf. Accessed: September 2016.

[93] The California Water Resources Control Board adopted the recycled water policy in 2009 and revised the policy in 2013. Available at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2013/rs2013_0003_a.pdf. Accessed: September 2016.

[94] Embodied energy refers to the amount of energy that was used in delivering water to the specific land use.

[95] CEC. 2006. Refining Estimates of Water-Related Energy Use in California. Available at: http://www.energy.ca.gov/2006publications/CEC-500-2006-118/CEC-500-2006-118.PDF. Accessed: September 2016.

within the Newhall Ranch Specific Plan area, and not outside the Project as assumed by the default electricity intensity factor for wastewater treatment.

As shown in **Table 3-15c**, the Project was estimated to have 257 and 573 million gallons (Mgal) per year of indoor and outdoor water usages before applying the regulatory based emission reduction for recycled outdoor water. After applying the regulatory reduction for recycled outdoor water, the Project was estimated to result in 889 $MTCO_2e$ per year, as shown in **Table 3-15c**.

3.3.4 Solid Waste

Municipal solid waste (MSW) is the amount of material that is disposed of by land filling, recycling, or composting. CalEEMod® calculates the indirect GHG emissions associated with waste that is disposed of at a landfill using waste disposal rates by land use and overall composition. The emission estimates in this Project were based on City of Santa Clarita 2012 actual disposal rate.[96]

CalEEMod® uses the overall California Waste Stream composition to generate the necessary types of different waste disposed into landfills. The program quantifies the GHG emissions associated with the decomposition of the waste, which generates methane based on the total amount of degradable organic carbon. The program also quantifies the CO_2 emissions associated with the combustion of methane, if applicable. Default landfill gas concentrations were used as reported in Section 2.4 of the USEPA's AP-42. The IPCC has a similar method to calculate GHG emissions from MSW in its 2006 Guidelines for National Greenhouse Gas Inventories.

The analysis assumes that additional waste will be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting to meet the statewide goal of 75 percent waste diversion.[97] The remainder of the waste not diverted will be disposed of at a landfill.

Various plans and regulations support achievement of the statewide diversion goal, including: (1) SW- 1: Waste Diversion Goal of the County's Community Climate Action Plan[98], which calls for compliance with all State mandates associated with diverting at least 75 percent of waste from landfill disposal by 2020; (2) the County's Green Building Standards Code (Municipal Code Title 31), which includes a number of sustainability requirements that apply to waste diversion; and, (3) AB 1826, which requires applicable commercial businesses to separate food scraps and yard trimmings, and arrange for recycling services for that organic waste. Various design elements of the Project's facilitated development also would further the achievement of AB 341, such as the provision and location of recycling receptacles.

GHG emissions from landfills are associated with the anaerobic breakdown of material. The CalEEMod® version 2013.2.2 solid waste module determines the GHG emissions associated with the disposal of solid waste into landfills in quantities that are based upon land use type

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[96] CalRecycle. Available at: http://www.calrecycle.ca.gov/LGCentral/reports/diversionprogram/JurisdictionDiversionPost2006.aspx. Accessed: September 2016.

[97] CalRecycle. 2013. California's 75 Percent Initiative. Available at: http://www.calrecycle.ca.gov/75percent/. Accessed: September 2016

[98] LA County, 2015. Community Climate Action Plan. Page 4-8. Available at: http://planning.lacounty.gov/CCAP. Accessed: September, 2016.

according to waste disposal studies conducted by CalRecycle. For this module, CalEEMod® version 2013.2.2 used City of Santa Clarita actual disposal rate.[99]

GHG emissions associated with non-landfill diverted waste streams are not considered, because it is generally assumed that these diversions do not result in any appreciable amounts of GHG emissions when operated effectively.[100] These waste diversion alternatives may result in differences in life-cycle emissions of GHGs, but it is not appropriate to combine life-cycle emissions for only one category of emissions.[101] Biogenic CO_2 emissions were not included when CARB analyzed the GHG emissions inventory under AB 32. Therefore, they are not included in the Project emissions inventory.

The Unmitigated Project was estimated to generate 8,732 tons per year of solid waste and was estimated to result in 4,391 $MTCO_2e$ per year as shown in **Table 3-16.**

3.3.5 Mobile Sources

The GHG emissions associated with on-road mobile sources are generated from residents, workers, customers, and delivery vehicles visiting the land use types in the Project. The GHG emissions associated with on-road mobile sources includes running and starting exhaust emissions. Running emissions are dependent on VMT. Starting emissions are associated with the number of starts or time between vehicle uses and the assumptions used in determining these values are described below. Ramboll Environ estimated mobile source emissions using the trip rates and trip length information specified in the Traffic Data provided by Stantec (**Appendix D**), which was derived using the Santa Clarita Valley Consolidated Traffic Model (SCVCTM), which was the same model used to generate the trip information in the *Draft EIR for Mission Village*. The mobile source emissions were estimated using CalEEMod®.

The analysis includes the benefit of reductions from some adopted regulatory programs, which are accounted for as follows:

- AB 1493 ("the Pavley Standard") required CARB to adopt regulations by January 1, 2005, to reduce GHG emissions from non-commercial passenger vehicles and light-duty trucks of model year 2009 and thereafter. CalEEMod® and EMFAC2014 include emission reductions for non-commercial passenger vehicles and light-duty trucks of model year 2017 – 2025.
- The ACC program, introduced in 2012, combines the control of smog, soot causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2015 through 2025. While this regulation has not been incorporated into CalEEMod®, EMFAC2014 includes reductions associated with this regulation that are represented in this analysis.

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[99] Actual disposal rates are equivalent to a 50% diversion rate based on the jurisdiction-specific average of per capita generation rates for years 2003 to 2006. Therefore, the actual disposal rates were divided by 50% to estimate the disposal rate without any diversion.

[100] CARB. 2010. Local Government Operations Protocol. Chapter 9.4.

[101] This inventory represents scope 1 and 2 emission categories. A life-cycle analysis of waste diversion would be a scope 3 inventory. CARB's Local Government Operations Protocol Version 1.1 (May 2010) clearly states that scope 3 emissions should not be combined with scope 1 and 2 emissions.

- The USEPA/NHTSA advanced fuel economy and GHG standards (Phase 1) were adopted in 2011 for medium and heavy-duty trucks for model years 2014-2018. [102] This Heavy-Duty National Program is intended to reduce fuel use and GHG emissions from medium- and heavy-duty vehicles, semi-trucks, pickup trucks and vans, and all types and sizes of work trucks and buses in between. This regulation has not been incorporated into CalEEMod®; however, EMFAC 2014 emission factors used for the analyses in this report include reductions associated with this regulation.
- The USEPA/NHTSA advanced fuel economy and GHG standards (Phase 2) were adopted in 2016 for medium- and heavy-duty trucks for model years 2018 and beyond.[103] The Phase 2 program includes technology-advancing standards that substantially reduce GHG emissions and fuel consumption resulting in an ambitious, yet achievable, program that will allow manufacturers to meet the applicable standards over time, at reasonable cost, through a mix of different technologies. The Phase 2 program's standards will be phased in, beginning with model year 2021 and culminate with model year 2027. Since the introduction of this standard is very recent, associated reductions are included for mobile source emissions are calculated outside of CalEEMod® as shown in **Table 3-18b**.

3.3.5.1 Estimating Mobile Source Emissions

The SCVCTM was used to estimate the total annual VMT from the Project, which, in turn, was used to estimate the Project mobile source GHG emissions. The SCVCTM is a computerized travel demand model jointly maintained by the City of Santa Clarita and County of Los Angeles in which existing and future land uses are quantified and corresponding traffic distribution patterns are estimated based on standardized modeling techniques. The following sections described the SCVCTM data and how it was used derive the inputs for CalEEMod®, which is the model used to estimate the GHG emissions.

3.3.5.2 SCVCTM Data

Project traffic forecasts were derived using the SCVCTM taking into account the five standardized trip types as described below:

- H-W: Home-based work trips
- H-S: Home-based shopping trips
- H-O: Home-based "other" (i.e., non-work, non-shopping) trips
- O-W: Other-based work trips
- O-O: Other-based other trips

Each trip type has unique characteristics, which are reflected in the SCVCTM. All trips that are generated within the SCVCTM model limits are first categorized into one of the five trip types, as shown in **Table 3-17a**. The SCVCTM then calculates the distribution of the trips in each traffic analysis zone (TAZ) based on the trip type and the corresponding regional trip distribution factors utilized by the SCVCTM. From the resulting distribution of vehicle

[102] USEPA, Office of Transportation and Air Quality. 2011. Available at: https://www3.epa.gov/otaq/climate/documents/420f11031.pdf. Accessed: September 2016.

[103] USEPA, Office of Transportation and Air Quality. 2016. Available at: https://www3.epa.gov/otaq/climate/documents/420f16044.pdf. Accessed: September 2016.

trips, an estimate of the average trip length for each trip type is derived, as shown in **Table 3-17b**. The underlying data provided by the traffic engineer, Stantec, is included in **Appendix D**.

3.3.5.3 Adjusting for Trip Generation Numbers

The daily tripend generation numbers derived from the traffic model, as shown in **Table 3-17a** overestimate actual trips by "double-counted" trips resulting from trip internalization. The double-counted trips in the traffic model that need to be adjusted to reflect actual trip generation for purposes of the GHG model. In other words, to present an accurate account of emissions from actual vehicle trips, the double-counted trips in the traffic model need to be adjusted to reflect actual trips.

Trip internalization (or internal trip capture) for planned communities or mixed-use developments describes the portion of trips generated by those developments that both begin and end within the development boundary. These trips, which have both tripends (origin and destination, or productions and attractions) within the project site, are known as internal trips. The internal trip capture rate is the percentage of tripends for trips that remain internal to the project site; in this case, the rate was derived by the SCVCTM.

The internal tripend percentages for the Project, by trip type, are illustrated in **Table 3-17c**; the overall tripend internalization rate calculated for the project by the SCVCTM is 33 percent. Planned communities like Newhall Ranch have higher internal trip capture rates than single-use developments. This is because such planned communities include different integrated, complementary, and interacting land uses, such as residential, school, recreation, office, retail, restaurants, and entertainment uses, such that residents or workers need not travel outside of the project boundaries for many services.[104]

In calculating total VMT, it is necessary in the case of a mixed-use development, such as this Project, to make an adjustment in order to avoid the double-counting of vehicle trips related to internal capture. For example, in the case of a roundtrip between an *on-site* residence and an *on-site* store, the traffic engineer produces trip generation estimates that include two tripends assigned to the residential portion of the Project (to and from) *and* two tripends assigned to the commercial portion of the project (to and from). Thus, a total of *four* tripends were assigned for one roundtrip by the resident to the store, even though there would be a total of only *two* trips – the resident driving from his/her home to the store to shop and then returning home again.

To avoid the double counting of VMT, one-half of the number of daily internal tripends for each land use and trip type (e.g., in the case of residential H-W tripends, 4.5 percent [9 percent divided by 2]), is subtracted from the unadjusted daily total. This approach is applied to each individual land use (i.e., residential; non-residential; schools/parks) and trip type (i.e., H-W, H-S, H-O, O-W, O-O), while also accounting for whether the land use is producing or attracting the vehicle trip. For example, as shown on **Table 3-17d**, the total daily trips attributed to single-family dwellings for H-W trips was reduced from 764 (see **Table 3-17a**) to 730 total daily trips (i.e., 764 daily trips was reduced by 4.5 percent, or 9 percent divided by 2). With this adjustment, the total amount of Project VMT can be determined without double-counting the internal trips.

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[104] Ewing, Reid and Cervero, Robert, 2010. Travel and the Built Environment. Journal of the American Planning Association, 76: 3, 265 — 294. May 11.

Table 3-17e shows the estimated Project VMT. The VMT is calculated by multiplying the trip lengths as shown in **Table 3-17b** with the total number of daily trips as calculated in **Table 3-17d**.

3.3.5.4 Deriving CalEEMod® Inputs

The VMT calculations described above are used to derive the appropriate inputs for CalEEMod® to estimate the GHG emissions associated with mobile sources. To conduct the analysis, CalEEMod® requires the input of average trip lengths and trip generation rates for each different land use type (e.g., single-family, condominium/townhouse, etc.). The average trip length is calculated by dividing the total daily VMT shown in **Table 3-17e** by the total daily trips shown in **Table 3-17d**. The trip generation rate, on the other hand, is calculated by dividing the total daily trip generation shown in **Table 3-17d** with the number of applicable units (e.g., number of dwelling units in the case of the single family dwelling use). The resulting Average Trip Length (in miles) and Trip Rate (number of trips per unit per weekday) is shown in **Table 3-17f**.

3.3.5.5 Summary of CalEEMod® Inputs

The CalEEMod® inputs for the mobile source emission estimates are shown in **Table 3-17g**. To estimate the annual VMT, CalEEMod® incorporates weekend trip rates. Since the SCVCTM trip generation data is a weekday trip generation rate estimate, the Project weekend trip rates were derived from the ratio of weekday to weekend trip rates from CalEEMod® applied to the SCVCTM adjusted weekday trip rates.

The average trip lengths shown in **Table 3-17f** were used as inputs as shown in **Table 3-17g**. While CalEEMod® has options to represent different trip lengths for different trip types, the same trip length was used for all trip types to ensure that the total annual VMT was accurately estimated by CalEEMod® consistent with the VMT estimates from the SCVCTM.

In calculating trip distribution, the SCVCTM does not distinguish between primary, pass-by, or diverted trips; instead, the traffic model simply calculates the origin and destination of all trips without distinction. From this distribution of vehicle trips, a trip length is derived that represents an average distance that accounts for all trips, both internal and external, and includes primary, pass-by, and diverted trips.

In conducting the GHG emissions analysis, CalEEMod®'s default approach is to specify a certain percentage of vehicle trips as pass-by or diverted trips and, thereby, assign a shorter trip length to such trips. However, to do so in this case would be to over-compensate for these shorter pass-by or diverted trips, which have shorter trip lengths already accounted for in the average trip length derived using the traffic model. To remedy this, all trips input into CalEEMod® for the GHG emissions analysis were input as primary trips, thereby effectively overriding the model's default settings to ensure that the VMT is accurately accounted for in CalEEMod®. This is illustrated in **Table 3-17g**, CalEEMod Input Assumptions for Traffic, of the GHG Emissions Technical Report, which shows that 100 percent of the trips input into CalEEMod were assumed to be primary trips, with zero percent assumed to be diverted and/or pass-by trips. Therefore, no adjustments (i.e., reductions) were applied as part of the analysis to account for diverted or pass-by trips additive to internal capture.

3.3.5.6 Mobile Source Emissions

The 2028 Unmitigated Project was estimated to generate 170,984,398 VMT/year and was estimated to result in 59,585 $MTCO_2e$/year as shown in **Table 3-18a** and **ES-2**, respectively.[105] The Unmitigated Project emissions include emissions reductions due to the NHTSA Phase 2 regulation of 803 $MTCO_2e$/year, as calculated in **Table 3-18b**.

SCS Analysis

In order to facilitate the proper comparison of emission inventories for the SCS consistency evaluation, it was necessary to modify the 2028 Unmitigated Project GHG emissions totals noted above. This SCS consistency evaluation is based on the concept that light-duty vehicles are accounted for by the SCS and thus do not need to be included in the Project emissions inventory. Specifically, the mobile emissions associated with light-duty vehicles were removed from the Project's inventory, leaving only those emissions associated with medium- and heavy-duty vehicles (i.e., trucks).

To determine the amount of mobile emissions associated with light-duty vehicles, the analysis looked to identify the VMT that may be associated with other types of vehicle classes (e.g., medium- and heavy-duty vehicles, such as trucks). In this regard, the 'Other-Other Attraction' trip type VMT category (see **Table 3-17e**) includes trips associated with delivery and vendor trucks and, therefore, is assumed to include vehicles that are not light-duty vehicles. (For purposes of the SCVCTM, Other-Other trips are those trips between any two locations neither of which is an individual's home or workplace, including such trips as those between school and shopping, shopping and the gym, and delivery service trips, etc.).

The 'Other-Other' attractions make up 15.3 percent of total daily VMT; this is calculated by adding up all of the 'Other-Other' attraction VMT and dividing the resulting number by the total VMT in **Table 3-17e**. For purposes of the analysis, non-light duty vehicles are assumed to comprise the entire 15.3 percent as a worse-case condition, for 'Other-Other' VMT. The remaining 85.7 percent of total daily VMT is assumed to be driven by light-duty vehicles. Therefore, the total unmitigated mobile emissions for the year 2028 were scaled by this percentage to estimate the remaining mobile emissions after the light-duty vehicle related emissions were removed. The 2028 Unmitigated Project without light-duty vehicle related emissions was estimated to generate 26,305,411 VMT per year and was estimated to result in 9,340 $MTCO_2e$ per year as shown in **Table 3-18a**.

[105] As an interim condition, there are expected to be wastewater processing-related trips. Emissions are estimated assuming heavy-duty trucks and are conservatively included in the total traffic emissions inventory.

4. PROJECT INVENTORY IN CONTEXT (UNMITIGATED)

This section assesses the significance of the Project's emissions for purposes of CEQA. While identified at length in Section 3 of this report, **Table 4-1** also summarizes the relevant modeling assumptions used in the significance analysis when estimating the emissions associated with various Project conditions (i.e., Unmitigated and Mitigated).

4.1 Project Emissions Inventory

As previously documented, the Project site – in its existing condition – emits 369 $MTCO_2e$ per year, and the Unmitigated Project emits 79,202 $MTCO_2e$ per year (see **Table ES-1** and **Table 4-2**). While the Unmitigated Project results in an obvious change to the existing environment, by increasing existing GHG emission levels by 78,832 $MTCO_2e$ per year, there is no scientific or regulatory consensus regarding what particular quantity of GHG emissions is significant. Further, no agency with regulatory authority and expertise, such as the CARB or SCAQMD, has adopted numeric GHG thresholds for land use development projects for purposes of CEQA. For additional comparison, the Unmitigated Project's percentage contribution to the existing international, national, state, and county GHG emission inventories are 0.0002%, 0.001%, 0.02%, and 1.0% respectively, as presented in **Table 4-2**. Nonetheless, for purposes of Threshold 1, the Unmitigated Project's emissions of 79,202 MT CO_2e per year in 2028 could have a potentially significant impact on global climate change.

4.1.1 SCS Consistent Emissions Inventory

The report also compares the Unmitigated Project's emissions to an emissions inventory that excludes emissions associated with cars and light-duty trucks pursuant to Public Resources Code Section 21159.28.

The Project's GHG emissions inventory was modified in order to facilitate the proper comparison of the inventories to the SCS consistent approach (see Section 3.3.5.6 above). Specifically, consistent with the derivation of the SCS consistent approach, the mobile emissions associated with light-duty vehicles were removed from the Project's inventory. The emissions inventory was revised by determining the percentage of total mobile emissions that represent light-duty vehicle emissions. The revised Unmitigated Project's emissions inventory is estimated to be 28,957 $MTCO_2e$ per year, such that the Unmitigated Project is potentially significant under this methodology (see **Table 4-3**).

4.2 Statewide Emissions Reduction Targets

This report also evaluates the Project's potential to conflict with the statewide emissions reductions targets established by AB 32, SB 32 and Executive Order S-3-05 for 2020, 2030 and 2050, respectively. Since the Unmitigated Project's impacts are potentially significant based on its estimated emissions (Threshold 1), the Unmitigated Project also may potentially conflict with the statewide emissions reduction targets for the referenced calendar years. Therefore, the Project's impacts are potentially significant for purposes of Threshold 2.

5. MITIGATION MEASURES

This section describes the mitigation measures developed for the Project that are recommended for adoption. The section summarizes the mitigation measures and describes the anticipated emission reductions based on the unmitigated emissions inventory. The mitigation measures recommended here are intended to replace in full the mitigation measures contained in Section 8.0 of the previously certified EIR (2011).

5.1.1 List of Mitigation Measures

The 13 mitigation measures set forth below, are identical to those recommended for system-wide implementation across the applicant's land holdings where development would be facilitated by California Department of Fish and Wildlife's Resource Management and Development Plan and Spineflower Conservation Plan (RMDP/SCP) Project.[106]

<u>Building Energy Efficiency</u>

- **GCC-1.** Prior to the issuance of residential building permits, the project applicant or its designee shall submit a Zero Net Energy Confirmation Report (ZNE Report) prepared by a qualified building energy efficiency and design consultant to Los Angeles County for review and approval. The ZNE Report shall demonstrate that the residential development within the RMDP/SCP project site subject to application of Title 24, Part 6, of the California Code of Regulations has been designed and shall be constructed to achieve ZNE, as defined by CEC in its 2015 Integrated Energy Policy Report, or otherwise achieve an equivalent level of energy efficiency, renewable energy generation or greenhouse gas emissions savings.

  A ZNE Report may, but is not required to:

  (1) Evaluate multiple buildings and/or land use types. For example, a ZNE Report may cover all of the residential and commercial buildings within a neighborhood/community, or a subset thereof.

  (2) Rely upon aggregated or community-based strategies to support its determination that the subject buildings are designed to achieve ZNE. For example, shortfalls in renewable energy generation for one or more buildings may be offset with excess renewable generation from one or more other buildings, or off-site renewable energy generation. As such, a ZNE Report could determine a building is designed to achieve ZNE based on aggregated or community-based strategies even if the building on its own may not be designed to achieve ZNE.

  (3) Make reasonable assumptions about the estimated electricity and natural gas loads and energy efficiencies of the subject buildings.

  (This mitigation measure applies to Mission Village without change.)

- **GCC-2.** Prior to the issuance of building permits for commercial development and private recreation centers, and prior to the commencement of construction for the public facilities, respectively, the project applicant or its designee shall submit a Zero

[106] The RMDP/SCP Project's geographic boundaries encompass three planning areas: the Newhall Ranch Specific Plan, Valencia Commerce Center, and Entrada. As previously discussed, the Mission Village Project is one of five inter-related, mixed-use villages located within the Newhall Ranch Specific Plan area proposed for development by the applicant.

Net Energy Confirmation Report (ZNE Report) prepared by a qualified building energy efficiency and design consultant to Los Angeles County for review and approval. The ZNE Report shall demonstrate that the commercial development, private recreation centers, and public facilities within the RMDP/SCP project site subject to application of Title 24, Part 6, of the California Code of Regulations have been designed and shall be constructed to achieve ZNE, as defined by CEC in its 2015 Integrated Energy Policy Report, or otherwise achieve an equivalent level of energy efficiency, renewable energy generation or GHG gas emissions savings.

("Commercial development" includes retail, light industrial, office, hotel, and mixed-use buildings. "Public facilities" are fire stations, libraries, and elementary, middle/junior high and high schools.)

A ZNE Report may, but is not required to:

(1) Evaluate multiple buildings and/or land use types. For example, a ZNE Report may cover all of the residential and non-residential buildings within a neighborhood/community, or a subset thereof.

(2) Rely upon aggregated or community-based strategies to support its determination that the subject buildings are designed to achieve ZNE. For example, short falls in renewable energy generation for one or more buildings may be offset with excess renewable generation from one or more other buildings, or off-site renewable energy generation. As such, a ZNE Report could determine a building is designed to achieve ZNE based on aggregated or community-based strategies even if the building on its own may not be designed to achieve ZNE.

(3) Make reasonable assumptions about the estimated electricity and natural gas loads and energy efficiencies of the subject buildings.

(This mitigation measure applies to Mission Village without change)

- **GCC-3.** Prior to the issuance of private recreation center building permits, the project applicant or its designee shall submit swimming pool heating design plans to Los Angeles County for review and approval. The design plans shall demonstrate that all swimming pools located at private recreation centers on the RMDP/SCP project site have been designed and shall be constructed to use solar water heating or other technology with an equivalent level of energy efficiency.

  (This mitigation measure applies to Mission Village without change.)

<u>Mobile Sources</u>

- **GCC-4.** Prior to the issuance of residential building permits, the project applicant or its designee shall submit building design plans, to Los Angeles County for review and approval, which demonstrate that each residence within the RMDP/SCP project site subject to application of Title 24, Part 6, of the California Code of Regulations shall be equipped with a minimum of one single-port electric vehicle (EV) charging station. Each charging station shall achieve a similar or better functionality as a Level 2 charging station.

  Additionally, prior to the issuance of the first building permit for the RMDP/SCP project site, the project applicant or its designee shall establish and fund a dedicated account for the provision of subsidies for the purchase of ZEVs, as defined by ARB. The project applicant or its designee shall provide proof of the account's establishment and funding to Los Angeles County.

The dedicated account shall be incrementally funded, for each village-level project, in an amount that equals the provision of a $1,000 subsidy per residence – on a first-come, first-served basis – for 50 percent of the village's total residences subject to application of Title 24, Part 6, of the California Code of Regulations.

(This mitigation measure applies to Mission Village without change.)

- **GCC-5.** Prior to the issuance of commercial building permits, the project applicant or its designee shall submit building design plans, to Los Angeles County, which demonstrate that the parking areas for commercial buildings on the RMDP/SCP project site shall be equipped with EV charging stations that provide charging opportunities to 7.5 percent of the total number of required parking spaces. ("Commercial buildings" include retail, light industrial, office, hotel, and mixed-use buildings.)

  The EV charging stations shall achieve a similar or better functionality as a Level 2 charging station. In the event that the installed charging stations use more superior functionality/technology than Level 2 charging stations, the parameters of the mitigation obligation (i.e., number of parking spaces served by EV charging stations) shall reflect the comparative equivalency of Level 2 charging stations to the installed charging stations on the basis of average charge rate per hour. For purposes of this equivalency demonstration, Level 2 charging stations shall be assumed to provide charging capabilities of 25 range miles per hour.

  (This mitigation measure applies to Mission Village without change.)

- **GCC-6**. The project applicant-submitted Newhall Ranch Transportation Demand Management Plan (TDM Plan), located in **Appendix E**, shall be implemented to reduce VMT resulting from project build out with oversight from Los Angeles County. The TDM Plan is designed to influence the transportation choices of residents, students, employees, and visitors, and serves to enhance the use of alternative transportation modes both on and off the project site through the provision of incentives and subsidies, expanded transit opportunities, bikeshare and carshare programs, technology-based programs, and other innovative means. Implementation of relevant elements of the TDM Plan will be included as a condition of approval by Los Angeles County when approving tentative subdivision maps for land developments that are part of the project.

  Accordingly, the TDM Plan identifies key implementation actions that are critical to the effectiveness of the VMT-reducing strategies, as well as timeline and phasing requirements, monitoring standards, and performance metrics and targets tailored to each of the strategies.

  In accordance with the TDM Plan, a non-profit Transportation Management Organization (TMO) or equivalent management entity shall be established to provide the services required, as applicable.

  (This mitigation measure applies to Mission Village without change.)

- **GCC-7.** Prior to the issuance of traffic signal permits, the project applicant or its designee shall work with Los Angeles County and the California Department of Transportation (Caltrans), as applicable, to facilitate traffic signal coordination along:

  (1) State Route 126 from the Los Angeles County line to the Interstate 5 north-bound ramps;

  (2) Chiquito Canyon Road, Long Canyon Road, and Valencia Boulevard within the RMDP/SCP Project site;

  (3) Magic Mountain Parkway from Long Canyon Road to the Interstate 5 north-bound ramps; and,

  (4) Commerce Center Drive from Franklin Parkway to Magic Mountain Parkway.

  To effectuate the signal synchronization and specifically the operational and timing adjustments needed at affected traffic signals, the project applicant or its designee shall submit traffic signal plans for review and approval, and/or pay needed fees as determined by Los Angeles County or Caltrans, as applicable.

  A majority of the signals that will be synchronized will be new signals constructed/installed by the project. Thus, for these signals, the project will provide the necessary equipment at the signal controller cabinet, as well as within the new roadways themselves, to enable and facilitate synchronization. The project is responsible for paying 100 percent of the applicable fee amount for the signal synchronization work, with assurance that the necessary funding will be available to fully implement this measure.

  (For purposes of the Mission Village Project, the following roadway segments shall be subject to traffic signal synchronization improvements: (a) Commerce Center Drive from SR-126 to Magic Mountain Parkway; and, (b) Magic Mountain Parkway (within the Mission Village boundary).)

- **GCC-8**. Consistent with the parameters of the Newhall Ranch TDM Plan, the project applicant or its designee shall provide Los Angeles County with proof that funding has been provided for the purchase, operation and maintenance of electric school buses in furtherance of the school bus program identified in the project's TDM Plan. The proof of funding shall be demonstrated incrementally as the school bus program is paced to village-level occupancy and student enrollment levels.

  (This mitigation measure applies to Mission Village without change.)

- **GCC-9.** Prior to the issuance of the first 2,000th residential building permit within the RMDP/SCP project site and every 2,000th residential building permit thereafter, the project applicant or its designee shall provide Los Angeles County with proof that it has provided a subsidy of $100,000 per bus for the replacement of up to 10 diesel or compressed natural gas transit buses with electric buses to the identified transit provider(s).

  (The Mission Village Project shall be responsible for its proportional share of the referenced subsidies.)

<u>Construction Sources</u>

- **GCC-10.** Prior to issuing grading permits for village-level development within the RMDP/SCP project site, Los Angeles County shall confirm that the project applicant or its designee shall fully mitigate the related construction and vegetation change GHG emissions (the "Incremental Construction GHG Emissions") by relying upon one of the following compliance options, or a combination thereof, in accordance with the project applicant-submitted Newhall Ranch GHG Reduction Plan (GHG Reduction Plan; see **Appendix F**):

  (1) Directly undertake or fund activities that reduce or sequester GHG emissions and retire the associated GHG reduction credits in a quantity equal to the Incremental Construction GHG Emissions; or

  (2) Obtain and retire carbon credits that have been issued by a recognized and reputable carbon registry, as described in the GHG Reduction Plan, in a quantity equal to the Incremental Construction GHG Emissions.

  (This mitigation measure applies to Mission Village without change.)

<u>Off-site Mitigation</u>

- **GCC-11.** Prior to the issuance of building permits for every 100 residential units or 100,000 square feet of commercial development for each village-level project, the project applicant or its designee shall provide proof of funding of the proportional percentage of the Building Retrofit Program (Retrofit Program), as included in **Appendix G**, to Los Angeles County ("Commercial development" includes retail, light industrial, office, hotel and mixed-use buildings.) Building retrofits covered by the Retrofit Program can include, but are not limited to: cool roofs, solar panels, solar water heaters, smart meters, energy efficient lighting (including, but not limited to, light bulb replacement), energy efficient appliances, energy efficient windows, insulation, and water conservation measures.

  The Retrofit Program shall be implemented within the geographic area defined to include Los Angeles County and primarily within disadvantaged communities, as defined by the Retrofit Program, or in other areas accepted by the Los Angeles County Planning Director.

  Funding shall be applied to implement retrofits strategies identified in the Retrofit Program or other comparable strategies accepted by the Los Angeles County Planning Director.

  (This mitigation measure applies to Mission Village without change.)

- **GCC-12.** Prior to the issuance of the first building permit for the RMDP/SCP project site, the project applicant or its designee shall provide Los Angeles County with proof of installation of EV charging stations capable of serving 20 off-site parking spaces. Thereafter, the project applicant or its designee shall provide Los Angeles County proof of installation of EV charging stations prior to the issuance of residential and commercial building permits per the following ratios: one (1) off-site parking space shall be served by an electric vehicle charging station for every 30 dwelling units, and one (1) off-site parking space shall be served by an electric vehicle charging station for every 7,000 square feet of commercial development. ("Commercial development" includes retail, light industrial, office, hotel and mixed-use buildings.) Off-site EV charging stations capable of servicing 2,036 parking spaces would be required if the maximum allowable development facilitated by the RMDP/SCP project occurs; fewer EV charging stations would be required if maximum build-out under the RMDP/SCP project does not occur.

The EV charging stations shall achieve a similar or better functionality as a Level 2 charging station and may service one or more parking spaces. In the event that the installed charging stations use more superior functionality/technology than Level 2 charging stations, the parameters of the mitigation obligation (i.e., number of parking spaces served by EV charging stations) shall reflect the comparative equivalency of Level 2 charging stations to the installed charging stations on the basis of average charge rate per hour. For purposes of this equivalency demonstration, Level 2 charging stations shall be assumed to provide charging capabilities of 25 range miles per hour.

The EV charging stations shall be located within the geographic area defined to include Los Angeles County, and in areas that are generally accessible to the public. For example, the charging stations may be located in areas that include, but are not limited to, retail centers, employment centers, recreational facilities, schools, and other categories of public facilities.

(This mitigation measure applies to Mission Village without change.)

GCC-13. In addition to GCC-1 through GCC-12, the project applicant shall offset GHG emissions to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining carbon credits through the Newhall Ranch GHG Reduction Plan. The project applicant-submitted Newhall Ranch GHG Reduction Plan focuses on achieving GHG reductions or sequestration through the direct investment in specific programs or projects in coordination with an accredited carbon registry, such as the Climate Action Reserve. If these direct investment efforts do not achieve an adequate amount of GHG reductions, the project applicant can obtain carbon credits from accredited carbon registries.

SCAQMD recommends that mitigation be considered in the following prioritized manner: (1) project design feature/on-site reduction measures; (2) off-site within neighborhood; (3) off-site within district; (4) off-site within state; and (5) off-site out of state (SCAQMD 2008).

Prior to issuing building permits for development within the project site, Los Angeles County shall confirm that the project applicant or its designee shall fully offset the project's remaining (i.e., post implementation of GCC-1 through GCC-12) operational GHG emissions over the 30-year project life associated with such building permits ("Incremental Operational GHG Emissions) by relying upon one of the following compliance options, or a combination thereof, in accordance with the Newhall Ranch GHG Reduction Plan:

(1) Demonstrate that the project applicant has directly undertaken or funded activities that reduce or sequester GHG emissions ("Direct Reduction Activities") that are estimated to result in GHG reduction credits, as described in the GHG Reduction Plan, and retire such GHG reduction credits in a quantity equal to the Incremental Operational GHG emissions

(2) Provide a guarantee that it shall retire carbon credits issued in connection with Direct Reduction Activities in a quantity equal to the Incremental Operational GHG emissions;

(3) Undertake or fund Direct Reduction Activities and retire the associated carbon credits in a quantity equal to the Incremental Operational GHG Emissions; or

(4) If it is impracticable to fully offset Incremental Operational Emissions through the Direct Reduction Activities, the project applicant or its designee may purchase and retire carbon credits that have been issued by a recognized and reputable, accredited carbon registry in a quantity equal to the Incremental Operational GHG Emissions.

Compliance with GCC-13 shall be demonstrated incrementally prior to obtaining building permits, and shall in the context of the project overall follow the preferred geographic hierarchy recommended by SCAQMD, discussed above. Incremental Operational GHG emissions shall be equal to the sum of the number of proposed residential units covered by the applicable building permit multiplied by 88.13 MT CO2e and every thousand square feet of proposed commercial development covered by the applicable building permit multiplied by 367.90 MT CO2e.

(This mitigation measure applies to Mission Village without change, with the exception that the emissions reduction rates specified in the mitigation measure for residential and commercial building permits have been modified to reflect the Project-specific emissions analysis presented in this report and equate to those rates of emissions reductions needed to ensure that Project emissions are reduced to zero.)

5.1.2 Mobile Related Emissions Reduction Methodology

The combined emission reductions related to the mitigation measures addressing mobile source emissions need to be estimated sequentially, in order to avoid double counting the emission reductions. For purposes of this analysis, the emission reductions are calculated and applied in the following order: (1) Transportation Demand Management (TDM Plan), (2) incentives for residential electric vehicles; and (3) traffic signal synchronization. The emission reductions due to commercial development area EV charging stations, and the utilization of electric transit and school buses, are independent of the TDM Plan's reductions, since they are based on a fixed number of replaced vehicles, and do not need to be accounted for in a particular sequence.

5.2 Mitigation Measures

The following section describes the estimates for the GHG reductions.

5.2.1 GCC-1. Residential ZNE

The residential development within the Project site subject to application of Title 24, Part 6, of the California Code of Regulations shall be designed and constructed to achieve ZNE, as defined by CEC in its 2015 Integrated Energy Policy Report.[107, 108.] Specifically, this

[107] California Energy Commission. Integrated Energy Policy Report. 2015. Available at: http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-01/TN210527_20160224T115023_2015_Integrated_Energy_Policy_Report__Small_Size_File.pdf. Accessed: September 2016.

[108] As stated in the CEC IEPR, the ZNE goal is also supported “by the CPUC in the Long-Term Energy Efficiency Strategic Plan, by California Air Resources Board (ARB) in the First Update to the Climate Change Scoping Plan, and in Governor Brown’s Clean Energy Jobs Plan.”

mitigation assumes the following definition of ZNE: A ZNE building is one "where the value of the net amount of energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building at the level of a single 'project' seeking development entitlements and building code permits measured using the California Energy Commission's Time Dependent Valuation metric."[109]

Achieving ZNE represents "a unique opportunity to manage energy costs and meet greenhouse gas (GHG) reduction goals."[110] CEC proposes to meet ZNE through a variety of energy efficiency improvements coupled with on-site renewable energy generation. While energy efficient design required by "future updates of the building and appliance energy efficiency standards" serves to minimize energy demand, CEC anticipates that "onsite renewable electricity generation such as solar photovoltaic systems or wind-driven electricity generators" will generate the remainder of a building's energy needs to achieve ZNE.[111, 112]

Estimated GHG Reduction

The main variables contributing to the calculated GHG benefit of achieving residential ZNE are as follows:

- Residential Building Prototypes: The residential building prototypes modeled by ConSol are used as the basis for this estimate of GHG emission reductions from achieving ZNE (see **Appendix C**). ConSol studied two residential building prototypes in its analysis that are representative of the development that would be facilitated by the Project, a single family home and a multifamily home, and evaluated how each residential home could achieve ZNE.
- Residential Energy Efficiency: ConSol's modeling estimates the energy consumption of a home that is designed to achieve ZNE by exceeding the 2016 Title 24 standards through the combined use of building envelope efficiencies and on-site onsite Photovoltaic (PV) systems.[113] The electricity and natural gas consumption of this "2019 Title 24 Standards" home are shown **Appendix C**, and the GHG reductions from upgrading the 2016 Title 24 homes to 2019 Title 24 homes are shown in **Table 5-1a**.
- PV System Design: The estimated GHG reductions achieved through residential ZNE are based, in part, on the additional PV system requirements as estimated by ConSol. Specifically, ConSol estimated the rated PV system size required for the single family and multifamily building prototypes to achieve ZNE using the CEC's California Solar Initiative Incentive Calculator. Based on ConSol's analysis, a 5.0-kilowatt (kW) system

[109] The CEC and CPUC concept of TDV "is based on the cost for utilities to provide energy at different times." This valuation accounts for the variable value of electricity and natural gas based on hour, day, or season.

[110] California Energy Commission. Achieving Energy Savings in California Buildings. 2011. Available at: http://www.energy.ca.gov/2011publications/CEC-400-2011-007/CEC-400-2011-007-SD.pdf. Accessed: September 2016.

[111] California Energy Commission. Achieving Energy Savings in California Buildings. 2011. Available at: http://www.energy.ca.gov/2011publications/CEC-400-2011-007/CEC-400-2011-007-SD.pdf. Accessed: September 2016.

[112] California Energy Commission. Integrated Energy Policy Report. 2011. Available at: http://www.energy.ca.gov/2011publications/CEC-100-2011-001/CEC-100-2011-001-CMF.pdf. Accessed: September 2016.

[113] The ConSol modeling represents one option of many that may be feasible to achieve residential ZNE.

per single family home and a 21.9-kW system per multifamily home were required to meet ZNE. These PV systems are sized to achieve ZNE by exceeding the Energy Design Rating (EDR) and TDV energy consumption of the modeled homes, as described in more detail in **Appendix C**. The calculations shown in **Table 5-1b** estimate the GHG reduction from installing the PV systems necessary to achieve ZNE.

- Emission Factors: The analysis is based on the assumption that the 45 percent RPS for 2027 is achieved.

Table 5-1c shows the total GHG reduction achieved through the Project's development of ZNE residences.

5.2.2 GCC-2. Non-Residential ZNE

The non-residential development within the Project site subject to application of Title 24, Part 6, of the California Code of Regulations shall be designed and constructed to achieve Zero Net Energy, as defined by the California Energy Commission in its 2015 Integrated Energy Policy Report, or otherwise achieve an equivalent level of energy efficiency or greenhouse gas emissions savings.[114, 115]

Estimated GHG Reduction

The main variables contributing to the calculated GHG benefit of achieving residential ZNE are as follows:

- Non-Residential Building Prototypes: The commercial building prototypes modeled by ConSol are used as the basis for this estimate of GHG emission reductions from achieving ZNE (see **Appendix C**). ConSol studied three commercial building prototypes in its analysis that are representative of the development that would be facilitated by the Project: an office building, a light industrial building, and a retail building. ConSol's modeling showed that ZNE could be achieved through a combination of additional energy efficiency design improvements beyond the 2016 Title 24 Standards and adequate on-site PV systems. [116] The estimated GHG reductions by building prototype were mapped to the land uses represented for the Project. For example, "regional shopping center" was mapped to retail, and "industrial park" was mapped to industrial.

- Non-Residential Energy Efficiency: In ConSol's analysis, the estimated improvements in building design are applied to each building prototype in order to estimate the GHG reductions. Given the variability in energy usage in the building prototypes, the required energy efficiency improvements vary across the three prototypes modeled. **Table 5-2a** presents the GHG reductions from improving building energy efficiencies beyond the 2016 Title 24 Standards to 2019 Title 24 Standards.

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[114] California Energy Commission. Integrated Energy Policy Report. 2015. Available at: http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-01/TN210527_20160224T115023_2015_Integrated_Energy_Policy_Report__Small_Size_File.pdf. Accessed: September 2016.

[115] As stated in the CEC IEPR, the ZNE goal is also supported "by the CPUC in the Long-Term Energy Efficiency Strategic Plan, by California Air Resources Board (ARB) in the First Update to the Climate Change Scoping Plan, and in Governor Brown's Clean Energy Jobs Plan."

[116] The ConSol modeling represents one option of many that may be feasible to achieve commercial ZNE.

- PV System Design: The estimated GHG reductions achieved through additional PV system requirements, as estimated by ConSol, are contribute to the overall GHG reduction resulting from the Project's development of ZNE commercial buildings. As shown in **Table 5-2b**, ConSol identified the rated PV system size required for each of the building prototypes to achieve ZNE. **Table 5-2b** also identifies the annual GHG reduction attributable to the PV systems identified for the commercial building prototypes.
- Emission Factors: The analysis is based on the assumption that the 45 percent RPS for 2027 is achieved.

Table 5-2c shows the total GHG reduction achieved through the Project's development of ZNE non-residential buildings.[117]

5.2.3 GCC-3. Swimming Pool Heating

All swimming pools located at the private recreation centers on the Project site shall be designed and constructed to use solar water heating or other technology with an equivalent level of energy efficiency (e.g., use solar energy (or equivalent) to replace natural gas for purposes of heating the swimming pool waters).

Estimated GHG Reduction

The main variables contributing to the calculated GHG benefit of solar heating the swimming pools are as follows:

- Energy sources: The swimming pools are assumed to use electricity for filters and pumps and use natural gas for water heating for the Unmitigated Project. The mitigation measure requires that solar heating (or equivalent) replaces all natural gas heating at the swimming pools.
- Energy use factor: The electricity and natural gas energy usage factors for swimming pools are based on the energy consumption of filter pumps and water heaters included in a published pools study by the City of Oakland (Pools Study),[118] and scaled to represent energy consumption per year per volume of the pool. The Pools Study data included pool volume, number of heaters, heater rating, operation schedule, and annual electricity usage. Annual Natural Gas Usage was calculated by multiplying the number of hours per day, days per year, heaters, and the heating rating. The calculated Annual Natural Gas Usage was adjusted to account for (1) the higher average ambient temperature in Southern California compared to Oakland (i.e., an average temperature of 55.5 °F for Oakland and 63.3 °F for Santa Clarita), and (2) savings from newer energy efficient heater standards, i.e., Ramboll Environ assumed that the Oakland pools used 78 percent efficient heaters, which is the minimum efficiency legally required (see 10 CFR Part 431). According to the U.S. Department of Energy, newer pools are likely to use heaters with 89-95 percent efficiency. [119]Ramboll Environ conservatively assumed 90 percent efficiency for Santa Clarita pool heaters,

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[117] No GHG benefits were included for shifting load from peak to off-peak hours.

[118] City of Oakland/Oakland Unified School District. October 2006. Energy Efficient Commercial Pool Program; Preliminary Facility Reports for DeFremery Pool, Fremont Pool, Live Oak Pool, Lyons Pool, and Temescal Pool.

[119] Energy.gov. Energy Saver. Available at: http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13170. Accessed: September 2016.

resulting in a 12 percent savings over the Pool Study data. Average Annual Electricity Usage was calculated from the Annual Electricity Usage of the Pool Study data divided by the swimming pools total pool volume.

- Emission Factors: The utility emission factors are consistent with the analyses for the project.
- Swimming pool size: All the swimming pools are assumed to be 50m x 25yd x 8ft.[120]

The calculations shown in **Table 3-14a** estimate the GHG reduction from replacing natural gas with solar energy for heating the swimming pools. The GHG emissions reduction is the difference between the total GHG emissions from the unmitigated and mitigated emission estimates.

5.2.4 GCC-4. Residential EV Chargers and Vehicle Subsidy

Each residence within the Project site subject to application of Title 24, Part 6, of the California Code of Regulations shall be equipped with a minimum of one single-port electric vehicle charging station. Each charging station will achieve a similar or better functionality as a Level 2 charging station. Additionally, a $1,000 subsidy shall be available for 50 percent of the Project site's residences subject to application of Title 24, Part 6, of the California Code of Regulations, on a first-come, first-served basis, for the purchase of a zero emission vehicle, as defined by the California Air Resources Board.

These measures will complement the Project's commitments to install Level 2 charging stations for 7.5 percent of the parking spaces within the Project site and to install Level 2 charging stations at publicly available areas within the SCAG region. Through these commitments, the Project will help support an increasingly inter-connected web of charging infrastructure, making it easier to own and use EVs, consistent with goals aimed to increase EV penetration.

Mobile GHG emissions are a major component of overall land use development emission inventories. Conventional gasoline and diesel vehicles emit GHGs from the tailpipe, whereas EVs minimize these emissions. EVs including battery-electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) comprise a growing fraction of the passenger vehicles on the roads in California, and EV adoption is expected to greatly increase over the upcoming decades due in part to improvements in battery technology and public initiatives and goals. In addition to the discussion below, a study that forecasts electric vehicle purchases in the Newhall Ranch community is included in **Appendix H**.

A variety of external factors will complement Newhall Ranch's commitment to facilitate the use of EVs and the growth of electric vehicle penetration. There are dozens of electric vehicle models available for purchase in California, and the costs of batteries and BEVs continues to decrease. Batteries for electric vehicles have seen rapidly decreasing costs in recent years, averaging fourteen percent annually from 2007 to 2014[121]. Furthermore, the impact of learning-by-doing cost reductions (resulting from a doubling in production), is between six and nine percent. This has resulted in the industry-wide average cost of a

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[120] ENVIRON International Corporation, October 2009. Prepared for The Newhall Land and Farming Company, Valencia, CA. Climate Change Technical Addendum: Resource Management and Development Plan Spineflower Conservation Plan.

[121] Nykvist, B. and Nilsson, M. Rapidly falling costs of battery packs for electric vehicles. *Nature: Climate Change* (2015), 5, pg. 329-332.

battery pack declining from $1000 per kilowatt-hour(kWh) to $410/kWh (2007 to 2014), and an even greater reduction among market-leading battery electric vehicle manufacturers, to around $300/kWh. There are statewide and regional initiatives to help fund electric vehicle and infrastructure purchases, and ambitious goals to increase the number of EVs on the road by 2025. Peer-reviewed studies show that vehicle electrification is necessary to achieve California's long-term greenhouse gas reduction goals. Reliable access to EV chargers is an important factor contributing to people's comfort levels when buying electric vehicles.

<u>Statewide Initiatives</u>

As discussed in Section 2.2.2.7 above, California has programs and initiatives already in place to further the progress of EV penetration. These include vehicle fuel efficiency standards, executive orders, and purchase incentives.

<u>Electric Vehicles Necessary to Achieve Statewide GHG Goals</u>

As described in Section 2.2.2, California has goals to reduce GHGs to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. Meeting these GHG reduction goals will require an increase in vehicle electrification, according to several recent studies. In a 2012 *Science* paper on achieving California's 2050 goal,[122] Williams concludes that "[t]he most important finding of this research is that, after other emission reduction measures were employed to the maximum feasible extent, there was no alternative to widespread switching of direct fuel uses (e.g., gasoline in cars) to electricity in order to achieve the reduction target." The study parameters displace 75 percent of light-duty gasoline use with EVs and PHEVs in 2050. A 2015 UC Davis study[123] reiterates that EVs are needed to reach California's 2050 goal and also federal and national GHG reduction targets, stating that "passenger vehicles will not be able to achieve an 80 percent GHG reduction…using hydrocarbon fuels."

Widespread EV adoption is necessary *before* 2050 to achieve California's 2030 goals. Energy + Environmental Economics (E3) developed a modeling tool called PATHWAYS to chart the GHG impact of different scenarios of fuel usage, technology adoptions, and other California policy changes that may affect future GHG emissions. They used PATHWAYS to show potential pathways to meeting the 2030 and 2050 California state goals and national goals. The pathways presented to meet California's 2030 goal[124] include six to seven million ZEVs and PHEVs on the road by 2030, which is significantly higher than the Executive Order (EO) B-16-2012 target of 1.5 million EVs by 2025. E3 shows that EVs should have a new vehicle market share of 35 to 40 percent by 2025 and over 50 percent by 2030. Based on E3's sensitivity analysis, zero-emission vehicles are the single most important contributor to GHG reductions for the 2050 goal.

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[122] Williams, J.H., et al. 2012. The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity. *Science, 335.*

[123] Brown, R., et al. 2015. Achieving California's Greenhouse Gas Goals: A Focus on Transportation. Institute of Transportation Studies, University of California, Davis, Research Report UCD-ITS-RR-15-14. Available at: http://www.its.ucdavis.edu/research/publications/publication-detail/?pub_id=2529. Accessed: September 2016.

[124] Energy + Environmental Economics (E3). 2015. California PATHWAYS: GHG Scenario Results. April 6. Available at: https://ethree.com/documents/E3_PATHWAYS_GHG_Scenarios_Updated_April2015.pdf. Accessed: September 2016.

Residential EV Charging is an Important Factor for Increasing EV Penetration

While charging stations at work places and retail stores are becoming more widespread, most EV charging has historically taken place at homes, and will continue to do so.[125] An average vehicle spends 90 percent of its time at home and work, with over 70 to 80 percent of EV charging taking place at home, followed by workplace charging.[126],[127] In fact, the availability and accessibility of a plug at home increases a person's propensity to buy an electric vehicle.[128] National Renewable Energy Laboratory's assessment for the California Energy Commission[129] found that home charging is the predominant location for charging, followed by workplace/retail charging, then public charging. In the near term, the CEC believes that "can't miss" locations are homes and multi-unit dwellings, followed by workplaces.[130]

Research shows that access to charging infrastructure at home plays an important role in decisions regarding purchase of EVs. A 2013 study conducted by the Institute of Transportation Studies at University of California, Davis explored the characteristics of 1,200 households who actually purchased a new plug-in vehicle in California during 2011-2012, with the overall target population of the survey being new plug-in electric vehicle (PEV) owners in California.[131] This study reveals that purchasing a PEV is associated in most cases with the installation of EVSE at home and the ability to plug the car to the power for charging.[132] In 2011, a report released by the National Research Council of the National Academies on the barriers to electric vehicle deployment pointed to lack of charging infrastructure deployment as one of the barriers to EV deployment, with 21.3 percent of survey respondents stating concern about access to charging infrastructure as

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[125] Holland, B. 2013. How important is charging infrastructure to EV adoption? GreenBiz. January 17. Available at: https://www.greenbiz.com/blog/2013/01/17/how-important-charging-infrastructure-ev-adoption. Accessed: September 2016.

[126] Holland, B. 2013. How important is charging infrastructure to EV adoption? GreenBiz. January 17. Available at: https://www.greenbiz.com/blog/2013/01/17/how-important-charging-infrastructure-ev-adoption. Accessed: September 2016.

[127] Leemput, N. et al. 2015. MV and LV Residential Grid Impact of Combined Slow and Fast Charging of Electric Vehicles. Energies (2015), 8, 1760-1783. Available at: http://www.mdpi.com/1996-1073/8/3/1760. Accessed: September 2016.

[128] Hidrue, M.K., G.R. Parsons, W. Kempton, and M.P. Gargner. 2011. Willingness to pay for electric vehicles and their attributes. Resource Energy Econ. doi:10.1016/j.reseneeco.2011.02.002. Available at: http://www.udel.edu/V2G/resources/HidrueEtAl-Pay-EV-Attributes-correctedProof.pdf. Accessed: September 2016.

[129] National Renewable Energy Laboratory (NREL). 2014. California Statewide Plug-In Electric Vehicle Infrastructure Assessment. Available at: http://www.energy.ca.gov/2014publications/CEC-600-2014-003/CEC-600-2014-003.pdf. Accessed: September 2016.

[130] Ibid.

[131] Tal, G., M.A. Nicholas, J. Woodjack, and D. Scrivano. February 2013. Who Is Buying Electric Cars in California? Exploring Household and Vehicle Fleet Characteristics of New Plug-In Vehicle Owners. Institute of Transportation Studies at University of California, Davis. Research Report – UCD-ITS-RR-13-02. Available at: https://merritt.cdlib.org/d/ark:%252F13030%252Fm56692z3/1/producer%252F2013-UCD-ITS-RR-13-02.pdf. Accessed: September 2016.

[132] Tal, G., M.A. Nicholas, J. Woodjack, and D. Scrivano. February 2013. Who Is Buying Electric Cars in California? Exploring Household and Vehicle Fleet Characteristics of New Plug-In Vehicle Owners. Institute of Transportation Studies at University of California, Davis. Research Report – UCD-ITS-RR-13-02. Available at: https://merritt.cdlib.org/d/ark:%252F13030%252Fm56692z3/1/producer%252F2013-UCD-ITS-RR-13-02.pdf. Accessed: September 2016.

the barrier.[133] Another study revealed that when asked about the critical factors that may influence their decision, the highest percentage (63 percent) of respondents cited the ability to charge at home [other factors included battery range, total operating cost, government subsidy].[134]

The Plug-in Electric Vehicle Owner Survey, managed by the Center for Sustainable Energy, further highlighted the importance of subsidized or discounted chargers.[135] Of those with an installed Level 2 charger at home, 64 percent received a free or subsidized charger and 80 percent of them found the importance of the subsidy to install a Level 2 charger influential. Thus, a home with an already installed (free) charger might influence residents to purchase a PHEV. Another study reveals that 83.1 percent of the participants of a consumer survey on plug-in hybrid electric vehicles stated that it would increase their comfort in purchasing or leasing a PHEV by "a lot" or would be "a deciding factor" if they have recharge facilities at home for easy overnight recharge.[136] This evidence suggests that investment in a residential charging infrastructure could result in an increased probability of a household purchasing an EV. Another study also identified the importance of residential parking and charging, suggesting that: [137]

- Fleet penetration of EVs beyond 22 percent will require residential infrastructure investment to increase access to outlets near home parking;
- Fleet penetration beyond 39 percent may require significant residential infrastructure investment because many households will need to upgrade their electrical infrastructure to charge multiple vehicles;
- Fleet penetration beyond 47 percent will require residential charging to be available for renters; and
- Fleet penetration beyond 56 percent may require not only new chargers but also additional residential parking, with associated logistics, space implications, and environmental impacts.

The program to install charging stations in residential areas has the potential to fulfill an important component to facilitate the level of conversion to EV that will be necessary if

[133] Slavin, M.I. December 2013. Drivers and Barriers to Electric Vehicle Adoption. Published in EV World. Available at: http://evworld.com/article.cfm?storyid=2076. Accessed: September 2016.

[134] Accenture. 2011. Plug In Electric Vehicles Changing Perceptions, Hedging Bets - Accenture end-consumer survey on the electrification of private transport. Available at: https://www.accenture.com/us-en/~/media/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Industries_9/Accenture-Plug-in-Electric-Vehicle-Consumer-Perceptions.pdf. Accessed: September 2016.

[135] California Center for Sustainable Energy (CCSE) and California Environmental Protection Agency - Air Resources Board (ARB). 2012. California Plug-in Electric Vehicle Owner Survey. Available at: https://energycenter.org/sites/default/files/docs/nav/policy/research-and-reports/California%20Plug-in%20Electric%20Vehicle%20Owner%20Survey%20Report-July%202012.pdf. Accessed: September 2016.

[136] Krupa, J.K., D.M. Rizzo, M.J. Eppstein, D.B. Lanute, D.E. Gaalema, K. Lakkaraju, and C.E. Warrender. 2014. Analysis of a Consumer Survey on Plug-in Hybrid Electric Vehicles. Transportation Research Part A 64 (2014) 14-34. Available at: http://www.sciencedirect.com/science/article/pii/S0965856414000500. Accessed: September 2016.

[137] Traut, E.J., T.C. Cherng, C. Hendrickson, and J.J. Michalek. 2013. US Residential Charging Potential for Electric Vehicles. Transportation Research Park D 25 (2013) 139-145. Available at: http://www.cmu.edu/me/ddl/publications/2013-TRD-Traut-etal-Residential-EV-Charging.pdf. Accessed: September 2016.

California is to meet its stated penetration targets and associated emission reduction goals. Increased market penetration often results in a 'neighbor effect' of adoption, meaning that as more people see neighbors and friends successfully adopting EVs, the fewer perceived barriers remain.[138] In short, as EVs become more common due to reduced costs, increased availability of infrastructure and other incentives, members of the neighborhood/community without an EV will be increasingly more likely to purchase and use an EV.

Subsidies Incentivise EV Adoption

Given the rapid pace of EV technological improvement and the many policy efforts to encourage EV adoption, economists and policy researchers have considered the effectiveness of rebates and other incentives with influencing the rate of EV adoption. Research suggests that rebates and other policies that reduce the overall price of EV purchase and operations are one of the most effective at increasing rates of adoption.[139] Policies that provide other benefits such as increasing the availability of public chargers, carpool lane access, and emissions testing exemptions were also shown to be effective. Economic models of EV purchasing behavior suggest that price is still a significant barrier to adoption of EVs. Many models have evaluated the decision to select EVs compared with internal combustion engine vehicles (ICEVs), as a function of cost, range, income of the buyer, driving habits, price of gas, recharging infrastructure, 'greenness' including the influence of neighbors and friends among other determinants of EV adoption.

Rebates and other incentives fundamentally work to reduce the cost of purchasing and then operating an EV.[140] While policies differ from state to state,[141] adoption of EVs does correlate strongly to subsidies and rebates offered.

California is currently one of the largest markets for EVs in the United States, and has, in fact, been referred to as "America's capital of plug-in cars."[142] Based on sales figures tracked by the California Air Resources Board, Californians buy approximately 40 percent of all plug-in vehicles sold in the United States[143] (36 percent in 2015).[144]

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138 Nelson-Nygaard Consulting Associates Inc. 2014. Removing Barriers to Electric Vehicle Adoption by Increasing Access to Charging Infrastructure. Seattle Office of Sustainability & Environment. Available at: http://www.seattle.gov/Documents/Departments/OSE/FINAL%20REPORT_Removing%20Barriers%20to%20EV%20Adoption_TO%20POST.pdf. Accessed: September 2016.

139 Jin, Lingzhi, Stephanie Searle, and Nic Lutsey, 2014. Evaluation of State-Level U.S. Electric Vehicle Incentives, White Paper for the International Council on Clean Transportation, October. Available at: http://www.theicct.org/sites/default/files/publications/ICCT_state-EV-incentives_20141030.pdf. Accessed: September 2016.

140 Clinton, Bentley, Austin Brown, Carolyn Davidson, and Daniel Steinberg, 2015. Impact of Direct Financial Incentives in the Emerging Battery Electric Vehicle Market: A Preliminary Analysis. National Renewable Energy Laboratory. Department of Economics, University of Colorado – Boulder. February.

141 See DeShazo, J.R., CC Song, Michael Sin, and Thomas Gariffo, 2015. State of the Sates' Plug-in Electric Vehicle Policies, UCLA Luskin School of Public Affairs, March for a good review. Available at: http://innovation.luskin.ucla.edu/sites/default/files/EV_State_Policy.pdf. Accessed: September 2016.

142 Jeff Cobb. February 2016. California Plug-in Sales Led the US Last Year with Nearly Five-Times Greater Market Share. HybridCars.com. Available at: http://www.hybridcars.com/california-plug-in-sales-led-us-last-year-with-nearly-five-times-greater-market-share/. Accessed: September 2016.

143 Dana Hull. September 2014. California charges ahead with electric vehicles. San Jose Mercury News. Available at: http://www.mercurynews.com/business/ci_26493736/california-charges-ahead-electric-vehicles. Accessed: September 2016.

EV Usage Rate Exceeds Conventional Vehicles

An annual survey of California PEV owners[145] shows that even though many households with EVs also own a conventional gasoline or diesel car, they use the PEV for over 85 percent of work commute, personal errands, and shopping, while the conventional vehicle is the primary vehicle for vacation travel. The following year's survey shows that the average PEV owner drives 28.9 miles per day, which is well within the electric range of many eligible PEVs available in 2013.[146]

A survey conducted by the Union of Concerned Scientists (UCS)[147] found that 64 percent of respondents live in a household with two or more vehicles. This is consistent with a survey of EV users, which reported that 79.4 percent of EV owners and potential owners had two or more vehicles in the household.[148] Conventional wisdom as well as economic theory suggest that when households have at least one EV and one ICEV, they favour the EV and use the more costly-to-drive ICEV for longer distance trips on the weekend, for hauling, or if there is a need for more than five passengers.[149] One detailed study found exactly this in a broad survey of different types of households that have EVs. For example, one-car households that switch from one ICEV to one EV showed very little difference in daily driving distances nor the number of daily trips taken when they invested in an EV.[150] But the households that had one (or more) EV and at least one ICEV all showed that after three months of EV ownership, the daily distance driven for the ICE declined, and the EV increased so that the EV usage was about 45 percent higher in use. This is consistent with survey data from Norway, which showed that 90 percent of EV owners said that the EV car "Completely" or "To a High Degree" replaced their ICEV, with 66 percent of the

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144 Extrapolated from Data Provided in: California New Car Dealers Association (CNCDA). February 2016. California New Vehicle Registrations Expected to Remain Above 2 Million Units in 2016. Registrations through December 2015 since 2011. Revised figures for 2014. Available at: http://www.cncda.org/CMS/Pubs/Cal%20Covering%204Q%2015.pdf. Accessed: September 2016.

AND

Electric Drive Transportation Association (EDTA). 2016. Electric Drive Sales Dashboard. Sales figures sourced from HybridCars.com and direct reports submitted by EDTA member companies. Available at: http://electricdrive.org/index.php?ht=d/sp/i/20952/pid/20952#sthash.5QBifqpG.EyVW8gqf.dpuf and http://electricdrive.org/index.php?ht=d/sp/i/20952/pid/20952. Accessed: September 2016.

145 California Center for Sustainable Energy. 2012. California Plug-in Electric Vehicle Owner Survey. Available at: https://energycenter.org/sites/default/files/docs/nav/policy/research-and-reports/California%20Plug-in%20Electric%20Vehicle%20Owner%20Survey%20Report-July%202012.pdf. Accessed: September 2016.

146 California Center for Sustainable Energy. 2013. California Plug-in Electric Vehicle Driver Survey Results. Available at: https://energycenter.org/sites/default/files/docs/nav/transportation/cvrp/survey-results/California_Plug-in_Electric_Vehicle_Driver_Survey_Results-May_2013.pdf. Accessed: September 2016.

147 Union of Concerned Scientists, 2013, Electric Vehicle Survey Methodology and Assumptions; American Driving Habits, Vehicle Needs, and Attitudes toward Electric Vehicles, December. Available at: http://www.ucsusa.org/sites/default/files/legacy/assets/documents/clean_vehicles/UCS-and-CU-Electric-Vehicle-Survey-Methodology.pdf. Accessed: September 2016.

148 Shahan, Zachary, 2015, Electric Cars: What Early Adopters and First Followers Want. Important Media. Available at: http://cleantechnica.us2.list-manage.com/subscribe?u=a897522b53d0853c85abbf9fa&id=a264ba3c49. Accessed: September 2016.

149 UCS, 2013.

150 Hwang, Sang-kyu, and Sang-hoon Son, 2015. Electric Vehicle User Mobility Analysis with Dashboard Camera in Jeju Island, Korea. Paper presented at Electric Vehicle Symposium, EVS28, in Kintex, Korea, May 3-6, 2015.

respondents living in two car households.[151] This is also consistent with preliminary data from Ford, which also suggests that with time – six months – the frequency of use of the EV increases, and the ICEV use decreases.[152]

Accordingly, as EV penetration increases, the amount of miles driven for residential trips by EV compared to conventional vehicles will grow at a disproportionately higher rate because households with EVs will tend to rely on the EV for a large majority of their trips.

<u>Estimated GHG Reduction</u>

The main variables contributing to the calculated GHG benefit of installing residential EV chargers and providing EV vehicle subsidies include the following assumptions:

- <u>Electric Vehicle Penetration</u>: Based on the discussion above, a variety of factors will contribute to high rates of electric vehicle penetration near Newhall Ranch. First, there are already dozens of electric vehicle models available for purchase in California, and the costs of batteries continue to decrease. Second, there are numerous statewide and regional initiatives to help fund electric vehicle and infrastructure purchases, and many policy goals aim to increase the number of EVs because vehicle electrification is critical to achieving California's long-term greenhouse gas reduction goals. Third, reliable access to EV chargers is an important factor contributing to buying electric vehicles. Therefore, the Project's mitigation measures requiring that EV charging infrastructure be made widely available and the provision of EV purchase incentives will encourage EV ownership and use. Given the market trends, policy goals, infrastructure growth and incentives, this analysis assumes that half the residential units facilitated by the Project will have an EV by 2028.
- <u>Electrical Vehicle Usage Rate</u>: As explained above, even though many households with EVs also own a conventional gasoline or diesel car, they use the EV for over 85 percent of work commute, personal errands, and shopping, while the conventional vehicle is the primary vehicle for vacation travel. Therefore, the evidence supports an assumption that households with an EV will have a very high usage rate for residential trips, even if the households also own a conventional vehicle.
- <u>EV Miles Driven From Residential Land Uses:</u> Based on the commitment to install EV chargers in all dwelling units, the subsidy for EV purchase, published peer reviewed studies regarding EV usage behavior and EV adoption trends, and the state's ongoing effort to encourage EV adoption, it is anticipated that at least half of the dwelling units in the Project will have an EV. As discussed above, studies have shown that households tend to preferentially use the EV. Numerous other factors (e.g., declining costs of EVs) are also anticipated to push the number of EV's used by Project residents to be even higher than that estimated here. Thus, the overall effect of this mitigation measure is estimated to displace 50 percent of the miles driven from residential land uses from traditional gasoline/diesel vehicles with electric vehicles.

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[151] Haugneland, Petter, and Hans Havard Kvisle, 2013. Norwegian Electric Car User Experiences, paper presented at EVS27, Barcelona Spain, November.

[152] Castrucci Alexandria, Mike 2015. Good Habits Pay Dividends for Electric Car Drivers. Posted on October 7, 2013. Available at: http://www.mikecastruccialexandria.com/blog/electric-car-driving-habits/); Based on data from MyFord Mobile app, available at: (https://www.myfordmobile.com/content/mfm/app/site/my-car/home.html. Accessed: September 2016.

- Emission Factors: The analysis is based on the assumption that the 45 percent RPS for 2027 is achieved, and the gasoline/diesel CO_2 emission factors are derived using California Air Resource Board's EMFAC2014 software model.

The calculations shown in **Table 5-3** estimate the GHG reduction from replacing conventional gasoline or diesel light-duty vehicles with electric vehicles. The table calculates the estimated emission reduction for each mile driven in an electric vehicle as compared to the default emission factor calculated by CalEEMod® in the mobile emissions inventory. To ensure that the calculated Project benefit is only the incremental increase in EV usage beyond what is already anticipated; the emission factor and emissions inventory incorporates the existing EV fleet penetration rates included in EMFAC2014. This ensures that the VMT reduction benefits of the Project EVs does not double count the benefit of the existing EVs. The calculation then estimates the average annual residential traffic, after the reduction in VMT due to transportation demand management strategies and the NHTSA Phase 2 benefits are applied. The GHG emissions reduction is the total miles displaced by EVs from this measure multiplied by the emissions reduction per mile. The remaining project traffic GHG emissions in **Table 5-3** (41,878 MT CO_2e/year) results from subtracting the GHG emissions reductions due to residential EV (9,043 MT CO_2e/year) from the remaining mobile GHG emissions after TDMs from **Table 5-5** (50,921 MT CO_2e/year).

5.2.5 GCC-5. Commercial Development Area EV Chargers

The parking areas for commercial buildings on the Project site shall be equipped with electric vehicle charging stations that provide charging opportunities to 7.5 percent of the total number of required parking spaces. ("Commercial buildings" include retail, light industrial, office, hotel, and mixed-use buildings.) The electric vehicle charging stations shall achieve a similar or better functionality as a Level 2 charging station. This mitigation measure will complement the Project's residential commitment to install charging station for each single family and multifamily dwelling unit and subsidize the purchase of electric vehicles. Overall, the Project will help support an increasingly inter-connected web of charging infrastructure; the combination of commercial development area and residential charging stations will encourage EV ownership and use.

As discussed in greater detail in the Residential EV Charger section above, a variety of factors will contribute to high rates of electric vehicle penetration near Newhall Ranch. There are already dozens of electric vehicle models available for purchase in California, and the costs of batteries continue to decrease. There are statewide and regional initiatives to help fund electric vehicle and infrastructure purchases, and ambitious goals to increase the number of EVs on the road by 2025. Peer-reviewed studies show that vehicle electrification is necessary to achieve California's long-term greenhouse gas reduction goals. Reliable access to EV chargers is an important factor contributing to buying electric vehicles.

Estimated GHG Reduction

The main variables contributing to the calculated GHG benefit of installing commercial development area EV charging stations are as follows:

- Electric Vehicle Penetration and Usage Rate: Charge station usage will vary from zero hours per day to 24 hours per day for each electric vehicle charging station. Ramboll Environ assumes a ten hour per day charger usage rate when in consideration of the anticipated increase in EV adoption throughout the state.[153] As discussed in above, the state will need to further its efforts to improve and increase EV penetration rates such that the prevalence of EV will be greater and the use of the EV chargers will continue to increase for EV chargers in a variety of locations. Furthermore, as discussed by Bakker[154] the fundamental challenge with EV adoption is range anxiety.

- Charge Rate: The charge rate refers to the amount of power supplied from the charger to the car battery per hour, or the range of miles the charger enables the car to travel per hour (RPH). The US Department of Energy (USDOE) writes that a Level 2 charging station is expected to charge 10 to 20 miles of RPH, depending on the circuitry.[155] ChargePoint commercial Level 2 electric vehicle charging stations charge up to 25 RPH.[156] Direct Current (DC) "fast charging" stations and future three-phase charging options allow for much higher rates of charging.[157] These charge rates are influenced based on the technology for the actual charge rate of kilowatts per hour and also the vehicle fuel efficiency (discussed further below). The technology for chargers, batteries, and electric vehicle efficiency is expected to improve into the future. Thus, we have assumed that the charging stations can provide 25 miles of driving range per hour of charging.

- Electric Vehicle Fuel Economy: Electric vehicle fuel economy reflects the amount of electricity needed to drive a certain distance. Based on 2013 USDOE data, the range of fuel economy in currently available electric vehicles ranges from 25 to 40 kilowatt-hours per 100 miles (kWh/100 mi).[158] This fuel economy varies depending on the vehicle model, with examples of a 2012 Nissan Leaf achieving 34 kWh/100 mi and a Tesla Roadster achieving 21.7 kWh/100 mi. The technology for batteries and electric vehicle fuel economy is expected to improve into the future. Thus, we have assumed that the electric vehicles will achieve a fuel economy of 25 kWh/100 mi to represent the near-future electric vehicle fleet.

- Emission Factors: The analysis is based on the assumption that the 45 percent RPS for 2027 is achieved, and the gasoline/diesel CO_2 emission factors are derived using California Air Resource Board's EMFAC2014 software model.

The calculations shown in **Table 5-4** estimate the GHG reduction from replacing conventional gasoline or diesel light-duty vehicles with electric vehicles. The table calculates the estimated range that each charging station is estimated to provide to electric vehicles in miles per year, based on the charge station usage and charge station rate. The

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[153] Chang, D., et al. 2012. Financial Viability of Non-Residential Electric Vehicle Charging Stations. Available at: http://innovation.luskin.ucla.edu/content/financial-viability-non-residential-electric-vehicle-charging-stations. Accessed: September 2016.

[154] Bakker, J.J. 2011. Contesting range anxiety: The role of electric vehicle charging infrastructure in the transportation transition. Available at: http://alexandria.tue.nl/extra2/afstversl/tm/Bakker_2011.pdf. Accessed: September 2016.

[155] US Department of Energy (USDOE) Alternative Fuels Data Center. 2016. Charging Equipment. Available at: http://www.afdc.energy.gov/fuels/electricity_infrastructure.html. Accessed: September 2016.

[156] ChargePoint. 2015. Available at: http://www.chargepoint.com/news/2015/0702/defining-rph-miles-range-per-hour-an-ev-charging-station-delivers/. Accessed: September 2016.

[157] USDOE. *op. cit*.

[158] USDOE. 2015. Available at: http://www.afdc.energy.gov/fuels/electricity_benefits.html. Accessed: September 2016.

range for one station is multiplied by the total number of stations in the mitigation commitment. This results in a total number of miles per year that will be driven in electric vehicles instead of conventional vehicles. The difference between the total GHG emissions from the conventional vehicles and the GHG emissions from the electric vehicles is the emissions benefit from the charging stations.

5.2.6 GCC-6. Transportation Demand Management Program

The Newhall Ranch Transportation Demand Management (TDM) Plan (see **Appendix E**) shall be implemented in order to reduce vehicle miles traveled resulting from Project build out. The TDM Plan is designed to influence the transportation choices of residents, students, employees, and visitors, and serves to enhance the utilization of alternative transportation modes both on and off the Project site through the provision of incentives and subsidies, expanded transit opportunities, bikeshare and carshare programs, technology-based programs, and other innovative means.

Estimated GHG Reduction

The TDM program reduces annual vehicle miles travelled by 15.5 percent from the Unmitigated Project. Since mobile GHG emissions are directly proportional to vehicle miles travelled, this equates to a 15.5 percent reduction in mobile emissions. This reduction calculation is shown in **Table 5-5**.

5.2.7 GCC-7. Traffic Signal Synchronization

The applicant or its designee shall work with the applicable agency(ies) with jurisdiction over the local roadway network to facilitate traffic signal coordination throughout the Project area. This program is described in detail in **Appendix I**.

Estimated GHG Reduction

The traffic signal coordination program reduces mobile GHG emissions by 2.93 percent from the Unmitigated Project. This percent was determined using the CAPCOA GHG reduction methodology for measure RPT-2.[159] The percent reduction is applied sequentially with the other mobile GHG mitigation measures to avoid double-counting. This reduction calculation is shown in **Table 5-6**.

5.2.8 GCC-8. Electric School Bus Funding Program

The applicant or its designee shall provide funding for electric school buses.

Estimated GHG Reduction

The main variables contributing to the calculated GHG benefit of the Project's commitment to subsidizing the conversion to electric school buses are as follows:

- Annual Average VMT: The annual average VMT refers to the number of miles a vehicle runs each year. For school buses and transit buses, this metric is derived using California Air Resource Board's EMFAC2014 software model, based on vehicle model years and speeds in Los Angeles County. EMFAC2014 data shows that school buses' annual VMT is 13,805 miles per year (mi/yr) in 2028.
- Electric Bus Fuel Economy: Electric vehicle fuel economy reflects the amount of electricity needed to drive a certain distance. Buses from two existing electric bus

[159] CAPCOA. Available at: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf. Accessed: September 2016.

manufacturers are Proterra and BYD are used to estimate electric bus fuel economy. Proterra's 40-foot and BYD's electric bus fuel economy is 1.7 kilowatt-hours per mile (kWh/mi) [160] and 1.87 kWh/mi,[161] respectively. The fuel economy used to calculate the electric bus electricity usage was an average of Proterra and BYD's specification: 1.8 kWh/mi. The technology for batteries and electric vehicle fuel economy is expected to improve into the future, so using current electric bus specifications is a conservative assumption.

- Emission Factors: The analysis is based on the assumption that the 45 percent RPS for 2027 is achieved, and the gasoline/diesel CO2 emission factors are derived using California Air Resource Board's EMFAC2014 software model.

The data from the California Air Resource Board's EMFAC2014 software model provided the GHG emission factors for the compressed natural gas (CNG) buses. The CNG emission factors were identified through data from the web-based EMFAC2014 tool and the desktop application. The web-based EMFAC2014 model provided an 'urban transit diesel emission factor' which represents a composite of both CNG and diesel buses. To get separated CNG and diesel emission factors for urban transit buses, the EMFAC2014 Desktop Application was run in the Project-Level Assessment Mode to generate an estimate of the ratio of CNG and diesel buses. For the EMFAC2014 Desktop Application analysis, the temperature and relative humidity were based on the EMFAC2014 Los Angeles County default values. The data from the web-based EMFAC2014 program and the ratio of CNG and diesel buses from the EMFAC Desktop application were used to derive the CNG bus emission factor for 2028. Conservatively, emissions from idling and starting the engine for the CNG buses were not included in the emissions calculations.

The calculations shown in **Table 5-7** estimate the GHG reduction from replacing CNG school buses with electric buses for 2028. The tables show the total number of miles per year that will be driven in electric buses instead of CNG buses, the GHG emissions if CNG buses were used, and the GHG emissions for the total miles based on electric vehicle fuel economy and the electric grid emission factor. The difference between the total GHG emissions from the CNG buses and the GHG emissions from the electric buses is the emissions benefit from the electric bus replacement of CNG buses.

5.2.9 GCC-9. Subsidy for Electric Transit Buses

The applicant or its designee shall provide a subsidy of $100,000 per bus for the replacement of up to two diesel or compressed natural gas transit buses with electric buses.

Estimated GHG Reduction

The calculation is the same as for school buses, except for transit buses; EMFAC2014 data shows annual VMT of 38,237 mi/yr in 2028.

The calculations shown in **Table 5-8** estimate the GHG reduction from replacing CNG transit buses with electric buses for 2028. The tables show the total number of miles per year that will be driven in electric buses instead of CNG buses, the GHG emissions if CNG buses were used, and the GHG emissions for the total miles based on electric vehicle fuel

[160] Proterra. Available at: https://www.proterra.com/. Accessed: September 2016.

[161] BYD. Available at: http://byd.com/na/ebus/ebus.html. Accessed: September 2016.

economy and the electric grid emission factor. The difference between the total GHG emissions from the CNG buses and the GHG emissions from the electric buses is the emissions benefit from the electric bus replacement of CNG buses.

5.2.10 GCC-10. Carbon Credits

Prior to obtaining grading permits for the Project, the Project applicant or its designee will fully mitigate the related construction and vegetation change GHG emissions.

Estimated GHG Reduction

The estimated emissions for construction and vegetation change will be offset.

5.2.11 GCC-11. Off-site Retrofit Program

The Project applicant or its designee shall fund the Building Retrofit Program (Retrofit Program), located in **Appendix G**. Building retrofits covered by the Retrofit Program can include, but are not limited to: cool roofs, solar panels, solar water heaters, smart meters, energy efficient lighting (including, but not limited to, light bulb replacement), energy efficient appliances, energy efficient windows, insulation, and water conservation measures.

Estimated GHG Reduction

The Building Retrofit Program provides funding that will be used to implement various improvements to the built environment. **Table 5-9** provides a reasonable approximation of how the Building Retrofit Program may achieve the estimated GHG reductions (see also **Appendix J**). The emission estimates illustrate an estimate of how the Project may achieve the GHG emission reductions. The emission ratios in the Retrofit Program are based on an estimate of the 80 percent of the emission reductions being achieved in connection with the Project's residential development, and 20 percent of the emission reductions being achieved in connection with the Project's with commercial development.

5.2.12 GCC-12. Off-site Electric Vehicle Chargers

The Project applicant or its designee shall install, or cause to be installed, off-site electric vehicle charging stations. Off-site electric vehicle charging stations servicing 357 parking spaces would be required if the maximum allowable development facilitated by the Mission Village Project occurs; fewer electric vehicle charging stations would be required if the maximum build-out does not occur. The electric vehicle charging stations shall achieve a similar or better functionality as a Level 2 charging station and may service one or more parking spaces.

Estimated GHG Reduction

The estimated GHG reductions follow the same methodology as described above (see **Table 5-4** and Section 5.2.5. It is estimated that 357 parking spaces will have access to a charging station to estimate the GHG emission reductions benefit.

5.2.13 GCC-13. GHG Reduction Plan

This section evaluates the amount of GHG reductions that will be required to fully offset all remaining GHG emissions to zero over the project life, defined as 30 years. [162]. The

[162] The SCAQMD GHG Working Group proposed that off-site mitigation could be used to mitigate GHG emissions from a project under CEQA. The SCAQMD indicated that offsets should have a 30-year project life unless a shorter project life could be ensured based on a binding permit condition or other legal limit. SCAQMD, 2008.

analysis here estimates how the reductions over time would be accounted in determining the necessary GHG reductions.

The figure shown in **Appendix K** illustrates the interpolation of the emissions modeled in CalEEMod® starting in 2020 through the project life for the last piece of development completed in 2028 to estimate the GHG offsets required. The reason for the 2020 and 2030 CalEEMod® model runs is to develop factors to account for the anticipated reduction in emissions due to existing regulatory programs (i.e., the reductions of energy and water-related emissions due to the 50 percent RPS and the reductions of mobile-related emissions due to the fleet fuel efficiency improvements predicted by EMFAC2014) that will reduce GHG emissions over the lifetime of the Project. The full description of offsets calculation methodology is shown in **Table K-1** through **Table K-7** in **Appendix K**. This analysis shows that the offsets requirement for the Project will be 32,122 MT per year for the project life. This estimate is considered a conservative estimate as it is anticipated that further regulatory programs and technology will develop in the future to further reduce GHG emissions.

Prior to obtaining building permits for an incremental level of development within the Project site, the incremental operational GHG emissions over the Project life associated with such building permits that must be offset (the “Incremental Operational GHG Emissions”) will be equal to the sum of: (1) the number of proposed residential units covered by the applicable building permit multiplied by 88.13 $MTCO_2e$; and (2) every thousand square feet (“TSF”) of proposed commercial development covered by the applicable building permit multiplied by 367.90 $MTCO_2e$. For example, to obtain a building permit for 75 residential units and 40,000 square feet of commercial development, the Incremental Operational GHG Emissions would be: 75 units x 88.13 $MTCO_2e$/unit + 40 TSF. x 367.90 MTCO2e/TSF = 21,326 $MTCO_2e$.

Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2. Accessed: September 2016.

6. PROJECT INVENTORY IN CONTEXT (MITIGATED)

This section assesses the significance of the Project's emissions for purposes of CEQA with implementation of the recommended mitigation measures. While discussed at length in Sections 3 and 5 of this report, **Table 4-1** also summarizes the relevant modeling assumptions used in the significance analysis when estimating the emissions associated with the Project conditions (i.e., Unmitigated; Mitigated).

6.1 Project Emissions Inventory

As previously documented, the Project site – in its existing condition – emits 369 $MTCO_2e$ per year, and the Mitigated Project emits zero $MTCO_2e$ per year (see **Tables ES-1** and **ES-2**). Because the Mitigated Project will result in no change to the existing environmental setting, the Mitigated Project's GHG emissions are less than significant with mitigation for purposes of Threshold 1.

6.1.1 SCS Consistent Emissions Inventory

The report also compares the Project's emissions to an emissions inventory that excludes emissions associated with cars and light-duty trucks pursuant to Public Resources Code Section 21159.28.

The estimated GHG reductions from the mitigation measures recommended for the Project were modified so that the emission reductions from light-duty vehicles were excluded. **Table 6-1** shows the revised estimates for the mitigation measure reductions. The mitigation measures specific to light-duty vehicles (i.e., GCC-4 and GCC-5, residential and commercial electric vehicles, respectively) were excluded. The emissions reductions from the offsite electric vehicle charging stations (GCC-12) were also excluded. The traffic signal synchronization (GCC-7) and Transportation Demand Management Plan (GCC-6) emission reductions were scaled down using the percentage of medium- and heavy-duty VMT (described in Section 3.3.5.6) to account for the benefit that would still apply to the remaining mobile emission sources (e.g., medium- and heavy-duty trucks and buses). These revisions allows for an apples-to-apples comparison to the SCS consistent emissions inventory.

The Mitigated Project's SCS consistent emissions inventory is estimated to be -18,703 $MTCO_2e$ per year, such that the Project's impacts are less than significant with mitigation under this methodology (see **Table ES-4**).

6.2 Statewide Emissions Reduction Targets

As of 2004, California was emitting 12 percent more GHG emissions than in 1990.[163] For California to emit 80 percent less than it emitted in 1990, in accordance with the statewide emissions reduction target established by Executive Order S-3-05, the emissions would be only 18 percent of the 2004 emissions. Accounting for a population growth from 35,840,000 people in 2004 to approximately 55,000,000 people in 2050, the emissions per capita would have to be only 12 percent of what they were in 2004. This means 88 percent reductions in per capita GHG emissions from today's emissions intensities must be realized in order to achieve California's 2050 GHG goals. Clearly, energy efficiency and reduced

[163] CEC. 2006. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004. October. Available at: http://www.energy.ca.gov/2006publications/CEC-600-2006-013/CEC-600-2006-013-D.PDF. Accessed: September 2016.

vehicle miles traveled will play important roles in achieving this aggressive goal, but the decarbonization of fuel will also be necessary.

The extent to which GHG emissions from traffic at the Project will change in the future depends on the quantity (e.g., number of vehicles, average daily mileage) and quality (i.e., carbon content) of fuel that will be available and required to meet both regulatory standards and residents' needs. In addition, renewable power requirements, low carbon fuel standards, and vehicle emissions standards discussed above will all decrease GHG emissions per unit of energy delivered or per vehicle mile traveled.

Studies[164] have shown that, in order to meet the 2050 target, aggressive and economy-wide technological changes in the transportation and energy sectors, including electrification of the vehicle fleet and decarbonization of electricity and fuel sources will be required among many other possible measures. One study[165] indicated that, even with these emerging technologies, the 2050 goal will not be met, due to the population growth to 55 million by 2050. A more recent study[166]; however, shows that the existing and proposed regulatory framework will allow the State to reduce GHG emissions to 40 percent below 1990 levels by 2030, and to 60 percent below 1990 by 2050. Even though this study did not provide a regulatory and technology roadmap to achieve the 2050 target, it demonstrated that various combinations of policies could allow Statewide emissions to remain very low through 2050, suggesting that the combination of new technologies and other regulations not analyzed in the study could allow the State to meet the 2050 target.

Statewide efforts are underway to facilitate the State's achievement of that goal and it is reasonable to expect the Project's emissions to decline as the regulatory initiatives identified by CARB in the First Update are implemented, new regulatory programs or incentives are implemented to reduce GHG emissions, and other technological innovations occur. Many of these initiatives include reducing the carbon content of motor fuels and fuels for electricity generation.[167] Reducing the carbon content of motor fuels and fuels for electricity generation will reduce CO_2e emissions from this Project over time. Stated differently, the Project's emissions total at build-out (2028) represents the maximum emissions inventory for the Project as California's emissions sources are being regulated (and foreseeably expected to continue to be regulated in the future) in furtherance of the State's environmental policy objectives.

For example, CARB's 2014 First Update "lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050." And many of the emission reduction strategies recommended

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[164] Lawrence Berkeley National Laboratory (LBL). 2011. California's Energy Future – The View to 2050. May. Available at: http://ccst.us/publications/2011/2011energy.php. Accessed: September 2016.

[165] LBL. 2013. Estimating Policy-Driven Greenhouse Gas Emissions Trajectories in California: The California Greenhouse Gas Inventory Spreadsheet (GHGIS) Model. Available at: http://eetd.lbl.gov/publications/estimating-policy-driven-greenhouse-g. Accessed: September 2016.

[166] Jeffery Greenblatt. 2015. Modeling California Impacts on Greenhouse Gas Emissions. Energy Policy. Volume 78, May 2015, pages 158-172. Abstract available at: http://www.sciencedirect.com/science/article/pii/S0301421514006892. Accessed: September 2016.

[167] California Energy Commission. 2007. State Alternative Fuels Plan. December. CEC-600-2007-011-CMF. Available at: http://www.energy.ca.gov/2007publications/CEC-600-2007-011/CEC-600-2007-011-CMF.PDF. Accessed: September 2016.

by CARB would serve to reduce the Project's post-build out emissions level to the extent applicable by law:

- Energy Sector: Continued improvements in California's appliance and building energy efficiency programs and initiatives would serve to reduce the Project's emissions level. Additionally, further additions to California's renewable resource portfolio would favorably influence the Project's emissions level.
- Transportation Sector: Anticipated deployment of improved vehicle efficiency, zero emission technologies, lower carbon fuels, and improvement of existing transportation systems all will serve to reduce the Project's emissions level.
- Water Sector: The Project's emissions level will be reduced as a result of further desired enhancements to water conservation technologies.
- Waste Management Sector: Plans to further improve recycling, reuse and reduction of solid waste will beneficially reduce the Project's emissions level.

In addition to CARB's First Update, in January 2015, during his inaugural address, Governor Jerry Brown expressed a commitment to achieve "three ambitious goals" that he would like to see accomplished by 2030 to reduce the State's GHG emissions: (1) increasing the State's Renewable Portfolio Standard from 33 percent in 2020 to 50 percent in 2030; (2) cutting the petroleum use in cars and trucks in half; and, (3) doubling the efficiency of existing buildings and making heating fuels cleaner. Two of these expressions of Executive Branch policy – (1) and (3) – already have been manifested in adopted legislative action (i.e., SB 350).

In summary, given the Mitigated Project would result in no net increase in GHG emissions – that is, a net zero GHG emissions level, the Project is doing more than its "fair share" to advance statewide policy objectives. Additionally, the Project's emissions at build out are reasonably anticipated to decline due to continued regulatory and technological advancements. Further, the Project's mitigation program advances many of the State's primary policies directed towards the reduction of GHG emissions and the establishment of a clean energy paradigm. Therefore, the Project would not conflict with the statewide emissions reduction targets for 2020, 2030 and 2050 for purposes of Threshold 2.

TABLES

Table ES-1. Summary of Existing On-Site GHG Emissions
Mission Village
Los Angeles County, California

Category	Existing CO_2e Emissions (MT/yr)[1]
Energy use emissions associated with water	311
N_2O Emissions associated with fertilizer use	43
Emissions associated with diesel fuel usage	16
Total	369

Notes:
[1] Emissions calculations shown in Appendix A.

Abbreviations:
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tonnes
N_2O - nitrous oxide
yr - year

Table ES-2. Summary of 2028 Project GHG Emissions
Mission Village
Los Angeles County, California

Category[1]	Total CO_2e Emissions[2]	
	Unmitigated Project	Mitigated Project
	MT/yr	MT/yr
Area	70	70
Energy Use	12,419	441
Residential Zero Net Energy (GCC-1)	--	-5,043
Commercial Zero Net Energy (GCC-2)	--	-5,112
Swimming Pool Heating (GCC-3)	--	-1,636
Building Retrofit Program (GCC-11)	--	-187
Water Use	889	889
Waste Disposed	4,391	4,391
Traffic	59,585	26,331
Residential EV Chargers and Vehicle Subsidy (GCC-4)	--	-9,043
Commercial Development Area EV Chargers (GCC-5)	--	-6,646
Transportation Demand Management Plan (GCC-6)	--	-9,193
Traffic Signal Synchronization (GCC-7)	--	-1,032
Electric School Bus Program (GCC-8)	--	-25
Electric Transit Bus Subsidy (GCC-9)	--	-124
Off-Site EV Chargers (GCC-12)	--	-7,190
Sub-Total	**77,354**	**32,122**
Construction Amortized[3]	844	0
Vegetation Amortized[3]	1,004	0
Carbon Credits (GCC-10)	--	-1,847
Sub-Total	**1,847**	**0**
GHG Reduction Plan (GCC-13)	--	-32,122
Total	**79,202**	**0**

Notes:

[1] CO_2e emissions were primarily estimated using CalEEMod® version 2013.2.2.

[2] CO_2e includes CO_2, CH_4, and N_2O emissions, which are weighted by their respective AR4 global warming potentials. Source: Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4): Climate Change 2007. Available at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016.

[3] One-time emissions from construction and vegetation removal were amortized over a 30-year period. Source: SCAQMD. 2009. Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13. August. Available at: http://sfprod.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf?sfvrsn=2. Accessed: September 2016.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CEQA - California Environmental Air Quality Act
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EV - electric vehicle
GHG - greenhouse gases
MT - metric tonnes
N_2O - nitrous oxide
SCAQMD - South Coast Air Quality Management District
yr - year

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Table ES-3. Summary of GHG Emissions Reductions due to Mitigation Measures (2028)
Mission Village
Los Angeles County, California

Emission Reductions due to Mitigation Measures		
		CO_2e Emissions Reduction Due to Mitigation Measure[2,3]
Mitigation Measure Number[1]	**Mitigation Measure Description**	**MT / yr**
GCC-1	Residential Zero Net Energy	5,043
GCC-2	Commercial Zero Net Energy	5,112
GCC-3	Swimming Pool Heating	1,636
GCC-4	Residential EV Chargers and Vehicle Subsidy	9,043
GCC-5	Commercial Development Area EV Chargers	6,646
GCC-6	Transportation Demand Management Plan	9,193
GCC-7	Traffic Signal Synchronization	1,032
GCC-8	Electric School Bus Program	25
GCC-9	Electric Transit Bus Subsidy	124
GCC-10	Carbon Credits	1,847
GCC-11	Building Retrofit Program	187
GCC-12	Off-Site EV Chargers	7,190
GCC-13	GHG Reduction Plan	32,122
Total Emission Reductions from Mitigation Measures		**79,202**

Notes:

[1] These mitigation measures are described in more detail in the technical report.

[2] CO_2e emissions were estimated using CalEEMod® version 2013.2.2. Reduction calculations for each mitigation measure are shown in more detail in supporting tables.

[3] CO_2e includes CO_2, CH_4, and N_2O emissions, which are weighted by their respective AR4 global warming potentials. Source: Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4): Climate Change 2007. Available at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EV - electric vehicle
GHG - greenhouse gases
MT - metric tonnes
N_2O - nitrous oxide
yr - year

Table ES-4. Summary of Project GHG Emissions (SCS Consistent)
Mission Village
Los Angeles County, California

Category[1]	Unmitigated Project, SCS Consistent (No Light-Duty Vehicles) MT CO_2e / yr [2]	Mitigated Project, SCS Consistent (No Light-Duty Vehicles) MT CO_2e / yr [2]
Area	70	70
Energy Use	12,419	441
Residential Zero Net Energy (GCC-1)	--	-5,043
Commercial Zero Net Energy (GCC-2)	--	-5,112
Swimming Pool Heating (GCC-3)	--	-1,636
Building Retrofit Program (GCC-11)	--	-187
Water Use	889	889
Waste Disposed	4,391	4,391
Traffic[3]	9,340	7,628
Residential EV Chargers and Vehicle Subsidy (GCC-4)	--	0
Commercial Development Area EV Chargers (GCC-5)	--	0
Transportation Demand Management Plan (GCC-6)	--	-1,405
Traffic Signal Synchronization (GCC-7)	--	-158
Electric School Bus Program (GCC-8)	--	-25
Electric Transit Bus Subsidy (GCC-9)	--	-124
Off-Site EV Chargers (GCC-12)	--	0
Sub-Total	**27,109**	**13,420**
Construction Amortized[4]	844	0
Vegetation Amortized[4]	1,004	0
Carbon Credits (GCC-10)	--	-1,847
Sub-Total	**1,847**	**0**
GHG Reduction Plan (GCC-13)	--	-32,122
Total	**28,957**	**-18,703**

Notes:

[1] CO_2e emissions were primarily estimated using CalEEMod® version 2013.2.2.

[2] CO_2e includes CO_2, CH_4, and N_2O emissions, which are weighted by their respective AR4 global warming potentials. Source: Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4): Climate Change 2007. Available at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016.

[3] The traffic emissions for the SCS Consistent Project were estimated using the vehicle miles traveled (VMT) from the "Other-Other Attraction" trip type. This trip type can be used to reasonably approximate the medium- and heavy-duty vehicles associated with the Project, such as delivery trucks. As can be calculated using Table 3-17e, the "Other-Other Attraction" trip type is 15.3% of the Project's total daily VMT. The wastewater processing-related trips are added. Additionally, the mitigated traffic emissions for the SCS Consistent Project exclude emissions reductions that would apply only to light-duty vehicles.

[4] One-time emissions from construction and vegetation removal were amortized over a 30-year period. Source: SCAQMD. 2009. Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13. August. Available at: http://sfprod.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf?sfvrsn=2. Accessed: September 2016.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CEQA - California Environmental Air Quality Act
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EV - electric vehicle
GHG - greenhouse gases
MT - metric tonnes
N_2O - nitrous oxide
SCAQMD - South Coast Air Quality Management District
SCS - Sustainable Communities Strategy
yr - year

Table 1-1. Project Statistical Summary
Mission Village
Los Angeles County, California

Land Use	Acres (gross acres)	Total Units or Square Footage
Residential		
Single-Family	88.8	351 du
Multi-Family	211.6	3,704 du
Apartments/Condominiums	22.1	
Continued Care Retirement Community	13.6	
Subtotal (Residential)	336.1	4,055 du
Mixed-Use / Commercial	57.4	1,555,100 sf
Elementary School	9.5	Not Applicable
Open Space		Not Applicable
River[1]	212.6	
Un-Graded Lots	65.0	
Graded Lots	287.8	
Public Park (Active)	26.8	
Private Recreation	14.7	
Spineflower Preserves	85.8	
Subtotal (Open Space)	692.7	
Library	3.3	
Fire Station	1.5	
Bus Transfer Station	1.2	
Utilities	26.0	
Roads	134.1	
TOTAL	**1,261.8**	**4,055 du / 1,555,100 sf**

Notes:
[1] 4.4 acres previously identified as River are now included in the spineflower preserve.

Abbreviations:
du - dwelling unit
sf - square feet

Table 1-2. List of Applicable Regulatory Standards
Mission Village
Los Angeles County, California

Project-Related Emissions Sources	Adopted Regulatory Standards	Reduction Benefits Quantified in GHG Analysis? Yes	No
Construction	California Cap-and-Trade Program		√
	USEPA/NHTSA Standards Phase 1 (through model year 2018)		√
	California ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling		√
	California In-Use Off-Road Regulation	√	
	California In-Use On-Road Heavy-Duty Diesel Vehicles Regulation		√
Vegetation Amortization	County CCAP Land Conservation and Tree Planning (LC)		√
Building Energy Consumption	Energy Independence and Security Act		√
	California Cap-and-Trade Program		√
	California Title 20 Standards – 2012		√
	California Title 24, Part 6 Standards – 2016	√	
	California Title 24, Part 11 Standards		√
	California Renewable Portfolio Standard (45% in 2028)	√	
	California AB 1470 (Solar Water Heating)	√	
	Million Solar Roofs		√
	Los Angeles County Green Building Standards (Title 31)		√
Traffic (Medium- and Heavy-Duty Trucks)	California Cap-and-Trade Program		√
	USEPA /NHTSA Standards Phase 1 (through model year 2018)	√	
	USEPA /NHTSA Standards Phase 2 (through model year 2027 and beyond)	√	
	California ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling		√
	California In-Use On-Road Heavy-Duty Diesel Vehicles Regulation		√
	SCAQMD Rule 1193 (Clean On-Road Residential And Commercial Refuse Collection Vehicles)		√
	SCAQMD 1195 (Clean On-Road Buses)		√
Traffic (Passenger Vehicles, cars & light-duty trucks)	California AB 1493/Pavley Standards (through model year 2016)	√	
	California Advanced Clean Cars Standards (through model year 2025)	√	
	California Cap-and-Trade Program		√
	California Low Carbon Fuel Standard		√
	USEPA/NHTSA CAFE Standards (through model year 2021)	√	
Solid Waste	California AB 341 Standards (Solid Waste Diversion)	√	
	California Cap-and-Trade Program		√
Water Use	California Cap-and-Trade Program		√
	California Title 24, Part 11 Standards	√	
	California Renewable Portfolio Standard (45% in 2028)	√	
	California Recycled Water Policy	√	

Abbreviations:
AB - Assembly Bill
ATCM - Airborne Toxic Control Measure
CAFE - Corporate Average Fuel Economy
CCAP - Community Climate Action Plan
NHTSA - National Highway Traffic Safety Administration
SCAQMD - South Coast Air Quality Management District
USEPA - United States Environmental Protection Agency

Table 2-1. GHG Emissions Sources Covered by Cap-and-Trade Program
Mission Village
Los Angeles County, California

Land Use Emissions Sources	GHG Emissions Source Examples	Covered by Cap-and-Trade?
Area Sources	Fuel combustion by landscaping equipment	Yes (gasoline and diesel fuel suppliers)
Energy Use	Natural gas combustion (e.g., stoves and water heaters)	Yes (natural gas suppliers)
	Fuel combustion at utilities for electricity production used in building energy use	Yes (electrical generators)
Water Use	Production of electricity to supply and treat water	Yes (electrical generators)
	Methane generated by wastewater treatment	Yes (wastewater treatment facilities)
Waste Disposal	Landfill gas combustion non-biogenic GHG emissions	Yes (landfills)
Traffic	Fuel combustion in car and trucks	Yes (gasoline and diesel fuel suppliers)
Construction	Fuel combustion in construction equipment	Yes (gasoline and diesel fuel suppliers)
Vegetation	Carbon sequestration lost due to vegetation loss	No

Table 3-1. Project Land Uses and Square Footage
Mission Village
Los Angeles County, California

Area	Project Assumptions[1]		Land Use Category	CalEEMod® Analysis		
				Land Use Subtype[2]	Land Use Unit Amount	Size Metric
Mission Village	Apartments Low Rise	836 DU	Residential	Apartments Low Rise	836	DU
	Open Space[3]	287.8 acres	Recreational	City Park	287.8	acres
	Condo/Townhouse General	2,058 DU	Residential	Condo/Townhouse	2,058	DU
	Continued Care Retirement Community	351 DU	Residential	Congregate Care (Assisted Living)	351	DU
	Elementary/Middle School	100 TSF	Educational	Elementary School	900	student
	Fire Station (Miscellaneous)	17.1 TSF	Industrial	General Light Industry	17.1	TSF
	Commercial - Office	1,331 TSF	Commercial	General Office Building	1,331	TSF
	Developed Park[4]	41.5 acres	Recreational	Health Club	52	TSF
	Library	36 TSF	Educational	Library	36	TSF
	Commercial – Retail/Office	224.1 TSF	Retail	Regional Shopping Center	224.1	TSF
	Senior (Active)	459 DU	Residential	Retirement Community	459	DU
	Single Family Housing	351 DU	Residential	Single Family Housing	351	DU
	Parking Lot[5]	3,148 spaces	Parking	Parking Lot	3,148	spaces
	Parking Structure[5]	1,258 spaces	Parking	Unenclosed Parking with Elevator	1,258	spaces

Notes:

[1] Project conditions based on project description.

[2] Land uses as defined in CalEEMod®. When an exact mapping of a land use was not available in CalEEMod® relative to the "Project Assumptions," a land use with similar emission characteristics was chosen.

[3] Open spaces represent graded lots which may have irrigation.

[4] Developed park includes both public parks and private recreation centers. The 52,000 square feet represents multiple buildings including restrooms.

[5] This represents the parking related to commercial land uses.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
DU - dwelling unit
TSF - thousand square feet

Table 3-2. Analyzed Emissions Inventories
Mission Village
Los Angeles County, California

Year	Emissions Inventory Description
2028	Unmitigated Project
2028	Mitigated Project

Table 3-3. Construction Schedule Assumptions
Mission Village
Los Angeles County, California

Construction Phase[1]	Number of Work Days[2]
Mass Grading - Utility Corridor	261
Mass Grading	885
Trenching - Sewer	681
Trenching - Storm Drain	340
Trenching - Water	374
Paving - Street	230
Paving	1,109
Building Construction	1,239
Architectural Coating	1,173
Fine Grading - Stabilization	40

Notes:
[1] Construction phases and duration are based on Project specific estimates.
[2] The construction work week was assumed to be 5 days per week.

Table 3-4. Construction Equipment Mix Assumptions
Mission Village
Los Angeles County, California

Construction Phase[1]	Equipment Type[1]	Unit HP-Hours[2]
Mass Grading - Utility Corridor	Crawler Tractors	171,216
	Excavators	655,632
	Off Highway Trucks	795,528
	Rubber Tired Loaders	417,600
	Water Trucks (Other Material Handling Equipment)	409,248
Mass Grading	Crawler Tractors	2,902,800
	Excavators	2,778,900
	Graders	2,867,400
	Off Highway Trucks	6,743,700
	Rubber Tired Dozers	6,336,600
	Scrapers	25,204,800
	Tractors/Loaders/Backhoes	858,450
	Water Trucks (Other Material Handling Equipment)	10,407,600
Trenching - Sewer	Cranes	1,231,248
	Excavators	855,336
	Other Material Handling Equipment	1,067,808
	Tractors/Loaders/Backhoes	528,456
	Water Trucks (Other Material Handling Equipment)	1,067,808
Trenching - Storm Drain	Cranes	614,720
	Excavators	427,040
	Other Material Handling Equipment	533,120
	Tractors/Loaders/Backhoes	263,840
	Water Trucks (Other Material Handling Equipment)	533,120
Trenching - Water	Cranes	676,192
	Excavators	469,744
	Other Material Handling Equipment	586,432
	Tractors/Loaders/Backhoes	290,224
	Water Trucks (Other Material Handling Equipment)	586,432
Building Construction	Cranes	1,960,098
	Forklifts	2,646,504
	Generator Sets	832,608
	Tractors/Loaders/Backhoes	2,523,843
	Welders	455,952
Architectural Coating	Air Compressors	548,964
Paving - Street	Graders	298,080
	Pavers	163,760
	Rollers	154,560
	Scrapers	655,040
	Water Trucks (Other Material Handling Equipment)	360,640
Paving	Pavers	789,608
	Paving Equipment	1,455,008
	Rollers	1,117,872
Fine Grading - Stabilization	Crawler Tractors	26,240
	Crushing/Processing Equipment	27,200
	Excavators	50,240
	Graders	51,840
	Off Highway Trucks	243,840
	Rollers	26,880
	Rubber Tired Dozers	114,560
	Scrapers	455,680
	Tractors/Loaders/Backhoes	31,040
	Water Trucks (Other Material Handling Equipment)	62,720

Notes:
[1] Construction phases and equipment mix are consistent with the Final EIR for Mission Village (May, 2011).
[2] Unit HP-Hours is calculated as the product of the number of work days, units of equipment, hours of equipment usage per day and equipment horsepower.

Abbreviations:
CalEEMod® - CALifornia Emissions Estimator MODel
HP - Horsepower

Table 3-5. Summary of Construction Worker, Vendor, and Hauling Trips
Mission Village
Los Angeles County, California

Construction Phase	Worker Trips Per Day[1]	Vendor Trips Per Day[1]	Total Hauling Trips[1,2]
Mass Grading - Utility Corridor	15	0	16,704
Mass Grading	68	0	56,640
Trenching - Sewer	13	0	0
Trenching - Storm Drain	13	0	0
Trenching - Water	13	0	0
Paving - Street	13	0	0
Paving	13	0	0
Fine Grading - Stabilization	35	0	0
Building Construction[3]	--	--	0
Architectural Coating[3]	--	--	0

Notes:

[1] Worker and vendor trips are presented as one-way trips. One round trip consists of two one-way trips, e.g., for a worker/vendor to come to the Site and leave the Site. Hauling trips are total trips for the phase. The one-way trip lengths for worker, vendor, and hauling trips are 19.8, 7.9, and 20 miles, respectively, based on CalEEMod® defaults.

[2] The hauling trips are for hauling vegetation waste during grading phase.

[3] CalEEMod® default trips used to estimate emissions were refined outside the model to account for the models' inaccuracy in evaluating phased construction.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel

Table 3-6. Building Construction and Architectural Coating Worker and Vendor Trips Adjustment
Mission Village
Los Angeles County, California

Derivation of Adjustment Factor[1]	
Total Emissions from Daily Trips for Building Construction and Architectural Coating Phases (MT CO_2e)[2]	5,295
Building Construction and Architectural Coating Worker/Vendor Trip Emissions as Estimated by CalEEMod® (MT CO_2e)[3]	119,170
% Actual Emissions Relative to CalEEMod®-Estimated Emissions[4]	4.4%

Notes:

[1] CalEEMod® overestimated the number of vendor and worker trips for building construction and architectural coating due to an assumption that all buildings were constructed simultaneously during every construction year, rather than working on varying proportions of the total buildings from year-to-year. The adjustment factor corrects the number of vendor and worker trips to be based on the estimated number of residential dwelling units and square footages of non-residential building being built and painted in each year.

[2] The estimated emissions generated from worker and vendor trips during building construction and architectural coating are based on a development schedule along with CalEEMod® default trip lengths, trip rate factors, and fleet mix. Emission factors used are based on EMFAC2011, running and starting emissions for CO_2 and CH_4 only.

[3] Based on CalEEMod® defaults. The model overestimated the number of vendor and worker trips for building construction and architectural coating due to an assumption that all buildings were constructed simultaneously during every construction year.

[4] Adjustment factor calculated by dividing the corrected emissions with the CalEEMod®'s overestimated results. This percentage is applied to the emissions from worker and vendor trips during the building construction and architectural coating phases for each stage.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2e - carbon dioxide equivalents
CO_2 - carbon dioxide
EMFAC - California Air Resources Board Emission Factor Model
GHG - greenhouse gas
MT - metric tonnes

Table 3-7. Annual GHG Construction Emissions from Off-Road Equipment[1]
Mission Village
Los Angeles County, California

Construction Phase	CO_2e Emissions (MT)[1,2]
	Offroad Equipment
Grading	12,793
Trenching	1,688
Paving	944
Building Construction	1,439
Architectural Coating	150
Grand Total	**17,014**

Notes:

[1] Emissions estimated using CalEEMod® version 2013.2.2.

[2] CO_2e includes CO_2, CH_4, and N_2O emissions, weighted by their respective Fourth Assessment Report (AR4) global warming potentials (GWP). Based on Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report released in 2007, the GWPs for CH_4 and N_2O were updated from 21 to 25 and from 310 to 298, respectively. Available at: https://www.ipcc.ch/publications_and_data/ ar4/wg1/en/ch2s2-10-2.html, Table 2.14. Accessed: September 2016.

Abbreviations:

AR4 - Fourth Assessment Report
CalEEMod® - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gas
GWP - global warming potential
IPCC - Intergovernmental Panel on Climate Change
MT - metric tonnes
N_2O - nitrous oxide

Table 3-8. Annual GHG Construction Emissions from On-Road Vehicles
Mission Village
Los Angeles County, California

Construction Phase	CO_2e Emissions (MT)[1,2]			
	Worker[3]	Vendor[3]	Hauling	Total
Grading	415	0	2,372	**8,296**
Trenching	114	0	0	
Paving	101	0	0	
Building Construction	2,976	1,756	0	
Architectural Coating	563	0	0	

Notes:

[1] Emissions estimated using CalEEMod® version 2013.2.2.

[2] CO_2e includes CO_2, CH_4, and N_2O emissions, weighted by their respective Fourth Assessment Report (AR4) global warming potentials (GWP). Based on Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report released in 2007, the GWPs for CH_4 and N_2O were updated from 21 to 25 and from 310 to 298, respectively. Available at: https://www.ipcc.ch/publications_and_data/ ar4/wg1/en/ch2s2-10-2.html, Table 2.14. Accessed: September 2016.

[3] Emissions associated with worker and vendor trips for building construction and architectural coating were scaled by the adjustment factor to account for the inaccuracy in how CalEEMod® evaluates phased construction.

Abbreviations:

AR4 - Fourth Assessment Report
CalEEMod® - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gas
GWP - global warming potential
IPCC - Intergovernmental Panel on Climate Change
MT - metric tonnes
N_2O - nitrous oxide

Table 3-9. Summary of GHG Construction Emissions
Mission Village
Los Angeles County, California

CO_2e Emissions (MT)[1,2]		
Off-Road	**On-Road**	**Total**
17,014	**8,296**	**25,310**
	30-yr amortized[3]	**844**

Notes:

[1] Emissions estimated using CalEEMod® version 2013.2.2. See Tables 3-7 and 3-8 for detailed emission inventories of the Off-Road Equipment, and On-Road Vehicles categories, respectively.

[2] CO_2e includes CO_2, CH_4, and N_2O emissions, weighted by their respective Fourth Assessment Report (AR4) global warming potentials (GWP). Based on Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report released in 2007, the GWPs for CH_4 and N_2O were updated from 21 to 25 and from 310 to 298, respectively. Available at: https://www.ipcc.ch/publications_and_data/ ar4/wg1/en/ch2s2-10-2.html, Table 2.14. Accessed: September 2016.

[3] This approach to one-time construction and vegetation change GHG emissions is based on the GHG Threshold Working Group Meeting #13 Minutes from August 26, 2009. Available at: http://sfprod.aqmd.gov/ docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf?sfvrsn=2. Accessed: September 2016.

Abbreviations:

AR4 - Fourth Assessment Report
CalEEMod® - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gas
GWP - global warming potential
IPCC - Intergovernmental Panel on Climate Change
MT - metric tonnes
N_2O - nitrous oxide

Table 3-10a. Number of Net New Trees
Mission Village
Los Angeles County, California

Area	Tree Type	Number of Net New Trees[1]
Mission Village	Miscellaneous	4,985

Notes:
[1] Number of new trees was based on Project specific estimates.

Table 3-10b. Vegetation Change Evaluation
Mission Village
Los Angeles County, California

Area	Type of Vegetation Change	Land Use Change[1]		
		Initial (acres)	Final (acres)	CO_2e emissions[2] (MT)
Mission Village	Forest Land (Scrub)[3]	547.9	0	7,835
	Forest Land (Trees)[3]	217.3	0	24,120
	Cropland	224.4	0	1,391
	Grassland	68.8	0	297
	Wetlands	1.6	0	0
	Others	422.3	0	0
	Total vegetation change	**1482.3**	**0**	**33,643**
CO_2e sequestered from Net New Trees (MT)[4]				**-3,529**
Total CO_2e emissions released (MT)				**30,114**
30-yr amortized (MT/yr)				**1,004**

Notes:

[1] Land use change was based on Project specific data shown in the ENVIRON International Corporation, *Climate Change Technical Report: Mission Village* (August 2010). In addition to these, other GHG emissions associated with croplands (fertilizer use, water use and fuel use) have been separately calculated under existing condition as shown in Appendix A.

[2] Emissions were estimated using CalEEMod® version 2013.2.2.

[3] Two sets of forest land use change were modeled, based on the land designations of 'scrub' and 'trees.'

[4] Total CO_2e sequestered over 20 year active growth period of new trees, as recommended by the Intergovernmental Panel on Climate Change (IPCC). The negative value indicates CO_2e emissions sequestration, as opposed to emissions. See Table 3-10a for number of net new trees.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tonnes
yr - year

Table 3-11. GHG Emissions from Area Sources
Mission Village
Los Angeles County, California

Area Sources[1]	Condition[2]
	Unmitigated Project
Landscaping	70
Total CO_2e Emissions (MT)	**70**

Notes:

[1] Categories that CalEEMod® classifies as "Area Sources." CalEEMod® does not associate any CO_2e emissions with architectural coating or consumer products. Any emissions from hearths are assumed to be captured in the ConSol residential building energy modeling.

[2] Emissions were estimated using CalEEMod® version 2013.2.2.

Abbreviations:
CalEEMod® - CALifornia Emissions Estimator MODel
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tonnes

Table 3-12. Utility GHG Emission Factor Associated with Renewable Portfolio Standard
Mission Village
Los Angeles County, California

Energy Delivered[1] [MWh]				
	2006	**2007**	**Average**	**Units**
Total Energy Delivery[1]	82,776,309	83,958,770	--	MWh
from renewables[2]	12,670,583	12,476,219	--	MWh
from non-renewables	70,105,726	71,482,551	--	MWh
% of Total Energy From Renewables[2]	15%	15%	--	
% of Total Energy From Non-Renewables	85%	85%	--	
Total CO_2 Emissions[1]	24,077,133	24,026,108	--	MT CO_2
CO_2 Intensity Factor per Total Energy Delivered[1]	641.26	630.89	636.07	lbs CO_2/MWh delivered
CO_2 Intensity Factor per Total Non-Renewable Energy[3]	757.16	741.00	--	lbs CO_2/MWh delivered
Estimated Intensity Factors for Total Energy Delivered[4]				
2010 RPS (20%)	**605.7**	**592.8**	**599.26**	lbs CO_2/MWh delivered
2020 RPS (33%)	**507.3**	**496.5**	**501.88**	lbs CO_2/MWh delivered
2028 RPS (45%)	**416.4**	**407.5**	**411.99**	lbs CO_2/MWh delivered
2030 RPS (50%)	**378.6**	**370.5**	**374.54**	lbs CO_2/MWh delivered

Notes:

[1] Total energy delivery and total CO_2 emissions are provided in SCE Power/Utility Protocol (PUP). Available at: http://www.climateregistry.org/tools/carrot.html. Accessed: September 2016.

[2] Renewable energy delivered is the sum of biogenic, geothermal and other renewable generations in PUP reports.

[3] The emissions metric presented here is calculated based on the total CO_2 emissions divided by the energy delivered from non-renewable sources.

[4] The intensity factors for total energy delivered are estimated by multiplying the percentage of energy delivered from non-renewable energy by the CO_2 emissions per total non-renewable energy metric calculated above. Four emission factors are presented here: the 20% RPS for 2010, the 33% RPS for 2020, 50% RPS for 2030, and 45% projected RPS for 2028 estimated based on Public Utilities Code Section 399.15 (b)(2)(B). The estimate provided here and the PUP reports issued by SCE assume that renewable energy sources do not result in any CO_2 emissions.

Abbreviations:

CO_2 - carbon dioxide
GHG - greenhouse gases
lbs - pounds
MT - metric tonnes
MWh - megawatt-hour
RPS - Renewable Portfolio Standard
SCE - Southern California Edison

Table 3-13a. Residential Electricity and Natural Gas Usage Rates
Mission Village
Los Angeles County, California

Unmitigated Condition: Title 24 - 2016 Standards								
CalEEMod® Land Use Subtype	ConSol Land Use Subtype[1]	Title 24 Electricity[2]	Non-Title 24 Electricity[3]	Lighting Electricity[4]	Title 24 Natural Gas[5]	Non-Title 24 Natural Gas[6]	Total Electricity[7]	Total Natural Gas[7]
		kWh/unit/yr	kWh/unit/yr	kWh/unit/yr	kBTU/unit/yr	kBTU/unit/yr	kWh/unit/yr	kBTU/unit/yr
Single Family Housing	Single Family	879	4,244	767	20,500	1,500	5,890	22,000
Apartments Low Rise	Multifamily	499	2,855	308	8,700	1,200	3,662	9,900
Condo/Townhouse	Multifamily	499	2,855	308	8,700	1,200	3,662	9,900
Congregate Care (Assisted Living)	Multifamily	499	2,855	308	8,700	1,200	3,662	9,900
Retirement Community	Multifamily	499	2,855	308	8,700	1,200	3,662	9,900

Notes:

[1] CalEEMod® land use types were mapped to the most representative land use types from ConSol based on the similarity of emission factors in CalEEMod®.

[2] Title 24 electricity is the "regulated loads" kWh shown in the ConSol Report (see Appendix C).

[3] Non-Title 24 electricity is the sum of "Appliance & Cooking kWh" and "Plug Load kWh" shown in ConSol Report (see Appendix C).

[4] Lighting electricity is the sum of "Interior Lighting kWh" and "Exterior Lighting kWh" shown in ConSol Report (see Appendix C). Sum may differ from Appendix C by up to 1 kWh/unit/yr due to rounding.

[5] Title 24 natural gas is the "regulated loads" Therms shown in Appendix C.

[6] Non-Title 24 natural gas is the "Appliance & Cooking Therms" shown in ConSol Report (see Appendix C).

[7] Total electricity and total natural gas are not used in CalEEMod® inputs.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CEC - California Energy Commission
kBTU - 1,000 British thermal units
kWh - kilowatt-hour
yr - year

References:

CEC. 2016. 2016 Building Energy Efficiency Standards Approved Computer Compliance Programs. Available at: http://www.energy.ca.gov/title24/2016standards/2016_computer_prog_list.html. Accessed: September 2016.

ConSol. 2016. *Newhall Land & Farming Company, Residential and Commercial Building Analysis.*

Table 3-13b. Non-Residential Electricity and Natural Gas Usage Rate
Mission Village
Los Angeles County, California

Non-residential Electricity Usage Rates						
CalEEMod Land Use Subtype	ConSol Land Use Prototype[1]	2008 Title 24 Electricity[2]	Total Lighting and Non-2008 Title 24 Electricity	Total 2008 Electricity	Reduction to Total 2016 Electricity[3]	Total 2016 Electricity
		kWh/unit/yr	kWh/unit/yr	kWh/unit/yr	%	kWh/unit/yr
Elementary School	Office	2.13	4.57	6.70	7.7%	6.18
General Light Industry	Industrial	2.75	9.30	12.05	21.5%	9.46
General Office Building	Office	5.62	8.91	14.53	7.7%	13.41
Health Club	Industrial	2.75	9.30	12.05	21.5%	9.46
Library	Industrial	2.75	9.30	12.05	21.5%	9.46
Parking Lot[4]	-	0.00	0.88	0.88	50.0%	0.44
Regional Shopping Center	Retail	4.90	10.27	15.17	21.6%	11.89
Unenclosed Parking with Elevator[4]	-	0.00	2.82	2.82	50.0%	1.50
Non-residential Natural Gas Usage Rates						
CalEEMod Land Use Subtype	**ConSol Land Use Prototype[1]**	**2008 Title 24 Natural Gas[2]**	**Total Lighting and Non-2008 Title 24 Natural Gas**	**Total 2008 Natural Gas**	**Reduction to Total 2016 Natural Gas[3]**	**Total 2016 Natural Gas**
		kWh/unit/yr	**kWh/unit/yr**	**kWh/unit/yr**	**%**	**kBTU/unit/yr**
Elementary School	Office	9.81	1.08	10.89	13.8%	9.39
General Light Industry	Industrial	14.36	4.45	18.81	-2.4%	19.27
General Office Building	Office	10.54	0.39	10.93	13.8%	9.43
Health Club	Industrial	14.36	4.45	18.81	-2.4%	19.27
Library	Industrial	14.36	4.45	18.81	-2.4%	19.27
Parking Lot[4]	-	0.00	0.00	0.00	0.0%	0.00
Regional Shopping Center	Retail	1.21	0.49	1.70	22.3%	1.32
Unenclosed Parking with Elevator	-	0.00	0.00	0.00	0.0%	0.00

Notes:

[1] CalEEMod® land use types were mapped to the most representative land use types from ConSol based on the similarity of emission factors in CalEEMod®.

[2] Default energy use rates from CalEEMod® Appendix D, Table 8.1 were used for 2008 Title 24 electricity and natural gas. The reduction from 2008 Title 24 to 2016 Title 24 is based on ConSol building energy modeling as described in Appendix C.

[3] The majority of energy consumption in non-residential buildings is regulated under the 2016 California Building Code. Rather than split electricity and gas use into "Title 24", "Lighting", and "Non-Title 24", ConSol modeled the change in total electricity use and total natural gas use for non-residential buildings. These changes were applied to the total default 2008 energy use factors from CalEEMod® (e.g. the sum of the "Title 24", "Lighting", and "Non-Title 24" factors). A negative sign (-) indicates an increase in gas use.

[4] A 50% reduction due to 2016 Title 24 improvements was applied to parking lighting electricity. For Unenclosed Parking with Elevator, the reduction was applied solely to the lighting portion of total electricity.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CEC - California Energy Commission
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
kBTU -1,000 British thermal units
kWh - kilowatt-hour
yr - year

References:

CEC. 2016. 2016 Building Energy Efficiency Standards Approved Computer Compliance Programs. Available at: http://www.energy.ca.gov/title24/2016standards/2016_computer_prog_list.html. Accessed: September 2016.

ConSol. 2016. *Newhall Land & Farming Company Residential and Commercial Building Analysis.*

Table 3-14a. GHG Emissions Associated with Swimming Pools
Mission Village
Los Angeles County, California

I. OAKLAND STUDY TO CALCULATE EMISSIONS FROM SWIMMING POOLS

Facility Name[1]	Pool Volume[1] (gal)	Number of Heaters[1]	Heater Rating[1] (BTU/hr)	Operation Schedule[1] (hrs/day)	Operation Schedule[1] (days/yr)	Annual Natural Gas Usage[2] (MMBTU/yr)	Average Annual Natural Gas Usage[3] (MMBTU/gal/yr)	Adjusted Average Annual Natural Gas Usage[3] (MMBTU/gal/yr)	Annual Electricity Usage[4] (KWh/yr)	Average Annual Electricity Usage[5] (kWh/gal/yr)
Fremont Pool	215,000	4	350,000	12	243	4,082	0.023	**0.014**	106,872	**0.496**
DeFremery Pool	226,659	1	1,738,800	10	243	4,225			105,120	
Live Oak Pool	260,000	4	350,000	12	365	6,132			95,309	
Lyons Pool	240,000	4	350,000	12	365	6,132			110,376	
Temescal Pool	227,605	4	350,000	12	365	6,132			162,060	

II. ENERGY USE FACTORS AND EMISSION FACTORS TO CALCULATE EMISSIONS FROM NEWHALL LAND SWIMMING POOLS[6]

Energy Use Factor		Emission Factors[7,8,9] (lb CO_2e/unit)			Emission Factors (lb CO_2e/gal/yr)	
		Unmitigated	Mitigated	(unit)	Unmitigated	Mitigated
0.496	(kWh/gal/yr)	0.415	0.415	(kWh)	1.838	0.206
0.014	(MMBTU/gal/yr)	118	--	(MMBTU)		

III. EMISSIONS FROM NEWHALL LAND SWIMMING POOLS

Pool Volume[10]		Emissions (MT CO_2e/yr)		Emission Reductions (MT CO_2e/yr)
(cubic feet)	(gal)	Unmitigated	Mitigated	Unmitigated - Mitigated
295,276	2,208,815	1,842	206	1,636

Notes:

[1] To estimate the baseline electricity and natural gas energy usage factors for Newhall's pools, Ramboll Environ calculated the energy consumption of filter pumps and water heaters of 5 pools in Oakland, California and scaled them to present energy consumption per year per volume of the pool. Oakland pools data including pool volume, number of heaters, heater rating, operation schedule, and annual electricity usage are provided in the City of Oakland Energy Efficient Commercial Pool Program Preliminary Facility Reports: City of Oakland / Oakland Unified School District. October 2006. Energy Efficient Commercial Pool Program; Preliminary Facility Reports for DeFremery Pool, Fremont Pool, Live Oak Pool, Lyons Pool, and Temescal Pool.

[2] Annual Natural Gas Usage calculated by multiplying the following factors: (Number of hrs/day) x (Number of days/yr) x (Number of Heaters) x (Heater Rating). Each of these factors were taken from the City of Oakland. Preliminary Facility Reports for DeFremery Pool, Fremont Pool, Live Oak Pool, Lyons Pool, and Temescal Pool.

[3] Average Annual Natural Gas Usage calculated from the Annual Natural Gas Usage of all 5 pools divided by the total Pool Volume of all 5 pools, then was adjusted to account for the higher average ambient temperature in Southern California compared to Oakland (i.e., an average temperature of 55.5 F for Oakland and 63.3 F for Santa Clarita) and also adjusted to account for savings from newer energy efficient heater standards (i.e., Ramboll Environ assumed that the Oakland pools used 78% efficient heaters, which is the minimum efficiency legally required (see 10 CFR Part 431). According to the U.S. Department of Energy, newer pools are likely to use heaters with 89-95% efficiency (see http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13170). Ramboll Environ conservatively assumed 90% efficiency for Santa Clarita pool heaters, resulting in a 12% savings over the Oakland pools).

[4] Annual Electricity Usage for each pool is shown as reported in the City of Oakland Preliminary Facility Reports for DeFremery Pool, Fremont Pool, Live Oak Pool, Lyons Pool, and Temescal Pool.

[5] Average Annual Electricity Usage calculated from the Annual Electricity Usage of all 5 pools divided by the total Pool Volume of all 5 pools.

[6] Similar to the Oakland pools, the Newhall land swimming pools are assumed to use electricity for filters and pumps, and natural gas for water heating.

[7] Only CO_2 emissions are estimated and are assumed to be equivalent to total GHG emissions. For this calculation, the contributions from methane (CH_4) and nitrous oxide (N_2O) are considered negligible when compared to total GHG for emissions associated with electricity generation and natural gas combustion. The emission factors in the California Climate Action Registry General Reporting Protocol show that CH_4 and N_2O emissions (in CO_2e) are less than 1% of CO_2 emissions for these processes.

[8] The emission factor for electricity was obtained from the California Climate Action Registry Database. The electricity generation emission factor was adjusted to reflect 45% of power provided by renewables for the 2028 Unmitigated condition. The emission factor for natural gas is obtained from CalEEMod® Appendix D Table 8.2.

[9] It is assumed that the solar cover replaces all natural gas heating. Thus the estimated mitigated emissions represent those for the electric pumping only.

[10] Project specific estimate for three swimming pool with dimensions (50m x 25yd x 8ft) based on the ENVIRON International Corporation, *Climate Change Technical Report: Mission Village* (August 2010)

Abbreviations:

BTU - British thermal units	F - Fahrenheit	hrs - hours	MT - metric tonnes
CalEEMod® - CALifornia Emissions Estimator MODel	ft - feet	kWh - kilowatt-hour	RPS - Renewable Portfolio Standard
CFR - Code of Federal Regulations	gal - gallon	lb - pound	yd - yard
CO_2 - carbon dioxide	GHG - greenhouse gases	m - meter	yr - year
CO_2e - carbon dioxide equivalents	hr - hour	MMBTU - million British thermal units	

Table 3-14b. GHG Emissions Associated with Electricity and Natural Gas

Mission Village

Los Angeles County, California

Area	CalEEMod® Land Use	Project Assumption	Electricity Use[1]	Natural Gas Use[1]	Associated with Electricity Use	Associated with Natural Gas Burning	Unmitigated Total
			kWh / yr	kBTU / yr	MT CO_2e / yr		
Mission Village	Apartments Low Rise	Apartments Low Rise	3,061,430	8,276,400	576	444	1,020
	City Park	Open Space	0	0	0	0	0
	Condo/Townhouse	Condo/townhouse general	7,536,400	20,374,200	1,417	1,094	2,511
	Congregate Care (Assisted Living)	Continued Care Retirement Community	1,285,360	3,474,900	242	187	428
	Elementary School	School	618,000	939,000	116	50	167
	General Light Industry	Fire Station (Misc.)	161,766	329,517	30	18	48
	General Office Building	Commercial - Office	17,848,700	12,551,300	3,356	674	4,030
	Health Club	Developed Park	491,920	1,002,040	92	54	146
	Library	Library	340,560	693,720	64	37	101
	Parking Lot	Parking	554,048	0	104	0	104
	Regional Shopping Center	Commercial – Retail/Office	2,664,550	295,812	501	16	517
	Retirement Community	Senior (Active)	1,680,860	4,544,100	316	244	560
	Single Family Housing	Single Family Housing	2,067,390	7,722,000	389	415	803
	Unenclosed Parking with Elevator	Parking	754,800	0	142	0	142
		Total	**39,065,784**	**60,202,989**	**7,345**	**3,232**	**10,577**

Notes:

[1] Energy and natural gas usage for each land use category was estimated assuming compliance with 2016 Title 24. Emissions were estimated using CalEEMod® version 2013.2.2, with energy use estimates adjusted based on ConSol building energy analysis (see Appendix C and Tables 2-13a and 2-13b). Energy use and emissions from the recreational swimming pools are added separately to the emissions inventory and not included here.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
kBTU - 1,000 British thermal units
kWh - kilowatt-hour
MT - metric tonnes
SCAQMD - South Coast Air Quality Management District
yr - year

References:

SCAQMD. 2013. CalEEMod® User's Guide. Available at: http://caleemod.com/. Accessed: September 2016.
ConSol, Newhall Land & Farming Company Residential and Commercial Building Analysis (2016)

Table 3-15a. Project Water Demand
Mission Village
Los Angeles County, California

Description[1]	GSI Water Study[2]				Project Water Demand[3]	
	Quantity	Units	Quantity	Units	Quantity	Units
Indoor Water Demand	986	Acre-ft/yr	321	Mgal/yr	257	Mgal/yr
Outdoor Water Demand	1,757	Acre-ft/yr	573	Mgal/yr	573	Mgal/yr
Total Water Demand	2,743	Acre-ft/yr	894	Mgal/yr	830	Mgal/yr
Recycled Water	1,251	Acre-ft/yr	408	Mgal/yr	408	Mgal/yr
% Recycled Water (of outdoor water)	71.2%					

Notes:

[1] The sum of indoor and outdoor water demand equals total water demand. The recycled water is assumed to only be used outdoors. Recycled water percentage is calculated as the recycled water divided by the outdoor water demand.

[2] Total water usage based on GSI Water Solutions, Updated Water Demand Projections for Mission Village (October 2014). CalEEMod® defaults were used to split water usage for Indoor/Outdoor splits.

[3] The Project water demand includes a 20% reduction of indoor water usage based on regulations requiring water efficient fixtures passed since the water study performed for the 2014 Mission Village EIR (which used water demand from before the CalGreen regulatory requirements).

Abbreviations

CalEEMod® - CALifornia Emissions Estimator MODel
EIR - Environmental Impact Report
ft - feet
Mgal - million gallons
yr - year

Table 3-15b. GHG Emissions Reductions Associated with Recycled Water
Mission Village
Los Angeles County, California

Category		Unmitigated Project		Unmitigated Project (if no recycled water)	
Total Outdoor Water Use (Mgal/yr)[1]		573		573	
Outdoor Water Source		Recycled Water	Potable Water	Recycled Water	Potable Water
Percentage by Source[1]		71.2%	28.8%	0%	100%
Water Use by Source (Mgal/yr)		408	165	0	573
Electricity Intensity Factors (kWh/Mgal)[2]	Supply	--	2,917	--	2,917
	Treat	111	111	111	111
	Distribute	1,272	1,272	1,272	1,272
Annual Energy Use by Source (kWh/yr)[3]		563,762	708,982	0	2,461,821
Total Annual Energy Use (kWh/yr)		1,272,744		2,461,821	
Electricity Intensity Factors[4]	(lb CO_2/MWh)	411.99		411.99	
	(lb CH_4/MWh)	0.029		0.029	
	(lb N_2O/MWh)	0.006		0.006	
GHG Emissions[5]	(MT CO_2/yr)	237.85		460.06	
	(MT CH_4/yr)	0.02		0.03	
	(MT N_2O/yr)	0.003		0.007	
Global Warming Potentials[6]	CO_2	1		1	
	CH_4	25		25	
	N_2O	298		298	
Total GHG Emissions (MT CO_2e / yr)		**239.3**		**462.9**	
GHG Reduction due to Recycled Water (MT CO_2e / yr)[7]		**224**			

Notes:

[1] Outdoor and recycled water usage based on Water Demand as shown in Table 3-15a.

[2] CalEEMod® default assumptions are used for average embodied energy for the supply and conveyance, treatment and distribution of water, as well as treatment of wastewater, for Southern California. For Mission Village, the electricity intensity value of 2,917 was used to represent on-site groundwater as the source of water.

[3] For potable water, the water use is multiplied by the sum of the electricity intensity factors to supply, treat and distribute the water. For recycled water, the water use is multiplied by the sum of the electricity intensity factors to treat and distribute the water, since the Project has an onsite water treatment facility which supplies the water.

[4] The CO_2 emission intensity factor reflects 45% RPS for 2028 for the Project Condition.

[5] GHG emissions were calculated by multiplying the annual energy use by the electricity intensity factor for each pollutant.

[6] Global warming potentials are the AR4 global warming potentials. Source: IPCC Fourth Assessment Report: Climate Change 2007. Available at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016.

[7] GHG reduction from using recycled water for outdoor use was calculated as the difference between GHG emissions from using 100% potable water minus GHG emissions from using 71.2% recycled water (Project) for outdoor water usage.

Abbreviations:

AR4 - Fourth Assessment Report
CalEEMod® - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
IPCC - Intergovernmental Panel on Climate Change
kWh - kilowatt-hour
lb - pound
Mgal - million gallons
MWh - megawatt-hour
MT - metric tonnes
N_2O - nitrous oxide
RPS - Renewable Portfolio Standard
yr - year

Table 3-15c. GHG Emissions Associated with Water Usage
Mission Village
Los Angeles County, California

Area	CalEEMod® Land Use	Project Assumption	Indoor Water Use[1]	Outdoor Water Use[1]	Unmitigated Project CO_2e Emissions[2]
			Mgal/yr		MT/yr
Mission Village	Apartments Low Rise	Apartments Low Rise	26.53	27.65	89.5
	City Park	Open Space	0.00	305.97	247.4
	Condo/Townhouse	Condo/Townhouse General	65.31	68.08	220.2
	Congregate Care (Assisted Living)	Continued Care Retirement Community	11.14	11.61	37.6
	Elementary School	School	1.06	4.52	6.3
	General Light Industry	Fire Station (Misc.)	1.93	0.00	4.9
	General Office Building	Commercial - Office	115.22	116.76	385.8
	Health Club	Developed Park	1.50	1.52	5.0
	Library	Library	0.55	1.42	2.5
	Parking Lot	Parking	0.00	0.00	0.0
	Regional Shopping Center	Commercial – Retail/Office	8.09	8.19	27.1
	Retirement Community	Senior (Active)	14.57	15.18	49.1
	Single Family Housing	Single Family Housing	11.14	11.61	37.6
	Unenclosed Parking with Elevator	Parking	0.00	0.00	0.0
		Total	**257**	**573**	**1,113**
GHG Reduction due to Outdoor Recycled Water (MT CO_2e/yr)[3]					**224**
Total					**889**

Notes:

[1] Total water usage based on GSI Water Solutions, *Updated Water Demand Projections for Mission Village* (October 2014). CalEEMod® defaults were used to split water usage by land use.

[2] Emissions associated with water usage were estimated using CalEEMod® version 2013.2.2 and includes CO_2, CH_4, and N_2O emissions, which are weighted by their respective AR4 global warming potentials. Source: Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4): Climate Change 2007, Available at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016. Electricity intensity factor used in these calculation reflects 45% RPS. CalEEMod® default electricity intensity factor to supply (9,727 kWh/Mgal) was not used. Mission Village uses groundwater on-site, and hence the default factor was replaced by a lower electricity intensity factor to supply groundwater (2,917 kWh/Mgal). The CalEEMod® wastewater treatment intensity values incorporate electricity required for pumping of wastewater.

[3] The project assumes some water will be non-potable/recycled water consistent with the 2011 Mission Village EIR and the mandate by the State Water Resources Board. GHG reductions are calculated to account for emissions associated with supplying potable water.

[4] To be consistent with the required California regulatory standards, the project assumes 20 percent reduction in the indoor water usage.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EIR - Environmental Impact Report
GHG - greenhouse gases
kWh - kilowatt-hour
Mgal - million gallons
MT - metric tonnes
N_2O - nitrous oxide
RPS - Renewable Portfolio Standard
yr - year

References:

GSI Water Solutions. 2014. Updated Water Demand Projections for Mission Village. October.

Table 3-16. GHG Emissions Associated with Waste
Mission Village
Los Angeles County, California

Area	CalEEMod® Land Use	Project Assumption	Unmitigated Project Waste Disposed[1]	Unmitigated Project CO_2e Emissions Associated with Waste[1]
			tons/yr	MT/yr
Mission Village	Apartments Low Rise	Apartments Low Rise	913	459
	City Park	Open Space	0	0
	Condo/Townhouse	Condo/Townhouse General	2,248	1,130
	Congregate Care (Assisted Living)	Continued Care Retirement Community	298	150
	Elementary School	School	35	18
	General Light Industry	Fire Station (Miscellaneous)	18	9
	General Office Building	Commercial - Office	3,737	1,880
	Health Club	Developed Park	148	75
	Library	Library	35	18
	Parking	Parking Lot	0	0
	Regional Shopping Center	Commercial – Retail/Office	629	317
	Retirement Community	Senior (Active)	286	144
	Single Family Housing	Single Family Housing	383	193
	Unenclosed Parking with Elevator	Parking	0	0
		Total	**8,732**	**4,391**

Notes:

[1] Solid waste disposal rates were based on actual 2012 disposal rates for the city of Santa Clarita. Solid waste generation and associated emissions for the Project scenario assume 75 percent waste diversion, based on California (statewide) waste diversion goal. Available at: http://www.calrecycle.ca.gov/75percent/. Accessed: September 2016.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CO_2e - carbon dioxide equivalents
MT - metric tonnes
yr - year

Table 3-17a. SCVCTM Daily Tripend Generation
Mission Village
Los Angeles County, California

Land Use Type[1]	Units		Productions or Attractions	Daily Tripend Generation[2]						
				H-W	H-S	H-O	O-W	O-O	Total	Total
Single Family (6-10du/ac)	351	DU	P	764	520	942	69	382	2,677	**3,475**
			A	0	0	347	69	382	798	
Condominium/Townhouse	2,058	DU	P	3,292	2,800	5,595	330	1,481	13,498	**16,464**
			A	0	0	1,155	330	1,481	2,966	
Apartment	836	DU	P	1,154	981	1,961	115	519	4,730	**5,768**
			A	0	0	404	115	519	1,038	
Senior (Active)	459	DU	P	85	375	699	34	170	1,363	**1,703**
			A	0	0	136	34	170	340	
Commercial Center (10-30ac)	224.1	TSF	P	0	0	0	363	3,029	3,392	**12,115**
			A	1,090	2,424	1,817	363	3,029	8,723	
Elementary/Middle School	900	STU	P	0	0	0	0	39	39	**1,305**
			A	131	757	339	0	39	1,266	
Library	36	TSF	P	0	0	0	275	520	795	**3,059**
			A	489	0	980	275	520	2,264	
Industrial Park	17.1	TSF	P	0	0	0	7	22	29	**103**
			A	40	0	5	7	22	74	
Commercial Office	1,331	TSF	P	0	0	0	1,693	2,769	4,462	**15,386**
			A	4,154	0	2,308	1,693	2,769	10,924	
Developed Park	41.5	AC	P	0	0	0	0	13	13	**108**
			A	1	0	81	0	13	95	
Congregate Care	351	DU	P	0	0	0	30	296	326	**986**
			A	59	147	128	30	296	660	
Subtotal Trip Ends			**P**	**5,295**	**4,676**	**9,197**	**2,916**	**9,240**	**31,324**	**60,472**
			A	**5,964**	**3,328**	**7,700**	**2,916**	**9,240**	**29,148**	
Total Trips				**11,259**	**8,004**	**16,897**	**5,832**	**18,480**	**60,472**	

Notes:

[1] Land Use Type lists the nomenclature consistent with trip information.

[2] The tripends are provided by Stantec as included in Appendix D. These include the double-counted internal tripends for the five different trip categories: Home to Work, Home to Shopping, Home to Other, Other to Work, Other to Other from the SCVCTM. Productions are the trips that the building produces, and attractions refer to the trips the building attracts.

Abbreviations:

A - Attraction
AC/ac - acre
DU/du - dwelling unit
H-O - Home to Other
H-W - Home to Work
H-S - Home to Shopping
O-W - Other to Work
O-O - Other to Other
P - Production
STU - students
SCVCTM - Santa Clarita Valley Consolidated Traffic Model
TSF - thousand square feet

Table 3-17b. SCVCTM Average Trip Length Data
Mission Village
Los Angeles County, California

	Productions or Attractions	Trip Types				
		H-W	H-S	H-O	O-W	O-O
Average Trip Lengths by Trip Type (miles)[1]	P	10.696	5.179	7.04	8.906	7.62
	A	16.030	15.04216	13.27354	11.10202	10.52688

Notes:
[1] The trip lengths are modeled by Stantec using the SCVCTM as shown in Appendix D.

Abbreviations:
A - Attraction
H-O - Home to Other
H-W - Home to Work
H-S - Home to Shopping
O-W - Other to Work
O-O - Other to Other
P - Production
SCVCTM - Santa Clarita Valley Consolidated Traffic Model

Table 3-17c. SCVCTM Tripend Internalization Percentages
Mission Village
Los Angeles County, California

Tripend Internalization % Type[1]	Productions or Attractions	H-W	H-S	H-O	O-W	O-O
Residential	P	9.0%	37.0%	37.0%	33.0%	33.0%
	A	0.0%	50.0%	50.0%	33.0%	33.0%
Non-Residential	P	0.0%	0.0%	0.0%	38.0%	38.0%
	A	8.0%	42.1%	42.1%	38.0%	38.0%
Schools/Parks	P	0.0%	0.0%	0.0%	46.0%	46.0%
	A	7.6%	70.1%	70.1%	46.0%	46.0%

Notes:

[1] The tripend internalization percentage represents the percentage of the trip ends for each land use type which are internal to the Project. This was modeled by Stantec using the SCVCTM that was used to generate the trip ends and trip lengths as shown in Appendix D.

Abbreviations:

A - Attraction
H-O - Home to Other
H-W - Home to Work
H-S - Home to Shopping
O-W - Other to Work
O-O - Other to Other
P - Production
SCVCTM - Santa Clarita Valley Consolidated Traffic Model

Table 3-17d. Daily Trip Generation (Adjusted Internal Trips)
Mission Village
Los Angeles County, California

Land Use Type[1]	Productions or Attractions	Daily Trip Generation (Adjusted Internal Trips)[2]						
		H-W	H-S	H-O	O-W	O-O	Subtotal	Total Daily Trips
Single Family (6-10du/ac)	P	730	424	768	58	319	2,298	**2,935**
	A	0	0	260	58	319	637	
Condominium/Townhouse	P	3,144	2,282	4,560	276	1,237	11,498	**13,876**
	A	0	0	866	276	1,237	2,378	
Apartment	P	1,102	800	1,598	96	433	4,029	**4,862**
	A	0	0	303	96	433	832	
Senior (Active)	P	81	306	570	28	142	1,127	**1,399**
	A	0	0	102	28	142	272	
Commercial Center (10-30ac)	P	0	0	0	294	2,453	2,748	**9,890**
	A	1,046	1,914	1,435	294	2,453	7,142	
Elementary/Middle School	P	0	0	0	0	30	30	**898**
	A	126	492	220	0	30	868	
Library	P	0	0	0	223	421	644	**2,531**
	A	469	0	774	223	421	1,887	
Industrial Park	P	0	0	0	6	18	23	**89**
	A	38	0	4	6	18	66	
Commercial Office	P	0	0	0	1,371	2,243	3,614	**13,038**
	A	3,988	0	1,822	1,371	2,243	9,424	
Developed Park	P	0	0	0	0	10	10	**74**
	A	1	0	53	0	10	64	
Congregate Care	P	0	0	0	24	240	264	**802**
	A	57	116	101	24	240	538	
Subtotal Trips	**P**	**5,057**	**3,811**	**7,496**	**2,376**	**7,546**	**26,285**	**50,394**
	A	**5,726**	**2,522**	**5,940**	**2,376**	**7,546**	**24,109**	
Total Trips		**10,782**	**6,333**	**13,435**	**4,751**	**15,092**	**50,394**	

Notes:

[1] Land Use Type lists the nomenclature consistent with trip information.

[2] Given that many trips have both their starting point and destination within the planning area, there is a double counting of trips, with a production for one building comprising the same trip as an attraction for another building. For example, per the SCVCTM, 9.0% of H-W residential production trip ends are internal; therefore, if all H-W residential production trip ends are summed without adjustment, there will be a 4.5% (9/2) overestimation of the actual number of trip ends. The SCVCTM trip ends are adjusted to eliminate the double counting by subtracting 4.5% of the trip ends from the H-W residential production SCVCTM data (see Appendix E and Table 3-17a). The resulting value represents the trip generation. This method is carried out for each trip category (H-W, H-S, H-O, O-W, and O-O), each land use type (Residential, Non-Residential, and Schools/Parks), and each trip type (Production and Attraction). Internalization percentages are shown in Table 3-17c.

Abbreviations:

A - Attraction
ac - acre
du - dwelling unit
H-O - Home to Other
H-W - Home to Work
H-S - Home to Shopping
O-W - Other to Work
O-O - Other to Other
P - Production
SCVCTM - Santa Clarita Valley Consolidated Traffic Model

Table 3-17e. Calculating Total Daily VMT
Mission Village
Los Angeles County, California

Land Use				VMT from SCVCTM with Adjusted Internal Trips							
Area	Land Use Type[1]	Units[4]		Productions or Attractions	H-W[2] (mi)	H-S[2] (mi)	H-O[2] (mi)	O-W[2] (mi)	O-O[2] (mi)	Total Daily VMT with Adjusted Internal Trips[3] (mi)	
Mission Village	Single Family (6-10du/ac)[5]	351	DU	P	7,804	2,195	5,405	513	2,431	18,347	25,799
				A	0	0	3,454	640	3,358	7,452	
	Condominium/Townhouse	2,058	DU	P	33,627	11,818	32,102	2,454	9,423	89,424	117,000
				A	0	0	11,498	3,059	13,018	27,575	
	Apartment	836	DU	P	11,788	4,141	11,251	855	3,302	31,337	40,987
				A	0	0	4,022	1,066	4,562	9,650	
	Senior (Active)	459	DU	P	868	1,583	4,011	253	1,082	7,796	10,960
				A	0	0	1,354	315	1,494	3,163	
	Commercial Center (10-30ac)	224.1	TSF	P	0	0	0	2,619	18,696	21,314	115,008
				A	16,774	28,787	19,041	3,264	25,828	93,694	
	Elementary/Middle School	900	STU	P	0	0	0	0	229	229	12,887
				A	2,020	7,399	2,924	0	316	12,659	
	Library	36	TSF	P	0	0	0	1,984	3,210	5,193	29,895
				A	7,525	0	10,270	2,473	4,434	24,702	
	Industrial Park	17.1	TSF	P	0	0	0	50	136	186	1,105
				A	616	0	52	63	188	918	
	Commercial Office	1,331	TSF	P	0	0	0	12,213	17,091	29,304	156,252
				A	63,926	0	24,187	15,225	23,611	126,948	
	Developed Park	41.5	TSF	P	0	0	0	0	76	76	896
				A	15	0	699	0	105	819	
	Congregate Care	351	DU	P	0	0	0	216	1,827	2,043	8,832
				A	908	1,746	1,341	270	2,524	6,789	
			Total							**519,621**	**519,621**

Notes:

[1] Land Use Type lists the nomenclature consistent with trip information.

[2] The VMT were calculated by multiplying the trip length for production trips or attraction trips by trip type as provided from the SCVCTM (Table 3-17b) with the daily trip generation for the respective category (See Table 3-17d).

[3] This column is the sum of the calculated VMT by trip types.

[4] For certain land uses, unit type or size is mapped from the traffic outputs in Table 3-17a into a form that accurately represents the CalEEMod® inputs in Table 3-17f. The developed parks are modeled based on building square footage rather than park acreage so that building energy consumption is calculated. VMT has been calculated using the total trip rate for this land use from Table 3-17d.

[5] Example calculation for Mission Village single family housing:
H-W VMT for Production = (Daily Trip Generation x Trip Length)
7,804 H-W VMT for Production = (730 daily trips) x (10.696 miles)

Abbreviations:

A - Attraction
AC/ac - acre
CalEEMod® - CALifornia Emissions Estimator MODel
DU/du - dwelling unit
H-O - Home to Other
H-W - Home to Work
H-S - Home to Shopping
mi - mile
O-W - Other to Work
O-O - Other to Other
P - Production
STU - students
SCVCTM - Santa Clarita Valley Consolidated Traffic Model
TSF - thousand square feet
VMT - vehicle miles traveled

Table 3-17f. Trip Lengths and Trip Rates for CalEEMod®
Mission Village
Los Angeles County, California

Land Use					Total Daily Trip Generation[2] (# of trips)	Total Daily VMT[3] (mi)	CalEEMod® Input Derivation	
Area	Land Use Type[1]	CalEEMod® Land Use Subtype[1]	Units				Average Trip Length[4] (mi)	Trip Rate[5] (# of trips/unit/weekday)
Mission Village	Single Family (6-10du/ac)	Single Family Housing[6]	351	DU	2,935	25,799	8.8	8.36
	Condominium/Townhouse	Condo/Townhouse	2,058	DU	13,876	117,000	8.4	6.74
	Apartment	Apartments Low Rise	836	DU	4,862	40,987	8.4	5.82
	Senior (Active)	Retirement Community	459	DU	1,399	10,960	7.8	3.05
	Commercial Center (10-30ac)	Regional Shopping Center	224.1	TSF	9,890	115,008	11.6	44.13
	Elementary/Middle School	Elementary School	900	STU	898	12,887	14.3	1.00
	Library	Library	36	TSF	2,531	29,895	11.8	70.31
	Industrial Park[7]	General Light Industry	17.1	TSF	89	1,105	12.4	5.22
	Commercial Office	General Office Building	1,331	TSF	13,038	156,252	12.0	9.80
	Developed Park[8]	Health Club	41.5	TSF	74	896	12.2	1.77
	Congregate Care	Congregate Care (Assisted Living)	351	DU	802	8,832	11.0	2.28
				Total	**50,394**	**519,621**	--	--

Notes:

[1] Land Use Type lists the nomenclature consistent with trip information. These were matched to land use names for CalEEMod®.

[2] The Total Daily Trip Generation was calculated in Table 3-17d which removes the doubled-counted internal trips.

[3] The Total Daily VMT were calculated as shown in Table 3-17e.

[4] Average trip length to input into CalEEMod® is calculated by dividing the Total Daily VMT by the Total Daily Trip Generation. This trip length differs from the trip lengths from Stantec because of the adjustments to remove the double-counted internal trips and because this is a calculated average trip length for all trip purpose types (e.g., H-W, H-S, H-O, O-W, O-O). CalEEMod® only accepts one decimal place for average trip length, so slight differences in calculated totals may result from rounding.

[5] The trip rate to input into CalEEMod® is calculated by dividing the Total Daily Trip Generation with the corresponding land use's unit (e.g., DU, TSF, Room, Student, AC). This differs from the trip rate from Appendix F because of the adjustments to remove the double-counted internal trips. CalEEMod® only accepts two decimal places for trip rate so slight differences in calculated totals may result from rounding.

[6] Example calculation for Mission Village single family housing:
- Total Daily Trip Generation calculated in Table 3-17d.
- Total Daily VMT with Double-Counted Internal Trips removed is 25,799 miles per weekday (Table 3-17e).
- Average trip length for CalEEMod® is calculated by dividing the Total Daily VMT by the Total Daily Trip Generation: 25,799/2,935 = 8.8.
- Trip Rate for CalEEMod® is calculated by dividing the Total Daily Trip Generation by the number of units: 2,935/351 = 8.36.

[7] The fire station was modeled as a "General Light Industry" building in CalEEMod®. Therefore, the land use TSF is the value of the fire station building instead of the entire land acreage referred as "Industrial Park." Trip rate has been calculated by dividing the total trip generation number for "Industrial Park" by the square footage of the fire station.

[8] "Developed Park" was modeled as "Health Club" to represent the building in the "Developed Park". Therefore, the land use TSF is the value of the "Health Club" building. Trip rate has been calculated by dividing the total trip generation numbers for "Developed Park" by the square footage of the "Health Club."

Abbreviations
AC/ac - acre
CalEEMod® - CALifornia Emissions Estimator MODel
DU/du - dwelling unit
H-O - Home to Other
H-W - Home to Work
H-S - Home to Shopping
mi - mile
O-W - Other to Work
O-O - Other to Other
STU - students
TSF - thousand square feet
VMT - vehicle miles traveled

Table 3-17g. CalEEMod® Input Assumptions for Traffic
Mission Village
Los Angeles County, California

Area	CalEEMod® Land Use[1,5]	Unit	Trip Rate (trips/day/unit)[2] Adjusted SCVCTM Weekday	Derived with CalEEMod® Data Saturday	Derived with CalEEMod® Data Sunday	Trip Length (miles)[2,3] Home Work	Home Shopping	Home Other	Commercial Customer	Commercial Work	Commercial Non-Work	Trip Link Type (%)[4] Primary	Diverted	Pass-By
Mission Village	Single Family Housing	DU	8.36	8.81	7.66	8.8	8.8	8.8	0	0	0	100	0	0
	Condo/Townhouse	DU	6.74	7.33	6.21	8.4	8.4	8.4	0	0	0	100	0	0
	Apartments Low Rise	DU	5.82	6.32	5.36	8.4	8.4	8.4	0	0	0	100	0	0
	Retirement Community	DU	3.05	3.05	3.05	7.8	7.8	7.8	0	0	0	100	0	0
	Regional Shopping Center	TSF	44.13	51.36	25.94	0	0	0	11.6	11.6	11.6	100	0	0
	Elementary School	STU	1.00	0.00	0.00	0	0	0	14.3	14.3	14.3	100	0	0
	Library	TSF	70.31	58.19	31.87	0	0	0	11.8	11.8	11.8	100	0	0
	General Light Industry	TSF	5.22	0.99	0.51	0	0	0	12.4	12.4	12.4	100	0	0
	General Office Building	TSF	9.80	2.11	0.87	0	0	0	12.0	12.0	12.0	100	0	0
	Health Club	TSF	1.77	1.12	1.44	0	0	0	12.2	12.2	12.2	100	0	0
	Congregate Care (Assisted Living)	DU	2.28	1.83	2.03	11.0	11.0	11.0	0	0	0	100	0	0

Notes:

[1] Land Use Type lists the nomenclature consistent with trip information.

[2] The Adjusted SCVCTM Trip Rate for weekdays, as calculated in Table 3-17f, was used as the basis to derive the weekend trip rates. The weekday to weekend ratios for each land use as provided by CalEEMod® were used for the derivation.

[3] Trip lengths are calculated in Table 3-17f and based on the adjusted SCVCTM data that removes the double counted internal trips. While CalEEMod® has options to represent different trip lengths for different trip types, the same trip length was used for all trip types to ensure that the total annual VMT was accurately calculated by CalEEMod® consistent with the VMT from the SCVCTM.

[4] The trip distribution and trip assignment processes utilized in SCVCTM accounts for primary trip, pass-by trips, and diverted trips. When utilizing traffic forecasts produced by the SCVCTM, it is unnecessary to undertake additional steps to calculate the number of diverted trips or pass-by trips since they are reflected in the total trip forecasts produced by the SCVCTM. As a result, this analysis assumes that all trips are “primary” trips.

[5] There are 3 additional land uses for Mission Village that are not listed in Tables 3-17a and 3-17d through 3-17g: City Park, Parking Lot, and Unenclosed Parking with Elevator. These three land uses are not listed because they do not have any trips associated with the specific land use itself; therefore, trip rates and trip lengths are both entered as 0.

Abbreviations:

CalEEMod® - California Emissions Model
DU - dwelling unit
SCVCTM - Santa Clarita Valley Consolidated Traffic Model
STU - student
TDM - Transportation Demand Management
TSF - thousand square feet

Table 3-18a. GHG Emissions Associated With Traffic
Mission Village
Los Angeles County, California

Area	CalEEMod® Land Use	Project Assumption	Vehicles Miles Traveled	CO_2e Emissions Associated with Traffic[1,2]
			VMT / yr	MT / yr
Mission Village	Apartments Low Rise	Apartments Low Rise	14,891,421	5,236
	City Park	Open Space	0	0
	Condo/Townhouse	Condo/Townhouse General	42,465,661	14,930
	Congregate Care (Assisted Living)	Continued Care Retirement Community	3,063,781	1,077
	Elementary School	School	3,346,200	1,176
	General Light Industry	Fire Station (Miscellaneous)	304,320	107
	General Office Building	Commercial - Office	43,171,677	15,178
	Health Club	Developed Park	376,402	132
	Library	Library	9,754,988	3,430
	Parking Lot	Parking	0	0
	Regional Shopping Center	Commercial – Retail/Office	40,276,023	14,160
	Retirement Community	Senior (Active)	3,974,738	1,397
	Single Family Housing	Single Family Housing	9,359,188	3,291
	Unenclosed Parking with Elevator	Parking	0	0
		Total Residential	73,754,788	25,931
		Total	**170,984,398**	**60,115**
		Emissions Reduction due to Phase 2 NHTSA Regulations[3]	**--**	**803**
		Total Including NHTSA Regulations	**--**	**59,312**
		SCS Consistent Total (Without Light-Duty Vehicles)[4]	**26,305,411**	**9,340**

Notes:

[1] Emissions were estimated using CalEEMod® version 2013.2.2. Emission factors for 2028 Unmitigated Project updated to use EMFAC2014. Emissions associated with Traffic included emissions during running, idling, and startup of vehicles. Emissions by land use were calculated by distributing the total traffic emissions based on the VMT for each land use.

[2] TDM and mitigation measure reductions are not reflected in the Traffic emissions in this table. As an interim condition, there are expected to be four wastewater processing-related round-trips per day. Emissions are estimated to be 273 MT assuming heavy-duty trucks that travel approximately 114 miles per round-trip. These emissions are conservatively included into the total traffic emissions inventory, as shown in Table ES-2.

[3] Emissions reductions due to the NHTSA Phase 2 GHG standards are calculated in Table 3-18b.

[4] The traffic emissions for the SCS Consistent Project were estimated using the vehicle miles traveled (VMT) from the "Other-Other Attraction" trip type. This trip type can be used to reasonably approximate the medium- and heavy-duty vehicles associated with the Project, such as delivery trucks. As can be calculated using Table 3-17e, the "Other-Other Attraction" trip type is 15.3% of the Project's total daily VMT. This total then adds the wastewater processing-related trips as described in footnote 2.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CO_2e - carbon dioxide equivalents
EMFAC - California Air Resources Board Emissions Factor Model
GHG - greenhouse gases
NHTSA - National Highway Traffic Safety Administration
MT - metric tonnes
TDM - Transportation Demand Management
VMT - vehicle miles traveled
yr - year

Table 3-18b. GHG Emissions Reductions Due to Phase 2 Program for Medium-Duty and Heavy-Duty Engines and Vehicles
Mission Village
Los Angeles County, California

Item	Mission Village
CO_2e Emissions Associated with Traffic (Unmitigated)[1], MT	60,115
% of NHTSA Vehicle Categories[2]	8.1%
% of Running CO_2 Emissions from NHTSA Vehicle Categories (weighted)[3]	27.8%
Approx CO_2e Emissions Associated with Medium or Heavy-Duty Fleet	16,715
% of Running CO_2 Emissions from NHTSA Vehicle Categories for MY 2021-2029 (weighted)[4]	48%
Approx CO_2e Emissions Associated with Medium or Heavy-Duty Fleet MY 2021-2029	8,025
% Reduction assumed in 2021-2029 GHG for Medium/Heavy Duty[5]	10%
Total CO_2e Reduction	**803**

Notes:

[1] Unmitigated emissions associated with Project related traffic movement for CY 2028 (see Table 3-18a).

[2] Percentage of NHTSA fleet mix from the total CalEEMod® EMFAC2014 fleet mix. Vehicle classes applicable to NHTSA include -- LHD1, LHD2, MHD, HHD, OBUS, UBUS, SBUS, MH. NHTSA applicable vehicle classes are obtained from https://www3.epa.gov/otaq/climate/documents/420r16900.pdf. Accessed: September, 2016. Note that, Motor Homes (MH) are recognized as a part of NHTSA reg.

[3] Percentage (weighted) of CO_2 emissions of NHTSA applicable fleet mix from total fleet mix.

[4] EMFAC2014 model run for CY 2028, shows that about 48% of the weighted CO_2 emissions for the medium or heavy-duty fleet are associated with EPA-NHTSA vehicle classes for MY 2021-2029.

[5] Based on US EPA and NHTSA Phase 2 program documentation, Phase 2 achieves 10 percent more GHG reductions. Available at: https://www3.epa.gov/otaq/climate/documents/420f16044.pdf. Accessed: September 2016.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
CY - calendar year
EMFAC - California Air Resources Board Emissions Factor Model
EPA - Environmental Protection Agency
GHG - greenhouse gases
HHD - heavy-heavy duty
LHD - light-heavy duty
NHTSA - National Highway Traffic Safety Administration
MHD - medium-heavy duty
MH - motor home
MT - metric tonnes
MY - model year
OBUS - other buses
SBUS - school buses
UBUS - urban buses

Table 4-1. Summary of Assumptions
Mission Village
Los Angeles County, California

	Unmitigated Project	Mitigated Project
Electricity CO_2 intensity factor	SCE intensity factor adjusted for 45% RPS.	
Mobile:		
Number of trips generated	• Trip rates, trip length, and internal trip capture provided by Stantec for each individual land use and/or trip type.	
Vehicle emission factor	• EMFAC2014 for 2028 • HHD/OBUS idling factors based on EMFAC2011 because not available in EMFAC2014. • Include reduction from Pavley regulations and Advanced Clean Cars program. • Exclude reduction from LCFS regulations. • Include reductions for EPA-NHTSA Phase II regulation.	
VMT Reductions Due to Mitigation Measures	None	• 15.5% reduction in VMT per year due to TDM measures.
GHG Reductions Due to Mitigation Measures	None	• Residential EV chargers and vehicle subsidy. • Commercial development area and off-site EV chargers. • Traffic signal synchronization. • Electric school bus program. • Electric transit bus subsidy.
Energy use	• Building energy intensity based on Title 24 - 2016. • Recreational swimming pool is heated by natural gas. • Include 45% RPS.	• Building energy intensity based on Title 24 - 2016. • Recreational swimming pool is heated by solar power or equivalent. • Zero Net Energy (ZNE) for residential and non-residential land uses. • Include 45% RPS. • Building Retrofit Program.
Water use	• Based on the water demand from GSI Water Solutions, *Updated Water Demand Projections for Mission Village* (October 2014). • Include 45% RPS. • 20 Percent Reduction for Indoor Water Consumption per CalGreen Building Standards (Title 24, Part 11) • Potable/non-potable and indoor/outdoor water split based on GSI Water Solutions, *Updated Water Demand Projections for Mission Village* (October 2014).	
Solid Waste generation	• Based on Santa Clarita's 2012 CalRecycle disposal rates for residents and employees. • 75% diversion rate based on State's goal.	

Table 4-1. Summary of Assumptions
Mission Village
Los Angeles County, California

	Unmitigated Project	Mitigated Project
Vegetation	• Based on the ENVIRON International Corporation, *Climate Change Technical Report: Mission Village* (August 2010).	• Based on the ENVIRON International Corporation, *Climate Change Technical Report: Mission Village* (August 2010). • Change in GHG emissions are offset.
Construction	• Total level of construction equipment activity consistent with ENVIRON International Corporation, *Climate Change Technical Report: Mission Village* (August 2010).	• Total level of construction equipment activity consistent with ENVIRON International Corporation, *Climate Change Technical Report: Mission Village* (August 2010). • Construction GHG emissions are offset.
Others	None	• GHG Reduction Plan

Abbreviations:
CO_2 - carbon dioxide
EMFAC - California Air Resources Board Emissions Factor Model
EV - electric vehicle
GHG - greenhouse gases
HHD - heavy-heavy duty
LCFS - Low Carbon Fuel Standard
OBUS - other buses
RPS - Renewable Portfolio Standard
SCE - Southern California Edison
TDM - Transportation Demand Management
VMT - vehicle miles traveled
NHTSA - National Highway Traffic Safety Administration

Table 4-2. Unmitigated Project GHG Emissions: Percentage Contribution to Existing International, National, State, and County Inventories
Mission Village
Los Angeles County, California

Emission Inventory	CO_2e Emissions[1] MT/yr	CO_2e Percentage Contribution to Existing Inventory
Unmitigated Project[2]	79,202	--
Unincorporated Los Angeles County - 2010[3]	7,982,720	1.0%
State of California - 2013[4]	459,300,000	0.02%
United States of America - 2014[5]	6,872,600,000	0.001%
Global - 2010[6]	50,101,410,000	0.0002%

Notes:

[1] CO_2e includes CO_2, CH_4, and N_2O emissions. For all emission inventories other than "Project," halogenated compounds, which are associated with industrial activity and not expected to be a component of Project emissions, are included . All species are weighted by their respective global warming potentials (GWP) to calculate CO_2e. All inventories other than the global inventories use GWPs from AR4. The global inventory uses the GWP from SAR. This has a minor impact on the overall emissions.[7]

[2] 2028 Unmitigated Project inventory includes reduction from regulatory measures.

[3] Unincorporated Los Angeles County Community Climate Action Plan 2020. Final. August 2015. Available at: http://planning.lacounty.gov/assets/upl/project/ccap_final-august2015.pdf. Accessed: September 2016.

[4] CARB. 2015. California Greenhouse Gas Emission Inventory - 2015 Edition. Available at: http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed: September 2016.

[5] USEPA. 2016. DRAFT Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014. Available at: http://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2016-Main-Text.pdf. Accessed: September 2016.

[6] Joint Research Centre, European Commission. 2013. GHG (CO_2, CH_4, N_2O, F-gases) emission time series 1990-2010 per region/country. Emission Database for Global Atmospheric Research. Available at: http://edgar.jrc.ec.europa.eu/overview.php?v=GHGts1990-2010. Accessed: September 2016.

[7] IPCC Fourth Assessment Report: Climate Change 2007. Available at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016.

Abbreviations:

AR4 - Fourth Assessment Report
CARB - California Air Resources Board
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
F-gases - fluorinated gases
GHG - greenhouse gases
IPCC - Intergovernmental Panel on Climate Change
MT - metric tonnes
N_2O - nitrous oxide
USEPA - United States Environmental Protection Agency
SAR - Second Assessment Report
yr - year

Table 4-3. Service Population Calculations
Mission Village
Los Angeles County, California

From CalEEMod®				Newhall Data[3]				
				Resident	Population[1]	CBRE Study Population Intensity[2,3,4]		Commercial Population[2]
Land Use Type	Land Use Sub Type	Land Use Unit Amount	Land Use Size Metric	[res/DU]	[resident]	[jobs/unit]	Unit[2]	[worker]
Residential	Apartments Low Rise	836	DU	3.15	2,633			
Recreational	City Park	287.8	acres					
Residential	Condo/Townhouse	2058	DU	3.15	6,483			
Residential	Congregate Care (Assisted Living)[5]	351	DU	1.8	632	0.23	per DU	80
Educational	Elementary School	900	Student			50	per school	50
Industrial	General Light Industry	17.1	TSF			18	per station	18
Commercial	General Office Building	1331	TSF			4.0	per 1000sqft	5324
Recreational	Health Club[6]	52	TSF					
Educational	Library	36	TSF			36	per library	36
Parking	Parking Lot	3148	spaces					
Retail	Regional Shopping Center	224.1	TSF			2.85	per 1000sqft	639
Residential	Retirement Community	459	DU	1.8	826			
Residential	Single Family Housing	351	DU	3.15	1,106			
Parking	Unenclosed Parking with Elevator	1258	spaces					
Sub Total (Residential OR Worker) -->					**11,679**			**6,146**
Total Service Population -->				**17,825**				

Note:

[1] Resident per DU based on average of the Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan (RTP) average household size for Santa Clarita (2.94) and for unincorporated Los Angeles County (3.36).

[2] Service population for Elementary School based on CBRE's study specific to Newhall Ranch Specific Plan.

[3] Service population for General Office Building and Regional Shopping Center based on CBRE, Employment Projection for the Newhall Ranch Area (2011).

[4] Service population for Congregate Care is based on the City of Buellton Meritage Senior Living Project Subsequent Environmental Impact Report (SEIR) (June 2013).

[5] Congregate Care based on conservative comparison to similar City of Buellton (Meritage) project. Available at: http://www.cityofbuellton.com/files/Environmental%20Documents/0629B-Meritage%20Senior%20Living%20Project%20FEIR%20Vol%20I.pdf. Accessed: September 2016

[6] Health club commercial service population conservatively assumed to be zero.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
DU - dwelling unit
res - resident
TSF - thousand square feet

Table 4-4. 2028 Unmitigated Project GHG Emissions (SCS Consistent)
Mission Village
Los Angeles County, California

Category[1]	Unmitigated Project, SCS Consistent (No Light-Duty Vehicles) MT CO_2e / yr [2]
Area	70
Energy Use	10,577
Water Use	889
Waste Disposed	4,391
Traffic[3]	9,340
Swimming Pool Energy Use	1,842
Sub-Total	**27,109**
Construction Amortized[4]	844
Vegetation Amortized[4]	1,004
Sub-Total	**1,847**
Total	**28,957**

Notes:

[1] CO_2e emissions were primarily estimated using CalEEMod® version 2013.2.2.

[2] CO_2e includes CO_2, CH_4, and N_2O emissions, which are weighted by their respective AR4 global warming potentials. Source: Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4): Climate Change 2007. Available at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016.

[3] The traffic emissions for the SCS Consistent Project were estimated using the vehicle miles traveled (VMT) from the "Other-Other Attraction" trip type. This trip type can be used to reasonably approximate the medium- and heavy-duty vehicles associated with the Project, such as delivery trucks. As can be calculated in Table 3-17e, the "Other-Other Attraction" trip type is 15.3% of the Project's total daily VMT. The wastewater processing-related trips are added.

[4] One-time emissions from construction and vegetation removal were amortized over a 30-year period. Source: SCAQMD. 2009. Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13. August. Available at: http://sfprod.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf?sfvrsn=2. Accessed: September 2016.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CARB - California Air Resources Board
CEQA - California Environmental Air Quality Act
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tonnes
SCS - Sustainable communities Strategy
yr - year

Table 5-1a. GHG Emissions Reduction due to Residential 2019 Title 24 Building Features
Mission Village
Los Angeles County, California

CalEEMod® Land Use	ConSol Land Use Subtype (Assigned)[1]	Number of Dwelling Units[2]	2016 Title 24			2019 Title 24 Building Features (Approximated)			GHG Reduction from Building Features
			Total Electricity[3]	Total Natural Gas[3]	Total GHG Emissions[4]	Total Electricity[3]	Total Natural Gas[3]	Total GHG Emissions[5]	
		DU	kWh / DU / yr	kBTU / DU / yr	MT / yr	kWh / DU / yr	kBTU / DU / yr	MT / yr	MT / yr
Single Family Housing	Single Family	351	5,890	22,000	803	6,878	8,900	622	182
Apartments Low Rise	Multifamily	836	3,662	9,900	1,020	4,300	1,588	747	273
Condo/Townhouse	Multifamily	2,058	3,662	9,900	2,511	4,300	1,588	1,839	671
Congregate Care (Assisted Living)	Multifamily	351	3,662	9,900	428	4,300	1,588	314	115
Retirement Community	Multifamily	459	3,662	9,900	560	4,300	1,588	410	150
Total		**4,055**	**-**	**-**	**5,322**	**-**	**-**	**3,932**	**1,390**

Notes:
[1] CalEEMod® land use types were mapped to the most representative land use type modeled by ConSol. ConSol modeling is shown in Appendix C.
[2] Number of dwelling units includes single family and multifamily homes.
[3] Total electricity is the sum of regulated and unregulated electricity loads. Total natural gas is the sum of regulated and unregulated natural gas loads. Values are shown in table 3-13a and Appendix C.
[4] Total GHG emissions are also shown in Table 3-14b.
[5] Total GHG emissions for the 2019 Title 24 Building Features home are the emissions remaining after efficient building before the application of solar PV. GHG reductions from solar PV are shown in Table 5-1b.

Abbreviations:
CalEEMod® - CALifornia Emissions Estimator MODel
CO_2e - carbon dioxide equivalents
DU - dwelling unit
GHG - greenhouse gases
kBTU - 1,000 British thermal units
kWh - kilowatt-hour
MT - metric tonnes
PV - photovoltaic
yr - year

References:
ConSol, *Newhall Land & Farming Company Residential and Commercial Building Analysis* (2016)

Table 5-1b. GHG Emissions Reduction due to Residential ZNE Building Solar PV
Mission Village
Los Angeles County, California

Land Use	Rated Solar PV Production[1]	Number of Dwelling Units[2]	Number of Solar PV Systems[3]	Annual Renewable Energy Generated[4]	Total Annual Renewable Energy Generated	Total Annual Solar PV CO_2e Reduction[5]
	kW / system	DU	system	kWh / yr / system	kWh / yr	MT / yr
Single Family	5.0	351	351	8,167	2,866,617	539
Multifamily	21.9	3,704	463	35,772	16,562,436	3,114
Total		**4,055**	**814**	**43,939**	**19,429,053**	**3,653**

Notes:

[1] Based on ConSol study to achieve CEC definition of ZNE for residences (Appendix C). For Single Family, a 2-story 2,700 sqft home constructed to approximate 2019 Title 24 standards, would need a 5.0 kW solar power system to reach Zero Net Energy in Climate Zone 9, Santa Clarita. For Multifamily, a 6,960 sqft, 2-story multi-family, 8-plex would need a 21.9 kW system.

[2] Multifamily homes include apartments low rise, condo/townhouses, congregate care (continued care retirement community), and retirement community, as shown in Table 5-1a.

[3] Total number of PV systems assumes 351 single family homes and 463 multifamily homes (8 units each) each contain PV systems.

[4] Annual renewable energy generated per unit from Appendix C.

[5] Annual Photovoltaic GHG Reduction is based on the CO_2e emission factor for SCE in 2028, assuming 45% RPS. Note this reduction does not account for potential improvements in emission factors due to shifting of loads from peak to off-peak hours.

Abbreviations:

CEC - California Energy Commission
CO_2e - carbon dioxide equivalents
DU - dwelling unit
GHG - greenhouse gases
MT - metric tonnes
kW - kilowatt
kWh - kilowatt-hour
PV - photovoltaic
RPS - Renewable Portfolio Standard
SCE - Southern California Edison
sqft - square feet
yr - year
ZNE - Zero Net Energy

References:

CEC. Integrated Energy Policy Report. 2011. Available at: http://www.energy.ca.gov/2011publications/CEC-100-2011-001/CEC-100-2011-001-CMF.pdf. Accessed: September 2016.

ConSol, *Newhall Land & Farming Company Residential and Commercial Building Analysis* (2016)

Table 5-1c. Total GHG Emissions Reductions due to Residential ZNE Building Features and Solar PV
Mission Village
Los Angeles County, California

GHG Reduction from 2016 Title 24 to 2019 Title 24 Building Features (Approximated) Residences[1]	GHG Reduction from Solar PV[2]	Total GHG Reduction
MT CO_2e / yr		
1,390	3,653	**5,043**

Notes:
[1] Reduction calculation shown in Table 5-1a.
[2] Reduction calculation shown in Table 5-1b.

Abbreviations:
CO_2e - carbon dioxide equivalents
GHG - greenhouse gas
MT - metric tonnes
PV - photovoltaic
yr - year

Table 5-2a. GHG Emissions Reduction due to Non-Residential 2019 Title 24 Building Features
Mission Village
Los Angeles County, California

Area	Project Assumption	CalEEMod® Land Use Subtype	ConSol Land Use Type (Assigned)[1,2]	Total Size	Total Approximate Energy Use Rates: 2016 Electricity[3]	2016 Natural Gas[3]	Reduction to 2019 Electricity[4]	Reduction to 2019 Natural Gas[4]	2019 Electricity	2019 Natural Gas	Total Approximate Energy Emissions[5]: 2016	2019	GHG Reduction from 2016 to Approximate 2019 Title 24[6,7]
				TSF	kWh/SF/yr	kBTU/SF/yr	%	%	kWh/SF/yr	kBTU/SF/yr	MT CO_2e/yr		
Mission Village	Open Space	City Park	--	12,537	-	-	-	-	-	-	-	-	-
	Elementary/Middle School	Elementary School	Office	100	6.18	9.39	12%	57%	5.41	4.00	167	123	43
	Fire Station (Miscellaneous)	General Light Industry	Industrial	17.1	9.46	19.27	7%	-23%	8.82	23.66	48	50	-2
	Commercial - Office	General Office Building	Office	1,331	13.41	9.43	12%	57%	11.74	4.02	4,030	3,226	804
	Developed Park	Health Club	Industrial	52	9.46	19.27	7%	-23%	8.82	23.66	146	152	-6
	Library	Library	Industrial	36	9.46	19.27	7%	-23%	8.82	23.66	101	105	-4
	Commercial – Retail/Office	Regional Shopping Center	Retail	224.1	11.89	1.32	15%	-3%	10.16	1.36	517	444	72
	Parking Lot	Parking Lot	--	1,259.2	0.44	0.00	-	-	0.44	0.00	104	104	-
	Parking Structure	Unenclosed Parking with Elevator	--	503.2	1.50	0.00	-	-	1.50	0.00	142	142	-
			Total	**16,059**	**-**	**-**	**-**	**-**	**-**	**-**	**5,255**	**4,347**	**907**

Notes:

[1] ConSol land use prototypes include a 100,000 square foot, 4-story office building; a 75,000 square foot, one-story light industrial building (20,000 square feet conditioned); and a 40,000 square foot, one-story suburban retail building.

[2] CalEEMod® land use types were mapped to the most representative land use type from ConSol based on the similarity of emission factors in CalEEMod®.

[3] Derivations for 2016 Title 24 energy use rates are presented in Table 3-13b.

[4] Energy use reductions from 2016 Title 24 to 2019 Title 24 based on ConSol building energy modeling.

[5] Reductions were not applied to parking lots or parking structures.

[6] Electricity intensity factor for CO_2e is for SCE in 2028, assuming 45% RPS.

[7] Reduction does not account for potential improvements in emission factors due to shifting of loads from peak to off-peak hours.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CEC - California Energy Commission
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
kBTU- 1,000 British thermal units
kWh - kilowatt-hour
MT - metric tonnes
RPS - Renewable Portfolio Standard
SCE - Southern California Edison
SF - square feet
TSF- thousand square feet
yr - year
ZNE - Zero Net Energy

References:

CEC. 2016 Building Energy Efficiency Standards Approved Computer Compliance Programs. Available at: http://www.energy.ca.gov/title24/2016standards/2016_computer_prog_list.html. Accessed: September 2016.
CEC. Integrated Energy Policy Report. 2011. Available at: http://www.energy.ca.gov/2011publications/CEC-100-2011-001/CEC-100-2011-001-CMF.pdf. Accessed: September 2016.
ConSol, *Newhall Land & Farming Company Residential and Commercial Building Analysis* (2016)

Table 5-2b. GHG Emissions Reduction due to Non-Residential ZNE Building Solar PV
Mission Village
Los Angeles County, California

Consol Appendix C Analysis: Solar PV Generation Required to Achieve ZNE

ConSol Land Use Type[1]	2019 Title 24 Energy Demand[2]	PV Size[2]	Solar PV Generation Required for ZNE[2]	% of 2019 kWh Required for ZNE[2]
	kWh	kW DC	kWh	%
Office	808,029	536.9	902,871	112%
Industrial	150,882	126.60	199,604	132%
Retail	361,550	299.10	486,764	135%

Project Assumption	CalEEMod® Land Use Subtype	ConSol Land Use Type[1,2]	Total Size	Approximate 2019 Electricity Consumption[3]	% of 2019 kWh Required from Solar PV for ZNE[4]	Solar PV Generation Needed to Achieve ZNE	Annual PV GHG Reduction[5,6]
			TSF	kWh/yr	%	kWh/yr	MT CO_2e/yr
Open Space	City Park	-	12,537	-	-	-	-
Elementary/Middle School	Elementary School	Office	100	541,202	112%	604,726	114
Fire Station (Miscellaneous)	General Light Industry	Industrial	17.1	150,903	132%	199,632	38
Commercial - Office	General Office Building	Office	1,331	15,630,683	112%	17,465,327	3,284
Developed Park	Health Club	Industrial	52	458,888	132%	607,069	114
Library	Library	Industrial	36	317,691	132%	420,279	79
Commercial – Retail/Office	Regional Shopping Center	Retail	224.1	2,276,862	135%	3,065,398	576
Parking Lot	Parking Lot	-	1,259.2	554,048	-	-	-
Parking Structure	Unenclosed Parking with Elevator	-	503.2	754,800	-	-	-
Total			**16,059**	**20,685,078**	-	**22,362,431**	**4,205**

Notes:

[1] ConSol land use prototypes include a 100,000 square foot, 4-story office building; a 75,000 square foot, one-story light industrial building (20,000 square feet conditioned); and a 40,000 square foot, one-story suburban retail building.

[2] CalEEMod® land use types were mapped to the most representative land use type from ConSol based on the similarity of emission factors in CalEEMod ®.

[3] Approximate 2019 electricity consumption based on percent reductions in electricity use from 2016 Title 24 to 2019 Title 24 derived from ConSol building energy modeling, as shown in table 5-2a.

[4] Percentages of baseline electricity required to achieve CEC definition of ZNE are approximate because they are based on assumed building features and reflect time-dependant valuation of energy. Based on ConSol's building-specific energy use and solar system-specific assumptions.

[5] Electricity intensity factor for CO_2e is for SCE in 2028, assuming 45% RPS.

[6] Reduction does not account for potential improvements in emission factors due to shifting of loads from peak to off-peak hours.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CEC - California Energy Commission
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
kBTU -1,000 British thermal units
kWh - kilowatt-hour
MT - metric tonnes
PV - photovoltaic
RPS - Renewable Portfolio Standard
SCE - Southern California Edison
TSF - thousand square feet
yr - year
ZNE - Zero Net Energy

References:

CEC. 2016 Building Energy Efficiency Standards Approved Computer Compliance Programs. Available at: http://www.energy.ca.gov/title24/2016standards/2016_computer_prog_list.html. Accessed: September 2016.

CEC. Integrated Energy Policy Report. 2011. Available at: http://www.energy.ca.gov/2011publications/CEC-100-2011-001/CEC-100-2011-001-CMF.pdf. Accessed: September 2016.

ConSol, *Newhall Land & Farming Company Residential and Commercial Building Analysis* (2016).

Table 5-2c. Total GHG Emissions Reductions due to Non-Residential ZNE Building Features and Solar PV
Mission Village
Los Angeles County, California

Reduction from 2016 Title 24 to Approximate 2019 Title 24[1]	Reduction from Solar PV[2]	Total Reduction
MT CO_2e / yr		
907	4,205	**5,112**

Notes:
[1] Reduction calculation shown in Table 5-2a.
[2] Reduction calculation shown in Table 5-2b.

Abbreviations:
CO_2e - carbon dioxide equivalents
GHG - greenhouse gas
MT - metric tonnes
PV - photovoltaic
yr - year
ZNE - zero net energy

Table 5-3. GHG Emissions Reductions for Residential Electric Vehicles
Mission Village
Los Angeles County, California

Estimating GHG Emissions Reduction from Replacement of Gasoline Vehicle with Electric Vehicle		
SCE Electricity Emission Factor[1]	0.19	(MT CO_2e/MWh)
Fuel Economy of Electric Vehicle[2]	0.25	(kWh/mile)
Electric Vehicle GHG Emissions	46.8	(gms/mile)
GHG Emissions for the Residential Miles Traveled as Estimated by CalEEMod® (including NHTSA Phase 2 reduction)[3]	338.1	(gms/mile)
GHG Emissions Reduction from Additional Electric Vehicles, per mile	291.3	(gms/mile)
Estimating Project Residential-Related Traffic GHG Emissions		
Residential Average Yearly Traffic, before TDMs[4]	70,691,007	(miles/year)
Residential Average Yearly Traffic, After TDMs[5]	59,733,901	(miles/year)
Percent of Residential Miles Driven in Electric Vehicles due to This Measure[6]	50%	
Residential VMT that is Displaced by EVs due to This Measure	29,866,951	(miles/year)
Estimated Benefit from Residential EV Chargers and Vehicle Subsidy		
GHG Emissions Reduction from Residential Electric Vehicles[7]	8,701	(MT CO_2e/year)
GHG Emissions Reduction from Congregate Care EV Chargers[8]	342	(MT CO_2e/year)
Total GHG Emissions Reduction	9,043	(MT CO_2e/year)
Remaining Project Traffic GHG Emissions, After TDMs and Residential EV Mitigation[9]	41,878	(MT CO_2e/year)

Notes:

[1] CO_2 intensity factor for SCE accounts for the 45% Renewable Portfolio Standard consistent with assumptions for the 2028 emissions inventories. This analysis only uses CO_2 and CH_4 emissions, and N_2O is not included.

[2] US Department of Energy, 2013. Benefits and Considerations of Electricity as a Vehicle Fuel. Available at: http://www.afdc.energy.gov/fuels/electricity_benefits.html. Accessed: September 2016.

[3] The emissions factor (338.1 gms/mile) is consistent with the CalEEMod® input, and includes default reductions for the ACC Program and Pavley Standards. The emissions factor also is consistent with EMFAC2014's running exhaust emission rate for CO_2 for vehicles in Los Angeles County, as aggregated for all models and speeds, and averaged over all seasons for 2028, except includes the emissions reduction due to NHTSA Phase 2 regulations since this benefit is estimated post-CalEEMod®. The emissions inventory includes a small amount of CH_4 and N_2O, so when they are excluded from the reductions, it is a conservative approach. To ensure that the Project mitigation's emissions reduction benefit does not take credit for EVs that EMFAC2014 already forecasts will be part of the vehicle fleet, the emissions factor and emissions inventory includes the existing EVs. CalEEMod® conservatively includes medium- and heavy-duty vehicle emissions factors proportional to EMFAC2014's default fleet mix when calculating mobile emissions for all land use types.

Calculation methodology from EMFAC2014 output: Weighted average running emissions CO_2 (g/mi) = % of mi by vehicle type x CO_2 running EF (g/mi)

1. EF in CalEEMod®: 342.7 g/mi
2. EF including NHTSA Phase 2, used in calculation: 338.1 g/mi
3. EF if no EVs were included in CalEEMod®, including NHTSA Phase 2: 358.7 g/mi

Available at: http://www.arb.ca.gov/emfac/. Accessed: September 2016.

[4] From CalEEMod® modeling, as shown in Table 3-18a. Congregate care is treated separately and not included in this total.

[5] The 15.5% reduction in VMT due to TDMs (shown in Table 5-5) is applied prior to taking credit for the residential EV mitigation measure.

[6] This assumption is described in more detail in the Appendix H.

[7] Calculated by multiplying the GHG reduction per mile from EVs by the miles displaced by EVs. Assuming that 50% of the 3,704 dwelling units use a subsidy to purchase an EV, the reduction per subsidy equals the total GHG emissions reduction divided by the number of subsidies = 8,701 MT / (3,704 x 50%) = 4.70 MT CO_2e per year per subsidy.

[8] The congregate care will include 7.5 percent of required parking spaces to be provided with EV charging stations. For 221 required spaces, this equates to 17 spaces with EV charging. Calculations of GHG reductions per EV parking space are shown in Table 5-4.

[9] Remaining mobile emissions after TDMs and Residential EV Mitigation.

Abbreviations:

ACC - Advanced Clean Cars
CalEEMod® - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EF - emission factor
EMFAC - California Air Resources Board Emissions Factor Model
EV - electric vehicle
g/gms - grams
GHG - greenhouse gases
kWh - kilowatt-hour
mi - mile
MT - metric tonnes
MWh - megawatt-hour
N_2O - nitrous oxide
NHTSA - National Highway Traffic Safety Administration
SCE - Southern California Edison
TDM - Transportation Demand Management
VMT - vehicle miles traveled

Table 5-4. GHG Emissions Reductions for Commercial Development Area Electric Vehicle Charging Stations
Mission Village
Los Angeles County, California

Estimating GHG Emissions Reduction to Replace Gasoline Vehicle with Electric Vehicle		
SCE electricity emission factor[1]	0.19	(MT CO_2e/MWh)
Fuel Economy of Electric Vehicle[2]	0.25	(kWh/mile)
Gasoline/Diesel CO_2e emission while running[3]	268	(gms/mile)
Annual VMT Reduction per Parking Spot[4]	91,250	(miles/charging station/year)
Number of On-Site Commercial Parking Spots Provided Chargers[5]	330	
Annual VMT Reduction All Stations (Based on Charge)	30,112,500	(miles/year)
Estimated Benefit from Installing Electric Vehicle Charging Stations in Commercial Development Area		
GHG Emissions of Gasoline/Diesel Vehicle[6]	8,056	(MT CO_2e/year)
GHG Emissions of Electric Vehicle[7]	1,409	(MT CO_2e/year)
GHG Emissions Reduction[8]	6,646	(MT CO_2e/year)
GHG Reduction per Parking Space with Charging per Year	20	(MT CO2e/year)
Total Project Traffic GHG Emissions, After TDMs and Residential and Commercial EV Mitigation[9]	35,232	(MT CO_2e/year)
Number of Off-Site Parking Spots Provided Chargers[5]	357	
GHG Emissions Reduction from Off-Site Parking Spots[10]	7,190	(MT CO_2e/year)

Notes:

[1] CO_2e weighted intensity factor for SCE accounts for CO_2 and CH_4 emissions rates consistent with 45% Renewable Portfolio Standard.

[2] US Department of Energy, 2013. Benefits and Considerations of Electricity as a Vehicle Fuel. Available at: http://www.afdc.energy.gov/fuels/electricity_benefits.html. Accessed: September 2016.

[3] CARB, 2015. EMFAC2014, running exhaust emission rate for CO_2 and CH_4 for light duty gasoline- and diesel-powered vehicles in Los Angeles, aggregated for all models and speeds, averaged over all seasons for 2028. Emission rate includes reductions for Advanced Clean Cars (ACC) and Pavley. Available at: http://www.arb.ca.gov/emfac/. Accessed: September 2016.

[4] Annual VMT reduction estimated based on an estimate of ten hours of charge time for a Level 2 charging station that charges at a rate of 25 driving range per hour.

[5] Number of charging stations based on project commitment. This assumes 330 parking spaces will be serviced by a charging station (equivalent to 7.5 percent of required commercial parking spaces). The off-site mitigation measure GCC-12 assumes 357 parking spaces will have a charging station, based on a ratio of one parking space serviced by an electric vehicle charging station per 30 residential dwelling units and one parking space serviced by an electric vehicle charging station per 7,000 commercial square feet.

[6] GHG emissions calculated using annual VMT reduction at all stations and CO_2 and CH_4 emission rate. The emissions inventory includes a small amount of nitrous oxide, so when it is excluded from reductions benefits, it is conservative.

[7] GHG emissions calculated using annual VMT reduction at all stations, fuel economy of electric vehicles, along with SCE electricity CO_2e emission factor. The emissions inventory includes a small amount of nitrous oxide, so when it is excluded from reductions benefits, it is conservative.

[8] GHG emissions reduction is a difference of GHG emissions of gasoline vehicles and GHG emissions of electric vehicles. The emissions inventory includes a small amount of nitrous oxide, so when it is excluded from reductions benefits, it is conservative.

[9] Remaining mobile emissions after TDMs and Residential and Commercial EV Mitigation. TDM calculations are shown in Table 5-5.

[10] Reduction is the number of off-site parking spots multiplied by the GHG reduction per parking spot.

Abbreviations:

CARB - California Air Resources Board
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EV - electric vehicle
GHG - greenhouse gases
EMFAC - Califoria Air Resources Board Emissions Factor Model
gms - grams
kWh - kilowatt-hour
MT - metric tonnes
MWh - megawatt-hour
SCE - Southern California Edison
TDM - Transportation Demand Management
VMT - vehicle miles traveled

Table 5-5. GHG Emissions Reductions due to Transportation Demand Management
Mission Village
Los Angeles County, California

Item	Value	Units
Total VMT per Year[1]	170,984,398	(miles/yr)
Total VMT Reduction due to TDMs[2]	15.5%	
Total VMT per Year after TDMs	144,481,816	(miles/yr)
Total Mobile GHG Emissions, 2028 Unmitigated	60,115	(MT CO_2e/yr)
Total GHG Reduction due to NHTSA Regulatory Compliance[3]	803	(MT CO_2e/yr)
Total Mobile GHG Emissions after NHTSA Reduction, 2028 Unmitigated	59,312	(MT CO_2e/yr)
Total GHG Reduction due to TDMs[4]	15.5%	
Reduction in Mobile GHG Emissions due to TDMs, 2028 Unmitigated	9,193	(MT CO_2e/yr)
Remaining Mobile GHG Emissions after TDMs, 2028	50,921	(MT CO_2e/yr)

Notes:

[1] Total VMT based on the Project-specific traffic study. Trips were modeled using CalEEMod® version 2013.2.2.

[2] Reduction due to TDMs based on Fehr & Peers, *Mission Village: Transportation Demand Management Evaluation* (2016).

[3] Mobile GHG reductions due to Phase 2 NHTSA regulations are not incorporated into EMFAC2014. These reductions are calculated in Table 3-18b and apply to both the 2028 unmitigated and 2028 mitigated emissions inventories.

[4] GHG emissions are directly proportional to VMT using CalEEMod® methodology. The NEV measure results in a 2.54% reduction in mobile VMT, which translates to a 2.54% reduction in mobile GHGs: 59,312 MT CO_2e/year x 2.54% = 1,507 MT CO_2e/year reduction due to NEVs. Assuming that 20% of the 3,704 dwelling units use a subsidy to purchase an NEV, the number of NEVs purchased equals (3,704 x 20%) = 741 NEVs. The GHG reduction per subsidy equals the total GHG emissions reduction divided by the number of subsidies = 1,507 MT CO_2e / 741 NEVs = 2.03 MT CO_2e per year per subsidy.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tonnes
NHTSA - National Highway Traffic Safety Administration
TDM - Transportation Demand Management
VMT - vehicle miles traveled
yr - year

Table 5-6. GHG Emissions Reductions due to Traffic Signal Synchronization
Mission Village
Los Angeles County, California

I. Percent Reduction in Mobile GHG Emissions Due to Traffic Signal Synchronization

Traffic Assumptions[1]			
Total Mission Village ADT	50,394		trips/day
Total Mission Village VMT	519,621		mi/day
Road Segment-Specific Traffic Assumptions[2]	Commerce Center Drive	Magic Mountain Parkway	
Average Running Speed	45	45	mph
Average Daily Trips (ADT)	24,200	31,200	trips/day
Road Segment Length	1.5	1.3	mi/trip
Road Segment-Specific Daily VMT[3]	36,300	40,560	mi/day
CO_2 Emission Factors[4]			
Congested CO_2 Emission Factor	323	323	g CO_2/mi
Free-flow CO_2 Emission Factor	259	259	g CO_2/mi
CO_2 Emissions[4]			
"Baseline" CO_2 Emissions (based on congested EF)	11.72	13.10	MT CO_2/day
Post-Synchronization CO_2 Emissions (based on free-flow EF)	9.40	10.51	MT CO_2/day
Road Segment-Specific Percent Reduction in Mobile GHG Emissions due to Traffic Signal Synchronization[5]	1.38%	1.55%	%
Overall Project Percent Reduction in Mobile GHG Emissions due to Traffic Signal Synchronization[6]	**2.93%**		**%**

II. Mobile GHG Emissions after Traffic Signal Synchronization

Total Mobile GHG Emissions, after TDMs, Residential and Commercial EV, and Electric School Bus Mitigation Measures	35,207	MT CO_2e/yr
Reduction in Mobile GHG Emissions due to Traffic Signal Synchronization, 2020	1,032	MT CO_2e/yr
Remaining Mobile GHG Emissions after Mitigation, 2020	**34,175**	**MT CO_2e/yr**

Notes:

[1] Total Mission Village ADT and VMT was based on the SCVCTM Model as provided by Stantec. This ADT and VMT is calculated in Tables 3-17a through 3-17e. This represents the VMT and trips before the weekend trip rate adjustment in CalEEMod®.

[2] This calculation was provided by Stantec as shown in Appendix I. Two road segments in Mission Village are proposed for traffic signal synchronization: Commerce Center Drive from SR-126 to Magic Mountain Parkway and Magic Mountain Parkway (within the Mission Village boundary).

[3] Average running speed was assumed. Segment VMT is the product of ADT and road segment length.

[4] Congested and Free-flow emission factors are based on the CAPCOA RPT-2 Fact Sheet, which provides CO_2 emissions per mile based on vehicle speed. CO_2 emissions were Calculated by multiplying the emission factor by the respective road segment daily VMT.

[5] The reduction due to traffic synchronization for each road segment is found using the following equation:

$$\%\ CO_2\ \text{Reduction} = \left(1 - \frac{\text{Project } CO_{2(post)}}{\text{Project } CO_{2(baseline)}}\right) \times \frac{VMT_{(Segment)}}{VMT_{(Project\ Total)}} \times 100$$

[6] The calculated percent reduction is normalized to the total traffic emissions to facilitate the calculation relative to the Project GHG emissions inventory. The CAPCOA RPT-2 emission factors do not account for the detail that the Project emissions inventory does. For example, the Project emissions inventory is based on EMFAC2014 and CalEEMod® accounts for weekend vs. weekday variations. By normalizing this reduction due to the traffic signal synchronization to the Project VMT using the RPT-2 emission factors, the calculation can account for the differences between the Project emissions inventory relative to the RPT-2 methodology.

Abbreviations:

ADT - Average Daily Trips
CalEEMod® - CALifornia Emissions Estimator MODel
CAPCOA - California Air Pollution Control Officers Association
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EMFAC - California Air Resources Board Emissions Factor Model
EF - emission factor
EV - electric vehicle
g - gram
GHG - greenhouse gases
mi - mile
MT - metric tonnes
mph - miles per hour
SCVCTM - Santa Clarita Valley Consolidated Traffic Model
SR-126 - State Route 126
TDM - Transportation Demand Management
VMT - vehicle miles traveled
yr - year

References:

CAPCOA, 2010. Available at: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf. Accessed: September 2016.
Stantec, *Newhall Ranch Mission Village – GHG Reductions from Traffic Signal Coordination* (2016).

Table 5-7. GHG Emissions Reduction to Replace CNG with Electric School Buses
Mission Village
Los Angeles County, California

Assumptions		
SCE electricity emission factor[1]	0.19	(MT CO_2e/MWh)
Fuel economy of electric bus[2]	1.8	(kWh/mile)
CNG school bus CO_2e emission while running[3]	936	(gms/mile)
Annual average school bus VMT[4]	13,805	(VMT/year)
Number of buses[5]	3	buses
Estimated Benefit from Replacing School Bus Trips with Electric Buses		
GHG emissions of CNG bus[6]	39	(MT CO_2e/year)
GHG emissions of electric bus[7]	14	(MT CO_2e/year)
GHG emissions reduction[8]	25	(MT CO_2e/year)
Total Project Traffic GHG Emissions, After TDMs, Residential and Non-Residential EV Mitigation, and Electric School Buses[9]	35,207	(MT CO_2e/year)

Notes:

[1] CO_2e weighted intensity factor for SCE accounts for CO_2 and CH_4 emissions rates consistent with the 45% Renewable Portfolio Standard.

[2] Average of BYD and Proterra fuel economy found on their respective websites. Proterra. Available at: http://www.proterra.com/product-tech/product-portfolio/. Accessed: September 2016. BYD. Available at: http://byd.com/na/ebus/ebus.html. Accessed: September 2016.

[3] CARB, 2015. EMFAC2014 2028 running exhaust emission rate for CO_2e (accounts for CO_2 and CH_4) for diesel school buses in Los Angeles County (1,272 gms/mile), along with the ratio of EMFAC2014 2028 emission rates for diesel urban buses (2,652 gms/mile) to CNG urban buses (1,952 gms/mile), were used to calculate the CNG school bus emission rate. Emission rates include reductions for Advanced Clean Cars (ACC) and Pavley and are aggregated for all models and speeds, averaged over all seasons for 2028. Available at: http://www.arb.ca.gov/emfac/. Accessed: September 2016.

[4] CARB, 2015. EMFAC2014 2028 annual diesel school bus VMT in Los Angeles County, aggregated for all models and speeds, averaged over all seasons for 2028. Accessed: September 2016. Assumed CNG bus VMT should be no different from diesel bus VMT.

[5] Number of buses based on project specific estimate.

[6] GHG emissions calculated using annual VMT, number of buses, and CO_2 and CH_4 emission rate. The emissions inventory includes a small amount of nitrous oxide, so when it is excluded from reductions benefits, it is conservative.

[7] GHG emissions calculated using annual VMT, fuel economy and number of electric buses along with SCE electricity CO_2e emission factor. The emissions inventory includes a small amount of nitrous oxide, so when it is excluded from reductions benefits, it is conservative.

[8] GHG emissions reduction is a difference of GHG emissions of CNG buses and GHG emissions of electric buses. The emissions inventory includes a small amount of nitrous oxide, so when it is excluded from reductions benefits, it is conservative.

[9] Remaining mobile emissions after TDMs, Residential and Commercial EV Mitigation, and EV school bus program.

Abbreviations:

CARB - California Air Resources Board
CH_4 - methane
CNG - compressed natural gas
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EMFAC - California Air Resources Board Emissions Factor Model
EV - electric vehicle
TDM - Transportation Demand Management
GHG - greenhouse gases
gms - grams
kWh - kilowatt-hour
MT - metric tonnes
MWh - megawatt-hour
SCE - Southern California Edison
VMT - vehicle miles traveled

Table 5-8. GHG Emissions Reduction to Replace Transit CNG Buses with Electric Buses
Mission Village
Los Angeles County, California

Assumptions		
SCE electricity emission factor[1]	0.19	(MT CO_2e/MWh)
Fuel economy of electric bus[2]	1.8	(kWh/mile)
Urban CNG bus CO2e emission while running[3]	1952	(gms/mile)
Annual Average transit bus VMT[4]	38,237	(VMT/year)
Number of Buses[5]	2	buses
Estimated Benefit from Replacing Transit Bus Trips with Electric Buses		
GHG emissions of 2 CNG buses[6]	149	(MT CO_2e/year)
GHG emissions of 2 electric buses[7]	26	(MT CO_2e/year)
GHG emissions reduction[8]	124	(MT CO_2e/year)

Notes:

[1] CO_2e weighted intensity factor for SCE accounts for CO_2 and CH_4 emissions rates consistent with the 45% Renewable Portfolio Standard.

[2] Average of BYD and Proterra fuel economy found on their respective websites. Proterra. Available at: http://www.proterra.com/product-tech/product-portfolio/. Accessed: September 2016. BYD. Available at: http://byd.com/na/ebus/ebus.html. Accessed: September 2016.

[3] CARB, 2015. EMFAC2014, running exhaust emission rate for CO_2 and CH_4 for CNG urban bus fleets in Los Angeles County, aggregated for all models and speeds, averaged over all seasons for 2028. Emission rate includes reductions for Advanced Clean Cars (ACC) and Pavley. Available at: http://www.arb.ca.gov/emfac/. Accessed: September 2016.

[4] CARB, 2015. EMFAC2014 2028 annual VMT for CNG urban buses in Los Angeles County, aggregated for all models and speeds, averaged over all seasons for 2028. Accessed: September 2016.

[5] Number of buses based on project specific estimate.

[6] GHG emissions calculated using annual VMT, number of buses, and CO_2 and CH_4 emission rate. The emissions inventory includes a small amount of nitrous oxide, so when it is excluded from reductions benefits, it is conservative.

[7] GHG emissions calculated using annual VMT, fuel economy and number of electric buses along with SCE electricity CO_2e emission factor. The emissions inventory includes a small amount of nitrous oxide, so when it is excluded from reductions benefits, it is conservative.

[8] GHG emissions reduction is a difference of GHG emissions of CNG buses and GHG emissions of electric buses. The emissions inventory includes a small amount of nitrous oxide, so when it is excluded from reductions benefits, it is conservative. The reduction per subsidy equals the total GHG emissions reduction divided by the number of transit bus subsidies = 124 MT CO2e / 2 buses = 61.87 MT CO2e per year per bus.

Abbreviations:

CARB - California Air Resources Board
CH_4 - methane
CNG - compressed natural gas
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EV - electric vehicle
EMFAC - California Air Resources Board Emissions Factor Model
GHG - greenhouse gases
gms - grams
kWh - kilowatt-hour
MT - metric tonnes
MWh - megawatt-hour
SCE - Southern California Edison
VMT - vehicle miles traveled

Table 5-9. GHG Emissions Reduction due to Building Retrofit Program
Mission Village
Los Angeles County, California

Measure Concept[1]	Incremental or Full Savings Claimed[2]	Annual GHG Savings Attributed to Market Intervention (MT)[3]	Number of Residences Required to Meet 187 MT Reduction
HVAC Upstream Incentive (no-cost upgrade) - All Electric Heat Pump	Incremental	1.037	180
	Full	1.698	110
Water Heater Replacement No-Cost Upgrade	Incremental	0.703	266
	Full	0.852	219

Notes:

[1] These are example measure concepts adapted from Appendix J. Energy savings were modeled by ConSol using 2016 CBECC-Res software.

[2] Incremental savings claimed indicates the Project funds the incremental cost of an upgrade and claims the emissions savings for this incremental gain; for example, when a homeowner goes to replace an HVAC system with the minimum Title 24-compliant unit, instead a highly efficient unit is offered with the difference in cost covered by the Project. Full savings claimed indicates a funding structure where the Project funds a large portion (50-80%) of the total measure costs and claims the entire emissions savings from the measure; for example, replacing a 1975 baseline HVAC system with a highly efficient unit. The energy savings are not directly proportional to costs in these two funding mechanisms.

[3] Annual savings attributed to market intervention is the amount of GHG savings that are claimed due to the program incentive. Electricity and natural gas savings for each measure are presented in Appendix J. The electricity emission factor assumes 45% RPS. Depending on whether the funding structure is the 'full savings claimed' or 'incremental savings claimed', this is either the full savings from a 1975 baseline unit to a highly efficient unit, or the incremental savings from a minimum Title 24-compliant unit to a highly efficient unit.

Abbreviations

GHG - greenhouse gases

HVAC - heating ventilation air conditioning

MT - metric tonnes

Table 6-1. Summary of GHG Emissions Reductions due to Mitigation Measures (2028 SCS Consistent)
Mission Village
Los Angeles County, California

Mitigation Measure Number[1]	Mitigation Measure Description	CO_2e Emissions Reduction Due to Mitigation Measure[2,3] MT/yr	SCS Consistent (No Light-Duty Vehicles) CO_2e Emissions Reduction Due to Mitigation Measure[2,3,4] MT/yr
GCC-1	Residential Zero Net Energy	5,043	5,043
GCC-2	Commercial Zero Net Energy	5,112	5,112
GCC-3	Swimming Pool Heating	1,636	1,636
GCC-4	Residential EV Chargers and Vehicle Subsidy	9,043	0
GCC-5	Commercial Development Area EV Chargers	6,646	0
GCC-6	Transportation Demand Management Plan	9,193	1,405
GCC-7	Traffic Signal Synchronization	1,032	158
GCC-8	Electric School Bus Program	25	25
GCC-9	Electric Transit Bus Subsidy	124	124
GCC-10	Carbon Credits	1,847	1,847
GCC-11	Building Retrofit Program	187	187
GCC-12	Off-Site EV Chargers	7,190	0
GCC-13	GHG Reduction Plan	32,122	32,122
	Total Emission Reductions from Mitigation Measures	**79,202**	**47,660**

Notes:

[1] The mitigation measures are described in more detail in the GHG Technical Report.

[2] CO_2e emissions were estimated using CalEEMod® version 2013.2.2.

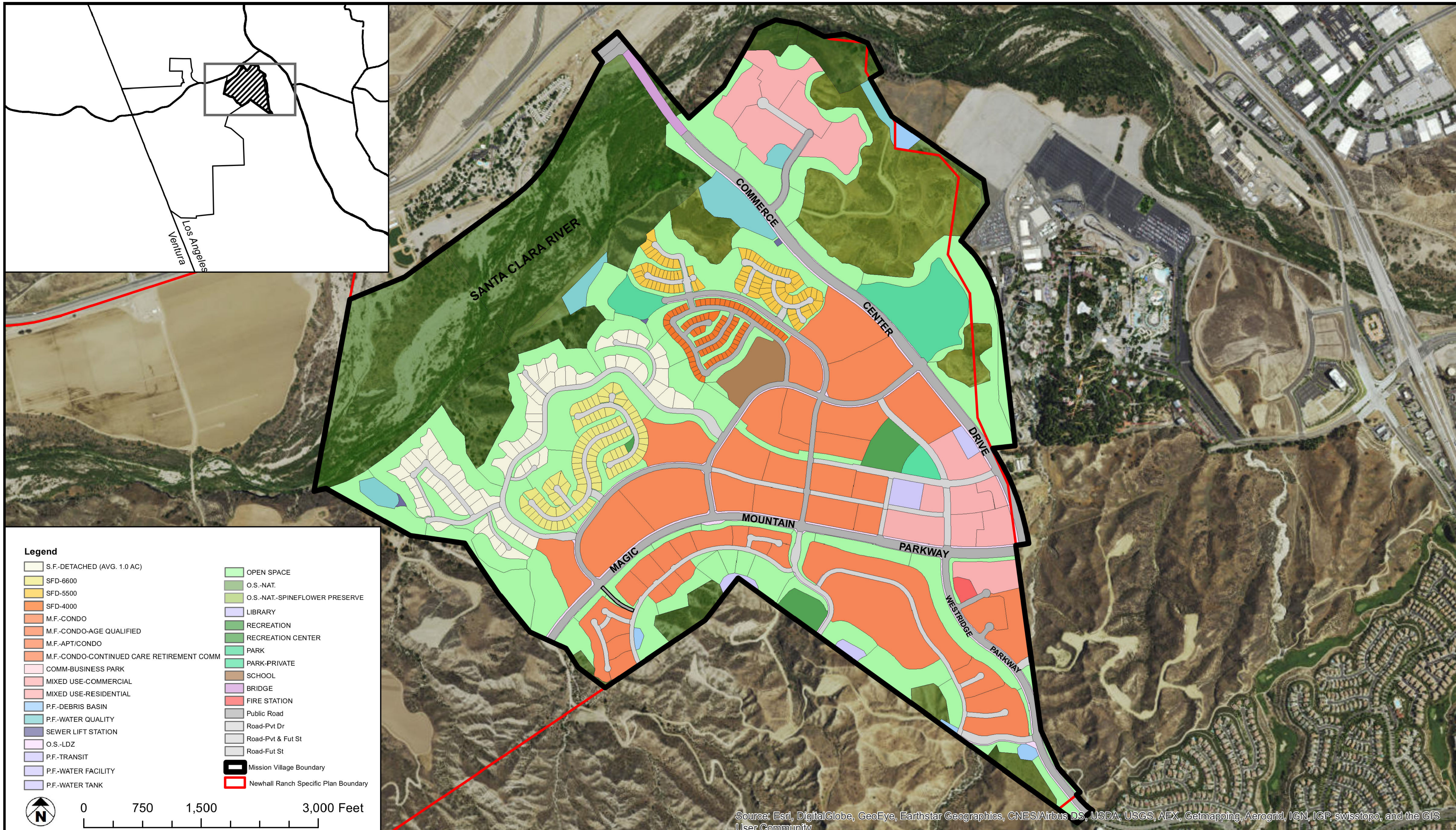
[3] CO_2e includes CO_2, CH_4, and N_2O emissions, which are weighted by their respective AR4 global warming potentials. Source: Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4): Climate Change 2007, Available online at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016.

[4] Project mitigation features under the "SCS Consistent" evaluation excludes or reduces the GHG emission reductions from mitigation measures for light-duty vehicle types.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EV - electric vehicle
GHG - greenhouse gases
MT - metric tonnes
N_2O - nitrous oxide
SCS - Sustainable Communities Strategy
yr - year

FIGURE



SOURCE: Hunsaker & Associates - 2016

Path: Z:\01_Projects\Newhall\AdHoc\0534264Q Figure 1-1 -Mission Village Land Use Plan.mxd

RAMBOLL ENVIRON

DRAFTED BY: KMY

Date: 4/29/2016

Mission Village Land Use Plan

Figure

1-1

PROJECT: 04-34264Q

APPENDIX A
CALCULATION METHODOLOGY FOR GHG EMISSIONS UNDER EXISTING CONDITIONS

Table A-1. Existing Conditions - Farming
Mission Village
Los Angeles County, California

Description	Activity Data	Units	Source(s)
Area of disturbed farmland	224.4	acre	Mission Greenhouse Gas Emissions Technical Report, Table 3-10b.
US average amount of water used for irrigation, in 2013	1.60	acre-feet water/acre irrigated	USDA. Farm and Ranch Irrigation Survey. 2013. Table 6. Available from: http://www.agcensus.usda.gov/Publications/2012/Online_Resources/Farm_and_Ranch_Irrigation_Survey/fris13_1_006_006.pdf. Accessed: September 2016.
Total acre-feet used	359.05	acre-feet	Calculations: Area of disturbed farmland * US average amount of water used for irrigation, in 2013
kWh/acre-foot	3,170	kWh/acre-feet	California Energy Commission. 2006. Refining Estimates of Water-Related Energy Use in California. PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118. Table ES-1. Available from: http://www.energy.ca.gov/2006publications/CEC-500-2006-118/CEC-500-2006-118.PDF. Accessed: September 2016.
Electricity use for water	1,138,191	kWh/year	Calculations: Total acre-feet used * kWh/acre-foot
CO_2 Emission Factor for electricity used	601.77	lb CO_2e/MWh	Mission Greenhouse Gas Emissions Technical Report, Table 3-12.
Crop grown on an acre, per year	148.6	bu	USDA. 2014. Feeds Grain Database. Average US Corn Yield Per Acre for 1999-2015. Available from: http://www.ers.usda.gov/data-products/feed-grains-database/feed-grains-custom-query.aspx. Accessed: September 2016.
Crop grown on an acre, per year	3,774.51	kg	Calculations: Crop grown on an acre (in bu) * 56 lb per corn bu * 0.453592 kg per lbs (Conversion factor of bu to lbs from: NREL. 2014. US Life Cycle Inventory Database. Available from: https://www.lcacommons.gov/nrel/search. Accessed: September 2016.
Nitrogen fertilizer required to produce 1 kg of crop	0.0169	kg	NREL. 2014. US Life Cycle Inventory Database. Available from: https://www.lcacommons.gov/nrel/search. Accessed: September 2016.
Nitrogen fertilizer required for 1 acre of crop production	63.8	kg	Calculations: Crop grown on an acre, per year (in kg) * Nitrogen fertilizer required to produce 1 kg of crop
Nitrogen fertilizer required for acreage	14,314	kg	Calculations: Area of disturbed farmland * Nitrogen fertilizer required for one acre of crop production
N_2O Emission Factor for emissions from synthetic/organic N inputs	1%	--	IPCC. 2006. Guidelines for National Greenhouse Gas Inventories. Table 11.1. Available from: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_11_Ch11_N2O&CO2.pdf. Accessed: September 2016.
Total N_2O Emissions	143.14	kg	Calculations: Nitrogen fertilizer required for acreage * N_2O Emission Factor for emissions from N inputs
GWP of N_2O	298	--	IPCC. 2007. Fourth Assessment Report: Climate Change. Available from: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016.
Total N_2O Emissions (in CO_2e)	42,657	kg	Calculations: Total N_2O Emissions * GWP of N_2O
Tractor diesel fuel usage rate	6.85	gallon/acre	USDA. 2001. The 2001 Net Energy Balance of Corn-Ethanol. Table 1. Available from: http://apps1.eere.energy.gov/news/pdfs/net_energy_balance.pdf. Accessed: September 2016.
Diesel fuel usage for acreage	1,537.14	gallon	Calculations: Area of disturbed farmland * Tractor diesel fuel usage rate
CO_2 Emission Factor per unit volume for diesel fuel	10.21	kg CO_2/gallon	The Climate Registry. 2015. General Reporting Protocol. Table 13.1. Available from: http://www.theclimateregistry.org/wp-content/uploads/2015/04/2015-TCR-Default-EF-April-2015-FINAL.pdf. Accessed: September 2016.

<u>Abbreviations:</u>

bu - bushel
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GWP - global warming potential
IPCC - Intergovernmental Panel on Climate Change
kg - kilogram
kW - kilowatt
kWh - kilowatt-hour
lb - pound
MT - metric tonnes
MWh - megawatt-hour
N - nitrogen
N_2O - nitrous oxide
NREL - National Renewable Energy Laboratory
PIER - Public Interest Energy Research
USDA - United States Department of Agriculture

Table A-2. Existing Conditions - Emissions
Mission Village
Los Angeles County, California

Description	Activity Data	Units	Source(s)
Energy use emissions associated with water	310.7	MT CO_2e	Calculations: [Electricity use for water (in kWh) * 0.001 MWh per kWh * CO_2 Emission Factor for electricity used (in lb CO_2 per MWh)] /2,204.62 lb per MT
N_2O Emissions associated with fertilizer use	42.7	MT CO_2e	Calculations: Total N_2O Emissions (in kg CO_2e)/1000 kg per MT
Diesel fuel usage	15.7	MT CO_2e	Calculations: [Diesel fuel usage * CO_2 Emission Factor for diesel] /1000 kg per MT
Total	369.0	MT CO_2e	

Abbreviations:

CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
kg - kilogram
kWh - kilowatt-hour
lb - pound
MT - metric tonnes
MWh - megawatt-hour
N_2O - nitrous oxide

APPENDIX B
CALEEMOD® OUTPUT FILES

Table B-1. CalEEMod® Model Outputs Descriptions
Mission Village
Los Angeles County, California

Construction CalEEMod® Runs	
Output	**Scenario**
Mission Village - Construction	Construction - GHGs
Operational CalEEMod® Runs	
Output	**Scenario**
MV Unmitigated Project	2028 Unmitigated Project

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel

GHGs - greenhouse gases

MV - Mission Village

Mission Village - Construction

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	1,331.00	1000sqft	40.50	1,331,000.00	0
Elementary School	900.00	1000sqft	9.50	71,500.00	0
Library	36.00	1000sqft	3.30	36,000.00	0
General Light Industry	17.10	1000sqft	1.50	17,100.00	0
Parking Lot	3,148.00	Space	28.33	1,259,200.00	0
Unenclosed Parking with Elevator	1,258.00	Space	11.32	503,200.00	0
City Park	287.80	Acre	287.80	12,536,568.00	0
Health Club	52.00	1000sqft	41.50	52,000.00	0
Apartments Low Rise	836.00	Dwelling Unit	22.10	836,000.00	2633
Condo/Townhouse	2,058.00	Dwelling Unit	132.30	2,058,000.00	6483
Congregate Care (Assisted Living)	351.00	Dwelling Unit	13.60	351,000.00	632
Retirement Community	459.00	Dwelling Unit	79.20	459,000.00	826
Single Family Housing	351.00	Dwelling Unit	88.90	631,800.00	1106
Regional Shopping Center	224.10	1000sqft	26.50	224,100.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use based on project information. Residential population from project specific estimation.

Construction Phase - Based on project construction schedule.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Based on construction phase equipment list.

Off-road Equipment - Based on construction phase equipment list. Other Material Handling Equipment is a Water Truck.

Off-road Equipment - Based on construction phase equipment list. Other Material Handling Equipment is a Water Truck.

Off-road Equipment - Based on construction phase equipment list. Other Material Handling Equipment is a Water Truck.

Off-road Equipment - Based on construction phase equipment list.

Off-road Equipment - Based on construction phase equipment list.

Off-road Equipment - Based on construction phase equipment list.

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Off-road Equipment - Based on construction phase equipment list.

Off-road Equipment - Based on construction phase equipment list.

Off-road Equipment - Based on construction phase equipment list.

Off-road Equipment - Based on construction phase equipment list.

Off-road Equipment - Based on construction phase equipment list. The second Other Material Handling Equipment is a Water Truck.

Off-road Equipment - Based on construction phase equipment list. The second Other Material Handling Equipment is a Water Truck.

Off-road Equipment - Based on construction phase equipment list. The second Other Material Handling Equipment is a Water Truck.

Trips and VMT - Default Worker and Vendor Trips. Hauling Trips in the Mass Grading phases account for hauling trips for vegetation.

Grading -

Vehicle Trips - Operational emissions calculated separately.

Woodstoves - Operational emissions calculated separately.

Energy Use - Operational emissions calculated separately.

Water And Wastewater - Operational emissions calculated separately.

Solid Waste - Operational emissions calculated separately.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	7,404,622.00	1,143,650.00
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tblArchitecturalCoating	ConstArea_Nonresidential_Interior	22,213,866.00	3,430,950.00

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tblConstructionPhase	NumDays	880.00	146.00

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tblConstructionPhase	PhaseStartDate	8/5/2026	1/1/2026
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tblConstructionPhase	PhaseStartDate	8/15/2028	1/1/2028
tblConstructionPhase	PhaseStartDate	10/6/2020	10/13/2020
tblConstructionPhase	PhaseStartDate	8/31/2021	12/1/2020
tblConstructionPhase	PhaseStartDate	8/5/2021	1/1/2021
tblConstructionPhase	PhaseStartDate	7/22/2021	11/1/2018

tblConstructionPhase	PhaseStartDate	6/11/2021	3/1/2019
tblConstructionPhase	PhaseStartDate	6/19/2020	5/1/2019
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tblEnergyUse	T24E	5.62	0.00
tblEnergyUse	T24E	2.75	0.00
tblEnergyUse	T24E	2.75	0.00
tblEnergyUse	T24E	4.90	0.00
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tblEnergyUse	T24NG	14.36	0.00
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tblEnergyUse	T24NG	14.36	0.00

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tblEnergyUse	T24NG	23,944.02	0.00
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tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
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tblFireplaces	NumberWood	17.55	0.00
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tblLandUse	LotAcreage	128.63	132.30
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tblLandUse	LotAcreage	5.14	26.50
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tblLandUse	Population	1,313.00	826.00
tblLandUse	Population	1,004.00	1,106.00
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tblOffRoadEquipment	UsageHours	8.00	10.00
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tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
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tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
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tblSolidWaste	SolidWasteGenerationRate	320.29	0.00
tblSolidWaste	SolidWasteGenerationRate	1,170.00	0.00
tblSolidWaste	SolidWasteGenerationRate	21.20	0.00
tblSolidWaste	SolidWasteGenerationRate	1,237.83	0.00
tblSolidWaste	SolidWasteGenerationRate	296.40	0.00
tblSolidWaste	SolidWasteGenerationRate	33.15	0.00
tblSolidWaste	SolidWasteGenerationRate	235.31	0.00
tblSolidWaste	SolidWasteGenerationRate	211.14	0.00
tblSolidWaste	SolidWasteGenerationRate	453.46	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	16,704.00
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tblVehicleTrips	ST_TR	7.16	0.00
tblVehicleTrips	ST_TR	1.59	0.00
tblVehicleTrips	ST_TR	7.16	0.00
tblVehicleTrips	ST_TR	2.20	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	ST_TR	2.37	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	46.55	0.00
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	ST_TR	2.81	0.00

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tblVehicleTrips	SU_TR	6.07	0.00
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tblVehicleTrips	SU_TR	25.49	0.00
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	SU_TR	2.81	0.00
tblVehicleTrips	SU_TR	8.77	0.00
tblVehicleTrips	WD_TR	6.59	0.00
tblVehicleTrips	WD_TR	1.59	0.00
tblVehicleTrips	WD_TR	6.59	0.00
tblVehicleTrips	WD_TR	2.74	0.00
tblVehicleTrips	WD_TR	15.43	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblVehicleTrips	WD_TR	11.01	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	56.24	0.00
tblVehicleTrips	WD_TR	42.94	0.00
tblVehicleTrips	WD_TR	2.81	0.00
tblVehicleTrips	WD_TR	9.57	0.00
tblWater	IndoorWaterUseRate	54,468,765.42	0.00
tblWater	IndoorWaterUseRate	134,086,984.73	0.00
tblWater	IndoorWaterUseRate	22,869,062.99	0.00
tblWater	IndoorWaterUseRate	26,097,225.49	0.00

tblWater	IndoorWaterUseRate	3,954,375.00	0.00
tblWater	IndoorWaterUseRate	236,563,618.58	0.00
tblWater	IndoorWaterUseRate	3,075,443.49	0.00
tblWater	IndoorWaterUseRate	1,126,400.70	0.00
tblWater	IndoorWaterUseRate	16,599,652.06	0.00
tblWater	IndoorWaterUseRate	29,905,697.76	0.00
tblWater	IndoorWaterUseRate	22,869,062.99	0.00
tblWater	OutdoorWaterUseRate	34,339,004.29	0.00
tblWater	OutdoorWaterUseRate	342,908,332.43	0.00
tblWater	OutdoorWaterUseRate	84,533,099.07	0.00
tblWater	OutdoorWaterUseRate	14,417,452.76	0.00
tblWater	OutdoorWaterUseRate	67,107,151.26	0.00
tblWater	OutdoorWaterUseRate	144,990,604.94	0.00
tblWater	OutdoorWaterUseRate	1,884,949.24	0.00
tblWater	OutdoorWaterUseRate	1,761,806.23	0.00
tblWater	OutdoorWaterUseRate	10,173,980.30	0.00
tblWater	OutdoorWaterUseRate	18,853,592.07	0.00
tblWater	OutdoorWaterUseRate	14,417,452.76	0.00
tblWoodstoves	NumberCatalytic	41.80	0.00
tblWoodstoves	NumberCatalytic	102.90	0.00
tblWoodstoves	NumberCatalytic	17.55	0.00
tblWoodstoves	NumberCatalytic	22.95	0.00
tblWoodstoves	NumberCatalytic	17.55	0.00
tblWoodstoves	NumberNoncatalytic	41.80	0.00
tblWoodstoves	NumberNoncatalytic	102.90	0.00
tblWoodstoves	NumberNoncatalytic	17.55	0.00
tblWoodstoves	NumberNoncatalytic	22.95	0.00
tblWoodstoves	NumberNoncatalytic	17.55	0.00

tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018											0.0000	4,504.6777	4,504.6777	1.0906	0.0000	4,527.5805
2019											0.0000	5,230.5805	5,230.5805	1.4152	0.0000	5,260.2985
2020											0.0000	4,977.8658	4,977.8658	1.3985	0.0000	5,007.2332
2021											0.0000	18,473.3440	18,473.3440	1.4327	0.0000	18,503.4300
2022											0.0000	15,380.7755	15,380.7755	0.5880	0.0000	15,393.1237
2023											0.0000	15,198.8402	15,198.8402	0.5646	0.0000	15,210.6958
2024											0.0000	15,135.8733	15,135.8733	0.5527	0.0000	15,147.4789
2025											0.0000	15,007.2274	15,007.2274	0.5380	0.0000	15,018.5260
2026											0.0000	14,892.9965	14,892.9965	0.5241	0.0000	14,904.0035
2027											0.0000	14,794.1334	14,794.1334	0.5127	0.0000	14,804.8998
2028											0.0000	15,359.8150	15,359.8150	0.5244	0.0000	15,370.8273
Total											**0.0000**	**138,956.1293**	**138,956.1293**	**9.1413**	**0.0000**	**139,148.0972**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018											0.0000	4,504.6736	4,504.6736	1.0906	0.0000	4,527.5763
2019											0.0000	5,230.5752	5,230.5752	1.4151	0.0000	5,260.2932
2020											0.0000	4,977.8607	4,977.8607	1.3985	0.0000	5,007.2280
2021											0.0000	18,473.3407	18,473.3407	1.4327	0.0000	18,503.4266
2022											0.0000	15,380.7752	15,380.7752	0.5880	0.0000	15,393.1233
2023											0.0000	15,198.8399	15,198.8399	0.5646	0.0000	15,210.6955
2024											0.0000	15,135.8730	15,135.8730	0.5527	0.0000	15,147.4786
2025											0.0000	15,007.2271	15,007.2271	0.5380	0.0000	15,018.5257
2026											0.0000	14,892.9962	14,892.9962	0.5241	0.0000	14,904.0032
2027											0.0000	14,794.1331	14,794.1331	0.5127	0.0000	14,804.8995
2028											0.0000	15,359.8147	15,359.8147	0.5244	0.0000	15,370.8270
Total											**0.0000**	**138,956.1092**	**138,956.1092**	**9.1413**	**0.0000**	**139,148.0770**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	68.4887	68.4887	0.0656	0.0000	69.8652
Energy											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**68.4887**	**68.4887**	**0.0656**	**0.0000**	**69.8652**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	68.4887	68.4887	0.0656	0.0000	69.8652
Energy											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**68.4887**	**68.4887**	**0.0656**	**0.0000**	**69.8652**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mass Grading - Utility Corridor	Grading	3/1/2018	2/28/2019	5	261	
2	Mass Grading	Grading	3/1/2018	7/21/2021	5	885	
3	Trenching - Sewer	Trenching	11/1/2018	6/10/2021	5	681	

4	Trenching - Storm Drain	Trenching	3/1/2019	6/18/2020	5	340	
5	Trenching - Water	Trenching	5/1/2019	10/5/2020	5	374	
6	Paving - Street	Paving	10/13/2020	8/30/2021	5	230	
7	Paving 0	Paving	12/1/2020	12/31/2020	5	23	
8	Building Construction 1	Building Construction	1/1/2021	8/4/2021	5	154	
9	Paving 1	Paving	1/1/2021	7/8/2021	5	135	
10	Architectural Coating 1	Architectural Coating	3/1/2021	9/20/2021	5	146	
11	Fine Grading - Stabilization	Grading	5/26/2021	7/20/2021	5	40	
12	Building Construction 2	Building Construction	1/1/2022	8/4/2022	5	154	
13	Paving 2	Paving	1/1/2022	7/8/2022	5	135	
14	Architectural Coating 2	Architectural Coating	1/1/2022	7/25/2022	5	146	
15	Building Construction 3	Building Construction	1/1/2023	8/3/2023	5	154	
16	Paving 3	Paving	1/1/2023	7/7/2023	5	135	
17	Architectural Coating 3	Architectural Coating	1/1/2023	7/24/2023	5	146	
18	Building Construction 4	Building Construction	1/1/2024	8/1/2024	5	154	
19	Paving 4	Paving	1/1/2024	7/5/2024	5	135	
20	Architectural Coating 4	Architectural Coating	1/1/2024	7/22/2024	5	146	
21	Building Construction 5	Building Construction	1/1/2025	8/4/2025	5	154	
22	Paving 5	Paving	1/1/2025	7/8/2025	5	135	
23	Architectural Coating 5	Architectural Coating	1/1/2025	7/23/2025	5	146	
24	Building Construction 6	Building Construction	1/1/2026	8/4/2026	5	154	
25	Paving 6	Paving	1/1/2026	7/8/2026	5	135	
26	Architectural Coating 6	Architectural Coating	1/1/2026	7/23/2026	5	146	
27	Building Construction 7	Building Construction	1/1/2027	8/4/2027	5	154	
28	Paving 7	Paving	1/1/2027	7/8/2027	5	135	
29	Architectural Coating 7	Architectural Coating	1/1/2027	7/23/2027	5	146	
30	Building Construction 8	Building Construction	1/1/2028	8/14/2028	5	161	
31	Paving 8	Paving	1/1/2028	7/17/2028	5	141	

32	Architectural Coating 8	Architectural Coating	1/15/2028	8/14/2028		5	151	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 10,802,160; Residential Outdoor: 3,600,720; Non-Residential Indoor: 3,430,950; Non-Residential Outdoor: 1,143,650 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mass Grading - Utility Corridor	Crawler Tractors	1	8.00	82	0.43
Mass Grading - Utility Corridor	Excavators	2	8.00	157	0.38
Mass Grading - Utility Corridor	Off-Highway Trucks	1	8.00	381	0.38
Mass Grading - Utility Corridor	Other Material Handling Equipment	1	8.00	196	0.38
Mass Grading - Utility Corridor	Rubber Tired Loaders	1	8.00	200	0.36
Mass Grading	Crawler Tractors	4	10.00	82	0.43
Mass Grading	Excavators	2	10.00	157	0.38
Mass Grading	Graders	2	10.00	162	0.41
Mass Grading	Off-Highway Trucks	2	10.00	381	0.38
Mass Grading	Other Material Handling Equipment	6	10.00	196	0.38
Mass Grading	Rubber Tired Dozers	2	10.00	358	0.40
Mass Grading	Scrapers	8	10.00	356	0.48
Mass Grading	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Trenching - Sewer	Cranes	1	8.00	226	0.29
Trenching - Sewer	Excavators	1	8.00	157	0.38
Trenching - Sewer	Other Material Handling Equipment	1	8.00	196	0.40
Trenching - Sewer	Other Material Handling Equipment	1	8.00	196	0.38
Trenching - Sewer	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trenching - Storm Drain	Cranes	1	8.00	226	0.29
Trenching - Storm Drain	Excavators	1	8.00	157	0.38
Trenching - Storm Drain	Other Material Handling Equipment	1	8.00	196	0.40
Trenching - Storm Drain	Other Material Handling Equipment	1	8.00	196	0.38
Trenching - Storm Drain	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching - Water	Cranes	1	8.00	226	0.29
Trenching - Water	Excavators	1	8.00	157	0.38
Trenching - Water	Other Material Handling Equipment	1	8.00	196	0.40
Trenching - Water	Other Material Handling Equipment	1	8.00	196	0.38
Trenching - Water	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving - Street	Graders	1	8.00	162	0.41
Paving - Street	Other Material Handling Equipment	1	8.00	196	0.38
Paving - Street	Pavers	1	8.00	89	0.42
Paving - Street	Rollers	1	8.00	84	0.38
Paving - Street	Scrapers	1	8.00	356	0.48
Paving 0	Pavers	1	8.00	89	0.42
Paving 0	Paving Equipment	2	8.00	82	0.36
Paving 0	Rollers	2	6.00	84	0.38
Building Construction 1	Cranes	1	7.00	226	0.29
Building Construction 1	Forklifts	3	8.00	89	0.20
Building Construction 1	Generator Sets	1	8.00	84	0.74
Building Construction 1	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 1	Welders	1	8.00	46	0.45
Paving 1	Pavers	1	8.00	89	0.42
Paving 1	Paving Equipment	2	8.00	82	0.36
Paving 1	Rollers	2	6.00	84	0.38
Architectural Coating 1	Air Compressors	1	6.00	78	0.48
Fine Grading - Stabilization	Crawler Tractors	1	8.00	82	0.43

Fine Grading - Stabilization	Crushing/Proc. Equipment	1	8.00	85	0.78
Fine Grading - Stabilization	Excavators	1	8.00	157	0.38
Fine Grading - Stabilization	Graders	1	8.00	162	0.41
Fine Grading - Stabilization	Off-Highway Trucks	2	8.00	381	0.38
Fine Grading - Stabilization	Other Material Handling Equipment	1	8.00	196	0.38
Fine Grading - Stabilization	Rollers	1	8.00	84	0.38
Fine Grading - Stabilization	Rubber Tired Dozers	1	8.00	358	0.40
Fine Grading - Stabilization	Scrapers	4	8.00	356	0.48
Fine Grading - Stabilization	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2	Cranes	1	7.00	226	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Paving 2	Pavers	1	8.00	89	0.42
Paving 2	Paving Equipment	2	8.00	82	0.36
Paving 2	Rollers	2	6.00	84	0.38
Architectural Coating 2	Air Compressors	1	6.00	78	0.48
Building Construction 3	Cranes	1	7.00	226	0.29
Building Construction 3	Forklifts	3	8.00	89	0.20
Building Construction 3	Generator Sets	1	8.00	84	0.74
Building Construction 3	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 3	Welders	1	8.00	46	0.45
Paving 3	Pavers	1	8.00	89	0.42
Paving 3	Paving Equipment	2	8.00	82	0.36
Paving 3	Rollers	2	6.00	84	0.38
Architectural Coating 3	Air Compressors	1	6.00	78	0.48
Building Construction 4	Cranes	1	7.00	226	0.29

Building Construction 4	Forklifts	3	8.00	89	0.20
Building Construction 4	Generator Sets	1	8.00	84	0.74
Building Construction 4	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 4	Welders	1	8.00	46	0.45
Paving 4	Pavers	1	8.00	89	0.42
Paving 4	Paving Equipment	2	8.00	82	0.36
Paving 4	Rollers	2	6.00	84	0.38
Architectural Coating 4	Air Compressors	1	6.00	78	0.48
Building Construction 5	Cranes	1	7.00	226	0.29
Building Construction 5	Forklifts	3	8.00	89	0.20
Building Construction 5	Generator Sets	1	8.00	84	0.74
Building Construction 5	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 5	Welders	1	8.00	46	0.45
Paving 5	Pavers	1	8.00	89	0.42
Paving 5	Paving Equipment	2	8.00	82	0.36
Paving 5	Rollers	2	6.00	84	0.38
Architectural Coating 5	Air Compressors	1	6.00	78	0.48
Building Construction 6	Cranes	1	7.00	226	0.29
Building Construction 6	Forklifts	3	8.00	89	0.20
Building Construction 6	Generator Sets	1	8.00	84	0.74
Building Construction 6	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 6	Welders	1	8.00	46	0.45
Paving 6	Pavers	1	8.00	89	0.42
Paving 6	Paving Equipment	2	8.00	82	0.36
Paving 6	Rollers	2	6.00	84	0.38
Architectural Coating 6	Air Compressors	1	6.00	78	0.48
Building Construction 7	Cranes	1	7.00	226	0.29
Building Construction 7	Forklifts	3	8.00	89	0.20

Building Construction 7	Generator Sets	1	8.00	84	0.74
Building Construction 7	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 7	Welders	1	8.00	46	0.45
Paving 7	Pavers	1	8.00	89	0.42
Paving 7	Paving Equipment	2	8.00	82	0.36
Paving 7	Rollers	2	6.00	84	0.38
Architectural Coating 7	Air Compressors	1	6.00	78	0.48
Building Construction 8	Cranes	1	7.00	226	0.29
Building Construction 8	Forklifts	3	8.00	89	0.20
Building Construction 8	Generator Sets	1	8.00	84	0.74
Building Construction 8	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 8	Welders	1	8.00	46	0.45
Paving 8	Pavers	1	8.00	89	0.42
Paving 8	Paving Equipment	2	8.00	82	0.36
Paving 8	Rollers	2	6.00	84	0.38
Architectural Coating 8	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mass Grading - Utility Corridor	6	15.00	0.00	16,704.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Mass Grading	27	68.00	0.00	56,640.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching - Sewer	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching - Storm Drain	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching - Water	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Street	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving 0	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1	9	9,371.00	3,061.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT

Paving 1	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 1	1	1,874.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Fine Grading - Stabilization	14	35.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	9,371.00	3,061.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 2	1	1,874.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 3	9	9,371.00	3,061.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving 3	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 3	1	1,874.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 4	9	9,371.00	3,061.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving 4	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 4	1	1,874.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 5	9	9,371.00	3,061.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving 5	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 5	1	1,874.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 6	9	9,371.00	3,061.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving 6	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 6	1	1,874.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 7	9	9,371.00	3,061.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving 7	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 7	1	1,874.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 8	9	9,371.00	3,061.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving 8	5	13.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 8	1	1,874.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Mass Grading - Utility Corridor - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	382.0377	382.0377	0.1189	0.0000	384.5354
Total											**0.0000**	**382.0377**	**382.0377**	**0.1189**	**0.0000**	**384.5354**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	460.4512	460.4512	3.5200e-003	0.0000	460.5252
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	21.7216	21.7216	1.1300e-003	0.0000	21.7454
Total											**0.0000**	**482.1728**	**482.1728**	**4.6500e-003**	**0.0000**	**482.2705**

3.2 Mass Grading - Utility Corridor - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	382.0373	382.0373	0.1189	0.0000	384.5349
Total											**0.0000**	**382.0373**	**382.0373**	**0.1189**	**0.0000**	**384.5349**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	460.4512	460.4512	3.5200e-003	0.0000	460.5252
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	21.7216	21.7216	1.1300e-003	0.0000	21.7454
Total											**0.0000**	**482.1728**	**482.1728**	**4.6500e-003**	**0.0000**	**482.2705**

3.2 Mass Grading - Utility Corridor - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	74.1328	74.1328	0.0235	0.0000	74.6254
Total											**0.0000**	**74.1328**	**74.1328**	**0.0235**	**0.0000**	**74.6254**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	88.9788	88.9788	6.9000e-004	0.0000	88.9933
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	4.1164	4.1164	2.1000e-004	0.0000	4.1208
Total											**0.0000**	**93.0952**	**93.0952**	**9.0000e-004**	**0.0000**	**93.1141**

3.2 Mass Grading - Utility Corridor - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	74.1327	74.1327	0.0235	0.0000	74.6253
Total											**0.0000**	**74.1327**	**74.1327**	**0.0235**	**0.0000**	**74.6253**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	88.9788	88.9788	6.9000e-004	0.0000	88.9933
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	4.1164	4.1164	2.1000e-004	0.0000	4.1208
Total											**0.0000**	**93.0952**	**93.0952**	**9.0000e-004**	**0.0000**	**93.1141**

3.3 Mass Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	3,024.8219	3,024.8219	0.9417	0.0000	3,044.5970
Total											**0.0000**	**3,024.8219**	**3,024.8219**	**0.9417**	**0.0000**	**3,044.5970**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	460.4512	460.4512	3.5200e-003	0.0000	460.5252
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	98.4711	98.4711	5.1400e-003	0.0000	98.5790
Total											**0.0000**	**558.9223**	**558.9223**	**8.6600e-003**	**0.0000**	**559.1041**

3.3 Mass Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	3,024.818 3	3,024.818 3	0.9417	0.0000	3,044.593 3
Total											**0.0000**	**3,024.818 3**	**3,024.818 3**	**0.9417**	**0.0000**	**3,044.593 3**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	460.4512	460.4512	3.5200e-003	0.0000	460.5252
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	98.4711	98.4711	5.1400e-003	0.0000	98.5790
Total											**0.0000**	**558.9223**	**558.9223**	**8.6600e-003**	**0.0000**	**559.1041**

3.3 Mass Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	3,562.5606	3,562.5606	1.1272	0.0000	3,586.2309
Total											**0.0000**	**3,562.5606**	**3,562.5606**	**1.1272**	**0.0000**	**3,586.2309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	540.0808	540.0808	4.1800e-003	0.0000	540.1686
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	113.2680	113.2680	5.7500e-003	0.0000	113.3888
Total											**0.0000**	**653.3489**	**653.3489**	**9.9300e-003**	**0.0000**	**653.5574**

3.3 Mass Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	3,562.556 3	3,562.556 3	1.1272	0.0000	3,586.226 6
Total											**0.0000**	**3,562.556 3**	**3,562.556 3**	**1.1272**	**0.0000**	**3,586.226 6**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	540.0808	540.0808	4.1800e-003	0.0000	540.1686
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	113.2680	113.2680	5.7500e-003	0.0000	113.3888
Total											**0.0000**	**653.3489**	**653.3489**	**9.9300e-003**	**0.0000**	**653.5574**

3.3 Mass Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	3,497.9371	3,497.9371	1.1313	0.0000	3,521.6945
Total											**0.0000**	**3,497.9371**	**3,497.9371**	**1.1313**	**0.0000**	**3,521.6945**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	530.0355	530.0355	4.2000e-003	0.0000	530.1237
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	109.1318	109.1318	5.4700e-003	0.0000	109.2468
Total											**0.0000**	**639.1673**	**639.1673**	**9.6700e-003**	**0.0000**	**639.3705**

3.3 Mass Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	3,497.933 0	3,497.933 0	1.1313	0.0000	3,521.690 3
Total											**0.0000**	**3,497.933 0**	**3,497.933 0**	**1.1313**	**0.0000**	**3,521.690 3**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	530.0355	530.0355	4.2000e-003	0.0000	530.1237
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	109.1318	109.1318	5.4700e-003	0.0000	109.2468
Total											**0.0000**	**639.1673**	**639.1673**	**9.6700e-003**	**0.0000**	**639.3705**

3.3 Mass Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	1,922.9036	1,922.9036	0.6219	0.0000	1,935.9636
Total											**0.0000**	**1,922.9036**	**1,922.9036**	**0.6219**	**0.0000**	**1,935.9636**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	291.1394	291.1394	2.3500e-003	0.0000	291.1887
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	59.0405	59.0405	2.8800e-003	0.0000	59.1009
Total											**0.0000**	**350.1798**	**350.1798**	**5.2300e-003**	**0.0000**	**350.2896**

3.3 Mass Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	1,922.9013	1,922.9013	0.6219	0.0000	1,935.9613
Total											**0.0000**	**1,922.9013**	**1,922.9013**	**0.6219**	**0.0000**	**1,935.9613**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	291.1394	291.1394	2.3500e-003	0.0000	291.1887
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	59.0405	59.0405	2.8800e-003	0.0000	59.1009
Total											**0.0000**	**350.1798**	**350.1798**	**5.2300e-003**	**0.0000**	**350.2896**

3.4 Trenching - Sewer - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	53.0096	53.0096	0.0165	0.0000	53.3562
Total											**0.0000**	**53.0096**	**53.0096**	**0.0165**	**0.0000**	**53.3562**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	3.7133	3.7133	1.9000e-004	0.0000	3.7173
Total											**0.0000**	**3.7133**	**3.7133**	**1.9000e-004**	**0.0000**	**3.7173**

3.4 Trenching - Sewer - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	53.0096	53.0096	0.0165	0.0000	53.3561
Total											**0.0000**	**53.0096**	**53.0096**	**0.0165**	**0.0000**	**53.3561**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	3.7133	3.7133	1.9000e-004	0.0000	3.7173
Total											**0.0000**	**3.7133**	**3.7133**	**1.9000e-004**	**0.0000**	**3.7173**

3.4 Trenching - Sewer - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	316.5455	316.5455	0.1002	0.0000	318.6487
Total											**0.0000**	**316.5455**	**316.5455**	**0.1002**	**0.0000**	**318.6487**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	21.6542	21.6542	1.1000e-003	0.0000	21.6773
Total											**0.0000**	**21.6542**	**21.6542**	**1.1000e-003**	**0.0000**	**21.6773**

3.4 Trenching - Sewer - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	316.5452	316.5452	0.1002	0.0000	318.6483
Total											**0.0000**	**316.5452**	**316.5452**	**0.1002**	**0.0000**	**318.6483**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	21.6542	21.6542	1.1000e-003	0.0000	21.6773
Total											**0.0000**	**21.6542**	**21.6542**	**1.1000e-003**	**0.0000**	**21.6773**

3.4 Trenching - Sewer - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	310.8521	310.8521	0.1005	0.0000	312.9633
Total											**0.0000**	**310.8521**	**310.8521**	**0.1005**	**0.0000**	**312.9633**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	20.8634	20.8634	1.0500e-003	0.0000	20.8854
Total											**0.0000**	**20.8634**	**20.8634**	**1.0500e-003**	**0.0000**	**20.8854**

3.4 Trenching - Sewer - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	310.8517	310.8517	0.1005	0.0000	312.9630
Total											**0.0000**	**310.8517**	**310.8517**	**0.1005**	**0.0000**	**312.9630**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	20.8634	20.8634	1.0500e-003	0.0000	20.8854
Total											**0.0000**	**20.8634**	**20.8634**	**1.0500e-003**	**0.0000**	**20.8854**

3.4 Trenching - Sewer - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	136.4508	136.4508	0.0441	0.0000	137.3775
Total											**0.0000**	**136.4508**	**136.4508**	**0.0441**	**0.0000**	**137.3775**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	9.0140	9.0140	4.4000e-004	0.0000	9.0233
Total											**0.0000**	**9.0140**	**9.0140**	**4.4000e-004**	**0.0000**	**9.0233**

3.4 Trenching - Sewer - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	136.4506	136.4506	0.0441	0.0000	137.3774
Total											**0.0000**	**136.4506**	**136.4506**	**0.0441**	**0.0000**	**137.3774**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	9.0140	9.0140	4.4000e-004	0.0000	9.0233
Total											**0.0000**	**9.0140**	**9.0140**	**4.4000e-004**	**0.0000**	**9.0233**

3.5 Trenching - Storm Drain - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	264.3944	264.3944	0.0837	0.0000	266.1510
Total											**0.0000**	**264.3944**	**264.3944**	**0.0837**	**0.0000**	**266.1510**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	18.0866	18.0866	9.2000e-004	0.0000	18.1059
Total											**0.0000**	**18.0866**	**18.0866**	**9.2000e-004**	**0.0000**	**18.1059**

3.5 Trenching - Storm Drain - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	264.3940	264.3940	0.0837	0.0000	266.1507
Total											**0.0000**	**264.3940**	**264.3940**	**0.0837**	**0.0000**	**266.1507**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	18.0866	18.0866	9.2000e-004	0.0000	18.1059
Total											**0.0000**	**18.0866**	**18.0866**	**9.2000e-004**	**0.0000**	**18.1059**

3.5 Trenching - Storm Drain - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	144.7479	144.7479	0.0468	0.0000	145.7310
Total											**0.0000**	**144.7479**	**144.7479**	**0.0468**	**0.0000**	**145.7310**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	9.7150	9.7150	4.9000e-004	0.0000	9.7253
Total											**0.0000**	**9.7150**	**9.7150**	**4.9000e-004**	**0.0000**	**9.7253**

3.5 Trenching - Storm Drain - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	144.7477	144.7477	0.0468	0.0000	145.7308
Total											**0.0000**	**144.7477**	**144.7477**	**0.0468**	**0.0000**	**145.7308**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	9.7150	9.7150	4.9000e-004	0.0000	9.7253
Total											**0.0000**	**9.7150**	**9.7150**	**4.9000e-004**	**0.0000**	**9.7253**

3.6 Trenching - Water - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	212.2432	212.2432	0.0672	0.0000	213.6534
Total											**0.0000**	**212.2432**	**212.2432**	**0.0672**	**0.0000**	**213.6534**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	14.5191	14.5191	7.4000e-004	0.0000	14.5346
Total											**0.0000**	**14.5191**	**14.5191**	**7.4000e-004**	**0.0000**	**14.5346**

3.6 Trenching - Water - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	212.2429	212.2429	0.0672	0.0000	213.6531
Total											**0.0000**	**212.2429**	**212.2429**	**0.0672**	**0.0000**	**213.6531**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	14.5191	14.5191	7.4000e-004	0.0000	14.5346
Total											**0.0000**	**14.5191**	**14.5191**	**7.4000e-004**	**0.0000**	**14.5346**

3.6 Trenching - Water - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	236.1052	236.1052	0.0764	0.0000	237.7088
Total											**0.0000**	**236.1052**	**236.1052**	**0.0764**	**0.0000**	**237.7088**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	15.8467	15.8467	7.9000e-004	0.0000	15.8633
Total											**0.0000**	**15.8467**	**15.8467**	**7.9000e-004**	**0.0000**	**15.8633**

3.6 Trenching - Water - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	236.1049	236.1049	0.0764	0.0000	237.7085
Total											**0.0000**	**236.1049**	**236.1049**	**0.0764**	**0.0000**	**237.7085**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	15.8467	15.8467	7.9000e-004	0.0000	15.8633
Total											**0.0000**	**15.8467**	**15.8467**	**7.9000e-004**	**0.0000**	**15.8633**

3.7 Paving - Street - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	83.6325	83.6325	0.0271	0.0000	84.2005
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**83.6325**	**83.6325**	**0.0271**	**0.0000**	**84.2005**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	4.6186	4.6186	2.3000e-004	0.0000	4.6235
Total											**0.0000**	**4.6186**	**4.6186**	**2.3000e-004**	**0.0000**	**4.6235**

3.7 Paving - Street - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	83.6324	83.6324	0.0271	0.0000	84.2004
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**83.6324**	**83.6324**	**0.0271**	**0.0000**	**84.2004**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	4.6186	4.6186	2.3000e-004	0.0000	4.6235
Total											**0.0000**	**4.6186**	**4.6186**	**2.3000e-004**	**0.0000**	**4.6235**

3.7 Paving - Street - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	248.1224	248.1224	0.0803	0.0000	249.8076
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**248.1224**	**248.1224**	**0.0803**	**0.0000**	**249.8076**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	13.4819	13.4819	6.6000e-004	0.0000	13.4957
Total											**0.0000**	**13.4819**	**13.4819**	**6.6000e-004**	**0.0000**	**13.4957**

3.7 Paving - Street - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	248.1221	248.1221	0.0803	0.0000	249.8073
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**248.1221**	**248.1221**	**0.0803**	**0.0000**	**249.8073**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	13.4819	13.4819	6.6000e-004	0.0000	13.4957
Total											**0.0000**	**13.4819**	**13.4819**	**6.6000e-004**	**0.0000**	**13.4957**

3.8 Paving 0 - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	12.5484	12.5484	4.0600e-003	0.0000	12.6336
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**12.5484**	**12.5484**	**4.0600e-003**	**0.0000**	**12.6336**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1.8315	1.8315	9.0000e-005	0.0000	1.8335
Total											**0.0000**	**1.8315**	**1.8315**	**9.0000e-005**	**0.0000**	**1.8335**

3.8 Paving 0 - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	12.5484	12.5484	4.0600e-003	0.0000	12.6336
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**12.5484**	**12.5484**	**4.0600e-003**	**0.0000**	**12.6336**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1.8315	1.8315	9.0000e-005	0.0000	1.8335
Total											**0.0000**	**1.8315**	**1.8315**	**9.0000e-005**	**0.0000**	**1.8335**

3.9 Building Construction 1 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.6215	177.6215	0.0428	0.0000	178.5201
Total											**0.0000**	**177.6215**	**177.6215**	**0.0428**	**0.0000**	**178.5201**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,925.841 9	4,925.841 9	0.0360	0.0000	4,926.598 0
Worker											0.0000	8,701.318 7	8,701.318 7	0.4243	0.0000	8,710.229 2
Total											**0.0000**	**13,627.16 06**	**13,627.16 06**	**0.4603**	**0.0000**	**13,636.82 72**

3.9 Building Construction 1 - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.6213	177.6213	0.0428	0.0000	178.5199
Total											**0.0000**	**177.6213**	**177.6213**	**0.0428**	**0.0000**	**178.5199**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,925.8419	4,925.8419	0.0360	0.0000	4,926.5980
Worker											0.0000	8,701.3187	8,701.3187	0.4243	0.0000	8,710.2292
Total											**0.0000**	**13,627.1606**	**13,627.1606**	**0.4603**	**0.0000**	**13,636.8272**

3.10 Paving 1 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6446	73.6446	0.0238	0.0000	74.1448
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6446**	**73.6446**	**0.0238**	**0.0000**	**74.1448**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.5817	10.5817	5.2000e-004	0.0000	10.5925
Total											**0.0000**	**10.5817**	**10.5817**	**5.2000e-004**	**0.0000**	**10.5925**

3.10 Paving 1 - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6445	73.6445	0.0238	0.0000	74.1447
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6445**	**73.6445**	**0.0238**	**0.0000**	**74.1447**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.5817	10.5817	5.2000e-004	0.0000	10.5925
Total											**0.0000**	**10.5817**	**10.5817**	**5.2000e-004**	**0.0000**	**10.5925**

3.11 Architectural Coating 1 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6388	18.6388	1.2800e-003	0.0000	18.6656
Total											**0.0000**	**18.6388**	**18.6388**	**1.2800e-003**	**0.0000**	**18.6656**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,649.6844	1,649.6844	0.0804	0.0000	1,651.3737
Total											**0.0000**	**1,649.6844**	**1,649.6844**	**0.0804**	**0.0000**	**1,651.3737**

3.11 Architectural Coating 1 - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6387	18.6387	1.2800e-003	0.0000	18.6656
Total											**0.0000**	**18.6387**	**18.6387**	**1.2800e-003**	**0.0000**	**18.6656**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,649.6844	1,649.6844	0.0804	0.0000	1,651.3737
Total											**0.0000**	**1,649.6844**	**1,649.6844**	**0.0804**	**0.0000**	**1,651.3737**

3.12 Fine Grading - Stabilization - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	227.4187	227.4187	0.0705	0.0000	228.8988
Total											**0.0000**	**227.4187**	**227.4187**	**0.0705**	**0.0000**	**228.8988**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	8.4412	8.4412	4.1000e-004	0.0000	8.4499
Total											**0.0000**	**8.4412**	**8.4412**	**4.1000e-004**	**0.0000**	**8.4499**

3.12 Fine Grading - Stabilization - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	227.4184	227.4184	0.0705	0.0000	228.8985
Total											**0.0000**	**227.4184**	**227.4184**	**0.0705**	**0.0000**	**228.8985**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	8.4412	8.4412	4.1000e-004	0.0000	8.4499
Total											**0.0000**	**8.4412**	**8.4412**	**4.1000e-004**	**0.0000**	**8.4499**

3.13 Building Construction 2 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.6891	177.6891	0.0425	0.0000	178.5818
Total											**0.0000**	**177.6891**	**177.6891**	**0.0425**	**0.0000**	**178.5818**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,921.778 9	4,921.778 9	0.0368	0.0000	4,922.551 2
Worker											0.0000	8,556.380 6	8,556.380 6	0.4062	0.0000	8,564.910 4
Total											**0.0000**	**13,478.15 95**	**13,478.15 95**	**0.4430**	**0.0000**	**13,487.46 16**

3.13 Building Construction 2 - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.6889	177.6889	0.0425	0.0000	178.5816
Total											**0.0000**	**177.6889**	**177.6889**	**0.0425**	**0.0000**	**178.5816**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,921.7789	4,921.7789	0.0368	0.0000	4,922.5512
Worker											0.0000	8,556.3806	8,556.3806	0.4062	0.0000	8,564.9104
Total											**0.0000**	**13,478.1595**	**13,478.1595**	**0.4430**	**0.0000**	**13,487.4616**

3.14 Paving 2 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6772	73.6772	0.0238	0.0000	74.1776
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6772**	**73.6772**	**0.0238**	**0.0000**	**74.1776**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.4054	10.4054	4.9000e-004	0.0000	10.4158
Total											**0.0000**	**10.4054**	**10.4054**	**4.9000e-004**	**0.0000**	**10.4158**

3.14 Paving 2 - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6771	73.6771	0.0238	0.0000	74.1775
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6771**	**73.6771**	**0.0238**	**0.0000**	**74.1775**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.4054	10.4054	4.9000e-004	0.0000	10.4158
Total											**0.0000**	**10.4054**	**10.4054**	**4.9000e-004**	**0.0000**	**10.4158**

3.15 Architectural Coating 2 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6388	18.6388	1.2100e-003	0.0000	18.6642
Total											**0.0000**	**18.6388**	**18.6388**	**1.2100e-003**	**0.0000**	**18.6642**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,622.2055	1,622.2055	0.0770	0.0000	1,623.8227
Total											**0.0000**	**1,622.2055**	**1,622.2055**	**0.0770**	**0.0000**	**1,623.8227**

3.15 Architectural Coating 2 - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6387	18.6387	1.2100e-003	0.0000	18.6642
Total											**0.0000**	**18.6387**	**18.6387**	**1.2100e-003**	**0.0000**	**18.6642**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,622.2055	1,622.2055	0.0770	0.0000	1,623.8227
Total											**0.0000**	**1,622.2055**	**1,622.2055**	**0.0770**	**0.0000**	**1,623.8227**

3.16 Building Construction 3 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.7504	177.7504	0.0422	0.0000	178.6370
Total											**0.0000**	**177.7504**	**177.7504**	**0.0422**	**0.0000**	**178.6370**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,898.3408	4,898.3408	0.0330	0.0000	4,899.0327
Worker											0.0000	8,423.2327	8,423.2327	0.3900	0.0000	8,431.4231
Total											**0.0000**	**13,321.5735**	**13,321.5735**	**0.4230**	**0.0000**	**13,330.4558**

3.16 Building Construction 3 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.7501	177.7501	0.0422	0.0000	178.6368
Total											**0.0000**	**177.7501**	**177.7501**	**0.0422**	**0.0000**	**178.6368**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,898.3408	4,898.3408	0.0330	0.0000	4,899.0327
Worker											0.0000	8,423.2327	8,423.2327	0.3900	0.0000	8,431.4231
Total											**0.0000**	**13,321.5735**	**13,321.5735**	**0.4230**	**0.0000**	**13,330.4558**

3.17 Paving 3 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6721	73.6721	0.0238	0.0000	74.1725
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6721**	**73.6721**	**0.0238**	**0.0000**	**74.1725**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.2435	10.2435	4.7000e-004	0.0000	10.2535
Total											**0.0000**	**10.2435**	**10.2435**	**4.7000e-004**	**0.0000**	**10.2535**

3.17 Paving 3 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6720	73.6720	0.0238	0.0000	74.1724
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6720**	**73.6720**	**0.0238**	**0.0000**	**74.1724**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.2435	10.2435	4.7000e-004	0.0000	10.2535
Total											**0.0000**	**10.2435**	**10.2435**	**4.7000e-004**	**0.0000**	**10.2535**

3.18 Architectural Coating 3 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6388	18.6388	1.1200e-003	0.0000	18.6622
Total											**0.0000**	**18.6388**	**18.6388**	**1.1200e-003**	**0.0000**	**18.6622**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,596.9620	1,596.9620	0.0739	0.0000	1,598.5148
Total											**0.0000**	**1,596.9620**	**1,596.9620**	**0.0739**	**0.0000**	**1,598.5148**

3.18 Architectural Coating 3 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6387	18.6387	1.1200e-003	0.0000	18.6622
Total											**0.0000**	**18.6387**	**18.6387**	**1.1200e-003**	**0.0000**	**18.6622**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,596.9620	1,596.9620	0.0739	0.0000	1,598.5148
Total											**0.0000**	**1,596.9620**	**1,596.9620**	**0.0739**	**0.0000**	**1,598.5148**

3.19 Building Construction 4 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.7845	177.7845	0.0420	0.0000	178.6660
Total											**0.0000**	**177.7845**	**177.7845**	**0.0420**	**0.0000**	**178.6660**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,909.2276	4,909.2276	0.0334	0.0000	4,909.9282
Worker											0.0000	8,361.1897	8,361.1897	0.3799	0.0000	8,369.1684
Total											**0.0000**	**13,270.4172**	**13,270.4172**	**0.4133**	**0.0000**	**13,279.0966**

3.19 Building Construction 4 - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.7843	177.7843	0.0420	0.0000	178.6658
Total											**0.0000**	**177.7843**	**177.7843**	**0.0420**	**0.0000**	**178.6658**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,909.2276	4,909.2276	0.0334	0.0000	4,909.9282
Worker											0.0000	8,361.1897	8,361.1897	0.3799	0.0000	8,369.1684
Total											**0.0000**	**13,270.4172**	**13,270.4172**	**0.4133**	**0.0000**	**13,279.0966**

3.20 Paving 4 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6655	73.6655	0.0238	0.0000	74.1658
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6655**	**73.6655**	**0.0238**	**0.0000**	**74.1658**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.1681	10.1681	4.6000e-004	0.0000	10.1778
Total											**0.0000**	**10.1681**	**10.1681**	**4.6000e-004**	**0.0000**	**10.1778**

3.20 Paving 4 - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6654	73.6654	0.0238	0.0000	74.1657
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6654**	**73.6654**	**0.0238**	**0.0000**	**74.1657**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.1681	10.1681	4.6000e-004	0.0000	10.1778
Total											**0.0000**	**10.1681**	**10.1681**	**4.6000e-004**	**0.0000**	**10.1778**

3.21 Architectural Coating 4 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6388	18.6388	1.0500e-003	0.0000	18.6608
Total											**0.0000**	**18.6388**	**18.6388**	**1.0500e-003**	**0.0000**	**18.6608**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,585.1993	1,585.1993	0.0720	0.0000	1,586.7119
Total											**0.0000**	**1,585.1993**	**1,585.1993**	**0.0720**	**0.0000**	**1,586.7119**

3.21 Architectural Coating 4 - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6387	18.6387	1.0500e-003	0.0000	18.6608
Total											**0.0000**	**18.6387**	**18.6387**	**1.0500e-003**	**0.0000**	**18.6608**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,585.1993	1,585.1993	0.0720	0.0000	1,586.7119
Total											**0.0000**	**1,585.1993**	**1,585.1993**	**0.0720**	**0.0000**	**1,586.7119**

3.22 Building Construction 5 - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.8387	177.8387	0.0417	0.0000	178.7152
Total											**0.0000**	**177.8387**	**177.8387**	**0.0417**	**0.0000**	**178.7152**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,909.473 1	4,909.473 1	0.0335	0.0000	4,910.176 5
Worker											0.0000	8,252.910 0	8,252.910 0	0.3678	0.0000	8,260.633 4
Total											**0.0000**	**13,162.38 30**	**13,162.38 30**	**0.4013**	**0.0000**	**13,170.80 99**

3.22 Building Construction 5 - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.8385	177.8385	0.0417	0.0000	178.7150
Total											**0.0000**	**177.8385**	**177.8385**	**0.0417**	**0.0000**	**178.7150**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,909.4731	4,909.4731	0.0335	0.0000	4,910.1765
Worker											0.0000	8,252.9100	8,252.9100	0.3678	0.0000	8,260.6334
Total											**0.0000**	**13,162.3830**	**13,162.3830**	**0.4013**	**0.0000**	**13,170.8099**

3.23 Paving 5 - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6601	73.6601	0.0238	0.0000	74.1603
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6601**	**73.6601**	**0.0238**	**0.0000**	**74.1603**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.0364	10.0364	4.5000e-004	0.0000	10.0458
Total											**0.0000**	**10.0364**	**10.0364**	**4.5000e-004**	**0.0000**	**10.0458**

3.23 Paving 5 - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6600	73.6600	0.0238	0.0000	74.1603
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6600**	**73.6600**	**0.0238**	**0.0000**	**74.1603**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.0364	10.0364	4.5000e-004	0.0000	10.0458
Total											**0.0000**	**10.0364**	**10.0364**	**4.5000e-004**	**0.0000**	**10.0458**

3.24 Architectural Coating 5 - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6388	18.6388	1.0200e-003	0.0000	18.6601
Total											**0.0000**	**18.6388**	**18.6388**	**1.0200e-003**	**0.0000**	**18.6601**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,564.6705	1,564.6705	0.0697	0.0000	1,566.1348
Total											**0.0000**	**1,564.6705**	**1,564.6705**	**0.0697**	**0.0000**	**1,566.1348**

3.24 Architectural Coating 5 - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6387	18.6387	1.0200e-003	0.0000	18.6601
Total											**0.0000**	**18.6387**	**18.6387**	**1.0200e-003**	**0.0000**	**18.6601**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,564.6705	1,564.6705	0.0697	0.0000	1,566.1348
Total											**0.0000**	**1,564.6705**	**1,564.6705**	**0.0697**	**0.0000**	**1,566.1348**

3.25 Building Construction 6 - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.8387	177.8387	0.0417	0.0000	178.7152
Total											**0.0000**	**177.8387**	**177.8387**	**0.0417**	**0.0000**	**178.7152**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,908.4517	4,908.4517	0.0324	0.0000	4,909.1326
Worker											0.0000	8,157.8404	8,157.8404	0.3570	0.0000	8,165.3378
Total											**0.0000**	**13,066.2921**	**13,066.2921**	**0.3894**	**0.0000**	**13,074.4703**

3.25 Building Construction 6 - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.8385	177.8385	0.0417	0.0000	178.7150
Total											**0.0000**	**177.8385**	**177.8385**	**0.0417**	**0.0000**	**178.7150**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,908.4517	4,908.4517	0.0324	0.0000	4,909.1326
Worker											0.0000	8,157.8404	8,157.8404	0.3570	0.0000	8,165.3378
Total											**0.0000**	**13,066.2921**	**13,066.2921**	**0.3894**	**0.0000**	**13,074.4703**

3.26 Paving 6 - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6601	73.6601	0.0238	0.0000	74.1603
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6601**	**73.6601**	**0.0238**	**0.0000**	**74.1603**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	9.9208	9.9208	4.3000e-004	0.0000	9.9299
Total											**0.0000**	**9.9208**	**9.9208**	**4.3000e-004**	**0.0000**	**9.9299**

3.26 Paving 6 - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6600	73.6600	0.0238	0.0000	74.1603
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6600**	**73.6600**	**0.0238**	**0.0000**	**74.1603**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	9.9208	9.9208	4.3000e-004	0.0000	9.9299
Total											**0.0000**	**9.9208**	**9.9208**	**4.3000e-004**	**0.0000**	**9.9299**

3.27 Architectural Coating 6 - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6388	18.6388	1.0200e-003	0.0000	18.6601
Total											**0.0000**	**18.6388**	**18.6388**	**1.0200e-003**	**0.0000**	**18.6601**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,546.6462	1,546.6462	0.0677	0.0000	1,548.0677
Total											**0.0000**	**1,546.6462**	**1,546.6462**	**0.0677**	**0.0000**	**1,548.0677**

3.27 Architectural Coating 6 - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6387	18.6387	1.0200e-003	0.0000	18.6601
Total											**0.0000**	**18.6387**	**18.6387**	**1.0200e-003**	**0.0000**	**18.6601**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,546.6462	1,546.6462	0.0677	0.0000	1,548.0677
Total											**0.0000**	**1,546.6462**	**1,546.6462**	**0.0677**	**0.0000**	**1,548.0677**

3.28 Building Construction 7 - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.8387	177.8387	0.0417	0.0000	178.7152
Total											**0.0000**	**177.8387**	**177.8387**	**0.0417**	**0.0000**	**178.7152**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,908.8194	4,908.8194	0.0325	0.0000	4,909.5018
Worker											0.0000	8,074.5096	8,074.5096	0.3473	0.0000	8,081.8037
Total											**0.0000**	**12,983.3290**	**12,983.3290**	**0.3798**	**0.0000**	**12,991.3055**

3.28 Building Construction 7 - 2027

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	177.8385	177.8385	0.0417	0.0000	178.7150
Total											**0.0000**	**177.8385**	**177.8385**	**0.0417**	**0.0000**	**178.7150**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	4,908.8194	4,908.8194	0.0325	0.0000	4,909.5018
Worker											0.0000	8,074.5096	8,074.5096	0.3473	0.0000	8,081.8037
Total											**0.0000**	**12,983.3290**	**12,983.3290**	**0.3798**	**0.0000**	**12,991.3055**

3.29 Paving 7 - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6601	73.6601	0.0238	0.0000	74.1603
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6601**	**73.6601**	**0.0238**	**0.0000**	**74.1603**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	9.8194	9.8194	4.2000e-004	0.0000	9.8283
Total											**0.0000**	**9.8194**	**9.8194**	**4.2000e-004**	**0.0000**	**9.8283**

3.29 Paving 7 - 2027

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	73.6600	73.6600	0.0238	0.0000	74.1603
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**73.6600**	**73.6600**	**0.0238**	**0.0000**	**74.1603**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	9.8194	9.8194	4.2000e-004	0.0000	9.8283
Total											**0.0000**	**9.8194**	**9.8194**	**4.2000e-004**	**0.0000**	**9.8283**

3.30 Architectural Coating 7 - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6388	18.6388	1.0200e-003	0.0000	18.6601
Total											**0.0000**	**18.6388**	**18.6388**	**1.0200e-003**	**0.0000**	**18.6601**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,530.8475	1,530.8475	0.0659	0.0000	1,532.2304
Total											**0.0000**	**1,530.8475**	**1,530.8475**	**0.0659**	**0.0000**	**1,532.2304**

3.30 Architectural Coating 7 - 2027

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	18.6387	18.6387	1.0200e-003	0.0000	18.6601
Total											**0.0000**	**18.6387**	**18.6387**	**1.0200e-003**	**0.0000**	**18.6601**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,530.8475	1,530.8475	0.0659	0.0000	1,532.2304
Total											**0.0000**	**1,530.8475**	**1,530.8475**	**0.0659**	**0.0000**	**1,532.2304**

3.31 Building Construction 8 - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	185.9222	185.9222	0.0436	0.0000	186.8386
Total											**0.0000**	**185.9222**	**185.9222**	**0.0436**	**0.0000**	**186.8386**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	5,132.0147	5,132.0147	0.0338	0.0000	5,132.7247
Worker											0.0000	8,366.3331	8,366.3331	0.3542	0.0000	8,373.7705
Total											**0.0000**	**13,498.3478**	**13,498.3478**	**0.3880**	**0.0000**	**13,506.4952**

3.31 Building Construction 8 - 2028

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	185.9220	185.9220	0.0436	0.0000	186.8384
Total											**0.0000**	**185.9220**	**185.9220**	**0.0436**	**0.0000**	**186.8384**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	5,132.0147	5,132.0147	0.0338	0.0000	5,132.7247
Worker											0.0000	8,366.3331	8,366.3331	0.3542	0.0000	8,373.7705
Total											**0.0000**	**13,498.3478**	**13,498.3478**	**0.3880**	**0.0000**	**13,506.4952**

3.32 Paving 8 - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	76.9338	76.9338	0.0249	0.0000	77.4564
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**76.9338**	**76.9338**	**0.0249**	**0.0000**	**77.4564**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.1645	10.1645	4.3000e-004	0.0000	10.1735
Total											**0.0000**	**10.1645**	**10.1645**	**4.3000e-004**	**0.0000**	**10.1735**

3.32 Paving 8 - 2028

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road											0.0000	76.9337	76.9337	0.0249	0.0000	77.4563
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**76.9337**	**76.9337**	**0.0249**	**0.0000**	**77.4563**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	10.1645	10.1645	4.3000e-004	0.0000	10.1735
Total											**0.0000**	**10.1645**	**10.1645**	**4.3000e-004**	**0.0000**	**10.1735**

3.33 Architectural Coating 8 - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	19.2771	19.2771	1.0500e-003	0.0000	19.2992
Total											**0.0000**	**19.2771**	**19.2771**	**1.0500e-003**	**0.0000**	**19.2992**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,569.1696	1,569.1696	0.0664	0.0000	1,570.5645
Total											**0.0000**	**1,569.1696**	**1,569.1696**	**0.0664**	**0.0000**	**1,570.5645**

3.33 Architectural Coating 8 - 2028

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	19.2770	19.2770	1.0500e-003	0.0000	19.2991
Total											**0.0000**	**19.2770**	**19.2770**	**1.0500e-003**	**0.0000**	**19.2991**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1,569.1696	1,569.1696	0.0664	0.0000	1,570.5645
Total											**0.0000**	**1,569.1696**	**1,569.1696**	**0.0664**	**0.0000**	**1,570.5645**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	0.00	0.00	0.00		
City Park	0.00	0.00	0.00		
Condo/Townhouse	0.00	0.00	0.00		
Congregate Care (Assisted Living)	0.00	0.00	0.00		
Elementary School	0.00	0.00	0.00		
General Light Industry	0.00	0.00	0.00		
General Office Building	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Library	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
Retirement Community	0.00	0.00	0.00		
Single Family Housing	0.00	0.00	0.00		
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	19.80	9.60	12.90	40.20	19.20	40.60	86	11	3
City Park	18.50	10.10	7.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse	19.80	9.60	12.90	40.20	19.20	40.60	86	11	3
Congregate Care (Assisted	19.80	9.60	12.90	40.20	19.20	40.60	86	11	3
Elementary School	18.50	10.10	7.90	65.00	30.00	5.00	63	25	12
General Light Industry	18.50	10.10	7.90	59.00	28.00	13.00	92	5	3
General Office Building	18.50	10.10	7.90	33.00	48.00	19.00	77	19	4
Health Club	18.50	10.10	7.90	16.90	64.10	19.00	52	39	9
Library	18.50	10.10	7.90	52.00	43.00	5.00	44	44	12
Parking Lot	18.50	10.10	7.90	0.00	0.00	0.00	0	0	0
Regional Shopping Center	18.50	10.10	7.90	16.30	64.70	19.00	54	35	11
Retirement Community	19.80	9.60	12.90	40.20	19.20	40.60	86	11	3
Single Family Housing	19.80	9.60	12.90	40.20	19.20	40.60	86	11	3
Unenclosed Parking with	18.50	10.10	7.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.508453	0.058534	0.182003	0.128323	0.043028	0.007073	0.018375	0.041612	0.002788	0.003272	0.003888	0.000508	0.002143

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Congregate Care (Assisted Living)	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Elementary School	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Light Industry	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Library	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Retirement Community	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Congregate Care (Assisted Living)	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Elementary School	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Light Industry	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Library	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Retirement Community	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Apartments Low Rise	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	0	0.0000	0.0000	0.0000	0.0000
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000
Congregate Care (Assisted Living)	0	0.0000	0.0000	0.0000	0.0000
Elementary School	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
Library	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
Retirement Community	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	0	0.0000	0.0000	0.0000	0.0000
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000
Congregate Care (Assisted Living)	0	0.0000	0.0000	0.0000	0.0000
Elementary School	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
Library	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
Retirement Community	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	68.4887	68.4887	0.0656	0.0000	69.8652
Unmitigated											0.0000	68.4887	68.4887	0.0656	0.0000	69.8652

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	68.4887	68.4887	0.0656	0.0000	69.8652
Total											**0.0000**	**68.4887**	**68.4887**	**0.0656**	**0.0000**	**69.8652**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	68.4887	68.4887	0.0656	0.0000	69.8652
Total											**0.0000**	**68.4887**	**68.4887**	**0.0656**	**0.0000**	**69.8652**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0 / 0	0.0000	0.0000	0.0000	0.0000
City Park	0 / 0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0 / 0	0.0000	0.0000	0.0000	0.0000
Congregate Care (Assisted Living)	0 / 0	0.0000	0.0000	0.0000	0.0000
Elementary School	0 / 0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0 / 0	0.0000	0.0000	0.0000	0.0000
Library	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0 / 0	0.0000	0.0000	0.0000	0.0000
Retirement Community	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0 / 0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0 / 0	0.0000	0.0000	0.0000	0.0000
City Park	0 / 0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0 / 0	0.0000	0.0000	0.0000	0.0000
Congregate Care (Assisted Living)	0 / 0	0.0000	0.0000	0.0000	0.0000
Elementary School	0 / 0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0 / 0	0.0000	0.0000	0.0000	0.0000
Library	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0 / 0	0.0000	0.0000	0.0000	0.0000
Retirement Community	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0 / 0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	0	0.0000	0.0000	0.0000	0.0000
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000
Congregate Care (Assisted Living)	0	0.0000	0.0000	0.0000	0.0000
Elementary School	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
Library	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
Retirement Community	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	0	0.0000	0.0000	0.0000	0.0000
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000
Congregate Care (Assisted Living)	0	0.0000	0.0000	0.0000	0.0000
Elementary School	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
Library	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
Retirement Community	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

MV Unmitigated Project

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	1,331.00	1000sqft	40.50	1,331,000.00	0
Elementary School	900.00	Student	9.50	100,000.00	0
Library	36.00	1000sqft	3.30	36,000.00	0
General Light Industry	17.10	1000sqft	1.50	17,100.00	0
Parking Lot	3,148.00	Space	28.33	1,259,200.00	0
Unenclosed Parking with Elevator	1,258.00	Space	11.32	503,200.00	0
City Park	287.80	Acre	287.80	12,536,568.00	0
Health Club	52.00	1000sqft	41.50	52,000.00	0
Apartments Low Rise	836.00	Dwelling Unit	22.10	836,000.00	2633
Condo/Townhouse	2,058.00	Dwelling Unit	132.30	2,058,000.00	6483
Congregate Care (Assisted Living)	351.00	Dwelling Unit	13.60	351,000.00	632
Retirement Community	459.00	Dwelling Unit	79.20	459,000.00	826
Single Family Housing	351.00	Dwelling Unit	88.90	631,800.00	1106
Regional Shopping Center	224.10	1000sqft	26.50	224,100.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	411.99	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Includes 45% RPS.

Land Use - Land use based on project information. Residential population from project specific estimation.

Construction Phase - Construction emissions calculated separately.

Off-road Equipment -

Vehicle Trips - Trip rates and lengths are based on trip generation summary. Trips are assumed to be 100% primary trips.

Vechicle Emission Factors - EMFAC2014. Includes reduction from Pavley/ACC. Excludes LCFS.

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Assumed that any decorative fireplaces are captured in the ConSol residential building energy analysis.

Energy Use - Updated to Title 24 - 2016 based on ConSol building analysis.

Water And Wastewater - Water use updated according to water study.

Solid Waste - Solid waste generation updated according to data for Santa Clarita, CA.

Land Use Change - Vegetation based on project information.

Sequestration - Number of trees based on project information.

Waste Mitigation - 75% diverted.

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	810.36	308.00
tblEnergyUse	LightingElect	1,001.10	308.00
tblEnergyUse	LightingElect	741.44	308.00
tblEnergyUse	LightingElect	2.98	0.00
tblEnergyUse	LightingElect	3.55	0.00
tblEnergyUse	LightingElect	4.29	0.00
tblEnergyUse	LightingElect	3.55	0.00

tblEnergyUse	LightingElect	3.55	0.00
tblEnergyUse	LightingElect	0.88	0.44
tblEnergyUse	LightingElect	7.04	0.00
tblEnergyUse	LightingElect	1,001.10	308.00
tblEnergyUse	LightingElect	1,608.84	767.00
tblEnergyUse	LightingElect	2.63	1.31
tblEnergyUse	NT24E	2,630.88	2,855.00
tblEnergyUse	NT24E	3,126.97	2,855.00
tblEnergyUse	NT24E	2,553.86	2,855.00
tblEnergyUse	NT24E	1.59	0.00
tblEnergyUse	NT24E	5.75	0.00
tblEnergyUse	NT24E	4.62	0.00
tblEnergyUse	NT24E	5.75	0.00
tblEnergyUse	NT24E	5.75	0.00
tblEnergyUse	NT24E	3.23	0.00
tblEnergyUse	NT24E	3,126.97	2,855.00
tblEnergyUse	NT24E	5,089.81	4,244.00
tblEnergyUse	NT24NG	2,616.15	1,200.00
tblEnergyUse	NT24NG	2,951.00	1,200.00
tblEnergyUse	NT24NG	1,718.92	1,200.00
tblEnergyUse	NT24NG	1.08	0.00
tblEnergyUse	NT24NG	4.45	0.00
tblEnergyUse	NT24NG	0.39	0.00
tblEnergyUse	NT24NG	4.45	0.00
tblEnergyUse	NT24NG	4.45	0.00
tblEnergyUse	NT24NG	0.49	0.00
tblEnergyUse	NT24NG	2,951.00	1,200.00
tblEnergyUse	NT24NG	5,856.92	1,500.00

tblEnergyUse	T24E	229.94	499.00
tblEnergyUse	T24E	269.81	499.00
tblEnergyUse	T24E	246.66	499.00
tblEnergyUse	T24E	2.13	6.18
tblEnergyUse	T24E	2.75	9.46
tblEnergyUse	T24E	5.62	13.41
tblEnergyUse	T24E	2.75	9.46
tblEnergyUse	T24E	2.75	9.46
tblEnergyUse	T24E	4.90	11.89
tblEnergyUse	T24E	269.81	499.00
tblEnergyUse	T24E	596.10	879.00
tblEnergyUse	T24NG	11,615.22	8,700.00
tblEnergyUse	T24NG	11,455.03	8,700.00
tblEnergyUse	T24NG	8,201.59	8,700.00
tblEnergyUse	T24NG	9.81	9.39
tblEnergyUse	T24NG	14.36	19.27
tblEnergyUse	T24NG	10.54	9.43
tblEnergyUse	T24NG	14.36	19.27
tblEnergyUse	T24NG	14.36	19.27
tblEnergyUse	T24NG	1.21	1.32
tblEnergyUse	T24NG	11,455.03	8,700.00
tblEnergyUse	T24NG	23,944.02	20,500.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	710.60	0.00

tblFireplaces	NumberGas	1,749.30	0.00
tblFireplaces	NumberGas	298.35	0.00
tblFireplaces	NumberGas	390.15	0.00
tblFireplaces	NumberGas	298.35	0.00
tblFireplaces	NumberNoFireplace	83.60	836.00
tblFireplaces	NumberNoFireplace	205.80	2,058.00
tblFireplaces	NumberNoFireplace	35.10	351.00
tblFireplaces	NumberNoFireplace	45.90	459.00
tblFireplaces	NumberNoFireplace	35.10	351.00
tblFireplaces	NumberWood	41.80	0.00
tblFireplaces	NumberWood	102.90	0.00
tblFireplaces	NumberWood	17.55	0.00
tblFireplaces	NumberWood	22.95	0.00
tblFireplaces	NumberWood	17.55	0.00
tblLandUse	LandUseSquareFeet	75,243.03	100,000.00
tblLandUse	LotAcreage	30.56	40.50
tblLandUse	LotAcreage	1.73	9.50
tblLandUse	LotAcreage	0.83	3.30
tblLandUse	LotAcreage	0.39	1.50
tblLandUse	LotAcreage	1.19	41.50
tblLandUse	LotAcreage	52.25	22.10
tblLandUse	LotAcreage	128.63	132.30
tblLandUse	LotAcreage	21.94	13.60
tblLandUse	LotAcreage	91.80	79.20
tblLandUse	LotAcreage	113.96	88.90
tblLandUse	LotAcreage	5.14	26.50
tblLandUse	Population	2,391.00	2,633.00
tblLandUse	Population	5,886.00	6,483.00

tblLandUse	Population	1,004.00	632.00
tblLandUse	Population	1,313.00	826.00
tblLandUse	Population	1,004.00	1,106.00
tblProjectCharacteristics	CO2IntensityFactor	630.89	411.99
tblProjectCharacteristics	OperationalYear	2014	2025
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSequestration	NumberOfNewTrees	0.00	4,985.00
tblSolidWaste	SolidWasteGenerationRate	384.56	3,652.53
tblSolidWaste	SolidWasteGenerationRate	24.75	0.00
tblSolidWaste	SolidWasteGenerationRate	946.68	8,991.50
tblSolidWaste	SolidWasteGenerationRate	320.29	1,190.01
tblSolidWaste	SolidWasteGenerationRate	164.25	140.40
tblSolidWaste	SolidWasteGenerationRate	21.20	70.96
tblSolidWaste	SolidWasteGenerationRate	1,237.83	14,949.79
tblSolidWaste	SolidWasteGenerationRate	296.40	592.80
tblSolidWaste	SolidWasteGenerationRate	33.15	141.91
tblSolidWaste	SolidWasteGenerationRate	235.31	2,517.70
tblSolidWaste	SolidWasteGenerationRate	211.14	1,145.94
tblSolidWaste	SolidWasteGenerationRate	453.46	1,533.54
tblVehicleEF	HHD	9.9860e-003	0.10
tblVehicleEF	HHD	1.54	1.12
tblVehicleEF	HHD	1,534.61	1,543.83
tblVehicleEF	HHD	0.04	0.03
tblVehicleEF	HHD	2.38	1.98
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.08	6.0276e-003
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.7190e-003	8.8491e-003
tblVehicleEF	HHD	0.08	5.7664e-003
tblVehicleEF	HHD	0.22	0.09
tblVehicleEF	HHD	0.26	3.5593e-004
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.25	0.20
tblVehicleEF	HHD	0.26	3.5593e-004
tblVehicleEF	LDA	9.6760e-003	3.1947e-003
tblVehicleEF	LDA	3.9570e-003	2.6598e-003
tblVehicleEF	LDA	0.68	0.45
tblVehicleEF	LDA	1.05	0.69
tblVehicleEF	LDA	237.84	218.54
tblVehicleEF	LDA	48.01	45.34
tblVehicleEF	LDA	0.52	0.54
tblVehicleEF	LDA	0.06	0.03
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	8.0000e-003	8.0000e-003
tblVehicleEF	LDA	2.3090e-003	1.7073e-003
tblVehicleEF	LDA	4.2880e-003	1.9908e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	2.0000e-003	2.0000e-003
tblVehicleEF	LDA	2.1420e-003	1.5715e-003
tblVehicleEF	LDA	3.9790e-003	1.8305e-003
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.08	0.07
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.01	8.0293e-003

tblVehicleEF	LDA	0.19	0.03
tblVehicleEF	LDA	0.07	0.04
tblVehicleEF	LDA	3.7410e-003	2.1876e-003
tblVehicleEF	LDA	7.5600e-004	4.6462e-004
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.08	0.07
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.19	0.03
tblVehicleEF	LDA	0.07	0.04
tblVehicleEF	LDT1	0.02	8.5884e-003
tblVehicleEF	LDT1	0.01	7.0810e-003
tblVehicleEF	LDT1	1.60	1.01
tblVehicleEF	LDT1	2.60	1.53
tblVehicleEF	LDT1	297.86	285.08
tblVehicleEF	LDT1	59.55	58.07
tblVehicleEF	LDT1	0.06	0.04
tblVehicleEF	LDT1	0.16	0.09
tblVehicleEF	LDT1	0.15	0.08
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	8.0000e-003	8.0000e-003
tblVehicleEF	LDT1	3.4850e-003	2.5624e-003
tblVehicleEF	LDT1	4.7040e-003	2.6480e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.0000e-003	2.0000e-003
tblVehicleEF	LDT1	3.2330e-003	2.3570e-003
tblVehicleEF	LDT1	4.3650e-003	2.4348e-003
tblVehicleEF	LDT1	0.12	0.08

tblVehicleEF	LDT1	0.24	0.18
tblVehicleEF	LDT1	0.11	0.07
tblVehicleEF	LDT1	0.04	0.02
tblVehicleEF	LDT1	0.79	0.13
tblVehicleEF	LDT1	0.19	0.10
tblVehicleEF	LDT1	4.3400e-003	2.8622e-003
tblVehicleEF	LDT1	8.9700e-004	6.0692e-004
tblVehicleEF	LDT1	0.12	0.08
tblVehicleEF	LDT1	0.24	0.18
tblVehicleEF	LDT1	0.11	0.07
tblVehicleEF	LDT1	0.06	0.03
tblVehicleEF	LDT1	0.79	0.13
tblVehicleEF	LDT1	0.20	0.10
tblVehicleEF	LDT2	0.01	4.6330e-003
tblVehicleEF	LDT2	5.5040e-003	3.4342e-003
tblVehicleEF	LDT2	0.89	0.63
tblVehicleEF	LDT2	1.43	0.89
tblVehicleEF	LDT2	364.48	313.52
tblVehicleEF	LDT2	72.89	63.78
tblVehicleEF	LDT2	0.18	0.21
tblVehicleEF	LDT2	0.09	0.05
tblVehicleEF	LDT2	0.11	0.05
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	8.0000e-003	8.0000e-003
tblVehicleEF	LDT2	2.2810e-003	1.9445e-003
tblVehicleEF	LDT2	4.2210e-003	2.2397e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	2.0000e-003	2.0000e-003

tblVehicleEF	LDT2	2.1170e-003	1.7883e-003
tblVehicleEF	LDT2	3.9160e-003	2.0593e-003
tblVehicleEF	LDT2	0.06	0.03
tblVehicleEF	LDT2	0.12	0.07
tblVehicleEF	LDT2	0.06	0.04
tblVehicleEF	LDT2	0.02	0.01
tblVehicleEF	LDT2	0.38	0.05
tblVehicleEF	LDT2	0.10	0.05
tblVehicleEF	LDT2	5.0910e-003	3.1396e-003
tblVehicleEF	LDT2	1.0320e-003	6.5211e-004
tblVehicleEF	LDT2	0.06	0.03
tblVehicleEF	LDT2	0.12	0.07
tblVehicleEF	LDT2	0.06	0.04
tblVehicleEF	LDT2	0.03	0.02
tblVehicleEF	LDT2	0.38	0.05
tblVehicleEF	LDT2	0.10	0.05
tblVehicleEF	LHD1	1.2850e-003	4.0467e-003
tblVehicleEF	LHD1	9.2230e-003	5.4130e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.19	0.14
tblVehicleEF	LHD1	0.69	0.42
tblVehicleEF	LHD1	3.63	1.77
tblVehicleEF	LHD1	7.51	8.95
tblVehicleEF	LHD1	551.23	562.04
tblVehicleEF	LHD1	45.23	26.99
tblVehicleEF	LHD1	0.04	0.01
tblVehicleEF	LHD1	0.03	0.07
tblVehicleEF	LHD1	0.59	0.47

tblVehicleEF	LHD1	1.30	0.67
tblVehicleEF	LHD1	3.4100e-004	8.1741e-004
tblVehicleEF	LHD1	0.04	0.08
tblVehicleEF	LHD1	8.7150e-003	0.01
tblVehicleEF	LHD1	4.7150e-003	7.2052e-003
tblVehicleEF	LHD1	6.8000e-004	6.9212e-004
tblVehicleEF	LHD1	3.1400e-004	7.8205e-004
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.1790e-003	2.6102e-003
tblVehicleEF	LHD1	4.3420e-003	6.8740e-003
tblVehicleEF	LHD1	6.3100e-004	6.3638e-004
tblVehicleEF	LHD1	2.3320e-003	2.1273e-003
tblVehicleEF	LHD1	0.07	0.08
tblVehicleEF	LHD1	0.03	0.01
tblVehicleEF	LHD1	1.6520e-003	1.3851e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.37	0.24
tblVehicleEF	LHD1	0.31	0.15
tblVehicleEF	LHD1	8.6000e-005	8.8943e-005
tblVehicleEF	LHD1	6.0830e-003	5.4915e-003
tblVehicleEF	LHD1	5.6900e-004	3.0227e-004
tblVehicleEF	LHD1	2.3320e-003	2.1273e-003
tblVehicleEF	LHD1	0.07	0.08
tblVehicleEF	LHD1	0.03	0.02
tblVehicleEF	LHD1	1.6520e-003	1.3851e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.37	0.24
tblVehicleEF	LHD1	0.34	0.17

tblVehicleEF	LHD2	1.0490e-003	2.8777e-003
tblVehicleEF	LHD2	6.0880e-003	2.4089e-003
tblVehicleEF	LHD2	0.01	4.1572e-003
tblVehicleEF	LHD2	0.16	0.12
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	2.19	0.96
tblVehicleEF	LHD2	8.23	13.51
tblVehicleEF	LHD2	526.51	588.08
tblVehicleEF	LHD2	33.08	23.68
tblVehicleEF	LHD2	6.7020e-003	6.3875e-003
tblVehicleEF	LHD2	0.08	0.07
tblVehicleEF	LHD2	0.91	0.22
tblVehicleEF	LHD2	0.88	0.33
tblVehicleEF	LHD2	8.6200e-004	1.0461e-003
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	9.6970e-003	0.01
tblVehicleEF	LHD2	9.6420e-003	6.8494e-003
tblVehicleEF	LHD2	3.2300e-004	3.8666e-004
tblVehicleEF	LHD2	7.9300e-004	1.0008e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	2.4240e-003	2.6929e-003
tblVehicleEF	LHD2	8.8720e-003	6.5397e-003
tblVehicleEF	LHD2	3.0000e-004	3.5552e-004
tblVehicleEF	LHD2	1.3230e-003	6.9096e-004
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	0.02	0.01
tblVehicleEF	LHD2	9.9000e-004	5.0321e-004
tblVehicleEF	LHD2	0.05	0.03

tblVehicleEF	LHD2	0.22	0.05
tblVehicleEF	LHD2	0.18	0.06
tblVehicleEF	LHD2	9.2000e-005	1.3174e-004
tblVehicleEF	LHD2	5.7470e-003	5.7187e-003
tblVehicleEF	LHD2	4.0700e-004	2.5329e-004
tblVehicleEF	LHD2	1.3230e-003	6.9096e-004
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	0.03	0.02
tblVehicleEF	LHD2	9.9000e-004	5.0321e-004
tblVehicleEF	LHD2	0.06	0.04
tblVehicleEF	LHD2	0.22	0.05
tblVehicleEF	LHD2	0.20	0.06
tblVehicleEF	MCY	0.00	0.56
tblVehicleEF	MCY	0.00	0.15
tblVehicleEF	MCY	18.28	18.09
tblVehicleEF	MCY	10.11	9.76
tblVehicleEF	MCY	143.62	192.13
tblVehicleEF	MCY	37.14	42.60
tblVehicleEF	MCY	3.7760e-003	5.2515e-003
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	0.31	0.31
tblVehicleEF	MCY	0.04	0.01
tblVehicleEF	MCY	8.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.4300e-004	2.6609e-003
tblVehicleEF	MCY	7.3000e-004	3.3926e-003
tblVehicleEF	MCY	0.02	5.0400e-003
tblVehicleEF	MCY	2.0000e-003	1.0000e-003
tblVehicleEF	MCY	2.0900e-004	2.4815e-003

tblVehicleEF	MCY	6.2800e-004	3.1742e-003
tblVehicleEF	MCY	0.90	1.05
tblVehicleEF	MCY	0.39	0.57
tblVehicleEF	MCY	0.53	0.62
tblVehicleEF	MCY	2.30	2.57
tblVehicleEF	MCY	1.14	0.49
tblVehicleEF	MCY	2.03	1.98
tblVehicleEF	MCY	1.9550e-003	2.2964e-003
tblVehicleEF	MCY	6.3500e-004	6.4371e-004
tblVehicleEF	MCY	0.90	1.05
tblVehicleEF	MCY	0.39	0.57
tblVehicleEF	MCY	0.53	0.62
tblVehicleEF	MCY	2.53	3.23
tblVehicleEF	MCY	1.14	0.49
tblVehicleEF	MCY	2.18	2.16
tblVehicleEF	MDV	0.02	7.4202e-003
tblVehicleEF	MDV	0.01	6.7255e-003
tblVehicleEF	MDV	1.40	0.84
tblVehicleEF	MDV	2.85	1.39
tblVehicleEF	MDV	486.32	422.81
tblVehicleEF	MDV	97.87	84.66
tblVehicleEF	MDV	0.13	0.12
tblVehicleEF	MDV	0.16	0.08
tblVehicleEF	MDV	0.25	0.11
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	2.4050e-003	2.0008e-003
tblVehicleEF	MDV	4.0190e-003	2.2345e-003

tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	2.2320e-003	1.8424e-003
tblVehicleEF	MDV	3.7290e-003	2.0545e-003
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.20	0.12
tblVehicleEF	MDV	0.10	0.06
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.60	0.08
tblVehicleEF	MDV	0.23	0.09
tblVehicleEF	MDV	6.5060e-003	4.2300e-003
tblVehicleEF	MDV	1.3300e-003	8.6986e-004
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.20	0.12
tblVehicleEF	MDV	0.10	0.06
tblVehicleEF	MDV	0.05	0.03
tblVehicleEF	MDV	0.60	0.08
tblVehicleEF	MDV	0.25	0.10
tblVehicleEF	MH	0.00	0.01
tblVehicleEF	MH	0.00	0.02
tblVehicleEF	MH	0.61	0.69
tblVehicleEF	MH	4.74	3.88
tblVehicleEF	MH	612.86	1,111.43
tblVehicleEF	MH	28.95	57.99
tblVehicleEF	MH	1.9160e-003	8.2172e-004
tblVehicleEF	MH	0.78	0.73
tblVehicleEF	MH	0.58	0.61
tblVehicleEF	MH	0.05	0.13

tblVehicleEF	MH	8.4490e-003	0.01
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	3.4700e-004	8.8587e-004
tblVehicleEF	MH	0.02	0.06
tblVehicleEF	MH	2.1120e-003	3.2119e-003
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	3.2200e-004	8.1452e-004
tblVehicleEF	MH	0.58	0.54
tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	0.29	0.26
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	1.08	0.01
tblVehicleEF	MH	0.26	0.23
tblVehicleEF	MH	6.7500e-003	0.01
tblVehicleEF	MH	4.0400e-004	6.4716e-004
tblVehicleEF	MH	0.58	0.54
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tblVehicleEF	MH	0.05	0.05
tblVehicleEF	MH	1.08	0.01
tblVehicleEF	MH	0.27	0.25
tblVehicleEF	MHD	3.2160e-003	2.5283e-003
tblVehicleEF	MHD	0.47	0.23
tblVehicleEF	MHD	919.25	1,127.03
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.87	0.71
tblVehicleEF	MHD	0.11	0.13
tblVehicleEF	MHD	0.01	0.01

tblVehicleEF	MHD	0.03	2.8531e-003
tblVehicleEF	MHD	0.05	0.06
tblVehicleEF	MHD	2.8000e-003	3.0000e-003
tblVehicleEF	MHD	0.03	2.7246e-003
tblVehicleEF	MHD	0.08	0.03
tblVehicleEF	MHD	0.36	0.02
tblVehicleEF	MHD	9.8020e-003	0.01
tblVehicleEF	MHD	0.09	0.04
tblVehicleEF	MHD	0.36	0.02
tblVehicleEF	OBUS	2.9660e-003	4.0346e-003
tblVehicleEF	OBUS	0.68	0.32
tblVehicleEF	OBUS	1,046.92	1,236.30
tblVehicleEF	OBUS	2.6440e-003	2.6194e-003
tblVehicleEF	OBUS	1.11	0.69
tblVehicleEF	OBUS	0.10	0.13
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.04	2.8909e-003
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	2.6780e-003	3.0000e-003
tblVehicleEF	OBUS	0.04	2.7483e-003
tblVehicleEF	OBUS	0.11	0.04
tblVehicleEF	OBUS	0.33	0.04
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.13	0.04
tblVehicleEF	OBUS	0.33	0.04
tblVehicleEF	SBUS	5.0590e-003	0.81
tblVehicleEF	SBUS	6.6580e-003	6.8177e-003
tblVehicleEF	SBUS	0.00	0.05

tblVehicleEF	SBUS	1.25	17.44
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tblVehicleEF	SBUS	19.98	12.78
tblVehicleEF	SBUS	558.63	1,937.87
tblVehicleEF	SBUS	1,036.92	1,028.66
tblVehicleEF	SBUS	115.30	121.50
tblVehicleEF	SBUS	5.1900e-004	6.9213e-004
tblVehicleEF	SBUS	6.92	9.78
tblVehicleEF	SBUS	6.17	2.19
tblVehicleEF	SBUS	1.69	7.66
tblVehicleEF	SBUS	0.01	6.2235e-003
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tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.04	0.01
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tblVehicleEF	SBUS	0.01	5.9543e-003
tblVehicleEF	SBUS	0.24	0.32
tblVehicleEF	SBUS	2.7520e-003	2.6123e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	2.0940e-003	1.8829e-003
tblVehicleEF	SBUS	0.02	7.3357e-003
tblVehicleEF	SBUS	0.18	0.06
tblVehicleEF	SBUS	0.11	2.06
tblVehicleEF	SBUS	0.01	4.3423e-003
tblVehicleEF	SBUS	0.23	0.07
tblVehicleEF	SBUS	1.85	0.02
tblVehicleEF	SBUS	1.25	0.69
tblVehicleEF	SBUS	5.9220e-003	0.02

tblVehicleEF	SBUS	0.01	9.9279e-003
tblVehicleEF	SBUS	1.6320e-003	1.4363e-003
tblVehicleEF	SBUS	0.02	7.3357e-003
tblVehicleEF	SBUS	0.18	0.06
tblVehicleEF	SBUS	0.12	2.99
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tblVehicleEF	SBUS	0.26	0.08
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tblVehicleEF	SBUS	1.33	0.76
tblVehicleEF	UBUS	0.00	1.80
tblVehicleEF	UBUS	0.00	0.05
tblVehicleEF	UBUS	3.72	7.69
tblVehicleEF	UBUS	6.87	8.02
tblVehicleEF	UBUS	1,982.70	1,842.84
tblVehicleEF	UBUS	19.75	118.94
tblVehicleEF	UBUS	3.2190e-003	1.8151e-003
tblVehicleEF	UBUS	10.51	5.38
tblVehicleEF	UBUS	0.82	1.23
tblVehicleEF	UBUS	0.72	0.56
tblVehicleEF	UBUS	8.0000e-003	0.01
tblVehicleEF	UBUS	0.18	0.07
tblVehicleEF	UBUS	4.7500e-004	1.2761e-003
tblVehicleEF	UBUS	0.31	0.24
tblVehicleEF	UBUS	2.0000e-003	3.0000e-003
tblVehicleEF	UBUS	0.16	0.07
tblVehicleEF	UBUS	4.4100e-004	1.1733e-003
tblVehicleEF	UBUS	3.8870e-003	3.5358e-003
tblVehicleEF	UBUS	0.07	0.05

tblVehicleEF	UBUS	2.1850e-003	2.4268e-003
tblVehicleEF	UBUS	0.66	0.40
tblVehicleEF	UBUS	0.73	0.02
tblVehicleEF	UBUS	0.52	0.69
tblVehicleEF	UBUS	0.02	8.8464e-003
tblVehicleEF	UBUS	3.4300e-004	1.3361e-003
tblVehicleEF	UBUS	3.8870e-003	3.5358e-003
tblVehicleEF	UBUS	0.07	0.05
tblVehicleEF	UBUS	2.1850e-003	2.4268e-003
tblVehicleEF	UBUS	0.73	2.26
tblVehicleEF	UBUS	0.73	0.02
tblVehicleEF	UBUS	0.56	0.76
tblVehicleTrips	CC_TL	10.10	0.00
tblVehicleTrips	CC_TL	10.10	14.30
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tblVehicleTrips	CC_TL	10.10	11.80
tblVehicleTrips	CC_TL	10.10	0.00
tblVehicleTrips	CC_TL	10.10	11.60
tblVehicleTrips	CC_TL	10.10	0.00
tblVehicleTrips	CNW_TL	7.90	0.00
tblVehicleTrips	CNW_TL	7.90	14.30
tblVehicleTrips	CNW_TL	7.90	12.40
tblVehicleTrips	CNW_TL	7.90	12.00
tblVehicleTrips	CNW_TL	7.90	12.20
tblVehicleTrips	CNW_TL	7.90	11.80
tblVehicleTrips	CNW_TL	7.90	0.00

tblVehicleTrips	CNW_TL	7.90	11.60
tblVehicleTrips	CNW_TL	7.90	0.00
tblVehicleTrips	CW_TL	18.50	0.00
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tblVehicleTrips	CW_TL	18.50	11.60
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tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	28.00	0.00
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tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	44.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	12.90	8.40
tblVehicleTrips	HO_TL	12.90	8.40
tblVehicleTrips	HO_TL	12.90	11.00
tblVehicleTrips	HO_TL	12.90	7.80
tblVehicleTrips	HO_TL	12.90	8.80

tblVehicleTrips	HS_TL	9.60	8.40
tblVehicleTrips	HS_TL	9.60	8.40
tblVehicleTrips	HS_TL	9.60	11.00
tblVehicleTrips	HS_TL	9.60	7.80
tblVehicleTrips	HS_TL	9.60	8.80
tblVehicleTrips	HW_TL	19.80	8.40
tblVehicleTrips	HW_TL	19.80	8.40
tblVehicleTrips	HW_TL	19.80	11.00
tblVehicleTrips	HW_TL	19.80	7.80
tblVehicleTrips	HW_TL	19.80	8.80
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	6.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	12.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	12.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	66.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	63.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00

tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	PR_TP	52.00	100.00
tblVehicleTrips	PR_TP	44.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	7.16	6.32
tblVehicleTrips	ST_TR	1.59	0.00
tblVehicleTrips	ST_TR	7.16	7.33
tblVehicleTrips	ST_TR	2.20	1.83
tblVehicleTrips	ST_TR	1.32	0.99
tblVehicleTrips	ST_TR	2.37	2.11
tblVehicleTrips	ST_TR	20.87	1.12
tblVehicleTrips	ST_TR	46.55	58.19
tblVehicleTrips	ST_TR	49.97	51.36
tblVehicleTrips	ST_TR	2.81	3.05
tblVehicleTrips	ST_TR	10.08	8.81
tblVehicleTrips	SU_TR	6.07	5.36
tblVehicleTrips	SU_TR	1.59	0.00
tblVehicleTrips	SU_TR	6.07	6.21
tblVehicleTrips	SU_TR	2.44	2.03
tblVehicleTrips	SU_TR	0.68	0.51
tblVehicleTrips	SU_TR	0.98	0.87
tblVehicleTrips	SU_TR	26.73	1.44
tblVehicleTrips	SU_TR	25.49	31.87
tblVehicleTrips	SU_TR	25.24	25.94

tblVehicleTrips	SU_TR	2.81	3.05
tblVehicleTrips	SU_TR	8.77	7.66
tblVehicleTrips	WD_TR	6.59	5.82
tblVehicleTrips	WD_TR	1.59	0.00
tblVehicleTrips	WD_TR	6.59	6.74
tblVehicleTrips	WD_TR	2.74	2.28
tblVehicleTrips	WD_TR	1.29	1.00
tblVehicleTrips	WD_TR	6.97	5.22
tblVehicleTrips	WD_TR	11.01	9.80
tblVehicleTrips	WD_TR	32.93	1.77
tblVehicleTrips	WD_TR	56.24	70.31
tblVehicleTrips	WD_TR	42.94	44.13
tblVehicleTrips	WD_TR	2.81	3.05
tblVehicleTrips	WD_TR	9.57	8.36
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00

tblWater	IndoorWaterUseRate	54,468,765.42	26,530,329.00
tblWater	IndoorWaterUseRate	134,086,984.73	65,310,274.00
tblWater	IndoorWaterUseRate	22,869,062.99	11,138,941.00
tblWater	IndoorWaterUseRate	2,181,816.00	1,062,708.00
tblWater	IndoorWaterUseRate	3,954,375.00	1,926,075.00
tblWater	IndoorWaterUseRate	236,563,618.58	115,224,144.00
tblWater	IndoorWaterUseRate	3,075,443.49	1,497,966.00
tblWater	IndoorWaterUseRate	1,126,400.70	548,640.00
tblWater	IndoorWaterUseRate	16,599,652.06	8,085,280.00
tblWater	IndoorWaterUseRate	29,905,697.76	14,566,285.00
tblWater	IndoorWaterUseRate	22,869,062.99	11,138,941.00
tblWater	OutdoorWaterUseRate	34,339,004.29	27,653,600.00
tblWater	OutdoorWaterUseRate	342,908,332.43	305,972,084.00
tblWater	OutdoorWaterUseRate	84,533,099.07	68,075,499.00
tblWater	OutdoorWaterUseRate	14,417,452.76	11,610,582.00
tblWater	OutdoorWaterUseRate	5,610,384.00	4,518,105.00
tblWater	OutdoorWaterUseRate	144,990,604.94	116,762,956.00
tblWater	OutdoorWaterUseRate	1,884,949.24	1,517,972.00
tblWater	OutdoorWaterUseRate	1,761,806.23	1,418,806.00
tblWater	OutdoorWaterUseRate	10,173,980.30	8,193,242.00
tblWater	OutdoorWaterUseRate	18,853,592.07	15,183,026.00
tblWater	OutdoorWaterUseRate	14,417,452.76	11,610,582.00
tblWoodstoves	NumberCatalytic	41.80	0.00
tblWoodstoves	NumberCatalytic	102.90	0.00
tblWoodstoves	NumberCatalytic	17.55	0.00
tblWoodstoves	NumberCatalytic	22.95	0.00
tblWoodstoves	NumberCatalytic	17.55	0.00
tblWoodstoves	NumberNoncatalytic	41.80	0.00

tblWoodstoves	NumberNoncatalytic	102.90	0.00
tblWoodstoves	NumberNoncatalytic	17.55	0.00
tblWoodstoves	NumberNoncatalytic	22.95	0.00
tblWoodstoves	NumberNoncatalytic	17.55	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Energy											0.0000	10,513.1024	10,513.1024	0.5755	0.1652	10,576.4047
Mobile											0.0000	60,054.0367	60,054.0367	2.4278	0.0000	60,105.0198
Waste											7,089.8816	0.0000	7,089.8816	419.0000	0.0000	15,888.8816
Water											81.5436	758.3841	839.9278	8.4287	0.2088	1,081.6596
Total											**7,171.4252**	**71,394.0119**	**78,565.4371**	**430.4978**	**0.3740**	**87,721.8379**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Energy											0.0000	10,513.1024	10,513.1024	0.5755	0.1652	10,576.4047
Mobile											0.0000	60,054.0367	60,054.0367	2.4278	0.0000	60,105.0198
Waste											1,772.4704	0.0000	1,772.4704	104.7500	0.0000	3,972.2204
Water											81.5436	758.3841	839.9278	8.4272	0.2085	1,081.5295
Total											**1,854.0140**	**71,394.0119**	**73,248.0259**	**116.2463**	**0.3737**	**75,805.0466**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**74.15**	**0.00**	**6.77**	**73.00**	**0.08**	**13.58**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,529.380 0
Vegetation Land Change	- 33,643.07 80
Total	**- 30,113.69 80**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	No Phase	Trenching	1/1/2016	12/31/2015	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
No Phase				0.00	19.80	7.90				

3.1 Mitigation Measures Construction

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	60,054.0367	60,054.0367	2.4278	0.0000	60,105.0198
Unmitigated											0.0000	60,054.0367	60,054.0367	2.4278	0.0000	60,105.0198

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	4,865.52	5,283.52	4480.96	14,891,421	14,891,421
City Park	0.00	0.00	0.00		
Condo/Townhouse	13,870.92	15,085.14	12780.18	42,465,661	42,465,661
Congregate Care (Assisted Living)	800.28	642.33	712.53	3,063,781	3,063,781
Elementary School	900.00	0.00	0.00	3,346,200	3,346,200
General Light Industry	89.26	16.93	8.72	304,320	304,320
General Office Building	13,043.80	2,808.41	1157.97	43,171,677	43,171,677
Health Club	92.04	58.24	74.88	376,402	376,402
Library	2,531.16	2,094.84	1147.32	9,754,988	9,754,988
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	9,889.53	11,509.78	5813.15	40,276,023	40,276,023
Retirement Community	1,399.95	1,399.95	1399.95	3,974,738	3,974,738
Single Family Housing	2,934.36	3,092.31	2688.66	9,359,188	9,359,188
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	50,416.83	41,991.45	30,264.33	170,984,398	170,984,398

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	8.40	8.40	8.40	40.20	19.20	40.60	100	0	0
City Park	0.00	0.00	0.00	33.00	48.00	19.00	100	0	0
Condo/Townhouse	8.40	8.40	8.40	40.20	19.20	40.60	100	0	0
Congregate Care (Assisted	11.00	11.00	11.00	40.20	19.20	40.60	100	0	0
Elementary School	14.30	14.30	14.30	65.00	30.00	5.00	100	0	0
General Light Industry	12.40	12.40	12.40	59.00	28.00	13.00	100	0	0
General Office Building	12.00	12.00	12.00	33.00	48.00	19.00	100	0	0
Health Club	12.20	12.20	12.20	16.90	64.10	19.00	100	0	0
Library	11.80	11.80	11.80	52.00	43.00	5.00	100	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	100	0	0
Regional Shopping Center	11.60	11.60	11.60	16.30	64.70	19.00	100	0	0
Retirement Community	7.80	7.80	7.80	40.20	19.20	40.60	100	0	0
Single Family Housing	8.80	8.80	8.80	40.20	19.20	40.60	100	0	0
Unenclosed Parking with	0.00	0.00	0.00	0.00	0.00	0.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.540471	0.044502	0.211583	0.117127	0.014105	0.006388	0.021207	0.033417	0.002619	0.001815	0.005251	0.000692	0.000822

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated											0.0000	3,212.6624	3,212.6624	0.0616	0.0589	3,232.2141
NaturalGas Unmitigated											0.0000	3,212.6624	3,212.6624	0.0616	0.0589	3,232.2141
Electricity Mitigated											0.0000	7,300.4400	7,300.4400	0.5139	0.1063	7,344.1906
Electricity Unmitigated											0.0000	7,300.4400	7,300.4400	0.5139	0.1063	7,344.1906

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	8.2764e+006											0.0000	441.6602	441.6602	8.4700e-003	8.1000e-003	444.3481
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	2.03742e+007											0.0000	1,087.2449	1,087.2449	0.0208	0.0199	1,093.8617
Congregate Care (Assisted Living)	3.4749e+006											0.0000	185.4339	185.4339	3.5500e-003	3.4000e-003	186.5624
Elementary School	939000											0.0000	50.1086	50.1086	9.6000e-004	9.2000e-004	50.4136
General Light Industry	329517											0.0000	17.5843	17.5843	3.4000e-004	3.2000e-004	17.6913
General Office Building	1.25513e+007											0.0000	669.7868	669.7868	0.0128	0.0123	673.8630
Health Club	1.00204e+006											0.0000	53.4727	53.4727	1.0200e-003	9.8000e-004	53.7981
Library	693720											0.0000	37.0195	37.0195	7.1000e-004	6.8000e-004	37.2448
Parking Lot	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	295812											0.0000	15.7857	15.7857	3.0000e-004	2.9000e-004	15.8817
Retirement Community	4.5441e+006											0.0000	242.4905	242.4905	4.6500e-003	4.4500e-003	243.9662
Single Family Housing	7.722e+006											0.0000	412.0753	412.0753	7.9000e-003	7.5500e-003	414.5832
Unenclosed Parking with Elevator	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**3,212.6624**	**3,212.6624**	**0.0616**	**0.0589**	**3,232.2141**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	8.2764e +006											0.0000	441.6602	441.6602	8.4700e-003	8.1000e-003	444.3481
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	2.03742e +007											0.0000	1,087.244 9	1,087.244 9	0.0208	0.0199	1,093.861 7
Congregate Care (Assisted Living)	3.4749e +006											0.0000	185.4339	185.4339	3.5500e-003	3.4000e-003	186.5624
Elementary School	939000											0.0000	50.1086	50.1086	9.6000e-004	9.2000e-004	50.4136
General Light Industry	329517											0.0000	17.5843	17.5843	3.4000e-004	3.2000e-004	17.6913
General Office Building	1.25513e +007											0.0000	669.7868	669.7868	0.0128	0.0123	673.8630
Health Club	1.00204e +006											0.0000	53.4727	53.4727	1.0200e-003	9.8000e-004	53.7981
Library	693720											0.0000	37.0195	37.0195	7.1000e-004	6.8000e-004	37.2448
Parking Lot	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	295812											0.0000	15.7857	15.7857	3.0000e-004	2.9000e-004	15.8817
Retirement Community	4.5441e +006											0.0000	242.4905	242.4905	4.6500e-003	4.4500e-003	243.9662
Single Family Housing	7.722e +006											0.0000	412.0753	412.0753	7.9000e-003	7.5500e-003	414.5832
Unenclosed Parking with Elevator	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**3,212.662 4**	**3,212.662 4**	**0.0616**	**0.0589**	**3,232.214 1**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	3.06143e +006	572.1067	0.0403	8.3300e-003	575.5353
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	7.5364e +006	1,408.3679	0.0991	0.0205	1,416.8081
Congregate Care (Assisted Living)	1.28536e +006	240.2027	0.0169	3.5000e-003	241.6422
Elementary School	618000	115.4891	8.1300e-003	1.6800e-003	116.1812
General Light Industry	161766	30.2301	2.1300e-003	4.4000e-004	30.4113
General Office Building	1.78487e +007	3,335.4870	0.2348	0.0486	3,355.4761
Health Club	491920	91.9278	6.4700e-003	1.3400e-003	92.4787
Library	340560	63.6423	4.4800e-003	9.3000e-004	64.0237
Parking Lot	554048	103.5380	7.2900e-003	1.5100e-003	104.1585
Regional Shopping Center	2.66455e +006	497.9390	0.0351	7.2500e-003	500.9231
Retirement Community	1.68086e +006	314.1112	0.0221	4.5700e-003	315.9936
Single Family Housing	2.06739e +006	386.3446	0.0272	5.6300e-003	388.6599
Unenclosed Parking with Elevator	754800	141.0536	9.9300e-003	2.0500e-003	141.8990
Total		**7,300.4400**	**0.5139**	**0.1063**	**7,344.1906**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	3.06143e +006	572.1067	0.0403	8.3300e-003	575.5353
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	7.5364e +006	1,408.3679	0.0991	0.0205	1,416.8081
Congregate Care (Assisted Living)	1.28536e +006	240.2027	0.0169	3.5000e-003	241.6422
Elementary School	618000	115.4891	8.1300e-003	1.6800e-003	116.1812
General Light Industry	161766	30.2301	2.1300e-003	4.4000e-004	30.4113
General Office Building	1.78487e +007	3,335.4870	0.2348	0.0486	3,355.4761
Health Club	491920	91.9278	6.4700e-003	1.3400e-003	92.4787
Library	340560	63.6423	4.4800e-003	9.3000e-004	64.0237
Parking Lot	554048	103.5380	7.2900e-003	1.5100e-003	104.1585
Regional Shopping Center	2.66455e +006	497.9390	0.0351	7.2500e-003	500.9231
Retirement Community	1.68086e +006	314.1112	0.0221	4.5700e-003	315.9936
Single Family Housing	2.06739e +006	386.3446	0.0272	5.6300e-003	388.6599
Unenclosed Parking with Elevator	754800	141.0536	9.9300e-003	2.0500e-003	141.8990
Total		**7,300.4400**	**0.5139**	**0.1063**	**7,344.1906**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Unmitigated											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Total											**0.0000**	**68.4887**	**68.4887**	**0.0659**	**0.0000**	**69.8722**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Total											**0.0000**	**68.4887**	**68.4887**	**0.0659**	**0.0000**	**69.8722**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	839.9278	8.4287	0.2088	1,081.6596
Mitigated	839.9278	8.4272	0.2085	1,081.5295

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	26.5303 / 27.6536	61.4316	0.8682	0.0212	86.2315
City Park	0 / 305.972	245.8684	0.0173	3.5800e-003	247.3418
Condo/Townhouse	65.3103 / 68.0755	151.2276	2.1373	0.0522	212.2780
Congregate Care (Assisted Living)	11.1389 / 11.6106	25.7925	0.3645	8.8900e-003	36.2049
Elementary School	1.06271 / 4.51811	5.2012	0.0350	8.9000e-004	6.2110
General Light Industry	1.92608 / 0	2.8466	0.0629	1.5100e-003	4.6374
General Office Building	115.224 / 116.763	264.1207	3.7706	0.0920	371.8133
Health Club	1.49797 / 1.51797	3.4337	0.0490	1.2000e-003	4.8337
Library	0.54864 / 1.41881	1.9510	0.0180	4.5000e-004	2.4679
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.08528 / 8.19324	18.5333	0.2646	6.4500e-003	26.0901
Retirement Community	14.5663 / 15.183	33.7286	0.4767	0.0116	47.3448
Single Family Housing	11.1389 / 11.6106	25.7925	0.3645	8.8900e-003	36.2049
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**839.9278**	**8.4287**	**0.2088**	**1,081.6596**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	26.5303 / 27.6536	61.4316	0.8681	0.0212	86.2181
City Park	0 / 305.972	245.8684	0.0173	3.5800e-003	247.3418
Condo/Townhouse	65.3103 / 68.0755	151.2276	2.1369	0.0521	212.2450
Congregate Care (Assisted Living)	11.1389 / 11.6106	25.7925	0.3645	8.8800e-003	36.1993
Elementary School	1.06271 / 4.51811	5.2012	0.0350	8.9000e-004	6.2105
General Light Industry	1.92608 / 0	2.8466	0.0629	1.5100e-003	4.6364
General Office Building	115.224 / 116.763	264.1207	3.7699	0.0918	371.7550
Health Club	1.49797 / 1.51797	3.4337	0.0490	1.1900e-003	4.8330
Library	0.54864 / 1.41881	1.9510	0.0180	4.5000e-004	2.4676
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.08528 / 8.19324	18.5333	0.2645	6.4400e-003	26.0860
Retirement Community	14.5663 / 15.183	33.7286	0.4766	0.0116	47.3374
Single Family Housing	11.1389 / 11.6106	25.7925	0.3645	8.8800e-003	36.1993
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**839.9278**	**8.4272**	**0.2085**	**1,081.5295**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,772.470 4	104.7500	0.0000	3,972.220 4
Unmitigated	7,089.881 6	419.0000	0.0000	15,888.88 16

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	3652.53	741.4306	43.8173	0.0000	1,661.593 7
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	8991.5	1,825.193 2	107.8658	0.0000	4,090.375 7
Congregate Care (Assisted Living)	1190.01	241.5613	14.2759	0.0000	541.3544
Elementary School	140.4	28.4999	1.6843	0.0000	63.8702
General Light Industry	70.96	14.4042	0.8513	0.0000	32.2808
General Office Building	14949.8	3,034.672 3	179.3440	0.0000	6,800.896 1
Health Club	592.8	120.3330	7.1115	0.0000	269.6741
Library	141.91	28.8065	1.7024	0.0000	64.5571
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2517.7	511.0704	30.2034	0.0000	1,145.341 6
Retirement Community	1145.94	232.6155	13.7472	0.0000	521.3063
Single Family Housing	1533.54	311.2948	18.3970	0.0000	697.6316
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**7,089.881 6**	**419.0000**	**0.0000**	**15,888.88 16**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	913.133	185.3577	10.9543	0.0000	415.3984
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	2247.88	456.2983	26.9665	0.0000	1,022.5939
Congregate Care (Assisted Living)	297.503	60.3903	3.5690	0.0000	135.3386
Elementary School	35.1	7.1250	0.4211	0.0000	15.9676
General Light Industry	17.74	3.6011	0.2128	0.0000	8.0702
General Office Building	3737.45	758.6681	44.8360	0.0000	1,700.2240
Health Club	148.2	30.0833	1.7779	0.0000	67.4185
Library	35.4775	7.2016	0.4256	0.0000	16.1393
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	629.425	127.7676	7.5509	0.0000	286.3354
Retirement Community	286.485	58.1539	3.4368	0.0000	130.3266
Single Family Housing	383.385	77.8237	4.5993	0.0000	174.4079
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**1,772.4704**	**104.7500**	**0.0000**	**3,972.2204**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-30,113.6980	0.0000	0.0000	-30,113.6980

10.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	224.4 / 0	-1,391.2800	0.0000	0.0000	-1,391.2800
Grassland	68.8 / 0	-296.5280	0.0000	0.0000	-296.5280
Others	422.3 / 0	0.0000	0.0000	0.0000	0.0000
Scrub	547.9 / 0	-7,834.9700	0.0000	0.0000	-7,834.9700
Trees	217.3 / 0	-24,120.3000	0.0000	0.0000	-24,120.3000
Wetlands	1.6 / 0	0.0000	0.0000	0.0000	0.0000
Total		**-33,643.0780**	**0.0000**	**0.0000**	**-33,643.0780**

10.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	4985	3,529.3800	0.0000	0.0000	3,529.3800
Total		**3,529.3800**	**0.0000**	**0.0000**	**3,529.3800**

APPENDIX C
CONSOL RESIDENTIAL AND COMMERCIAL BUILDING ANALYSIS REPORT

Prepared For:
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NEWHALL LAND®

Newhall Land & Farming Company
RESIDENTIAL AND COMMERCIAL BUILDING ANALYSIS
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September 2016

Executive Summary

This report estimates and identifies energy savings related to energy efficiency and renewable energy options for new residential and commercial construction. The energy uses considered are those regulated by the California Building Energy Efficiency Standards (California Energy Code) (Title 24, Part 6 of the California Code of Regulations), as well as those that are not regulated by Title 24 but are part of the total energy profile of residential and commercial buildings. Annual site energy savings (kWh and therms) and Time Dependent Valuation (TDV) energy savings were determined using energy modeling software. The photovoltaic (PV) systems for the residential and commercial building prototypes analyzed in this report were sized to offset the electrical and natural gas consumption in accordance with the California Energy Commission's (CEC) TDV-Based Zero Net Energy (ZNE) definition.

Two **residential building prototypes** were considered in the analysis:

- 2,700 square foot, two-story single-family home
- 6,960 square foot, two-story multifamily building (8-plex)

Three **non-residential building prototypes** were considered in the analysis:

- 100,000 square foot, four-story office building
- 75,000 square foot, one-story light industrial building (20,000 square feet conditioned)
- 40,000 square foot, one-story suburban retail building

The report presents information regarding the energy use of the building prototypes relative to multiple iterations of the California Energy Code (Title 24), as well as relative to the CEC's ZNE definitional parameters. Further, while the report presents a ZNE-compliant design pathway for each of the building prototypes, it is anticipated that additional annual site energy savings will occur as the result of more advanced building energy efficiency standards that: (i) become requirements imposed in future editions of the Title 24 Standards, and/or (ii) become standard practice as residential and commercial building technologies evolve.

Zero Net Energy Definition

This analysis used the CEC's definition of ZNE, which is based on TDV Energy.[1] TDV Energy assigns multipliers to gas and electric demand for every hour of the year. The natural gas multipliers have virtually no variation, while the electricity multipliers can vary dramatically over the course of a day, month, or year. The multipliers are designed to more accurately reflect the resource cost to the utility and society for peak electricity generation, transmission, and distribution, and are highest at periods of peak demand.

As the amount of PV energy generation has grown, the TDV peak has shifted to later in the afternoon, when PV production declines but demand for air conditioning remains high.[2] Measures that produce or reduce energy at periods of high electricity demand are rewarded by the TDV-based approach to ZNE. The units for "TDV energy," as used throughout this report, are "kTDV/sq. ft./year," which can also be written as "TDV

[1] See CEC, *2015 Integrated Energy Policy Report* (2015), p. 41.

[2] For more detail on TDV multipliers, please see Energy + Environmental Economics, *Time Dependent Valuation of Energy for Developing Building Efficiency Standards* (July 2014), available at: http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09_workshop/2017_TDV_Documents/.

kBTU/sq. ft./year." These units are used interchangeably throughout the CEC's relevant compliance tools and documentation.

New Residential Construction

Methods and Assumptions

All residential buildings are assumed to be in Climate Zone 9 (Santa Clarita/Los Angeles County), and the analysis focuses on feasible, cost-effective design and product selections most likely to be adopted by builders.

Energy modeling was conducted using the CEC's public domain building energy simulation and compliance software, known as "California Building Energy Code Compliance" software (CBECC-res). The single-family and multifamily building energy models used in this analysis are based on prototypical models developed by the CEC. ConSol modified the models to represent known builder preferences and practices.

For the single-family home and multifamily prototypes, ConSol determined annual site energy savings (kWh and therms) resulting from changes to the California Energy Code between 2005 and 2016. ConSol also developed a model for each residential building prototype, whereby each prototype exceeds the 2016 code by just over 10%, which serves as a proxy for the 2019 code. Building energy loads in each model are categorized as "regulated" loads, which include only the end-uses regulated by Title 24, Part 6: space heating, space cooling, and water heating. Additional data in each model is provided for "unregulated" loads, as shown in Table 1 and Table 2.

Although appliance efficiency is technically regulated by California's Title 20 Standards, as of today, it is not possible to gain compliance credit or to trade-off improved appliance efficiency with other measures. Similarly, lighting is regulated by Title 24, but it is not a presently changeable variable within the compliance software, so it presently is characterized as an unregulated load. However, recent updates to the assumptions within CBECC reflect dramatic lighting energy use savings, as well as more modest appliance energy use savings, which are shown in the "Unregulated Loads" portions of Table 1 and Table 2. When ZNE becomes a requirement for all new residential construction, both "regulated" and "unregulated" building loads will be included in the compliance calculation, and it may be possible to trade lighting and appliance efficiency with other efficiency measures and/or PV.

The most recent iteration of CBECC-res, version 2016.2.0 (857), allows users to begin balancing both regulated and unregulated loads against PV generation, in order to demonstrate that a residential building has reached ZNE on a TDV-basis. CBECC software currently uses the Energy Design Rating (EDR) to represent annual TDV energy consumption for both regulated and unregulated building loads. Likewise, CBECC-res software now enables users to model PV generation, which is also output as an EDR value.

ENERGY DESIGN RATING			
Energy Design Rating (EDR) is an alternate way to express the energy performance of a building using a scoring system where 100 represents the energy performance of the Residential Energy Services (RESNET) reference home characterization of the 2006 International Energy Conservation Code (IECC). A score of zero represents the energy performance of a building that combines high levels of energy efficiency with renewable generation to"zero out" its TDV energy. Because EDR includes consideration of components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics), it is not used to show compliance with Part 6 but may instead be used by local jurisdictions pursuing local ordinances under Title 24, Part 11 (CALGreen). As a Standard Design building under the 2016 Building Energy Efficiency Standards is significantly more efficient than the baseline EDR building, the EDR of the Standard Design building is provided for information. Similarly, the EDR score of the Proposed Design is provided separately from the EDR value of installed PV so that the effects of efficiency and renewable energy can both be seen			
EDR of Standard Design	EDR of Proposed Design	EDR Value of Proposed PV	Final EDR of Proposed Design
62.4	59.9	60.0	-0.1

Figure 1: Description of EDR and Output for a ZNE Residential Building

By sizing a PV system to generate greater annual EDR than the residential building consumes, the user can approximate a building that will meet the CEC's ZNE definition. As shown in Figure 1, the EDR of the

PV system slightly exceeds the EDR of the Proposed Design. (The CEC has not yet developed compliance software or published a method for demonstrating ZNE using EDR, so TDV values are also provided as an alternative method to demonstrate ZNE, as shown in Table 1 and Table 2.)

Savings Resulting From Past, Present, and Projected Code Changes

Table 1 provides estimates of annual site energy consumption for the single-family home prototype and Table 2 provides estimates for the multifamily building prototype. The first two columns in each table represent buildings designed to meet the 2005 and 2016 code, respectively. The third column represents buildings designed to exceed the 2016 code by 10% prior to the addition of solar PV necessary to reach ZNE, which serves as a proxy for 2019 code.

Table 1
Site and TDV[3] Energy Use in 2005, 2016, and ZNE for a Single-Family Home in Climate Zone 9

Newhall Land Co. - Code Review Santa Clarita Climate Zone 09 2700 Sqft / 2-Story / 20% Glazing / 4 Occupants	2005 Code-Compliant Building	2016 Code-Compliant Building	2019 Title 24 Building Features (Approximated)
Software	CBECC-RES 2013-4 (744)	CBECC-RES 2016.2.0 (857)	CBECC-RES 2016.2.0 (857)
Regulated Loads from CBECC Log file (Space Heating, Cooling & Water Heating)			
kWh	1,850	879	1,877
Therms	377	205	74
Unregulated Loads from CBECC Log File (Inside & Exterior Lighting, Appliance & Cook, Plug Loads)			
Interior Lighting kWh	1,300	616	616
Appliance & Cooking kWh	2,195	1,873	1,862
Plug Load kWh	2,630	2,371	2,371
Exterior Lighting kWh	161	152	152
Appliance & Cooking Therms	20	15	15
Total Regulated and Unregulated Loads			
Total kWh	8,136	5,891	6,878
Total Therms	397	220	89
PV Sizing to Achieve ZNE			5.0 kW
PV Production kWH			8,167
Proposed Design EDR			47.18
PV Production EDR			47.83
Proposed Design TDV			69.92
PV Production TDV			70.88

3 "TDV" as used in the table and elsewhere in the report represents kTDV/sq. ft./year.

Table 2
Site and TDV Energy Use in 2005, 2016, and ZNE in a Multifamily 8-plex in Climate Zone 9

Newhall Land Co. - Code Review Santa Clarita Climate Zone 09 8-Plex (6,960 Sqft) / 2-Story / 15% Glazing / 2 Occupants	2005 Code-Compliant Building	2016 Code-Compliant Building	2019 Title 24 Building Features (Approximated)
Software	CBECC-RES 2013-4 (744)	CBECC-RES 2016.2.0 (857)	CBECC-RES 2016.2.0 (857)
Regulated Loads from CBECC Log file (Space Heating, Cooling & Water Heating)			
kWh	9,202	3,996	9,085
Therms	1,108	697	31
Unregulated Loads from CBECC Log File (Inside & Exterior Lighting, Appliance & Cook, Plug Loads)			
Interior Lighting kWh	4,172	2,034	2,034
Appliance & Cooking kWh	11,544	10,780	10,781
Plug Load kWh	10,701	12,062	12,062
Exterior Lighting kWh	479	434	434
Appliance & Cooking Therms	118	96	96
Total Regulated and Unregulated Loads			
Total kWh	36,097	29,305	34,395
Total Therms	1,226	792	127
kWh per unit	4,512	3,663	4,299
Therms per unit	153	99	16
PV Sizing to Achieve ZNE			21.9 kW
PV Production kWH			35,772
Proposed Design EDR			59.92
PV Production EDR			60.05
Proposed Design TDV			120.19
PV Production TDV			120.44

Meeting 2019 Residential Building Energy Standards (ZNE)

ConSol assessed how builders will meet the 2019 Building Energy Efficiency Standards[4] and sized the PV systems to reach ZNE, in accordance with the CEC's goal for residential buildings.

During the last adoption cycle for the California Energy Code (2016), the CEC made aggressive changes to the Title 24 standards and it is unlikely that there will be substantial changes to energy efficiency requirements for 2019—instead, the transition will be focused on integrating PV. ConSol assumed that the 2019 code will include a relatively modest 10% improvement to energy efficiency before allowing the addition of PV to achieve ZNE. This assumption is based on the fact that changes to Title 24 must meet cost effectiveness thresholds for adoption, and—once the 2016 code requirements are implemented—there will be very few cost-effective options for energy efficiency improvements. As a result, using PV will likely be the lowest cost pathway to achieve ZNE for residential building types.

In order to achieve the 10% efficiency improvement above 2016 code, ConSol designed the single-family home with more efficient windows (lower U-factor and lower SHGC), a more efficient gas furnace, a more efficient air conditioner, and a more efficient water heater. The water heater was switched from a 0.82 EF (Energy Factor) tankless gas unit to a 3.39 EF electric heat pump, resulting in decreased annual therm

4 The 2019 Building Energy Standards are yet to be determined; therefore, ConSol used the best available knowledge and past experience to estimate the 2019 stringency and energy features.

usage and increased kWh usage. These design efficiencies for the single-family building prototype resulted in a net TDV energy decrease of over 10%.

ConSol designed the multifamily home with additional roof deck insulation, higher roof reflectance, more efficient windows (lower U-factor and lower SHGC), a more efficient gas furnace, a more efficient air conditioner, and a more efficient water heater. Since the water heater was switched from a 0.82 EF tankless gas unit to a 3.39 EF electric heat pump, annual therm usage again decreased while kWh usage increased. These design efficiencies for the multifamily building prototype also resulted in a net TDV energy decrease of over 10%.

PV Sizing to Achieve ZNE

Once the models for the residential prototypes were updated to represent the likely parameters of the 2019 code (10% better than 2016 code), PV systems were sized to reach ZNE. The most recent version of CBECC-res includes a version of the CEC-PV calculator, which allows users to size PV systems to match annual building consumption. There are limited variables such as "standard" versus "premium" panels and inverters. ConSol used a standard system using California Flexible Installation (CFI)[5] to meet the ZNE requirements.

Through iterative runs, ConSol determined that the two-story, 2,700 square foot single-family home would need an approximately 5.0kW system to reach ZNE in Climate Zone 9, Santa Clarita. The two-story, 6,960 square foot multifamily 8-plex would need an approximately 21.9kW system to reach ZNE in Climate Zone 9, Santa Clarita.

Policy documents, such as the 2015 Integrated Energy Policy Report, point to TDV as the metric that will be used to demonstrate compliance with ZNE in California. As previously discussed, CBECC software now uses EDR as the compliance metric that is output on CF1-R Title 24 compliance forms. The EDR value is based on TDV energy, but has additional ratios, which could cause confusion. In order to definitively demonstrate that the single-family home and multifamily building prototypes are designed to meet ZNE, ConSol has included both the EDR and TDV energy consumption and PV generation, which were acquired from the CBECC log file that is generated with each modeling run.

The EDR value for the Proposed Design for the single-family home prototype is **47.18**, while the EDR of the 5.0 kW PV system is **47.83**, slightly in excess of the annual building energy consumption. Similarly, the TDV energy of the Proposed Design is **69.92**, while the TDV energy of the 5.0 kW PV system is **70.88**, which is again slightly higher than the annual TDV energy consumption.

The EDR value for the Proposed Design for the multifamily building prototype is **59.90**, while the EDR of the 21.9 kW PV system is **60.05**, slightly in excess of the annual building energy consumption. Similarly, the TDV energy of the Proposed Design is **120.19**, while the TDV energy of the 21.9 kW PV system is **120.44**, which is again slightly higher than the annual TDV energy consumption.

5 California Flexible Installation (CFI) was developed to simplify rebate approvals within the NSHP program. Modeling PV using CFI provides an estimate of PV system performance within a range of installation scenarios, as are often found in new subdivisions. CFI can only be used for new construction projects, and it assumes that each PV system can be installed within all of the following criteria: 1) have an azimuth ranging from 150 to 270 degrees, 2) have a tilt corresponding to a roof pitch between 0:12 and 7:12, 3) meet the minimal shading criteria, 4) use the same make, model, and quantity of major system components, and 5) have fixed, nontracking mounting. For more information see: http://www.energy.ca.gov/2013publications/CEC-300-2013-009/CEC-300-2013-009-ED7-CMF.pdf

New Commercial Construction

Methods and Assumptions

All commercial buildings are assumed to be in Climate Zone 9 (Santa Clarita/Los Angeles County), and the analysis focuses on feasible, cost-effective design and product selections most likely to be adopted by builders.

Energy modeling was conducted using EnergyPro 6.8 and Energy Pro 7.1, which is CEC-approved modeling software that can be used for commercial buildings regulated by the California Energy Code. The office, light industrial, and suburban retail building energy models used in this analysis are based on prototypical models.

For the three commercial building prototypes, ConSol determined annual site energy consumption savings (kWh and therms) resulting from changes to the California Energy Code between 2008 and 2016.

Savings Resulting From Code Changes

Table 3 identifies the annual electrical energy consumption (kWh) savings for the three commercial building prototypes resulting from changes to the California Energy Code between 2008 and 2016.

Table 3
2008 to 2016 – Total Electrical Energy Savings

Building Type	Electrical Consumption (kWh)		Electrical Savings (kWh)
	2008 Code-Compliant Building	2016 Code-Compliant Building	2008 Code-Compliant Building to 2016 Code-Compliant Building
100,000 ft^2 4-Story Office Building	999,952	922,690	77,262
75,000 ft^2 Light Industrial Building*	205,979	161,743	44,236
40,000 ft^2 Suburban Retail Building	539,915	423,112	116,803

*Only 20,000 ft^2 is conditioned.

Table 4 identifies the annual natural gas energy consumption (therms) savings for the three building prototypes resulting from changes to the California Energy Code between 2008 and 2016. The recommended electrical energy savings measures resulted in additional natural gas usage for the light industrial building. This is indicated by the negative sign (-) in the therms savings column. The net increase for the light industrial building prototype is a result of the reduced internal heat produced by the lights, which then requires additional space heating.

Table 4
2008 to 2016 – Total Natural Gas Energy Savings

Building Type	Natural Gas Consumption (therms)		Natural Gas Savings (therms)
	2008 Code-Compliant Building	2016 Code-Compliant Building	2008 Code-Compliant Building to 2016 Code-Compliant Building
100,000 ft^2 4-Story Office Building	5,030	4,338	692
75,000 ft^2 Light Industrial Building*	948	971	-23
40,000 ft^2 Suburban Retail Building	4,096	3,183	913

*Only 20,000 ft^2 is conditioned.

Meeting 2019 Commercial Building Energy Standards

Packages of energy efficiency improvements that would be required for the three commercial building prototypes to exceed the 2016 California Energy Code by roughly 15%[6] were created. Based on our professional judgment, it is possible that the 2019 California Energy Code requirements will be 15% above the 2016 California Energy Code requirements; however, based on the last iteration of the Code (2008 to 2013), a smaller incremental improvement was achieved (i.e., approximately 2-18% depending on building prototype).

Although the goal was to target the 15% savings number, current and proposed code constraints, cost effectiveness, and practical options limited the feasibility of the actual measures that could be proposed. The actual savings percentage for each commercial building prototype, therefore, may be less than 15% based on the available energy efficiency improvements.

100,000 Square Foot, Four-Story Office Building

Table 5 shows the incremental energy savings for a package of energy efficiency recommendations for a 100,000 square foot, four-story office building.

Table 5
100,000 Square Foot, Four-Story Office Building (18% above 2016)
Energy Conservation Measures

End Use	ECM	Recommendations	Annual Savings (kWh)	Annual Savings (Therms)
Lighting	**1**	Reduce Lighting Density from 0.75 Watts per Square Foot to 0.60 Watts per Square Foot	114,661	2,491
HVAC	**2**	Install Water Cooled Chilled Water System (0.5 kW/ton) and Heating Hot Water Boiler Versus Packaged Units		
		Total	**114,661**	**2,491**

6 The percent energy savings includes both electricity and natural gas.

The lighting recommendation involves switching from standard fluorescent lighting fixtures to essentially 100% LED lighting fixtures.

The HVAC recommendation involves installing a high efficiency water cooled chiller, cooling tower, air handlers, piping, and distribution pumps versus standard packaged rooftop air conditioning units.

75,000 Square Foot Light Industrial Building

Table 6 shows the incremental energy savings for a package of energy efficiency recommendations for the 75,000 square foot light industrial building.

The recommended electrical energy savings measures resulted in additional natural gas usage. This is indicated by the negative sign (-) in the therms savings column. The net increase for each building prototype is a result of the reduced internal heat produced by the lights, which in turn requires additional gas heating.

Table 6
75,000 Square Foot Light Industrial Building (2% above 2016)
Energy Conservation Measures

End Use	ECM	Recommendations	Annual Savings (kWh)	Annual Savings (Therms)
Lighting	**1**	Reduce Office Area Lighting Density from 0.9 Watts per Square Foot to 0.72 Watts per Square Foot	10,861	-221
		Total	**10,861**	**-221**

The lighting recommendation involves switching from standard fluorescent lighting fixtures to essentially 100% LED lighting fixtures.

40,000 Square Foot Suburban Retail Building

Table 7 shows the incremental energy savings for a package of energy efficiency recommendations for the 40,000 square foot suburban retail building.

The recommended electrical energy savings measures resulted in additional natural gas usage. This is indicated by the negative sign (-) in the therms savings column. The net increase for each building prototype is a result of the reduced internal heat produced by the lights, which in turn requires additional gas heating.

Table 7
40,000 Square Foot Suburban Retail Building (11% above 2016)
Energy Conservation Measures

End Use	ECM	Recommendations	Annual Savings (kWh)	Annual Savings (Therms)
Lighting	**1**	Reduce Lighting Density from 1.2 Watts per Square Foot to 0.96 Watts per Square Foot	61,562	-104
		Total	**61,562**	**-104**

The lighting recommendation involves switching from standard fluorescent lighting fixtures to essentially 100% LED lighting fixtures.

Achieving ZNE For Commercial Buildings Via Photovoltaic Systems

The TDV Energy generated by the EnergyPro 7.1 software for each building prototype was used as the target for PV system design. ConSol used the CECPV Calculator (Version 5.0) to generate TDV Energy output for various PV system sizes. Through iterative runs, ConSol determined the appropriate PV system sizes needed to meet the annual TDV Energy usage for each building prototype.

The panels used for the calculations were 295 watts DC each. The dimensions of each panel is 77.01 x 39.06 x 1.57 inches.

The "baseline" columns for electrical and natural gas energy consumptions shown in Tables 8 through 10 below were calculated using the EnergyPro 7.1 software. The electrical generation of the PV system is greater than the baseline electrical consumption because the PV system is sized to offset the combined TDV impact of the electrical and natural gas consumption shown in these columns. The negative value in the last column indicates that the proposed PV system is generating more TDV Energy than is required by the building.

100,000 Square Foot, Four-Story Office Building

Table 8 shows the size of a PV system necessary to reach ZNE for a 2019-compliant 100,000 square foot, four-story office building. The proposed TDV with PV is not simply the baseline TDV minus the TDV generation because the TDV impacts of the building and PV were analysed hourly, which resulted in the proposed TDV values.

Table 8
100,000 Square Foot, Four-Story Office Building
PV System

PV Sizing	PV Size (kW DC)	Electrical Baseline (kWh)	Natural Gas Baseline (therms)	Electrical Generation (kWh)	TDV Generation (TDV kBtu/sqft/yr)	Baseline TDV (TDV kBtu/sqft/yr)	Proposed TDV w/ Solar (TDV kBtu/sqft/yr)
Zero Net Energy	536.9	808,029	1,847	902,871	215.8	212.0	-2.5

75,000 Square Foot Light Industrial Building

Table 9 shows the size of a PV system necessary reach ZNE for a 2019-compliant 75,000 square foot light industrial building. The proposed TDV with PV is not simply the baseline TDV minus the TDV generation because the TDV impacts of the building and PV were analysed hourly, which resulted in the proposed TDV values.

Table 9
75,000 Square Foot Light Industrial Building
PV System

PV Sizing	PV Size (kW DC)	Electrical Baseline (kWh)	Natural Gas Baseline (therms)	Electrical Generation (kWh)	TDV Generation (TDV kBtu/sqft/yr)	Baseline TDV (TDV kBtu/sqft/yr)	Proposed TDV w/ Solar (TDV kBtu/sqft/yr)
Zero Net Energy	126.6	150,882	1,192	199,604	231.1	228.1	-0.3

40,000 Square Foot Suburban Retail Building

Table 10 shows the size of a PV system necessary to reach ZNE for a 2019-compliant 40,000 square foot suburban retail building. The proposed TDV with PV is not simply the baseline TDV minus the TDV generation because the TDV impacts of the building and PV were analysed hourly, which resulted in the proposed TDV values.

Table 10
40,000 Square Foot Suburban Retail Building
PV System

PV Sizing	PV Size (kW DC)	Electrical Baseline (kWh)	Natural Gas Baseline (therms)	Electrical Generation (kWh)	TDV Generation (TDV kBtu/sqft/yr)	Baseline TDV (TDV kBtu/sqft/yr)	Proposed TDV w/ Solar (TDV kBtu/sqft/yr)
Zero Net Energy	299.1	361,550	3,287	486,764	283.7	273.6	-7.4

APPENDIX D
TRIP RATE AND TRIP LENGTH ESTIMATES

SCVCTM Buildout MISSION VILLAGE LAND USE AND TRIP GENERATION SUMMARY

	Land Use Type	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	ADT
3.	Single Family (6-10du/ac)	351.00 DU	66	197	263	224	130	354	3475
4.	Condominium/Townhouse	2058.00 DU	206	987	1193	966	536	1502	16464
5.	Apartment	836.00 DU	67	359	426	343	176	519	5768
7.	Senior (Active)	459.00 DU	37	55	92	73	46	119	1703
11.	Commercial Center(10-30a)	224.10 TSF	164	105	269	533	578	1111	12115
20.	Elementary/Middle School	900.00 STU	234	180	414	72	81	153	1305
24.	Library	36.00 TSF	27	11	38	122	133	255	3059
30.	Industrial Park	17.10 TSF	9	2	11	2	9	11	103
40.	Commercial Office	1331.00 TSF	2063	253	2316	279	1717	1996	15386
51.	Developed Park	41.50 AC	0	0	0	1	1	2	108
60.	Congregate Care	351.00 DU	42	21	63	49	53	102	986
	TOTAL		2915	2170	5085	2664	3460	6124	60472

SCVCTM Buildout MISSION VILLAGE LAND USE AND TRIP GENERATION SUMMARY

	Land Use Type	Units	Productions/ Attractions	H-W	H-S	H-O	O-W	O-O	Total	P&A Total
3.	Single Family (6-10du/ac)	351.00 DU	P's	764	520	942	69	382	2677	
			A's	0	0	347	69	382	798	3475
4.	Condominium/Townhouse	2058.00 DU	P's	3292	2800	5595	330	1481	13498	
			A's	0	0	1155	330	1481	2966	16464
5.	Apartment	836.00 DU	P's	1154	981	1961	115	519	4730	
			A's	0	0	404	115	519	1038	5768
7.	Senior (Active)	459.00 DU	P's	85	375	699	34	170	1363	
			A's	0	0	136	34	170	340	1703
11.	Commercial Center(10-30a)	224.10 TSF	P's	0	0	0	363	3029	3392	
			A's	1090	2424	1817	363	3029	8723	12115
20.	Elementary/Middle School	900.00 STU	P's	0	0	0	0	39	39	
			A's	131	757	339	0	39	1266	1305
24.	Library	36.00 TSF	P's	0	0	0	275	520	795	
			A's	489	0	980	275	520	2264	3059
30.	Industrial Park	17.10 TSF	P's	0	0	0	7	22	29	
			A's	40	0	5	7	22	74	103
40.	Commercial Office	1331.00 TSF	P's	0	0	0	1693	2769	4462	
			A's	4154	0	2308	1693	2769	10924	15386
51.	Developed Park	41.50 AC	P's	0	0	0	0	13	13	
			A's	1	0	81	0	13	95	108
60.	Congregate Care	351.00 DU	P's	0	0	0	30	296	326	
			A's	59	147	128	30	296	660	986
	TOTAL		P's	5295	4676	9197	2916	9240	31324	
			A's	5964	3328	7700	2916	9240	29148	60472

Mission Village Trip and Tripend Summary
Internal/External Estimates

		HBW			HBO			NHB			Ps & As Totals			ADT Tripend Totals			
		% Int.	Internal	External	% Int.	Internal	External	% Int.	Internal	External	% Int.	Internal	External	% Int.	Internal	External	Total
Residential	P's	9.0%	477	4,818	37.0%	5,133	8,740	33.0%	1,023	2,077	29.8%	6,633	15,635	31.7%	8,677	18,733	27,410
	A's	0.0%	0	0	50.0%	1,021	1,021	33.0%	1,023	2,077	39.8%	2,044	3,098				
Non-Residential	P's	0.0%	0	0	0.0%	0	0	38.0%	3,422	5,582	38.0%	3,422	5,582	33.5%	10,597	21,052	31,649
	A's	8.0%	467	5,365	42.1%	3,288	4,521	38.0%	3,422	5,582	31.7%	7,176	15,469				
Schools/Parks	P's	0.0%	0	0	0.0%	0	0	46.0%	24	28	46.0%	24	28	62.4%	882	531	1,413
	A's	7.6%	10	122	70.1%	824	353	46.0%	24	28	63.1%	858	503				
Total	P's	9.0%	477	4,818	37.0%	5,133	8,740	36.8%	4,468	7,688	32.2%	10,078	21,246	33.3%	20,156	40,316	60,472
	A's	8.0%	477	5,487	46.5%	5,133	5,895	36.8%	4,468	7,688	34.6%	10,078	19,070				
															ADT Trip Totals		
															Internal	External	Total
Residential															4,338	18,733	23,072
Non-Residential															5,299	21,052	26,350
Schools/Parks															441	531	972
Total															10,078	40,316	50,394

Source: SCVCTM Model Run

NL & Lennar Westside Area

	Average Productions & Attractions Trip Lengths by Purpose			Average Productions Only Trip Lengths by Purpose			Average Attractions Only Trip Lengths by Purpose		
	Total Trips	Ave. Trip Length	VMT	Total Trips	Ave. Trip Length	VMT	Total Trips	Ave. Trip Length	VMT
Home-to-Work	95232	13.526	1288108.032	44708	**10.696**	478196.768	50524	16.030	809911.264
Home-to-Shopping	70074	9.834	689107.716	37002	**5.179**	191633.358	33072	15.042	497474.358
Home-to-Other	114224	9.314	1063882.336	72555	**7.04**	510787.2	41669	13.274	553095.136
Other-to-Work	37795	9.803	370504.385	22357	8.906	199111.442	15438	11.102	171392.943
Other-to-Other	175400	8.686	1523524.4	111078	7.62	846414.36	64322	10.527	677110.04

NOTE: Geographic area is larger than RMDP/SCP area - do not use trip or VMT totals as project totals
source: SCVCTM run Nov. 1 2007

APPENDIX E
FEHR & PEERS TRANSPORTATION DEMAND MANAGEMENT PROGRAM TECHNICAL MEMORANDUM

FEHR & PEERS

TECHNICAL MEMORANDUM

Date: September 26, 2016

To: Eric Lu, Ramboll Environ

From: Tom Gaul & Chelsea Richer, Fehr & Peers

Subject: Mission Village: Transportation Demand Management Plan Evaluation

Ref: LA16-2810

This technical memorandum presents an evaluation of the recommended Newhall Ranch Transportation Demand Management (TDM) Plan as applied to Mission Village. The TDM Plan is included as an attachment to this document.

Mission Village is one of five villages within the Newhall Ranch Specific Plan area, which the County of Los Angeles approved in 2003 for the development of a large-scale mixed-used community. The Specific Plan will guide the long-term development and conservation of the 11,999-acre Newhall Ranch community, as approved to include a broad range of residential, mixed-use, commercial/retail uses within five interrelated villages.

1. INTRODUCTION

The recommended TDM Plan contains a set of strategies designed to maximize vehicle miles traveled (VMT) reduction opportunities within the Newhall Ranch development area, including Mission Village. The analysis presented in this memorandum takes into account the Mission Village Project location within the greater Newhall Ranch area and the types of land uses that would be developed as part of the Project.

As approved by the County Board of Supervisors on May 15, 2012, Mission Village would accommodate 4,055 homes (specifically, 351 single-family and 3,704 multi-family homes, including 351 homes located in a Continued Care Retirement Community (CCRC), 459 age-qualified homes and 300 affordable housing units) and 1,555,100 square feet of commercial uses (including 224,100 square feet of retail and 1,331,000 square feet of office). The project also would include a 9.5-acre elementary school, 3.3-acre library, 1.5-acre fire station, 1.2-acre bus transfer station, and approximately 693 acres of open space (including parks, recreation areas, Santa Clara River area, and three spineflower preserves located on 85.8 acres). Mission Village would further include supporting facilities and infrastructure, including roads, the Commerce Center Drive Bridge, trails, drainage improvements, flood protection, potable and recycled water systems, a sanitary sewer system, and dry utilities systems.

The estimated VMT reductions for each strategy presented in the TDM Plan are based on research presented in the California Air Pollution Control Officers Association's (CAPCOA) 2010 report.[1] For certain strategies, reference also is made to research conducted by Fehr & Peers beyond the estimates provided by the CAPCOA report. The remainder of this technical memorandum is organized as follows:

- Section 2 provides an overview of the recommended TDM Plan, including a list of the strategies contained in the recommended TDM Plan.
- Section 3 provides information about the overall methodology used to estimate the VMT reduction potential associated with each strategy.
- Section 4 provides a detailed description of and estimated VMT reductions for each of the strategies contained within the recommended TDM Plan.
- Section 5 provides a summary of the overall estimated VMT reduction associated with the strategies contained within the recommended TDM Plan.
- Appendix: TDM Strategy Examples provides a listing of examples of TDM strategies implemented in other areas of the state, with applicable internet source references.
- Attachments includes the following documents: Newhall Ranch Transportation Demand Management Plan; Exhibit 1, CAPCOA Chart 6-2, Transportation Strategies Organization; Exhibit 2, Mission Village Conceptual Transit Plan; Exhibit 3, Conceptual Transit Plan; Exhibit 4, Conceptual Large Mobility Hub Plan; Table 1, Strategies in the Recommended TDM Plan for the Mission Village Project; and Table 2, Calculations to Support the Strategies in the Recommended TDM Plan for the Mission Village Project.

2. OVERVIEW OF THE RECOMMENDED TDM PLAN

The following strategies are included in the recommended Newhall Ranch TDM Plan, and would apply to the Mission Village Project:

1. Integrate Affordable and Below Market Rate Housing
2. Pedestrian Network
3. Traffic Calming
4. Transit Network Expansion
5. Alternative Work Schedules and Telecommute Program (Residential End)
6. Required Commute Trip Reduction Program
7. Alternative Work Schedules and Telecommute Program (Work End)

[1]California Air Pollution Control Officers Association. *Quantifying Greenhouse Gas Mitigation Measures-A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*, 2010. The CAPCOA report is herein incorporated by reference pursuant to CEQA Guidelines, section 15150.

8. School Bus Program
9. Transit Fare Subsidy for Employees
10. Carshare Program
11. Neighborhood Electric Vehicle (NEV) Strategy
12. Mobility Hubs
13. Tech-Enabled Mobility
14. Bikeshare Program
15. Transit Fare Subsidy for Below Market Rate Housing Residents

The implementation of the TDM Plan would be, in part, accomplished through the creation of a Transportation Management Organization (TMO) or equivalent management entity, the formation of which is a pre-requisite to achievement of some of the VMT reduction estimates identified herein.

3. METHODOLOGY

The 2010 CAPCOA report, titled *Quantifying Greenhouse Gas Mitigation Measures*, is a primary resource to the assessment of quantifiable greenhouse gas emission reduction benefits. CAPCOA's research focuses on strategies to reduce greenhouse gas emissions at the project level, primarily in terms of land use, transportation, and energy use. The transportation component bases the emission reduction benefits on estimated reductions in VMT. These strategy-specific VMT reduction estimates were applied to the TDM strategies included in Section 4 below.

For each strategy, the CAPCOA report provides a discussion of the relevant literature, as well as a guideline for estimating the VMT reduction resulting from each individual strategy. The recommended guidelines for estimating VMT reduction were developed from relevant research and case studies. Section 4 below summarizes the particular methodology used to estimate the specific VMT reduction for each of the strategies included in the recommended TDM Plan.

For three strategies (Strategies 12, 13 and 14 below), there was no methodology available for estimating VMT reduction using the CAPCOA report, due to research limitations at the time the CAPCOA report was published. Therefore, VMT reduction estimates were derived from research conducted by Fehr & Peers, using professional engineering judgement and based on experience working on other TDM projects in California. These three instances are indicated in their respective sections in Section 4.

In addition, each strategy is considered by CAPCOA as part of a larger category group: Land Use/Location, Neighborhood/Site Enhancement, Parking Policy/Pricing, Transit System Improvements, Commute Trip Reduction, and Road Pricing Management. The CAPCOA report provides certain maximum reductions in VMT for each individual strategy, as well as for each category of strategies. The maximum reductions serve as caps for each category to prevent the double counting of reductions resulting from a combination of related strategies, similar in concept to the dampening adjustment discussed below in Section 5.

Similarly, the CAPCOA report sets overall maximum caps based on context, with a 20% maximum reduction cap set for "Suburban Center." "Suburban Center" is described generally as "a project typically involving a cluster of multi-use development within dispersed, low density, automobile dependent land use patterns (a suburb)." Suburban Center projects serve the population of the suburb with office, retail, and housing that is denser than the surrounding areas and are typically 20 miles or more from a regional central business district, with a generally balanced relationship between jobs and housing and bus service at 20-30 minute headways and/or a commuter rail station. Given these characteristics, "Suburban Center" is the context most appropriate to Mission Village based on Mission Village's location within the Newhall Ranch Specific Plan area, its mix of land uses, and the expected availability of local transit service throughout the Project site. Specifically, Mission Village contains more higher-density multi-family housing than single family housing (2,894 multi-family units compared to 351 single family units, plus 810 assisted living and retirement units), and substantial office uses (1,331,000 square feet) generating jobs.

The maximum cap set for Suburban Center recognizes that each set of strategies is somewhat limited by the overall land use beyond a project site, opportunities to connect to other suburban and urban environments, and the set of already existing mobility and access tools. Exhibit 1 is a reproduction of Chart 6-2 from the CAPCOA report, identifying the category and overall maximum VMT reduction caps, as well as the individual strategies included in each category.

4. EVALUATION OF RECOMMENDED TDM STRATEGIES

This section provides a detailed evaluation of each TDM strategy listed in Section 2: Overview of the Recommended TDM Plan, above. For each strategy that is based on the CAPCOA report, the related CAPCOA strategy code (for example, CAPCOA TRT-6 or SDT-3) is provided.

1. Integrate Affordable and Below Market Rate Housing

According to CAPCOA, a VMT reduction of 0.04%-1.20% would be expected based on the inclusion of below market rate housing into residential and mixed-use development projects with more than 5 dwelling units (CAPCOA LUT-6). Below market rate housing provides greater opportunity for lower income families to live closer to job centers and achieve jobs/housing match near transit. Income has a statistically significant effect on the probability that a commuter will take transit or walk to work. According to the research underlying the CAPCOA range of effectiveness, housing that is affordable to an average income of 75% below the area median income produces the expected VMT reduction. In Mission Village, 7% of the total housing would be deemed affordable, below market rate, while 4% would be affordable to those with an average income of 75% below the area median income. As such, the more conservative 4% rate was utilized to calculate the VMT reduction attributable to this strategy.

The reduction rate is based on the amount of below market rate housing provided and calculated according to the following formula:

> % VMT Reduction = 4% times, or multiplied by (*) Percentage of units in the project that are below market rate

Approximately 7% of the housing within Mission Village would be below market rate housing, with 4% affordable to an average of 75% below the area median income. This type of housing is therefore expected to result in an approximate 0.2% decrease in total VMT (4% * 4% = 0.2%).

2. *Pedestrian Network*

According to CAPCOA, enhancing pedestrian infrastructure can reduce VMT for residential, retail, office, industrial, and mixed-use projects (CAPCOA SDT-1). A high quality pedestrian network within an urban or suburban project site would be expected to result in an estimated 1% VMT reduction. With the expansion of the pedestrian network to include connections to the off-site network, a project can achieve an estimated VMT reduction of up to 2%.

In order for the pedestrian network to facilitate a reduction in VMT, the pedestrian network must directly connect to all existing and planned pedestrian facilities both within and adjacent to the project site, while minimizing any barriers to pedestrian access. According to CAPCOA, pedestrian network improvements are those that eliminate physical barriers to pedestrian access, such as walls, landscaping, and slopes/steep inclines that prevent easy access.

Mission Village would incorporate a high-quality pedestrian network to enhance pedestrian access both on- and off-site, thereby encouraging a mode shift from driving to walking. The pedestrian network would be built into the design of the street network throughout the Project site, and would connect to existing development surrounding the Project site and to a network of off-street trails that will link areas of residential development with areas of commercial development, schools, and open space. Moreover, higher capacity streets throughout the Project site would have sidewalks and generally avoid barriers to pedestrian travel such as walls, landscaping, and steep slopes/inclines that otherwise would impede pedestrian travel. As a result, this high quality network is expected to directly result in a 2% reduction in total VMT, and indirectly would combine with other TDM strategies to further reduce VMT.

3. *Traffic Calming*

According to CAPCOA, traffic calming strategies include design elements intended to reduce motor vehicle speeds and improve pedestrian and bicyclist safety, creating an environment that encourages people to walk or bike instead of driving (CAPCOA SDT-2). Design elements could include, but are not limited to, count-down signal timers, marked crosswalks, raised crosswalks, raised intersections, speed tables, median islands, planter strips with trees, curb extensions, on-street parking, tight corner radii, roundabouts or mini-circles, and chicanes/chokers.

CAPCOA's estimation of VMT reduction for traffic calming measures is based on the percentage of streets and intersections within the project that include traffic calming improvements. When 100% of streets and intersections within the project include such improvements, there is an estimated 1% reduction in VMT. This estimated reduction in VMT applies to both urban and suburban projects, although the underlying literature relied upon by CAPCOA includes differences in reductions between the two. The VMT reductions were generally higher for traffic calming improvements in suburban environments (1.5%-2.0%) than urban environments (0.5%-0.6%). According to CAPCOA, "[t]hough the literature provides some difference between a suburban and urban context, the difference is small and thus a conservative estimate was used to be applied to all contexts" (CAPCOA, 192). Thus, CAPCOA's estimate ranges from 0.25%-1%, based on the percentage of streets and intersections incorporating traffic calming design elements.

Traffic calming improvements interact with other TDM strategies that encourage a mode shift from driving to walking and/or biking. The VMT reductions estimated by CAPCOA take this interaction into account and the estimated VMT reduction for traffic calming is specific to the traffic calming improvements and is separate from any other interacting measures.

Based on the CAPCOA report, it is estimated that the Mission Village traffic calming improvements would result in a 1% reduction in total VMT. This percentage is based on the fact that 100% of the streets and intersections will include one or more of the design elements listed in CAPCOA's description of traffic calming improvements, as detailed above, or other features that would reduce motor vehicle speeds such as streetscaping, NEV lanes, or bike lanes.

4. Transit Network Expansion

According to CAPCOA, transit network expansion includes the extension of local transit service (CAPCOA TST-3), shuttles to major rail transit centers and other areas within a project site (CAPCOA TST-6), and improved pedestrian access to transit facilities (CAPCOA TST-2; e.g., sidewalk/crosswalk safety enhancements and/or bus shelter improvements).

The CAPCOA report provides the following formula for calculating the percent VMT reduction associated with transit network expansion:

> % VMT Reduction = (% increase in transit network coverage) * (elasticity of transit) * (existing transit mode share) * (adj. factor = 0.67)

According to the CAPCOA report, transit network expansion results in VMT reductions ranging from 0.1-8.2%.

With respect to Mission Village, Santa Clarita Transit plans to extend existing bus routes into the development area, thereby connecting Mission Village to major transit centers such as the Santa Clarita or Newhall Metrolink Stations.[2] Based on the CAPCOA formula, these planned transit enhancements were estimated to increase the existing transit system network coverage by 80%, a conservative estimate given the current lack of any transit presently serving the Project site. Given these coverage improvements (i.e., 80%), in combination with a transit elasticity of 1.01 based on CAPCOA documentation, and an existing 2.3% transit mode share as reported by the City of Santa

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[2] City of Santa Clarita. *Transportation Development Plan*, May 2013.

Clarita,[3] the estimated reduction in total VMT attributable to the transit network expansion would be approximately 1.3% (80% * 1.01 * 2.3% * 0.67 = 1.3%).[4]

5. Alternative Work Schedules and Telecommute Program (Residential End)

This strategy captures commuters who live within Mission Village and commute elsewhere, while Strategy 7 presented later captures commuters who live outside Mission Village and work within Mission Village.

According to CAPCOA, participation in an alternative work week or telecommute program results in fewer commute trips, which then reduces commute and overall VMT (CAPCOA TRT-6). The degree to which these programs reduce VMT is a direct result of the extent of the program and the number of people participating. Depending on the participation rate and the program type, the range in reduction of commute trip VMT is estimated by CAPCOA to be between 0.07% and 5.5%.

The program participation rate is approximated according to the methodology presented by CAPCOA, which itself is based on a Cambridge Systematics/Fehr & Peers study.[5] Based on this methodology, a maximum of 50% of the typical workforce would have the potential to participate in an alternative work schedule, and 50% of those people actually would chose to participate; i.e., 25% of the total workforce would chose to participate. CAPCOA conservatively suggests that this rate be adjusted down further, in order to take into consideration possible rebound effects (i.e., travel for other purposes during the day while working at home), to a 10% participation rate.

As to program type, telecommute program types based on alternative work schedules range from one to several telecommute days per week; that is, employees participating in the program would be expected to telecommute anywhere from 1 to 3 days. Based on the range of telecommute days, in combination with the marketing support of the Transportation Management Organization noted in Section 2, a telecommute program would be expected to result in an average of 1.5 days of telecommuting per week.

Given a participation rate of 10% in a program expected to result in an average of 1.5 days of telecommuting/week, CAPCOA estimates the commute VMT reduction as 2.2% (CAPCOA page 237). To extrapolate this reduction in commute VMT to a reduction in overall VMT, the commute VMT reduction rate of 2.2% was applied to the commute VMT, which is 10% of the total VMT attributable to home-based (production end) work trips.[6] Additionally, since any work trips that start and end within Mission Village (internal trips) would be captured by the reduction for Strategy 7: Alternative Work Schedules and Telecommute Program (Work End), the results are

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[3] 2.3% transit mode share based on the 2014 Census Journey to Work data for the City of Santa Clarita.
[4] Transit elasticity of 1.01 for suburban transit routes based on CAPCOA documentation.
[5] Cambridge Systematics and Fehr & Peers. *Moving Cooler: An analysis of transportation strategies for reducing greenhouse gas emissions.* Urban Land Institute, 2009.
[6] Percent of Mission Village VMT attributable to home-based (production end) work trips calculated based on traffic modeling conducted for the Mission Village EIR (October 2011).

multiplied by the percentage of home-to-work production-end trips, which are external, or 91%.[7] This results in an overall VMT reduction of approximately 0.2% (2.2% * 10% * 91% = 0.2%).

6. Required Commute Trip Reduction Program

According to CAPCOA, a required commute trip reduction program (CAPCOA TRT-2) is a multi-strategy program that encompasses a combination of individual VMT reduction measures such as ride-sharing, marketing and promotions, preferential parking, transit subsidies, and bicycle end-of-trip facilities. Commute trip programs are typically operated by Transportation Management Organizations that manage and promote the program, collect data and monitor effectiveness. In some cases, some strategies, such as ride-sharing or providing preferential parking for carpool participants, may be implemented and operated by individual employers who monitor and report progress regularly to the TMO. The critical components of a required commute trip program (TRT-2) compared to a voluntary commute trip program (TRT-1) is that the required commute trip program has established performance standards, required implementation, and regular monitoring and reporting. Participation in required commute trip reduction programs is typically required of employers above a certain size threshold, exempting small businesses and non-traditional employers from the requirement to participate.

Based on the diversity of types of jobs that would exist as part of Mission Village (i.e., large and small businesses, schools, community facilities), it is conservatively estimated that 50% of the employees would be employees of larger businesses eligible to access the services and benefits provided by the required commute trip program as a result of their employer's required participation. This estimate is at the low end of CAPCOA's expected participation range for this strategy, between 20% and 100%. According to CAPCOA, required commute trip reduction programs would result in a 21% decrease in vehicle mode share for commute trips for those employees who are eligible to participate in the program (CAPCOA page 224). Therefore, the following formula is used to estimate the commute-trip-related VMT reduction attributable to a required commute trip program:

> % VMT Reduction = (% employees eligible) * (21% reduction in vehicle mode share) * (% share of all trips attributable to home-based commute trips)

For Mission Village, it is estimated that an approximate 1.9% VMT reduction would result from implementation of a required commute trip program based on a 50% employee eligibility rate, and a 21% reduction in the percentage share of all trips attributable to home-based work trips, which is 18% (50% * 21% * 18% = 1.9%).[8]

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[7] Percent of work trips that are external are 91%, calculated based on traffic modeling conducted for the Mission Village EIR (October 2011).

[8] Percent Mission Village VMT attributable to home-based (attraction end) work trips calculated based on traffic modeling conducted for the Mission Village EIR (October 2011).

7. Alternative Work Schedules and Telecommute Program (Work End)

Related to alternative work schedules and telecommute programs from the residential perspective (Strategy 5) are similar programs viewed from the work, or employer, perspective. This strategy captures commuters who live outside Mission Village and work within Mission Village, while Strategy 5 captures commuters who live within Mission Village and commute elsewhere. The participation of an employee in an alternative work week or telecommute program is analogous to that of a project site resident (see Strategy 5, above): the higher the participation rate and the more extensive the program, the larger the reduction in VMT.

Determining the participation rate and program type for the telecommute program on the work end utilizes the same CAPCOA methodology as on the residential end: while 50% of a typical work force would have the potential to participate in the alternative work schedule, only a 10% participation rate is utilized. As to program type, commercial businesses that locate in Mission Village would be encouraged to implement alternative work schedules and telecommuting options for their employees. Using the reference table provided on page 237 of the CAPCOA report, a 4/40 alternative work schedule (4 days per week, 10 hours a day) and a 10% participation rate would yield a 1.5% reduction in commute VMT.

To extrapolate the reduction in commute VMT to a reduction in overall VMT, the commute reduction rate of 1.5% is applied to the 18% of total VMT that is attributed to home-based (attraction end) work trips, thereby resulting in an overall VMT reduction of approximately 0.3% (1.5% * 18% = 0.3%).

8. School Bus Program

According to CAPCOA, the implementation of a school bus program involves coordinating with local school districts to provide school bus service in the project area and local community (CAPCOA TRT-13). The degree to which the school bus program would reduce school VMT (i.e., those vehicle miles generated by student travel to and from a school) ranges from 38% to 63% dependent upon the number of families participating in the program.

Based on the methodology provided by CAPCOA, the reduction in school VMT is calculated as follows:

> % Reduction in School VMT = Participation rate of Families * (39 school weeks / 52 weeks)

CAPCOA research identified an 84% participation rate based on a study conducted in connection with the Lamorinda School Bus Program serving Lafayette, Orinda, and Moraga, California. The Lamorinda study, which contains the only empirical data provided by CAPCOA supporting participation rates, determined that 84% of the families within the boundaries of the School Bus Program participated in the program. CAPCOA also includes a low end participation rate of 50%, which is not supported by quantitative study and is based on an assumption of a "minimum participation goal." Because the communities of Lafayette, Orinda, and Moraga are suburban communities similar to the type of communities that would be built as part of the Project, and because the proposed School Bus Program would have as its goal a maximum, rather than minimum, participation rate, based on the professional judgment of the engineers preparing this analysis, a participation rate of 84% was used as a starting point for the analysis. As a conservative estimate, the participation rate was reduced by 10% to 76%.

Based on the methodology provided by CAPCOA, the proposed School Bus Program would result in an annual reduction in school-trip VMT of 57.0% (76% of families participating * 75% (39 weeks of school / 52 weeks in a year) = 57.0% of annual school-trip VMT reduced). This percent reduction is then applied to the total VMT that would be generated by the Project's school-based trips, or 5.9% of total annual VMT, resulting in an overall VMT reduction of approximately 3.4% (57.0% * 5.9% =3.4%).[9]

9. Transit Fare Subsidy for Employees

CAPCOA associates certain levels of transit fare subsidy with corresponding levels of commuter participation in transit based on locational context (CAPCOA TRT-4). For the Suburban Center context, when employees are given a subsidy at their place of employment, a subsidy of $2.98 per person per day incentivizes a 16.4% reduction in commute VMT (CAPCOA page 231). The 16.4% reduction provided by CAPCOA is then multiplied by the percent of employees eligible to receive this subsidy to arrive at the final percent VMT reduction for this category of trips.

For subsidies of $2.98 per person per day, the CAPCOA report provides the following formula for calculating the percent VMT reduction associated with employee transit fare subsidies:

> % VMT Reduction = (% employees eligible to participate) * (16.4% reduction in commute VMT) * (% share of all trips attributable to home-based commute trips)

The transit fare subsidy will be offered through the TMO. Because an estimated 50% of Mission Village employees would be eligible to access the services and benefits provided by the required commute trip reduction program (Strategy 6) as a result of their employer's required participation, the remaining 50% of employees who commute to jobs located within Mission Village will be eligible to access transit fare subsidies directly through the TMO. As noted above, at the level of $2.98 per day, which equates to between 25% and 100% of an existing round-trip Santa Clarita Transit fare, depending on service class, CAPCOA estimates that 16.4% of commuters would switch, resulting in a reduction of 8.2% of commute-based VMT (50% * 16.4%). Overall, the commute-based VMT for employees accounts for 18% of the overall VMT.[10] Therefore, an 8.2% reduction in commute-based VMT equates to an approximate 1.5% reduction in overall VMT (18% * 8.2% = 1.5%).

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[9] CAPCOA estimates that 9.8% of total trips (5.9% of total VMT) are related to school trips based on 2000-2001 California Statewide Travel Survey and 2001 NHTS Summary of Travel Trends.

[10] Percent VMT attributable to home-based (attraction end) work trips calculated based on traffic modeling conducted for the Mission Village EIR (October 2011).

10. Carshare Program

Carshare programs are membership-based programs that provide members access to a shared fleet of vehicles (CAPCOA TRT-9). Cost is generally based on a per mile or hourly basis. There are three common categories of carshare programs: transit station based, employer based, or residential based/citywide. Each of these programs has slightly different uses. Transit station-based carshare generally is intended to close the "last mile" gap by allowing users to drive from the transit station to their final destination. Employer-based carshare programs can provide transit/bike/walk commuters with an opportunity to conduct business/day trips while also providing a guaranteed ride home. Residential based/citywide carshare programs generally replace entire home-based trips.

The CAPCOA methodology calculates the reduction in overall VMT attributable to carshare programs as follows:

> % VMT Reduction = (37% reduction in carshare member VMT) * (20 carshare members per shared car) * (1 car / 2,000 suburban residents)

As to Mission Village, the CAPCOA reduction in carshare member VMT is estimated as approximately 0.4% (37% * 20/2,000 = 0.4%).

To incentivize participation, the recommended TDM Plan includes partial subsidization of the annual membership fee (50% subsidy) for up to 50% of the households that would elect to participate in the carshare program (i.e., a 50% subsidy for all households that elect to participate in the program, capped at 50% of the total Project households), and 100% subsidization of the annual fee for up to 100% of the below market rate households. The incentive program is entirely additive and does not factor in to the VMT reduction calculations.

11. Neighborhood Electric Vehicle (NEV) Strategy

CAPCOA attributes a VMT reduction to neighborhood electric vehicle (NEV) participation and ownership, along with a travel network that accommodates NEV use, including features such as charging facilities, striping, signage, and educational tools (CAPCOA SDT-3). The amount of VMT reduction is based on market penetration levels (i.e., percent of households owning a NEV) and an average reduction in total VMT per NEV household of 12.7% (Percent Market Penetration * 12.7%), as follows:

- 1 out of 10 Households purchases an NEV (10%) * 12.7% = 1.3% reduction in total VMT
- 1 out of 5 Households purchases an NEV (20%) * 12.7% = 2.5% reduction in total VMT
- 1 out of 3 Households purchases an NEV (33%) * 12.7% = 4.2% reduction in total VMT

The methodology of how to estimate market penetration is not well documented in CAPCOA, although a case study undertaken for a community in Los Angeles County provides a method to estimate market penetration levels given certain subsidy levels.

The South Bay region in Los Angeles County conducted a pilot demonstration project for NEVs, which surveyed participants after the study on price-point and willingness to buy an NEV.[11] Based on this survey, 83% of respondents said they would consider purchasing an NEV at the $6,000 price point (or a 54% subsidy based on an average purchase price of $13,000), and 69% said they would consider purchasing an NEV at the $8,000 price point (or a 38% subsidy). However, these survey respondents are not reflective of the general public because they already expressed interest in NEVs by signing up to participate in the pilot study, and already had been given an NEV to drive, free of charge. At the end of the study, two out of 51 participating households purchased an NEV without any subsidy, or about 4%.

Assuming the above survey data for the South Bay region of L.A. County overstates NEV interest relative to an average resident who has not participated in a pilot study nor expressed a pre-existing interest in NEVs, based on our professional judgment it was estimated that the general population's willingness to purchase an NEV at each price point would be one-half that of the South Bay study participants' willingness. Using this approach and interpolating from the survey results, it is estimated that about 1 in 8 or 9 residents (12%) would consider purchasing an NEV with a 10% subsidy; about 1 in 5 (20%) would consider purchasing with a 25% subsidy; and about 1 in 3 (35%) would consider purchasing with a 50% subsidy.

The recommended TDM Plan includes a subsidy of 25%, to be promoted and marketed through the Transportation Management Organization, for households purchasing an NEV. At this price point, in combination with a supportive travel network that accommodates NEVs, it is estimated that 1 out of 5 households would purchase and use NEVs, resulting in an overall VMT reduction of approximately 2.5% (12.7% * 20% = 2.5%).

12. Mobility Hubs

Mobility hubs are one-stop centers for transit, rideshare meeting, car share, bicycle repairs, bicycle share, end-of-trip facilities, and other commuter amenities. These sites are conveniently located within neighborhoods and employment centers in order to attract the most use and provide the most benefit. The mobility hub within Mission Village would tie together the other mobility options available within Mission Village and adjacent areas, and is expected to enhance the effectiveness of other strategies contained within this recommended TDM Plan by providing a centralized location to access mobility services and exposing users of one type of service to the other options available on site. The Mobility Hub strategy results in additional VMT reductions because it improves the usability of the other strategies available at the hub by making transfers easier, providing information about the full suite of transportation options to users who may start

[11] Siembab, W. and Magarian, D. *Zero Emission Local Use Vehicles: The Neglected Sustainable Transportation Mode*. Published June 30, 2013 for the South Bay Cities Council of Governments.

out using only one type of transportation service, and providing a location for promotional events, in this case those related to transportation within Newhall Ranch.

One large mobility hub would be established within Mission Village; the potential location of this mobility hub near Commerce Center Drive, and other mobility hubs in the surrounding Newhall Ranch area, are shown in Exhibits 2 and 3, respectively. Exhibit 4 shows a representative example of a large mobility hub. The following amenities are typical amenities that may be included at the mobility hub:

- Information kiosks
- Transit arrival information
- Bike lockers and bike parking
- Enhanced pedestrian amenities
- Branding/signage
- Co-location of carshare and bikeshare facilities
- Designated park–and-ride spaces
- EV/NEV charging stations

The Mobility Hub strategy is a relatively new innovation, and research documenting the effectiveness of this strategy was not available at the time the CAPCOA report was published. However, based on research conducted by Fehr & Peers for other California projects, and the CAPCOA 0.1-0.5% percent reduction attributable to park-and-ride lots as a stand-alone facility (CAPCOA page 298), mobility hubs can contribute up to an additional 0.5% VMT reduction when used in conjunction with a suite of other TDM strategies. Based on this information and Fehr & Peers' professional engineering judgment, the inclusion of a mobility hub in Mission Village, in combination with the other TDM strategies and the related synergy with the Project site, a 0.3% overall VMT reduction was utilized for the Mission Village Project.

13. Tech-Enabled Mobility

"Tech-enabled mobility" describes the development and provision of a one-stop website for transportation information, as well as complementary apps for mobile devices and computers. This website/app would provide comprehensive commute planning, on-demand rideshare matching, real-time transit arrivals, bicycle route mapping, shared ride reservations (carshare, bikeshare), and traffic information for Mission Village as part of the larger suite of options available within the Newhall Ranch area. This strategy brings together elements of and enhances the effectiveness of the other strategies included in the TDM Plan. By digitally assembling resources and information about transportation options and TDM services in one place, users are enabled to make different choices based on their needs for a particular trip. It also serves as an educational tool to expose users to the full range of transportation choices.

Additional capabilities of tech-enabled mobility include:

- It allows for two-way communication once the user has registered and downloaded the app. This can enable the TMO to remind users of transportation choices or alert users about promotions through push notifications, emails, or alerts.
- The website and app can be developed in a way that moves beyond simply assembling information in one place; it has the potential to "gamify" participation on the go, allowing users to set goals, track progress, provide rewards, and compare their activity to other users. Health/habit/lifestyle tracking apps are pervasive and popular, and the website/app format can engage users even when a trip is not being made.

One example of a mobile application that brings transportation services together in one digital space is GoLA (http://golaapp.com/), produced in partnership between the City of Los Angeles and Xerox. This app allows the user to see the full range of available transportation choices, set mode-based preferences, compare trips across a variety of metrics (total travel time, monetary cost, and environmental cost), and select an itinerary that meets the needs of that trip. Another example of a more "gamified" version of a transportation website/app is the Denver Regional Council of Government's Clear the Air Challenge (http://cleartheairchallenge.org/). Arlington County, Virginia's comprehensive TDM program also includes several tech-enabled components that bring together the program's transportation options in a digital space (www.commuterpage.com).

This strategy is a relatively new innovation, and research documenting the effectiveness of this strategy was not available at the time the CAPCOA report was published. However, based on research conducted by Fehr & Peers at large employers in the Silicon Valley, and documentation from mobility-app developers on the effectiveness of their products, mobility websites and apps can contribute up to an additional 1%-2.5% VMT reduction when used in conjunction with a suite of other TDM strategies. Based on this research and professional engineering judgement, a conservative 1.5% overall VMT reduction was estimated for Mission Village based on the development of a website and mobile device application specific to Newhall Ranch and the mobility options available on-site and nearby and the potential to reach many more users with information, promotions, and service options with a faster and less costly frequency.

14. Bikeshare Program

According to CAPCOA, bikeshare has a minimal impact on VMT when implemented alone, but in conjunction with other strategies, can further enhance VMT reduction. Though CAPCOA lists bikeshare as a strategy, it does not provide associated estimates of VMT reduction.

In membership surveys of an established urban bikeshare system, a self-reported VMT reduction of 5.5% per year was observed.[12] Based on additional investigation done by Fehr & Peers into the effectiveness of this strategy, in combination with our professional judgment, it is estimated that the availability of bikeshare bicycles throughout the Mission Village project site, in conjunction with subsidized membership, can reduce overall VMT by between 0.2%-0.5%.

[12] Capital Bikeshare membership survey, 2014.

Based on the conservative professional judgement of transportation engineers and planners, and in recognition of the differences between an established urban bikeshare system and the Suburban Center context of Mission Village, a 0.3% VMT reduction was estimated, based on inclusion of an on-site bikeshare system with five stations that would connect to other bikeshare stations within Newhall Ranch. To provide additional incentive to participate in the bikeshare system, the TDM Plan will subsidize 50% of the annual cost for up to 1.5% of Project residents who live in market rate housing, and 100% of the annual household membership cost for below market rate housing. This incentive program is entirely additive and does not factor in to the VMT reduction calculations.

15. Transit Fare Subsidy for Below Market Rate Housing Residents

In addition to the transit fare subsidy for employees discussed above in Strategies 6 and 9, additional subsidies would be offered to residents living in below market rate households. This is a separate strategy, with an analogous methodology to Strategies 6 and 9.

For subsidies of $2.98 per person per day, the CAPCOA report provides the following formula for calculating the percent VMT reduction associated with employee transit fare subsidies, which is applied only to the external work trips, and to the 7% of households that would be affordable, below-market-rate:

> % VMT Reduction = (% employees eligible to participate) * (16.4% reduction in commute VMT) * (% share of all trips attributable to home-based commute trips) * (% external work trips) * (% below market rate households)

The same level of subsidy would be offered, the same level of eligibility is utilized, and the same information relative to the Santa Clarita Transit fare would apply as for the employee transit fare subsidy: 50% * 16.4% = 8.2%. As previously described, the home-based (production end) work VMT accounts for 10% of the overall VMT, and 91% of those trips are external and would not be captured by the CTR program or transit fare subsidies for employees offered in Strategies 6 or 9. Because the subsidy would be offered to all 7% of the households identified as affordable, below market rate, the 7% rate was utilized for the calculations. Therefore, an 8.2% reduction in commute-based VMT would equate to a 0.1% reduction in overall VMT (10% * 8.2% * 91% * 7% = 0.1%).

It should also be noted that subsidizing transit passes for below market rate housing residents would be expected to increase transit usage for non-commute (i.e., non-work-related) trips, further reducing VMT from the reduction estimate provided herein.

5. OVERALL VMT REDUCTION EFFECTIVENESS

Based on the methodology outlined in the CAPCOA report, when determining the overall VMT reduction, the VMT reduction separately calculated for each of the individual strategies should be dampened, or diminished, according to a multiplicative formula to account for the fact that some of the strategies may be redundant or applicable to the same populations. The multiplicative equation to accomplish this adjustment is as follows:

Overall % VMT Reduction = 1-(1-A)*(1-B)*(1-C)*(1-D) …

where A, B, C, D … = individual mitigation strategy reduction percentages

For example, if two strategies were proposed with corresponding VMT reductions of 20% and 10%, the equation would be [1-(1-20%)*(1-10%)] or [1-(80%*90%)], which equates to a 28% reduction rather than the 30% reduction that would otherwise be seen with a direct sum. Therefore, the overall VMT reduction was calculated as a dampened, or diminished, total according to the equation above, which produces a conservative overall estimate.

Table 1, Strategies in the Recommended TDM Plan for Mission Village, identifies the strategies discussed above. The overall estimated VMT reduction, after accounting for the dampening effect previously described, is 15.5%. This total VMT reduction level is consistent with CAPCOA's global maximum reduction cap for projects, like Mission Village, located within a Suburban Center context. Additionally, Table 2, Calculations to Support the Strategies in the Recommended TDM Plan for Mission Village, provides a tabular overview of the mathematical inputs informing the VMT reduction effectiveness calculations for each of the strategies.

Given the ongoing evolution of transportation technologies and advancements, alternative TDM strategies with equal or enhanced effectiveness may prove to be better suited to Mission Village. As additional TDM strategies become available, the TDM Plan would have the flexibility to implement these alternative TDM strategies of equal or enhanced effectiveness.

APPENDIX: TDM STRATEGY EXAMPLES

Alternative Work Schedules and Telecommute Programs

Telecommute programs have been implemented as a TDM strategy in Menlo Park, Alameda County, and San Mateo.[13]

Carshare Programs

Carshare programs have been implemented as a TDM strategy in Menlo Park and Alameda County, and are under development in Santa Monica.[14]

NEV Networks

Areas that have implemented NEV networks include Rancho Mission Viejo, a master planned community in Orange County, and the City of Lincoln, California.[15,16]

Mobility Hubs

Mobility Hubs have been used to bolster the use of mobility options in Broward County (Florida), Toronto, and Milton (Ontario), and are under development in the City of Los Angeles.[17]

Tech-Enabled Mobility

In June 2013, Rancho Mission Viejo and Ladera Ranch, master planned communities in Orange County, launched a comprehensive online mobility hub website to provide bus and train schedules, traffic information, and rideshare requests to users who then accumulate reward points based on commute decisions.[18] The goal of these sites was to enroll 500 residents of these communities (or 2% of all residents) in the program, further enabling easy access to the available transportation choices and encouraging participation in the suite of options.[19] Examples of

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[13] http://www.menlopark.org/DocumentCenter/View/2634; http://www.greatcommunities.org/wp-content/uploads/pdf/2007%2011%20Parking%20TDM%20Policy%20Fact%20Sheet.pdf; http://www.alamedactc.org/files/managed/Document/2414/TDM_and_Parking_Management.pdf

[14] http://www.menlopark.org/DocumentCenter/View/2634; http://www.alamedactc.org/files/managed/Document/2414/TDM_and_Parking_Management.pdf

[15] Knight Shine, N. *Golf cart-like vehicles part of the plan at Rancho Mission Viejo*. OC Register. September 15, 2015. http://www.ocregister.com/articles/rancho-683758-mission-viejo.html

[16] MHM Engineers & Surveyors. *NEV Transportation Plan for the City of Lincoln*. August 2006. http://lincolnca.gov/home/showdocument?id=16

[17] http://www.browardmpo.org/projects-studies/mobility-hubs; https://crcresearch.org/case-studies/case-studies-sustainable-infrastructure/transportation/mobility-hubs-toronto-ontario; http://www.miltontransit.ca/en/transit-programs/resources/AppendixC-MiltonMobilityHubWorkingPaper.pdf; additional information provided by LADOT via email on 2/16/16.

[18] RideAmigos. *Rancho Mission Viejo Case Study*. http://rideamigos.com/wp-content/uploads/2014/11/2.1.8-Case-Study-iGoLadera.pdf

[19] Ekberg, Marie. *Five things you need to know about iGoLadera* The Orange County Register. March 27, 2013. http://www.ocregister.com/articles/community-501573-program-traffic.html

potential commercial providers of tech-enabled services include RideAmigos, Luum, Ridescout, Xerox, and Metropia.

Bikeshare Programs

Bikesharing has been implemented as a TDM strategy in Menlo Park and Berkeley, was implemented recently in the City of Santa Monica and the City of San Diego as an additional transportation option, and is under development in Downtown Los Angeles.[20]

[20] http://www.smgov.net/Departments/PCD/Programs/Santa-Monica-Bike-Share/;
http://thesource.metro.net/2015/06/25/metro-board-approves-bikeshare-vendor-for-los-angeles-county/

Chart 6-2: Transportation Strategies Organization

Transportation Measures (Five Subcategories) Global Maximum Reduction (all VMT): urban = 75%; compact infill = 40%; suburban center or suburban with NEV = 20%; suburban = 15%

Global Cap for Road Pricing needs further study

Transportation Measures (Four Categories) Cross-Category Max Reduction (all VMT): urban = 70%; compact infill = 35%; suburban center or suburban with NEV = 15%; suburban = 10%

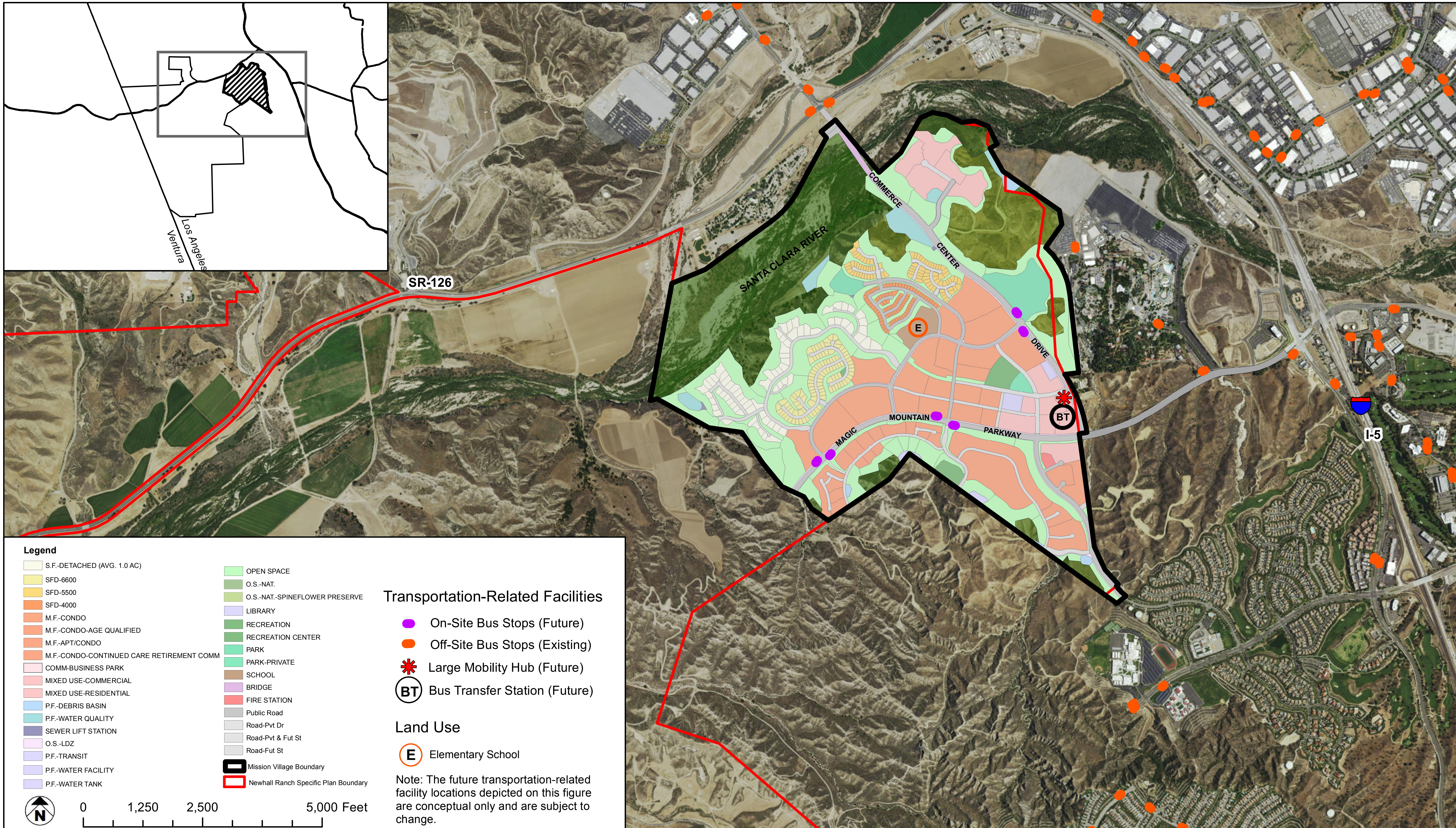
Land Use / Location	Neighborhood / Site Enhancement	Parking Policy / Pricing	Transit System Improvements	Commute Trip Reduction	Road Pricing Management	Vehicles
				Max Reduction = 15% overall; work VMT = 25%; school VMT = 65%;	Max Reduction = 25% (all VMT)	
Max Reduction: urban = 65%; compact infill = 30%; suburban center = 10%; suburban = 5%	Max Reduction: without NEV = 5%; with NEV = 15%	Max Reduction = 20%	Max Reduction = 10%	(assumes mixed use) Max Reduction = 25% (work VMT)	Max Reduction = 25%	
Density (30%)	Pedestrian Network (2%)	Parking Supply Limits (12.5%)	Network Expansion (8.2%)	CTR Program Required = 21% work VMT Voluntary = 6.2% work VMT	Cordon Pricing (22%)	Electrify Loading Docks
Design (21.3%)	Traffic Calming (1%)	Unbundled Parking Costs (13%)	Service Frequency / Speed (2.5%)	Transit Fare Subsidy (20% work VMT)	Traffic Flow Improvements (45% CO_2)	Utilize Alternative Fueled Vehicles
Location Efficiency (65%)	NEV Network (14.4) <NEV Parking>	On-Street Market Pricing (5.5%)	Bus Rapid Transit (3.2%)	Employee Parking Cash-out (7.7% work VMT)	Required Contributions by Project	Utilize Electric or Hybrid Vehicles
Diversity (30%)	Car Share Program (0.7%)	Residential Area Parking Permits	Access Improvements	Workplace Parking Pricing (19.7% work VMT)		
Destination Accessibility (20%)	Bicycle Network <Lanes> <Parking> <Land Dedication for Trails>		Station Bike Parking	Alternative Work Schedules & Telecommute (5.5% work VMT)		
Transit Accessibility (25%)	Urban Non-Motorized Zones		Local Shuttles	CTR Marketing (5.5% work VMT)		
BMR Housing (1.2%)			Park & Ride Lots*	Employer-Sponsored Vanpool/Shuttle (13.4% work VMT)		
Orientation Toward Non-Auto Corridor				Ride Share Program (15% work VMT)		
Proximity to Bike Path				Bike Share Program		
				End of Trip Facilities		
				Preferential Parking Permit		
				School Pool (15.8% school VMT)		
				School Bus (6.3% school VMT)		

Note: Strategies in bold text are primary strategies with reported VMT reductions; non-bolded strategies are support or grouped strategies.

Exhibit 1

CAPCOA Chart 6-2

Transportation Strategies Organization



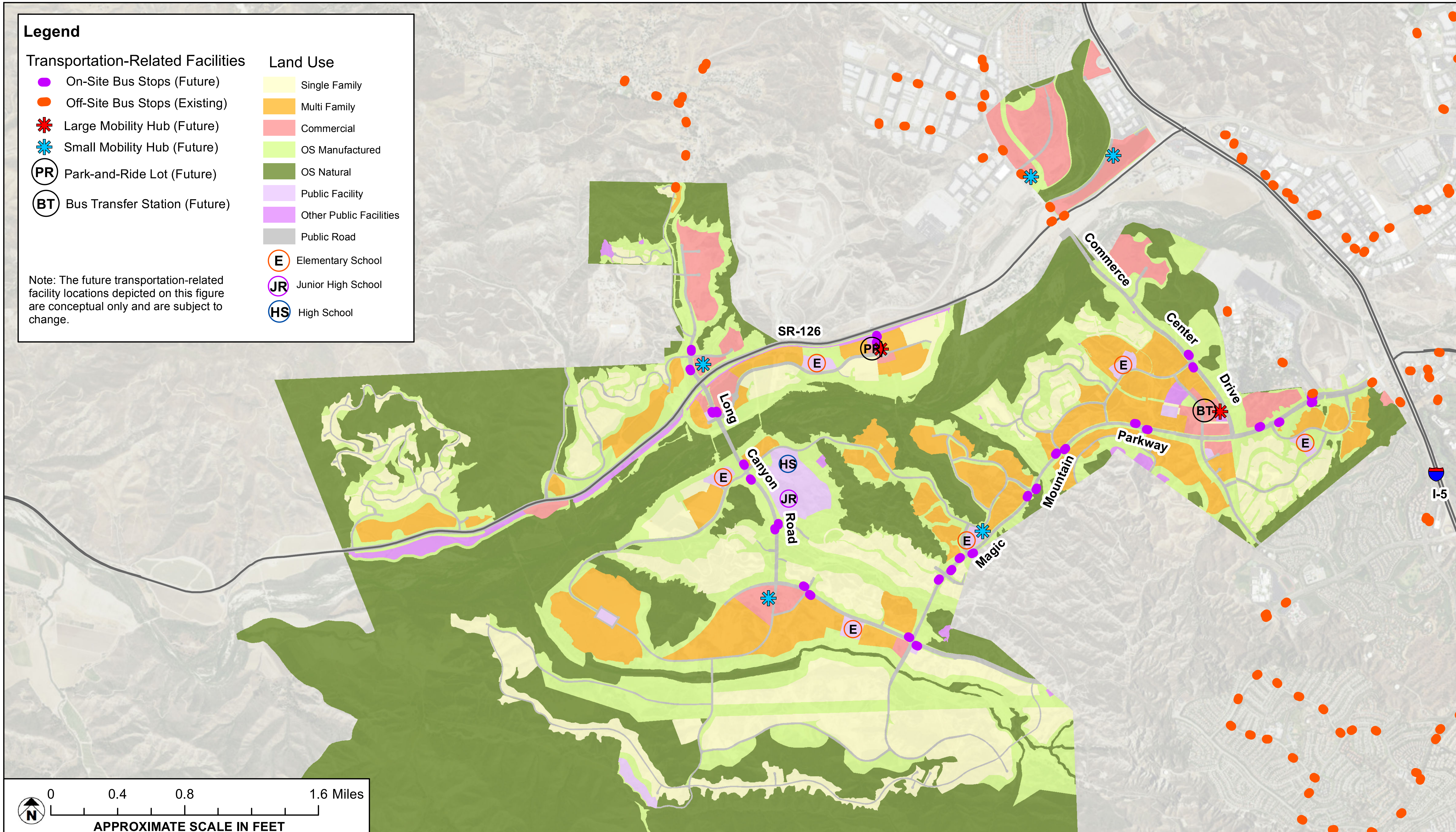
SOURCE: Hunsaker & Associates - 2016

FIGURE A-1

Meridian Consultants

Exhibit 2: Mission Village Conceptual Transit Plan

113-001-16



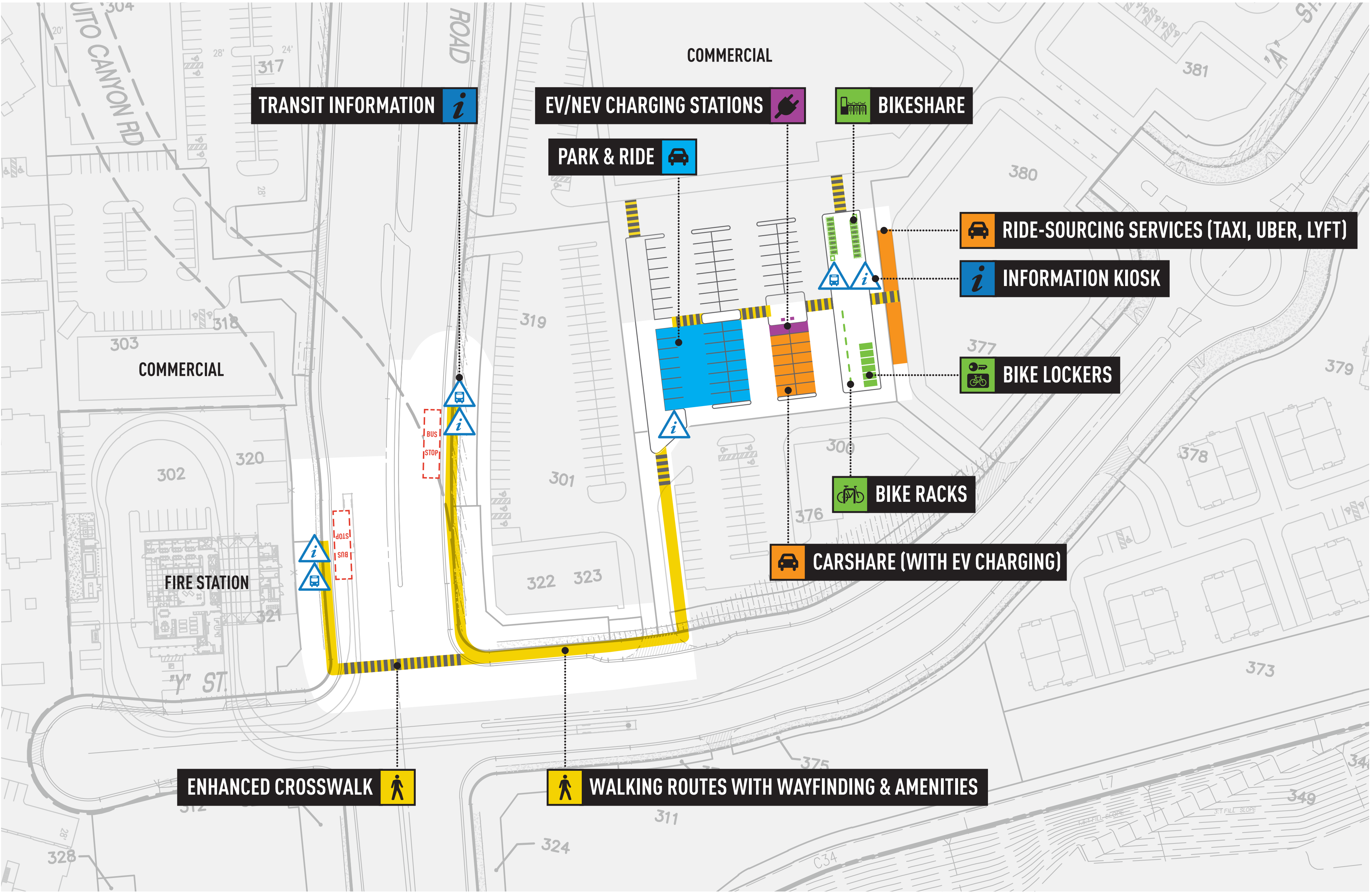
SOURCE: Hunsaker & Associates - 2016; Santa Clarita Transit - 2016; Meridian Consultants - 2016

Exhibit 3

Meridian Consultants

Conceptual Transit Plan

080-001-15



\\fpla03\data\Jobs\Active\2800s\2810_Newhall Ranch\Graphics\AI

Exhibit 4

Conceptual Large Mobility Hub Plan

The facilities and related locations depicted on this plan are conceptual only and are subject to change.

Table 1
Strategies in the Recommended TDM Plan for the Mission Village Project [1,2]

Strategy Number	Strategy	Description	Relevant Data	CAPCOA Reference	CAPCOA Reduction Range	CAPCOA VMT Reduction for Trip Type	Reduction to Overall VMT [3]
1	Integrate Affordable and Below Market Rate Housing	Below market rate housing provides greater opportunity for lower income families to live closer to job centers and achieve jobs/housing match near transit. Income has a statistically significant effect on the probability that a commuter will take transit or walk to work.	4% of units are below market rate and affordable to an average income of 75% below area median income	LUT-6	0.04%-1.2%	0.2%	0.2%
2	Pedestrian Network	Pedestrian facilities such as sidewalks, paseos, and regional trails.	Within project and connecting off-site	SDT-1	0%-2%	2.0%	2.0%
3	Traffic Calming	One or more traffic calming measures for all on-site roadways and intersections.	100% of streets within project; 100% of intersections within project	SDT-2	0.25%-1%	1.0%	1.0%
4	Transit Network Expansion	Extension of Santa Clarita Transit routes within the RMDP/SCP project area.	80% increase of transit network coverage; 2.3% transit mode share as a % of total daily trips; includes TST-2 [4]	TST-3	0.1%-8.2%	1.3%	1.3%
5	Alternative Work Schedules and Telecommute Program (Residential End)	Highest internet speed available to residents and marketing efforts by the Transportation Management Organization.	10% of employees participating; 1.5 days of telecommuting	TRT-6	0.07%-5.5% (commute trips only)	2.2%	0.2%
6	Required Commute Trip Reduction Program	Multi-strategy required program that encompasses a combination of individual VMT reduction measures such as ride-sharing, marketing, preferential parking, and end-of-trip facilities. Targets for the program are set and subject to regular performance monitoring and reporting.	50% of employees eligible (participating)	TRT-2	4.2%-21% (commute trips only)	10.5%	1.9%
7	Alternative Work Schedules and Telecommute Program (Work End)	Encouraging telecommuting and alternative work schedules (e.g., 4/40, 9/80).	10% of employees participating; 4/40 plan	TRT-6	0.07%-5.5% (commute trips only)	1.5%	0.3%
8	School Bus Program	Implement school bus service.	76% of families using school bus program (electric bus)	TRT-13	38%-63% (school trips only)	57.0%	3.4%
9	Transit Fare Subsidy for Employees	Discounted daily or monthly public transit passes for employees.	50% of employees eligible at $2.98/day subsidy	TRT-4	0.3%-20% (commute trips only)	8.2%	1.5%
10	Carshare Program	On-site availability of car-share vehicles throughout the project site, such as Zipcar or a Newhall Ranch-specific fleet.	Suburban setting	TRT-9	0.4%-0.7%	0.4%	0.4%
11	NEV Subsidies	Travel network that accommodates use of NEVs, including features such as charging facilities, striping, signage, and educational tools. Initial financial incentive in the form of subsidies are included in this strategy.	1 NEV per 5 households	SDT-3	0.5%-12.7%	2.5%	2.5%
12	Mobility Hub	One-stop center for transit, rideshare meeting, car share, bicycle repairs, bicycle share, end-of-trip facilities, commuter amenities. Centrally-located within Mission Village.	Contributes to increased uptake of all strategies; co-located with electric vehicle charging stations	N/A	0%-0.5%[5]	0.3%	0.3%

Table 1
Strategies in the Recommended TDM Plan for the Mission Village Project [1,2]

Strategy Number	Strategy	Description	Relevant Data	CAPCOA Reference	CAPCOA Reduction Range	CAPCOA VMT Reduction for Trip Type	Reduction to Overall VMT [3]
13	Tech-Enabled Mobility	One-stop website for Newhall Ranch transportation information. Comprehensive commute planning, on-demand rideshare matching, real-time transit arrivals, bicycle route mapping, shared ride reservations (shuttle, car share), traffic information, etc. All-in-one Newhall Ranch specific transportation app or suite of apps. Similar information and services as on website.	Smart-phone apps and online resource centers contribute to increased uptake of all strategies	N/A	1%-2.5%[5]	1.5%	1.5%
14	Bikeshare	On-site availability of bikeshare bicycles throughout the project site.	Minimal impact when implemented alone, but with other strategies can further enhance VMT reduction	TRT-12	0.2%-0.5%[5]	0.3%	0.3%
15	Transit Fare Subsidy - Below Market Rate Households	Discounted public transit passes to below market rate households.	Increases transit mode share for home-work productions.	N/A	N/A	8.2%	0.1%
Overall Global VMT Reduction							**15.5%[6]**

Notes
1. Based on the CAPCOA report, the land use type is Suburban Center.
2. The TDM Plan would include establishment of a transportation management organization (TMO) to implement and manage strategies.
3. 18% of total VMT is home-to-work attractions, 10% of total VMT is home-to-work productions, and 91% of home-to-work productions are external to Mission Village calculated based on traffic modeling conducted for Mission Village (October 2011). 5.9% of total VMT is school trips based on CAPCOA.
4. 2.3% transit mode share based on 2014 Census Journey to Work data for Santa Clarita City.
5. Estimated VMT reduction associated with these strategies based on Fehr & Peers research.
6. Individual rows' VMT reductions do not sum to overall total since effect of individual strategy reductions are multiplicative (not additive).

Table 2
Calculations to Support the Strategies in the Recommended TDM Plan for the Mission Village Project [1,2]

Strategy Number	Strategy	CAPCOA Reference	CAPCOA Final Reduction Range	Strategy Calculations					Reduction to Overall Mission Village VMT [3]
				(A)	(B)	(C)	(D)	(E)	(F)=(A)*(B)*(C)*(D)*(E)
1	Integrate Affordable and Below Market Rate Housing	LUT-6	0.04%-1.2%	4% Initial CAPCOA Reduction	4% BMR & Low-Income Housing	-	-	-	0.2%
2	Pedestrian Network	SDT-1	0%-2%			(Calculation N/A)			2.0%
3	Traffic Calming	SDT-2	0.25%-1%			(Calculation N/A)			1.0%
4	Transit Network Expansion	TST-3	0.1%-8.2%	80% Coverage	1.01 Elasticity of Transit (CAPCOA)	2.3% Transit Modeshare[4]	0.67 Adjustment Factor (CAPCOA)	-	1.3%
5	Alternative Work Schedules and Telecommute Program (Residential End)	TRT-6	0.07%-5.5% (commute trips only)	2.2% CAPCOA Reduction (given 10% participation; 1.5 days tele-commuting)	10% of VMT (home-based work productions)	91% of work trips external to Mission Village	-	-	0.2%
6	Required Commute Trip Reduction Program	TRT-2	4.2%-21% (commute trips only)	50% Employees eligible	21% reduction in vehicle mode share (CAPCOA)	18% of VMT (home-based work attractions)	-	-	1.9%
7	Alternative Work Schedules and Telecommute Program (Work End)	TRT-6	0.07%-5.5% (commute trips only)	1.5% CAPCOA Reduction (given 10% participation; 4/40 alternative work schedule)	18% of VMT (home-based work attractions)	-	-	-	0.3%
8	School Bus Program	TRT-13	38%-63% (school trips only)	76% participation rate	75% (39 weeks of school/52 weeks in a year)	5.9% of VMT (school-based trips)	-	-	3.4%
9	Transit Fare Subsidy for Employees	TRT-4	0.3%-20% (commute trips only)	50% Employees eligible	16.4% reduction in commute VMT (CAPCOA)	18% of VMT (home-based work attractions)	-	-	1.5%
10	Carshare Program	TRT-9	0.4%-0.7%	37% reduction in carshare member VMT (CAPCOA)	20 carshare members/shared car	1 shared car/2000 suburban residents	93% Market rate households; 7% Below Market Rate households	-	0.4%

Table 2
Calculations to Support the Strategies in the Recommended TDM Plan for the Mission Village Project [1,2]

Strategy Number	Strategy	CAPCOA Reference	CAPCOA Final Reduction Range	Strategy Calculations (A)	(B)	(C)	(D)	(E)	Reduction to Overall Mission Village VMT [3] (F)=(A)*(B)*(C)*(D)*(E)
11	NEV Subsidies	SDT-3	0.5%-12.7%	1 / 5 HH with an NEV	12.7% VMT reduction (CAPCOA)	-	-	-	2.5%
12	Mobility Hub	N/A	0%-0.5%[5]			(Calculation N/A)			0.3%
13	Tech-Enabled Mobility	N/A	1%-2.5%[5]			(Calculation N/A)			1.5%
14	Bikeshare	TRT-12	0.2%-0.5%[5]			(Calculation N/A)			0.3%
15	Transit Fare Subsidy - Below Market Rate Households	N/A	N/A	50% Participation	16.4% reduction in commute VMT (CAPCOA)	10% of VMT (home-based productions)	91% of work trips external to Mission Village	7% Below Market Rate households	0.1%
Overall Global VMT Reduction									**15.5%[6]**

Notes
1. Based on the CAPCOA report, the land use type is Suburban Center.
2. The TDM Plan would include establishment of a transportation management organization (TMO) to implement and manage strategies.
3. 18% of total VMT is home-to-work attractions, 10% of total VMT is home-to-work productions, and 91% of home-to-work productions are external to Mission Village calculated based on traffic modeling conducted for Mission Village (October 2011). 5.9% of total VMT is school trips based on CAPCOA.
4. 2.3% transit mode share based on 2014 Census Journey to Work data for Santa Clarita City.
5. Estimated VMT reduction associated with these strategies based on Fehr & Peers research.
6. Individual rows' VMT reductions do not sum to overall total since effect of individual strategy reductions are multiplicative (not additive).

ATTACHMENT

NEWHALL RANCH TRANSPORTATION DEMAND MANAGEMENT PLAN

Newhall Ranch

Transportation Demand Management Plan

September 2016

Prepared by UrbanTrans North America

Table of Contents

Executive Summary

The Newhall Ranch Transportation Demand Management (TDM) Plan is a comprehensive plan designed to achieve reductions in vehicle miles traveled (VMT) and, in so doing, reduce greenhouse gas (GHG) emissions.[1] Accordingly, this TDM Plan provides a summary description of the existing and planned regional transportation network, a listing of each of the strategies that comprise this TDM Plan with corresponding information regarding application of the strategy, and a step-by-step plan of implementation.

The TDM Plan applies to new development located on the Newhall Ranch Specific Plan, Entrada, and Valencia Commerce Center planning areas (the Project Site) that is facilitated by the Newhall Ranch Resource Management and Development Plan/Spineflower Conservation Plan (RMDP/SCP) Project. Specifically, the TDM Plan will serve planned development within the Project Site, which consists of up to approximately 21,242 residential units; about 9.3 million square feet of commercial uses; and, numerous public facilities, including schools, fire stations, a library, and recreational amenities. This TDM Plan will serve as an “umbrella plan,” with appropriate and customized application to individual villages and land uses, as applicable, located within the three planning areas (i.e., the Newhall Ranch Specific Plan, Entrada and Valencia Commerce Center sites).

The core objectives of the TDM Plan are to reduce the number of single occupancy vehicle trips, through the utilization of alternative forms of motorized and non-motorized transport and related strategies, and thereby reduce total VMT and the corresponding GHG emissions. Therefore, as presented below, the TDM Plan includes a number of strategies that enable the Project Site’s residents, employees, and visitors to utilize transit, ridesharing, walking, biking, telecommuting, and other transportation options. The TDM Plan relies, in part, on the design of the planned development and, in part, on innovative strategies developed by the transportation planning and engineering community to achieve its objectives, and provides the foundational elements necessary for the successful implementation of the TDM strategies outlined herein.

A non-profit Transportation Management Organization (TMO) or equivalent management entity will be established to provide the services required by this TDM Plan, as applicable. The TMO and the long-term implementation of the TDM Plan will be funded by TDM assessments, or other funding mechanisms that may be applicable, which all applicable property owners will be required

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[1] “Newhall Ranch” in this context refers to the development to be facilitated by the Newhall Ranch Resource Management Development Plan/Spineflower Conservation Plan, and includes the Newhall Ranch Specific Plan, Entrada, and Valencia Commerce Center planning areas.

to pay; this payment structure will be enforced through Covenants, Conditions and Restrictions (CC&Rs) placed on residential and commercial properties.

This TDM Plan is based, in part, on information and analysis contained in a technical memorandum entitled *RMDP/SCP Project: Transportation Demand Management Plan Evaluation*, Fehr & Peers (September 2016). The memorandum analyzes each of the VMT reduction strategies presented in this Plan and, based primarily on guidance provided by the California Air Pollution Control Officers Association, calculates the VMT reduction expected to result with implementation of each strategy. The memorandum, including appendix and exhibits, provides technical support for the VMT reductions expected to be achieved with implementation of this Plan.

1.0 Background Information

1.1 Regional Setting

This section provides an overview of the existing and planned transportation network in the vicinity of the Project Site, including transit, roadways, bicycle/trails network, and the pedestrian environment.

The Project Site is located in the northern portion of unincorporated Los Angeles County in the Santa Clarita Valley. The Project Site area begins just west of Interstate 5 and continues to the boundary between Los Angeles and Ventura Counties, as shown in Figure 1. Traversing the Site is State Route (SR) 126, which functions as an east-west travel corridor between the Santa Clarita Valley and Ventura County. This section describes the transportation context to provide an understanding of the TDM needs and opportunities at the Project Site.

Figure 1: Project Site Vicinity Map

1.1.1 Transit Network

The Project Site is located within the City of Santa Clarita Transit service area. The agency operates nine local bus routes and four commuter routes that connect the City's neighborhoods with each other, as well as provide connections to regional transit via the following six transfer stations: the Santa Clarita, Newhall, Via Princessa, and Chatsworth Metrolink stations, the North Hollywood Red/Orange Line Station, and the McBean Regional Transit Center, which includes a park and ride lot. Commuter Express Service also is available during rush hours to Century City and downtown Los Angeles.

On average, service frequency for local bus routes ranges from 30 minutes to an hour during morning and evening peak hours. Most routes run between 5:00 A.M. and 10:00 P.M. on weekdays. Weekend service is less frequent, starts later in the morning, and ends earlier in the evening. Commuter train service into downtown Los Angeles is provided via the Metrolink Antelope Valley

Line, which takes less than an hour to reach Union Station and runs 15 times a day between 5:00 A.M. and 7:30 P.M. From the North Hollywood Metro Station, the Red Line runs every ten minutes through Hollywood to Union Station, a ride that takes approximately 30 minutes. The Orange Line serves points west and terminates in Chatsworth. Figure 2 shows a map with regional connections. Figure 3 illustrates the existing local Santa Clarita Transit Network.

Figure 2: City of Santa Clarita Transit Regional Transit Connections

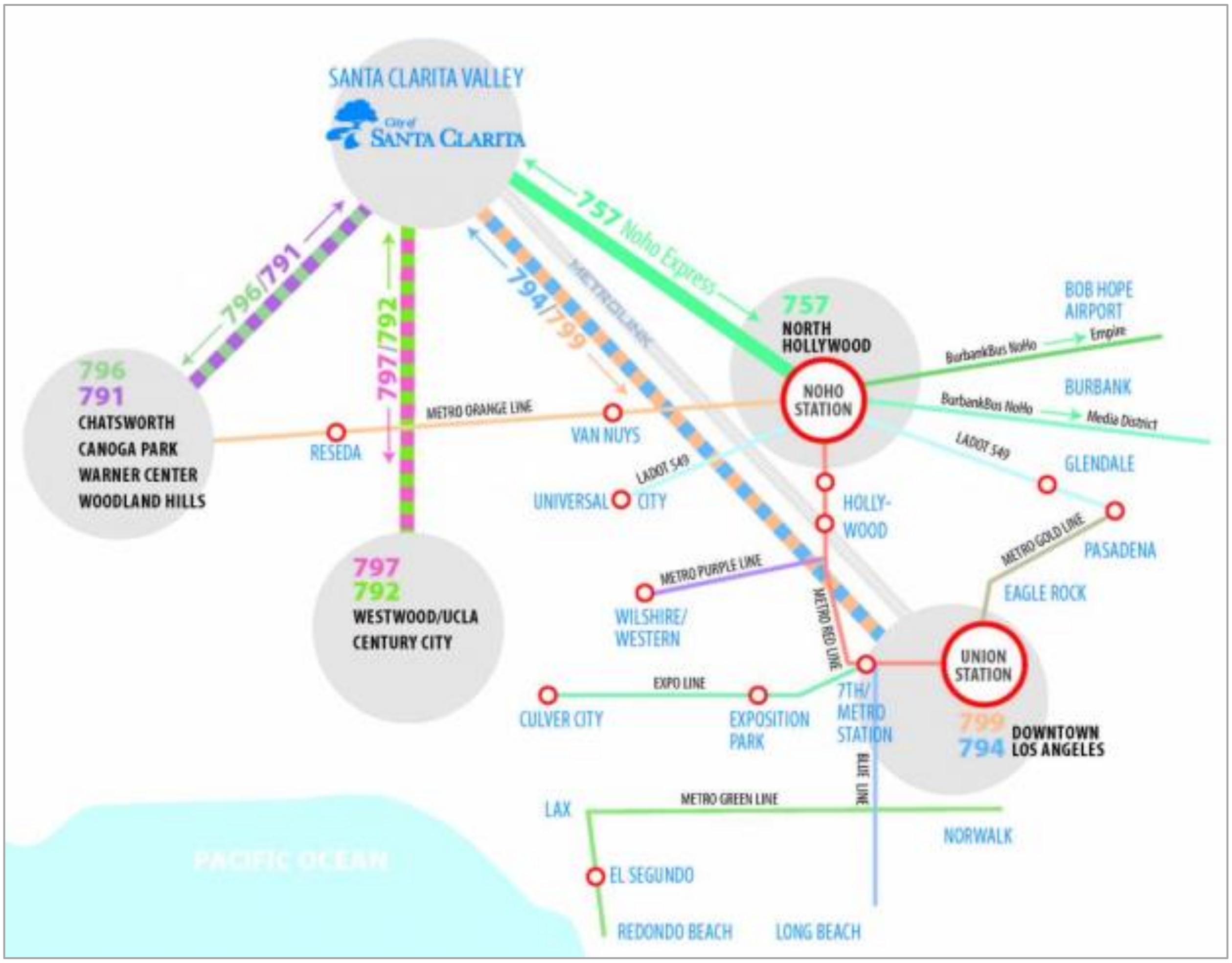
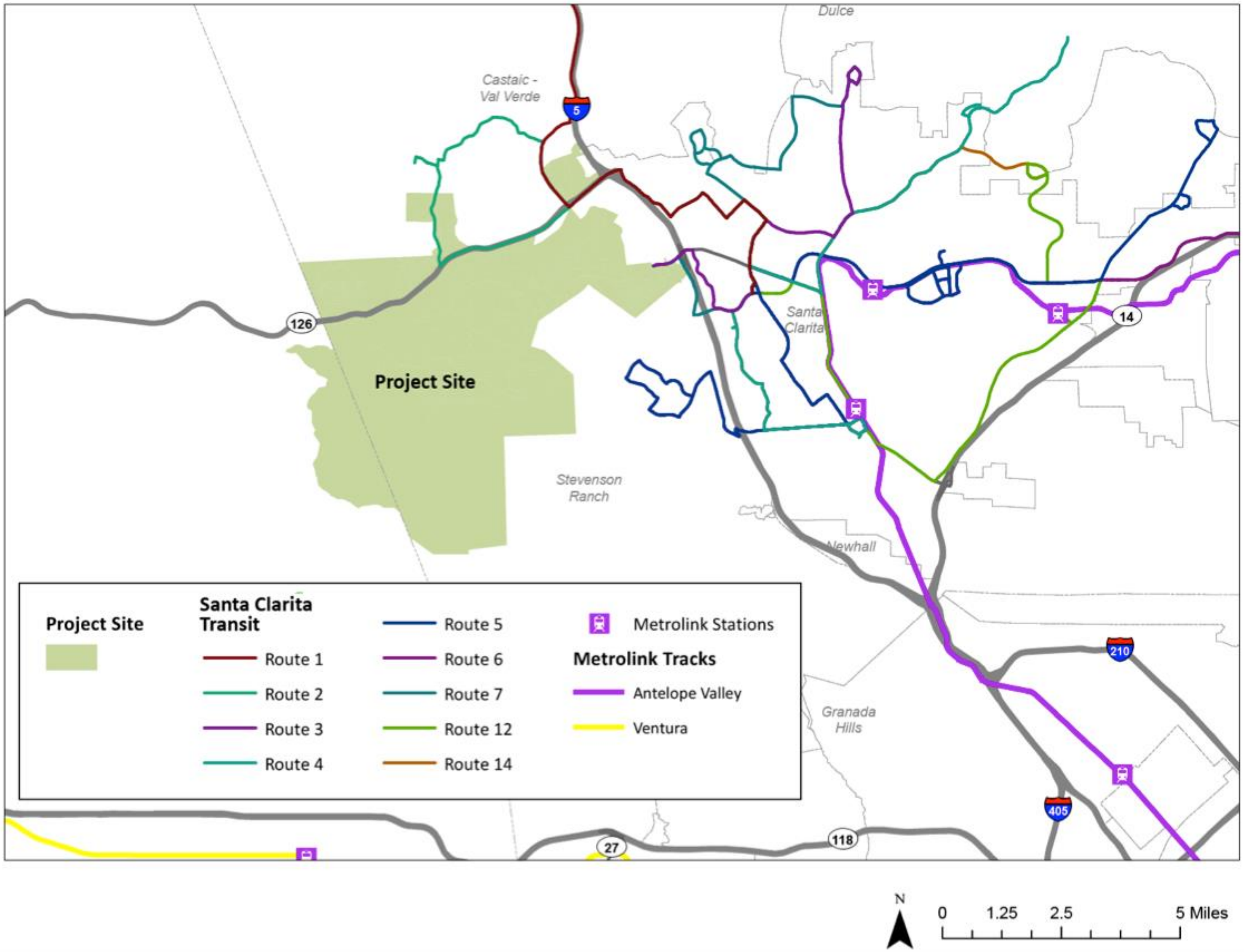


Figure 3: City of Santa Clarita Transit Local Service



1.1.2 Major Roadways

The Project Site is easily accessible from Interstate 5, which runs north-south and connects to downtown Los Angeles, and from Highway 126, which runs east-west between I-5 and the City of Ventura. A northward expansion of existing high occupancy vehicle (HOV) lanes from Highway 14 to north of Highway 126 is planned and scheduled to be completed in 2023. Within the Project Site area, an extension of Magic Mountain Parkway will run through the center of the site and connect with Long Canyon Road, an extension of the existing Valencia Boulevard. North-south connections will be provided by the extension of Commerce Center Drive, which will connect across Highway 126 to the Valencia Commerce Center, and by Long Canyon Road, which will connect to the existing Chiquito Canyon Road north of Highway 126. These new roads will be constructed as major and secondary highways along which transit service will be available.

1.1.3 Bicycle/Trails Network

The Los Angeles County Bicycle Master Plan adopted in 2012 identifies the addition of bike paths, lanes, or routes to several roadways adjacent to the Project Site. Planned improvements include bike paths and lanes along The Old Road, Castaic Creek, and the Santa Clara River/Highway 126. The bicycle master plan and related resources can be found here: https://dpw.lacounty.gov/pdd/bike/masterplan.cfm.

The City of Santa Clarita adopted a non-motorized transportation plan in 2014, which includes network and infrastructure improvements, facility design recommendations, and programmatic recommendations, including bicycle education and encouragement programs. The City of Santa Clarita is a Bronze level Bicycle Friendly Community, a recognition awarded by the League of American Bicyclists. The city's web site includes maps, bike parking information, safety tips, bicycles and transit information, and other resources. See: http://www.bicyclela.org/Programs.htm.

The Project's proposed network of bicycle and multi-use trails generally will resemble the extensive existing trail network in neighboring Valencia. Off-street, multi-use trails will connect the villages within the Project Site. They will be supplemented by paseos, wide sidewalks with lighting, benches, and shade trees that provide connections to activity centers, such as schools, recreation centers, and neighborhood centers. On-street bike lanes will be provided on major roads as well.

1.1.4 Pedestrian Environment

Sidewalks will be provided along all roads within the planned development located on the Project Site, supplemented by the trail network. Cul-de-sacs are part of the street design in certain locations, although pedestrian connections will be provided at some of the planned cul-de-sacs to improve pedestrian connectivity.

2.0 TDM Strategies

The strategies outlined below shall be implemented pursuant to this TDM Plan. However, in light of the ongoing evolution of transportation technology and advancements, the strategies set forth below may be modified or replaced, as necessary, with alternative strategies of equal or enhanced effectiveness. Therefore, the applicant (or its designee) and/or the TMO, or equivalent management entity, shall periodically evaluate the parameters of this TDM Plan so as to ensure that the strategies are meeting the needs and priorities of the residents, employees, tenants, and visitors to the Project Site. As new technologies and strategies become available, the TDM Plan can be modified in order to implement alternative technologies and/or strategies of equal or enhanced effectiveness.

2.1 TDM Strategy Description

The following is a brief description of each TDM strategy and its application to the Project Site.

Construction

1. **Construction Traffic Management Plan**

   Description: A construction traffic management plan can be effective both to reduce VMT and reduce the potential construction-related congestion on traffic by maintaining mobility to, from, and within the Project Site during the construction period.

   Application: Prior to issuance of a grading or building permit for each village level project, the applicant, or its designee, shall develop a Construction Traffic Management Plan that may include, as applicable: worker carpools through available incentives; remote parking areas and corresponding shuttle service; work hours and truck deliveries scheduled to the extent feasible to avoid peak hour traffic conditions (i.e., 7:00 A.M. to 9:00 A.M. and 4:00 P.M. to 6:00 P.M.); and re-routing construction-related traffic from congested streets (i.e., those streets, if any, operating at unacceptable levels of service during the peak hours).

Operation

1. **Integrate Affordable and Below Market Rate Housing**

   Description: Income has a statistically significant effect on the probability that a commuter will take transit or walk to work[2]. Below Market Rate (BMR) housing provides greater opportunity for lower income families to live closer to job centers and achieve jobs/housing

[2] Bento, Antonio M., Maureen L. Cropper, Ahmed Mushfiq Mobarak, and Katja Vinha. 2005. "The Effects of Urban Spatial Structure on Travel Demand in the United States." *The Review of Economics and Statistics* 87,3: 466-478.

balance near transit. Incorporating BMR also can encourage smaller units within the same building footprint, thereby increasing density and potential transit ridership.

Application: The applicant, or its designee, shall include an Affordable Housing Program as part of the planned development within the Project Site, in accordance with the County of Los Angeles' Newhall Ranch Specific Plan approvals.

2. **Pedestrian Network**

Description: Providing a pedestrian access network to link areas of a Project Site encourages people to walk instead of drive. This mode shift results in people driving less and, thus, a reduction in VMT.

Application: The applicant, or its designee, shall include within the planned development located on the Project Site pedestrian-movement facilities (e.g., sidewalks, paseos, and trails as depicted in the Newhall Ranch Specific Plan Mobility Plan) that eliminate physical barriers and provide pedestrian-based access to both on- and off-site complementary land uses (e.g., neighborhood-serving commercial retail opportunities; schools; recreational amenities).

3. **Traffic Calming**

Description: Providing traffic calming measures can encourage people to walk or bike instead of using a vehicle, thereby reducing VMT. Examples of traffic calming features include: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.

Application: The applicant, or its designee, shall include within the planned development located on the Project Site design elements that reduce motor vehicle speeds and improve pedestrian and bicyclist safety on the on-site streets and intersections. These design elements may include, but are not limited to, count-down signal timers, marked crosswalks, raised crosswalks, raised intersections, speed tables, median islands, planter strips with trees, curb extensions, on-street parking, tight corner radii, roundabouts or mini-circles, and chicanes/chokers.

4. **Transit Network Expansion**

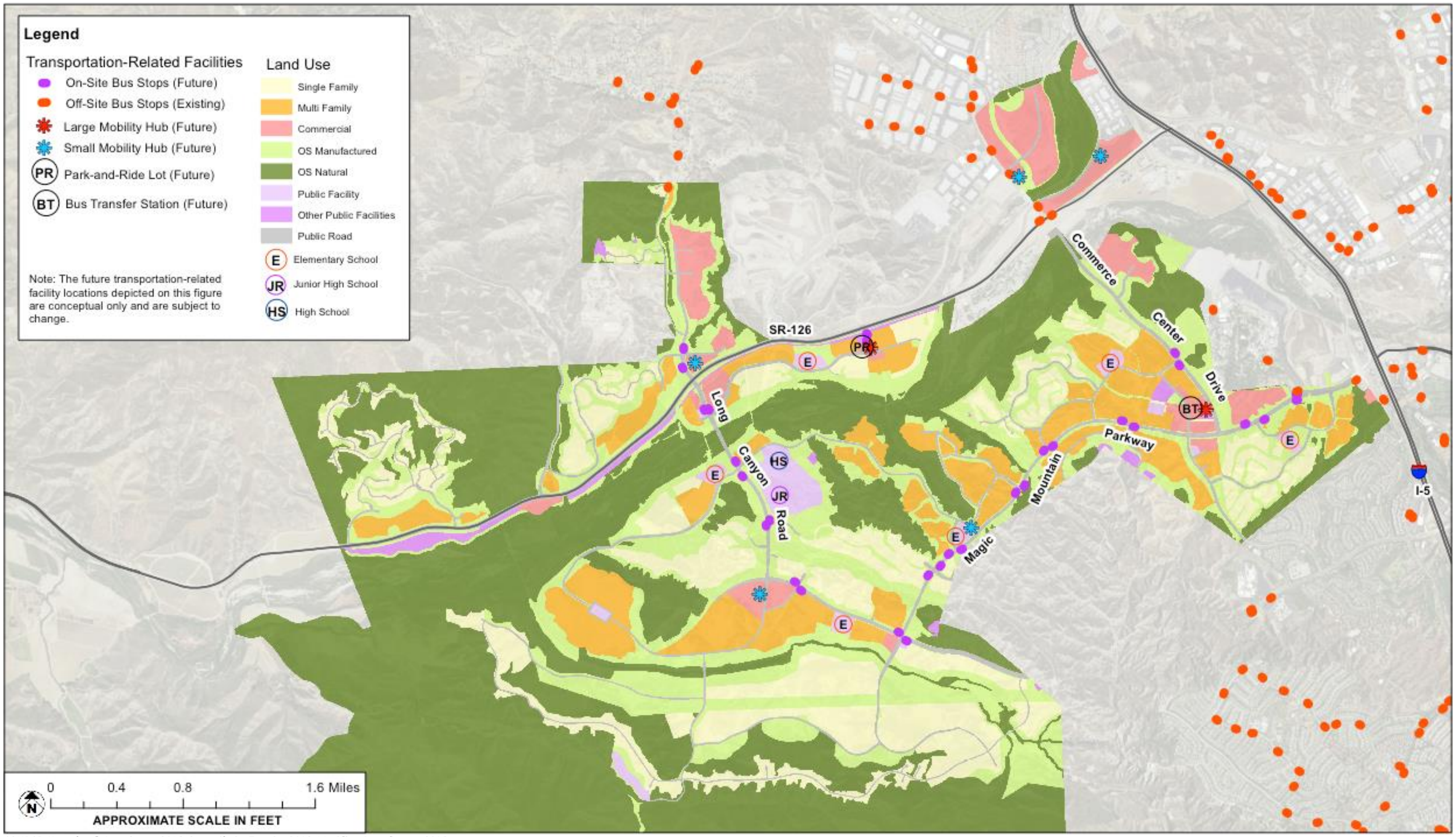
Description: Increasing transit availability through route expansion or increasing existing transit frequency improves access to the Project Site and, therefore, will encourage transit ridership. This mode shift results in people driving less and, thus, a reduction in VMT.

Application: The TMO, or its equivalent management entity, shall coordinate with the local transit agencies, including Santa Clarita Transit, to implement the Conceptual Transit Plan illustrated on Figure 4, to provide an expanded transit network that connects the Project

Site to major transit centers in the Santa Clarita Valley, and enhance on and off-site connectivity options via transit.[3] The expanded transit network shall include bus stops located throughout the development area, a bus transfer station, and a park-and-ride lot to the extent deemed appropriate.

[3] See, Fehr & Peers Technical Memorandum, *RMDP/SCP Project: Transportation Demand Management Plan Evaluation* (September 2016), Exhibit 2.

Figure 4: Conceptual Transit Plan



SOURCE: Hunsaker & Associates - 2016; Santa Clarita Transit - 2016; Meridian Consultants - 2016

FIGURE A

Meridian

Conceptual Transit Plan

5. **Alternative Work Schedules and Telecommute Program (Residential End)**

Description: Encouraging telecommuting and alternative work schedules reduces the number of commute trips and, therefore, VMT traveled by employees. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed workweeks.

Application: In furtherance of this strategy relative to Project residents, the TMO, or its equivalent management entity, shall utilize all appropriate marketing tools, including incentive strategies, to promote alternative work schedules and telecommuting on the part of Project residents, as feasible. In addition, the applicant, or its designee, shall construct all residential units to facilitate installation of high-speed internet services.

6. **Required Commute Trip Reduction Program**

Description: A Commute Trip Reduction (CTR) program is an employer-administered program that discourages single-occupancy vehicle trips and encourages alternative modes of transportation such as carpooling, taking transit, walking, and biking. A CTR program provides employees with assistance in using alternative modes of travel, and provides both "carrots" and "sticks" to achieve behavior change. A typical CTR program may include the following: preferential carpool parking, flexible work schedules for carpools, ridematching, designation of a transportation coordinator, transit subsidies, vanpool assistance, and bicycle end-trip facilities (e.g., parking, showers, and lockers). Participation in required commute trip reduction programs typically is required of employers above a certain size threshold, exempting small businesses and non-traditional employers from the requirement to participate.

Application: The TMO, or its equivalent management entity, shall coordinate with large business employers of the planned development located on the Project Site to implement a required CTR program that may include, but is not limited to, the utilization of ride sharing; provision of transit subsidies and preferential parking to carpools, vanpools and other commute strategies that minimize the use of single occupancy vehicles; and, installs end-of trip bicycle facilities. As part of the program, the TMO (or equivalent management entity) shall establish performance and monitoring standards for the program's implementation status. In furtherance of this strategy, the TMO (or equivalent management entity) shall develop marketing strategies, targeted towards the tenants, employers, and employees of the Project Site's commercial areas, which establish and promote the benefits of commuting habits that reduce vehicle miles traveled. Additionally, the applicant/designee or the TMO (or equivalent management entity), as applicable, shall coordinate with commercial builders/property owners to promote ridesharing through a multi-faceted approach that includes, but is not limited to, the measures below:

- Designating a certain percentage of parking spaces for ride-sharing vehicles that is equivalent to at least one dedicated parking space per 25,000 square feet of office space;

- Designating adequate passenger loading and unloading and waiting areas for ridesharing vehicles; and

- Providing a web site or message board for coordinating rides in conjunction with Strategy

7. **Alternative Work Schedules and Telecommute Program (Work End)**

   Description: Encouraging telecommuting and alternative work schedules reduces the number of commute trips and, therefore, VMT traveled by employees. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed workweeks.

   Application: The TMO, or its equivalent management entity, shall coordinate with employers of the planned development located on the Project Site to facilitate the utilization of non-traditional worker commute patterns, for both Project residents and Project employees, by encouraging the use of alternative work schedules and telecommuting. In furtherance of this strategy for Project employees, the TMO (or equivalent management entity) shall develop marketing strategies, targeted towards the tenants and employers located in commercial areas on the Project Site that establish the benefits of alternative work schedules/telecommuting and provide successful templates for the implementation of such alternative approaches in the workplace. Additionally, any property management company managing commercial property on the Project Site shall require employers with 100 or more employees within the Project Site to develop and implement an alternative work schedules/telecommuting program consisting of the following elements: (1) appointment of a program coordinator; (2) identification of specific categories of employment positions that are appropriate for alternative work schedules and/or telecommuting; (3) provision of required equipment for telecommuting (e.g., hardware, software, and security); and (4) establishment of communications strategies to facilitate satisfaction of employment responsibilities (e.g., instant messaging). In furtherance of this strategy for Project residents, all residential units will be constructed with high-speed, high-capacity internet, and will be included in the TMO's marketing and incentive strategies.

8. **School Bus Program**

   Description: School travel can be a large trip generator, and school bus programs have shown to be an important and cost effective way to reduce overall trips in the community.

   Application: The applicant, or its designee, in coordination with the Project Site's school districts shall establish and implement a school busing program to transport students residing within the Project Site to the on-site elementary, junior high, and high schools. The program shall be implemented in phases that correspond to the number of residential units and on-site schools. The TMO, or equivalent management entity, also shall implement school travel planning to promote both the school bus program, and to provide education and incentives intended to increase biking, walking, and carpooling to school.

9. **Transit Fare Subsidies for Employees**

Description: Subsidizing the cost of transit or other alternative modes can encourage adoption of these modes.

Application: The TMO, through assessments, or other funding mechanisms that may be applicable, shall fund and shall coordinate with those employers of the planned development located on the Project Site not required to participate in the Required Commute Trip Reduction program (Strategy 6) to provide alternative transportation subsidies to employees who commute to jobs located within the Project Site.

10. **Carshare Program**

Description: Carshare members, on average, have lower auto ownership rates and drive less than non-carshare members. One study found that, on average, 21% of carshare members in North America gave up their primary or secondary vehicle after joining a carsharing program[4].

Application: The TMO, or its equivalent management entity, shall establish a membership-based carshare program, whereby members have access to a shared fleet of vehicles. In order to incentivize participation, carshare program participation will be subsidized. Specifically, the TMO, through assessments, or other funding mechanisms that may be applicable, will subsidize 50 percent of the annual membership fee for up to 50 percent of the market rate households that elect to participate in the program (i.e., a 50% subsidy for all households that elect to participate in the program, capped at 50% of the total Project households); and, will subsidize 100 percent of the annual fee for up to 100 percent of the below market rate households. As described in the *RMDP/SCP Project: Transportation Demand Management Plan Evaluation, Fehr & Peers (September 2016),* the incentive program is entirely additive and does not factor into the VMT reduction calculations. In the event the TMO is unable to retain a commercial carshare vendor, the TMO may consider diverting the funds otherwise planned to provide membership subsidies to the establishment of a peer-to-peer carsharing model, such as Turo or Getaround. The peer-to-peer model relies on private individuals registering their car for use by other residents for a fee. To ensure comparable levels of service and reliability to a traditional carshare provider (such as Zipcar or Car2Go), the peer-to-peer model would require aggressive marketing, outreach, and incentives to ensure that a sufficient fleet is established in terms of the number of vehicles and their locations. Another alternative approach could be the

[4] IBI Group. (2009). *Parking Standards Review: Examination of Potential Options and Impacts of Car Share Programs on Parking Standards.* The City of Toronto.

establishment of a Newhall Ranch-specific carshare service, as has been done successfully in small cities such as Ithaca, New York (population 30,515).

11. **Neighborhood Electric Vehicle (NEV) Strategy**

Description: NEVs are classified in the California Vehicle Code as a "low speed vehicle". They are electric powered and must conform to applicable federal automobile safety standards. NEVs offer an alternative to traditional vehicle trips and can legally be used on roadways with speed limits of 35 MPH or less (unless specifically restricted). They are ideal for short trips up to 30 miles in length and can promote a mode shift from single-occupancy vehicles, particularly in their ability to replace short trips.

Application: The applicant, or its designee, shall incorporate into the design of the planned development located on the Project Site a comprehensive, interconnected travel network that accommodates NEV use and includes features such as NEV parking, charging facilities, striping, signage, and educational tools. Additionally, the applicant or its designee will provide funding for a subsidy covering 25 percent of the NEV purchase price that would be made available to 20 percent of the residential units located on the Project Site.

12. **Mobility Hubs**

Description: Mobility hubs are one-stop centers for transit, rideshare meeting, car share, bicycle repairs, bicycle share, end-of-trip facilities, and other commuter amenities. Mobility hubs are designed to facilitate multi-modal travel and encourage mode shifts by co-locating services and aggregating information.

Application: The applicant, or its designee, shall incorporate into the design of the planned development located on the Project Site four small mobility hubs and two large mobility hubs. The following amenities are typical amenities that may be included at each mobility hub, dependent upon size (see *RMDP/SCP Project: Transportation Demand Management Plan Evaulation, Fehr & Peers, September 2016, Exhibits 3 and 4*):

Small Mobility Hub:

- Information kiosks
- Transit arrival information
- Bike lockers and bike parking
- Enhanced pedestrian amenities
- Branding/signage
- Co-location of carshare and bikeshare

Large Mobility Hub:

- Information kiosks
- Transit arrival information
- Bike lockers and bike parking
- Enhanced pedestrian amenities
- Branding/signage

- Co-location of carshare and bikeshare
- Designated park-and-ride spaces

13. **Tech-Enabled Mobility**

    Description: Advances in technology have led to innovative new TDM opportunities. Recent technological applications include improved ride matching apps, real-time ride sharing, and innovative platforms that allow for trip planning, trip tracking, the administration of rewards programs, and real-time bus information.

    Application: The TMO, or its equivalent management entity, shall establish as part of the planned development located on the Project Site a one-stop website for transportation information, as well as complementary apps for mobile devices and computers.

14. **Bikeshare Program**

    Description: Similar to carshare members, bikeshare members also have lower auto ownership rates and drive less than non-bikeshare member counterparts. Studies have found that on average 7% of bikeshare members replaced their personal vehicle with the bikeshare[5].

    Application: The TMO, or its equivalent management entity, shall establish a bikeshare system on the Project Site with up to 15 stations. In order to incentivize participation, bikeshare program participation will be subsidized. Specifically, the TMO, through assessments, or other funding mechanisms that may be applicable, will subsidize 50 percent of the annual membership cost for up to 1.5 percent of Project residents who live in market rate housing; and, 100 percent of the annual household membership cost for below market rate households. As described in the *RMDP/SCP Project: Transportation Demand Management Plan Evaluation, Fehr & Peers (September 2016),* the incentive program is entirely additive and does not factor in to the VMT reduction calculations.

15. **Transit Fare Subsidies for Below Market Rate Housing Residents**

    Description: Subsidizing the cost of transit or other alternative modes can encourage adoption of these modes.

[5] Johnston, K. (2014, April 7). Beyond Urban Planning: The Economics of Capital Bikeshare. *Georgetown Public Policy Review*. Retrieved from http://gppreview.com/2014/04/07/beyond-urban-planning-the-economics-of-capital-bikeshare/

Application: The TMO, through assessments, or other funding mechanisms that may be applicable, shall fund, and shall provide alternative transportation subsidies to the below market rate households located within the Project Site (up to 300 passes based on anticipated participation rates)*.*

Table 1: TDM Plan Performance Metrics and Targets, sets forth the applicable performance metrics and targets for each strategy identified for implementation herein. Notably, however, and as described in Chapter 4.0 below, implementation of this "umbrella plan" will be subject to applicability evaluations and customization efforts in conjunction with the processing of County-level entitlements for planned development located on the Project Site. The overall implementation of this TDM Plan on the Project Site is anticipated to produce the desired effect and facilitate transportation behaviors and patterns that result in meaningful reductions in the number of vehicle trips and vehicle miles traveled.

2.2 TDM Resources

The following regional and local resources presently are available to facilitate implementation of the TDM Plan.

2.2.1 Go511

Go511 is Southern California's traffic information portal. It links commuters and employers to resources and information about car- and vanpooling, trip planning, commute costs, current traffic, and other helpful commute information. It offers regional employer programs, including a free Guaranteed Ride Home program, which provides commuters who take transit, car- or vanpool, or bike or walk to work with a free ride home in case of an emergency.

The affiliated ride share service, RideMatching, a joint partnership between Los Angeles County, Orange County, and Ventura County, provides commuters with a platform to find a car- or vanpool match, as well as other local resources and incentives for use. Additional employer and commuter programs are available from the Los Angeles County Metropolitan Transportation Authority, which also offers assistance with and incentives for setting up vanpools.

Associated web sites:

http://www.go511.com/

https://www.ridematch.info/

http://www.metro.net/riding/rideshare/

2.2.2 Vanpool Providers

Commuter vanpooling is a transportation mode that encourages employees who live near each other to commute to work via a van leased to the group by a private company. Two major vanpool providers operating in Southern California are vRide and Enterprise Rideshare. As of this writing, vRide operates 227 vanpools originating in Santa Clarita with destinations throughout the Los Angeles region. The Los Angeles County Metropolitan Transportation Authority (Metro) also has a vanpool program that offers assistance with vanpool formation and provides a $400 subsidy per vanpool.

Associated web sites:

https://www.metro.net/riding/vanpool/

http://www.enterpriserideshare.com/vanpool/en.html

http://www.vride.com/

2.2.3 Ridesourcing Options

In addition to traditional taxicab service, both Uber and Lyft operate in a service area that includes the City of Santa Clarita and the County of Los Angeles, including the Project Site. Both companies allow users to request rides real-time via a mobile app with payment processed through the app, and offer carpooling options on the fly (Lyft Line and UberPool). Rides are generally less expensive than a taxi ride, based on supply and demand of drivers and passengers..

3.0 TDM Implementation Plan

Following the California Department of Fish & Wildlife's (CDFW) approval of the Newhall Ranch RMDP/SCP, implementation of this TDM Plan will be overseen by the County of Los Angeles as individual village-level projects are processed and approved by the County. Because the VMT-reducing strategies that comprise the TDM Plan are expected to have varying levels of applicability and degrees of effectiveness for individual village-level projects, the TDM Plan (including performance metrics) may be refined, as necessary, as part of the County's approval process, to reflect the relevant characteristics (e.g., land use mix) of each respective village.

Notwithstanding, the performance metrics identified in this TDM Plan shall be met in full, upon buildout of all development facilitated by the RMDP/SCP. In the event the maximum development potential authorized by CDFW's approvals is not achieved as part of the County's approval processes for the individual village-level projects, the VMT-reducing strategies and performance metrics may be adjusted to reflect the modified buildout projections while maintaining consistency with the core objectives of this TDM Plan (i.e., to reduce the number of single occupancy vehicle trips through the utilization of alternative forms of motorized and non-motorized transport and related strategies and, thereby, reduce total VMT and the corresponding GHG emissions).

3.1 Funding Options

The TMO and the long-term implementation of the TDM Plan, including transit, car share and bikeshare programs subsidies, will be funded by TDM assessments, or other funding mechanisms that may be applicable, which all applicable property owners will be required to pay. The payment structure will be enforced through Covenants, Conditions and Restrictions (CC&Rs) placed on residential and commercial properties. The applicant or designee will provide funding for infrastructure components, such as mobility hubs, traffic calming, the pedestrian network, bikeshare facilities, school buses, and NEV subsidies. As needed, the applicant, or its designee, also may subsidize TMO operation during the first years until revenues from assessments are sufficient to fund the annual TMO operating expenses.

3.2 Organizational Structure

As previously discussed, a non-profit Transportation Management Organization (TMO) or equivalent management entity will be established to deliver the programs and services identified in this TDM Plan, as applicable.

3.3 TMO Creation Action Plan

It is estimated that the start-up activities to prepare for implementation of the TDM programs and strategies identified in this plan will begin approximately three months prior to issuance of the first building permit. The timing ensures that an organizational structure that facilitates the receipt of funds and the provision of applicable TMO services will be in place as soon as the first property owners and tenants move in. The TMO will be a non-profit organization. The governing body's membership gradually will expand to include a growing number of property owners as they begin occupancy at the Project Site. TMO creation steps are as follows:

- **Create a TMO and form a governing body:** If the TMO is a division of an existing entity, such as a master owners' association, this step simply involves formalizing and expanding a steering committee. If the TMO is envisioned as an independent non-profit organization, the steps for incorporating the entity are listed below.

- **Incorporation of the TMO (optional):** The process for incorporating a TMO is outlined below.

    - Draft and file the articles of incorporation
    - Recruit and appoint a Board of Directors
    - Draft by-laws and conflict of interest policy
    - Conduct initial board actions (election of board officers, approval of the by-laws and conflict of interest policy, and establishment of a bank account).
    - Obtain an employer identification number
    - File the initial registration form (Form CT-1) with the California Attorney General's Registry of Charitable Trusts
    - File the Statement of Information (Form SI-100) with the Secretary of State
    - Apply for federal tax exemption with the Internal Revenue Service (IRS) and receive a determination letter from the IRS
    - Apply for California tax exemption with the California Franchise Tax Board (FTB) and receive an affirmation of exemption letter from the FTB

3.4 Key Implementation Actions

Implementation of the TDM Plan shall be phased in, based on the mix of uses developed, occupancy rates, need, and demand. Additionally, in coordination with the County of Los Angeles, the applicant (or its designee) shall review the planned development located within the Project Site concurrent with the processing of County-level entitlements for each village. Each village's land use map, composition of land use categories, and geographic placement within the Project Site shall guide the determination of the precise implementation of the strategies identified herein. It is not anticipated that every village necessarily will implement each strategy enumerated in this TDM Plan (e.g., each village may not include its own mobility hub). Village-specific performance metrics and targets will be prepared in conjunction with the County's approval process for use in lieu of the overarching metrics and targets presented in Table 1. That said, the overall implementation of this TDM Plan on the Project Site is anticipated to facilitate transportation behaviors and patterns that result in meaningful reductions in the number of vehicle trips and vehicle miles traveled.

3.4.1 Start Up Activities

The start-up activities summarized below will be undertaken to prepare for TDM service delivery. The applicant, or its designee, will:

- Hire staff and establish the TMO office, including creation of a financial structure and accounting procedures

The applicant, or its designee, and TMO staff will proceed to:

- Create the TMO budget and ensure TDM program funding by finalizing assessment rates;
- Identify stakeholders and establishing the relationships necessary to successfully implement the TDM strategies;
- Finalize a business plan and create a detailed work plan;
- Create TMO branding and identity;
- Develop a marketing plan;
- Create a steering committee; and
- Establish monitoring and evaluation procedures.

3.4.2 Year One Activities – Based on development triggers

The activities described in this section prepare the TMO for effectively implementing its service when certain milestones are reached. These include employers and residents moving in, schools opening, and bikeshare and carshare systems launching. These activities do not necessarily happen during the first year of operation; instead, they are triggered by differing development milestones dependent upon the particular strategy and, generally, correspond to the first year of residential occupancy or the first year of school operation within the district unless otherwise noted. The timeline in section 3.5 below lists the triggers along with the corresponding strategies and actions. In Year One, the TMO will:

- Initiate the preparation of marketing materials, which may include new resident and new employee welcome kits, as well as general marketing materials;
- Establish an incentive structure for behavior-supportive subsidies, including prizes for drawings or giveaways to be used to incentivize and reward change from single occupant vehicle travel;
- Begin working with employers prior to their move to the Project Site;

- Conduct outreach to developers and property managers to ensure that preferential carpool parking, loading and passenger waiting zones and other end-of-trip facilities are implemented;
- Develop an effective system to administer payment of transit, bikeshare, and carshare program subsidies to employees and residents, as applicable;
- Develop a school travel planning strategy that will promote school bus service and encourage walking, biking and carpooling to school;
- Assess and employ tech-enabled mobility to provide functionalities such as trip planning, ridematching, ridehailing, trip tracking, rewards programs, and others;
- Begin implementation of monitoring and evaluation activities;
- Launch bikeshare program;
- Launch carshare program.

3.4.3 Ongoing Activities – Years 2 – 5

While specific implementation details will evolve over time and may be adjusted based on new strategies, technologies, or approaches that become available, these general categories will remain key components of program implementation during the first five years and beyond. During these years, TMO staff will:

- Administer transit/alternative transportation subsidies and introduce bikeshare and carshare subsidies as the programs are launched;
- Implement a residential engagement strategy to educate residents about alternative transportation options, available subsidies, and related programs;
- Implement an employer engagement strategy to educate both employers and their employees about the commute options, subsidies, and programs available to them;
- Administer school travel planning programs, such as school pools, walking, school bus, bike trains, incentives, and other programs available at that time; and
- Continue to monitor and evaluate TDM activities.

3.5 Timeline and Phasing

This timeline of TMO activities was developed to provide an estimate of when, during the development phasing process, certain actions need to begin in order to ensure service delivery as building occupancy occurs. The timeline may be adjusted based on changes to the TDM strategies.

Timeline	Development Triggers	Applicable Land Use				Strategy	Actions
		Residential	School	Retail	Office		
	Prior to issuance of first building permit for each applicable land use					TMO operations	TMO begins operations. Branding and marketing plan development begins.
						Required commute trip reduction program	TMO outreach to developers to ensure preferential parking, passenger loading for rideshare vehicles, waiting areas for rideshare
	Prior to occupancy for each applicable land use					TMO operations	Implement systems to deliver subsidies to residents and employees
						School bus program and travel planning	Coordinate school bus purchase with district, develop school travel planning program, implementation of programs
						Required commute trip reduction program	Pre-relocation employer outreach
						Alternative transportation subsidies - affordable housing	Market subsidies to affordable housing residents
						Alternative transportation subsidies - employees	Work with employers to market alternative transportation subsidies
						Alternative work schedules & telecommute program	General employer outreach, assistance to employers >100 employees, develop monitoring methods and begin tracking of implementation at large employer sites (>100 employees)
						Alternative work schedules & telecommute program	Residential outreach through welcome kits and marketing
						Required commute trip reduction program	Select and launch ridematching tool
						Tech-enabled mobility	Manage web site updates, app selection, distribution & marketing, etc.
	1,250 residential units in each village					Carshare program	Begin implementation of carshare program and promotion of subsidies to residents
						Bikeshare program	Begin implementation of bikeshare program and promotion of subsidies to residents

Activities that do not fall under the purview of the TMO, such as the review and approval of construction traffic management plans, inclusion of affordable housing, the development of a pedestrian network, traffic calming, and the transit network expansion, shall be incorporated into the County of Los Angeles' development review and approval activities and, in the case of transit expansion, coordinated and negotiated with City of Santa Clarita Transit.

4.0 Program Monitoring

The applicant (or its designee) and/or the TMO or equivalent management entity will track the progress towards meeting the performance metrics and targets identified in Table 1, RMDP/SCP TDM Plan Performance Metrics and Targets. Such monitoring includes verification of the installation of infrastructure components, payment of subsidies, and implementation of the various programs and services identified in this TDM plan. Progress will be monitored as identified in Table 1 to ensure that program goals are met and to inform the implementation of TDM strategies going forward.

Progress towards meeting the identified targets will be tracked via the following data collection mechanisms:

- Field verification: Field verification primarily will be used to verify installation of infrastructure components such as the Pedestrian Network, Traffic Calming, NEV travel network, Mobility Hubs, and Bikeshare Network. The field verification will be performed by the TMO or equivalent entity.

- Resident Surveys: The TMO or equivalent entity will conduct annual resident surveys to track the following metrics:
    - Percentage of workforce residents participating in an alternative work schedule;
    - Percentage of students arriving at school via school bus or non-motorized modes;
    - Percentage of households with carshare membership;
    - Percentage of households with a NEV; and
    - Percentage of below-market households with a subsidized transit pass.

- TMO Reports: The TMO or equivalent entity will prepare an annual report detailing its activities and accomplishments, including the establishment of and ongoing activities related to:
    - Required Commute Trip Reduction Program; and
    - Tech-enabled Mobility Program.

- Employer Reports/Surveys: Employers will submit an annual report to the TMO, or participate in an annual survey conducted by the TMO, as appropriate, to ensure the following metrics are tracked:
    - Percentage of employees participating in an alternative work schedule;
    - Percentage of employees receiving a discounted transit pass or other alternative transportation subsidy.

Additional methods listed in Table 1 include the review of partnership documents and reports from partnering agencies, and final as-built documents.

Table 1: RMDP/SCP TDM Plan Performance Metrics and Targets

Strategy #	Strategy	Description	Metric/Performance Measure	Target	Collection Method	Collection Frequency	When Target Should Be Met
1	Integrate Affordable and Below Market Rate Housing	Because income has a statistically significant effect on the probability that a commuter will take transit or walk to work, affordable and below market rate housing provides greater opportunity for lower income families to live closer to job centers and achieve jobs/housing balance near transit.	Percentage of deed-restricted, below market housing units	10% of total housing units upon full build-out of the development facilitated by the RMDP/SCP	Review of deed-restricted, below market housing units within the development divided by total number of housing units	Once after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP
2	Pedestrian Network	Pedestrian facilities, such as sidewalks, paseos, and trails.	Pedestrian network build-out that provides internal pedestrian facilities and facilities that connect off-site	Full build-out of planned pedestrian network that provides internal and external pedestrian connections	Field Verification	Once as to each village, after build-out of each village is complete	Full development build-out of each respective village
3	Traffic Calming	One or more traffic calming measures for all on-site roadways and intersections. These measures include, but are not limited to: count-down signal timers, marked crosswalks, raised crosswalks, raised intersections, speed tables, median islands, planter strips with trees, curb extensions, on-street parking, tight corner radii, roundabouts or mini-circles, and chicanes/chokers.	Percentage of streets and intersections with a traffic calming improvement	100% of streets and intersections	Field Verification	Once as to each village, after build-out of each village is complete	Full development build-out of each respective village
4	Transit Network Expansion	Extension of Santa Clarita Transit routes into Newhall Ranch.	Extension of transit system coverage throughout RMDP/SCP project area to each village, consistent with the Conceptual Transit Plan (or equivalent)	Extension results in 80% increase in Santa Clarita Transit system network coverage within the RMDP/SCP project area, as compared to the existing coverage provided within the project area	Transit Operator Reports	Annually after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP
5	Alternative Work Schedules and Telecommute Program (Residential End)	High-speed internet available to residents and marketing efforts by the Transportation Management Organization (or equivalent entity).[6]	Percent of workforce residents participating in an alternative work schedule	10% of workforce residents participating in an alternative work schedule	Resident Surveys	Annually after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP
			Internet speeds	Pre-wired residential access to high speed internet	Internet Service Provider Reports	Once as to each village, after build-out of each village is complete	Full development build-out of each respective village

[6] When referred to in this table, TMO includes a Transportation Management Organization or an equivalent entity.

Table 1: RMDP/SCP TDM Plan Performance Metrics and Targets

Strategy #	Strategy	Description	Metric/Performance Measure	Target	Collection Method	Collection Frequency	When Target Should Be Met
6	Required Commute Trip Reduction Program	Multi-strategy required program at larger employers that encompasses a combination of individual VMT reduction measures, such as ride-sharing, marketing, transit fare subsidy, preferential parking, and/or end-of-trip facilities. (This is neither intended to be an inclusive or exclusive list of potential measures.)	Program established	Establishment of a multi-strategy program that may include components such as preferential carpool parking, flexible work schedules for carpools, transit fare subsidies, ridematching, designation of a transportation coordinator, vanpool assistance, and bicycle end-trip facilities	TMO Report	Annually after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP
7	Alternative Work Schedules and Telecommute Program (Work End)	Encouraging telecommuting and alternative work schedules (e.g., 4/40, 9/80).	Percent of employees participating in an alternative work schedule	10% of employees participating in an alternative work schedule	Employer Report or TMO Survey	Annually after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP
8	School Bus Program	Implement school bus service.	School Bus Program Established	Established as part of the development of each respective village	School District(s) report	Once as to each village, after build-out of each village is complete	Concurrent with the development of each respective village
			Percentage of students arriving at school via school bus or non-motorized modes	76% of students	Resident Surveys	Annually after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP
9	Transit Fare Subsidy for Employees	Discounted daily or monthly public transit passes or other alternative transportation subsidy for those employees whose employer does not participate in the Required Commute Trip Reduction (CTR) Program.	Fund a transit or alternative transportation subsidy program for 8.2% of all employees employed at Newhall Ranch whose employer does not participate in the CTR Program, at $2.98 subsidy per person per day.	8.2% of non-CTR Program employees	Employer Reports or TMO Survey	Annually after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP
10	Carshare Program	On-site availability of car-share vehicles throughout the project site, such as Zipcar or other.	Provide infrastructure for carshare parking spaces at mobility hubs	Full build-out of supportive carshare network	Final as-built documents	Once as to each village that includes a mobility hub, after build-out of each such village is complete	Full development build-out of each village with an identified mobility hub
			Carshare provider contracted to serve Newhall Ranch	Partnership with carshare provider	Partnership documents	Annually after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP

Table 1: RMDP/SCP TDM Plan Performance Metrics and Targets

Strategy #	Strategy	Description	Metric/Performance Measure	Target	Collection Method	Collection Frequency	When Target Should Be Met
			Membership in carshare program	1% of residents participate in carshare program	Resident Surveys	Annually after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP
11	NEV Strategies	Travel network that accommodates NEV use, including features such as charging facilities, striping, signage, and educational tools. Initial financial incentive in the form of subsidies is included in this strategy.	NEV travel network build-out	Full build-out of planned NEV travel network	Field Verification	Once as to each village, after build-out of each village is complete	Full development build-out of each respective village
			Percent of households with an NEV	20% of households	Resident Surveys	Annually after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP
12	Mobility Hubs	One-stop centers for transit, rideshare meeting, car share, bicycle repairs, bicycle share, end-of-trip facilities, commuter amenities. Centrally-located within neighborhood and employment centers, consistent with the Conceptual Transit Plan (or equivalent).	Number of small mobility hubs (providing information kiosks, transit arrival information, bike lockers and bike parking, enhanced pedestrian amenities, branding/signage, co-location for carshare and bikeshare)	4 small mobility hubs	Field Verification	Once as to each village that includes a mobility hub, after build-out of each such village is complete	Full development build-out of each village with an identified mobility hub
			Number of large mobility hubs (providing information kiosks, transit arrival information, bike lockers and bike parking, enhanced pedestrian amenities, branding/signage, co-location for carshare and bikeshare, designated park-and-ride spaces)	2 large mobility hubs	Field Verification	Once as to each village that includes a mobility hub, after build-out of each such village is complete	Full development build-out of each village with an identified mobility hub
13	Tech-Enabled Mobility	One-stop website for Newhall Ranch transportation information. Comprehensive commute planning, on-demand rideshare matching, real-time transit arrivals, bicycle route mapping, shared ride reservations (shuttle, car share), traffic information, etc. All-in-one Newhall Ranch specific transportation app or suite of apps. Similar information and services as on website.	Mobile Application implemented by TMO that displays the following: on-demand rideshare matching, real-time transit arrivals, bicycle route mapping, shared ride reservations (shuttle, car share), traffic information	One TMO-implemented application	TMO Report	Annual updates and upgrades to application	Full development build-out of each village
			Website implemented by TMO for transportation information that displays the following: on-demand rideshare matching, real-time transit arrivals, bicycle route mapping, shared ride reservations (shuttle, car share), traffic information	One TMO-implemented website	TMO Report	Annual updates and upgrades to website	Full development build-out of each village
14	Bikeshare	On-site availability of bikeshare bicycles throughout the project site with subsidized membership.	Provide infrastructure for up to 15 bikeshare stations at mobility hubs and other locations	Full build-out of planned bikeshare network	Field Verification	Once after full build-out of all development facilitated by the RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP

Table 1: RMDP/SCP TDM Plan Performance Metrics and Targets

Strategy #	Strategy	Description	Metric/Performance Measure	Target	Collection Method	Collection Frequency	When Target Should Be Met
			Bikeshare provider contracted to serve Newhall Ranch	Partnership with bikeshare provider	Partnership documents	Annually after full build-out of all development facilitated by RMDP/SCP	Full build-out of all development facilitated by RMDP/SCP
15	Transit Fare Subsidy - Below Market Rate Households	Discounted public transit passes to below market rate households.	Fund subsidized transit pass at $2.98 per day for residents in BMR households	14% of deed-restricted, below market rate housing units (up to 300 passes)	Resident Surveys	Annually after full build-out of all below market rate housing facilitated by RMDP/SCP	Full build-out of all below market rate housing facilitated by RMDP/SCP

Newhall Ranch Transportation Demand Management Plan

Mission Village Applicability Supplement

The Newhall Ranch Transportation Demand Management (TDM) Plan is a comprehensive plan designed to achieve reductions in vehicle miles traveled (VMT) and, in so doing, reduce greenhouse gas (GHG) emissions. The TDM Plan covers all development to be facilitated by the Newhall Ranch Resource Management Development Plan and Spineflower Conservation Plan (RMDP/SCP), which includes the Newhall Ranch Specific Plan, Entrada, and Valencia Commerce Center planning areas. The Mission Village project is one of the five villages located within the Newhall Ranch Specific Plan planning area. The Specific Plan, as approved by the County of Los Angeles in 2003, will guide the long-term development and conservation of the 11,999-acre Newhall Ranch community, as approved to include a broad range of residential, mixed-use, and commercial/retail uses within five interrelated villages.

The Newhall Ranch TDM Plan includes 15 VMT reduction strategies to be implemented following construction of Newhall Ranch (i.e., during operation). As illustrated by this supplement, each of the 15 strategies is applicable to the Mission Village project and will be implemented as part of the Mission Village project pursuant to Mitigation Measure MV 4.23-6/GCC-6. Exhibit A, *Mission Village TDM Plan Performance Metrics and Targets* (Fehr & Peers, September 2016), of this supplement sets forth the TDM Plan performance criteria specific to Mission Village, all of which are consistent with the implementation of the TDM Plan. Further, an evaluation of the VMT reduction benefits of the Newhall Ranch TDM Plan specific to Mission Village is provided in the *Mission Village: Transportation Demand Management Plan Evaluation* (Fehr & Peers, September 2016).

Table 1: Mission Village TDM Plan Performance Metrics and Targets

Strategy #	Strategy	Description	Metric/Performance Measure	Target	Collection Method	Collection Frequency	When Target Should Be Met
1	Integrate Affordable and Below Market Rate Housing	Because income has a statistically significant effect on the probability that a commuter will take transit or walk to work, affordable and below market rate housing provides greater opportunity for lower income families to live closer to job centers and achieve jobs/housing balance near transit.	Percentage of deed-restricted, below market housing units	7% of total housing units upon full build-out of the development facilitated by the RMDP/SCP	Review of deed-restricted, below market housing units within the development divided by total number of housing units	Once after full build-out of Mission Village	Full build-out of Mission Village
2	Pedestrian Network	Pedestrian facilities, such as sidewalks, paseos, and trails.	Pedestrian network build-out that provides internal pedestrian facilities and facilities that connect off-site	Full build-out of planned pedestrian network that provides internal and external pedestrian connections	Field Verification	Once after full build-out of Mission Village	Full build-out of Mission Village
3	Traffic Calming	One or more traffic calming measures for all on-site roadways and intersections. These measures include, but are not limited to: count-down signal timers, marked crosswalks, raised crosswalks, raised intersections, speed tables, median islands, planter strips with trees, curb extensions, on-street parking, tight corner radii, roundabouts or mini-circles, and chicanes/chokers.	Percentage of streets and intersections with a traffic calming improvement	100% of streets and intersections	Field Verification	Once after full build-out of Mission Village	Full build-out of Mission Village
4	Transit Network Expansion	Extension of Santa Clarita Transit routes into Mission Village, consistent with Conceptual Transit Plan (or equivalent), to meet the overall TDM Plan target for Newhall Ranch	Extension of transit system coverage into Mission Village, as measured in miles	Proportionate extension of transit system coverage into Mission Village, as measured in miles, in an amount that, when combined with the remainder of the RMDP/SCP area, would achieve an overall 80% increase over existing RMDP/SCP area transit coverage (see RMDP/SCP TDM Plan Performance Metrics and Targets)	Transit Operator Reports	Annually after full build-out of Mission Village	Full build-out of Mission Village

Table 1: Mission Village TDM Plan Performance Metrics and Targets

Strategy #	Strategy	Description	Metric/Performance Measure	Target	Collection Method	Collection Frequency	When Target Should Be Met
5	Alternative Work Schedules and Telecommute Program (Residential End)	High-speed internet available to residents and marketing efforts by the Transportation Management Organization (or equivalent entity).[1]	Percent of workforce residents participating in an alternative work schedule	10% of all workforce residents participating in an alternative work schedule	Resident Surveys	Annually after full build-out of Mission Village	Full build-out of Mission Village
			Internet speeds	Pre-wired residential access to high speed internet	Internet Service Provider Reports	Once after full build-out of Mission Village	Full development build-out of Mission Village
6	Required Commute Trip Reduction Program	Multi-strategy required program that encompasses a combination of individual VMT reduction measures, such as ride-sharing, marketing, transit fare subsidy, preferential parking, and/or end-of-trip facilities at larger employers. (This is neither intended to be an inclusive or exclusive list of potential measures.)	Program established for Mission Village, or then-existing program, if any, amended to include Mission Village employees and residents, with a threshold for participation set such that at least 50% of employees in Landmark Village are captured in the program	Establishment of a multi-strategy program that includes components such as preferential carpool parking, flexible work schedules for carpools, transit fare subsidies, ridematching, designation of a transportation coordinator, vanpool assistance, and bicycle end-trip facilities	TMO Report	Annually after full build-out of Mission Village	Full build-out of Mission Village
7	Alternative Work Schedules and Telecommute Program (Work End)	Encouraging telecommuting and alternative work schedules (e.g., 4/40, 9/80).	Percent of employees participating in an alternative work schedule	Proportionate employee participation rate calculated to achieve a 10% participation rate of all employees within RMDP/SCP area (see RMDP/SCP TDM Plan Performance Metrics and Targets)[2]	Employer Report or TMO Survey	Annually after full build-out of Mission Village	Full build-out of Mission Village
8	School Bus Program	Implement school bus service.	School Bus Program Established for Mission Village, or then-existing program, if any, amended to include Mission Village schools	Established as part of the development of Mission Village	School District(s) report	Once after full build-out of Mission Village	Concurrent with the development of Mission Village

[1] When referred to in this table, TMO includes a Transportation Management Organization or an equivalent entity.

[2] Village-specific targets for participation in employer-end alternative work schedules will vary based on the specific commercial and industrial employment mix. All Villages within the RMDP/SCP will contribute to an overall RMDP/SCP target of 10% employee participation in an employer-end alternative work schedule, as specified in the RMDP/SCP TDM Plan Performance Metrics Table.

Table 1: Mission Village TDM Plan Performance Metrics and Targets

Strategy #	Strategy	Description	Metric/Performance Measure	Target	Collection Method	Collection Frequency	When Target Should Be Met
			Percentage of students arriving at school via school bus or non-motorized modes	Percentage of students calculated to achieve a 76% rate of all resident students within RMDP/SCP area arriving at school via school bus or non-motorized modes (see RMDP/SCP TDM Plan Performance Metrics and Targets)[3]	Resident Surveys	Annually after full build-out of Mission Village	Full build-out Mission Village
9	Transit Fare Subsidy for Employees	Discounted daily or monthly public transit passes or other alternative transportation subsidy for employees whose employer does not participate in the CTR Program.	Fund a transit or alternative transportation subsidy program for 8.2% of all employees employed in Mission Village whose employer does not participate in the CTR Program, at $2.98 subsidy per person per day	Employee participation rate calculated to achieve 8.2% of non-CTR employees within RMDP/SCP area (see RMDP/SCP TDM Plan Performance Metrics and Targets)[4]	Employer Reports or TMO Surveys	Annually after full build-out of Mission Village	Full build-out of Mission Village
10	Carshare Program	On-site availability of car-share vehicles throughout the project site, such as Zipcar or other.	Provide infrastructure for carshare parking spaces at mobility hub	Full build-out of supportive carshare network	Final as-built documents	Once after full build-out of Mission Village	Full development build-out of Mission Village
			Carshare provider contracted to serve Mission Village, or then-existing contract with carshare provider, if any, extended to cover Mission Village	Partnership with carshare provider	Partnership documents	Annually after occupancy of 1,250 dwelling units	Following occupancy of 1,250 dwelling units
			Membership in carshare program	1% of residents participate in carshare program	Resident Surveys	Annually after full build-out of Mission Village	Full development build-out of Mission Village
11	NEV Strategy	Travel network that accommodates NEV use, including features such as charging facilities, striping, signage, and educational tools. Initial financial incentive in the form of subsidies is included in this strategy.	NEV travel network build-out	Full build-out of planned NEV travel network	Field Verification	Once after full build-out of Mission Village	Full development build-out of Mission Village
			Percent of households with an NEV	20% of households	Resident Surveys	Annually after full build-out of Mission Village	Full build-out of Mission Village

[3] Village-specific targets for participation in school bus program will vary based on school presence within each Village and the associated attendance boundaries. All Villages with school uses within the RMDP/SCP will participate in the overall school bus program, contributing to an overall target of 76% participation, as specified in the RMDP/SCP TDM Plan Performance Metrics Table.

[4] Village-specific targets for participation in transit subsidy program will vary based on employment mix. All Villages within the RMDP/SCP will be eligible to participate in the overall transit subsidy program, contributing to an overall target of 8.2% participation rate in the transit subsidy program, as specified in the RMDP/SCP TDM Plan Performance Metrics Table.

Table 1: Mission Village TDM Plan Performance Metrics and Targets

Strategy #	Strategy	Description	Metric/Performance Measure	Target	Collection Method	Collection Frequency	When Target Should Be Met
12	Mobility Hubs	One-stop centers for transit, rideshare meeting, car share, bicycle repairs, bicycle share, end-of-trip facilities, commuter amenities. Centrally-located within neighborhood and employment centers, consistent with the Conceptual Transit Plan (or equivalent).	Number of large mobility hubs (providing information kiosks, transit arrival information, bike lockers and bike parking, enhanced pedestrian amenities, branding/signage, co-location for carshare and bikeshare, designated park-and-ride spaces)	1 large mobility hub, consistent with the Conceptual Transit Plan (or equivalent)	Field Verification	Once after full build-out of Mission Village	Full development build-out of Mission Village
13	Tech-Enabled Mobility	One-stop website for Newhall Ranch transportation information. Comprehensive commute planning, on-demand rideshare matching, real-time transit arrivals, bicycle route mapping, shared ride reservations (shuttle, car share), traffic information, etc. All-in-one transportation app or suite of apps. Similar information and services as on website.	Mobile application, or expansion of then-existing Newhall Ranch mobile application, if any, to cover Mission Village, implemented by TMO that displays the following: on-demand rideshare matching, real-time transit arrivals, bicycle route mapping, shared ride reservations (shuttle, car share), traffic information	One TMO-implemented application	TMO Report	Annual updates and upgrades to application	Full development build-out of Mission Village
			Website, or expansion of then-existing Newhall Ranch website, if any, to cover Mission Village, implemented by TMO for transportation information that displays the following: on-demand rideshare matching, real-time transit arrivals, bicycle route mapping, shared ride reservations (shuttle, car share), traffic information	One TMO-implemented website	TMO Report	Annual updates and upgrades to website	Full development build-out of Mission Village
14	Bikeshare	On-site availability of bikeshare bicycles throughout the project site with subsidized membership.	Provide infrastructure for bikeshare stations at mobility hub and other locations[5]	Full build-out of planned bikeshare network	Field Verification	Once after full build-out of Mission Village	Full build-out of Mission Village
			Bikeshare provider contracted to serve Mission Village, or then-existing contract with bikeshare provider, if any, extended to cover Mission Village	Partnership with bikeshare provider	Partnership documents	Annually after occupancy of 1,250 dwelling units	Following occupancy of 1,250 dwelling units

[5] Locations other than the mobility hub will be determined in conjunction with a third-party bikeshare operator.

Table 1: Mission Village TDM Plan Performance Metrics and Targets

Strategy #	Strategy	Description	Metric/Performance Measure	Target	Collection Method	Collection Frequency	When Target Should Be Met
15	Transit Fare Subsidy - Below Market Rate Households	Discounted public transit passes to below market rate households.	Fund subsidized transit pass at $2.98 per day for residents in BMR households	14% of deed-restricted, below market rate housing units (up to 42 passes)	Resident Surveys	Annually after full build-out of Mission Village	Full build-out of Mission Village

APPENDIX F
NEWHALL RANCH GHG REDUCTION PLAN

Newhall Ranch
GHG Reduction Plan

I. OVERVIEW AND SUMMARY

The purpose of the Newhall Ranch GHG Reduction Plan (the "GHG Reduction Plan") is to facilitate the full reduction of Project[1]-related greenhouse gas ("GHG") emissions to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining approved carbon credits. This GHG Reduction Plan is organized as follows:

- Section II summarizes the process by which the Project applicant (or its designee) will seek to undertake or fund activities that directly reduce or sequester GHG emissions.
- Section III describes candidate activities for directly reducing or sequestering GHG emissions that the Project applicant is evaluating.
- Sections IV through VI outline the compliance options available to the Project applicant (or its designee).
- Sections VII and VII describe the compliance verification process for the GHG Reduction Plan.

Overall, the mitigation measures (GCC-1 through GCC-12) recommended for the Project and the implementation of this GHG Reduction Plan (GCC-13) are designed to substantially reduce the Project's GHG emissions at the local/regional level and within the State of California, as well as within the United States and internationally. The vast majority of investment in GHG emissions reduction activities covered by the mitigation measures (GCC-1 through GCC-12) and this GHG Reduction Plan (GCC-13) will occur within the County of Los Angeles and State California.

II. DIRECT REDUCTION ACTIVITIES

A. Description

The Project applicant (or its designee) will directly undertake or fund activities that will reduce or sequester GHG emissions (the "Direct Reduction Activities"). Under CEQA Guidelines Section 15126.4, subdivisions (c)(3) and (c)(4), respectively, a project's GHG emissions can be reduced by "[o]ff-site measures, including offsets that are not otherwise required" and "[m]easures that sequester greenhouse gases."

The Project applicant (or its designee) will work directly with third parties, including not-for-profits, non-governmental organizations ("NGOs"), project developers and project owners, to

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1 The "Project" for purposes of this GHG Reduction Plan is the Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan ("RMDP/SCP"). The Project's approval will facilitate land use development within the Newhall Ranch Specific Plan area, as well as the Entrada and Valencia Commerce Center planning areas.

achieve GHG emissions reduction or sequestration. All Direct Reduction Activities will be undertaken for the specific purpose of reducing the GHG emissions of the Project, and all Direct Reduction Activities will be confirmed by an independent, qualified third-party.

B. GHG Emissions Reductions Will Occur in Accordance with Approved Registry Rules

The Project applicant (or its designee) will list or register each Direct Reduction Activity with the Climate Action Reserve, the American Carbon Registry, the Verified Carbon Standard, the Clean Development Mechanism (each, a "Registry") or other comparable organization or program. In accordance with the applicable Registry requirements, the Project applicant (or its designee) will retain an independent, qualified third-party to confirm the GHG emissions reduction or sequestration achieved by the Direct GHG Reduction Activities against the applicable Registry protocol or methodology. The Project applicant (or its designee) will then apply for issuance of carbon credits in accordance with the applicable Registry rules.

C. Example Registries

The following paragraphs describe, in more detail, the four possible Registries identified above. In the event that these Registries cease to exist or are otherwise no longer available, the Project applicant (or its designee) would identify and work with entities that can perform the same functions.

Climate Action Reserve ("CAR"): The California Legislature established CAR in 2001 to encourage actions to reduce GHG emissions. CAR began as the California Climate Registry and developed protocols to track GHG emissions and reductions, and have those emissions verified and publicly reported. The California Climate Registry was renamed as CAR and expanded in 2008, and now plays a leading role in the carbon market. CAR has developed over 15 separate protocols for quantification and verification of GHG emissions reductions, and issued over 60 million carbon offset credits, known as "Climate Reserve Tonnes" or "CRTs." CAR is based in Los Angeles and has been approved by the California Air Resources Board ("CARB") as an official offset project registry for the State's Cap-and-Trade Program.

American Carbon Registry ("ACR"): ACR was founded in 1996 as a non-profit enterprise of Winrock International, a non-profit organization. ACR is a CARB-approved offset project registry for the State's Cap-and-Trade Program and has also developed its own carbon offset methodologies, such as methodologies for degraded wetlands and for avoided conversion of grasslands to crop production.

Verified Carbon Standard ("VCS"): VCS was founded in 2005 by the Climate Group, the International Emissions Trading Association and the World Economic Forum. Project developers are able to list projects on the VCS registry using a variety of protocols, including CAR protocols. VCS is a CARB-approved offset project registry for the State's Cap-and-Trade Program and has also developed its own carbon offset quantification methodologies.

Clean Development Mechanism ("CDM"): CDM is a carbon offsetting program established by the Kyoto Protocol to the United Nations Framework Convention on Climate Change. CDM approves carbon offset projects in conjunction with national authorities in countries that have entered into the Kyoto Protocol. Projects registered with CDM exist in economies in transition and developing countries. The GHG Reduction Plan will only utilize CDM to the extent that cook stove projects (see infra, Section IV.A) are used as Direct Reduction Activities.

III. OVERVIEW OF POTENTIAL DIRECT REDUCTION ACTIVITIES

The following is a description of Direct Reduction Activities that the Project applicant has identified on a preliminary basis for inclusion in the GHG Reduction Plan. The following list is illustrative only and the exact portfolio composition of the Direct Reduction Activities may differ over time as new project types may be added and certain opportunities identified below may not be realized.

A. Forest Conservation in California and the United States

Through working with a leading developer of forest carbon offset projects, the Project applicant is exploring opportunities involving the conservation of forest land and forest stocks for the purpose of sequestering GHG emissions. The developer would identify suitable forest land and then assist the Project applicant (or its designee) in its management of this land to maximize the forest and carbon stocks through afforestation, avoided conversion and improved management techniques.

Loss of forests or improper management of forests in California and the rest of the United States releases carbon emissions into the atmosphere that would otherwise have been sequestered in trees, soils, and understory plants in forests, which naturally absorb carbon dioxide from the atmosphere and store the gas as carbon.

Through sustainable management and protection, avoided conversion of forests to other uses, and reforestation, forests can increase their carbon storage compared to a business-as-usual scenario. The California Forestry Association recognizes that "healthy forests provide the state with clean water and air [and] thriving wildlife habitats."[2] The U.S. Forest Service recognizes the importance of forest restoration and protection through its "Integrated Resource Restoration" program, which aims to "re-establish a balance of nature needed for air, water, plants and animals to thrive" in the nation's forests through direct forest land management.[3] As evidenced by Governor Brown's central role in the creation of the Governors' Climate and Forests Task Force ("GCF"), a multi-national collaboration, which synchronizes efforts across jurisdictions to develop policies and programs that provide pathways to forest-maintaining rural development, California is making considerable efforts to broker the international accord to fight deforestation and climate change.

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2 California Forestry Association, "About Us," available at http://calforests.org/about/. Accessed: September 2016.

3 U.S. Forest Service, "Forests and Grasslands," available at http://www.fs.fed.us/managing-land/national-forests-grasslands. Accessed: September 2016.

The Project applicant is actively considering Direct Reduction Activities involving the forestry sector where the Project applicant (or its designee) could help conserve forest land or forest stocks for the purpose of sequestering GHG emissions.[4] The Project applicant (or its designee) may pursue opportunities that involve three types of forestry sequestration activities:

- Avoided conversion of forests: this activity involves the avoided de-forestation of forest land through a land purchase or, in the U.S., the creation of a conservation easement or other legally binding agreement.

- Improved forestry management: this activity may include increasing rotation ages to increase the overall age of the forest, increasing the stocking of trees on understocked areas, and increasing forest productivity by thinning diseased and suppressed trees.

- Afforestation: this activity involves the planting of new trees.

The applicable forestry sequestration protocols and methodologies provide strict criteria regulating the type of activities eligible to qualify as avoided conversion, improved forestry management or afforestation activities. For example, the use of non-native tree species in afforestation projects is restricted.

To implement these forestry Direct Reduction Activities, if ultimately pursued, the Project applicant (or its designee) would work with successful and experienced forestry carbon sequestration developers. These developers would identify forest land suitable for carbon sequestration projects.

Under a typical contractual structure, the Project applicant (or its designee) would purchase forest land from a forest owner to conserve or enhance forest stocks. It is possible, also, that the Project applicant (or its designee) would fund the sequestration activities by pre-paying the forest owner for the future sequestration. In both instances, the developer would subsequently assist the Project applicant (or its designee) in managing the forest land or assisting the forest owner so as to increase the forest and carbon stocks.

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[4] See, e.g., CAR, *Forest Project Protocol Version 3.3* (2012) (providing requirements and guidance for quantifying the net climate benefits of activities that sequester carbon on forestland); CARB, *Compliance Offset Protocol: U.S. Forest Projects* (2015) (the purpose of the protocol "is to quantify [GHG] emission reductions and [GHG] removal enhancements associated with the sequestration of carbon achieved by increasing and/or conserving forest carbon stocks"); UNFCC, *Afforestation and Reforestation Projects Under the Clean Development Mechanism* (2013) ("The monitoring report is based on actual data relating to the performance of the project. It provides evidence of the emission reductions or removals achieved by the project."); UNFCC, *Clean Development Mechanism AR-AMS0007: Afforestation and Reforestation Project Activities Implemented on Lands Other Than Wetlands* at 5 (2015) (describing accounting for carbon stock changes, emission sources and associated GHGs).

B. Clean Cook Stoves

Through a United Nations sponsored and verified program, the Project applicant is evaluating programs involving the funding of clean-burning cook stoves for underprivileged households in Africa (including in Zambia and Malawi). The clean cook stoves would reduce GHG emissions, as well as deliver many health-related co-benefits to their users. More than three billion people globally depend on burning woody fuels in archaic, 3-stone fires for cooking.[5] According to the World Health Organization, this primitive form of cooking results in over 4 million premature deaths worldwide every year.[6] More than 50% of premature deaths due to pneumonia among children under the age of 5 are caused by the particulate matter (soot) inhaled from household air pollution.[7] Other adverse health effects associated with biomass smoke exposure include stroke, chronic obstructive pulmonary disease, cardiovascular disease and lung cancer.[8] In Africa, more people die from exposure to cook stove smoke than from malaria, tuberculosis and HIV/AIDS, combined.

Inefficient cook stoves are also a significant contributor to GHG emissions and climate change. The need to gather high volumes of firewood also contributes significantly to deforestation and, consequently, climate change. Moreover, women and children must spend hours a day walking long distances for wood gathering or to purchase bundled wood, and are often exposed to assaults and other dangers. The time spent gathering wood deprives young children of time needed for schooling and education.

A single clean cook stove can save an average of two tonnes of carbon dioxide emissions per year, reduce household air pollution by 50%, and reduce the time spent gathering resources by 75%.

If this program is ultimately pursued, the Project applicant (or its designee) would provide the funding required to build, distribute and maintain cook stoves. The stove project developer would implement the project by providing in-person training on the manufacturing, operation and maintenance of cooking stoves. The owner and the location of each stove would be tracked and recorded in the project documents.[9]

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5 World Health Organization, "Household air pollution and health: Fact sheet N°292," (February 2016), available at: http://www.who.int/mediacentre/factsheets/fs292/en/. Accessed: September 2016.

6 Id.

7 Id.

8 Id.

9 See, e.g., C-Quest Capital Malaysia Global Stoves Limited, *Monitoring Report Form for CDM Programme of Activities: Improved Cookstoves Program for Malawi and Cross-border Regions of Mozambique* (2015) (listing GHG emissions reductions for roughly one-year period as 41,606 $MTCO_2e$); Earthhood Services Private Limited, *CDM Programme of Activities Issuance Request Form: Improved Cookstoves Program for*

C. Dairy Project Methane Capture

The Project applicant is exploring opportunities to reduce methane emissions from livestock in California and the United States. Working with a developer of dairy methane capture projects, the Project applicant (or its designee) would identify opportunities to fund the capture and destruction of methane emissions from livestock manure at suitable dairy farms, including in California.

Methane is the second most prevalent GHG emitted in the United States from human activities, and agriculture is the second largest source of methane emissions in the U.S. (after petroleum and natural gas systems).[10] California has the most dairy cows in the country and the highest aggregated dairy methane emissions.[11] California also has established a goal of reducing methane emissions from dairy manure management by at least 20 percent in 2020, 50 percent in 2025, and 75 percent in 2030.[12]

The Project applicant (or its designee) would provide the funding required to build and maintain methane capture and destruction equipment using established methodologies developed by CARB and/or CAR. The Project applicant (or its designee) also would explore opportunities for the beneficial use of the captured methane, such as for renewable electricity or biofuel production.

IV. PROJECT EMISSIONS

There are two types of GHG emissions that will result from the Project: (i) the construction and vegetation change emissions, and (ii) the operational emissions. The construction and vegetation change emissions include the GHG emissions during the construction phase of the Project. Operational emissions include the GHG emissions for the 30-year Project life.

The Project's mitigation program (i.e., GCC-1 through GCC-12) will mitigate the Project's GHG emissions below the CEQA significance thresholds. The remaining (post-mitigation) GHG emissions that must be reduced under the GHG Reduction Plan are estimated as follows:

- **Construction and Vegetation Change GHG Emissions –** Prior to obtaining grading permits for village-level development within the RMDP/SCP Project site, the incremental

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Malawi and Cross-border Regions of Mozambique (2015) (verifying reduction of 41,606 $MTCO_2e$); UNFCCC, Clean Development Mechanism AMS-II.G: *Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass* at 3 (2016) (describing utilization of energy efficient cook stoves to reduce GHG emissions).

10 U. S. Environmental Protection Agency, "Overview of Greenhouse Gases: Methane Emissions," available at https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane. Accessed: September 2016.

11 CARB, *Proposed Short-Lived Climate Pollutant Reduction Strategy* (April 2016), page 65.

12 Id. at page 66.

construction and vegetation change GHG emissions is based on the specific village-level development ("Incremental Construction GHG Emission").

- **Operational GHG Emissions –** Prior to obtaining building permits for an incremental level of development within the RMDP/SCP Project site, the incremental operational GHG emissions over the 30-year Project life associated with such building permits that must be reduced (the "Incremental Operational GHG Emissions") will be equal to the sum of: (1) the number of proposed residential units covered by the applicable building permit multiplied by 108.89 $MTCO_2e$; and (2) every thousand square feet ("TSF") of proposed commercial development covered by the applicable building permit multiplied by 506.86 $MTCO_2e$. For example, to obtain a building permit for 75 residential units and 40,000 square feet of commercial development, the Incremental Operational GHG Emissions would be: (75 units x 108.89 $MTCO_2e$/unit) + (40 TSF x 506.86 $MTCO_2e$/TSF) = 28,441 $MTCO_2e$.

The residential and commercial multipliers identified above may vary for a village-level project, as estimated in the CEQA document for the village-level project; however, in all cases, the remaining GHG emissions must be reduced fully.

V. COMPLIANCE OPTIONS – OPERATIONAL EMISSIONS

To satisfy this GHG Reduction Plan (GCC-13), the Project applicant (or its designee) must rely upon one of the following four compliance options described in this section, or a combination thereof (each, a "Compliance Option"). For each Compliance Option, all carbon credits will be issued by one of the Registries identified in Section III.C, above. Section IX below describes how carbon credits are issued and retired under such Registry requirements. Section VIII, below, describes how the Project applicant (or its designee) will verify completion of the Compliance Options.

Compliance Option No. 1 — Undertake Direct Reduction Activities and Retire Confirmed Reductions Before Permit Application

Under Compliance Option No. 1, prior to obtaining building permits for an incremental level of development covered by the RMDP/SCP Project, the Project applicant (or its designee) will retire Confirmed Reductions (as defined below) generated by Direct Reduction Activities in an amount equal to the Incremental Operational GHG Emissions.

Under Compliance Option No. 1, the Project applicant (or its designee) will undertake or fund certain Direct Reduction Activities before obtaining a building permit and will retain an independent, qualified third-party to review such Direct Reduction Activities to: (1) confirm that they have been undertaken; and (2) estimate the associated GHG emissions reduction or sequestration that the Direct Reduction Activities will achieve in the future, using assumptions based on protocols and methodologies adopted by

Registries and governmental agencies ("Confirmed Reductions").[13] As described in Section VIII infra, a Coordinating Registry (as defined below) will verify the accuracy of the estimated Confirmed Reductions for each $MTCO_2e$ that is estimated to be reduced or sequestered.

Compliance Option No. 1 will ensure that the estimated GHG emissions reductions will occur before a comparable amount of estimated Project GHG emissions are emitted. Thus, the estimated GHG emissions reductions will always be equal to or outpace estimated Project GHG emissions as the Project is developed over time. The Registry-approved protocols will ensure an independent, qualified third-party confirms that the GHG emissions reduction activities and projects are implemented in accordance with the Registry-approved protocols.

As an example of how this Compliance Option No. 1 would apply to a clean cook stove distribution project described in Section IV.A above, the Project applicant (or its designee) would fund the distribution of clean cook stoves prior to building permit issuance. The Project applicant (or its designee) would then retain an independent, qualified third-party to confirm or "audit" on the ground using statistical samples that the stove distribution has, indeed, taken place and estimate the reduction of CO_2 emissions that would result from such stoves. This estimate would rely upon methodologies adopted by a Registry and take into account the expected life of cook stoves in the field. An independent, qualified third-party would then provide a technical report containing the results.

Compliance Option No. 2 Undertake Direct Reduction Activities and Retire and Guarantee to Retire Offsets Within 10 Years

Under Compliance Option No. 2, prior to obtaining building permits for an incremental level of development covered by the RMDP/SCP, the Project applicant (or its designee) will guarantee that, within 10 years of such building application, it will retire offsets generated by Direct Reduction Activities in an amount equal to the Incremental Operational GHG Emissions.

During the first 10 years following the building permit application, the Project applicant (or its designee) will offset, at a minimum, the GHG emissions every year by November 1 of the following year, using carbon offsets of the same or an earlier vintage year. (As discussed below in Section VIII, a Coordinating Registry will true up the GHG emissions and the retirements on an annual basis to verify that the Project applicant (or its designee) complies with this requirement.) For example, in connection with 100 $MTCO_2e$ of emissions released in 2021, the Project applicant (or its designee) will retire 100 carbon offset credits by November 1, 2022, at the latest. As an additional example, the Project

[13] The defined terms in this GHG Reduction Plan are provided for informational purposes only. The terms used to describe certain activities may change depending on the particular Registry or protocol being applied; however, the underlying approach and purpose of the action will be consistent with this GHG Reduction Plan.

applicant (or its designee) will retire carbon offset credits in a quantity equal to the Incremental Operational GHG Emissions estimated to take place in Years 10-20 by November 1 of Year 11 at the latest.

The guarantee will be a performance bond or similar security instrument of adequate size to ensure the guarantee (the "Guarantee").

Compliance Option No. 3 Undertake Direct Reduction Activities and Retire Carbon Offset Credits Before Permit Application

Under Compliance Option No. 3, prior to obtaining building permits for an incremental level of development covered by the RMDP/SCP Project, the Project applicant (or its designee) will retire offsets generated by Direct Reduction Activities in an amount equal to the Incremental Operational GHG Emissions.

Compliance Option No. 4 Purchasing Carbon Offsets Credits Issued by Registries on the Secondary Market

Under Compliance Option No. 4, prior to obtaining building permits for an incremental level of development covered by the RMDP/SCP Project, the Project applicant (or its designee) will purchase and retire carbon offsets that have been issued by one of the Registries in an amount equal to the Incremental Operational GHG Emissions. The Project applicant (or its designee) will rely on this Compliance Option No. 4 only to the extent that it is impracticable to fully offset Incremental Operational Emissions through the Direct Reduction Activities.

VI. COMPLIANCE OPTIONS – CONSTRUCTION EMISSIONS

To satisfy GCC-10 (construction GHG emissions), prior to obtaining grading permits for an incremental level of development covered by the RMDP/SCP Project, the Project Applicant (or its designee) must rely upon Compliance Option No. 3 or Compliance Option No. 4, described above in Section VI, or some combination thereof, to retire offsets in an amount equal to the Incremental Construction GHG Emissions.

VII. COMPLIANCE VERIFICATION

The Project applicant (or its designee) can verify compliance with GCC-10 (construction) or GCC-13 (operational) by either of the following options, or some combination thereof:

- Directly providing proof of retired carbon credits (e.g., the carbon credit retirement documentation) in a quantity equal to the Incremental Construction Emissions or Incremental Operational Emissions, as applicable; *or*

- Providing a GHG Reduction Credit (as defined below) issued by a Coordinating Registry (as defined below) that verifies the retirement of carbon credits using one or more Compliance Options in a quantity equal to the Incremental Construction Emissions or Incremental Operational Emissions, as applicable.

A. Compliance Options – Registry Confirmation Process

Before applying for a grading permit or a building permit, the Project applicant (or its designee) will designate a Registry or other independent, qualified third-party to act as a coordinating registry for the purpose of this GHG Reduction Plan (the "Coordinating Registry"). The Coordinating Registry will review the actions taken by the Project applicant (or its designee) in furtherance of the Compliance Conditions stated above and issue a notice for a certain quantity of credited GHG reductions or sequestration ("GHG Reduction Credits"). The GHG Reduction Credits will be a certificate issued on the letterhead of the Coordinating Registry signed by an officer of the Coordinating Registry that will clearly specify the following: (1) the applicable Compliance Option(s); and (2) the number of $MTCO_2e$ that were reduced by the Project applicant (or its designee) through the applicable Compliance Option(s).

Upon application by the Project applicant (or its designee) and before issuing a GHG Reduction Credit, the Coordinating Registry will perform the following in connection with each Compliance Condition:

Compliance Option No. 1	The Coordinating Registry will review the report prepared by the verification body retained by the Project applicant (or its designee) to confirm that it meets the requirements of Compliance Condition No. 1 and issue GHG Reduction Credits for the quantity of GHG reduction or sequestration quantified in the report.
Compliance Option No. 2	The Coordinating Registry will verify that the Project applicant (or its designee) has begun undertaking or funding certain Direct Reduction Activities and provided a Guarantee in accordance with Compliance Condition No. 2. The Coordinating Registry will issue GHG Reduction Credits for the total quantity of GHG reductions or sequestration subject to the Guarantee.
Compliance Option No. 3	The Coordinating Registry will confirm that the Project applicant (or its designee) has retired carbon offset credits associated with Direct Reduction Activities and issued in accordance with the applicable rules of a Registry. For example, if the applicable Registry issues notices of cancellation, the Coordinating Registry will review such notices to confirm they are valid.
Compliance Option No. 4	The Coordinating Registry will confirm that the Project applicant (or its designee) has retired carbon offset credits issued in accordance with the applicable rules of a Registry.

VIII. ADDITIONAL INFORMATION ON CARBON CREDITS

This Section of the GHG Reduction Plan provides additional information on the carbon offset credits referred to in the Compliance Options No. 2, 3 and 4. To ensure the environmental integrity and transparency of the GHG Reduction Plan, the Project applicant (or its designee) will be required to comply with the programs established by the Registries. Sections II.B and II.C above identify and describe such Registries.

Each Registry has adopted comprehensive requirements applicable to: (1) the types and location of activities eligible for carbon offset credits (the "Rules"); and (2) the quantification rules to calculate the number of carbon offset credits that result from a particular activity – those are the Registry, project-specific protocols or methodologies (the "Protocols"). As a general matter, the Rules and Protocols would require that a Project meet the following steps to offset GHG emissions:

1. **Listing or Registration.** Apply to list or register the proposed Direct Reduction Activity with the Registry. The Registry will review the application and accept it only if it complies with the applicable Registry requirements.

2. **Independent, Qualified Third-Party Confirmation of Reduction or Sequestration.** Once a Direct Reduction Activity has begun, the Registry will require the Project applicant (or its designee) to retain an independent, qualified third-party verification body to confirm the reduction or sequestration achieved by the Direct Reduction Activity. Each Registry has adopted stringent requirements applicable to the accreditation of verification bodies and only such accredited verification bodies are qualified to confirm and audit the activities under the applicable Registry rules. This process typically takes place on an annual basis. Activities undertaken in a given 12-month period are typically verified during the following 6-12 months. Most Registry Rules and Protocols require "boots on the ground" audits, although in certain instances desktop reviews may be sufficient.

3. **Issuance of Carbon Credits.** The final step under most Registry Rules and Protocols involves the issuance of the carbon credits. Registry Rules and Protocols require the Project applicant (or its designee) to apply for issuance and to provide the confirmation report prepared by the independent, qualified third-party. The Registry will typically review a confirmation report and, to the extent that the Registry finds that the report complies with the applicable Registry requirements, the Registry will issue the carbon credit to the account of the Project applicant (or its designee).

4. **Carbon Credit Retirement.** Each Registry has adopted rules and procedures governing the retirement or cancellation of carbon credits. Typically these rules or procedures involve the transfer of the carbon credit serial numbers or the transfer of the carbon credit serial numbers from a Registry account.

APPENDIX G
NEWHALL RANCH BUILDING RETROFIT PROGRAM

<u>Newhall Ranch</u>
Building Retrofit Program

I. Benefits Of Improving Energy Efficiency Of Existing Buildings

The Newhall Ranch Building Retrofit Program (Retrofit Program) is designed to reduce greenhouse gas (GHG) emissions by funding the retrofit of existing buildings. Improving the energy efficiency of California's existing buildings has been identified as an important step towards reducing GHG emissions from the built environment.

The California Air Resources Board identified the need to improve the efficiency of existing buildings in the 2008 Scoping Plan: "While green building strategies are most easily integrated into new buildings, existing buildings offer the greatest potential for gains in efficiency."[1] Legislation has been enacted in furtherance of the Scoping Plan's framework for GHG emission reductions from existing development. For example, Assembly Bill (AB) 758, which was enacted into law in 2009, requires the California Energy Commission, in collaboration with the California Public Utilities Commission and other stakeholders, to develop a comprehensive program to achieve greater energy efficiency in the State's existing buildings.

Additionally, in October 2015, Senate Bill (SB) 350 was enacted into law. SB 350 includes a goal to double the energy savings in existing electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses upon which an energy efficiency program is focused) of retail customers through energy conservation and efficiency. SB 350 is consistent with one of California Governor Brown's climate goals, which calls for the doubling of energy efficiency savings in existing buildings by 2030.[2]

II. Implementation Requirements

A. Allowable Building Retrofits

Building retrofits covered by the Retrofit Program can include, but are not limited to: cool roofs, solar panels, solar water heaters, smart meters, energy efficient lighting (including, but not limited to, lightbulb replacement), energy efficient appliances, energy efficient windows, insulation, water conservation measures, and any other similar retrofit measures associated with green buildings.

B. Planning Director Approval of NGO Retrofit Strategy

The Project applicant or its designee may implement the Retrofit Program in collaboration with one or more non-governmental organizations (NGOs) accepted by the Regional Planning Director for the County of Los Angeles (Planning Director). To collaborate with an NGO to implement this program, the Project applicant or its designee must submit a written request to the Planning Director with supporting documentation of: (i) the NGO's qualifications; and (ii) the NGO's strategy to implement the Retrofit Program by installing energy retrofits in homes, schools or other buildings in disadvantaged communities within Los

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1 CARB, 2008. *Climate Change Scoping Plan*, Appendix C, p. C-139.

2 Available at: http://www.arb.ca.gov/cc/pillars/pillars.htm. Accessed: September 2016.

Angeles County, consistent with this Retrofit Program ("NGO Retrofit Strategy"). The NGO Retrofit Strategy shall estimate the GHG reductions that will be achieved by the planned retrofit measures in order to demonstrate that the GHG reductions identified in Section II(D), below, will be achieved. The NGO Retrofit Strategy shall include estimated costs to achieve the GHG reductions. The NGO Retrofit Strategy may provide a range of potential retrofit measures that can be tailored to particular buildings (e.g., depending on the age, size and use of the building). The NGO Retrofit Strategy also can provide flexibility to prioritize certain retrofit measures, depending on the building stock that is available, and deemphasize or eliminate other retrofit measures that are not efficient or practical to implement. The Planning Director shall review and respond to any such request within 30 calendar days of its receipt. At any time, the Project applicant may submit amendments to or a new NGO Retrofit Strategy for approval by the Planning Director. An amended or new NGO Retrofit Strategy shall become effective upon approval or at an earlier date approved by the Planning Director.

C. Locational Restrictions

The Retrofit Program must be implemented within the geographic area under the jurisdiction of the County of Los Angeles and primarily within disadvantaged communities or other areas accepted by the Planning Director.

For purposes of the Retrofit Program, disadvantaged communities are considered to include: (i) census tracts with a median household income (MHI) at or below 80% of the state MHI; (ii) census tracts identified as among the most disadvantaged 25% of census tracts according to the Office of Environmental Health Hazard Assessment's CalEnviroScreen;[3] (iii) areas with at least 75% of public school students meeting eligibility criteria for free or reduced price meals; or (iv) areas that do not meet the above criteria, or where data are insufficient, but for which there is a quantitative assessment demonstrating a reasonable basis for why the community should be considered disadvantaged.[4]

The Project applicant or its designee, which may include an NGO, may submit a written request to the Planning Director to implement such building retrofits in other specified areas, so long as it meets the purpose of benefitting disadvantaged communities. The Planning Director shall review and respond to any such request within 30 calendar days of its receipt.

D. Phasing Requirements

The Project applicant or its designee must implement the Retrofit Program as described in this section. The Retrofit Program shall be phased to apply to each village-level project within the RMDP/SCP Project site.

Prior to obtaining building permits for 100 residential units or 100,000 square feet of commercial development for each village-level project, the Project applicant or its designee shall

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3 Available at: http://oehha.ca.gov/calenviroscreen. Accessed: September 2016.

4 *See* "Ensuring Disadvantaged Communities Fully Share Active Transportation Program Benefits" presentation, available at http://www.scag.ca.gov/Documents/atp031615_ATPBenefits.pdf, at page 7. Accessed: September 2016.

implement the proportional percentage of the Retrofit Program applicable to the particular village-level project. The GHG reductions required for a particular village-level project shall be calculated as follows:

- For the residential portion of the project, multiply the planned number of residential units for the village-level project by 0.0377 metric tons of CO_2e per residential unit.

- For the commercial portion of the project, multiply the planned commercial square footage for the village-level project by 0.0215 metric tons of CO_2e per thousand commercial square feet. (Commercial development, for purposes of this requirement, includes retail, light industrial, office, hotel and mixed-use buildings.)

- For the total GHG reduction obligation for a particular village-level project, sum the residential and commercial GHG reduction levels.

Prior to the issuance of building permits from the County of Los Angeles, the Project applicant or its designee shall provide proof of payment made to implement energy retrofit measures identified in an approved NGO Retrofit Strategy, where such payments shall be sufficient to implement measures projected to achieve the quantity of GHG emissions reductions required by the ratios stated immediately above, as calculated in accordance with the methodology and costs estimates contained in the approved NGO Retrofit Strategy. After such energy retrofit measures have been installed or implemented, the Project applicant or its designee, which may include an NGO, also shall provide confirmation to the County of Los Angeles that all such energy retrofit measures were installed or implemented consistent with the approved NGO Retrofit Strategy.

III. GHG REDUCTIONS FROM THE RETROFIT PROGRAM

Based on the proportional GHG reductions identified in Section II(D), the Retrofit Program would achieve 1,000 MT CO_2e per year of reductions if the maximum allowable development facilitated by the RMDP/SCP Project occurs.[5]

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5 Ramboll Environ's analysis of the Building Retrofit Plan is supported by ConSol's *Energy Efficiency Upgrades for Existing Buildings: A GHG Emissions Mitigation Strategy* technical memorandum (September 2016).

APPENDIX H
FORECASTING ELECTRIC VEHICLE PURCHASES IN THE NEWHALL RANCH COMMUNITY

Prepared for
The Newhall Land and Farming Company
Valencia, California

Prepared by
Ramboll Environ US Corporation
San Francisco, California

Project Number
0534264Q

Date
September 2016

FORECASTING ELECTRIC VEHICLE PURCHASES IN THE NEWHALL RANCH COMMUNITY

RAMBOLL ENVIRON

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CONTENTS *(CONTINUED)*

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1. INTRODUCTION

Research shows that a driver's decision to convert from an internal combustion engine vehicle (ICEV) to an electric vehicle (EV) is influenced by a number of factors, including – but not limited to – cost of ownership and operation, battery ranges, and concerns about access to charging infrastructure, as well as environmental awareness and social perceptions. This report describes how incentives, as defined to include financial purchase subsidies and charging infrastructure, are expected to accelerate the conversion to EVs in the vehicle fleet operated by the future residents of the Newhall Ranch planned community.

1.1 Background on the Newhall Ranch Community's Incentive Program

As background, Newhall Ranch is a proposed planned community located in an unincorporated portion of the Santa Clarita Valley (northern Los Angeles County, California). The community proposes to implement a number of commitments to further incentivize the use of EVs, including:

- Equipping each residence with a minimum of one single-port EV charging station that will achieve a similar or better functionality as a Level 2 charging station.
- Providing a $1,000 subsidy for 50 percent of the community's residences for the purchase of a zero emission vehicle, as defined by the California Air Resources Board.
- Equipping the community's parking areas for commercial buildings with EV charging stations that provide charging opportunities to 7.5 percent of the total number of required parking spaces. ("Commercial buildings" include retail, light industrial, office, hotel, and mixed-use buildings.) The EV charging stations will achieve a similar or better functionality as a Level 2 charging station.[1]
- Installing off-site EV charging stations in Los Angeles County that will service one parking space for every 15 on-site residential dwelling units, and one parking space for every 15,000 square feet of on-site commercial development. ("Commercial development" includes retail, light industrial, office, hotel, and mixed-use buildings.) The EV charging stations again will achieve a similar or better functionality as a Level 2 charging station.[2]

This report evaluates the effect of these commitments on the purchase of EVs by the community's residents.

1.2 Analysis Overview

The analysis presented in this report is based on economic principles of demand; i.e., people make purchases based on price, their income level, the price of substitutes (in this case, an

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[1] In the event that the installed charging stations utilize more superior functionality/technology than Level 2 charging stations, the parameters of the mitigation obligation (i.e., number of parking spaces served by electric vehicle charging stations) shall reflect the comparative equivalency of Level 2 charging stations to the installed charging stations on the basis of average charge rate per hour.

[2] See footnote 1; the same provision applies.

ICEV), expectations, and a variety of tastes and preferences. The approach to analyzing the impact of the incentives involves first establishing the number of EVs that might be expected to be purchased by the community's residents absent any additional incentives. The same kind of forecast is then developed for the population with the incentives in place. The difference between the two forecasts may be considered the result attributable to the incentives.

1.3 Terminology

There are many terms and abbreviations that researchers have used to refer to the different kinds of EVs available. For example, a hybrid electric vehicle is often referred to as a HEV, and a plug-in hybrid as a PHEV. Additionally, some researchers use the term battery electric vehicle and refer to BEVs; other researchers collectively refer to both plug-in electric vehicles and plug-in hybrid electric vehicles as PEVs. To simplify the phraseology used in this report, we will henceforth refer to any car that has a plug-in option (both fully electric and plug-in hybrids) as EVs.

1.4 Structure of the Report

Section 2 of this report reviews published literature on the factors that affect EV purchasing decisions, and research about how incentives have worked elsewhere to increase the rate of EV conversion. An approach to modeling the anticipated response to the Newhall Ranch community's incentives is presented in Section 3. Section 4 shows the results of the modeling analysis.

2. PUBLISHED RESEARCH ON ELECTRIC VEHICLE ADOPTION

This section describes relevant research on the factors that influence the decision to purchase an EV. Current market shares for EVs also are reviewed, along with discussion of published forecasts for future EV sales. Finally, the body of research that examines how government incentives have been provided to increase EV penetration is discussed. The totality of this literature and research provides an overview of how incentives function in the marketplace to increase overall EV sales.

2.1 Who Buys an Electric Vehicle and Why?

Existing research has identified a number of key characteristics and factors that impact if and when people purchase an EV. For example, one study revealed that, when asked about the critical factors that may influence the decision to purchase an EV, the highest percentage (63 percent) of respondents cited the ability to charge at home, with other factors including battery range, and total operating cost.[3] Other studies have identified that the decision to select EVs, as compared to ICEVs, is a function of cost, range, income of the buyer, driving habits, price of gas, recharging infrastructure, and 'greenness', including the influence of neighbors and friends. The research on the characteristics of EV drivers and the factors affecting purchasing decisions are summarized below.

2.1.1 Characteristics of EV Households and Drivers

Several studies analyze the characteristics of EV drivers to identify the commonalities amongst those who are likely to purchase an EV.

A 2013 study conducted by the Institute of Transportation Studies at UC Davis explored the characteristics of 1,200 households who purchased an EV in California during the 2011 and 2012 calendar years.[4] The study found that 96 percent of the EV owners lived in single-family homes, with 46 percent of the owners reporting annual incomes higher than $150,000 (which was the highest category included in the survey). The study found that purchasing an EV was linked, in most cases, with the installation of electric vehicle supply equipment (EVSE) at home, and the ability to plug the car into a unit for charging. Additionally, overall, 19 percent of the new EVs were purchased as additional vehicles, and not as replacement vehicles, in households that had more vehicles than drivers.

The UC Davis study also explored how EV owners compared to the general population, in terms of interest in reducing their contribution to global warming and other environmental issues. The study found that 60 percent of EV owners either had solar panels on their roofs, or were considering installing panels. This contrasts to a statewide average of less than 1 percent of housing units having rooftop solar panels.

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3 Accenture. 2011. Plug In Electric Vehicles Changing Perceptions, Hedging Bets - Accenture end-consumer survey on the electrification of private transport. Available at: https://www.accenture.com/us-en/~/media/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Industries_9/Accenture-Plug-in-Electric-Vehicle-Consumer-Perceptions.pdf. Accessed: August 2016.

4 Tal, Gil, Michael A. Nicholas, Justin Woodjack, and Daniel Scrivano. 2013. Who Is Buying Electric Cars in California? Exploring Household and Vehicle Fleet Characteristics of New Plug-In Vehicle Owners. Institute of Transportation Studies - University of California, Davis. Available at: https://merritt.cdlib.org/d/ark:%252F13030%252Fm56692z3/1/producer%252F2013-UCD-ITS-RR-13-02.pdf. Accessed: August 2016.

A 2011 study conducted by the University of Delaware, unlike the UC Davis study, did not find a correlation between income and EV purchase, but instead found that a person's propensity to buy an EV increases with youth, education, "green" life style, believing gas prices will rise significantly in the future, and living in a place where a plug is easily accessible at home.[5] The study also found that people were more motivated by expected fuel savings than by a desire to be "green" or help the environment.

2.1.2 Frequency of EV Use in Multi-Car Households

A 2013 survey conducted by the Union of Concerned Scientists (UCS) found that 64 percent of its respondents (all of whom were EV owners) lived in a household with 2 or more vehicles and preferentially used the EV.[6] This is consistent with a 2015 survey of EV enthusiasts, which reported that 79.4 percent of EV owners and potential owners had 2 or more vehicles in their households.[7] The same study showed that, in households with one EV and one ICEV, people favored the EV for driving, except if the trip involved: a) driving longer distances on weekends, b) hauling, or c) the needed to carry more than 5 passengers.[8]

A 2015 study from South Korea also is consistent with these findings, in that it concluded that households that had one (or more) EV and at least one ICEV all showed a decline in the daily distance driven by the ICEV, and an increase in daily distance driven by the EV (about 45 percent higher) after three months of EV ownership.[9] In addition, a 2013 survey from Norway showed that 90 percent of EV owners said that the EV car "Completely" or "To a High Degree" replaced their ICEV, and preliminary data from Ford also suggests that with time – six months – the frequency of use of the EV increases, and the ICEV use decreases.[10],[11]

[5] Hidrue, Michael K., George R.Parsons, Willett Kempton, and Meryl P.Gardner. 2011. Willingness to Pay for Electric Vehicles and their Attributes. Resource Energy Econ. doi:10.1016/j.reseneeco.2011.02.002. Available http://www.udel.edu/V2G/resources/HidrueEtAl-Pay-EV-Attributes-correctedProof.pdf. Accessed: August 2016.

[6] Union of Concerned Scientists. 2013. Electric Vehicle Survey Methodology and Assumptions; American Driving Habits, Vehicle Needs, and Attitudes toward Electric Vehicles, December. Available at: http://www.ucsusa.org/sites/default/files/legacy/assets/documents/clean_vehicles/UCS-and-CU-Electric-Vehicle-Survey-Methodology.pdf. Accessed: August 2016.

[7] Shahan, Zachary. 2015. Electric Cars: What Early Adopters and First Followers Want. Important Media, available at: http://cleantechnica.us2.list-manage.com/subscribe?u=a897522b53d0853c85abbf9fa&id=a264ba3c49. Accessed: August 2016.

[8] UCS, 2013.

[9] Hwang, Sang-kyu, and Sang-hoon Son. 2015. Electric Vehicle User Mobility Analysis with Dashboard Camera in Jeju Island, Korea. Paper presented at Electric Vehicle Symposium, EVS28, in Kintex, Korea, May 3-6, 2015.

[10] Haugneland, Petter, and Hans Havard Kvisle. 2013. Norwegian Electric Car User Experiences, paper presented at EVS27, Barcelona Spain, November.

[11] Castrucci Alexandria, Mike. 2015. Good Habits Pay Dividends for Electric Car Drivers. Posted on October 7, 2013. Available at: (http://www.mikecastruccialexandria.com/blog/electric-car-driving-habits/). Based on data from MyFord Mobile app. Available at: (https://www.myfordmobile.com/content/mfm/app/site/my-car/home.html). Accessed: August 2016.

2.1.3 Cost

Economic models of EV purchasing behavior suggest that price is the biggest barrier to adoption of EVs, with cost defined to include the initial purchase cost of the vehicle and the subsequent operating costs.[12]

Initially, the purchase price of an EV was about $8,000 to $10,000 higher than comparable ICEVs without incentives. However, since the introduction of the Ford Focus EV, Chevrolet Volt, and Nissan Leaf in 2011, the cost of each has declined by $10,000, $7,000, and $5,000 respectively by 2015.[13] Some of this downward price pressure has occurred as the competition has increased, and as the selection of EVs and number of manufacturers has increased.[14]

The demonstrated decline in purchase costs is also influenced, in part, by the declining production costs of EV batteries. More specifically, the historical cost trends for batteries show a strong downward trend, with one study showing that batteries for EVs averaged a roughly 14 percent annual cost decrease from 2007 to 2014.[15] Furthermore, the impact of learning-by-doing cost reductions (which are attributable to a doubling in EV battery production), is between six and nine percent. This has resulted in the industry-wide average cost of a battery pack declining from $1,000/kWh to $410/kWh (2007 to 2014), and an even greater reduction among market-leading battery EV manufacturers, to around $300/kWh.

The other primary cost associated with EVs is the operating cost, which is the cost of operating the EV as compared with an ICEV. Generally speaking, EV operating costs tend to be lower than those associated with ICEVs because electricity is cheaper than gas on a cost per mile basis. For example, a study prepared by the Idaho National Laboratory shows that operating an EV costs about 3.3 cents per mile, compared with about 11 cents per mile for an ICEV getting 22 miles per gallon assuming a gas price of $2.50 per gallon.[16] The comparison will be much starker if gas prices were to increase. For example, if fuel were to increase to $4.00 per gallon, the cost of fuel for the ICEV with 22 miles per gallon goes to about 18 cents per mile, while the EV cost is expected to stay under 4 cents per mile. Therefore, the price of gas and electricity is expected to influence the decision to purchase an EV due to their role in evaluating the comparative operating costs.

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[12] See Adepetu and Keshav, 2015, and also Coffman et al., 2015 for good reviews of the economic models of consumer decision making for EV purchases.

[13] Coffman, Makena, P. Bernstein, S. Wee. 2015. Factors Affecting EV Adoption: A Literature Review and EV Forecast for Hawaii, Report Number: HNEI-04-15, Hawaii Natural Energy Institute, University of Hawaii at Manoa, April. Available at: http://www.hnei.hawaii.edu/sites/www.hnei.hawaii.edu/files/EVTC_EV%20Adoption%20and%20Forecast%20for%20HI.pdf. Accessed: August 2016.

[14] California's South Coast Air Quality Management District recently published a "Clean Car Buying Guide" that provides detailed comparisons of all EV makes and models currently available. The guide is found at: http://www.aqmd.gov/docs/default-source/publications/aqmd-advisor/2016-buyers-guide.pdf?sfvrsn=4, Accessed: August 2016.

[15] Nykvist, B. and Nilsson, M. Rapidly falling costs of battery packs for electric vehicles. *Nature: Climate Change* (2015), 5, pg. 329-332.

[16] Idaho National Laboratory, Advanced Vehicle Testing Activity. Available at: https://avt.inl.gov/sites/default/files/pdf/fsev/costs.pdf. Accessed: August 2016.

2.1.4 Range Anxiety

The range that an EV can travel on one charge and the associated "range anxiety" is a key topic associated with the decision to purchase an EV. "Range anxiety" is the experience that EV drivers have when they lack confidence that their vehicle will have sufficient fuel or charge to complete a trip or route.

Studies have shown that about 59 percent of US commuters drive less than 40 miles each day and, as a result, are well–suited to EV ownership.[17] One study analyzed the behavior of Toronto's drivers and identified several strategies to instill confidence in their drivers.[18] The strategies included training drivers to understand EV capacity, to know where charging infrastructure was located, to learn driving methods to extend battery life, to start the day with a full charge, and to plan their daily routes with navigation tools to reduce the risk of unexpected extra travel.

With the increase in battery charge range on the near horizon and a strong trend in the same direction for the mid-term, and with the increasing presence of publicly available charging stations, the issue of "range anxiety" is expected to diminish in importance. For example, Tesla launched a new EV model advertising over 200 miles in range on a single charge, and a price of $35,000. Tesla accepted pre-orders for the vehicle and reportedly had sold 373,000 vehicles through pre-orders by May 15, 2016.[19] The Tesla Model 3s will be available late 2017 as well as the Chevy Bolt, which will have a similar price and range. Hence, with improving EV technology, "range anxiety" is expected to reduce in the future.

2.1.5 EV Charging Stations – Residential and Public

Numerous studies have shown that EV charging currently occurs primarily at home. While charging stations at work places and retail stores are becoming more widespread, most EV charging has historically taken place at home, and will continue to do so.[20] An average vehicle spends 90 percent of its time at home and work, and with over 70 to 80 percent of EV charging typically occurring at home, the remaining charging primarily occurs at a workplace.[21,22] Both strategies are needed, however, to support EV adoption, and a reasonable assumption for strategic planning is that home charging will continue to be the preferred approach for future EV owners.[23]

[17] UCS, 2013.

[18] Toronto Atmospheric Fund. 2015. Fleetwise EV300 Findings Report on EV Usage in Sixteen GTA Fleets, June. Available at: http://taf.ca/wp-content/uploads/2014/09/FleetWise-EV300-Findings-Report-16-June-2015.pdf. Accessed: August 2016.

[19] Lambert, Frank. 2016. Tesla has 373,000 Model 3 reservations as of May 15, after 8k cancellations and 4k duplicates, Electrek, May. Available at: https://electrek.co/2016/05/18/tesla-model-3-reservations-cancellations-duplicates/. Accessed: August, 2016.

[20] Holland, B. 2013. How important is charging infrastructure to EV adoption? GreenBiz. January 17. Available at: (https://www.greenbiz.com/blog/2013/01/17/how-important-charging-infrastructure-ev-adoption). Accessed: August 2016.

[21] Holland, B. 2013. How important is charging infrastructure to EV adoption? GreenBiz. January 17. Available at: (https://www.greenbiz.com/blog/2013/01/17/how-important-charging-infrastructure-ev-adoption). Accessed: August 2016.

[22] Leemput, N. et al. 2015. MV and LV Residential Grid Impact of Combined Slow and Fast Charging of Electric Vehicles. Energies (2015), 8, 1760-1783. http://www.mdpi.com/1996-1073/8/3/1760. Accessed August 2016.

[23] In a 2014 assessment of infrastructure for the California Energy Commission, the authors analyzed two charging infrastructure paths forward, both emphasizing the dominance of home charging. Melaina, Marc, Michael Helwig. (National Renewable Energy Laboratory). 2014. California Statewide Plug-In Electric Vehicle

Research also shows that access to charging infrastructure at home is an important factor in the decision to purchase an EV. Hirdue et al. (2011) found that the availability and accessibility of a plug at home increases a person's propensity to buy an EV.[24] The 2013 UC Davis study discussed above also revealed that purchasing an EV is associated, in most cases, with the installation of EVSE at home and the ability to plug the car into power for charging.[25]

Another study also identified the importance of residential parking and charging, suggesting that:

- Fleet penetration of EVs beyond 22 percent will require residential infrastructure investment to increase access to outlets near home parking;
- Fleet penetration beyond 39 percent may require significant residential infrastructure investment because many households will need to upgrade their electrical infrastructure to charge multiple vehicles;
- Fleet penetration beyond 47 percent will require residential charging to be available for renters; and
- Fleet penetration beyond 56 percent may require not only new chargers but also additional residential parking, with associated logistics, space implications, and environmental impacts.[26]

The Newhall Ranch community's proposal to install charging stations in residential areas, therefore, will address an important factor to facilitate the level of conversion to EV.[27]

Charging stations outside the home are also critical to EV conversion. In one survey, 37 percent of respondents agreed with the statement that "having access to plug-in electric vehicle charging at work would increase the likelihood of considering a plug-in electric vehicle in my next purchase."[28]

Sierzchula et al. analyzed the impact of policies on EV adoption in 30 countries and found that an increase in public charging infrastructure was the strongest indicator of an increase

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Infrastructure Assessment. California Energy Commission. Publication Number: CEC-600-2014-003.Available at: http://www.energy.ca.gov/2014_energypolicy/documents/2014-06-05_workshop/summary_pev_infrastructure_report.pdf. Accessed August 2016.

[24] Hidrue, M.K., G.R. Parsons, W. Kempton, and M.P. Gargner. 2011. Willingness to pay for electric vehicles and their attributes. Resource Energy Econ. doi:10.1016/j.reseneeco.2011.02.002. Available at: (http://www.udel.edu/V2G/resources/HidrueEtAl-Pay-EV-Attributes-correctedProof.pdf). Accessed: August 2016.

[25] Tal, G., M.A. Nicholas, J. Woodjack, and D. Scrivano. 2013. Who Is Buying Electric Cars in California? Exploring Household and Vehicle Fleet Characteristics of New Plug-In Vehicle Owners. Institute of Transportation Studies at University of California, Davis. Research Report – UCD-ITS-RR-13-02. February. Available at: https://merritt.cdlib.org/d/ark:%252F13030%252Fm56692z3/1/producer%252F2013-UCD-ITS-RR-13-02.pdf. Accessed: August 2016.

[26] Traut, E.J., T.C. Cherng, C. Hendrickson, and J.J. Michalek. 2013. US Residential Charging Potential for Electric Vehicles. Transportation Research Park D 25, 2013 139-145. Available at: http://www.cmu.edu/me/ddl/publications/2013-TRD-Traut-etal-Residential-EV-Charging.pdf. Accessed: August 2016.

[27] For a good discussion of how EV drivers can use and benefit from public charging infrastructure, see SCAG's Southern California Plug-in Electric Vehicle Readiness Plan, December, 2012. Available at: https://www.scag.ca.gov/Documents/SCAG-Southern%20CA%20PEV%20Readiness%20Plan.pdf

[28] UCS, 2013.

in EV market share.[29] Specifically, they found that each additional charging station per 100,000 residents increased EV market share by 0.12 percent, and that charging station infrastructure was as effective (if not more) than financial incentives in explaining EV market behavior and trends. Sierzchula et al. relied upon data collected in 2012. At that time, Norway had the highest intensity of charging stations (25 stations per 100,000 people), and also the highest EV adoption rate at just over three percent. The next two highest charging station intensity rates were seen in the Netherlands and Estonia, which also had two of the next three highest rates of EV adoption. The exception was Japan, which also had a high EV adoption rate, but a slightly lower intensity of charging infrastructure per 100,000 people.

2.1.6 Technology Diffusion Impact

The pace of diffusion of a new technology has been studied relative to EV adoption. As there is increased awareness and visibility of EVs (as more and more are driven), more people see neighbors and friends successfully adopting EVs, and fewer perceived barriers remain.[30] This phenomenon has been termed, among others, as 'social networks' or the 'neighborhood effect.'[31, 32] Also, as the number of EV models for purchase increases, Sierzchula et al. found that there is a positive correlation with the rate of EV conversion.[33] Although causation could be explained in either direction, it is not surprising that consumers are more likely to purchase an EV when there are more EV models available for purchase. Observing a wide range of EV options in the market causes EVs to be perceived as a less risky choice than if there were only one EV model available for purchase.

The diffusion of innovation concept derives from work by Everett Rogers, who described the process through which populations adopt new technology.[34] Rogers hypothesized different technological adoption phases through time, first involving the "Innovators," about 2.5 percent of the population who is interested in a new idea and want to try it. A second group of about 13.5 percent of the population make up "Early Adopters," who follow the "Innovators," bringing the total of those who will ultimately adopt to about 16 percent. The next phase is often difficult to achieve, and thus getting from the "Early Adopters" to this "Early Majority Group" is often referred to as "the chasm." The "Early Majority" typically represents the next 34 percent. This is the point where the adoption rate reaches 50 percent of the number of people who will use the new technology. After the "Early Majority" group, the "Late Majority" and the "Laggards" are the final groups of people who convert.

Following this innovation diffusion model, one researcher found that besides price, usefulness for the environment, perceived risk, difficulty of use, knowledge and information, performance, fuel cost savings, and social prestige were all factors that

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[29] Sierzchula, W., Bakker, S., Maat, K., and van Wee, B. The influence of financial incentives and other socio-economic factors on electric vehicle adoption, Energy Policy (2014), 68, 183-194.

[30] Nelson-Nygaard Consulting Associates Inc. 2014. Removing Barriers to Electric Vehicle Adoption by Increasing Access to Charging Infrastructure. Seattle Office of Sustainability & Environment. Available at: http://www.seattle.gov/Documents/Departments/OSE/FINAL%20REPORT_Removing%20Barriers%20to%20EV%20Adoption_TO%20POST.pdf. Accessed: August 2016.

[31] He, L., M. Wang, W. Chen, and G. Conzelmann. 2014. Incorporating Social Impact on New Product Adoption in Choice Modeling: A Case Study in Green Vehicles. Transp. Res. Part D 32 421-434.

[32] See discussion in Coffman et al., 2015.

[33] Sierzchula et al. (2014).

[34] Rogers, Everett M. 2003. Diffusion of Innovations, fifth edition, The Free Press.

influenced the decision to purchase an EV.[35] Hence, social perceptions influencing the timing of a technology ‘catching on’ are important to consider.

Diffusion models have been widely used to capture the dynamics of automobile markets.[36] And, the recent history of EV adoption rates in Norway supports the use of the model in this context, with EV purchase rates moving from 3 to 6 to 14 to 23 percent over the course of 2012-2015.[37]

Another way to think about how and why some people wait to purchase an EV is described by Greene et al., who employ a diffusion model that captures the natural risk aversion that consumers have toward new technologies.[38] Their research explores how temporary policies that overcome transition barriers are needed in order to reduce risk aversion and induce positive feedback. Once these have been effective (they suggest after a decade or so), such policies are no longer needed. Coffman and Adepetu and Keshav also incorporate some form of technology diffusion in their research models of consumer behavior toward EV purchases.

2.1.7 Summary

The studies discussed above highlight the key factors that affect the transition to EVs. Demand for EVs is similar to other markets, and is a function of price, the income level of the buyer, tastes and preferences, and expectations. In addition, the published literature highlights that the ability to charge an EV at home (and away) and range anxiety are important factors influencing the decision to purchase an EV, and the pace of technology diffusion is related to social networks, neighbor effects, and visibility.

2.2 Market Share and Forecasts

Historical EV market shares and forecasts for future EV market shares establish important parameters in the modeling of EV adoption rates. (The rate of EV adoption is the percent of new cars purchased that are EV as a share of the total.) This section examines the recent history of EV adoption in California, and also covers a review of recent forecasts for the future.

2.2.1 Market Share for EVs

California is currently one of the largest markets for EVs in the United States, and has, in fact, been referred to as “America’s capital of plug-in cars.”[39] Based on sales figures tracked by the California Air Resources Board, Californians bought approximately 50

[35] Mayshayeki, Morteza. 2012. Factors Influencing The Diffusion of Battery Electric Vehicles In Urban Areas, in Partial Fulfillment of a Master’s Thesis Presented to Ryerson University In partial fulfillment of the Requirements for the degree of Master of Management Science In the program of Management of Technology and Innovation.

[36] Coffmann et al., 2015.

[37] World’s Top 7 Electric Vehicle Adoption Countries for 2015, EV insider website, Based on data from EV Sales Blog. Available at: http://insideevs.com/worlds-top-7-electric-vehicle-adoption-countries-for-2015/. Accessed: August 2016.

[38] Reene, David L. and Liu Changzheng. 2014. Transitioning to Electric Drive Vehicles, Public Policy Implications of Uncertainty, Network Externalities, Tipping Points, and Imperfect Markets. White Paper 1:14, University of Tennessee, Baker Center for Public Policy, January.

[39] Cobb, Jeff. 2016. California Plug-in Sales Led the US Last Year with Nearly Five-Times Greater Market Share. HybridCars.com. February. Available at: http://www.hybridcars.com/california-plug-in-sales-led-us-last-year-with-nearly-five-times-greater-market-share/. Accessed: August 2016.

percent of all EVs sold in the United States in 2014, and 55 percent in 2015.[40] Table 1 presents the market share of EVs in California and the United States over the last few years. These are calculated as the share of new cars in a given year that are electric. The table shows that EV sales, as a share of all new cars, dropped slightly in 2015 both nationally and in California, which appears to be due to overall drops in fuel prices. The actual number of EVs sold nationally was over 114,000 in 2015, with over 62,000 of those being sold in California. As shown in Table 1, the 3.03 percent market share of EVs in California is approximately four times higher than that in the United States, which was about 0.66 percent in 2015.

Table 1: Market Shares of Electric Vehicles in California and USA

Geography	Market Share of Electric Vehicles			
	2012	**2013**	**2014**	**2015**
California	1.31%	2.49%	3.22%	3.03%
USA	0.37%	0.62%	0.72%	0.66%

Sources: California New Car Dealers Association (CNCDA). February 2016. California New Vehicle Registrations Expected to Remain Above 2 Million Units in 2016. Registrations through December 2015 since 2011. Revised figures for 2014. Available at: http://www.cncda.org/CMS/Pubs/Cal%20Covering%204Q%2015.pdf. Accessed: August 2016.

Electric Drive Transportation Association (EDTA). 2016. Electric Drive Sales Dashboard. Sales figures sourced from HybridCars.com and direct reports submitted by EDTA member companies. Available at http://electricdrive.org/index.php?ht=d/sp/i/20952/pid/20952#sthash.5QBifqpG.EyVW8gqf.dpuf and http://electricdrive.org/index.php?ht=d/sp/i/20952/pid/20952. Accessed: August 2016.

2.2.2 Forecasts for EV Adoption

Forecasts for the pace of EV adoption in California have historically underestimated EV sales. For example, in July 2012, a forecast for EV sales was developed for the Southern California Association of Governments by UCLA. The results optimistically stated that, "EV sales in California could exceed 50,000 per year by 2019 and 150,000 by 2022."[41] As

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40 Extrapolated from Data Provided in: California New Car Dealers Association (CNCDA). February 2016. California New Vehicle Registrations Expected to Remain Above 2 Million Units in 2016. Registrations through December 2015 since 2011. Revised figures for 2014. Available at: http://www.cncda.org/CMS/Pubs/Cal%20Covering%204Q%2015.pdf. Accessed: August 2016.

AND

Electric Drive Transportation Association (EDTA). 2016. Electric Drive Sales Dashboard. Sales figures sourced from HybridCars.com and direct reports submitted by EDTA member companies. Available at: http://electricdrive.org/index.php?ht=d/sp/i/20952/pid/20952#sthash.5QBifqpG.EyVW8gqf.dpuf and http://electricdrive.org/index.php?ht=d/sp/i/20952/pid/20952. Accessed: August 2016.

41 Williams, Brett, J.R. DeShazo, and Ayala Ben-Yehuda, Early Plug-in Electric Vehicle Sales: Trends, Forecasts, and Determinants. Report prepared for the Southern California Association of Governments (SCAG), but the

mentioned above, sales in California were over 62,000 in 2015, thereby exceeding UCLA's projections four years ahead of schedule.

More recent forecasts predict higher EV penetration levels, with adoption to be moving out of the "Early Adopters" phase and into the "Early Majority" phase sooner rather than later. Specifically, one forecast for global sales developed by Bloomberg New Energy Finance (BNEF) anticipates that global EV sales will be 35 percent of new car sales by 2040.[42] Another recent forecast, developed by Navigant Consultants, projects that EV sales will increase in California by just under 70 percent annually for the years 2016 through 2018, and then by about 16 percent per year from 2019 through 2022, resulting in EV sales of over 500,000 in California by 2022.[43] Both the Navigant and BNEF forecasts were produced after the news that Tesla had taken 400,000 pre-orders for their new longer battery charge Tesla Model 3s, which suggests that the rate of increase in the EV market share could be as high as these estimates in the coming years.

2.2.3 Summary

The understanding of the historical EV market share and forecasts for future EV market share establish important parameters in the modelling of EV adoption rates. California's historical EV market share data establishes a baseline for expectations of conversion to EV. For the purpose of this report, emphasis is placed on the forecasts for California from Navigant Consulting, which suggest that a rapid increase in EV purchases is underway in 2016, with sales increasing from just over 62,000 in 2015 to over 500,000 in 2022.

2.3 How Incentives Work

A variety of incentives have been developed and used by governments and other global organizations to encourage the conversion to EVs to achieve greenhouse gas emission reductions. The incentives serve to reduce the purchase price of the vehicle, reduce ongoing operation and maintenance costs, expedite the industry's technological advancement, and/or address one of the preference issues, such as range anxiety.

Multiple studies suggest that there is a positive correlation between incentives and the conversion to EV. The primary and traditional incentives mechanisms are purchase oriented, and include rebates, tax credits/incentives, and purchase subsidies.[44] In addition to these financial-based incentives associated with EV purchase, other incentives include increased access to public charging stations, free electricity while using public charging stations, and/or subsidies that make the ability to install a home charging station more affordable, all which result in positive correlation with increased conversion to EV. While

UCLA Luskin School of Public Affairs, available at: http://luskin.ucla.edu/sites/default/files/WilliamsEtAl2012-UCLA%20Luskin%20Deliverable%204.pdf. Accessed: August 2016.

[42] Electric Vehicles to be 35 % of Global New Car Sales by 2040, press release for study developed by Bloomberg New Energy Finance study, available at: http://about.bnef.com/press-releases/electric-vehicles-to-be-35-of-global-new-car-sales-by-2040/. Accessed: August 2016.

[43] Shepard, Scott, and Lisa Jerram. 2016 Executive Summary: Electric Vehicle Geographic Forecasts; Battery and Plug-In Hybrid Electric Vehicle Sales and Populations in North America, free excerpt of the larger report. Available at: https://www.navigantresearch.com/research/electric-vehicle-geographic-forecasts. Accessed: August 2016.

[44] Clinton, Bentley, Austin Brown, Carolyn Davidson, and Daniel Steinberg. 2015. Impact of Direct Financial Incentives in the Emerging Battery Electric Vehicle Market: A Preliminary Analysis. National Renewable Energy Laboratory. Department of Economics, University of Colorado – Boulder. February.

policies differ from state to state, each state shows a strong correlation between subsidies and rebates offered and an increase in the conversion to EV.[45]

Financial incentives are generally effective because the higher initial cost of EVs is often viewed as the most prominent market barrier.[46] When the State of Georgia eliminated their state-level tax credit for EVs, sales of EVs dropped 90 percent in 2015.[47] In May 2016, the International Council on Clean Transportation (ICCT) released a study that compared EV incentive programs in European countries, and also concluded that there is a correlation between higher levels of fiscal incentives and charging infrastructure and higher adoption of EVs.[48] Although the data set of policies gathered by the ICCT is too small for statistical inference, it is clear that the combination of significant fiscal incentives as a percent of total vehicle cost and a high number of charging stations per 1,000 vehicles registered (such as five or more as are found in Oslo and Amsterdam) led to the highest rates of EV purchases as a share of all new cars. (The ICCT study found that EV purchases were approximately 20 percent and 14 percent of all vehicle sales with the incentives in Oslo and Norway, respectively.)

As previously discussed, there are many factors that affect EV adoption; however, price remains the biggest barrier, and financial incentives must be large enough to spur real adoption.

- Jenn, Azevedo, and Ferreira found that, in order for incentives to have a significant effect on the EV market, the overall incentive must be over $1,000.[49] For incentives less than this, the incentive has an insignificant effect on consumer behavior.
- Gallagher et al. found that a tax incentive equal to $1,000 brought about a five percent increase in EV sales, based on data from 2000 through 2006 comparing all states with incentive programs.[50]
- Adepetu and Keshav simulated results for adoption of EVs in Los Angeles, and found that, under a baseline scenario, the market share of EVs would increase from roughly three percent to around seven percent.[51] When offered a $2,000 rebate,

[45] DeShazo, J.R., CC Song, Michael Sin, and Thomas Gariffo. 2015. State of the States' Plug-in Electric Vehicle Policies, UCLA Luskin School of Public Affairs, March. Available at: http://innovation.luskin.ucla.edu/sites/default/files/EV_State_Policy.pdf. Accessed: August 2016.

[46] Yang, Zifei, P. Slowik, Nic Lutsey, Stephanie Searle. 2016. Principles for Effective Electric Vehicle Incentive Design. June 2016. Available at: http://www.theicct.org/sites/default/files/publications/ICCT_IZEV-incentives-comp_201606.pdf. Accessed: August 2016.

[47] Caputo, Michael. 2016. Georgia EV Sales Sputter without Tax Credit, online article. Available at: http://www.marketplace.org/2016/01/08/world/georgia-ev-sales-sputter-without-tax-break. Accessed: August 2016.

[48] Tietge, Uwe, P. Mock, N. Lutsey, A. Campestrin. 2016. The International Council on Clean Transportation. Comparison of Leading Electric Vehicle Policy and Deployment in Europe. May 2016. Available at: http://www.theicct.org/sites/default/files/publications/ICCT_EVpolicies-Europe-201605.pdf. Accessed: August 2016.

[49] Jenn, A., Azevedo, I., and Ferreira, P. 2013. The impact of federal incentives on the adoption of hybrid electric vehicles in the United States, Energy Economics. Available at: http://dx.doi.org/10.1016/j.eneco.2013.07.025. Accessed: August 2016.

[50] Gallagher, K. and Muehlegger, E. Giving green to get green? Incentives and consumer adoption of hybrid vehicle technology (2010), Journal of Environmental Economics and Management, 61(1), 1-15.

[51] Adepetu, Adedamola, and Srinivasan Keshav, 2015. The Relative Importance of Price and Driving Range on Electric Vehicle Adoption: Los Angeles Case Study. *Transportation,* DOI 10.1007/s11116-015-9641-y.

the EV share in 2018 of new car sales increased to 8.5 percent. This is equivalent to a 1.5 percent increase from the baseline scenario, or a 20 percent increase in EV market share. Similarly, a $4,000 rebate would increase the EV share of new car sales to ten percent in 2018 (a 40 percent increase), and a $2,000 rebate coupled with a quintupled battery size led to a 30 percent increase in adoption (or up to roughly nine percent of the new market share by 2018).

- Clinton et al. found that a tax credit of $1,000 stimulated a 2 to 10 percent increase in the rate of EV conversion.[52]

Incentives for related costs other than the EV vehicle purchase also have a positive effect to increase conversion to EVs. The Plug-in Electric Vehicle Owner Survey, managed by the Center for Sustainable Energy, highlighted the importance of subsidized or discounted chargers.[53] Of those with an installed Level 2 charger at home, 64 percent received a free or subsidized charger, and 80 percent of them found the importance of the subsidy to install a Level 2 charger influential. Another study revealed that 83.1 percent of the participants of a consumer survey on EVs stated that it would increase their comfort in purchasing or leasing a EV by “a lot” or would be “a deciding factor” if they have charging facilities at home for easy overnight charging.[54] This evidence suggests that investment in a residential charging infrastructure should result in increased conversion to EV.

Recent work from the ICCT found that there are specific principles that optimize the use of incentives for EV purchases.[55] First, incentives must be exceptionally visible and accessible to consumers, both in terms of their value and the time at which they are applied. Second, locations with a lack of infrastructure (charging stations) and unclear (poorly communicated or advertised) incentives have not seen as significant an uptake of EVs. Third, immediate rebates are the most effective at incentivizing consumers. Fourth, providing charging stations also serves as an immediate rebate and, in combination with effective notification to users, can provide another “incentive” to increase the conversion to EVs. As stated by the ICCT, “Rebates are more than twice as effective as tax credits in motivating consumers, and point-of-sale incentives can be an order of magnitude more effective.”[56]

2.3.1 Existing Federal Incentive Program

There have been numerous federal-level incentive programs for alternatively fueled vehicles. The Energy Improvement and Extension Act, enacted in 2008, was the first attempt by the federal government to provide incentives to stimulate the purchase of EVs.

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[52] Clinton, Bentley, Austin Brown, Carolyn Davidson, and Daniel Steinberg, 2015. Impact of Direct Financial Incentives in the Emerging Battery Electric Vehicle Market: A Preliminary Analysis. National Renewable Energy Laboratory. Department of Economics, University of Colorado – Boulder. February.

[53] California Center for Sustainable Energy (CCSE) and California Environmental Protection Agency - Air Resources Board (ARB). 2012. California Plug-in Electric Vehicle Owner Survey. Available at: https://energycenter.org/sites/default/files/docs/nav/policy/research-and-reports/California%20Plug-in%20Electric%20Vehicle%20Owner%20Survey%20Report-July%202012.pdf. Accessed: August 2016.

[54] Krupa, J.K., D.M. Rizzo, M.J. Eppstein, D.B. Lanute, D.E. Gaalema, K. Lakkaraju, and C.E. Warrender. 2014. Analysis of a Consumer Survey on Plug-in Hybrid Electric Vehicles. Volume 64 pages 14-31. Available at: http://www.sciencedirect.com/science/article/pii/S0965856414000500. Accessed: August 2016.

[55] Yang, Zifei, P. Slowik, Nic Lutsey, Stephanie Searle. 2016. Principles for Effective Electric Vehicle Incentive Design. June 2016. Available at: http://www.theicct.org/sites/default/files/publications/ICCT_IZEV-incentives-comp_201606.pdf. Accessed: August 2016.

[56] Ibid

The program was amended in 2009 with the American Recovery and Reinvestment Act, and again in 2013 as part of the American Taxpayer Relief Act.

While there are no longer any federal programs incentivizing the purchase and ownership of hybrid vehicles, there are federal incentive programs for plug-in electric and plug-in hybrid/electric vehicles. For qualified vehicles acquired after December 31, 2009, the existing federal incentive program provides a base credit of $2,500. An additional $417 credit is available for a vehicle which draws propulsion energy from a battery with at least 5 kilowatt hours of capacity, plus an additional $417 for each kilowatt hour of battery capacity in excess of 5 kilowatt hours, up to a maximum of $7,500.[57]

These programs are structured so that credits begin to phase out once a given manufacturer has sold at least 200,000 qualifying vehicles, as determined on a cumulative basis for sales after December 31, 2009.[58] There are as many as 42 different makes and models of vehicles (manufactured by Ford, BMW, Fiat, Chevrolet, Honda, Kia, Mercedes, Nissan, Porsche, Toyota, Volvo, and Volkswagen, as well as VIA, Wheego and previously, Tesla) that would qualify for a tax credit of some amount.[59] According to recent IRS data, sales have not yet approached the threshold levels for most manufacturers.[60] The federal program is a *tax credit*. As a tax credit, the approved amount is deducted from the purchaser's total tax burden. If the credit holders total tax bill is less than the amount of the credit, the "credit" is lost and the credit cannot be forwarded to future tax years.

The federal incentive program also recognizes the importance of home charging in the decision to purchase an EV. EV drivers can take a tax credit of 30 percent off the purchase of home charging equipment, up to $1,000, currently through 2016 when the tax credit will expire.[61] Home charging hardware may cost up to $1,500 (including installation), with more economical chargers available for less than $1,000.[62] The estimated benefit of this tax incentive is on the order of a few hundred dollars.

2.3.2 Existing State Incentive Programs

A number of states, including California, offer additional incentives and rebates to motivate the conversion to EVs. The ICCT conducted two meta-studies in 2014 and 2015 analyzing the correlation between direct and indirect incentives across 13 states[63] and in 30 major

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57 Internal Revenue Service. 2016. Plug-In Electric Drive Vehicle Credit (IRC 30D). Available at: https://www.irs.gov/Businesses/Plug-In-Electric-Vehicle-Credit-IRC-30-and-IRC-30D. Accessed: August 2016.

58 Ibid.

59 U.S. Department of Energy, Energy Efficiency & Renewable Energy and U.S. Environmental Protection Agency, Office of Transportation & Air Quality, The Official U.S. Government Source for Fuel Economy Information. Available at: http://www.fueleconomy.gov. Accessed: August 2016.

60 Internal Revenue Service. 2016. IRC 30D - Plug-In Electric Drive Motor Vehicle Credit Quarterly Sales. Available at: https://www.irs.gov/businesses/irc-30d-plug-in-electric-drive-motor-vehicle-credit-quarterly-sales. Accessed: August 2016.

61 Plugincars. 2016. Incentives for Plug-in Hybrids and Electric Cars, February 24. Available at: http://www.plugincars.com/federal-and-local-incentives-plug-hybrids-and-electric-cars.html. Accessed: August 2016.

62 Drive Clean. Charging Equipment Cost. Available at: http://driveclean.ca.gov/pev/Costs/Charging_Equipment.php. Accessed: August 2016.

63 Lingzhi Jin, Stephanie Searle, And Nic Lutsey. 2014. Evaluation Of State-Level U.S. Electric Vehicle Incentives**.** International Council on Clean Transportation 1225 Street NW, Suite 900 Washington DC 20005 USA

metropolitan areas.[64] Their analysis found that state incentives have promoted registrations of 700 to 3,500 EVs since 2011. The ICCT analysis considered incentive packages by type of incentive and by state, and compared the value of incentive(s) relative to the market share for EVs in a given state and to the national average. In the states with the three most aggressive combinations of incentive packages (CA, HI and OR, and WA and GA), the combined incentive packages resulted in EV conversion was two to four percent higher than the national average.

Within California, Governor Brown aims to encourage the deployment of 1.5 million zero emission vehicles in California by 2025.[65] The State is facilitating its achievement of this goal through a variety of financial incentives to reduce the difference in upfront cost between ICEVs and EVs. For example, the California Clean Vehicle Rebate Project (CVRP) currently provides a rebate of up to $6,500 for eligible individuals, subject to an income cap, and provides higher rebates to low and moderate-income consumers.[66]

2.3.3 Summary

Published literature establishes a positive correlation between incentives and conversion to EV. The primary positive effect results from reducing the cost of ownership and operation. More aggressive incentive programs have shown that greater incentives may further accelerate the conversion to EVs.

[64] Lutsey, Nic, Stephanie Searle, Sarah Chambliss, Anup Bandivadekar. 2015. Assessment Of Leading Electric Vehicle Promotion Activities In United States Cities. International Council on Clean Transportation 1225 Street NW, Suite 900 Washington DC 20005 USA.

[65] State of California Office of Governor. Executive Order B-16-2012. Available at: https://www.gov.ca.gov/news.php?id=17472. Accessed: August 2016.

[66] California Air Resources Board. 2016. Clean Vehicle Rebate Project. April. Available at: http://www.arb.ca.gov/msprog/aqip/cvrp.htm/. Accessed: August 2016. Similarly, the draft Mobile Source Strategy prepared by the California Air Resources Board for the South Coast Air Quality Management District's 2016 Air Quality Management Plan anticipates a robust suite of incentive funding to facilitate the penetration and advancement of zero and near-zero emission technologies and vehicles. Available at: http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/Draft2016AQMP. Accessed: August 2016. Additionally, as part of the June 2016 partial settlement between Volkswagen and the U.S. Environmental Protection agency, Volkswagen is required to invest $800 million in California to facilitate the installation of EV charging infrastructure and the promotion of EVs. Volkswagen's investment plans will be subject to review and approval by the California Air Resources Board. Available at: https://www.epa.gov/enforcement/volkswagen-clean-air-act-partial-settlement. Accessed: August 2016.

3. APPROACH

Ramboll Environ has developed a predictive model (see Appendix A) of the expected EV purchases that will occur at the Newhall Ranch community, based on the programs that the community will implement in order to promote the purchase of EVs. Please see Section 1.1, Background on the Newhall Ranch Community's Incentive Program, above for a description of those programs, which include the provision of EV purchase subsidies and a comprehensive EV charging station infrastructure network. The following is an overview of the model's development, which includes details regarding the calculations, data, and assumptions.

3.1 Overview of Approach

The basic development of the model includes the seven components summarized below.

1. Calculate the number of total residents that will live at the Newhall Ranch community by year.
   a. Calculations are based on the absorption schedule included in Appendix A.
2. Calculate the number of cars purchased by residents (households) each year.
   a. Calculations are based on the estimated number of drivers and the stock of cars in the Newhall Ranch community for all residents, and the percentage of drivers that purchase a car in any year.
3. Calculate the number of EVs owned by residents (households) each year.
   a. Calculations are based on data that includes EVs already-owned by residents prior to moving to the Newhall Ranch community, and data that indicates how many EVs may be purchased going forward.
   b. The number of EVs purchased is calculated as a percent of all cars purchased based on the published literature for anticipated EV sales (see Section 2.2, Market Share and Forecasts, above).
4. The percentage of all car purchases that are EVs is assumed to start at seven percent in 2020, and increase over time at a constant increase of 2.5 percent annually (see Section 2.2, Market Share and Forecasts, above).
   a. These assumptions are based on BNEF and Navigant studies, and the historical market information of EV purchases in California.
   b. The Newhall Ranch community's population is assumed to be similar to the population of California drivers in terms of distribution of income level and other preferences.
5. The EVs that would be purchased annually *without* the incentives are calculated by multiplying the total number of cars purchased in the Newhall Ranch community by the estimated EV purchase percentage for each year.
6. The total number of EVs purchased that are stimulated by the Newhall Ranch community's incentive program is estimated by three factors.

a. First, the effect of the $1,000 purchase subsidy and the installation of an in-home charging station (estimated at a value of $800) is considered.[67] Using a 10 percent increase per thousand dollars of stimulus, based on results from Adepetu and Keshay (2015), we assume a 19 percent increase in the rate of EV adoption due to these incentives. This result is also supported by research from Clinton et al. (2015).

b. Second, the effect of the additional installation of EV charging stations in the Newhall Ranch community is considered. Using results adapted from Sierzchula et al. (2014), the model assumes a 7.2 percent increase in the rate of EV adoption from the charging stations in the study area.[68] (While conservatively not considered in this analysis, the community's off-site installation of EV charging stations in the Los Angeles County area also is anticipated to beneficially improve EV adoption rates in that larger geographic area.)

c. Third, the effect of an accelerated technology diffusion path is considered, following the supportive scientific literature discussed above in Section 2.1.6, Technology Diffusion Impact, and as captured in modeling efforts by Coffmann (2015), and Adepetu and Keshav (2015). Due to the increased visibility of the Newhall Ranch community's programs, the social network and/or the neighbor effect, the pace of adoption is expected to be faster in the early years of the study (from 2020 to 2023) and then slow down. This will reflect the pace of adoption expected as the use of EVs moves from the "Early Adopters" phase into the "Early Majority" phase.

7. The total EV cars that may be purchased as a result of the Newhall Ranch community's program is calculated based on the difference between the EV cars purchased with implementation the Newhall Ranch program compared to the result without the program. The model represents the sum total effect of the program over the period of time that the Newhall Ranch community is anticipated to be built out (2030).

3.2 Vehicles Purchased by the Community

The vehicles purchased by the Newhall Ranch community are estimated based on a population estimate and published literature regarding vehicle purchasing trends.

Consistent with the Southern California Association of Governments data, the average household size in the Newhall Ranch community is assumed to be 3.15.[69] Factoring this into the number of households, we estimate that the Newhall Ranch community (Study Area) will have 63,000 residents (see Table 2).

Data regarding the proportion of an area's population that drives (and is assumed to own a vehicle) is based on the latest publicly available data from the Federal Highway

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[67] Estimate developed from Plug-In Hybrid website, stating that the station itself runs on average about $600-$700; and that professional installation could be as low as $200. Therefore, a value of $800 is assumed to approximate a mid-point value estimate. See: http://www.plugincars.com/quick-guide-buying-your-first-home-ev-charger-126875.html.

[68] Sierzchula et al. found that an increase of one charging station per 100,000 people increases new EV sales by 0.12 percent. Given the population of Newhall Ranch (around 60,000), and given the 2,000 new charging stations anticipated to serve approximately 4,000 parking spots, this would produce a 108 percent increase in sales of EVs. However, as the Sierzchula et al. research analyzed countries with fewer than 100 charging stations per 100,000 in population, we limited this effect to the result that could be brought about by the presence of 100 public charging stations.

[69] SCAG, 2016. Data relied upon by for the 2016 RTP/SCS for Santa Clarita (2.94) and LA County (3.36). Available at: http://scagrtpscs.net/Pages/default.aspx. Accessed: August 2016.

Administration (FHA) regarding the number of drivers per 1,000 residents in each state.[70] This data indicated that, in 2014, there were 639 drivers per 1,000 residents in California (see Table 3). Applying that to the 63,000 residents in anticipated for the Newhall Ranch community, and assuming that all drivers own vehicles, it is estimated that approximately 40,257 people are drivers in the Study Area.

Table 2: Data and Estimation of Drivers in the Study Area	
No. of Households	21,242
Average Number of Persons per Household	3.15
No. of Residents	66,912
No. of Drivers per 1,000 Residents in CA in 2014	639
No. of Drivers Among 66,912 Residents	**42,757**

Sources: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates. Available at https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2014/. Accessed: August 2016. And, U.S. Department of Transportation, Federal Highway Administration. 2014. Highway Statistics series of reports. Available at: www.fhwa.dot.gov/policyinformation/statistics.cfm. Accessed: August 2016.

To estimate the number of cars purchased in the Study Area each year, the analysis uses data on the number of new and used cars sold in 2014, and the total number of licensed drivers in the US in the same year. In 2014, approximately 16.17 million new cars were sold, and the number of used cars sold was just over 42 million.[71, 72] The number of licensed drivers were reported as over 214 million (see Table 3).[73] This suggests that 27 percent of licensed drivers purchase a car each year, or about one in four drivers. However, only about eight percent (one in 13 drivers) buys a new car in each year, while the rest buy used cars. Because the market for used EVs is smaller than the market for used ICEVs, we have adjusted the percent of the population that could potentially buy a new or used EV downward to 20 percent, which is considered a conservative assumption because the used EV market is expected to be more robust going into the future as the prevalence of used EVs increases. Table 3 shows that, using these assumptions, the number of drivers who purchase a car and, therefore, might purchase an EV ranges from 805 in 2020, to 8,051 in 2030, as more and more people move into the community.

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[70] U.S. Department of Transportation, Federal Highway Administration, 2014, Highway Statistics series of reports. Available at: www.fhwa.dot.gov/policyinformation/statistics.cfm. Accessed: August 2016.

[71] Davis, Stacy C., Susan W. Diegel, and Robert Boundy, 2015, Transportation Energy Data Book, Edition 34, Prepared for the Vehicle Technologies Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy, August. Table 3-11. Available at: http://cta.ornl.gov/data/index.shtml. Accessed: August 2016.

[72] Webb, Tom. 2015. 2015 Used Car Market Report Year in Review and Outlook. Available at: http://www.niada.com/uploads/dynamic_areas/tRRlH6fX2WoqiCcaonlq/33/2015ManheimUsedCarMarketReport.pdf. Accessed: August 2016.

[73] U.S. Department of Transportation, Federal Highway Administration. 2014. Highway Statistics series of reports. Available at: www.fhwa.dot.gov/policyinformation/statistics.cfm. Accessed: August 2016.

Table 3: Estimation of Drivers and Car Buyers in the Newhall Community	
Total Licensed Drivers in the US (2014) - USA	214,092,472
Total New Vehicles Sold in 2014 - USA	16,171,000
Total Used Vehicles Sold in 2014 - USA	42,000,000
Percentage of Drivers that Buy a Car Each Year (based on 2014 data)	27%
Adjusted Percent to Account for Reduced Used Car Market for EVs	20%
Number of Drivers in Newhall Ranch in 2020	670
Number of Drivers in Newhall Ranch in 2030	42,757
Number of Drivers Who Might Purchase an EV in Newhall Ranch in 2020	**134**
Number of Drivers Who Might Purchase an EV in Newhall Ranch in 2030	**8,551**

Sources: U.S. Department of Transportation, Federal Highway Administration. 2014. Highway Statistics series of reports. Available at www.fhwa.dot.gov/policyinformation/statistics.cfm, and,
Davis, Stacy C., Susan W. Diegel, and Robert Boundy, 2015. Transportation Energy Data Book, Edition 34, Prepared for the Vehicle Technologies Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy, August. Table 3-11, Available at: http://cta.ornl.gov/data/index.shtml. Accessed: August 2016.

4. RESULTS

Following the methodology outlined in Section 3, it is estimated that the Newhall Ranch community's incentive program will lead to a 48 percent increase in EV adoption. Specifically, without the incentive program, only 12,978 of the vehicles purchased and driven in the Newhall Ranch community by 2030 would be EVs. With implementation of the incentive program, 24,941 of the vehicles purchased and driven in the Newhall Ranch community by 2030 would be EVs, an increase of 11,963 vehicles. As a result, by 2030, nearly half of car purchases are expected to be EVs, and there will be an average of over one EV per household in the community.

Table 4: Expected EVs in Newhall Ranch Community by 2030 with Incentive Program

Total Cars Purchased by Newhall Land Residents	EVs in Community- No Additional Incentive	Additional EVs Purchased with Incentive Program	Percent Increase due to Incentives	Total EVs at in 2030	Average EV per Household
52,887	12,978	11,963	48%	24,941	1.17

The results in Table 4 represent the best estimate of EV adoption within the Newhall Ranch community given the incentive program, given our current understanding of EV purchases and our expectation that future events will more or less follow along with existing trends.

However, as the forecast begins in 2020, there is a possibility that unforeseen events could shift the anticipated purchasing behavior. Several alternative forecasts, therefore, have been developed to demonstrate how the results may change under different conditions. These alternative forecasts include:

1) **Greater Overall EV Conversion**: This forecast assumes a higher existing percentage of EV sales and ending percentage in 2030 compared to overall vehicle sales. Specifically, it is assumed that, in 2020, EV sales are nine percent of total car sales, and, in 2030, 34 percent of total car sales. This is an increase of two and four percent, respectively, from the base analysis;

2) **Lesser Overall EV Conversion**: This forecast assumes a lower existing percentage of EV sales and ending percentage in 2030 compared to overall vehicle sales. Specifically, it is assumed that, in 2020, EV sales are four percent of total car sales and, in 2030, 20 percent of total car sales. This is a decrease of three and ten percent, respectively, from the base analysis;

4) **Rapid Technology Diffusion**: This forecast assumes that the pace of technology diffusion is faster than the pace assumed in the base analysis, which peaks in 2024, and then begins to slow. Under the rapid technology diffusion alternative forecast, the rates are slightly higher through 2024, and continue to increase through 2025 and then begin to slow; and

3) **Delayed Technology Diffusion**: This forecast assumes that the pace of technology diffusion is slower than the pace assumed in the base analysis, which

peaks in 2024, and then begins to slow. Under the delayed technology diffusion alternative, the rate of increase is slightly lower through 2024 compared to the base analysis, and the peak does not come until 2027.

Results for these alternative forecasts are shown in Table 5. These alternatives demonstrate that the Newhall Ranch community's incentive program is likely to have a positive effect under different market conditions even if the predicted effect of the program varies. Two alternative forecasts may result in higher, or more rapid EV adoption than the current model captures, and two alternative forecasts may result in lower, or less rapid EV adoption than the current model captures.

Notably, the evaluation does not specifically factor in higher oil prices that may occur in the 2020 to 2030 time frame. If this occurs, it would be expected that this would result in more rapid adoption than what the current model anticipates. Similarly, the cost for electricity could have an effect both positive (e.g., if low cost renewable energy becomes more prevalent) or negative (e.g., if the cost of electricity increase).

Detailed annual results for the base analysis and each alternative forecast are shown in Appendix A to this report.

Table 5 Alternative Forecast Results

Forecast	Total Cars Bought by Newhall Land Residents	Total EVs in Community -No Additional Incentive	Additional EVs with Incentive Program	Percent Increase due to Incentives	Total EVs in 2030	Average EVs per Household
Greater EV Conversion	52,887	14,841	12,298	45%	27,138	1.28
Lesser EV Conversion	52,887	8,574	6,552	43%	15,126	0.71
Rapid Technology Diffusion	52,887	12,978	8,819	40%	21,797	1.03
Delayed Technology Diffusion	52,887	12,978	14,973	54%	27,951	1.32

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APPENDIX A
PURCHASING FORECAST MODEL

ASSUMPTIONS

Assumptions	Best Estimate	Greater EV Conversion	Lesser EV Conversion	Rapid Technology Diffusion	Delayed Technology Diffusion
New Households Annually \1	333-2,606	333-2,606	333-2,606	333-2,606	333-2,606
Persons per household \2	3.15	3.15	3.15	3.15	3.15
Vehicles per 1,000 people \3	639	639	639	639	639
Percent of drivers who purchase a vehicle per year \4	20%	20%	20%	20%	20%
2020 percent of vehicle purchases electric - trend \5	7%	9%	4%	7%	7%
2030 percent of vehicle purchases electric - trend \5	32%	34%	20%	32%	32%
Value financial incentive \7	$1,800	$1,800	$1,800	$1,800	$1,800
Increase in purchase rate due to financial incentive \8	1% - 6%	1% - 6%	1% - 4%	1% - 6%	1% - 6%
Increase in purchase rate due to charging stations \9	7% - 15%	7% - 15%	7% - 15%	7% - 12%	7% - 20%

Table Notes and References:

\1 - This range is based on the Project applicant's absorption schedule, and subject to additional calendar year specificity

\2 - SCAG, 2016. Data relied upon by for the 2016 RTP/SCS for Santa Clarita (2.94) and LA County (3.36). Available at: http://scagrtpscs.net/Pages/default.aspx. Accessed: August 2016.

\3 - Davis, Stacy C., Susan W. Diegel, and Robert Boundy, 2015, Transportation Energy Data Book, Edition 34, Prepared for the Vehicle Technologies Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy, August. Table 3-11. Available at: http://cta.ornl.gov/data/index.shtml. Accessed: August 2016.

\4 - Revised downward, based on U.S. Department of Transportation, Federal Highway Administration. 2014. Highway Statistics series of reports. Available at: www.fhwa.dot.gov/policyinformation/statistics.cfm. Accessed: August 2016.

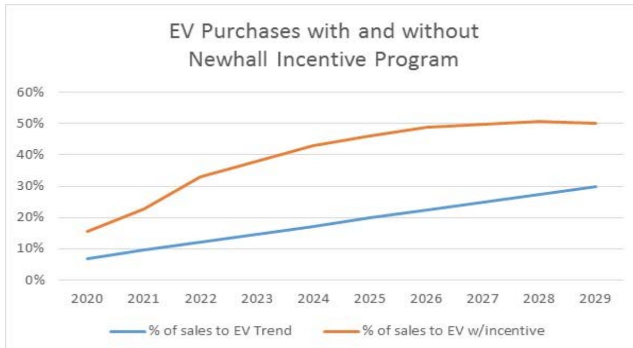
\5 - Based on BNEF and Navigant studies, and the historical market information of EV purchases in California and the population is assumed to be similar to the population of California drivers in terms of distribution of income level and other preferences;

\6 - This only reflects the benefit of the on-site residential EV chargers, and not those in the on-site commercial areas. Estimate developed from Plug-In Hybrid website, stating that the station itself runs on average about $600-$700; and that professional installation could be as low as $200. Therefore, a value of $800 is assumed to approximate a mid-point value estimate. See: http://www.plugincars.com/quick-guide-buying-your-first-home-ev-charger-126875.html.

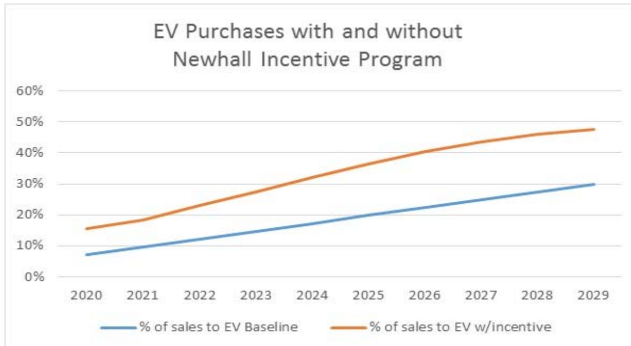
\7 - Based on relationship from Adepetu, Adedamola, and Srinivasan Keshav. 2015. The Relative Importance of Price and Driving Range on Electric Vehicle Adoption: Los Angeles Case Study. Transportation, DOI 10.1007/s11116-015-9641-y. 1-21.

\8 - Only includes the additional charging stations in the Newhall Ranch commercial areas. Based on Sierzchula, W., Bakker, S., Maat, K., and van Wee, B. 2014. The influence of financial incentives and other socio-economic factors on electric vehicle adoption, Energy Policy, 68, 183-194.

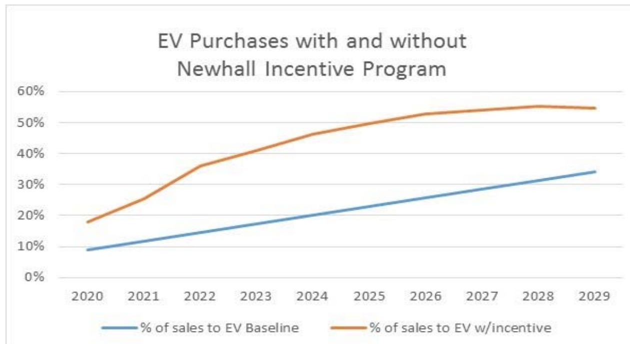
Best Estimate												
21,242 homes in the Development	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Number of households occupied per year	333	1,713	2,987	3,420	2,117	1,853	1,875	2,606	2,460	1,343	535	**21,242**
Number of households	333	2,046	5,033	8,453	10,570	12,423	14,298	16,904	19,364	20,707	21,242	
Stock of Cars in Community	670	4,118	10,131	17,015	21,276	25,006	28,780	34,025	38,977	41,680	42,757	
Number of cars purchased each year	134	824	2,026	3,403	4,255	5,001	5,756	6,805	7,795	8,336	8,551	**52,887**
Percent of purchased cars EV Trend	7%	10%	12%	15%	17%	20%	22%	25%	27%	30%	33%	
Percent of purchased cars EV Incentive	15%	23%	33%	38%	43%	46%	49%	50%	51%	50%	50%	
EV Cars trend	9	79	245	499	733	989	1,285	1,694	2,139	2,501	2,784	12,958
Additional EVS due to Incentive Pgrms	11	109	423	791	1,096	1,311	1,535	1,692	1,815	1,674	1,505	11,963
Total EVS in Community Trend	29	128	394	913	1666	2675	3981	5695	7854	10375	13179	
Total EVS in Community w/Incentive	41	249	938	2247	4096	6416	9257	12663	16638	20832	25142	
								Percent of Cars EV Trend				**25%**
								Percent of Cars EV with Incentive				**47%**



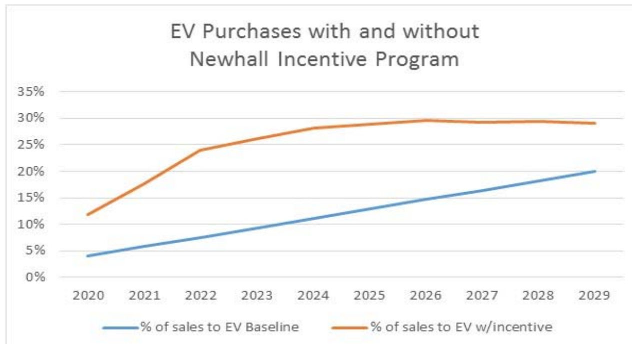
Delayed Technology Diffusion												
21,242 homes in the Development	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Number of households occupied per year	333	1,713	2,987	3,420	2,117	1,853	1,875	2,606	2,460	1,343	535	**21,242**
Number of households	333	2,046	5,033	8,453	10,570	12,423	14,298	16,904	19,364	20,707	21,242	
Stock of Cars in Community	670	4,118	10,131	17,015	21,276	25,006	28,780	34,025	38,977	41,680	42,757	
Number of cars purchased each year	134	824	2,026	3,403	4,255	5,001	5,756	6,805	7,795	8,336	8,551	**52,887**
Percent of purchased cars EV Trend	7%	10%	12%	15%	17%	20%	22%	25%	27%	30%	33%	
Percent of purchased cars EV Incentive	15%	18%	23%	28%	32%	36%	40%	43%	46%	48%	49%	
EV Cars trend	9	79	245	499	733	989	1,285	1,694	2,139	2,501	2,784	12,958
Additional EVS due to Incentive Pgrms	11	73	219	437	635	835	1,032	1,261	1,437	1,474	1,404	8,819
Total EVS in Community Trend	29	128	394	913	1,666	2,675	3,981	5,695	7,854	10,375	13,179	
Total EVS in Community w/Incentive	41	213	698	1,654	3,042	4,886	7,224	10,199	13,795	17,790	21,998	
								Percent of New Cars EV at Baseline				**25%**
								Percent of New Cars EV with Incentive				**41%**



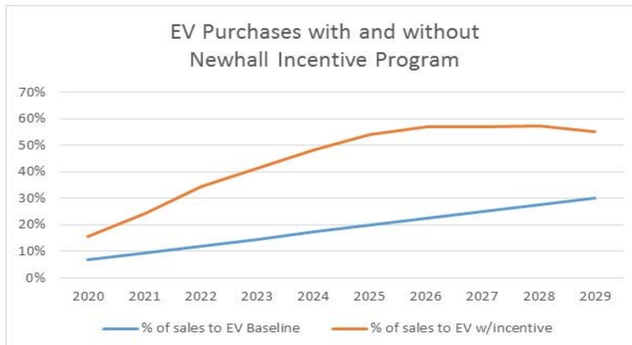
Greater EV Conversion												
21,242 homes in the Development	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Number of households occupied per year	333	1,713	2,987	3,420	2,117	1,853	1,875	2,606	2,460	1,343	535	**21,242**
Number of households	333	2,046	5,033	8,453	10,570	12,423	14,298	16,904	19,364	20,707	21,242	
Stock of Cars in Community	670	4,118	10,131	17,015	21,276	25,006	28,780	34,025	38,977	41,680	42,757	
Number of cars purchased each year	134	824	2,026	3,403	4,255	5,001	5,756	6,805	7,795	8,336	8,551	**52,887**
Percent of purchased cars EV Trend	9%	12%	15%	17%	20%	23%	26%	28%	31%	34%	37%	
Percent of purchased cars EV Incentive	18%	25%	36%	41%	46%	50%	53%	54%	55%	55%	55%	
EV Cars trend	12	97	295	590	856	1,145	1,477	1,936	2,434	2,834	3,145	14,820
Additional EVS due to Incentive Pgrms	12	112	432	807	1,118	1,339	1,570	1,736	1,868	1,734	1,570	12,298
Total EVS in Community Trend	32	149	464	1,074	1,950	3,115	4,612	6,568	9,022	11,877	15,042	
Total EVS in Community w/Incentive	44	273	1,021	2,438	4,431	6,935	10,002	13,694	18,016	22,604	27,340	
								Percent of New Cars EV at Baseline				**28%**
								Percent of New Cars EV with Incentive				**51%**



Lesser EV Conversion												
21,242 homes in the Development	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Number of households occupied per year	333	1,713	2,987	3,420	2,117	1,853	1,875	2,606	2,460	1,343	535	**21,242**
Number of households	333	2,046	5,033	8,453	10,570	12,423	14,298	16,904	19,364	20,707	21,242	
Stock of Cars in Community	670	4,118	10,131	17,015	21,276	25,006	28,780	34,025	38,977	41,680	42,757	
Number of cars purchased each year	134	824	2,026	3,403	4,255	5,001	5,756	6,805	7,795	8,336	8,551	**52,887**
Percent of purchased cars EV Trend	4%	6%	8%	9%	11%	13%	15%	16%	18%	20%	22%	
Percent of purchased cars EV Incentive	12%	18%	24%	26%	28%	29%	30%	29%	29%	29%	30%	
EV Cars trend	5	48	153	318	473	645	844	1,119	1,420	1,667	1,862	8,554
Additional EVS due to Incentive Pgrms	11	98	334	572	728	797	857	868	867	757	664	6,552
Total EVS in Community Trend	25	93	266	604	1,097	1,762	2,626	3,765	5,206	6,893	8,775	
Total EVS in Community w/Incentive	36	201	708	1,618	2,839	4,300	6,022	8,029	10,336	12,781	15,327	
								Percent of New Cars EV at Baseline				**16%**
								Percent of New Cars EV with Incentive				**29%**



Rapid Technology Diffusion												
21,242 homes in the Development	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Number of households occupied per year	333	1,713	2,987	3,420	2,117	1,853	1,875	2,606	2,460	1,343	535	**21,242**
Number of households	333	2,046	5,033	8,453	10,570	12,423	14,298	16,904	19,364	20,707	21,242	
Stock of Cars in Community	670	4,118	10,131	17,015	21,276	25,006	28,780	34,025	38,977	41,680	42,757	
Number of cars purchased each year	134	824	2,026	3,403	4,255	5,001	5,756	6,805	7,795	8,336	8,551	**52,887**
Percent of purchased cars EV Trend	7%	10%	12%	15%	17%	20%	22%	25%	27%	30%	33%	
Percent of purchased cars EV Incentive	15%	24%	34%	41%	48%	54%	57%	57%	57%	55%	54%	
EV Cars trend	9	79	245	499	733	989	1,285	1,694	2,139	2,501	2,784	12,958
Additional EVS due to Incentive Pgrms	11	121	453	913	1,316	1,709	1,993	2,179	2,317	2,103	1,858	14,973
Total EVS in Community Trend	29	128	394	913	1,666	2,675	3,981	5,695	7,854	10,375	13,179	
Total EVS in Community w/Incentive	41	261	979	2,411	4,480	7,197	10,496	14,389	18,866	23,490	28,152	
								Percent of New Cars EV at Baseline				**25%**
								Percent of New Cars EV with Incentive				**53%**



APPENDIX B
LIST OF PREPARERS

GRETCHEN GREENE, PH.D.

Senior Manager
Environmental Economics

Dr. Gretchen Greene has 20 years of diverse economics experience in natural resource, agricultural, and community economics. She works on complicated problems involving society and management of the natural environment. Dr. Greene has expertise in benefit cost analysis ecosystem service valuation; regulatory analysis; recreation and tourism; sustainable economic development; public infrastructure investment; and population projections. Recent interests have focused on risk based decision making in the face of a changing climate. She also brings expertise in econometric analysis, program review, feasibility analyses, National Environmental Policy Act (NEPA), risk perception, Natural Resource Damage Assessment (NRDA), surveys, and data analysis. She has worked with numerous federal, state, tribal and municipal agencies as well as private industrial clients and law firms. Gretchen has considerable litigation support experience including serving as expert witness in forecasting water demand and other topics.

CONTACT INFORMATION
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United States of America

EDUCATION
1995-1998
Ph.D., Food and Resource Economics
University of Florida, Gainesville, FL, United States

1991-1995
M.S., Food and Resource Economics
University of Florida, Gainesville, FL, United States

1977-1982
B.A., Religion Studies
Wellesley College, Wellesley, MA, United States

COURSES/CERTIFICATIONS
American Red Cross Adult CPR and First Aid Training CPR - AED Certification, 2015

LANGUAGE SKILLS
English (mother tongue), Spanish, Setswana

SELECTED PROJECT EXPERIENCE FOLLOWS
Benefits and Costs of Nature Based Adaptation to Climate Change – Non Profit Organization
Worked to evaluate impacts of alternative climate change adaptation strategies. Baseline conditions included an evaluation of how changing climatic conditions would affect the economic value of structures, agriculture, and ecosystem services to the year 2100. Benefits and costs of adaptation strategies were measured by evaluating the same assets under nature-based and engineering-based adaptation alternatives for Ventura County, California. The team worked closely with stakeholders representing city governments, state agencies, emergency managers, and the US Navy.

Global Water Resources Availability – Agricultural
Conducted an environmental scan for Driscoll's Berries, evaluating the risks associated with global access to fuel, water, land, and labor over the next 15 to 20 years. The team reviewed global forecasts for availability of these resources and analyzed how changing access might influence decisions to invest in areas throughout the world. Climate change impacts to agricultural production were analyzed in a GIS environment and overlaid with land, labor, and fuel availability.

Trade Leakage Analysis for Cap and Trade System, California
Analyzed trade leakage for rare earth mine in Central California for the purpose of establishing initial emission credits under the California cap and trade system designed to comply with AB 32.

Economic Value of Environmental and Community Benefits from Stewardship Development Strategy, Venice, Florida
Led a research team to identify and quantify environmental and community benefits associated with an environmentally friendly development design plan. The study identified benefits of the proposed project over and above those that would be realized using conventional development strategy. The proposed project produced additional environmental value through adherence to building and design standards and practices such as Florida Green Building Coalition, Smartgrowth, Low Impact Design (LID), Florida Yards and Neighborhoods, and Leadership in Energy and Environmental Design (LEED). Quantified benefits included improved water and ecological functioning, greater habitat for wildlife, reduced transportation and associated reductions in costs and pollution, improved energy conservation, and healthier lifestyles for citizens.

Regulatory Analysis of Used Oil Processing and Re-refining in California - Industry
ENVIRON analyzed the used oil markets in California and the impact California Senate Bill 546 (SB 546) will have on the current market structure. ENVIRON examined which elements of SB 546 would improve waste diversion, collection and ultimate end use of used oil. In addition, ENVIRON examined the environmental impact of used oil and the role re-refining serves in reducing that impact on air quality and energy consumption.

Economic Feasibility of Camelina Production for Jet Fuel Biomass Feedstock (Altair, LLC) Seattle, Washington
Dr. Greene evaluated the economic and environmental feasibility of camelina production in the western US for purposes of feedstock for jet fuel energy. The proposed project was submitted for the USDA Biomass Crop Assistance Program (BCAP). The analysis included an economic feasibility determination, including an assessment of location, labor, and infrastructure; a financial feasibility determination based on financial projections and assumptions and cash flows; a sensitivity analysis based on feedstock and energy prices; and an analysis stating that feedstock is the highest and best use of the land and product.

Environmental and Social Impact Analysis, Oyu Tolgoi Mine, Mongolia
Dr. Greene evaluated the ecosystem services provided by the Southern Gobi desert to livestock herders and people living in smaller towns (soums). Ecosystem services were evaluated through data collection, and verification through focus groups and on-site interviews with representatives from various demographic groups. Topics covered include pasture quality, water availability, use of plants and wildlife, and other traditional uses of the natural landscape.

Fargo Moorhead Metropolitan Flood Risk Management Area Draft Feasibility Report and Environmental Impact Statement (Battelle and US Army Corps of Engineers), North Dakota
Served as economics panel member of external panel review. Dr. Greene reviewed the flood damage assessment model and environmental mitigation for proposed flood protection alternatives for the Fargo Moorhead Metropolitan Area. Comments were reviewed and addressed by the US Army Corps of Engineers prior to publication.

Savannah Harbor Expansion Project (Battelle and US Army Corps of Engineers), Georgia
Economics member of external panel review. Dr. Greener reviewed the Savannah Harbor Expansion Project Economic Evaluation, General Reevaluation Report and Transportation Cost and Savings Model. Comments were reviewed and addressed by the US Army Corps of Engineers prior to publication. The review team also reviewed a Tier II EIS for the project including environmental mitigation and enhancement plans.

Economic Analysis of the Proposed Stream Protection Rule (National Mining Association), Washington D.C.
Dr. Greene led the ENVIRON team in evaluating the economic impacts of the Office of Surface Mining proposed stream protection rule (SPR) which affects the entire U.S. coal industry. The percent decrease in access to recoverable reserves was determined for both surface and underground mining, and for each of the three regions in the country. For each sector experiencing losses, the ENVIRON team estimated employment impacts, including direct mining jobs placed at risk as well as total jobs at risk. In addition, ENVIRON developed estimates of the overall economic impact including direct, indirect, and induced effects, and the municipal effects from loss of tax revenues.

Regional Economic Impacts of Wind Power Development, (Palouse Economic Development council), Southeastern Washington
For the Palouse Economic Development Council in Southeastern Washington, assisted in the analysis of the economic impact of three existing wind power projects in Columbia County. Sources of project impacts being evaluated include wind turbine operation and maintenance jobs, lease payments to landowners, increased visitation to the region, increased tax revenue, and potential effects on property values and recreation. In addition to data collection from project developers and operators, the estimation of these effects includes extensive interviews with local service and retail businesses, government officials (tax assessors, public works directors, land use planners, etc), and community organizations (chamber of commerce, economic development agencies). Based on this data, estimated the increased revenue to all economic sectors directly due to the project and how these direct economic impacts ripple through the economy and translate into total increased economic activity (direct, indirect, and induced effects) in terms of jobs and income.

Planning Strategies for Revenue Enhancement on the Valles Caldera National Preserve (Valles Caldera Trust), New Mexico
Managed a project to develop a business plan for the Valles Caldera National Preserve in New Mexico. A variety of ventures are being analyzed for the Preserve, including; mid level lodge with restaurant, high end lodge, campground, cabin rentals, visitor center with gift shop and café, green burial cemetery, and expanding recreational program and visitor tours. Developed an interactive financial model to be used for planning purposes. The interactive model allows board members and preserve staff to adjust model assumptions to view their impact on future cost and return projections.

Future Water Requirements for Domestic, Commercial, Municipal, and Industrial Purposes on the Flathead Indian Reservation, Upper Columbia Area Office, Montana
Worked in cooperation with Tribal Consultants to determine the present use and future water requirements for domestic, commercial, municipal, and industrial (DCMI) purposes on the Flathead Indian Reservation in Montana. The work included an economic assessment of future projects and development opportunities. The results will be included in an operational water model of the reservation. Results will also assist in negotiating for a water rights settlement among the tribe, the state of Montana, and the federal government.

Present Water Use and Future Water Needs for Domestic, Commercial, and Municipal Purposes and Present and Future Comprehensive Ground Water Need by the Lummi Nation on the Lummi Peninsula
Served as expert witness on the domestic, commercial, and municipal water needs of the Lummi Nation. The work included conducting a population projection, and estimating the future water requirements of the tribe on a per capita basis. Water demand forecasts were used in this study covering the

comprehensive ground water needs of the Lummi Nation. Contributed a socioeconomic analysis of the reservation.

Feasibility of Marine Terminal on West Hayden Island – Municipality
Completed an evaluation of the economic gains and losses associated with development of a marine terminal on West Hayden Island for Portland Office of Sustainability and Planning. The effort included assessments of the economic role of Portland Harbor; marine industrial trends; marine site suitability; and land demand. The analysis also informed the Economic Social, Environmental, and Energy (ISEE) analysis completed as part of the city land use plan.

Tribal Housing and Income in the Pacific Northwest: Unmet Need for American Indians Living Outside Tribal Home States, Pierce County, Washington
The Alesek Institute conducted a survey of Native Americans in Washington State during 2004-5. Analyzed the results of the survey, including the different types of household structures found among Native Americans. For example, multigenerational households with children, parents, siblings, and grandparents represented one household structure, while several unrelated adults living together another, and households with single parents and young children still another. The analysis compared how household incomes verified by household structure, and also how Indians from Washington State tribes compared with other Indians living in the region.

Social and Economic Assessment Report, Grand Ronde, Oregon
Conducted a social and economic assessment of several communities within which the Confederated Tribes of the Grand Ronde (CTGR) operate. Developed, administered, and analyzed results of a 14 page mail survey of over 1,300 Tribal members living in the immediate Grand Ronde area and throughout the nation, as well as non-Tribal members living in the local community. The survey questions were developed based on interviews with dozens of Tribal staff members. Also held a series of workshops with representatives from the Tribe to set-up and use a shared information network to house the most current community data and reports.

Analytic Techniques for Incorporating Economics into Coastal Climate Change Adaptation
The Nature Conservancy sought Dr. Greene to analyze existing economic tools to assist in adaptation planning for sea level rise. No single economic tool addresses all the economic impacts of sea level rise, and so it is necessary to understand the capabilities and limitations of available tools. Dr. Greene analyzed the economic metrics, technical expertise required, analytical flexibility, scale of analysis, software requirements, and budget considerations for multiple tools addressing flood damages, regional economic impacts, ecosystem services, and social and community impacts.

Floodplain Ecosystem Services Valuation for Carson River Valley – Municipal Water District
Estimated the value of floodplain ecosystem services provided by farmlands that flood in winter. Facing population and development pressures, the water management district was interested in exploring appropriate monetary values to pay farmers for ecosystem services provided by the undeveloped land. Based on actual flood flow data a model was designed to simulate the actual event and then the same event as it might have happened were the floodplain to have been developed. Results demonstrated changes in peak flow speed, volume, and warning time under the two scenarios.

Economic Analysis of Modified Risk Tobacco Products– Tobacco Industry
Created an estimate of the benefits in terms of health care cost savings that would be stimulated by the adoption of reduced harm tobacco products by smokers who would otherwise continue to smoke. The estimation process involves processing data from numerous public health sources to estimate health care cost savings by state for Medicaid recipients.

Water Supply for Future Demand - Municipality
Oversaw the analysis conducted to identify options to meet future demand for water in Polk County, Oregon. The effort included collection of water use data through interviews with water providers,

reservoir operators, and other stakeholder organizations within the relevant watersheds, and development of a comprehensive database of water use in the region. The information included, among others, source capacity, average daily demand, maximum daily demand, and deficit, where applicable.

Social and Economic Assessment Report, Grand Ronde, Oregon
Conducted a social and economic assessment of several communities within which the Confederated Tribes of the Grand Ronde (CTGR) operate. Developed, administered, and analyzed results of a 14 page mail survey of over 1,300 Tribal members living in the immediate Grand Ronde area and throughout the nation, as well as non-Tribal members living in the local community. The survey questions were developed based on interviews with dozens of Tribal staff members. Also held a series of workshops with representatives from the Tribe to set-up and use a shared information network to house the most current community data and reports.

Comprehensive Economic Development Strategy, White River, Arizona
Provided support to the White Mountain Apache Tribe, as the Tribe updates their Comprehensive Economic Development Strategy (CEDS). The CEDS is required by the US Economic Development Agency when pursuing grants for economic development. Supported the effort through data collection, economic development project evaluations, and overseeing the document preparations.

Impacts of Oil and Gas Development on Tropical Colonists and Indigenous Groups
Led a team providing litigation support to a confidential oil and gas company on potential damage to tropical rainforest land in Latin America. The project involved reviewing the history of Amazonian development in Ecuador, including the colonization effort and the interaction between the indigenous populations, the oil and gas exploration, the government of Ecuador, and the colonial farmers. Economic theory was evaluated and socioeconomic improvements were measured and analyzed using World Bank metrics and econometric tools.

MEMBERSHIPS

American Water Research Association (AWRA)

Population Association of America (PAA)

Western International Economic Association (WIEA)

American Agricultural Economic Association (AAEA)

JERI ANNETTE SAWYER

Manager 8

Jeri Sawyer is an economist with more than 25 years of experience in energy, water, health, and agricultural economic analysis, including crop, livestock, and ranching analysis, water rights analysis, regional economic and demographic forecasting, utility-level electric load forecasting, renewable energy analysis, and electric rate impact analysis. She is highly proficient in power product cost analysis, pricing and rate formulation. Jeri has proven experience in technical and economic analysis, supporting the Bureau of Indian Affairs and associated Native American Tribes for FERC hydroelectric project relicensing, including development of Section 4(e) conditions, Section 10(a) recommendations, Section 10(e) annual charges and alternative energy/power analyses. In addition, she has increasing experience with recreation demand analysis, recreational site assessments and inventories, economic impact analysis, and population forecasting, much of which has been in support of Native American Tribes. Jeri is highly skilled in health economic analysis, providing support to various clients using modeling and statistical analysis.

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United States of America

EDUCATION
1991-1993
MS, Economics
Portland State University, Portland, United States

1984-1988
BS, Agricultural Economics
Washington State University, Pullman, United States

PROJECTS
DEMAND FORECASTING

Water Demand / Population Forecasting for Little Colorado River Basin
Lead economist responsible for the estimation of baseline population, and collection and assessment of additional population data to update previously developed population projection models, using 2000 and 2010 Census data, to forecast future domestic, commercial, municipal, and industrial water requirements for the Hopi Indian Reservation and the Navajo Indian Reservation within the Little Colorado River Basin, Arizona and New Mexico. This information is being used in litigation and negotiation to compare model results to the results used in the settlement agreement related to water right claims on behalf of these tribes.

San Juan River Basin Economic / Socio Economic Analysis
Estimated baseline population and collected additional population data to develop a population projection model for the Navajo Indian Reservation within the San Juan River Basin, Arizona and New Mexico to be used to forecast future domestic, commercial, municipal, and industrial water requirements. This information was used to compare model results to the results used in the settlement agreement related to water right claims on behalf of this tribe.

3 Pueblos Population and Economic Analysis
Developed, prepared and documented population projections for three Pueblos in New Mexico to support the determination of future domestic, commercial, municipal, and industrial (DCMI) water requirements for each of the pueblos.

LARGE MODEL DEVELOPMENT

Economics of Tobacco Harm Reduction Strategies
Assisting in developing estimates of health care costs and cost savings related to tobacco harm reduction strategies. This is an ongoing project where she is working on the continued development and enhancement of a model to estimate changes in life tables related to tobacco harm reduction housed within an Access database with output presented in 2-page excel reports.

The Nature Conservancy, Benefits and Costs of Nature Based Adaptation to Climate Change Ventura, California
All economic costs and benefits of adaptation alternatives for Ventura County were developed including changes in the ecosystem service levels. Flood and hazard damages were evaluated for over 31,000 parcels in a GIS system, including damages to public infrastructure and agriculture. The team is working closely with stakeholders representing city governments, state agencies, emergency managers, and the US Navy.

ENERGY ECONOMIC ASSESSMENT

Enloe Dam FERC Hydroelectric Dam Relicensing and Energy Analysis
Provided economic and socioeconomic analysis for the Enloe Dam FERC licensing process for the Okanogan Public Utility District. She developed the power economics and socioeconomic sections of the License Application. Specifically, she collected, compiled and analyzed power cost and revenue data, and developed a socioeconomic impact analysis to Okanogan County with the operation of the project.

Economic and Energy Analysis for Proposed Wind Project
Harney County 230-kV Transmission Line and Wind Farm EIS. Jeri provided economic and energy analysis for a transmission line right-of-way (ROW) that will connect a wind power project in Harney County, Oregon to the existing power grid. The co-clients are green energy development firms, Harney Electric Cooperative & Columbia Energy Partners. The preferred ROW path crosses national wildlife refuge lands under the management of the Fish & Wildlife Service and Bureau of Land Management that are under general management plan direction.

FERC Hydroelectric Dam Relicensing - Pelton
Serving as overall project manager and provides technical analytical support to the Department of the Interior in economics, recreation and land use, and database and document management, to ensure protection of the trust resources of the Warm Springs Indian Reservation. She oversees and coordinates staff and subcontractors performing studies for a wide variety of disciplines, including fisheries, terrestrial, power engineering, water quality and hydrology, cultural resources, and GIS. She also developed a methodology and price calculations for the sale of allotted reservation land used in the production of power to the Licensees.

Bristol Bay Assessment
Provided a detailed review of the socioeconomic components of an EPA draft scientific study document of the Bristol Bay watershed and its natural resources addressing likely effects of the Pebble Mine in Alaska. Specific review components included Existing Conditions and Impact Assessment of Economics of Energy Resources.

Similkameen River Proposed Hydroelectric Project FERC Study
Provided economic and flooding analysis for the proposed Similkameen River hydroelectric project FERC study for the Okanogan Public Utility District. Developed the power economics and flooding impact analyses. Collecting, compiling, and analyzing county tax data, and developing an impact analysis to Okanogan County with the operation of the proposed project.

St. Lawrence River/FDR Power Project FERC Relicensing Study
Overseeing and coordinating the work of subcontractors from a wide variety of disciplines in the FERC relicensing studies for the St. Lawrence/FDR Project in New York, for which 10(a) recommendations were submitted. Overall project management and provided technical analytical support to the BIA in economics, recreation and land use, and database and document management. Coordinated subcontractors performing studies for fisheries, terrestrial, power engineering, water quality and hydrology, and cultural resources. Deliverables were produced for the Department of the Interior/BIA, with the focus on the protection of the trust resources of the St. Regis Mohawk Tribe Reservation.

Annual Charges Related to Wisconsin River Headwaters Hydroelectric Project FERC Application
Developed recommendations for section 10(e) annual charges to be paid to the Lac Vieux Desert Band of the Lake Superior Chippewa Tribe. Conducted a study on the Lac Vieux Desert Indian Reservation in northern Michigan to determine the amount and value of reservation land flooded by the hydroelectric project. Presented recommendations to the Bureau of Indian Affairs, Minneapolis Area Office in 1997.

Friant Power Authority Impacts
Provided technical support in the development of analysis of the impact to the Friant Power Authority from various alternative flow regimes of the San Joaquin river. The Friant Project consists of three generators, one on each of the Madera Canal, Friant-Kern Canal, and the San Joaquin river outlet of the Friant Dam. Analyzed the proposed reductions in flow through the two canals as it applies to the Friant Power Authority as a whole as well as to its member districts. Analysis included impacts to power generation at the three power facilities, financial impacts to the Friant Power Authority and its eight member water, irrigation, and municipal utility districts, and the final consumers within the region.

Licensing Conditions and Annual Charges Related to Cushman Hydroelectric Project FERC Application
Overseeing and coordinating the work of subcontractors from a wide variety of disciplines and providing economic analysis for the Cushman Hydroelectric Project FERC relicensing project, for the Bureau of Indian Affairs, Northwest Regional Office, ongoing since 1995. Coordinated the development of section 4(e) conditions and developed the recommended 10(e) annual charges for the relicensing of the Cushman Hydroelectric Project, which impacts the Skokomish Indian Reservation in western Washington. Coordinated the work of six subconsultant firms, including experts in fisheries, hydrology, power engineering, geology, sediment transport, wetlands, wildlife, and cultural resources, to address project impacts, including loss of fish habitat and fish passage, flooding, changes in groundwater, changes in wetland and wetland habitat, and impacts on cultural resources.

West Enfield Hydroelectric Project Operations Modification Assessment
Responsible for overseeing and coordinating the work of subcontractors from several disciplines. Evaluated the potential impacts of a proposal to raise the dam at the West Enfield Project (FERC Project No. 2600) in Maine, which could cause further flooding of lands of the Penobscot Indian Nation. Based on information provided by GIS analysts, which included the identification and quantification of additional lands and habitat that could potentially be flooded with raising the pool level by one foot or two feet, developed an annual charge for the flooded lands to be paid to the Penobscot Indian Nation and made recommendations to BIA based on this analysis.

OTHER RELATED ECONOMIC ANALYSIS

Review of Regulatory Impact Assessment of Proposed Air Rule

Part of a team conducting a review of a Regulatory Impact Assessment (RIA) prepared by the Bureau of Ocean Energy Management (BOEM) for a proposed rule regarding air quality near offshore oil and natural gas production in the Gulf of Mexico. Developed cost calculations for various elements of the Proposed Rule, and critiqued the RIA prepared by BOEM in regards to its estimation of cost and benefit impacts of the proposed Rule. Key Deliverables included Economic Assessment within Specific Sector, Geography, & State, Evaluation of Market Mechanisms, Cost Benefit Analysis, Survey Design, Review of Regulatory Impact Assessment

Economic Impact Analysis for Colorado Recycling

Providing economic impact analysis for the Recycling Industry in the State of Colorado. This is an ongoing project which includes gathering data, developing an on-line survey to gather additional non-publicly available data, and using IMPLAN software to analyze the direct, indirect, and induced economic impacts within each county and state-wide. She is responsible for compiling data, using IMPAN software and analyzing the results to develop economic impacts for each county and for the state as a whole.

Coexistence White Paper

Assisting in developing research and a resulting white paper regarding the coexistence of various corn types, including the use of, markets for, prices of, regulations of, and stewardship practices for various types of corn such as conventional, organic, and biotechnology (BT) corn.

Human Use Services Information System

Assisting in the development of a web-based information management system that compiles, evaluates, and facilitates access to publicly available data, reports, articles, and geospatial information related to baseline ecological and human use services provided within a large water body.

OTHER ACTIVITIES

Portland, Oregon – April 2014

Metro Compost Use: Economic Analysis of Supply, Demand, and Utilization
BioCycle West Conference

Denver, Colorado – October 2014

Economic Impacts of Recycling in Colorado
Colorado Association for Recycling Annual Meeting

Tacoma, Washington – May 2004

The Importance of Detailed Small Area Population Projections in Local Planning Efforts,
Pacific Northwest Regional Economic Conference

Boston, Massachusetts – April 2004

Estimating AIAN Migration on Indian Reservations in the Western United States,
Population Association of America Annual Meeting

Minneapolis, Minnesota – May 2003

Projecting Indian Populations for the Purpose of Determining Water Requirements: Methodological Issues
Population Association of America Annual Meeting

APPENDIX I
STANTEC TRAFFIC SIGNAL SYNCHRONIZATION ANALYSIS

To:	Eric Lu Ramboll Environ	From:	Daryl Zerfass Stantec
File:	2073010090	Date:	September 2016

Reference: Newhall Ranch Mission Village – GHG Reductions from Traffic Signal Coordination

The following analysis provides an estimate of greenhouse gas (GHG) reductions that would be achieved by improving traffic flow within the Mission Village Development (Project) site. The estimated GHG reductions are calculated using the California Air Pollution Control Officers Association's (CAPCOA) resource document titled, "Quantifying Greenhouse Gas Mitigation Measures" (August 2010). The CAPCOA document identifies specific mitigation measures proven to reduce transportation-related GHG emissions, with step-by-step guidelines (in a "Fact Sheet" format) to quantify the GHG reductions based on the specific features of the subject project.

In this instance, CAPCOA Fact Sheet RPT-2, Improve Traffic Flow, identifies a range of effectiveness, between 0 to 45 percent in estimated GHG reductions, when a project implements improvements to smooth traffic flow, reduce idling, eliminate bottlenecks and manage speed. Strategies include the synchronization of traffic signals to reduce delay.

In this case, signal synchronization is proposed on two road segments in the project area: Commerce Center Drive from SR-126 to Magic Mountain Parkway and Magic Mountain Parkway (within the Mission Village boundary).

To calculate the percentage of CO_2 reduction attributable to signal synchronization, the methodology outlined in the CAPCOA RPT-2 fact sheet is followed. First, the total segment vehicle miles of travel (VMT) for each of the subject segments is calculated by multiplying the forecast segment ADT volume by the length of the segment. Then the running emissions estimates for congested conditions and for free-flow conditions are estimated using the emission factors provided in the RPT-2 fact sheet (e.g., 323 grams of CO_2 /mile and 259 grams of CO_2 /mile for congested and free-flow conditions at 45mph, respectively), with the resulting net reduction in GHG emissions for the segment determined. The net emissions reduction for the segment, presented in the form of a percentage reduction of emissions, is then adjusted based on the proportion of segment VMT to total project VMT to thereby arrive at the percentage reduction in total project emissions attributable to the traffic signal synchronization for that specific segment. In this case, the process was repeated for each of the two road segments analyzed; separate tables illustrating the analysis for each of the two segments are attached.

As shown on the tables, synchronizing traffic signals within the Mission Village Project Site would result in the estimated GHG reductions identified in Table 1, below. As shown, a total reduction of overall project-generated GHG of 2.93 percent would be achieved.

Table 1 Traffic Signal Synchronization GHG Reductions

Description:	% CO_2 Reduction
Commerce Center Drive from SR-126 to Magic Mountain Parkway	1.38
Magic Mountain Parkway (within Mission Village boundary)	1.55
Total	**2.93%**
SR-126 = State Route 126	

STANTEC CONSULTING SERVICES INC.

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Principal, Transportation Planning & Traffic Engineering
Phone: (949) 923-6058
Daryl.Zerfass@stantec.com

Mission Village - CAPCOA RPT-2 Synchronized Traffic Lights Reduction of GHG

Assumptions:		Outputs:	Notes:
Traffic Signal Coordination Estimated mph average running speed (pre+post) Project VMT changes (pre+post)?	Commerce Center (from I-5 to Magic Mountain Pkwy) 45 No		
$VMT_{(Segment)}$ =	24,200 ADT X 1.5 miles	36,300 $VMT_{(Segment)}$	ADT from Mission Village DEIR Figure3-4 (ADT Segments/# Segments) Miles estimated on GIS from aerial map
Project $CO_{2(baseline)}$ =	$EF_{(baseline)}$ X $VMT_{(Project)}$ 323 $CO_{2/mi}$ X 36,300 $VMT_{(Project)}$	11.72 $MTCO_2$	EF from RPT-2 Fact Sheet for 45 mph speed
Project $CO_{2(post)}$ =	$EF_{(post)}$ 259 $CO_{2/mi}$ X 36,300 $VMT_{(Project)}$	9.40 $MTCO_2$	EF from RPT-2 Fact Sheet for 45 mph speed
Project $CO_{2(Total)}$ =	$EF_{(average)}$ x Total ADT x Average for internal & external VMT 291 $CO_{2/mi}$ X 50,394 $ADT_{(Project)}$ X 10.3112 $VMT_{(Project\ Average)}$	151.21 $MTCO_2$	Assumes 50% Congested and 50% free flow VMT is weighted average for internal & external VMT for Mission Village ADT from Mission Village VMT calculations
% CO_2 Reduction =	$\left(1 - \frac{\text{Project } CO_{2(post)}}{\text{Project } CO_{2(baseline)}}\right) \times \frac{VMT_{(Segment)}}{VMT_{(Project\ Total)}} \times 100$ $\left(1 - \frac{9.40\ MTCO_2}{11.72\ MTCO_2}\right) \times \frac{36{,}300\ VMT_{(Segment)}}{519{,}621\ VMT_{(Total)}} \times 100$	**1.38% CO_2 Reduction**	

Mission Village - CAPCOA RPT-2 Synchronized Traffic Lights Reduction of GHG

Assumptions:	**Outputs:**	**Notes:**
Traffic Signal Coordination: Magic Mountain (within Mission Village boundary) Estimated mph average running speed (pre+post): 45 Project VMT changes (pre+post)?: No		
$VMT_{(Segment)}$ = 31,200 ADT X 1.3 miles	40,560 $VMT_{(Segment)}$	ADT from Mission Village DEIR Figure3-4 (ADT Segments/# Segments) Miles estimated on GIS from aerial map
Project $CO_{2(baseline)}$ = $EF_{(baseline)}$ X $VMT_{(Project)}$ 323 $CO_{2/mi}$ X 40,560 $VMT_{(Project)}$	13.10 $MTCO_2$	EF from RPT-2 Fact Sheet for 45 mph speed
Project $CO_{2(post)}$ = $EF_{(post)}$ 259 $CO_{2/mi}$ X 40,560 $VMT_{(Project)}$	10.51 $MTCO_2$	EF from RPT-2 Fact Sheet for 45 mph speed
Project $CO_{2(Total)}$ = $EF_{(average)}$ x Total ADT x Average for internal & external VMT 291 $CO_{2/mi}$ X 50,394 $ADT_{(Project)}$ X 10.3112 $VMT_{(Project\ Average)}$	151.21 $MTCO_2$	Assumes 50% Congested and 50% free flow VMT is weighted average for internal & external VMT for Mission Village ADT from Mission Village VMT calculations
% CO_2 Reduction = $\left(1 - \frac{\text{Project } CO_{2(post)}}{\text{Project } CO_{2(baseline)}}\right) \times \frac{VMT_{(Segment)}}{VMT_{(Project\ Total)}} \times 100$ $\left(1 - \frac{10.51\ MTCO_2}{13.10\ MTCO_2}\right) \times \frac{40{,}560\ VMT_{(Segment)}}{519{,}621\ VMT_{(Total)}} \times 100$	**1.55% CO_2 Reduction**	

APPENDIX J
CONSOL ENERGY EFFICIENCY UPGRADES FOR EXISTING BUILDINGS

TECHNICAL MEMORANDUM

**ENERGY EFFICIENCY UPGRADES FOR EXISTING BUILDINGS:
A GHG EMISSIONS MITIGATION STRATEGY**

Objective:

Estimate the costs and greenhouse gas (GHG) emissions reduction benefits of example building retrofit concepts implemented in Los Angeles County for the Newhall Ranch Building Retrofit Program.

Assumptions:

CLIMATE ZONE

Los Angeles County is intersected by six of the California Energy Commission's (CEC) sixteen Climate Zones (CZs)—more than any other California county. Portions of LA County are in CZs 6, 8, 9, 10, 14, and 16. CZ 9 includes a larger portion of LA County (greater number of ZIP codes and inhabitants) than any other CZ.

In contrast to the very mild coastal climates, represented by CZs 6 and 8, CZ 9 includes some heating and cooling demand (although not as much as CZs 10, 14, or 16). This allows for consideration of energy efficiency retrofit measures that reduce heating and/or cooling energy use (building envelope, HVAC) as well as those that are largely independent of outdoor climate (water heating, lighting, plug loads). In general, programs implemented further inland will see greater savings from heating and cooling focused measures, while programs implemented closer to the coast will see lower levels of savings from heating and cooling measures, making water heating, lighting and plug load measures more attractive in a relative sense.

This analysis of existing building retrofit program opportunities and costs uses **energy modeling data representative of Climate Zone 9**.

BASELINE CONDITIONS

The "baseline" home used to estimate savings is assumed to have original **1975 vintage (pre-Title 24) materials and equipment**. It is assumed that the home has not benefited from any significant energy efficiency upgrades.

CONVERSION FACTORS

The conversion factor for natural gas is **11.708 therms/lb of CO_2**. The conversion factor for electricity reflects the estimated fuel mix of the Renewable Portfolio Standard mandated by SB

350[1], which is **0.377kWh/lb of CO_2**. Both values were multiplied by 2,204 to convert the values from lbs to metric tons of CO_2.

Methods:

REVIEW OF EXISTING ENERGY EFFICIENCY PROGRAM DATA

ConSol gathered cost and energy savings data for more than ten utility energy efficiency (EE) programs and two EE programs implemented by California Department of Community Services and Development (CSD). This cost and savings data was gathered from EE program evaluation and implementation reports, and then formatted and tabulated to show the relative cost of existing conventional EE program delivery models with respect to carbon dioxide (CO_2) savings.

PROGRAM DESIGN

ConSol collected cost and annual savings data for over 40 specific energy saving measures and packages of measures that could be installed in existing residential buildings. The kWh and therm savings data was converted to metric tons of CO_2 and tabulated to allow sorting by dollars-per-metric ton of CO_2 reduction. The cost/benefit ratio for each measure (or package of measures) was one of several considerations used to develop preliminary program concepts. Additionally, ConSol considered the ease of startup/implementation within a short timeframe (in the absence of existing program infrastructure), level of complexity and associated risk for different program delivery models, ability to control/reduce marketing costs, and likelihood of consumer uptake (measure attractiveness to the end user).

Although ConSol focused on residential energy saving measures for purposes of this technical memorandum, ConSol expects that similar energy savings could be achieved in non-residential buildings (at the same or lower cost) with appropriate energy saving measures.

ENERGY AND GHG SAVINGS ESTIMATES

The most recent version of the **2016 California Building Energy Code Compliance Residential (CBECC-Res) software** was used to estimate the savings from the installation of one or more efficiency measures. CBECC software is a public domain energy modeling program developed by the California Energy Commission (CEC).

Energy models of existing homes were first created in CBECC to establish baseline annual kWh and therm consumption from a typical existing home in CZ 9. The model was then re-run to include one or more upgraded energy efficiency measures. The reduction in annual kWh and therm usage was recorded and converted to metric tons of CO_2. In certain cases, annual kWh consumption *increased* due to the electrification of measures previously fueled by natural gas, such as water heating and

[1] SB 350 requires utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030.

space heating. However, this increase in annual kWh eliminated the natural gas energy previously employed for each particular end use, resulting in a net reduction in CO_2.

Additional cost data was gathered from the Database for Energy Efficiency Resources (DEER)[2], a widely accepted (albeit conservative) source for validated energy savings data, which is used to evaluate the efficacy of California utility programs.

Results:

EXISTING GOVERNMENT AND UTILITY ENERGY EFFICIENCY PROGRAMS

ConSol collected data on **whole-home retrofit programs**, such as Energy Upgrade California, as well as **single-measure direct install programs**, such as On Demand Efficiency (for multifamily buildings). The cost/benefit ratio for each program varied, but many of the existing whole-home programs were found to suffer from poor cost performance due to a variety of causes, including – but not limited to – high marketing, outreach and administrative costs.

Notably, natural gas savings offer significantly higher CO_2 savings that the equivalent electricity savings due to relatively clean mix of generation that supplies power to California electric utilities. However, at present utility program regulations restrict “fuel switching” or “electrification” of natural gas equipment, which limits the CO_2 reductions that can be achieved through utility programs.

ALTERNATIVE PROGRAM DESIGNS

Single-Measure Concepts

ConSol identified several measure concepts that focus on “transactional entry points”, at which the program administrator could intervene in a common equipment change-out to increase home efficiency. These entry points address categories of equipment with limited lifespans that must eventually be replaced, including central HVAC systems, water heaters, and roofing. Technologies that have recently matured (such as electric heat pump HVAC and water heaters), as well as new entries to the market (such as insulating roof tiles) offer substantial CO_2 savings—not only when compared to the existing equipment in many older homes—but also to the lower-cost entry-level replacement equipment that is most often installed absent a market intervention.

These measure concepts can work “upstream” to offer upgraded equipment at no added cost to the consumer. In this scenario, a homeowner that has already decided to replace their HVAC system, water heater, or roof with an entry-level product would instead receive a highly efficient model at no added cost. Intervening at this pre-existing entry point all but eliminates marketing expense. Alternately, a low-cost marketing effort focused on owners of older homes—when combined with

[2] http://www.deeresources.com/

aggressive incentives covering over 50% of the installed cost—could inspire homeowners to invest in efficient equipment before the end of the equipment's life requires replacement.

Single measure concepts can substantially reduce QA/QC costs. When compared to whole-home retrofits that can require energy modeling, and test-in/test-out verification, it is relatively simple to confirm the installation of a single measure. In many cases installation of the measure may already be verified by a building department or third party (HERS rater) as part of the building permit. Additionally, identifying the energy characteristics of the existing equipment is more straight forward than modeling whole-home characteristics, further reducing program administration and oversight cost, and providing further assurance that the projected savings will materialize.

ConSol evaluated the costs and savings achievable through roofing, HVAC, and water heater replacement programs for single-family homes. The latter two measure concepts can also be successfully implemented at many multifamily buildings.

Comprehensive "Whole-Home" Concepts

Although single measure concepts are generally less costly to administer and can deliver better bang-for-the-buck, deeper energy savings can be accomplished through installation of multiple measures at once. This comprehensive or "whole-home" approach can be costly to implement in the single-family market, but the centralized ownership of multifamily buildings means one or few individuals make investment decisions about many apartment units or many buildings, making marketing direct and far less costly.

Through this delivery model the individual measures identified for single-family home (e.g. HVAC, water heaters) could be packaged and installed in small-to-medium multifamily buildings (without central systems) or packaged with lighting and low-flow fixtures to provide still deeper energy savings, along with the ancillary benefit of reduced water use. At this time, no comprehensive programs have been presented in the program summary table.

ELECTRIFICATION

Electric heat pump technology is mature and represents a significant opportunity for CO_2 savings. Air-source electric heat pump inverters provide heat by extracting energy from outdoor air and pumping it into indoor air or water, or can provide cooling by running in reverse. One limitation that prevents more widespread adoption of the technology is that the heat pumps lose full function below 20 to 25 degrees F. Since temperatures this low are not encountered in CZ 9, these technologies are particularly promising for deployment in Los Angeles County.

Finally, due to the elimination of on-site natural gas use through electrification of water heating and/or space heating, the higher cost of the products is more than offset by substantial CO_2 savings.

Program Details, Costs, and Benefits:

The table that follows identifies various energy efficiency upgrade measure concepts, as well as the related costs associated with achieving 1,000 metric tons of CO_2 annual reductions.

For several of the program designs presented, efficiency and costs savings are attained by intervening in an existing transaction that commonly occurs in the residential housing market—the purchase of new equipment to replace failing or outdated equipment. In some cases, such as HVAC change-out, the new equipment will already be more efficient than the old model due to building codes and technological advances, but not as efficient as a higher cost replacement model.

Under the "incremental" approach to program savings claims, the difference in cost between an entry-level replacement product and a high-performance product is the basis of the "total measure cost per home". Since the program pays for the difference between the entry-level product (which is still more efficient than the original equipment), the program would only claim the energy savings above and beyond that provided by entry-level equipment—not above the existing equipment.

Under the "full" approach to program savings claims, the incentive amount would be at least 50% of equipment cost. In this instance, the consumer motivation to replace the existing unit could be attributed entirely to the program, and the full value of the energy savings (above existing conditions) would be claimed. Since costs are not directly proportional to equipment performance, the ratio of "incremental" cost to "incremental" savings is not equal to the ratio of "full" cost to "full" savings.

In the case of heat pump technologies that convert a conventional natural gas appliance to electricity, there is an increase in kWh usage, shown as a "negative savings" (in parentheses). In these cases, the increase in electricity usage is more than offset by a decrease in therms, resulting in a net reduction of CO_2.

Table 1. Example Building Retrofit Measures
Los Angeles County, California

Measure Concept[1]	Incremental or Full Savings Claimed[2]	Total Measure Cost/Home (Incentive Amount)[3]	Annual kWh Savings Attributed To Market Intervention[4,5]	Annual Therm Savings Attributed To Market Intervention[4,5]	Annual GHG Savings Attributed to Market Intervention (MT)[4]	Number of Residences Required to Meet 1,000 MT Reduction	Total Cost to Achieve 1,000 MT Annual Reduction[6]
HVAC Upstream Incentive (no-cost upgrade) - All Electric Heat Pump	Incremental	$3,900	(1,526)	249	1.063	940	**$3,667,287**
	Full	$7,020	1,077	282	1.680	595	**$4,178,384**
HVAC Upstream Incentive (no-cost upgrade) - Package Unit or Split Furnace Unit	Incremental	$1,950	283	39	0.258	3,883	**$7,571,083**
	Full	$5,850	2,887	72	0.874	1,144	**$6,691,755**
Rooftop PV 50% Buy Down (4kW System)	Incremental	$7,800	3,358	0	0.574	1,741	**$13,577,932**
	Full	$9,360	6,715	0	1.149	870	**$8,146,759**
Water Heater Replacement No-Cost Upgrade	Incremental	$1,733	(1,263)	177	0.725	1,380	**$2,392,045**
	Full	$2,080	(1,263)	205	0.874	1,145	**$2,381,180**
Roof Replacement No-Cost Upgrade	Full	$3,900	1,840	17	0.408	2,453	**$9,566,871**

Notes:

[1] These are example measure concepts. Energy savings were modeled using 2016 CBECC-Res software.

[2] Incremental savings claimed indicates the Project funds the incremental cost of an upgrade and claims the emissions savings for this incremental gain; for example, when a homeowner goes to replace an HVAC system with the minimum Title 24-compliant unit, instead a highly efficient unit is offered with the difference in cost covered by the Project. Full savings claimed indicates a funding structure where the Project funds a large portion (50-80%) of the total measure costs and claims the entire emissions savings from the measure; for example, replacing a 1975 baseline HVAC system with a highly efficient unit. The energy savings are not directly proportional to costs in these two funding mechanisms.

[3] Total measure cost includes 5% estimated for marketing, 10% for administration, and 15% for technical support QA/QC.

[4] Annual savings attributed to market intervention is the amount of kWh, therms, or GHG savings that are claimed due to the program incentive. Depending on whether the funding structure is the 'full savings claimed' or 'incremental savings claimed', this is either the full savings from a 1975 baseline unit to a highly efficient unit, or the incremental savings from a minimum Title 24-compliant unit to a highly efficient unit.

[5] A negative kWh or therm value indicates the replacement unit consumes more electricity or natural gas than the original unit; however, due to efficiencies and emission factor differences between electricity and gas, the overall GHG emissions are reduced due to the measure.

[6] Total cost is estimated.

Abbreviations

GHG - greenhouse gas
HVAC - heating ventilation air conditioning
kWh - kilowatt-hour
MT - metric ton
PV - photovoltaic
QA/QC - quality assurance/quality control

APPENDIX K
OFFSETS ANALYSIS

Overview of Offsets Calculation

The Project's offsets requirement is calculated based on the Project's emission inventory at build out, the Project's absorption schedule, CalEEMod® calculations, and EMFAC2014 mobile source emission factors. The analysis separates the residential and non-residential components of the Project's emission inventories in order to account for the absorption schedule for each land use. The methodology also identifies the anticipated GHG emission reductions, which are attributable to the Project's mitigation measures and applicable regulatory compliance measures, from the residential and non-residential land uses. Because this analysis does not account for anticipated improvements in the utility intensity factor and vehicle fuel efficiency that are likely to be implemented by the state to achieve the state's 2050 goal, the calculated results for the offsets requirement are considered conservative.

Table K-1 and **Table K-2** show the mitigated residential and non-residential emission inventories, respectively, prior to application of GCC-13.

Using the Project's build-out year (2028) emissions inventory as the starting point, **Table K-3a** shows the Project's mitigated residential emissions extrapolated to 2020, 2030, and 2050.[1]

The change in energy- and water-related emissions between 2020 and 2030 is based on CalEEMod® calculations that are used to derive a ratio of the emissions change between 2020 and 2028 *and* 2028 and 2030. The CalEEMod® inputs are identical to those used for the Project's unmitigated evaluation, except the utility intensity factor is changed to reflect the Renewable Portfolio Standard for each particular year. The Project's 2020 and 2030 energy- and water-related emissions are calculated by multiplying the Project build-out year emissions by the respective ratios (e.g., for purposes of energy use emissions in 2020: 335 MT CO_2e x 1.15 = 386 MT CO_2e).

The change in traffic-related emissions are estimated based on the emission factors provided by EMFAC2014 (e.g., for purposes of traffic emissions in 2020: 9,484 MT CO_2e x 1.24 = 11,722 MT CO_2e). EMFAC2014's post-2030 emissions reductions for mobile sources are attributable to improvements in the fleet wide emission factor from existing regulations. Therefore, the decrease in traffic-related emissions is based on a linear interpolation of the difference in the EMFAC2014 emission factors between 2030 and 2050. Due to the limitations of EMFAC2014, the post-2050 emissions are not assumed to decrease further after 2050.

Table K-3b shows the mitigated residential emission inventories by year, after incorporating the calculated changes to energy-, water- and traffic-related emissions. The percentage change by year is shown as derived from the 2020, 2030 and 2050 emissions inventories identified in **Table K-3a**. The emissions shown assume the Project is fully built out and exists in each calendar year as part of this calculation. As illustrated, the Project's emissions between 2020 and 2050 are anticipated to decrease proportionally, by year, due to regulatory changes. After 2030, the traffic-related emissions will continue to decrease; all other emission categories are conservatively assumed to be constant.

Table K-4a shows the mitigated non-residential emissions extrapolated to 2020, 2030, and 2050. This table utilizes the same methodological approach described for **Table K-3a**.

Table K-4b shows the mitigated non-residential emission inventories by year, after incorporating the calculated changes to energy-, water- and traffic-related emissions, and utilizes the same methodological approach described for **Table K-3b**.

Table K-5 shows the Project's residential emissions, by year, after first occupancy. The calculation estimates Project emissions based on a 30-year lifetime for the Project's individual development components. The emission estimates presented in **Table K-5** are based on **Table K-3b**, which accounts for the on-going emissions decrease due to regulations. The analysis uses the Project's

[1] These years are chosen based on the target years for the Renewable Portfolio Standard (i.e., 2020 and 2030) and the limitations of EMFAC2014 which provides emission factors up to 2050, combined with the timeframe of the anticipated occupancy of the Project.

absorption schedule to calculate how many residential units will be occupied in the first year and shows those emissions. In each successive year, additional residential units are assumed to be occupied; thus, the emissions inventory for that year increases. This calculation occurs up to the buildout year (2028), at which point the entire Project is occupied.

Table K-6 shows the non-residential emissions, by year, after first occupancy. This table utilizes the same methodological approach described for **Table K-5**.

Table K-7 sums the emissions, as calculated by year, in **Table K-5** and **Table K-6**, and calculates the offsets ratio for residential and commercial development. The ratios incorporate all Project emissions and are based on commercial rather than non-residential square footage to facilitate implementation of GCC-13.

Table K-1. 2028 Mitigated Residential Emissions Inventory
Mission Village
Los Angeles County, California

Category[1]	CO_2e Emissions[1,2,3] 2028 Mitigated Residential[3] MT/yr
Area[4]	56
Energy Use[5]	335
Water Use[6]	382
Waste Disposed[7]	2,076
Traffic[8]	9,484
Sub-Total	**12,333**
Construction Amortized[9]	0
Vegetation Amortized[9]	0
Sub-Total	**0**
Total	**12,333**

Notes:

[1] CO_2e emissions were primarily estimated using CalEEMod® version 2013.2.2.

[2] CO_2e includes CO_2, CH_4, and N_2O emissions, which are weighted by their respective AR4 global warming potentials. Source: IPCC Fourth Assessment Report: Climate Change 2007, Available online at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016.

[3] Includes reductions in emissions from Project mitigation measures as shown in Report Table ES-2.

[4] Total area emissions are shown in Report Table ES-2. Total area source emissions are split assuming 80% residential and 20% non-residential emissions for the purpose of this calculation.

[5] Total mitigated energy emissions are shown in Report Table ES-2. Residential energy emissions are calculated by summing the following:
1) The emissions associated with residential land uses in Table 3-14b, minus the emissions reductions from GCC-1 Residential Zero Net Energy (shown in Table ES-3).
2) The total mitigated emissions associated with the swimming pools in Table 3-14a.
3) 80% of the emissions reduction associated with GCC-11 Building Retrofit Program; the other 20% is assigned to non-residential emissions reductions for purpose of this calculation.

[6] Total mitigated water emissions are shown in Report Table ES-2. Residential water emissions are calculated by summing the emissions associated with residential land uses in Table 3-15c, minus the fraction of emissions reduction due to outdoor recycled water proportional to the residential water emissions out of the total water emissions from Table 3-15c.

[7] Total waste emissions are shown in Report Table ES-2. Residential waste emissions are the sum of waste emissions associated with residential land uses in Table 3-16.

[8] Total traffic emissions are shown in Report Table ES-2. Residential traffic emissions are calculated by summing the emissions associated with residential land uses as shown in Table 3-18a (including the NHTSA emissions reduction associated with residential), minus the emissions reductions due to the following:
1) The fraction of emissions reductions from GCC-6 TDM, GCC-7 Traffic Signal Synchronization, GCC-8 Electric School Bus Program, and GCC-9 electric Transit Bus Subsidy proportional to the residential mobile emissions out of the total mobile emissions in Table 3-18a.
2) The emissions reductions from GCC-4 Residential EV Chargers
3) The fraction of residential emissions reductions from GCC-12 Off-Site EV Chargers proportional to the number of residential off-site chargers to the total off-site chargers based on the ratio of 1 parking space with charging per 30 DU and 1 parking space with charging per 7 TSF commercial building area.
4) The fraction of wastewater processing trips were added to the residential mobile emissions by scaling the overall wastewater processing trip emissions by the residential indoor water split.

[9] One-time emissions from construction and vegetation removal were amortized over a 30-year period. The project mitigation plan (GCC-10) includes offsetting all the construction and vegetation related emissions. Source: SCAQMD. 2009. Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13. August. Available online at: http://sfprod.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf?sfvrsn=2. Accessed: September 2016.

Abbreviations:

AR4 - Fourth Assessment Report
CalEEMod® - CALifornia Emissions Estimator MODel
CARB - California Air Resources Board
CEQA - California Environmental Air Quality Act
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EV - Electric Vehicle
GHG - greenhouse gases
IPCC - Intergovernmental Panel on Climate Change
MT - metric tonnes
N_2O - nitrous oxide
SCAQMD - South Coast Air Quality Management District
yr - year

Table K-2. 2028 Mitigated Nonresidential Emissions Inventory
Mission Village
Los Angeles County, California

Category[1]	CO_2e Emissions[1,2,3] 2028 Mitigated Non-Residential[3] MT/yr
Area[4]	14
Energy Use[5]	105
Water Use[6]	508
Waste Disposed[7]	2,315
Traffic[8]	16,847
Sub-Total	**19,789**
Construction Amortized[9]	0
Vegetation Amortized[9]	0
Sub-Total	**0**
Total	**19,789**

Notes:

[1] CO_2e emissions were primarily estimated using CalEEMod® version 2013.2.2.

[2] CO_2e includes CO_2, CH_4, and N_2O emissions, which are weighted by their respective AR4 global warming potentials. Source: IPCC Fourth Assessment Report: Climate Change 2007, Available online at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed: September 2016.

[3] Includes reductions in emissions from Project mitigation measures as shown in Report Table ES-2.

[4] Total area emissions are shown in Report Table ES-2. Total area source emissions are split assuming 80% residential and 20% non-residential emissions for purpose of this calculation.

[5] Total mitigated energy emissions are shown in Report Table ES-2. Non-residential energy emissions are calculated by summing the following:
1) The emissions associated with non-residential land uses in Table 3-14b, minus the emissions reductions from GCC-2 Commercial Zero Net Energy (shown in Table ES-3).
2) 20% of the emissions reduction associated with GCC-11 Building Retrofit Program; the other 80% is assigned to residential emissions reductions for purpose of this calculation.

[6] Total mitigated water emissions are shown in Report Table ES-2. Non-residential water emissions are calculated by summing the emissions associated with non-residential land uses in Table 3-15c, minus the fraction of emissions reduction due to outdoor recycled water proportional to the non-residential water emissions out of the total water emissions from Table 3-15c.

[7] Total waste emissions are shown in Report Table ES-2. Non-residential waste emissions are the sum of waste emissions associated with non-residential land uses in Table 3-16.

[8] Total traffic emissions are shown in Report Table ES-2. Non-residential traffic emissions are calculated by summing the emissions associated with non-residential land uses as shown in Table 3-18a (including the NHTSA emissions reduction associated with non-residential), minus the emissions reductions due to the following:
1) The fraction of emissions reductions from GCC-6 TDM, GCC-7 Traffic Signal Synchronization, GCC-8 Electric School Bus Program, and GCC-9 electric Transit Bus Subsidy proportional to the non-residential mobile emissions out of the total mobile emissions in Table 3-18a.
2) The emissions reductions from GCC-5 Commercial Development Area EV Chargers.
3) The fraction of non-residential emissions reductions from GCC-12 Off-Site EV Chargers proportional to the number of non-residential off-site chargers to the total off-site chargers based on the ratio of 1 parking space with charging per 30 DU and 1 parking space with charging per 7 TSF commercial building area.
4) The fraction of wastewater processing trips were added to the non-residential mobile emissions by scaling the overall wastewater processing trip emissions by the non-residential indoor water split.

[9] One-time emissions from construction and vegetation removal were amortized over a 30-year period. The project mitigation plan (GCC-10) includes offsetting all the construction and vegetation related emissions. Source: SCAQMD. 2009. Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13. August. Available online at: http://sfprod.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf?sfvrsn=2. Accessed: September 2016.

Abbreviations:

AR4 - Fourth Assessment Report
CalEEMod® - CALifornia Emissions Estimator MODel
CARB - California Air Resources Board
CEQA - California Environmental Air Quality Act
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
EV - Electric Vehicle
GHG - greenhouse gases
IPCC - Intergovernmental Panel on Climate Change
MT - metric tonnes
N_2O - nitrous oxide
SCAQMD - South Coast Air Quality Management District
yr - year

Table K-3a. Residential Emissions Ratios
Mission Village
Los Angeles County, California

2028 to 2020[1]		
Area	Non-Changing	
Energy	1.15	Ratio
Water	1.15	Ratio
Waste	Non-Changing	
Mobile	1.24	Ratio

2028 to 2030[1]		
Area	Non-Changing	
Energy	0.94	Ratio
Water	0.94	Ratio
Waste	Non-Changing	
Mobile	0.96	Ratio

2030 to 2050[2]		
Area	Non-Changing	
Energy	Non-Changing	
Water	Non-Changing	
Waste	Non-Changing	
Mobile	0.94	Ratio

Interpolation Factors for 2028 to 2020, 2030, and 2050 Emissions Changes

Category[3]	2020 Mitigated (MT CO2e / yr)	2028 Mitigated[4] (MT CO2e / yr)	2030 Mitigated (MT CO2e / yr)	2050 Mitigated (MT CO2e / yr)	% Difference / yr[5] (2020-2028)	% Difference / yr[5] (2028-2030)	% Difference / yr[5] (2030-2050)
Area	56	**56**	56	56	0.00%	0.00%	0.00%
Energy Use	386	**335**	314	314	1.64%	3.14%	0.00%
Water Use	440	**382**	357	357	1.66%	3.19%	0.00%
Waste Disposed	2,076	**2,076**	2,076	2,076	0.00%	0.00%	0.00%
Traffic	11,722	**9,484**	9,149	8,568	2.39%	1.77%	0.32%
Sub-Total	**14,680**	**12,333**	**11,953**	**11,372**	2.00%	1.54%	0.24%

Notes:

[1] To calculated the changes in the emissions inventory due to the RPS standard, two CalEEMod® runs were completed. The exact same CalEEMod® run as was used to create the 2028 Project inventory, was used for the 2020 and 2030 analysis, except that the RPS value was replaced for 2020 RPS (33%) and 2030 RPS (50%). The difference in emissions between the 2028 CalEEMod® run and the 2020 and 2030 CalEEMod® runs was used to calculate the ratios shown. To calculate the changes in mobile emissions, ratios of the weighted average CO_2 running emissions from EMFAC2014 are used (e.g., EMFAC emission factors for 2020 = 423.99; 2028 = 343.5; 2030 = 330.93).

[2] After 2030, the emissions from area, energy, water, and waste are held constant because there are currently no regulations to substantiate further quantitative decreases; this is a conservative calculation, because California will likely adopt additional regulations to decrease emissions after 2030 (i.e. to meet 2050 GHG targets). Mobile emissions are assumed to decrease linearly by the percentage reduction in weighted average CO_2 running emissions calculated using EMFAC2014 between 2030 and 2050 (e.g., EMFAC emission factors for 2030 = 330.93 and 2050 = 309.92).

[3] CO_2e emissions were estimated using CalEEMod® version 2013.2.2.

[4] Includes reductions in emissions from mitigation measures as compared to the Unmitigated Project (Table ES-2.)

[5] The percent difference per year is used to interpolate between 2028 and the three other emission years, 2020, 2030, and 2050.

Abbreviations:

EMFAC - California Air Resources Board Emissions Factor Model
CalEEMod® - CALifornia Emissions Estimator MODel
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tonnes
RPS - Renewable Portfolio Standard
yr - year

Table K-3b. Residential Emissions by Year
Mission Village
Los Angeles County, California

Interpolation Factors for 2028 to 2020, 2030, and 2050 Emissions Changes							
Category[1]	2020 Mitigated (MT CO2e/yr)	2028 Mitigated[2] (MT CO2e/yr)	2030 Mitigated (MT CO2e/yr)	2050 Mitigated (MT CO2e/yr)	% Difference/yr[3] (2020-2028)	% Difference/yr[3] (2028-2030)	% Difference/yr[3] (2030-2050)
Area	56	**56**	56	56	0.00%	0.00%	0.00%
Energy Use	386	**335**	314	314	1.64%	3.14%	0.00%
Water Use	440	**382**	357	357	1.66%	3.19%	0.00%
Waste Disposed	2,076	**2,076**	2,076	2,076	0.00%	0.00%	0.00%
Traffic	11,722	**9,484**	9,149	8,568	2.39%	1.77%	0.32%
Sub-Total	**14,680**	**12,333**	**11,953**	**11,372**	2.00%	1.54%	0.24%

Category[1]	2020 (MT/yr)	2021 (MT/yr)	2022 (MT/yr)	2023 (MT/yr)	2024 (MT/yr)	2025 (MT/yr)	2026 (MT/yr)	2027 (MT/yr)
Area	**56**	56	56	56	56	56	56	56
Energy Use	**386**	379	373	367	361	354	348	342
Water Use	**440**	433	425	418	411	403	396	389
Waste Disposed	**2,076**	2,076	2,076	2,076	2,076	2,076	2,076	2,076
Traffic	**11,722**	11,442	11,162	10,883	10,603	10,323	10,044	9,764
Total[4,5]	**14,680**	14,386	14,093	13,800	13,506	13,213	12,920	12,626

Notes:

[1] CO_2e emissions were estimated using CalEEMod® version 2013.2.2.

[2] Includes reductions in emissions from mitigation measures as compared to the Unmitigated Project (Table ES-2.)

[3] The percent difference per year is used to interpolate between 2028 and the three other emission years, 2020, 2030, and 2050.

[4] After 2030, the emissions from area, energy, water, and waste are held constant because there are currently no regulations to substantiate further quantitative decreases; this is a conservative calculation, because California will likely adopt additional regulations to decrease emissions after 2030 (i.e. to meet 2050 GHG targets). Mobile emissions are assumed to decrease linearly by the percentage reduction in weighted average CO_2 running emissions calculated using EMFAC2014 between 2030 and 2050 (e.g., EMFAC emission factors for 2030 = 330.93 and 2050 = 309.92).

[5] The 2028 total values match exactly with the 2028 mitigated total.

Abbreviations:

EMFAC - California Air Resources Board Emissions Factor Model
CalEEMod® - CALifornia Emissions Estimator MODel
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tonnes
RPS - Renewable Portfolio Standard
yr - year

Table K-3b. Residential Emissions by Year
Mission Village
Los Angeles County, California

Category	2028	2029	2030	2031	2032	2033	2034	2035
	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)
Area	**56**	56	**56**	56	56	56	56	56
Energy Use	**335**	325	**314**	314	314	314	314	314
Water Use	**382**	369	**357**	357	357	357	357	357
Waste Disposed	**2,076**	2,076	**2,076**	2,076	2,076	2,076	2,076	2,076
Traffic	**9,484**	9,316	**9,149**	9,120	9,091	9,062	9,033	9,004
Total	**12,333**	12,143	**11,953**	11,924	11,895	11,866	11,837	11,807

Table K-3b. Residential Emissions by Year
Mission Village
Los Angeles County, California

Category	2036 (MT/yr)	2037 (MT/yr)	2038 (MT/yr)	2039 (MT/yr)	2040 (MT/yr)	2041 (MT/yr)	2042 (MT/yr)	2043 (MT/yr)
Area	56	56	56	56	56	56	56	56
Energy Use	314	314	314	314	314	314	314	314
Water Use	357	357	357	357	357	357	357	357
Waste Disposed	2,076	2,076	2,076	2,076	2,076	2,076	2,076	2,076
Traffic	8,975	8,946	8,917	8,888	8,859	8,830	8,801	8,771
Total	11,778	11,749	11,720	11,691	11,662	11,633	11,604	11,575

Table K-3b. Residential Emissions by Year
Mission Village
Los Angeles County, California

Category	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)
Area	56	56	56	56	56	56	**56**	**56**	**56**	**56**	**56**
Energy Use	314	314	314	314	314	314	**314**	**314**	**314**	**314**	**314**
Water Use	357	357	357	357	357	357	**357**	**357**	**357**	**357**	**357**
Waste Disposed	2,076	2,076	2,076	2,076	2,076	2,076	**2,076**	**2,076**	**2,076**	**2,076**	**2,076**
Traffic	8,742	8,713	8,684	8,655	8,626	8,597	**8,568**	**8,568**	**8,568**	**8,568**	**8,568**
Total	11,546	11,517	11,488	11,459	11,430	11,401	**11,372**	**11,372**	**11,372**	**11,372**	**11,372**

Table K-3b. Residential Emissions by Year
Mission Village
Los Angeles County, California

Category	2055	2056	2057	2058
	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)
Area	56	56	56	56
Energy Use	314	314	314	314
Water Use	357	357	357	357
Waste Disposed	2,076	2,076	2,076	2,076
Traffic	8,568	8,568	8,568	8,568
Total	11,372	11,372	11,372	11,372

Table K-4a. Non-Residential Emissions Ratios
Mission Village
Los Angeles County, California

2028 to 2020[1]		
Area	Non-Changing	
Energy	1.15	Ratio
Water	1.15	Ratio
Waste	Non-Changing	
Mobile	1.24	Ratio

2028 to 2030[1]		
Area	Non-Changing	
Energy	0.94	Ratio
Water	0.94	Ratio
Waste	Non-Changing	
Mobile	0.96	Ratio

2030 to 2050[2]		
Area	Non-Changing	
Energy	Non-Changing	
Water	Non-Changing	
Waste	Non-Changing	
Mobile	0.94	Ratio

Interpolation Factors for 2028 to 2020, 2030, and 2050 Emissions Changes							
Category[3]	2020 Mitigated (MT CO2e / yr)	2028 Mitigated[4] (MT CO2e / yr)	2030 Mitigated (MT CO2e / yr)	2050 Mitigated (MT CO2e / yr)	% Difference / yr[5] (2020-2028)	% Difference / yr[5] (2028-2030)	% Difference / yr[5] (2030-2050)
Area	14	**14**	14	14	0.00%	0.00%	0.00%
Energy Use	121	**105**	99	99	1.64%	3.14%	0.00%
Water Use	585	**508**	475	475	1.66%	3.19%	0.00%
Waste Disposed	2,315	**2,315**	2,315	2,315	0.00%	0.00%	0.00%
Traffic	20,822	**16,847**	16,252	15,220	2.39%	1.77%	0.32%
Sub-Total	**23,858**	**19,789**	**19,155**	**18,123**	2.13%	1.60%	0.27%

Notes:

[1] To calculated the changes in the emissions inventory due to the RPS standard, two CalEEMod® runs were completed. The exact same CalEEMod® run as was used to create the 2028 Project inventory, was used for the 2020 and 2030 analysis, except that the RPS value was replaced for 2020 RPS (33%) and 2030 RPS (50%). The difference in emissions between the 2028 CalEEMod® run and the 2020 and 2030 CalEEMod® runs was used to calculate the ratios shown. To calculate the changes in mobile emissions, ratios of the weighted average CO_2 running emissions from EMFAC2014 are used (e.g., EMFAC emission factors for 2020 = 423.99; 2028 = 343.5; 2030 = 330.93).

[2] After 2030, the emissions from area, energy, water, and waste are held constant because there are currently no regulations to substantiate further quantitative decreases; this is a conservative calculation, because California will likely adopt additional regulations to decrease emissions after 2030 (i.e. to meet 2050 GHG targets). Mobile emissions are assumed to decrease linearly by the percentage reduction in weighted average CO_2 running emissions calculated using EMFAC2014 between 2030 and 2050 (e.g., EMFAC emission factors for 2030 = 330.93 and 2050 = 309.92).

[3] CO_2e emissions were estimated using CalEEMod® version 2013.2.2.

[4] Includes reductions in emissions from mitigation measures as compared to the Unmitigated Project (Table ES-2.)

[5] The percent difference per year is used to interpolate between 2028 and the three other emission years, 2020, 2030, and 2050.

Abbreviations:

EMFAC - California Air Resources Board Emissions Factor Model
CalEEMod® - CALifornia Emissions Estimator MODel
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tonnes
RPS - Renewable Portfolio Standard
yr - year

Table K-4b. Non-Residential Emissions by Year
Mission Village
Los Angeles County, California

Category[1]	2020 Mitigated (MT CO2e/yr)	2028 Mitigated[2] (MT CO2e/yr)	2030 Mitigated (MT CO2e/yr)	2050 Mitigated (MT CO2e/yr)	% Difference/yr[3] (2020-2028)	% Difference/yr[3] (2028-2030)	% Difference/yr[3] (2030-2050)
	Interpolation Factors for 2028 to 2020, 2030, and 2050 Emissions Changes						
Area	14	**14**	14	14	0.00%	0.00%	0.00%
Energy Use	121	**105**	99	99	1.64%	3.14%	0.00%
Water Use	585	**508**	475	475	1.66%	3.19%	0.00%
Waste Disposed	2,315	**2,315**	2,315	2,315	0.00%	0.00%	0.00%
Traffic	20,822	**16,847**	16,252	15,220	2.39%	1.77%	0.32%
Sub-Total	**23,858**	**19,789**	**19,155**	**18,123**	2.13%	1.60%	0.27%

Category[1]	2020 (MT/yr)	2021 (MT/yr)	2022 (MT/yr)	2023 (MT/yr)	2024 (MT/yr)	2025 (MT/yr)	2026 (MT/yr)	2027 (MT/yr)
Area	**14**	14	14	14	14	14	14	14
Energy Use	**121**	119	117	115	113	111	109	107
Water Use	**585**	576	566	556	547	537	527	518
Waste Disposed	**2,315**	2,315	2,315	2,315	2,315	2,315	2,315	2,315
Traffic	**20,822**	20,325	19,828	19,331	18,834	18,337	17,841	17,344
Total[4,5]	**23,858**	23,349	22,841	22,332	21,823	21,315	20,806	20,298

Notes:

[1] CO_2e emissions were estimated using CalEEMod® version 2013.2.2.

[2] Includes reductions in emissions from mitigation measures as compared to the Unmitigated Project (Table ES-2.)

[3] The percent difference per year is used to interpolate between 2028 and the three other emission years, 2020, 2030, and 2050.

[4] After 2030, the emissions from area, energy, water, and waste are held constant because there are currently no regulations to substantiate further quantitative decreases; this is a conservative calculation, because California will likely adopt additional regulations to decrease emissions after 2030 (i.e. to meet 2050 GHG targets). Mobile emissions are assumed to decrease linearly by the percentage reduction in weighted average CO_2 running emissions calculated using EMFAC2014 between 2030 and 2050 (e.g., EMFAC emission factors for 2030 = 330.93 and 2050 = 309.92).

[5] The 2028 total values match exactly with the 2028 mitigated total.

Abbreviations:

EMFAC - California Air Resources Board Emissions Factor Model
CalEEMod® - CALifornia Emissions Estimator MODel
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tonnes
RPS - Renewable Portfolio Standard
yr - year

Table K-4b. Non-Residential Emissions by Year
Mission Village
Los Angeles County, California

Category	2028	2029	2030	2031	2032	2033	2034	2035
	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)
Area	**14**	14	**14**	14	14	14	14	14
Energy Use	**105**	102	**99**	99	99	99	99	99
Water Use	**508**	492	**475**	475	475	475	475	475
Waste Disposed	**2,315**	2,315	**2,315**	2,315	2,315	2,315	2,315	2,315
Traffic	**16,847**	16,549	**16,252**	16,200	16,148	16,097	16,045	15,994
Total	**19,789**	19,472	**19,155**	19,103	19,052	19,000	18,949	18,897

Table K-4b. Non-Residential Emissions by Year
Mission Village
Los Angeles County, California

Category	2036 (MT/yr)	2037 (MT/yr)	2038 (MT/yr)	2039 (MT/yr)	2040 (MT/yr)	2041 (MT/yr)	2042 (MT/yr)	2043 (MT/yr)
Area	14	14	14	14	14	14	14	14
Energy Use	99	99	99	99	99	99	99	99
Water Use	475	475	475	475	475	475	475	475
Waste Disposed	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315
Traffic	15,942	15,891	15,839	15,787	15,736	15,684	15,633	15,581
Total	18,845	18,794	18,742	18,691	18,639	18,588	18,536	18,484

Table K-4b. Non-Residential Emissions by Year
Mission Village
Los Angeles County, California

Category	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)
Area	14	14	14	14	14	14	14	14	14	14
Energy Use	99	99	99	99	99	99	99	99	99	99
Water Use	475	475	475	475	475	475	475	475	475	475
Waste Disposed	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315
Traffic	15,530	15,478	15,426	15,375	15,323	15,272	15,220	15,220	15,220	15,220
Total	18,433	18,381	18,330	18,278	18,227	18,175	18,123	18,123	18,123	18,123

Table K-4b. Non-Residential Emissions by Year
Mission Village
Los Angeles County, California

Category	2054	2055	2056	2057
	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)
Area	14	14	14	14
Energy Use	99	99	99	99
Water Use	475	475	475	475
Waste Disposed	2,315	2,315	2,315	2,315
Traffic	15,220	15,220	15,220	15,220
Total	18,123	18,123	18,123	18,123

Table K-5. Residential Emissions by Year After First Occupancy
Mission Village
Los Angeles County, California

	1	2	3	4	5	6	7	8	9	10
Category	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**
Area	0	2	15	32	45	53	55	56	56	56
Energy Use[1]	0	12	99	207	287	335	339	339	335	325
Water Use	0	13	113	236	327	382	386	386	382	369
Waste Disposed	0	63	550	1,171	1,654	1,965	2,025	2,062	2,076	2,076
Traffic[2]	0	350	2,956	6,140	8,446	9,768	9,796	9,696	9,484	9,316
Total[3]	**0**	**440**	**3,733**	**7,786**	**10,759**	**12,503**	**12,601**	**12,539**	**12,333**	**12,143**
Fraction of Residential Units Included	0.00	0.03	0.26	0.56	0.80	0.95	0.98	0.99	1.00	1.00

Sum of Total (Residential Project Lifetime)[3] = 357,369 MTCO2e

Notes:
[1] The Project is built out starting in 2021 and then completed by 2028. The project lifetime is assumed to be 30 years, consistent with the SCAQMD GHG Working Group.
[2] Emissions have been scaled linearly between 2028 and the years 2020, 2030, and 2050. Only the Traffic emissions reduce between 2030 and 2050. No emissions reductions were included after the year 2050, as a conservative estimate due to available EMFAC 2014 data.
[3] The 2028 total values match exactly with the 2028 mitigated total. Beginning in 2051 the emissions begin to decline based on the project lifetime assumption of 30 years.

Abbreviations:
MT - metric tonnes
MTCO2e - metric tonnes of carbon dioxide equivalents
TSF - thousand square feet
yr - year

Table K-5. Residential Emissions by Year After First Occupancy
Mission Village
Los Angeles County, California

Year	11	12	13	14	15	16	17	18	19	20
Category	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**
Area	56	56	56	56	56	56	56	56	56	56
Energy Use	314	314	314	314	314	314	314	314	314	314
Water Use	357	357	357	357	357	357	357	357	357	357
Waste Disposed	2,076	2,076	2,076	2,076	2,076	2,076	2,076	2,076	2,076	2,076
Traffic	9,149	9,120	9,091	9,062	9,033	9,004	8,975	8,946	8,917	8,888
Total	**11,953**	**11,924**	**11,895**	**11,866**	**11,837**	**11,807**	**11,778**	**11,749**	**11,720**	**11,691**
Fraction of Residential Units Included	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table K-5. Residential Emissions by Year After First Occupancy
Mission Village
Los Angeles County, California

Year	21	22	23	24	25	26	27	28	29	30
Category	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**
Area	56	56	56	56	56	56	56	56	56	56
Energy Use	314	314	314	314	314	314	314	314	314	314
Water Use	357	357	357	357	357	357	357	357	357	357
Waste Disposed	2,076	2,076	2,076	2,076	2,076	2,076	2,076	2,076	2,076	2,076
Traffic	8,859	8,830	8,801	8,771	8,742	8,713	8,684	8,655	8,626	8,597
Total	**11,662**	**11,633**	**11,604**	**11,575**	**11,546**	**11,517**	**11,488**	**11,459**	**11,430**	**11,401**
Fraction of Residential Units Included	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table K-5. Residential Emissions by Year After First Occupancy
Mission Village
Los Angeles County, California

Year	31	32	33	34	35	36	37	38
Category	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**
Area	56	54	41	24	11	3	1	0
Energy Use	314	305	231	137	64	17	8	2
Water Use	357	346	263	156	73	19	9	2
Waste Disposed	2,076	2,013	1,526	905	422	112	51	14
Traffic	8,568	8,306	6,299	3,734	1,743	461	211	59
Total	**11,372**	**11,024**	**8,360**	**4,955**	**2,314**	**611**	**280**	**79**
Fraction of Residential Units Included	1.00	0.97	0.74	0.44	0.20	0.05	0.02	0.01

Table K-6. Non-Residential Emissions by Year After First Occupancy
Mission Village
Los Angeles County, California

	1	2	3	4	5	6	7	8	9	10
Category	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**
Area	0	1	4	8	11	13	14	13	14	14
Energy Use[1]	0	5	30	63	93	105	106	107	105	102
Water Use	0	25	145	303	448	507	510	518	508	492
Waste Disposed	0	100	593	1,259	1,898	2,187	2,238	2,315	2,315	2,315
Traffic[2]	0	880	5,080	10,511	15,441	17,325	17,249	17,344	16,847	16,549
Total[3]	**0**	**1,011**	**5,851**	**12,143**	**17,891**	**20,138**	**20,117**	**20,297**	**19,789**	**19,472**
Fraction of Non-Residential Units Included	0.00	0.04	0.26	0.54	0.82	0.94	0.97	1.00	1.00	1.00

Sum of Total (Non-Residential Project Lifetime)[3] = 572,086 MTCO2e

Notes:

[1] Year 1 is 2020 for both the residential and non-residential analyses. The Project is built out starting in 2021 and then completed by 2028. However, the first non-residential occupancy is in 2021, and full non-residential occupancy is completed in 2027. The project lifetime is assumed to be 30 years, consistent with the SCAQMD GHG Working Group.

[2] Emissions have been scaled linearly between 2028 and the years 2020, 2030, and 2050. Only the Traffic emissions reduce between 2030 and 2050. No emissions reductions were included after the year 2050, as a conservative estimate due to available EMFAC 2014 data.

[3] The 2028 total values match exactly with the 2028 mitigated total. Beginning in 2051 the emissions begin to decline based on the project lifetime assumption of 30 years.

Abbreviations:

MT - metric tonnes

MTCO2e - metric tonnes of carbon dioxide equivalents

TSF - thousand square feet

yr - year

Table K-6. Non-Residential Emissions by Year After First Occupancy
Mission Village
Los Angeles County, California

Year	11	12	13	14	15	16	17	18	19	20
Category	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**
Area	14	14	14	14	14	14	14	14	14	14
Energy Use	99	99	99	99	99	99	99	99	99	99
Water Use	475	475	475	475	475	475	475	475	475	475
Waste Disposed	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315
Traffic	16,252	16,200	16,148	16,097	16,045	15,994	15,942	15,891	15,839	15,787
Total	**19,155**	**19,103**	**19,052**	**19,000**	**18,949**	**18,897**	**18,845**	**18,794**	**18,742**	**18,691**
Fraction of Non-Residential Units Included	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table K-6. Non-Residential Emissions by Year After First Occupancy
Mission Village
Los Angeles County, California

Year	21	22	23	24	25	26	27	28	29	30
Category	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)	(MT/yr)
Area	14	14	14	14	14	14	14	14	14	14
Energy Use	99	99	99	99	99	99	99	99	99	99
Water Use	475	475	475	475	475	475	475	475	475	475
Waste Disposed	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315
Traffic	15,736	15,684	15,633	15,581	15,530	15,478	15,426	15,375	15,323	15,272
Total	**18,639**	**18,588**	**18,536**	**18,484**	**18,433**	**18,381**	**18,330**	**18,278**	**18,227**	**18,175**
Fraction of Non-Residential Units Included	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table K-6. Non-Residential Emissions by Year After First Occupancy
Mission Village
Los Angeles County, California

Year	31	32	33	34	35	36	37
Category	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**	**(MT/yr)**
Area	14	13	10	6	3	1	0
Energy Use	99	95	73	45	18	5	3
Water Use	475	455	354	217	86	26	16
Waste Disposed	2,315	2,215	1,722	1,056	417	128	77
Traffic	15,220	14,561	11,321	6,944	2,742	841	504
Total	**18,123**	**17,339**	**13,480**	**8,269**	**3,266**	**1,001**	**601**
Fraction of Non-Residential Units Included	1.00	0.96	0.74	0.46	0.18	0.06	0.03

Table K-7. Summation of Offset Requirements and Ratios
Mission Village
Los Angeles County, California

Mission Village Statistics	
Number of Dwelling Units (DU)[1]	4,055
Commercial Development Area (TSF)[1]	1,555
Offsets Requirements	
Offset Commitment for Operational Emissions (MT CO_2e)[2]	929,455
Commitment Associated with Residential	357,369
Commitment Associated with Commercial	572,086
Offsets Ratios[3]	
Residential Offsets (MT CO_2e/DU)	88.13
Commercial Offsets (MT CO_2e/TSF)	367.90

Notes:

[1] The square footage total presented for commercial development does not include the Project's 15.5 acres of public facilities. However, the offset ratios calculated for the residential and commercial development are based on the Project-wide emissions total that remains after implementation of GCC-1 through GCC-12 and, therefore, fully capture the emissions associated with the operation of the public facilities.

[2] Total offsets requirement shown here excludes the Project's construction and vegetation emissions, which will be reduced to zero through implementation of GCC-10.

[3] Ratios are calculated by splitting the total offset commitment between residential and commercial land uses, then dividing by the number of dwelling units or commercial development area.

Abbreviations:

CO_2e - carbon dioxide equivalents

DU - dwelling unit

MT - metric tonnes

TSF - thousand square feet

MV Unmitigated Project - 2020 RPS for Offsets Calc

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	1,331.00	1000sqft	40.50	1,331,000.00	0
Elementary School	900.00	Student	9.50	100,000.00	0
Library	36.00	1000sqft	3.30	36,000.00	0
General Light Industry	17.10	1000sqft	1.50	17,100.00	0
Parking Lot	3,148.00	Space	28.33	1,259,200.00	0
Unenclosed Parking with Elevator	1,258.00	Space	11.32	503,200.00	0
City Park	287.80	Acre	287.80	12,536,568.00	0
Health Club	52.00	1000sqft	41.50	52,000.00	0
Apartments Low Rise	836.00	Dwelling Unit	22.10	836,000.00	2633
Condo/Townhouse	2,058.00	Dwelling Unit	132.30	2,058,000.00	6483
Congregate Care (Assisted Living)	351.00	Dwelling Unit	13.60	351,000.00	632
Retirement Community	459.00	Dwelling Unit	79.20	459,000.00	826
Single Family Housing	351.00	Dwelling Unit	88.90	631,800.00	1106
Regional Shopping Center	224.10	1000sqft	26.50	224,100.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	501.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Includes 33% RPS.

Land Use - Land use based on project information. Residential population from project specific estimation.

Construction Phase - Construction emissions calculated separately.

Off-road Equipment -

Vehicle Trips - Trip rates and lengths are based on trip generation summary. Trips are assumed to be 100% primary trips.

Vechicle Emission Factors - EMFAC2014. Includes reduction from Pavley/ACC. Excludes LCFS.

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Assumed that any decorative fireplaces are captured in the ConSol residential building energy analysis.

Energy Use - Updated to Title 24 - 2016 based on ConSol building analysis.

Water And Wastewater - Water use updated according to water study.

Solid Waste - Solid waste generation updated according to data for Santa Clarita, CA.

Land Use Change - Vegetation based on project information.

Sequestration - Number of trees based on project information.

Waste Mitigation - 75% diverted.

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	810.36	308.00
tblEnergyUse	LightingElect	1,001.10	308.00
tblEnergyUse	LightingElect	741.44	308.00
tblEnergyUse	LightingElect	2.98	0.00
tblEnergyUse	LightingElect	3.55	0.00
tblEnergyUse	LightingElect	4.29	0.00
tblEnergyUse	LightingElect	3.55	0.00

tblEnergyUse	LightingElect	3.55	0.00
tblEnergyUse	LightingElect	0.88	0.44
tblEnergyUse	LightingElect	7.04	0.00
tblEnergyUse	LightingElect	1,001.10	308.00
tblEnergyUse	LightingElect	1,608.84	767.00
tblEnergyUse	LightingElect	2.63	1.31
tblEnergyUse	NT24E	2,630.88	2,855.00
tblEnergyUse	NT24E	3,126.97	2,855.00
tblEnergyUse	NT24E	2,553.86	2,855.00
tblEnergyUse	NT24E	1.59	0.00
tblEnergyUse	NT24E	5.75	0.00
tblEnergyUse	NT24E	4.62	0.00
tblEnergyUse	NT24E	5.75	0.00
tblEnergyUse	NT24E	5.75	0.00
tblEnergyUse	NT24E	3.23	0.00
tblEnergyUse	NT24E	3,126.97	2,855.00
tblEnergyUse	NT24E	5,089.81	4,244.00
tblEnergyUse	NT24NG	2,616.15	1,200.00
tblEnergyUse	NT24NG	2,951.00	1,200.00
tblEnergyUse	NT24NG	1,718.92	1,200.00
tblEnergyUse	NT24NG	1.08	0.00
tblEnergyUse	NT24NG	4.45	0.00
tblEnergyUse	NT24NG	0.39	0.00
tblEnergyUse	NT24NG	4.45	0.00
tblEnergyUse	NT24NG	4.45	0.00
tblEnergyUse	NT24NG	0.49	0.00
tblEnergyUse	NT24NG	2,951.00	1,200.00
tblEnergyUse	NT24NG	5,856.92	1,500.00

tblEnergyUse	T24E	229.94	499.00
tblEnergyUse	T24E	269.81	499.00
tblEnergyUse	T24E	246.66	499.00
tblEnergyUse	T24E	2.13	6.18
tblEnergyUse	T24E	2.75	9.46
tblEnergyUse	T24E	5.62	13.41
tblEnergyUse	T24E	2.75	9.46
tblEnergyUse	T24E	2.75	9.46
tblEnergyUse	T24E	4.90	11.89
tblEnergyUse	T24E	269.81	499.00
tblEnergyUse	T24E	596.10	879.00
tblEnergyUse	T24NG	11,615.22	8,700.00
tblEnergyUse	T24NG	11,455.03	8,700.00
tblEnergyUse	T24NG	8,201.59	8,700.00
tblEnergyUse	T24NG	9.81	9.39
tblEnergyUse	T24NG	14.36	19.27
tblEnergyUse	T24NG	10.54	9.43
tblEnergyUse	T24NG	14.36	19.27
tblEnergyUse	T24NG	14.36	19.27
tblEnergyUse	T24NG	1.21	1.32
tblEnergyUse	T24NG	11,455.03	8,700.00
tblEnergyUse	T24NG	23,944.02	20,500.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	710.60	0.00

tblFireplaces	NumberGas	1,749.30	0.00
tblFireplaces	NumberGas	298.35	0.00
tblFireplaces	NumberGas	390.15	0.00
tblFireplaces	NumberGas	298.35	0.00
tblFireplaces	NumberNoFireplace	83.60	836.00
tblFireplaces	NumberNoFireplace	205.80	2,058.00
tblFireplaces	NumberNoFireplace	35.10	351.00
tblFireplaces	NumberNoFireplace	45.90	459.00
tblFireplaces	NumberNoFireplace	35.10	351.00
tblFireplaces	NumberWood	41.80	0.00
tblFireplaces	NumberWood	102.90	0.00
tblFireplaces	NumberWood	17.55	0.00
tblFireplaces	NumberWood	22.95	0.00
tblFireplaces	NumberWood	17.55	0.00
tblLandUse	LandUseSquareFeet	75,243.03	100,000.00
tblLandUse	LotAcreage	30.56	40.50
tblLandUse	LotAcreage	1.73	9.50
tblLandUse	LotAcreage	0.83	3.30
tblLandUse	LotAcreage	0.39	1.50
tblLandUse	LotAcreage	1.19	41.50
tblLandUse	LotAcreage	52.25	22.10
tblLandUse	LotAcreage	128.63	132.30
tblLandUse	LotAcreage	21.94	13.60
tblLandUse	LotAcreage	91.80	79.20
tblLandUse	LotAcreage	113.96	88.90
tblLandUse	LotAcreage	5.14	26.50
tblLandUse	Population	2,391.00	2,633.00
tblLandUse	Population	5,886.00	6,483.00

tblLandUse	Population	1,004.00	632.00
tblLandUse	Population	1,313.00	826.00
tblLandUse	Population	1,004.00	1,106.00
tblProjectCharacteristics	CO2IntensityFactor	630.89	501.88
tblProjectCharacteristics	OperationalYear	2014	2025
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSequestration	NumberOfNewTrees	0.00	4,985.00
tblSolidWaste	SolidWasteGenerationRate	384.56	3,652.53
tblSolidWaste	SolidWasteGenerationRate	24.75	0.00
tblSolidWaste	SolidWasteGenerationRate	946.68	8,991.50
tblSolidWaste	SolidWasteGenerationRate	320.29	1,190.01
tblSolidWaste	SolidWasteGenerationRate	164.25	140.40
tblSolidWaste	SolidWasteGenerationRate	21.20	70.96
tblSolidWaste	SolidWasteGenerationRate	1,237.83	14,949.79
tblSolidWaste	SolidWasteGenerationRate	296.40	592.80
tblSolidWaste	SolidWasteGenerationRate	33.15	141.91
tblSolidWaste	SolidWasteGenerationRate	235.31	2,517.70
tblSolidWaste	SolidWasteGenerationRate	211.14	1,145.94
tblSolidWaste	SolidWasteGenerationRate	453.46	1,533.54
tblVehicleEF	HHD	9.9860e-003	0.10
tblVehicleEF	HHD	1.54	1.12
tblVehicleEF	HHD	1,534.61	1,543.83
tblVehicleEF	HHD	0.04	0.03
tblVehicleEF	HHD	2.38	1.98
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.08	6.0280e-003
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.7190e-003	8.8490e-003
tblVehicleEF	HHD	0.08	5.7660e-003
tblVehicleEF	HHD	0.22	0.09
tblVehicleEF	HHD	0.26	3.5600e-004
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.25	0.20
tblVehicleEF	HHD	0.26	3.5600e-004
tblVehicleEF	LDA	9.6760e-003	3.1950e-003
tblVehicleEF	LDA	3.9570e-003	2.6600e-003
tblVehicleEF	LDA	0.68	0.45
tblVehicleEF	LDA	1.05	0.69
tblVehicleEF	LDA	237.84	218.54
tblVehicleEF	LDA	48.01	45.34
tblVehicleEF	LDA	0.52	0.54
tblVehicleEF	LDA	0.06	0.03
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	2.3090e-003	1.7070e-003
tblVehicleEF	LDA	4.2880e-003	1.9910e-003
tblVehicleEF	LDA	2.1420e-003	1.5710e-003
tblVehicleEF	LDA	3.9790e-003	1.8300e-003
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.08	0.07
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.01	8.0290e-003
tblVehicleEF	LDA	0.19	0.03
tblVehicleEF	LDA	0.07	0.04
tblVehicleEF	LDA	3.7410e-003	2.1880e-003
tblVehicleEF	LDA	7.5600e-004	4.6500e-004

tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.08	0.07
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.19	0.03
tblVehicleEF	LDA	0.07	0.04
tblVehicleEF	LDT1	0.02	8.5880e-003
tblVehicleEF	LDT1	0.01	7.0810e-003
tblVehicleEF	LDT1	1.60	1.01
tblVehicleEF	LDT1	2.60	1.53
tblVehicleEF	LDT1	297.86	285.08
tblVehicleEF	LDT1	59.55	58.07
tblVehicleEF	LDT1	0.06	0.04
tblVehicleEF	LDT1	0.16	0.09
tblVehicleEF	LDT1	0.15	0.08
tblVehicleEF	LDT1	3.4850e-003	2.5620e-003
tblVehicleEF	LDT1	4.7040e-003	2.6480e-003
tblVehicleEF	LDT1	3.2330e-003	2.3570e-003
tblVehicleEF	LDT1	4.3650e-003	2.4350e-003
tblVehicleEF	LDT1	0.12	0.08
tblVehicleEF	LDT1	0.24	0.18
tblVehicleEF	LDT1	0.11	0.07
tblVehicleEF	LDT1	0.04	0.02
tblVehicleEF	LDT1	0.79	0.13
tblVehicleEF	LDT1	0.19	0.10
tblVehicleEF	LDT1	4.3400e-003	2.8620e-003
tblVehicleEF	LDT1	8.9700e-004	6.0700e-004
tblVehicleEF	LDT1	0.12	0.08

tblVehicleEF	LDT1	0.24	0.18
tblVehicleEF	LDT1	0.11	0.07
tblVehicleEF	LDT1	0.06	0.03
tblVehicleEF	LDT1	0.79	0.13
tblVehicleEF	LDT1	0.20	0.10
tblVehicleEF	LDT2	0.01	4.6330e-003
tblVehicleEF	LDT2	5.5040e-003	3.4340e-003
tblVehicleEF	LDT2	0.89	0.63
tblVehicleEF	LDT2	1.43	0.89
tblVehicleEF	LDT2	364.48	313.52
tblVehicleEF	LDT2	72.89	63.78
tblVehicleEF	LDT2	0.18	0.21
tblVehicleEF	LDT2	0.09	0.05
tblVehicleEF	LDT2	0.11	0.05
tblVehicleEF	LDT2	2.2810e-003	1.9450e-003
tblVehicleEF	LDT2	4.2210e-003	2.2400e-003
tblVehicleEF	LDT2	2.1170e-003	1.7880e-003
tblVehicleEF	LDT2	3.9160e-003	2.0590e-003
tblVehicleEF	LDT2	0.06	0.03
tblVehicleEF	LDT2	0.12	0.07
tblVehicleEF	LDT2	0.06	0.04
tblVehicleEF	LDT2	0.02	0.01
tblVehicleEF	LDT2	0.38	0.05
tblVehicleEF	LDT2	0.10	0.05
tblVehicleEF	LDT2	5.0910e-003	3.1400e-003
tblVehicleEF	LDT2	1.0320e-003	6.5200e-004
tblVehicleEF	LDT2	0.06	0.03
tblVehicleEF	LDT2	0.12	0.07

tblVehicleEF	LDT2	0.06	0.04
tblVehicleEF	LDT2	0.03	0.02
tblVehicleEF	LDT2	0.38	0.05
tblVehicleEF	LDT2	0.10	0.05
tblVehicleEF	LHD1	1.2850e-003	4.0470e-003
tblVehicleEF	LHD1	9.2230e-003	5.4130e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.19	0.14
tblVehicleEF	LHD1	0.69	0.42
tblVehicleEF	LHD1	3.63	1.77
tblVehicleEF	LHD1	7.51	8.95
tblVehicleEF	LHD1	551.23	562.04
tblVehicleEF	LHD1	45.23	26.99
tblVehicleEF	LHD1	0.04	0.01
tblVehicleEF	LHD1	0.03	0.07
tblVehicleEF	LHD1	0.59	0.47
tblVehicleEF	LHD1	1.30	0.67
tblVehicleEF	LHD1	3.4100e-004	8.1700e-004
tblVehicleEF	LHD1	0.04	0.08
tblVehicleEF	LHD1	8.7150e-003	0.01
tblVehicleEF	LHD1	4.7150e-003	7.2050e-003
tblVehicleEF	LHD1	6.8000e-004	6.9200e-004
tblVehicleEF	LHD1	3.1400e-004	7.8200e-004
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.1790e-003	2.6100e-003
tblVehicleEF	LHD1	4.3420e-003	6.8740e-003
tblVehicleEF	LHD1	6.3100e-004	6.3600e-004
tblVehicleEF	LHD1	2.3320e-003	2.1270e-003

tblVehicleEF	LHD1	0.07	0.08
tblVehicleEF	LHD1	0.03	0.01
tblVehicleEF	LHD1	1.6520e-003	1.3850e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.37	0.24
tblVehicleEF	LHD1	0.31	0.15
tblVehicleEF	LHD1	8.6000e-005	8.9000e-005
tblVehicleEF	LHD1	6.0830e-003	5.4920e-003
tblVehicleEF	LHD1	5.6900e-004	3.0200e-004
tblVehicleEF	LHD1	2.3320e-003	2.1270e-003
tblVehicleEF	LHD1	0.07	0.08
tblVehicleEF	LHD1	0.03	0.02
tblVehicleEF	LHD1	1.6520e-003	1.3850e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.37	0.24
tblVehicleEF	LHD1	0.34	0.17
tblVehicleEF	LHD2	1.0490e-003	2.8780e-003
tblVehicleEF	LHD2	6.0880e-003	2.4090e-003
tblVehicleEF	LHD2	0.01	4.1570e-003
tblVehicleEF	LHD2	0.16	0.12
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	2.19	0.96
tblVehicleEF	LHD2	8.23	13.51
tblVehicleEF	LHD2	526.51	588.08
tblVehicleEF	LHD2	33.08	23.68
tblVehicleEF	LHD2	6.7020e-003	6.3880e-003
tblVehicleEF	LHD2	0.08	0.07
tblVehicleEF	LHD2	0.91	0.22

tblVehicleEF	LHD2	0.88	0.33
tblVehicleEF	LHD2	8.6200e-004	1.0460e-003
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	9.6970e-003	0.01
tblVehicleEF	LHD2	9.6420e-003	6.8490e-003
tblVehicleEF	LHD2	3.2300e-004	3.8700e-004
tblVehicleEF	LHD2	7.9300e-004	1.0010e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	2.4240e-003	2.6930e-003
tblVehicleEF	LHD2	8.8720e-003	6.5400e-003
tblVehicleEF	LHD2	3.0000e-004	3.5600e-004
tblVehicleEF	LHD2	1.3230e-003	6.9100e-004
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	0.02	0.01
tblVehicleEF	LHD2	9.9000e-004	5.0300e-004
tblVehicleEF	LHD2	0.05	0.03
tblVehicleEF	LHD2	0.22	0.05
tblVehicleEF	LHD2	0.18	0.06
tblVehicleEF	LHD2	9.2000e-005	1.3200e-004
tblVehicleEF	LHD2	5.7470e-003	5.7190e-003
tblVehicleEF	LHD2	4.0700e-004	2.5300e-004
tblVehicleEF	LHD2	1.3230e-003	6.9100e-004
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	0.03	0.02
tblVehicleEF	LHD2	9.9000e-004	5.0300e-004
tblVehicleEF	LHD2	0.06	0.04
tblVehicleEF	LHD2	0.22	0.05
tblVehicleEF	LHD2	0.20	0.06

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tblVehicleEF	MCY	0.00	0.15
tblVehicleEF	MCY	18.28	18.09
tblVehicleEF	MCY	10.11	9.76
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tblVehicleEF	MCY	3.7760e-003	5.2510e-003
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	0.31	0.31
tblVehicleEF	MCY	0.04	0.01
tblVehicleEF	MCY	8.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.4300e-004	2.6610e-003
tblVehicleEF	MCY	7.3000e-004	3.3930e-003
tblVehicleEF	MCY	0.02	5.0400e-003
tblVehicleEF	MCY	2.0000e-003	1.0000e-003
tblVehicleEF	MCY	2.0900e-004	2.4820e-003
tblVehicleEF	MCY	6.2800e-004	3.1740e-003
tblVehicleEF	MCY	0.90	1.05
tblVehicleEF	MCY	0.39	0.57
tblVehicleEF	MCY	0.53	0.62
tblVehicleEF	MCY	2.30	2.57
tblVehicleEF	MCY	1.14	0.49
tblVehicleEF	MCY	2.03	1.98
tblVehicleEF	MCY	1.9550e-003	2.2960e-003
tblVehicleEF	MCY	6.3500e-004	6.4400e-004
tblVehicleEF	MCY	0.90	1.05
tblVehicleEF	MCY	0.39	0.57
tblVehicleEF	MCY	0.53	0.62

tblVehicleEF	MCY	2.53	3.23
tblVehicleEF	MCY	1.14	0.49
tblVehicleEF	MCY	2.18	2.16
tblVehicleEF	MDV	0.02	7.4200e-003
tblVehicleEF	MDV	0.01	6.7260e-003
tblVehicleEF	MDV	1.40	0.84
tblVehicleEF	MDV	2.85	1.39
tblVehicleEF	MDV	486.32	422.81
tblVehicleEF	MDV	97.87	84.66
tblVehicleEF	MDV	0.13	0.12
tblVehicleEF	MDV	0.16	0.08
tblVehicleEF	MDV	0.25	0.11
tblVehicleEF	MDV	2.4050e-003	2.0010e-003
tblVehicleEF	MDV	4.0190e-003	2.2340e-003
tblVehicleEF	MDV	2.2320e-003	1.8420e-003
tblVehicleEF	MDV	3.7290e-003	2.0550e-003
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.20	0.12
tblVehicleEF	MDV	0.10	0.06
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.60	0.08
tblVehicleEF	MDV	0.23	0.09
tblVehicleEF	MDV	6.5060e-003	4.2300e-003
tblVehicleEF	MDV	1.3300e-003	8.7000e-004
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.20	0.12
tblVehicleEF	MDV	0.10	0.06
tblVehicleEF	MDV	0.05	0.03

tblVehicleEF	MDV	0.60	0.08
tblVehicleEF	MDV	0.25	0.10
tblVehicleEF	MH	0.00	0.01
tblVehicleEF	MH	0.00	0.02
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tblVehicleEF	MH	612.86	1,111.43
tblVehicleEF	MH	28.95	57.99
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tblVehicleEF	MH	0.58	0.61
tblVehicleEF	MH	0.05	0.13
tblVehicleEF	MH	8.4490e-003	0.01
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	3.4700e-004	8.8600e-004
tblVehicleEF	MH	0.02	0.06
tblVehicleEF	MH	2.1120e-003	3.2120e-003
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	3.2200e-004	8.1500e-004
tblVehicleEF	MH	0.58	0.54
tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	0.29	0.26
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	1.08	0.01
tblVehicleEF	MH	0.26	0.23
tblVehicleEF	MH	6.7500e-003	0.01
tblVehicleEF	MH	4.0400e-004	6.4700e-004
tblVehicleEF	MH	0.58	0.54

tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	0.29	0.26
tblVehicleEF	MH	0.05	0.05
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tblVehicleEF	MHD	919.25	1,127.03
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tblVehicleEF	MHD	0.11	0.13
tblVehicleEF	MHD	0.01	0.01
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tblVehicleEF	MHD	2.8000e-003	3.0000e-003
tblVehicleEF	MHD	0.03	2.7250e-003
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tblVehicleEF	MHD	0.36	0.02
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tblVehicleEF	MHD	0.09	0.04
tblVehicleEF	MHD	0.36	0.02
tblVehicleEF	OBUS	2.9660e-003	4.0350e-003
tblVehicleEF	OBUS	0.68	0.32
tblVehicleEF	OBUS	1,046.92	1,236.30
tblVehicleEF	OBUS	2.6440e-003	2.6190e-003
tblVehicleEF	OBUS	1.11	0.69
tblVehicleEF	OBUS	0.10	0.13
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	0.04	2.8910e-003
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	2.6780e-003	3.0000e-003
tblVehicleEF	OBUS	0.04	2.7480e-003
tblVehicleEF	OBUS	0.11	0.04
tblVehicleEF	OBUS	0.33	0.04
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.13	0.04
tblVehicleEF	OBUS	0.33	0.04
tblVehicleEF	SBUS	5.0590e-003	0.81
tblVehicleEF	SBUS	6.6580e-003	6.8180e-003
tblVehicleEF	SBUS	0.00	0.05
tblVehicleEF	SBUS	1.25	17.44
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tblVehicleEF	SBUS	1,036.92	1,028.66
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tblVehicleEF	SBUS	6.92	9.78
tblVehicleEF	SBUS	6.17	2.19
tblVehicleEF	SBUS	1.69	7.66
tblVehicleEF	SBUS	0.01	6.2240e-003
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tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	2.2570e-003	2.0480e-003
tblVehicleEF	SBUS	0.01	5.9540e-003

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tblVehicleEF	SBUS	2.7520e-003	2.6120e-003
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tblVehicleEF	SBUS	2.0940e-003	1.8830e-003
tblVehicleEF	SBUS	0.02	7.3360e-003
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tblVehicleEF	SBUS	0.11	2.06
tblVehicleEF	SBUS	0.01	4.3420e-003
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tblVehicleEF	SBUS	1.85	0.02
tblVehicleEF	SBUS	1.25	0.69
tblVehicleEF	SBUS	5.9220e-003	0.02
tblVehicleEF	SBUS	0.01	9.9280e-003
tblVehicleEF	SBUS	1.6320e-003	1.4360e-003
tblVehicleEF	SBUS	0.02	7.3360e-003
tblVehicleEF	SBUS	0.18	0.06
tblVehicleEF	SBUS	0.12	2.99
tblVehicleEF	SBUS	0.01	4.3420e-003
tblVehicleEF	SBUS	0.26	0.08
tblVehicleEF	SBUS	1.85	0.02
tblVehicleEF	SBUS	1.33	0.76
tblVehicleEF	UBUS	0.00	1.80
tblVehicleEF	UBUS	0.00	0.05
tblVehicleEF	UBUS	3.72	7.69
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tblVehicleEF	UBUS	19.75	118.94
tblVehicleEF	UBUS	3.2190e-003	1.8150e-003

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tblVehicleEF	UBUS	8.0000e-003	0.01
tblVehicleEF	UBUS	0.18	0.07
tblVehicleEF	UBUS	4.7500e-004	1.2760e-003
tblVehicleEF	UBUS	0.31	0.24
tblVehicleEF	UBUS	2.0000e-003	3.0000e-003
tblVehicleEF	UBUS	0.16	0.07
tblVehicleEF	UBUS	4.4100e-004	1.1730e-003
tblVehicleEF	UBUS	3.8870e-003	3.5360e-003
tblVehicleEF	UBUS	0.07	0.05
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tblVehicleEF	UBUS	0.07	0.05
tblVehicleEF	UBUS	2.1850e-003	2.4270e-003
tblVehicleEF	UBUS	0.73	2.26
tblVehicleEF	UBUS	0.73	0.02
tblVehicleEF	UBUS	0.56	0.76
tblVehicleTrips	CC_TL	10.10	0.00
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tblVehicleTrips	CC_TL	10.10	12.00

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tblVehicleTrips	CC_TL	10.10	11.80
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tblVehicleTrips	CNW_TL	7.90	0.00
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tblVehicleTrips	CW_TL	18.50	0.00
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tblVehicleTrips	DV_TP	11.00	0.00
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tblVehicleTrips	HO_TL	12.90	8.40
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tblVehicleTrips	HO_TL	12.90	7.80
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tblVehicleTrips	PB_TP	3.00	0.00
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tblVehicleTrips	PR_TP	86.00	100.00
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tblVehicleTrips	ST_TR	7.16	6.32
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tblVehicleTrips	ST_TR	2.20	1.83
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tblVehicleTrips	ST_TR	46.55	58.19

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tblVehicleTrips	ST_TR	10.08	8.81
tblVehicleTrips	SU_TR	6.07	5.36
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tblVehicleTrips	SU_TR	25.24	25.94
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tblVehicleTrips	SU_TR	8.77	7.66
tblVehicleTrips	WD_TR	6.59	5.82
tblVehicleTrips	WD_TR	1.59	0.00
tblVehicleTrips	WD_TR	6.59	6.74
tblVehicleTrips	WD_TR	2.74	2.28
tblVehicleTrips	WD_TR	1.29	1.00
tblVehicleTrips	WD_TR	6.97	5.22
tblVehicleTrips	WD_TR	11.01	9.80
tblVehicleTrips	WD_TR	32.93	1.77
tblVehicleTrips	WD_TR	56.24	70.31
tblVehicleTrips	WD_TR	42.94	44.13
tblVehicleTrips	WD_TR	2.81	3.05
tblVehicleTrips	WD_TR	9.57	8.36
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00

tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	IndoorWaterUseRate	54,468,765.42	26,530,329.00
tblWater	IndoorWaterUseRate	134,086,984.73	65,310,274.00
tblWater	IndoorWaterUseRate	22,869,062.99	11,138,941.00
tblWater	IndoorWaterUseRate	2,181,816.00	1,062,708.00
tblWater	IndoorWaterUseRate	3,954,375.00	1,926,075.00
tblWater	IndoorWaterUseRate	236,563,618.58	115,224,144.00
tblWater	IndoorWaterUseRate	3,075,443.49	1,497,966.00
tblWater	IndoorWaterUseRate	1,126,400.70	548,640.00
tblWater	IndoorWaterUseRate	16,599,652.06	8,085,280.00
tblWater	IndoorWaterUseRate	29,905,697.76	14,566,285.00
tblWater	IndoorWaterUseRate	22,869,062.99	11,138,941.00
tblWater	OutdoorWaterUseRate	34,339,004.29	27,653,600.00
tblWater	OutdoorWaterUseRate	342,908,332.43	305,972,084.00
tblWater	OutdoorWaterUseRate	84,533,099.07	68,075,499.00
tblWater	OutdoorWaterUseRate	14,417,452.76	11,610,582.00
tblWater	OutdoorWaterUseRate	5,610,384.00	4,518,105.00

tblWater	OutdoorWaterUseRate	144,990,604.94	116,762,956.00
tblWater	OutdoorWaterUseRate	1,884,949.24	1,517,972.00
tblWater	OutdoorWaterUseRate	1,761,806.23	1,418,806.00
tblWater	OutdoorWaterUseRate	10,173,980.30	8,193,242.00
tblWater	OutdoorWaterUseRate	18,853,592.07	15,183,026.00
tblWater	OutdoorWaterUseRate	14,417,452.76	11,610,582.00
tblWoodstoves	NumberCatalytic	41.80	0.00
tblWoodstoves	NumberCatalytic	102.90	0.00
tblWoodstoves	NumberCatalytic	17.55	0.00
tblWoodstoves	NumberCatalytic	22.95	0.00
tblWoodstoves	NumberCatalytic	17.55	0.00
tblWoodstoves	NumberNoncatalytic	41.80	0.00
tblWoodstoves	NumberNoncatalytic	102.90	0.00
tblWoodstoves	NumberNoncatalytic	17.55	0.00
tblWoodstoves	NumberNoncatalytic	22.95	0.00
tblWoodstoves	NumberNoncatalytic	17.55	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Energy											0.0000	12,105.9482	12,105.9482	0.5755	0.1652	12,169.2505
Mobile											0.0000	60,053.8274	60,053.8274	2.4277	0.0000	60,104.8089
Waste											7,089.8816	0.0000	7,089.8816	419.0000	0.0000	15,888.8816
Water											81.5436	923.8521	1,005.3957	8.4287	0.2088	1,247.1276
Total											**7,171.4252**	**73,152.1164**	**80,323.5417**	**430.4977**	**0.3740**	**89,479.9408**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Energy											0.0000	12,105.9482	12,105.9482	0.5755	0.1652	12,169.2505
Mobile											0.0000	60,053.8274	60,053.8274	2.4277	0.0000	60,104.8089
Waste											1,772.4704	0.0000	1,772.4704	104.7500	0.0000	3,972.2204
Water											81.5436	923.8521	1,005.3957	8.4272	0.2085	1,246.9975
Total											**1,854.0140**	**73,152.1164**	**75,006.1305**	**116.2462**	**0.3737**	**77,563.1495**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**74.15**	**0.00**	**6.62**	**73.00**	**0.08**	**13.32**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,529.380 0
Vegetation Land Change	- 33,643.07 80
Total	**- 30,113.69 80**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	No Phase	Trenching	1/1/2016	12/31/2015	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
No Phase				0.00	19.80	7.90				

3.1 Mitigation Measures Construction

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	60,053.8274	60,053.8274	2.4277	0.0000	60,104.8089
Unmitigated											0.0000	60,053.8274	60,053.8274	2.4277	0.0000	60,104.8089

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	4,865.52	5,283.52	4480.96	14,891,421	14,891,421
City Park	0.00	0.00	0.00		
Condo/Townhouse	13,870.92	15,085.14	12780.18	42,465,661	42,465,661
Congregate Care (Assisted Living)	800.28	642.33	712.53	3,063,781	3,063,781
Elementary School	900.00	0.00	0.00	3,346,200	3,346,200
General Light Industry	89.26	16.93	8.72	304,320	304,320
General Office Building	13,043.80	2,808.41	1157.97	43,171,677	43,171,677
Health Club	92.04	58.24	74.88	376,402	376,402
Library	2,531.16	2,094.84	1147.32	9,754,988	9,754,988
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	9,889.53	11,509.78	5813.15	40,276,023	40,276,023
Retirement Community	1,399.95	1,399.95	1399.95	3,974,738	3,974,738
Single Family Housing	2,934.36	3,092.31	2688.66	9,359,188	9,359,188
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	50,416.83	41,991.45	30,264.33	170,984,398	170,984,398

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	8.40	8.40	8.40	40.20	19.20	40.60	100	0	0
City Park	0.00	0.00	0.00	33.00	48.00	19.00	100	0	0
Condo/Townhouse	8.40	8.40	8.40	40.20	19.20	40.60	100	0	0
Congregate Care (Assisted	11.00	11.00	11.00	40.20	19.20	40.60	100	0	0
Elementary School	14.30	14.30	14.30	65.00	30.00	5.00	100	0	0
General Light Industry	12.40	12.40	12.40	59.00	28.00	13.00	100	0	0
General Office Building	12.00	12.00	12.00	33.00	48.00	19.00	100	0	0
Health Club	12.20	12.20	12.20	16.90	64.10	19.00	100	0	0
Library	11.80	11.80	11.80	52.00	43.00	5.00	100	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	100	0	0
Regional Shopping Center	11.60	11.60	11.60	16.30	64.70	19.00	100	0	0
Retirement Community	7.80	7.80	7.80	40.20	19.20	40.60	100	0	0
Single Family Housing	8.80	8.80	8.80	40.20	19.20	40.60	100	0	0
Unenclosed Parking with	0.00	0.00	0.00	0.00	0.00	0.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.540471	0.044502	0.211583	0.117127	0.014105	0.006388	0.021207	0.033417	0.002619	0.001815	0.005251	0.000692	0.000822

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated											0.0000	3,212.662 4	3,212.662 4	0.0616	0.0589	3,232.214 1
NaturalGas Unmitigated											0.0000	3,212.662 4	3,212.662 4	0.0616	0.0589	3,232.214 1
Electricity Mitigated											0.0000	8,893.285 9	8,893.285 9	0.5139	0.1063	8,937.036 4
Electricity Unmitigated											0.0000	8,893.285 9	8,893.285 9	0.5139	0.1063	8,937.036 4

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	8.2764e +006											0.0000	441.6602	441.6602	8.4700e-003	8.1000e-003	444.3481
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	2.03742e +007											0.0000	1,087.2449	1,087.2449	0.0208	0.0199	1,093.8617
Congregate Care (Assisted Living)	3.4749e +006											0.0000	185.4339	185.4339	3.5500e-003	3.4000e-003	186.5624
Elementary School	939000											0.0000	50.1086	50.1086	9.6000e-004	9.2000e-004	50.4136
General Light Industry	329517											0.0000	17.5843	17.5843	3.4000e-004	3.2000e-004	17.6913
General Office Building	1.25513e +007											0.0000	669.7868	669.7868	0.0128	0.0123	673.8630
Health Club	1.00204e +006											0.0000	53.4727	53.4727	1.0200e-003	9.8000e-004	53.7981
Library	693720											0.0000	37.0195	37.0195	7.1000e-004	6.8000e-004	37.2448
Parking Lot	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	295812											0.0000	15.7857	15.7857	3.0000e-004	2.9000e-004	15.8817
Retirement Community	4.5441e +006											0.0000	242.4905	242.4905	4.6500e-003	4.4500e-003	243.9662
Single Family Housing	7.722e +006											0.0000	412.0753	412.0753	7.9000e-003	7.5500e-003	414.5832
Unenclosed Parking with Elevator	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**3,212.6624**	**3,212.6624**	**0.0616**	**0.0589**	**3,232.2141**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	8.2764e+006											0.0000	441.6602	441.6602	8.4700e-003	8.1000e-003	444.3481
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	2.03742e+007											0.0000	1,087.2449	1,087.2449	0.0208	0.0199	1,093.8617
Congregate Care (Assisted Living)	3.4749e+006											0.0000	185.4339	185.4339	3.5500e-003	3.4000e-003	186.5624
Elementary School	939000											0.0000	50.1086	50.1086	9.6000e-004	9.2000e-004	50.4136
General Light Industry	329517											0.0000	17.5843	17.5843	3.4000e-004	3.2000e-004	17.6913
General Office Building	1.25513e+007											0.0000	669.7868	669.7868	0.0128	0.0123	673.8630
Health Club	1.00204e+006											0.0000	53.4727	53.4727	1.0200e-003	9.8000e-004	53.7981
Library	693720											0.0000	37.0195	37.0195	7.1000e-004	6.8000e-004	37.2448
Parking Lot	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	295812											0.0000	15.7857	15.7857	3.0000e-004	2.9000e-004	15.8817
Retirement Community	4.5441e+006											0.0000	242.4905	242.4905	4.6500e-003	4.4500e-003	243.9662
Single Family Housing	7.722e+006											0.0000	412.0753	412.0753	7.9000e-003	7.5500e-003	414.5832
Unenclosed Parking with Elevator	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**3,212.6624**	**3,212.6624**	**0.0616**	**0.0589**	**3,232.2141**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	3.06143e +006	696.9318	0.0403	8.3300e-003	700.3603
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	7.5364e +006	1,715.6526	0.0991	0.0205	1,724.0927
Congregate Care (Assisted Living)	1.28536e +006	292.6113	0.0169	3.5000e-003	294.0508
Elementary School	618000	140.6870	8.1300e-003	1.6800e-003	141.3792
General Light Industry	161766	36.8259	2.1300e-003	4.4000e-004	37.0070
General Office Building	1.78487e +007	4,063.2399	0.2348	0.0486	4,083.2290
Health Club	491920	111.9851	6.4700e-003	1.3400e-003	112.5360
Library	340560	77.5281	4.4800e-003	9.3000e-004	77.9095
Parking Lot	554048	126.1284	7.2900e-003	1.5100e-003	126.7489
Regional Shopping Center	2.66455e +006	606.5818	0.0351	7.2500e-003	609.5658
Retirement Community	1.68086e +006	382.6455	0.0221	4.5700e-003	384.5280
Single Family Housing	2.06739e +006	470.6391	0.0272	5.6300e-003	472.9545
Unenclosed Parking with Elevator	754800	171.8294	9.9300e-003	2.0500e-003	172.6747
Total		**8,893.2859**	**0.5139**	**0.1063**	**8,937.0364**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	3.06143e +006	696.9318	0.0403	8.3300e-003	700.3603
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	7.5364e +006	1,715.652 6	0.0991	0.0205	1,724.092 7
Congregate Care (Assisted Living)	1.28536e +006	292.6113	0.0169	3.5000e-003	294.0508
Elementary School	618000	140.6870	8.1300e-003	1.6800e-003	141.3792
General Light Industry	161766	36.8259	2.1300e-003	4.4000e-004	37.0070
General Office Building	1.78487e +007	4,063.239 9	0.2348	0.0486	4,083.229 0
Health Club	491920	111.9851	6.4700e-003	1.3400e-003	112.5360
Library	340560	77.5281	4.4800e-003	9.3000e-004	77.9095
Parking Lot	554048	126.1284	7.2900e-003	1.5100e-003	126.7489
Regional Shopping Center	2.66455e +006	606.5818	0.0351	7.2500e-003	609.5658
Retirement Community	1.68086e +006	382.6455	0.0221	4.5700e-003	384.5280
Single Family Housing	2.06739e +006	470.6391	0.0272	5.6300e-003	472.9545
Unenclosed Parking with Elevator	754800	171.8294	9.9300e-003	2.0500e-003	172.6747
Total		**8,893.285 9**	**0.5139**	**0.1063**	**8,937.036 4**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Unmitigated											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Total											**0.0000**	**68.4887**	**68.4887**	**0.0659**	**0.0000**	**69.8722**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Total											**0.0000**	**68.4887**	**68.4887**	**0.0659**	**0.0000**	**69.8722**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	1,005.3957	8.4287	0.2088	1,247.1276
Mitigated	1,005.3957	8.4272	0.2085	1,246.9975

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	26.5303 / 27.6536	72.9987	0.8682	0.0212	97.7986
City Park	0 / 305.972	299.5132	0.0173	3.5800e-003	300.9866
Condo/Townhouse	65.3103 / 68.0755	179.7024	2.1373	0.0522	240.7528
Congregate Care (Assisted Living)	11.1389 / 11.6106	30.6490	0.3645	8.8900e-003	41.0614
Elementary School	1.06271 / 4.51811	6.2625	0.0350	8.9000e-004	7.2723
General Light Industry	1.92608 / 0	3.3344	0.0629	1.5100e-003	5.1252
General Office Building	115.224 / 116.763	313.7720	3.7706	0.0920	421.4647
Health Club	1.49797 / 1.51797	4.0792	0.0490	1.2000e-003	5.4792
Library	0.54864 / 1.41881	2.3387	0.0180	4.5000e-004	2.8556
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.08528 / 8.19324	22.0174	0.2646	6.4500e-003	29.5742
Retirement Community	14.5663 / 15.183	40.0794	0.4767	0.0116	53.6956
Single Family Housing	11.1389 / 11.6106	30.6490	0.3645	8.8900e-003	41.0614
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1,005.3957**	**8.4287**	**0.2088**	**1,247.1276**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	26.5303 / 27.6536	72.9987	0.8681	0.0212	97.7851
City Park	0 / 305.972	299.5132	0.0173	3.5800e-003	300.9866
Condo/Townhouse	65.3103 / 68.0755	179.7024	2.1369	0.0521	240.7198
Congregate Care (Assisted Living)	11.1389 / 11.6106	30.6490	0.3645	8.8800e-003	41.0558
Elementary School	1.06271 / 4.51811	6.2625	0.0350	8.9000e-004	7.2718
General Light Industry	1.92608 / 0	3.3344	0.0629	1.5100e-003	5.1242
General Office Building	115.224 / 116.763	313.7720	3.7699	0.0918	421.4064
Health Club	1.49797 / 1.51797	4.0792	0.0490	1.1900e-003	5.4785
Library	0.54864 / 1.41881	2.3387	0.0180	4.5000e-004	2.8553
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.08528 / 8.19324	22.0174	0.2645	6.4400e-003	29.5701
Retirement Community	14.5663 / 15.183	40.0794	0.4766	0.0116	53.6882
Single Family Housing	11.1389 / 11.6106	30.6490	0.3645	8.8800e-003	41.0558
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1,005.3957**	**8.4272**	**0.2085**	**1,246.9975**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,772.470 4	104.7500	0.0000	3,972.220 4
Unmitigated	7,089.881 6	419.0000	0.0000	15,888.88 16

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	3652.53	741.4306	43.8173	0.0000	1,661.593 7
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	8991.5	1,825.193 2	107.8658	0.0000	4,090.375 7
Congregate Care (Assisted Living)	1190.01	241.5613	14.2759	0.0000	541.3544
Elementary School	140.4	28.4999	1.6843	0.0000	63.8702
General Light Industry	70.96	14.4042	0.8513	0.0000	32.2808
General Office Building	14949.8	3,034.672 3	179.3440	0.0000	6,800.896 1
Health Club	592.8	120.3330	7.1115	0.0000	269.6741
Library	141.91	28.8065	1.7024	0.0000	64.5571
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2517.7	511.0704	30.2034	0.0000	1,145.341 6
Retirement Community	1145.94	232.6155	13.7472	0.0000	521.3063
Single Family Housing	1533.54	311.2948	18.3970	0.0000	697.6316
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**7,089.881 6**	**419.0000**	**0.0000**	**15,888.88 16**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	913.133	185.3577	10.9543	0.0000	415.3984
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	2247.88	456.2983	26.9665	0.0000	1,022.5939
Congregate Care (Assisted Living)	297.503	60.3903	3.5690	0.0000	135.3386
Elementary School	35.1	7.1250	0.4211	0.0000	15.9676
General Light Industry	17.74	3.6011	0.2128	0.0000	8.0702
General Office Building	3737.45	758.6681	44.8360	0.0000	1,700.2240
Health Club	148.2	30.0833	1.7779	0.0000	67.4185
Library	35.4775	7.2016	0.4256	0.0000	16.1393
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	629.425	127.7676	7.5509	0.0000	286.3354
Retirement Community	286.485	58.1539	3.4368	0.0000	130.3266
Single Family Housing	383.385	77.8237	4.5993	0.0000	174.4079
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**1,772.4704**	**104.7500**	**0.0000**	**3,972.2204**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-30,113.6980	0.0000	0.0000	-30,113.6980

10.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	224.4 / 0	-1,391.2800	0.0000	0.0000	-1,391.2800
Grassland	68.8 / 0	-296.5280	0.0000	0.0000	-296.5280
Others	422.3 / 0	0.0000	0.0000	0.0000	0.0000
Scrub	547.9 / 0	-7,834.9700	0.0000	0.0000	-7,834.9700
Trees	217.3 / 0	-24,120.3000	0.0000	0.0000	-24,120.3000
Wetlands	1.6 / 0	0.0000	0.0000	0.0000	0.0000
Total		**-33,643.0780**	**0.0000**	**0.0000**	**-33,643.0780**

10.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	4985	3,529.380 0	0.0000	0.0000	3,529.380 0
Total		**3,529.380 0**	**0.0000**	**0.0000**	**3,529.380 0**

MV Unmitigated Project - 2030 RPS for Offsets Calc

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	1,331.00	1000sqft	40.50	1,331,000.00	0
Elementary School	900.00	Student	9.50	100,000.00	0
Library	36.00	1000sqft	3.30	36,000.00	0
General Light Industry	17.10	1000sqft	1.50	17,100.00	0
Parking Lot	3,148.00	Space	28.33	1,259,200.00	0
Unenclosed Parking with Elevator	1,258.00	Space	11.32	503,200.00	0
City Park	287.80	Acre	287.80	12,536,568.00	0
Health Club	52.00	1000sqft	41.50	52,000.00	0
Apartments Low Rise	836.00	Dwelling Unit	22.10	836,000.00	2633
Condo/Townhouse	2,058.00	Dwelling Unit	132.30	2,058,000.00	6483
Congregate Care (Assisted Living)	351.00	Dwelling Unit	13.60	351,000.00	632
Retirement Community	459.00	Dwelling Unit	79.20	459,000.00	826
Single Family Housing	351.00	Dwelling Unit	88.90	631,800.00	1106
Regional Shopping Center	224.10	1000sqft	26.50	224,100.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	374.54	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Includes 50% RPS.

Land Use - Land use based on project information. Residential population from project specific estimation.

Construction Phase - Construction emissions calculated separately.

Off-road Equipment -

Vehicle Trips - Trip rates and lengths are based on trip generation summary. Trips are assumed to be 100% primary trips.

Vechicle Emission Factors - EMFAC2014. Includes reduction from Pavley/ACC. Excludes LCFS.

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Assumed that any decorative fireplaces are captured in the ConSol residential building energy analysis.

Energy Use - Updated to Title 24 - 2016 based on ConSol building analysis.

Water And Wastewater - Water use updated according to water study.

Solid Waste - Solid waste generation updated according to data for Santa Clarita, CA.

Land Use Change - Vegetation based on project information.

Sequestration - Number of trees based on project information.

Waste Mitigation - 75% diverted.

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	810.36	308.00
tblEnergyUse	LightingElect	1,001.10	308.00
tblEnergyUse	LightingElect	741.44	308.00
tblEnergyUse	LightingElect	2.98	0.00
tblEnergyUse	LightingElect	3.55	0.00
tblEnergyUse	LightingElect	4.29	0.00
tblEnergyUse	LightingElect	3.55	0.00

tblEnergyUse	LightingElect	3.55	0.00
tblEnergyUse	LightingElect	0.88	0.44
tblEnergyUse	LightingElect	7.04	0.00
tblEnergyUse	LightingElect	1,001.10	308.00
tblEnergyUse	LightingElect	1,608.84	767.00
tblEnergyUse	LightingElect	2.63	1.31
tblEnergyUse	NT24E	2,630.88	2,855.00
tblEnergyUse	NT24E	3,126.97	2,855.00
tblEnergyUse	NT24E	2,553.86	2,855.00
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tblEnergyUse	NT24E	3,126.97	2,855.00
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tblEnergyUse	NT24NG	4.45	0.00
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tblEnergyUse	T24E	269.81	499.00
tblEnergyUse	T24E	246.66	499.00
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tblEnergyUse	T24E	2.75	9.46
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tblEnergyUse	T24E	596.10	879.00
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tblEnergyUse	T24NG	11,455.03	8,700.00
tblEnergyUse	T24NG	8,201.59	8,700.00
tblEnergyUse	T24NG	9.81	9.39
tblEnergyUse	T24NG	14.36	19.27
tblEnergyUse	T24NG	10.54	9.43
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tblEnergyUse	T24NG	14.36	19.27
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tblEnergyUse	T24NG	11,455.03	8,700.00
tblEnergyUse	T24NG	23,944.02	20,500.00
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tblFireplaces	FireplaceWoodMass	1,019.20	0.00
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tblFireplaces	NumberGas	710.60	0.00

tblFireplaces	NumberGas	1,749.30	0.00
tblFireplaces	NumberGas	298.35	0.00
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tblFireplaces	NumberNoFireplace	205.80	2,058.00
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tblFireplaces	NumberWood	102.90	0.00
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tblFireplaces	NumberWood	17.55	0.00
tblLandUse	LandUseSquareFeet	75,243.03	100,000.00
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tblLandUse	LotAcreage	52.25	22.10
tblLandUse	LotAcreage	128.63	132.30
tblLandUse	LotAcreage	21.94	13.60
tblLandUse	LotAcreage	91.80	79.20
tblLandUse	LotAcreage	113.96	88.90
tblLandUse	LotAcreage	5.14	26.50
tblLandUse	Population	2,391.00	2,633.00
tblLandUse	Population	5,886.00	6,483.00

tblLandUse	Population	1,004.00	632.00
tblLandUse	Population	1,313.00	826.00
tblLandUse	Population	1,004.00	1,106.00
tblProjectCharacteristics	CO2IntensityFactor	630.89	374.54
tblProjectCharacteristics	OperationalYear	2014	2025
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSequestration	NumberOfNewTrees	0.00	4,985.00
tblSolidWaste	SolidWasteGenerationRate	384.56	3,652.53
tblSolidWaste	SolidWasteGenerationRate	24.75	0.00
tblSolidWaste	SolidWasteGenerationRate	946.68	8,991.50
tblSolidWaste	SolidWasteGenerationRate	320.29	1,190.01
tblSolidWaste	SolidWasteGenerationRate	164.25	140.40
tblSolidWaste	SolidWasteGenerationRate	21.20	70.96
tblSolidWaste	SolidWasteGenerationRate	1,237.83	14,949.79
tblSolidWaste	SolidWasteGenerationRate	296.40	592.80
tblSolidWaste	SolidWasteGenerationRate	33.15	141.91
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tblSolidWaste	SolidWasteGenerationRate	211.14	1,145.94
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tblVehicleEF	LDT2	0.10	0.05
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tblVehicleEF	LDT2	0.12	0.07

tblVehicleEF	LDT2	0.06	0.04
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tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.1790e-003	2.6100e-003
tblVehicleEF	LHD1	4.3420e-003	6.8740e-003
tblVehicleEF	LHD1	6.3100e-004	6.3600e-004
tblVehicleEF	LHD1	2.3320e-003	2.1270e-003

tblVehicleEF	LHD1	0.07	0.08
tblVehicleEF	LHD1	0.03	0.01
tblVehicleEF	LHD1	1.6520e-003	1.3850e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.37	0.24
tblVehicleEF	LHD1	0.31	0.15
tblVehicleEF	LHD1	8.6000e-005	8.9000e-005
tblVehicleEF	LHD1	6.0830e-003	5.4920e-003
tblVehicleEF	LHD1	5.6900e-004	3.0200e-004
tblVehicleEF	LHD1	2.3320e-003	2.1270e-003
tblVehicleEF	LHD1	0.07	0.08
tblVehicleEF	LHD1	0.03	0.02
tblVehicleEF	LHD1	1.6520e-003	1.3850e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.37	0.24
tblVehicleEF	LHD1	0.34	0.17
tblVehicleEF	LHD2	1.0490e-003	2.8780e-003
tblVehicleEF	LHD2	6.0880e-003	2.4090e-003
tblVehicleEF	LHD2	0.01	4.1570e-003
tblVehicleEF	LHD2	0.16	0.12
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	2.19	0.96
tblVehicleEF	LHD2	8.23	13.51
tblVehicleEF	LHD2	526.51	588.08
tblVehicleEF	LHD2	33.08	23.68
tblVehicleEF	LHD2	6.7020e-003	6.3880e-003
tblVehicleEF	LHD2	0.08	0.07
tblVehicleEF	LHD2	0.91	0.22

tblVehicleEF	LHD2	0.88	0.33
tblVehicleEF	LHD2	8.6200e-004	1.0460e-003
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	9.6970e-003	0.01
tblVehicleEF	LHD2	9.6420e-003	6.8490e-003
tblVehicleEF	LHD2	3.2300e-004	3.8700e-004
tblVehicleEF	LHD2	7.9300e-004	1.0010e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	2.4240e-003	2.6930e-003
tblVehicleEF	LHD2	8.8720e-003	6.5400e-003
tblVehicleEF	LHD2	3.0000e-004	3.5600e-004
tblVehicleEF	LHD2	1.3230e-003	6.9100e-004
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	0.02	0.01
tblVehicleEF	LHD2	9.9000e-004	5.0300e-004
tblVehicleEF	LHD2	0.05	0.03
tblVehicleEF	LHD2	0.22	0.05
tblVehicleEF	LHD2	0.18	0.06
tblVehicleEF	LHD2	9.2000e-005	1.3200e-004
tblVehicleEF	LHD2	5.7470e-003	5.7190e-003
tblVehicleEF	LHD2	4.0700e-004	2.5300e-004
tblVehicleEF	LHD2	1.3230e-003	6.9100e-004
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	0.03	0.02
tblVehicleEF	LHD2	9.9000e-004	5.0300e-004
tblVehicleEF	LHD2	0.06	0.04
tblVehicleEF	LHD2	0.22	0.05
tblVehicleEF	LHD2	0.20	0.06

tblVehicleEF	MCY	0.00	0.56
tblVehicleEF	MCY	0.00	0.15
tblVehicleEF	MCY	18.28	18.09
tblVehicleEF	MCY	10.11	9.76
tblVehicleEF	MCY	143.62	192.13
tblVehicleEF	MCY	37.14	42.60
tblVehicleEF	MCY	3.7760e-003	5.2510e-003
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	0.31	0.31
tblVehicleEF	MCY	0.04	0.01
tblVehicleEF	MCY	8.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.4300e-004	2.6610e-003
tblVehicleEF	MCY	7.3000e-004	3.3930e-003
tblVehicleEF	MCY	0.02	5.0400e-003
tblVehicleEF	MCY	2.0000e-003	1.0000e-003
tblVehicleEF	MCY	2.0900e-004	2.4820e-003
tblVehicleEF	MCY	6.2800e-004	3.1740e-003
tblVehicleEF	MCY	0.90	1.05
tblVehicleEF	MCY	0.39	0.57
tblVehicleEF	MCY	0.53	0.62
tblVehicleEF	MCY	2.30	2.57
tblVehicleEF	MCY	1.14	0.49
tblVehicleEF	MCY	2.03	1.98
tblVehicleEF	MCY	1.9550e-003	2.2960e-003
tblVehicleEF	MCY	6.3500e-004	6.4400e-004
tblVehicleEF	MCY	0.90	1.05
tblVehicleEF	MCY	0.39	0.57
tblVehicleEF	MCY	0.53	0.62

tblVehicleEF	MCY	2.53	3.23
tblVehicleEF	MCY	1.14	0.49
tblVehicleEF	MCY	2.18	2.16
tblVehicleEF	MDV	0.02	7.4200e-003
tblVehicleEF	MDV	0.01	6.7260e-003
tblVehicleEF	MDV	1.40	0.84
tblVehicleEF	MDV	2.85	1.39
tblVehicleEF	MDV	486.32	422.81
tblVehicleEF	MDV	97.87	84.66
tblVehicleEF	MDV	0.13	0.12
tblVehicleEF	MDV	0.16	0.08
tblVehicleEF	MDV	0.25	0.11
tblVehicleEF	MDV	2.4050e-003	2.0010e-003
tblVehicleEF	MDV	4.0190e-003	2.2340e-003
tblVehicleEF	MDV	2.2320e-003	1.8420e-003
tblVehicleEF	MDV	3.7290e-003	2.0550e-003
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.20	0.12
tblVehicleEF	MDV	0.10	0.06
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.60	0.08
tblVehicleEF	MDV	0.23	0.09
tblVehicleEF	MDV	6.5060e-003	4.2300e-003
tblVehicleEF	MDV	1.3300e-003	8.7000e-004
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.20	0.12
tblVehicleEF	MDV	0.10	0.06
tblVehicleEF	MDV	0.05	0.03

tblVehicleEF	MDV	0.60	0.08
tblVehicleEF	MDV	0.25	0.10
tblVehicleEF	MH	0.00	0.01
tblVehicleEF	MH	0.00	0.02
tblVehicleEF	MH	0.61	0.69
tblVehicleEF	MH	4.74	3.88
tblVehicleEF	MH	612.86	1,111.43
tblVehicleEF	MH	28.95	57.99
tblVehicleEF	MH	1.9160e-003	8.2200e-004
tblVehicleEF	MH	0.78	0.73
tblVehicleEF	MH	0.58	0.61
tblVehicleEF	MH	0.05	0.13
tblVehicleEF	MH	8.4490e-003	0.01
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	3.4700e-004	8.8600e-004
tblVehicleEF	MH	0.02	0.06
tblVehicleEF	MH	2.1120e-003	3.2120e-003
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	3.2200e-004	8.1500e-004
tblVehicleEF	MH	0.58	0.54
tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	0.29	0.26
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	1.08	0.01
tblVehicleEF	MH	0.26	0.23
tblVehicleEF	MH	6.7500e-003	0.01
tblVehicleEF	MH	4.0400e-004	6.4700e-004
tblVehicleEF	MH	0.58	0.54

tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	0.29	0.26
tblVehicleEF	MH	0.05	0.05
tblVehicleEF	MH	1.08	0.01
tblVehicleEF	MH	0.27	0.25
tblVehicleEF	MHD	3.2160e-003	2.5280e-003
tblVehicleEF	MHD	0.47	0.23
tblVehicleEF	MHD	919.25	1,127.03
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.87	0.71
tblVehicleEF	MHD	0.11	0.13
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	0.03	2.8530e-003
tblVehicleEF	MHD	0.05	0.06
tblVehicleEF	MHD	2.8000e-003	3.0000e-003
tblVehicleEF	MHD	0.03	2.7250e-003
tblVehicleEF	MHD	0.08	0.03
tblVehicleEF	MHD	0.36	0.02
tblVehicleEF	MHD	9.8020e-003	0.01
tblVehicleEF	MHD	0.09	0.04
tblVehicleEF	MHD	0.36	0.02
tblVehicleEF	OBUS	2.9660e-003	4.0350e-003
tblVehicleEF	OBUS	0.68	0.32
tblVehicleEF	OBUS	1,046.92	1,236.30
tblVehicleEF	OBUS	2.6440e-003	2.6190e-003
tblVehicleEF	OBUS	1.11	0.69
tblVehicleEF	OBUS	0.10	0.13
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	0.04	2.8910e-003
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	2.6780e-003	3.0000e-003
tblVehicleEF	OBUS	0.04	2.7480e-003
tblVehicleEF	OBUS	0.11	0.04
tblVehicleEF	OBUS	0.33	0.04
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.13	0.04
tblVehicleEF	OBUS	0.33	0.04
tblVehicleEF	SBUS	5.0590e-003	0.81
tblVehicleEF	SBUS	6.6580e-003	6.8180e-003
tblVehicleEF	SBUS	0.00	0.05
tblVehicleEF	SBUS	1.25	17.44
tblVehicleEF	SBUS	1.80	0.43
tblVehicleEF	SBUS	19.98	12.78
tblVehicleEF	SBUS	558.63	1,937.87
tblVehicleEF	SBUS	1,036.92	1,028.66
tblVehicleEF	SBUS	115.30	121.50
tblVehicleEF	SBUS	5.1900e-004	6.9200e-004
tblVehicleEF	SBUS	6.92	9.78
tblVehicleEF	SBUS	6.17	2.19
tblVehicleEF	SBUS	1.69	7.66
tblVehicleEF	SBUS	0.01	6.2240e-003
tblVehicleEF	SBUS	0.57	0.74
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	2.2570e-003	2.0480e-003
tblVehicleEF	SBUS	0.01	5.9540e-003

tblVehicleEF	SBUS	0.24	0.32
tblVehicleEF	SBUS	2.7520e-003	2.6120e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	2.0940e-003	1.8830e-003
tblVehicleEF	SBUS	0.02	7.3360e-003
tblVehicleEF	SBUS	0.18	0.06
tblVehicleEF	SBUS	0.11	2.06
tblVehicleEF	SBUS	0.01	4.3420e-003
tblVehicleEF	SBUS	0.23	0.07
tblVehicleEF	SBUS	1.85	0.02
tblVehicleEF	SBUS	1.25	0.69
tblVehicleEF	SBUS	5.9220e-003	0.02
tblVehicleEF	SBUS	0.01	9.9280e-003
tblVehicleEF	SBUS	1.6320e-003	1.4360e-003
tblVehicleEF	SBUS	0.02	7.3360e-003
tblVehicleEF	SBUS	0.18	0.06
tblVehicleEF	SBUS	0.12	2.99
tblVehicleEF	SBUS	0.01	4.3420e-003
tblVehicleEF	SBUS	0.26	0.08
tblVehicleEF	SBUS	1.85	0.02
tblVehicleEF	SBUS	1.33	0.76
tblVehicleEF	UBUS	0.00	1.80
tblVehicleEF	UBUS	0.00	0.05
tblVehicleEF	UBUS	3.72	7.69
tblVehicleEF	UBUS	6.87	8.02
tblVehicleEF	UBUS	1,982.70	1,842.84
tblVehicleEF	UBUS	19.75	118.94
tblVehicleEF	UBUS	3.2190e-003	1.8150e-003

tblVehicleEF	UBUS	10.51	5.38
tblVehicleEF	UBUS	0.82	1.23
tblVehicleEF	UBUS	0.72	0.56
tblVehicleEF	UBUS	8.0000e-003	0.01
tblVehicleEF	UBUS	0.18	0.07
tblVehicleEF	UBUS	4.7500e-004	1.2760e-003
tblVehicleEF	UBUS	0.31	0.24
tblVehicleEF	UBUS	2.0000e-003	3.0000e-003
tblVehicleEF	UBUS	0.16	0.07
tblVehicleEF	UBUS	4.4100e-004	1.1730e-003
tblVehicleEF	UBUS	3.8870e-003	3.5360e-003
tblVehicleEF	UBUS	0.07	0.05
tblVehicleEF	UBUS	2.1850e-003	2.4270e-003
tblVehicleEF	UBUS	0.66	0.40
tblVehicleEF	UBUS	0.73	0.02
tblVehicleEF	UBUS	0.52	0.69
tblVehicleEF	UBUS	0.02	8.8460e-003
tblVehicleEF	UBUS	3.4300e-004	1.3360e-003
tblVehicleEF	UBUS	3.8870e-003	3.5360e-003
tblVehicleEF	UBUS	0.07	0.05
tblVehicleEF	UBUS	2.1850e-003	2.4270e-003
tblVehicleEF	UBUS	0.73	2.26
tblVehicleEF	UBUS	0.73	0.02
tblVehicleEF	UBUS	0.56	0.76
tblVehicleTrips	CC_TL	10.10	0.00
tblVehicleTrips	CC_TL	10.10	14.30
tblVehicleTrips	CC_TL	10.10	12.40
tblVehicleTrips	CC_TL	10.10	12.00

tblVehicleTrips	CC_TL	10.10	12.20
tblVehicleTrips	CC_TL	10.10	11.80
tblVehicleTrips	CC_TL	10.10	0.00
tblVehicleTrips	CC_TL	10.10	11.60
tblVehicleTrips	CC_TL	10.10	0.00
tblVehicleTrips	CNW_TL	7.90	0.00
tblVehicleTrips	CNW_TL	7.90	14.30
tblVehicleTrips	CNW_TL	7.90	12.40
tblVehicleTrips	CNW_TL	7.90	12.00
tblVehicleTrips	CNW_TL	7.90	12.20
tblVehicleTrips	CNW_TL	7.90	11.80
tblVehicleTrips	CNW_TL	7.90	0.00
tblVehicleTrips	CNW_TL	7.90	11.60
tblVehicleTrips	CNW_TL	7.90	0.00
tblVehicleTrips	CW_TL	18.50	0.00
tblVehicleTrips	CW_TL	18.50	14.30
tblVehicleTrips	CW_TL	18.50	12.40
tblVehicleTrips	CW_TL	18.50	12.00
tblVehicleTrips	CW_TL	18.50	12.20
tblVehicleTrips	CW_TL	18.50	11.80
tblVehicleTrips	CW_TL	18.50	0.00
tblVehicleTrips	CW_TL	18.50	11.60
tblVehicleTrips	CW_TL	18.50	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	28.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	25.00	0.00

tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	44.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	12.90	8.40
tblVehicleTrips	HO_TL	12.90	8.40
tblVehicleTrips	HO_TL	12.90	11.00
tblVehicleTrips	HO_TL	12.90	7.80
tblVehicleTrips	HO_TL	12.90	8.80
tblVehicleTrips	HS_TL	9.60	8.40
tblVehicleTrips	HS_TL	9.60	8.40
tblVehicleTrips	HS_TL	9.60	11.00
tblVehicleTrips	HS_TL	9.60	7.80
tblVehicleTrips	HS_TL	9.60	8.80
tblVehicleTrips	HW_TL	19.80	8.40
tblVehicleTrips	HW_TL	19.80	8.40
tblVehicleTrips	HW_TL	19.80	11.00
tblVehicleTrips	HW_TL	19.80	7.80
tblVehicleTrips	HW_TL	19.80	8.80
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	6.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	12.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00

tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	12.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00
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tblVehicleTrips	PR_TP	86.00	100.00
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tblVehicleTrips	PR_TP	52.00	100.00
tblVehicleTrips	PR_TP	44.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	7.16	6.32
tblVehicleTrips	ST_TR	1.59	0.00
tblVehicleTrips	ST_TR	7.16	7.33
tblVehicleTrips	ST_TR	2.20	1.83
tblVehicleTrips	ST_TR	1.32	0.99
tblVehicleTrips	ST_TR	2.37	2.11
tblVehicleTrips	ST_TR	20.87	1.12
tblVehicleTrips	ST_TR	46.55	58.19

tblVehicleTrips	ST_TR	49.97	51.36
tblVehicleTrips	ST_TR	2.81	3.05
tblVehicleTrips	ST_TR	10.08	8.81
tblVehicleTrips	SU_TR	6.07	5.36
tblVehicleTrips	SU_TR	1.59	0.00
tblVehicleTrips	SU_TR	6.07	6.21
tblVehicleTrips	SU_TR	2.44	2.03
tblVehicleTrips	SU_TR	0.68	0.51
tblVehicleTrips	SU_TR	0.98	0.87
tblVehicleTrips	SU_TR	26.73	1.44
tblVehicleTrips	SU_TR	25.49	31.87
tblVehicleTrips	SU_TR	25.24	25.94
tblVehicleTrips	SU_TR	2.81	3.05
tblVehicleTrips	SU_TR	8.77	7.66
tblVehicleTrips	WD_TR	6.59	5.82
tblVehicleTrips	WD_TR	1.59	0.00
tblVehicleTrips	WD_TR	6.59	6.74
tblVehicleTrips	WD_TR	2.74	2.28
tblVehicleTrips	WD_TR	1.29	1.00
tblVehicleTrips	WD_TR	6.97	5.22
tblVehicleTrips	WD_TR	11.01	9.80
tblVehicleTrips	WD_TR	32.93	1.77
tblVehicleTrips	WD_TR	56.24	70.31
tblVehicleTrips	WD_TR	42.94	44.13
tblVehicleTrips	WD_TR	2.81	3.05
tblVehicleTrips	WD_TR	9.57	8.36
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00

tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
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tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	2,917.00
tblWater	IndoorWaterUseRate	54,468,765.42	26,530,329.00
tblWater	IndoorWaterUseRate	134,086,984.73	65,310,274.00
tblWater	IndoorWaterUseRate	22,869,062.99	11,138,941.00
tblWater	IndoorWaterUseRate	2,181,816.00	1,062,708.00
tblWater	IndoorWaterUseRate	3,954,375.00	1,926,075.00
tblWater	IndoorWaterUseRate	236,563,618.58	115,224,144.00
tblWater	IndoorWaterUseRate	3,075,443.49	1,497,966.00
tblWater	IndoorWaterUseRate	1,126,400.70	548,640.00
tblWater	IndoorWaterUseRate	16,599,652.06	8,085,280.00
tblWater	IndoorWaterUseRate	29,905,697.76	14,566,285.00
tblWater	IndoorWaterUseRate	22,869,062.99	11,138,941.00
tblWater	OutdoorWaterUseRate	34,339,004.29	27,653,600.00
tblWater	OutdoorWaterUseRate	342,908,332.43	305,972,084.00
tblWater	OutdoorWaterUseRate	84,533,099.07	68,075,499.00
tblWater	OutdoorWaterUseRate	14,417,452.76	11,610,582.00
tblWater	OutdoorWaterUseRate	5,610,384.00	4,518,105.00

tblWater	OutdoorWaterUseRate	144,990,604.94	116,762,956.00
tblWater	OutdoorWaterUseRate	1,884,949.24	1,517,972.00
tblWater	OutdoorWaterUseRate	1,761,806.23	1,418,806.00
tblWater	OutdoorWaterUseRate	10,173,980.30	8,193,242.00
tblWater	OutdoorWaterUseRate	18,853,592.07	15,183,026.00
tblWater	OutdoorWaterUseRate	14,417,452.76	11,610,582.00
tblWoodstoves	NumberCatalytic	41.80	0.00
tblWoodstoves	NumberCatalytic	102.90	0.00
tblWoodstoves	NumberCatalytic	17.55	0.00
tblWoodstoves	NumberCatalytic	22.95	0.00
tblWoodstoves	NumberCatalytic	17.55	0.00
tblWoodstoves	NumberNoncatalytic	41.80	0.00
tblWoodstoves	NumberNoncatalytic	102.90	0.00
tblWoodstoves	NumberNoncatalytic	17.55	0.00
tblWoodstoves	NumberNoncatalytic	22.95	0.00
tblWoodstoves	NumberNoncatalytic	17.55	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Energy											0.0000	9,849.490 5	9,849.490 5	0.5755	0.1652	9,912.792 7
Mobile											0.0000	60,053.82 74	60,053.82 74	2.4277	0.0000	60,104.80 89
Waste											7,089.881 6	0.0000	7,089.881 6	419.0000	0.0000	15,888.88 16
Water											81.5436	689.4468	770.9904	8.4287	0.2088	1,012.722 3
Total											**7,171.425 2**	**70,661.25 34**	**77,832.67 86**	**430.4977**	**0.3740**	**86,989.07 78**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Energy											0.0000	9,849.4905	9,849.4905	0.5755	0.1652	9,912.7927
Mobile											0.0000	60,053.8274	60,053.8274	2.4277	0.0000	60,104.8089
Waste											1,772.4704	0.0000	1,772.4704	104.7500	0.0000	3,972.2204
Water											81.5436	689.4468	770.9904	8.4272	0.2085	1,012.5922
Total											**1,854.0140**	**70,661.2534**	**72,515.2674**	**116.2462**	**0.3737**	**75,072.2865**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**74.15**	**0.00**	**6.83**	**73.00**	**0.08**	**13.70**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,529.380 0
Vegetation Land Change	-33,643.07 80
Total	**-30,113.69 80**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	No Phase	Trenching	1/1/2016	12/31/2015	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
No Phase				0.00	19.80	7.90				

3.1 Mitigation Measures Construction

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	60,053.8274	60,053.8274	2.4277	0.0000	60,104.8089
Unmitigated											0.0000	60,053.8274	60,053.8274	2.4277	0.0000	60,104.8089

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	4,865.52	5,283.52	4480.96	14,891,421	14,891,421
City Park	0.00	0.00	0.00		
Condo/Townhouse	13,870.92	15,085.14	12780.18	42,465,661	42,465,661
Congregate Care (Assisted Living)	800.28	642.33	712.53	3,063,781	3,063,781
Elementary School	900.00	0.00	0.00	3,346,200	3,346,200
General Light Industry	89.26	16.93	8.72	304,320	304,320
General Office Building	13,043.80	2,808.41	1157.97	43,171,677	43,171,677
Health Club	92.04	58.24	74.88	376,402	376,402
Library	2,531.16	2,094.84	1147.32	9,754,988	9,754,988
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	9,889.53	11,509.78	5813.15	40,276,023	40,276,023
Retirement Community	1,399.95	1,399.95	1399.95	3,974,738	3,974,738
Single Family Housing	2,934.36	3,092.31	2688.66	9,359,188	9,359,188
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	50,416.83	41,991.45	30,264.33	170,984,398	170,984,398

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	8.40	8.40	8.40	40.20	19.20	40.60	100	0	0
City Park	0.00	0.00	0.00	33.00	48.00	19.00	100	0	0
Condo/Townhouse	8.40	8.40	8.40	40.20	19.20	40.60	100	0	0
Congregate Care (Assisted	11.00	11.00	11.00	40.20	19.20	40.60	100	0	0
Elementary School	14.30	14.30	14.30	65.00	30.00	5.00	100	0	0
General Light Industry	12.40	12.40	12.40	59.00	28.00	13.00	100	0	0
General Office Building	12.00	12.00	12.00	33.00	48.00	19.00	100	0	0
Health Club	12.20	12.20	12.20	16.90	64.10	19.00	100	0	0
Library	11.80	11.80	11.80	52.00	43.00	5.00	100	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	100	0	0
Regional Shopping Center	11.60	11.60	11.60	16.30	64.70	19.00	100	0	0
Retirement Community	7.80	7.80	7.80	40.20	19.20	40.60	100	0	0
Single Family Housing	8.80	8.80	8.80	40.20	19.20	40.60	100	0	0
Unenclosed Parking with	0.00	0.00	0.00	0.00	0.00	0.00	100	0	0

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.540471	0.044502	0.211583	0.117127	0.014105	0.006388	0.021207	0.033417	0.002619	0.001815	0.005251	0.000692	0.000822

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated											0.0000	3,212.6624	3,212.6624	0.0616	0.0589	3,232.2141
NaturalGas Unmitigated											0.0000	3,212.6624	3,212.6624	0.0616	0.0589	3,232.2141
Electricity Mitigated											0.0000	6,636.8281	6,636.8281	0.5139	0.1063	6,680.5786
Electricity Unmitigated											0.0000	6,636.8281	6,636.8281	0.5139	0.1063	6,680.5786

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	8.2764e+006											0.0000	441.6602	441.6602	8.4700e-003	8.1000e-003	444.3481
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	2.03742e+007											0.0000	1,087.2449	1,087.2449	0.0208	0.0199	1,093.8617
Congregate Care (Assisted Living)	3.4749e+006											0.0000	185.4339	185.4339	3.5500e-003	3.4000e-003	186.5624
Elementary School	939000											0.0000	50.1086	50.1086	9.6000e-004	9.2000e-004	50.4136
General Light Industry	329517											0.0000	17.5843	17.5843	3.4000e-004	3.2000e-004	17.6913
General Office Building	1.25513e+007											0.0000	669.7868	669.7868	0.0128	0.0123	673.8630
Health Club	1.00204e+006											0.0000	53.4727	53.4727	1.0200e-003	9.8000e-004	53.7981
Library	693720											0.0000	37.0195	37.0195	7.1000e-004	6.8000e-004	37.2448
Parking Lot	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	295812											0.0000	15.7857	15.7857	3.0000e-004	2.9000e-004	15.8817
Retirement Community	4.5441e+006											0.0000	242.4905	242.4905	4.6500e-003	4.4500e-003	243.9662
Single Family Housing	7.722e+006											0.0000	412.0753	412.0753	7.9000e-003	7.5500e-003	414.5832
Unenclosed Parking with Elevator	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**3,212.6624**	**3,212.6624**	**0.0616**	**0.0589**	**3,232.2141**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	8.2764e +006											0.0000	441.6602	441.6602	8.4700e-003	8.1000e-003	444.3481
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	2.03742e +007											0.0000	1,087.2449	1,087.2449	0.0208	0.0199	1,093.8617
Congregate Care (Assisted Living)	3.4749e +006											0.0000	185.4339	185.4339	3.5500e-003	3.4000e-003	186.5624
Elementary School	939000											0.0000	50.1086	50.1086	9.6000e-004	9.2000e-004	50.4136
General Light Industry	329517											0.0000	17.5843	17.5843	3.4000e-004	3.2000e-004	17.6913
General Office Building	1.25513e +007											0.0000	669.7868	669.7868	0.0128	0.0123	673.8630
Health Club	1.00204e +006											0.0000	53.4727	53.4727	1.0200e-003	9.8000e-004	53.7981
Library	693720											0.0000	37.0195	37.0195	7.1000e-004	6.8000e-004	37.2448
Parking Lot	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	295812											0.0000	15.7857	15.7857	3.0000e-004	2.9000e-004	15.8817
Retirement Community	4.5441e +006											0.0000	242.4905	242.4905	4.6500e-003	4.4500e-003	243.9662
Single Family Housing	7.722e +006											0.0000	412.0753	412.0753	7.9000e-003	7.5500e-003	414.5832
Unenclosed Parking with Elevator	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**3,212.6624**	**3,212.6624**	**0.0616**	**0.0589**	**3,232.2141**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	3.06143e +006	520.1021	0.0403	8.3300e-003	523.5306
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	7.5364e +006	1,280.3469	0.0991	0.0205	1,288.7871
Congregate Care (Assisted Living)	1.28536e +006	218.3682	0.0169	3.5000e-003	219.8077
Elementary School	618000	104.9911	8.1300e-003	1.6800e-003	105.6832
General Light Industry	161766	27.4822	2.1300e-003	4.4000e-004	27.6634
General Office Building	1.78487e +007	3,032.2903	0.2348	0.0486	3,052.2794
Health Club	491920	83.5715	6.4700e-003	1.3400e-003	84.1225
Library	340560	57.8572	4.4800e-003	9.3000e-004	58.2386
Parking Lot	554048	94.1264	7.2900e-003	1.5100e-003	94.7469
Regional Shopping Center	2.66455e +006	452.6762	0.0351	7.2500e-003	455.6603
Retirement Community	1.68086e +006	285.5584	0.0221	4.5700e-003	287.4409
Single Family Housing	2.06739e +006	351.2258	0.0272	5.6300e-003	353.5411
Unenclosed Parking with Elevator	754800	128.2318	9.9300e-003	2.0500e-003	129.0771
Total		**6,636.8281**	**0.5139**	**0.1063**	**6,680.5787**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	3.06143e +006	520.1021	0.0403	8.3300e-003	523.5306
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	7.5364e +006	1,280.346 9	0.0991	0.0205	1,288.787 1
Congregate Care (Assisted Living)	1.28536e +006	218.3682	0.0169	3.5000e-003	219.8077
Elementary School	618000	104.9911	8.1300e-003	1.6800e-003	105.6832
General Light Industry	161766	27.4822	2.1300e-003	4.4000e-004	27.6634
General Office Building	1.78487e +007	3,032.290 3	0.2348	0.0486	3,052.279 4
Health Club	491920	83.5715	6.4700e-003	1.3400e-003	84.1225
Library	340560	57.8572	4.4800e-003	9.3000e-004	58.2386
Parking Lot	554048	94.1264	7.2900e-003	1.5100e-003	94.7469
Regional Shopping Center	2.66455e +006	452.6762	0.0351	7.2500e-003	455.6603
Retirement Community	1.68086e +006	285.5584	0.0221	4.5700e-003	287.4409
Single Family Housing	2.06739e +006	351.2258	0.0272	5.6300e-003	353.5411
Unenclosed Parking with Elevator	754800	128.2318	9.9300e-003	2.0500e-003	129.0771
Total		**6,636.828 1**	**0.5139**	**0.1063**	**6,680.578 7**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Unmitigated											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Total											**0.0000**	**68.4887**	**68.4887**	**0.0659**	**0.0000**	**69.8722**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	68.4887	68.4887	0.0659	0.0000	69.8722
Total											**0.0000**	**68.4887**	**68.4887**	**0.0659**	**0.0000**	**69.8722**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	770.9904	8.4287	0.2088	1,012.7223
Mitigated	770.9904	8.4272	0.2085	1,012.5922

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	26.5303 / 27.6536	56.6126	0.8682	0.0212	81.4125
City Park	0 / 305.972	223.5189	0.0173	3.5800e-003	224.9923
Condo/Townhouse	65.3103 / 68.0755	139.3644	2.1373	0.0522	200.4149
Congregate Care (Assisted Living)	11.1389 / 11.6106	23.7692	0.3645	8.8900e-003	34.1816
Elementary School	1.06271 / 4.51811	4.7591	0.0350	8.9000e-004	5.7689
General Light Industry	1.92608 / 0	2.6434	0.0629	1.5100e-003	4.4342
General Office Building	115.224 / 116.763	243.4350	3.7706	0.0920	351.1276
Health Club	1.49797 / 1.51797	3.1648	0.0490	1.2000e-003	4.5648
Library	0.54864 / 1.41881	1.7894	0.0180	4.5000e-004	2.3064
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.08528 / 8.19324	17.0818	0.2646	6.4500e-003	24.6386
Retirement Community	14.5663 / 15.183	31.0827	0.4767	0.0116	44.6989
Single Family Housing	11.1389 / 11.6106	23.7692	0.3645	8.8900e-003	34.1816
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**770.9905**	**8.4287**	**0.2088**	**1,012.7223**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	26.5303 / 27.6536	56.6126	0.8681	0.0212	81.3991
City Park	0 / 305.972	223.5189	0.0173	3.5800e-003	224.9923
Condo/Townhouse	65.3103 / 68.0755	139.3644	2.1369	0.0521	200.3818
Congregate Care (Assisted Living)	11.1389 / 11.6106	23.7692	0.3645	8.8800e-003	34.1760
Elementary School	1.06271 / 4.51811	4.7591	0.0350	8.9000e-004	5.7683
General Light Industry	1.92608 / 0	2.6434	0.0629	1.5100e-003	4.4332
General Office Building	115.224 / 116.763	243.4350	3.7699	0.0918	351.0693
Health Club	1.49797 / 1.51797	3.1648	0.0490	1.1900e-003	4.5641
Library	0.54864 / 1.41881	1.7894	0.0180	4.5000e-004	2.3061
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.08528 / 8.19324	17.0818	0.2645	6.4400e-003	24.6345
Retirement Community	14.5663 / 15.183	31.0827	0.4766	0.0116	44.6916
Single Family Housing	11.1389 / 11.6106	23.7692	0.3645	8.8800e-003	34.1760
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**770.9905**	**8.4272**	**0.2085**	**1,012.5922**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,772.470 4	104.7500	0.0000	3,972.220 4
Unmitigated	7,089.881 6	419.0000	0.0000	15,888.88 16

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	3652.53	741.4306	43.8173	0.0000	1,661.593 7
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	8991.5	1,825.193 2	107.8658	0.0000	4,090.375 7
Congregate Care (Assisted Living)	1190.01	241.5613	14.2759	0.0000	541.3544
Elementary School	140.4	28.4999	1.6843	0.0000	63.8702
General Light Industry	70.96	14.4042	0.8513	0.0000	32.2808
General Office Building	14949.8	3,034.672 3	179.3440	0.0000	6,800.896 1
Health Club	592.8	120.3330	7.1115	0.0000	269.6741
Library	141.91	28.8065	1.7024	0.0000	64.5571
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2517.7	511.0704	30.2034	0.0000	1,145.341 6
Retirement Community	1145.94	232.6155	13.7472	0.0000	521.3063
Single Family Housing	1533.54	311.2948	18.3970	0.0000	697.6316
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**7,089.881 6**	**419.0000**	**0.0000**	**15,888.88 16**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	913.133	185.3577	10.9543	0.0000	415.3984
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	2247.88	456.2983	26.9665	0.0000	1,022.5939
Congregate Care (Assisted Living)	297.503	60.3903	3.5690	0.0000	135.3386
Elementary School	35.1	7.1250	0.4211	0.0000	15.9676
General Light Industry	17.74	3.6011	0.2128	0.0000	8.0702
General Office Building	3737.45	758.6681	44.8360	0.0000	1,700.2240
Health Club	148.2	30.0833	1.7779	0.0000	67.4185
Library	35.4775	7.2016	0.4256	0.0000	16.1393
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	629.425	127.7676	7.5509	0.0000	286.3354
Retirement Community	286.485	58.1539	3.4368	0.0000	130.3266
Single Family Housing	383.385	77.8237	4.5993	0.0000	174.4079
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**1,772.4704**	**104.7500**	**0.0000**	**3,972.2204**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-30,113.6980	0.0000	0.0000	-30,113.6980

10.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	224.4 / 0	-1,391.2800	0.0000	0.0000	-1,391.2800
Grassland	68.8 / 0	-296.5280	0.0000	0.0000	-296.5280
Others	422.3 / 0	0.0000	0.0000	0.0000	0.0000
Scrub	547.9 / 0	-7,834.9700	0.0000	0.0000	-7,834.9700
Trees	217.3 / 0	-24,120.3000	0.0000	0.0000	-24,120.3000
Wetlands	1.6 / 0	0.0000	0.0000	0.0000	0.0000
Total		**-33,643.0780**	**0.0000**	**0.0000**	**-33,643.0780**

10.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	4985	3,529.3800	0.0000	0.0000	3,529.3800
Total		**3,529.3800**	**0.0000**	**0.0000**	**3,529.3800**

APPENDIX L
GHG EMISSION MODELING: POST-2010 MODIFICATIONS TO METHODOLOGIES

RAMBOLL ENVIRON

ENVIRONMENT
& HEALTH

MEMORANDUM

From: **Eric C. Lu, Ramboll Environ**
Shari B. Libicki, Ramboll Environ

Subject: **GHG EMISSIONS MODELING: POST-2010 MODIFICATIONS TO METHODOLOGIES**

Date: September 29, 2016

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The greenhouse gas (GHG) emissions estimates contained in the Mission Village 2011 EIR were prepared between 2009 and 2010. The difference in the previously reported GHG emissions estimates, as compared to what is presented in our 2016 GHG Technical Report, primarily is a result of changing methods of estimating and reporting GHGs. The evolution of the methods to estimate and report GHG emissions, and how that evolution impacted the estimation of emissions for this Project, are described in this memorandum.

As background, the original analysis presented in the 2011 EIR was prepared several years after the passage of Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, but well before any individual agency had formally established methods of estimating GHG emissions for the purposes of environmental documentation prepared pursuant to the California Environmental Quality Act (CEQA)[1]. Since that time, methods to prepare a GHG emissions inventory have been formally established, tools specific for GHG analyses have been prepared, and the tools used to estimate emissions from traffic have been updated. The methods used to evaluate whether GHG emissions associated with land use development are additive or moved from one place to another also have changed substantially. This is further discussed in this memorandum.

This technical memorandum:

- Discusses the evolution of whether GHG emissions are additive or moved (and therefore, not counted);
- Provides a summary of the GHG analytical tools for CEQA in the mid- to late-2000s, as compared to today; and
- Provides a historical review of the Project's GHG inventory, and a comparison of the original emissions analysis to the current emissions analysis.

[1] In January 2008, the California Air Pollution Control Officers Association (CAPCOA) prepared a document, "CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act". However, this document did not provide complete guidance on how to estimate emissions from projects. Available at: http://www.capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-White-Paper.pdf. Accessed: September 2016.

I. THE EVOLUTION OF WHETHER GHG EMISSIONS ARE ADDITIVE OR MOVED

One goal of the emissions analyses for environmental documents prepared pursuant to CEQA is to provide the public and decision makers with an understanding of the quantity of new emissions that would result from a project. Critically, if the emissions would exist with or without the project, then the emissions should not be characterized as "new" and should not be counted as being associated with the project.

There are two major categories of GHG emissions associated with new land use development: GHGs associated with vehicular emissions, and GHGs associated with energy use in buildings. The issue of how to account for GHGs is primarily associated with vehicular emissions because emissions associated with energy usage in buildings are typically new unless that building is replacing another building.

As a point of comparison, when evaluating the criteria pollutant impacts for a new project, the vehicular emissions associated with a project are counted as new emissions, even if the project's residents and workers would relocate from another area. The rationale for this is that the new land use development represents growth in the air basin, which has a limited ability to absorb additional criteria pollutant emissions without adverse air quality impacts. As a result, all emissions associated with vehicle travel are counted as new emissions, even if this might lead to some over-counting of criteria pollutant emissions from the project.

For purposes of GHGs, it makes sense to consider operational emissions (including vehicular emissions) from new residential development as growth, as residences are rarely removed from the housing supply once constructed. However, it is not clear that new commercial development should be considered new growth for vehicular travel purposes because, to the extent that new commercial development serves existing residential development, the vehicular travel associated with commercial development may not be new.

For instance, if the new commercial development serves an area with a high residential/commercial balance[2], then this new commercial growth will reduce shopping and work trip lengths and will reduce GHG emissions associated with mobile sources. This type of evaluation is recognized in the draft guidelines issued in furtherance of SB 743. Specifically, the draft guidelines[3] published by the Office of Public Research on January 2016 state, "Because new retail development typically redistributes shopping trips rather than creating new trips, estimating the total change in VMT (i.e. the difference in total VMT in the area affected with and without the project) is the best way to analyze a retail project's transportation impacts."

If, however, the new commercial development results in longer trips for its workers and residents than they would have previously made, then it adds GHGs emissions. Examples of commercial development that could increase vehicle miles traveled (VMT) would be facilities that draw trips from far away that otherwise would not be made, such as a theme park.

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[2] For purposes of this discussion, a "high residential/commercial balance" refers to a mix of land uses where commercial serving areas are in lower supply relative to the residential land uses, and thus residents must travel farther to reach commercial areas.

[3] Office of Planning and Research, 2016. Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA Implementing Senate Bill 743 (Steinberg, 2013) dated January 20, 2016. Available at: https://www.opr.ca.gov/docs/Revised_VMT_CEQA_Guidelines_Proposal_January_20_2016.pdf. Accessed: September 2016.

Further, to the extent that new commercial development serves new residential development, the commercial vehicle travel would already be counted in the evaluation of the new residential development. Accordingly, GHG emissions from commercial areas will only be counted if the commercial areas contribute to greater VMT as a result of its location. If the commercial development lowers VMT, then it will be considered to have a zero or negative GHG contribution as a result of its shortened operational vehicle trips.

In summary, for criteria pollutants, if new emissions move into the air basin, and even if there is a reduction in criteria emissions elsewhere, these emissions are new to the basin and, therefore, counted as project-related emissions. For GHGs, if the emissions simply moved location from one basin to another, these emissions are not new on a global scale and should not be counted as project-related emissions.

When the original evaluation for the Mission Village Project was conducted, there was a great deal of discussion between relevant regulatory agencies and the environmental consulting community in terms of how to treat GHG emissions associated with vehicular trips resulting from commercial developments. Those discussions included the idea of not including vehicular trips to commercial developments in order to avoid double counting. Therefore, at the time of the original analysis, the GHG emissions associated with commercial trips were excluded from the emissions estimates. For purposes of the current analysis, and despite a renewed recognition that commercial retail development does not always create new trips, a more conservative approach was taken, such that the GHG emissions results from all commercial trips were counted towards the total Project inventory.

II. HISTORY OF GHG ANALYTICAL TOOLS FOR CEQA

The California Air Resources Board (CARB), the South Coast Air Quality Management District (SCAQMD), and other public and private organizations have developed several software programs to facilitate the calculation of emissions from construction, motor vehicles, and urban developments by streamlining emissions estimation from these sources. In the mid- to late-2000s, five different models were required to estimate GHG emissions for land use development projects. These included the EMission FACtor model (EMFAC), the Emissions Inventory Program model (OFFROAD), the URBEMIS[4] model, the eQUEST model, and the Micropas model. The OFFROAD[5] and EMFAC[6] models have been updated by the CARB, and CalEEMod®[7] was developed to replace URBEMIS and incorporated methodology to accomplish what eQUEST and Micropas models were used for (i.e., estimating building energy usage). Ultimately, CalEEMod used data from the California Commercial End Use Survey[8] and the Residential Appliance Saturation Survey.[9] The updates to the models and the development of entirely different models leads to different emission estimates for an identical project evaluation. Additional details on the URBEMIS and CalEEMod models are included below.

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4 URBEMIS Environmental Management Software. Available at: http://www.urbemis.com/. Accessed: September 2016.

5 CARB. 2011. Off Road Mobile Source Emission factors. Available at: http://www.arb.ca.gov/msei/msei.htm. Accessed: September 2016.

6 CARB. 2015. EMFAC2014. Release. Available at: https://www.arb.ca.gov/msei/msei.htm. Accessed: September 2016.

7 SCAQMD. 2013. California Emissions Estimator Model®. Available at: http://www.CalEEMod.com/. Accessed: September 2016.

8 Available at: http://www.energy.ca.gov/ceus/. Accessed: September 2016.

9 Available at: http://www.energy.ca.gov/appliances/rass/. Accessed: September 2016.

A. URBEMIS

The URBEMIS software was created by SCAQMD, although it is used by other air districts as well. It estimates emissions associated with different aspects of urban development.

The operational data module in URBEMIS calculates emissions from mobile sources operating during the use of a development based on emission factors from EMFAC and traffic use information specific to a development. Mobile source emissions during the construction phase are calculated separately in the construction module of URBEMIS. URBEMIS provides county, air district / air basin, or state wide averages for number of daily trips per land use unit, such as per housing unit or per student at an elementary school, in the absence of more specific information from traffic engineers. URBEMIS also provides air district-specific default values for vehicle fleet characteristics (vehicle class distribution and technology categories) and travel conditions (average trip length, trip speed, and relative frequency of each type of trip) based on EMFAC2007 (URBEMIS Version 9.2.2).

In addition to mobile source emissions, URBEMIS can calculate emissions associated with the construction phase of a development and emissions from area sources, such as fireplaces, once the development is operational. The URBEMIS construction module enables separate emissions calculations from each of the three typical stages of any construction project: demolition, site grading, and building construction using EMFAC2007 and OFFROAD2007. Based on the timing of construction and size of the development, URBEMIS defaults can be used to estimate emissions. Alternatively, the user can overwrite these defaults by entering specific information about the construction project, such as what types and numbers of equipment are going to be used. In terms of area sources, URBEMIS is equipped to estimate GHG emissions from three types of GHG-emitting area sources based either on program defaults or more specific project information inputted by the user. These uses are natural gas fuel combustion, hearth fuel combustion, and landscaping equipment. URBEMIS was unable to estimate GHG emissions associated with building electricity usage.

B. CalEEMOD

The CalEEMod® version 2013.2.2[10] provides a platform to calculate both construction emissions and operational emissions from a land use development project.[11] The first version of CalEEMod® was released in January of 2011, after the release of the Project 2010 Draft EIR. It calculates both the daily maximum and annual average for criteria pollutants as well as total or annual GHG emissions. The model also provides default values for water and wastewater treatment and distribution, solid waste disposal, and energy use. Specifically the model aids the user in the following GHG calculations (emission categories of criteria pollutant are slightly different):

- One-time short-term construction emissions associated with site preparation, demolition, grading, utility installation, building, coating, and paving from off-road construction equipment, and on-road mobile equipment associated with workers, vendors, and hauling.
- One-time vegetation sequestration changes, such as permanent vegetation land use changes and new tree plantings.

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[10] SCAQMD. 2013. California Emissions Estimator Model®. Available at: http://www.CalEEMod.com/. Accessed: September 2016.

[11] CalEEMod® is also capable of calculating emissions associated with the vegetation change. However, it is not the focus of this memorandum.

- Operational emissions associated with the fully built-out land use development, such as on-road mobile vehicle traffic generated by the land uses, off-road emissions from landscaping equipment, wood stoves and hearth usage, natural gas usage in the buildings, electricity usage in the buildings, water usage by the land uses and wastewater treatment, and solid waste disposal by the land uses.

CalEEMod® was developed under the auspices of the SCAQMD, and received input from other California air districts, and is currently supported by numerous lead agencies for use in quantifying the emissions associated with development projects undergoing environmental review. CalEEMod® utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the USEPA AP-42 emission factors,[12] CARB's on-road and off-road equipment emission models such as the EMission FACtor model (EMFAC)[13] and the Emissions Inventory Program model (OFFROAD), and studies commissioned by California agencies such as the CEC and CalRecycle. In addition, CalEEMod® contains default values and existing regulation methodologies to use in each specific local air district region. Appropriate statewide default values can be utilized if regional default values are not defined.

III. HISTORICAL REVIEW OF MISSION VILLAGE GHG INVENTORY

The GHG emissions estimates in the 2011 EIR recognize that, based on the actual location of the Project site, the Project's new commercial (i.e., non-residential) development areas will serve an area with a high residential/commercial balance. Therefore, this new commercial non-residential development will reduce shopping and work trip lengths, and will reduce GHG emissions associated with mobile sources. Specifically, all commercial non-residential development will not contribute to net mobile GHG emissions. With this recognition, and using the then-available GHG modeling tools, the 2011 EIR identified a Project GHG emissions inventory of 64,017 metric tonnes (MT) CO2e per year, of which the mobile emissions contributed 39,355 MT CO_2e per year (see Table ES-1 of the *Mission Village* GHG Technical Report, 2010).[14] The annual VMT was estimated to be 130,440,780 miles per year (Table 4-E-2 of the *Mission Village* GHG Technical Report, 2010).

Based on the evolution of the GHG analytical tools for CEQA, notably the development of CalEEMod® and its corresponding treatment of all commercial development trips as "new," the Project's GHG emissions are accounted for differently in the current analysis than in the approach employed in the 2011 EIR. While the scientific understanding of "new" GHG emissions has not changed, the SCAQMD and other air districts, decided that CalEEMod® would conservatively include all mobile related emissions regardless of consideration of they are "new" GHG emissions. Thus, in the context of this Project analysis, the additional VMT non-home-based and non-residential VMT (approximately 150,508,239 miles per year) was included.

Table 1 shows that the 2016 GHG Technical Report's Project GHG emissions inventory would be less than the comparable GHG inventory presented in the 2011 EIR. Specifically, through extrapolation from the 2011 EIR's GHG inventory, if the non-home-based and non-residential miles were also included, the mobile

[12] The USEPA maintains a compilation of Air Pollutant Emission Factors and process information for several air pollution source categories. The data is based on source test data, material balance studies, and engineering estimates. Available at: http://epa.gov/ttnchie1/ap42/. Accessed: March 2016.

[13] Emission factors in CalEEMod® are based on the CARB EMFAC 2011 program. CARB has released an updated version EMFAC2014 that includes various updates. To more accurately estimate emissions, EMFAC 2014 information was incorporated into the analysis, in lieu of CalEEMod®'s default utilization of EMFAC 2011 information.

[14] County of Los Angeles, *Draft EIR for Mission Village* (October 2010; SCH No. 2005051143), Volume XX – Appendix 4.23 [ENVIRON International Corporation, *Climate Change Technical Report: Mission Village* (August 2010)].

source-related emissions might be 2.15 times larger than previously disclosed; this is estimated by dividing the 2016 GHG Technical Report's total VMT by the 2011 EIR's VMT analyzed. Using this ratio, we estimate what the 2011 EIR's GHG inventory would have been if it had assumed all VMT was "new." Thus, with inclusion of the vehicular trips identified as non-home-based and non-residential trips, the 2011 EIR's GHG inventory would have been 109,275 $MTCO_2e$ per year. The 2016 GHG Technical Report's Project GHG emissions inventory is estimated to be 32,122 $MTCO_2e$ per year (for comparison purposes, this excludes the Project's commitment to achieve net zero GHG emissions via GCC-13), which is less than the 2011 EIR's comparable GHG inventory.

Table 2 shows that adjusting the 2016 GHG Technical Report's Project GHG emissions inventory to reflect only the "new" emissions would also be less than the 2011 EIR's GHG emissions inventory. This analysis removes the non-home-based and non-residential VMT from the 2016 GHG Technical Report's Project GHG emission inventory in parallel to the approach used in the 2011 EIR, and also excludes the mitigation measure emission reductions related to these mobile emissions. The 2016 GHG Technical Report's Project GHG inventory is estimated to be 12,238 $MTCO_2e$ per year (again, for comparison purposes, this excludes the Project's commitment to achieve net zero GHG emissions via GCC-13), which is less than the 2011 EIR's GHG inventory (64,017 $MTCO_2e$ per year).

Note that this memorandum focuses on the differences in mobile VMT calculations between the original analysis and the current analysis. The mobile-related GHG emissions are the largest contributor to the difference in GHG emissions between these analyses. There are other differences in the modeling methodologies, which also contribute to the differences in the emissions[15]; however, the primary driver of the difference is the change in how the mobile-related GHG emissions are estimated and reported.

[15] For example, the Project's GHG emissions inventory in the 2016 GHG Technical Report is based on a build-out year of 2028 while the 2011 EIR was based on a 2020 evaluation year.

Table 1. Updating the 2010 EIR's Project GHG Emissions Estimate to Include Existing Worker Commute Trips
Mission Village
Los Angeles County, California

Vehicle Miles Traveled (miles/year)	
2011 Mission EIR VMT, Residential Home-Based Only[1]	130,440,780
Residential Non-Home-Based VMT[2]	53,278,628
Nonresidential VMT[3]	97,229,610
Total VMT (2011 Mission EIR including Non-Home-Based and Nonresidential VMT)[4]	280,949,019
Scaling Ratio (Total VMT divided by 2011 Mission EIR VMT)	2.15
Mobile GHG Emissions (MT CO_2e/year)	
2011 Mission EIR Mobile Emissions, Residential Home-Based Only	39,355
Updated 2011 Mission EIR Mitigated Mobile Emissions, Including Non-Home-Based and Nonresidential VMT	84,613
Updated Total GHG Emissions (MT CO_2e/year)	
Updated 2011 Mission EIR Mitigated Project Total Emissions[5]	109,275
Mission Mitigated Project Total Emissions (2016 Analysis)	32,122

Notes:

[1] Residential VMT represents trips that are made by "planning area residents, and begin or end at that resident's home," as described in Final Environmental Impact report - Mission Village (May 2011; SCH No. 2005051143), Appendix 8.0 [ENVIRON International Corporation, Climate Change Technical Report (August 2010), Table 4-E-1.

[2] Additional Residential VMT represents the home-based trips that are not attributed to residents in the Mission Village EIR. Excluded trips met one of the following conditions: (1) an on-site or off-site nonresidential trip to on-site resident (e.g. a delivery truck from a warehouse to on-site resident; or (2) an off-site resident trip to on-site resident. The percent of trips that were excluded in that analysis ranged from 29% to 36%. This table adds back in 29% of trips to estimate the minimum (conservative) Updated 2011 Mission EIR emissions for comparison purposes.

[3] Nonresidential VMT was estimated from the current Mission Village Project analysis.

[4] Total VMT consists of residential VMT from the 2011 Mission Village EIR and additional estimated residential and nonresidential VMT.

[5] The updated 2011 Mission EIR Mitigated Project Total Emissions is calculated by taking the original 2011 emissions for all source categories except for mobile and adding the updated mobile emissions.

Abbreviations:
EIR - Environmental Impact Report
EIS - Environmental Impact Statement
CO_2e - Carbon Dioxide Equivalents
GHG - Greenhouse Gas
MT - Metric Tonne
VMT - Vehicle Miles Traveled

Table 2. Tailoring the Mission Village GHG Emissions Estimate to Only Include Residential Home-Based Trips
Mission Village
Los Angeles County, California

Vehicle Miles Traveled (miles/year)		
Unmitigated Project VMT, All Trips	170,984,398	
VMT, All Residential	73,754,788	
VMT, Residential Home-Based Trips[1]	52,365,899	
Scaling Ratio (Residential Home-Based VMT divided by Total Mission Village VMT)	0.31	
Mobile GHG Emissions (MT CO_2e/year)		
Total Unmitigated Emissions, All Trips[2]	59,312	
Unmitigated Emissions, Residential Home-Based Trips	18,387	
Reduction from Mobile Mitigation Measures	All VMT	Residential Only[3]
TDM Program[4]	9,193	2,850
Residential EV Chargers and Vehicle Subsidy	9,043	9,043
Commercial Development Area EV Chargers[5]	6,646	0
Traffic Signal Synchronization[6]	1,032	320
Electric School Bus Program	25	0
Electric Transit Bus Subsidy	124	0
Reduction from Mobile Mitigation Measures	26,064	12,213
Tailored 2011 Mission Village Mitigated Project Mobile Emissions, Residential Home-Based Trips Only[7]	6,174	
2011 EIR Mitigated Mobile Emissions, Residential Home-Based Trips Only	39,355	
Total GHG Emissions (MT CO_2e/year)		
2011 EIR Mitigated Project Total Emissions	64,017	
Tailored Mission Village Mitigated Project Total Emissions[8]	12,238	

Notes:

[1] Approximately 29% of home-based trips are not attributed to residents, as described in Final Environmental Impact report - Mission Village (May 2011; SCH No. 2005051143), Appendix 8.0 [ENVIRON International Corporation, Climate Change Technical Report (August 2010), Table 4-E-1. These trips were removed from the total VMT.

[2] Unmitigated emissions are used for initial scaling because the mitigation measures do not all equally affect residential and non-residential VMT.

[3] Mitigation measures are scaled to estimate the mobile emissions reduction from residential VMT, excluding non-residential trips.

[4] The TDM program is assumed to be applicable to the remaining mobile emissions.

[5] The emissions reduction from non-residential electric vehicle charging stations is conservatively excluded.

[6] Traffic signal synchronization is assumed to be applicable to the remaining mobile emissions.

[7] Mitigated mobile emissions are calculated by subtracting a fraction of the total mobile mitigation measures from the total unmitigated mobile emissions.

[8] The Mission Mitigated Project Total Emissions are calculated by taking the 2028 Mitigated Project emissions for all source categories except for mobile and adding the adjusted mobile emissions from residential home-based trips.

Abbreviations:

CO_2e - carbon dioxide equivalents
EIR - Environmental Impact Report
EV - electric vehicle
GHG - greenhouse gas
MT - metric tonnes
MV - Mission Village
TDM - Transportation Demand Management
VMT - vehicle miles traveled

APPENDIX M
CONSISTENCY WITH CARB SCOPING PLAN

Appendix M: Consistency with CARB Scoping Plan (Mission Village)				
Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
Transportation Sector				
T-1	Advanced Clean Cars Program (http://www.arb.ca.gov/msprog/consumer_info/advanced_clean_cars/consumer_acc.htm)	The Advanced Clean Cars Program, for model years 2017 through 2025, combines the control of smog, soot and GHGs and requirements for greater numbers of zero emission vehicles into a single package of standards.	Adopted by CARB in January 2012.	This regulatory program applies to vehicle manufacturers, and not directly to land use development. That being said, the vehicles operated by future residents and occupants of and visitors to the development facilitated by the Project would benefit from this regulatory program in the form of reduced GHG emissions from the vehicle fleet for model years 2017 through 2025.
T-2	Low Carbon Fuel Standard Regulation (http://www.arb.ca.gov/fuels/lcfs/lcfs.htm)	The Low Carbon Fuel Standard promotes the use of GHG-reducing transportation fuels through a fuel-neutral declining carbon intensity standard that will reduce the carbon intensity of California's transportation fuels by 10 percent by 2020.	Adopted by CARB in April 2009 and re-adopted in September 2015.	This regulatory program applies to fuel suppliers, and not directly to land use development. That being said, the vehicles operated by future residents and occupants of and visitors to the development facilitated by the Project would benefit from this regulatory program in the form of reduced GHG emissions from the vehicle fleet.
T-4	Vehicle Efficiency Measures			
	Tire Pressure (http://www.arb.ca.gov/cc/tire-pressure/tire-pressure.htm)	The Tire Inflation Regulation reduces GHG emissions from vehicles operating with under-inflated tires by inflating them to the recommended tire pressure rating.	Adopted by CARB in March 2009 and approved by the Office of Administrative Law in August 2010.	This regulatory program applies to automotive service providers, and not directly to land use development. That being said, the vehicles operated by future residents and occupants of and visitors to the development facilitated by the Project would benefit from this regulatory program in the form of reduced GHG emissions from the vehicle fleet.

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Scoping Plan Measure		Description	Status	Project Level Evaluation
T-4 *(continued)*	Fuel Efficiency Tire Program (http://www.energy.ca.gov/transportation/tire_efficiency/index.html)	The Fuel Efficient Tire Program would implement a statewide program for replacement tires for passenger cars and light-duty trucks.	Under consideration by U.S. Department of Transportation.	As most recently proposed in 2009, this regulatory program would apply to the manufacturers of new tires for passenger cars and light-duty trucks, and not directly to land use development. That being said, if adopted, the vehicles operated by future residents and occupants of and visitors to the development facilitated by the Project would benefit from this regulatory program in the form of reduced GHG emissions from the vehicle fleet.
	Low Friction Oil (http://www.arb.ca.gov/msprog/consumer_info/ advanced_clean_cars/consumer_acc.htm)	The Low Friction Oil Measure requires the use of certain engine oils in passenger cars to reduce engine load and fuel use.	Adopted by CARB, as part of the Vehicle Efficiency Measures, in January 2012.	This regulatory program applies to vehicle manufacturers, lube oil manufacturers, and auto-repair shops, and not directly to land use development. That being said, the vehicles operated by future residents and occupants of and visitors to the development facilitated by the Project would benefit from this regulatory program in the form of reduced GHG emissions from the vehicle fleet for model years 2017 through 2025.
	Solar Reflective Automotive Paint and Window Glazing	The Solar Reflective Automotive Paint and Window Glazing Measure provides for a performance-based approach to cooling vehicle interiors.	Measure not feasible at this time.	This regulatory program would apply to vehicle manufacturers, and not directly to land use development. That being said, the vehicles operated by future residents and occupants of and visitors to the development facilitated by the Project would benefit from such a regulatory program in the form of reduced GHG emissions from the vehicle fleet for model years 2017 through 2025.
T-5	Ship Electrification at Ports (Shore Power)	The Shore Power Regulation requires emissions	Adopted by CARB in December 2007.	This regulatory program applies to the operators of container vessels, passenger

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
T-5 *(continued)*	(http://www.arb.ca.gov/ports/shorepower/shorepower.htm)	reductions from oceangoing vessels while at-berth at California ports.		vessels and refrigerated-cargo vessels, and not directly to land use development.
T-6	Goods Movement Efficiency Measure (http://www.arb.ca.gov/gmp/sfti/sfti.htm)	The Goods Movement Efficiency Measure is intended to reduce emissions from equipment or vehicles transporting freight to and from ports, intermodal rail yards, and distribution centers.	Under research and development by CARB, in coordination with Caltrans.	This regulatory program is intended to apply to the owners and/or operators of goods movement equipment and related facilities, and not directly to land use development.
T-7	Heavy-Duty Vehicle GHG Emission Reduction Regulation (http://www.arb.ca.gov/cc/hdghg/hdghg.htm) (http://www.arb.ca.gov/msprog/onroad/phaselghg/phaselghg.htm)	The Heavy-Duty Vehicle GHG Emission Reduction Regulation has two components: (1) the Tractor-Trailer GHG Regulation reduces GHG emissions from certain long-haul tractor-trailer combinations through a requirement to use technologies that improve fuel efficiency; and, (2) the Phase I (adopted in 2011) and Phase II (adopted in 2016) GHG Regulation for the engine manufacturers of heavy-duty trucks and engines.	Adopted by CARB in December 2008 and December 2013 (Phase I), respectively. Phase II is anticipated to be presented to CARB for adoption in 2017.	This regulatory program is intended to reduce fuel use and GHG emissions from medium- and heavy-duty vehicles, semi-trucks, pickup trucks and vans, and all types and sizes of work trucks and buses in between. The Project analysis includes the benefit of reductions from these programs. .
T-8	Hybrid and Zero-Emission Truck and Bus Voucher Incentive	The HVIP provides vouchers, on a first-come, first-served basis, to help	Adopted by CARB in April 2009.	This incentive program applies to the owners of truck and bus fleets, and not directly to land use development. That

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
T-8 *(continued)*	Project (HVIP) (http://www.arb.ca.gov/msprog/aqip/hvip.htm)	California fleets purchase an eligible new hybrid or zero-emission truck or bus.		being said, the Project applicant or its designee will facilitate the utilization of electric school and transit buses through mitigation measures **GCC-8** and **GCC-9**.
T-9	High Speed Rail (http://www.hsr.ca.gov/)	The High Speed Rail Program is intended to provide for an inter-city, high-speed rail system that would link the State's major population centers.	Ongoing by the California High-Speed Rail Authority.	This transportation program applies to the California High-Speed Rail Authority, in concert with other transportation agencies, and not directly to land use development.
Electricity and Natural Gas Sector				
E-1	Building Energy Efficiency Standards (Electricity) (http://www.energy.ca.gov/title24/) (http://www.energy.ca.gov/ab758/) (http://www.californiaznehomes.com/)	The Building Energy Efficiency Standards are implemented by the CEC through three complementary programs: (1) updates to CCR Title 24, Part 6, for new residential and commercial construction; (2) AB 758's (Skinner, 2009) program for existing building retrofits; and, (3) implementation of Zero Net Energy goals for new and existing development.	2016 Title 24 standards adopted by CEC, with a 2017 effective date; AB 758 Existing Buildings Energy Efficiency Action Plan complete; Zero Net Energy goals for 2020 and 2030 set, with corresponding action plans developed.	The Project will design and construct Zero Net Energy homes, commercial buildings, private recreation centers and public facilities (see mitigation measures **GCC-1** and **GCC-2**). Additionally, the Project applicant or its designee will fund the implementation of a retrofit program for existing buildings in the County of Los Angeles (see mitigation measure **GCC-11**).
	Appliance Energy Efficiency Standards (Electricity) (http://www.energy.ca.	The Appliance Energy Efficiency Standards are implemented by the CEC through CCR Title 20.	Most recently amended by the CEC in July 2015.	The Project would result in new land use development that would be outfitted with appliances that accord to the CEC's standards to the extent required by law. Additionally, the Project applicant or its

Appendix M: Consistency with CARB Scoping Plan (Mission Village)				
Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
E-1 *(continued)*	gov/appliances/)			designee will fund the implementation of a retrofit program for existing buildings in the County of Los Angeles (see mitigation measure **GCC-11**), which could include appliance upgrades.
	Publicly-Owned Utilities Efficiency Programs (Electricity) (http://www.energy.ca.gov/efficiency/)	The Publicly-Owned Utilities Efficiency Programs are implemented through AB 2021 (Levine, 2006) and AB 2227 (Bradford, 2012), which directed the CEC, CPUC and the State's publicly-owned utilities to develop statewide estimates of all potentially achievable cost-effective efficiency savings, and establish targets in order to reduce total forecasted energy consumption by 10 percent over 10 years.	Ongoing.	This program is implemented by the CEC and CPUC, in concert with publicly-owned utilities, and not land use development. That being said, the development facilitated by the Project would benefit from this regulatory program in the form of reduced GHG emissions from building energy consumption.
	Investor-Owned Utilities Efficiency Programs (Electricity) (http://www.energy.ca.gov/efficiency/)	The Investor-Owned Utilities Efficiency Programs provide funding for a range of activities to promote market transformation of energy efficiency.	Ongoing.	This incentive program is implemented by the CPUC in concert with investor-owned utilities, and not land use development. That being said, the development facilitated by the Project would benefit from this regulatory program in the form of reduced GHG emissions from building energy consumption.

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
E-2	Combined Heat and Power (CHP) Systems (http://www.energy.ca.gov/renewables/tracking_progress/documents/combined_heat_and_power.pdf)	The Combined Heat and Power Systems Program is implemented by the CEC and CPUC through AB 1613 (Blakeslee, 2007), which applies to highly efficient CHP systems with 20 megawatts or less of generating capacity installed on or after January 1, 2008. The CPUC also implements the Program through a 2010 Settlement Agreement, requiring the State's three largest investor-owned utilities to procure a specified minimum of CHP-generated capacity.	Ongoing. AB 1613, enacted in 2007, is being implemented. CPUC has adopted standard contracts for CHP systems and has set targets for CHP procurement.	This regulatory program applies to the owners and operators of CHP systems and investor-owned utilities, and not directly to land use development.
E-3	33 Percent Renewable Portfolio Standard (http://www.energy.ca.gov/portfolio/index.html) (http://www.cpuc.ca.gov/renewables/)	The CPUC and CEC jointly implement the Renewable Portfolio Standard, which requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources.	33 percent Renewable Portfolio Standard adopted for 2020; 50 percent Renewable Portfolio Standard adopted for 2030.	This regulatory program applies to investor-owned utilities, electric service providers and community choice aggregators, and not directly to land use development. That being said, the development facilitated by the Project would benefit from this regulatory program in the form of reduced GHG emissions from building energy consumption.
E-4	Million Solar Roofs (http://www.gosolarcalifornia.ca.gov/)	The Million Solar Roofs Program is implemented through SB 1 (Murray, 2006), which provides up to $3.3 billion in financial	Ongoing. The components of the Million Solar Roofs Program are administered by the Go Solar California campaign. To date, more	This incentive program is targeted to the owners of residential, commercial, and institutional buildings. The Project would not hinder continued implementation of this program and would be consistent with

Appendix M: Consistency with CARB Scoping Plan (Mission Village)				
Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
E-4 *(continued)*		incentives for the installation of residential, commercial and institutional solar PV programs.	than 4,500 MW of self-generating solar capacity has been installed under the incentives provided by this program and previous solar programs.	its underlying objective through its Zero Net Energy-compliant buildings (see mitigation measures **GCC-1** and **GCC-2**) and off-site building retrofit program within the County of Los Angeles (see mitigation measure **GCC-11**).
CR-1	Building Energy Efficiency Standards (Natural Gas) (http://www.energy.ca.gov/title24/) (http://www.energy.ca.gov/ab758/) (http://www.californiaznehomes.com/)	The Building Energy Efficiency Standards are implemented by the CEC through three complementary programs: (1) updates to CCR Title 24, Part 6, for new residential and commercial construction; (2) AB 758's (Skinner, 2009) program for existing building retrofits; and, (3) implementation of Zero Net Energy goals for new and existing development.	2016 Title 24 standards adopted by CEC, with a 2017 effective date; AB 758 Existing Buildings Energy Efficiency Action Plan complete; Zero Net Energy goals for 2020 and 2030 set, with corresponding action plans developed.	The Project will design and construct Zero Net Energy homes, commercial buildings, private recreation centers and public facilities (see mitigation measures **GCC-1** and **GCC-2**). Additionally, the Project applicant or its designee will fund the implementation of a retrofit program for existing buildings in the County of Los Angeles (see mitigation measure **GCC-11**).
	Appliance Energy Efficiency Standards (Natural Gas) (http://www.energy.ca.gov/appliances/)	The Appliance Energy Efficiency Standards are implemented by the CEC through CCR Title 20.	Most recently amended by the CEC in July 2015.	The Project would result in new land use development that would be outfitted with appliances that accord to the CEC's standards to the extent required by law. Additionally, the Project applicant or its designee will fund the implementation of a retrofit program for existing buildings in the County of Los Angeles (see mitigation measure **MV GCC-11**), which could lead to appliance upgrades.

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
CR-1 *(continued)*	Publicly-Owned Utilities Efficiency Programs (Natural Gas) (http://www.energy.ca.gov/efficiency/)	The Publicly-Owned Utilities Efficiency Programs are implemented through AB 2021 (Levine, 2006) and AB 2227 (Bradford, 2012), which directed the CEC, CPUC and the State's publicly-owned utilities to develop statewide estimates of all potentially achievable cost-effective efficiency savings, and establish targets in order to reduce total forecasted energy consumption by 10 percent over 10 years.	Ongoing.	This program is implemented by the CEC and CPUC, in concert with publicly-owned utilities, and not land use development. That being said, the development facilitated by the Project would benefit from this regulatory program in the form of reduced GHG emissions from building energy consumption.
	Investor-Owned Utilities Efficiency Programs (Natural Gas)	The Investor-Owned Utilities Efficiency Programs provide funding for a range of activities to promote market transformation of energy efficiency.	Ongoing.	This incentive program is implemented by the CPUC, in concert with investor-owned utilities, and not land use development. That being said, the development facilitated by the Project would benefit from this regulatory program in the form of reduced GHG emissions from building energy consumption.
CR-2	California Solar Initiative – Thermal Program (https://www.csithermal.com/)	The California Solar Initiative's Thermal Program provides cash rebates for solar water heating systems for single-family, multi-family and commercial customers.	Ongoing.	This incentive program is administered by various utilities providers (e.g., Southern California Edison and Southern California Gas Company) to their customer base; the Project would not hinder continued implementation of this program.

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
Water Sector				
W-1	Water Use Efficiency (http://www.water.ca.gov/wateruseefficiency/sb7/)	The Water Use Efficiency Program is implemented through SB x7-7 (Steinberg, 2009), which addresses urban and agricultural water conservation and specifically establishes a statewide goal to reduce urban per capita water use by 20 percent by 2020.	Ongoing.	This regulatory program is implemented through the California Department of Water Resources and urban water suppliers, not land use developers. That being said, the development facilitated by the Project would accord to water conservation objectives through use of the latest water-efficiency technologies, including those relating to water-conserving plumbing fixtures, weather-sensitive irrigation controls, drought-tolerant landscaping palettes, and the use of recycled water for irrigation purposes. It also is noted that CALGreen (CCR Title 24, Part 11) establishes mandatory regulatory standards for water conservation in furtherance of the statewide goal.
W-2	Water Recycling (http://www.swrcb.ca.gov/water_issues/programs/ water_recycling_policy/index.shtml)	The Water Recycling Program is being implemented through the State Water Resources Control Board's 2009 Recycled Water Policy.	Ongoing.	The Project would further the objectives of this program through the utilization of recycled water from the Newhall Ranch Water Reclamation Plant and the Valencia Water Reclamation Plant to meet the irrigation demands of development facilitated by the Project.

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
W-3	Water and Energy Conservation (http://www.waterplan.water.ca.gov/) (http://www.cpuc.ca.gov/nexus_calculator/)	The Water and Energy Conservation Program is being implemented in concert by the CEC, CPUC and Department of Water Resources through development of the California Water Plan, funding projects relating to energy and conservation, and initiating a pilot program directing investor-owned utilities to partner with local water agencies to implement, measure and better understand energy and conservation opportunities in the residential, commercial and industrial sectors.	Ongoing.	This regulatory, research, and incentive program is being implemented by several state agencies, not land use developers. That being said, the development facilitated by the Project would accord to water conservation objectives through use of the latest water-efficiency technologies, including those relating to water-conserving plumbing fixtures, weather-sensitive irrigation controls, drought-tolerant landscaping palettes, and the use of recycled water for irrigation purposes. The facilitated development also would accord to energy conservation objectives through the design and construction of Zero Net Energy-compliant homes, commercial buildings, private recreation centers and public facilities (see mitigation measures **GCC-1** and **GCC-2**).
W-4	Storm Water Reuse (http://www.waterboards.ca.gov/water_issues/programs/low_impact_development/index.shtml)	The Stormwater Reuse Program is designed to maximize the capture and infiltration of stormwater through the promotion of low impact development via regulatory programs implemented by the State and Regional Water Quality Control Boards.	Ongoing.	The development facilitated by the Project would adhere to the County of Los Angeles Department of Public Works' Low Impact Development Standards Manual as a matter of law. As developed by the County, the Standards Manual are consistent with this program, and ensure that the Project implements a suite of strategies that encourage groundwater recharge through infiltration mechanisms, such as bioretention/infiltration landscape areas, reduced impervious areas, and disconnected hydrologic flow paths.

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
W-5	Renewable Energy Production from Water (http://www.energy.ca.gov/renewables/)	The Renewable Energy Production from Water Program is designed to propose opportunities for development renewable energy projects on lands associated with State and local water infrastructure.	Ongoing.	This program is currently being implemented by the CEC through financing public interest research and demonstration projects, not land use developers.
W-6	Public Goods Charge for Water (http://www.waterboards.ca.gov)	The Public Goods Charge for Water Program was conceptualized as a means to assess a fee on water district customers in order to finance various water-related energy use reduction efforts.	On hold due to feasibility concerns.	This regulatory program has not come to pass and – as envisioned – would apply to water district customers, not land use developers.
Green Buildings				
GB-1	State Green Building Initiative (http://www.green.ca.gov/)	The State Green Building Initiative is implemented via Executive Order B-18-12 (April 2012), which directs State agencies and departments to take immediate action for State government buildings to serve as models for green building.	Ongoing.	The Project, if approved, would facilitate development of a mixed-use planned community within the Newhall Ranch Specific Plan area. It is not anticipated that the Project site would be developed with State buildings; and, in the event it is, the relevant State agencies and departments would adhere to the referenced Executive Order, as the Project would not impede its implementation.
	Green Building Standards Code (http://www.bsc.ca.gov	The Green Building Standards Code has been adopted by the California Building Standards	2016 CALGreen Code, effective January 1, 2017.	The development facilitated by the Project would comply with CALGreen as a matter of law. Additionally, the Project would exceed the requirements of CALGreen for

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
GB-1 *(continued)*	/Home/CALGreen.aspx)	Commission (CCR Title 24, Part 11).		new construction through its design and construction of Zero Net Energy-compliant homes, commercial buildings, private recreation centers and public facilities (see mitigation measures **-1** and **GCC-2**).
	Beyond Code: Voluntary Programs at the Local Level (http://www.arb.ca.gov/cc/greenbuildings/beyondcode.htm)	The "Beyond Code" Program encourages voluntary efforts to go beyond mandatory building codes and standards for new residential and commercial buildings.	Ongoing.	The development facilitated by the Project is consistent with this voluntary program through its design and construction of Zero Net Energy-compliant homes, commercial buildings, private recreation centers and public facilities (see mitigation measures **GCC-1** and **GCC-2**), a mitigation commitment that exceeds the requirements of mandatory building codes and standards.
	Greening Existing Buildings (http://www.green.ca.gov/)	The Greening Existing Buildings Program is intended to encourage voluntary actions that achieve GHG emission reductions from existing buildings.	Ongoing.	The Project is consistent with this voluntary program through its commitment to fund the implementation of an off-site retrofit program for existing buildings within the County of Los Angeles (see mitigation measure **GCC-11**).
Industry Sector				
I-1	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources (http://www.arb.ca.gov/cc/energyaudits/energyaudits.htm)	The Energy Efficiency Assessment Regulation requires affected industrial facilities to conduct a one-time assessment of fuel and energy consumption and the related emissions, and identify potential energy efficiency facility improvements.	Adopted by CARB in July 2010.	This regulatory audit program is applicable to large industrial facilities, and not land use development.

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
I-2	Oil and Gas Extraction GHG Emissions Reduction (http://www.arb.ca.gov/cc/oil-gas/oil-gas.htm)	The Oil and Gas Extraction Program is intended to address fugitive emissions from crude oil and natural gas production, processing, and storage operations.	Fourth public workshop to discuss proposed regulatory language was held in February 2016.	This regulatory program being developed by CARB would apply to crude oil and natural gas facilities, not land use development.
I-3	GHG Emissions Reduction from Natural Gas Transmission and Distribution (http://www.arb.ca.gov/cc/gas-trans/gas-trans.htm)	The Natural Gas Transmission and Distribution Program is intended to address GHG emissions from the transmission and distribution of natural gas.	Under research and development by CARB, with a focus on a methane reduction initiative.	This regulatory program being developed by CARB would apply to the owners and operators of natural gas transmission and distribution pipelines, not land use development.
I-4	Refinery Flare Recovery Process Improvement	The Refinery Flare Program is intended to minimize GHG emissions by recovering gases before they are combusted by refinery flares.	Ongoing via regional air district rulemaking.	This regulatory program is applicable to refineries, not land use development.
I-5	Removal of Methane Exemption for Large Industrial Sources, Including Refineries	The Removal of Methane Exemption Program is intended to eliminate methane exemptions in regional air district rules applicable to major industrial sources.	Ongoing via collaboration between CARB and regional air districts.	This regulatory program is applicable to large industrial sources, not land use development.
Recycling and Waste Management Sector				
RW-1	Landfill Methane Control Measure (http://www.arb.ca.gov	The Landfill Methane Control Measure requires the installation of gas	Adopted by CARB in June 2009.	This regulatory program applies to landfills, not land use development.

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
RW-1 *(continued)*	/cc/landfills/landfills.htm)	collection and control systems at certain municipal solid waste landfills.		
RW-2	Increasing the Efficiency of Landfill Methane Capture (http://www.arb.ca.gov/cc/landfills/landfills.htm)	The Increasing the Efficiency of Landfill Methane Capture Program is intended to reduce GHG emissions through the implementation of BMPs for landfills.	Under research and development by CARB.	This regulatory program, if adopted, would apply to landfills, not land use development.
RW-3	Mandatory Commercial Recycling (http://www.calrecycle.ca.gov/recycle/commercial/)	The Mandatory Commercial Recycling Regulation focuses on increased commercial waste diversion, as commercial businesses generate roughly 75 percent of the statewide solid waste.	Adopted by CalRecycle in January 2012	This regulatory program applies to commercial businesses and local land use jurisdictions, not land use developers. That being said, any businesses located in the development facilitated by the Project would be required to comply with the program to the extent required by law; the Project would not hinder implementation of the program.
	Increase Production and Markets for Compost and Other Organics (http://www.calrecycle.ca.gov/Climate/Organics/default.htm)	The Compost and Other Organics Program focuses on diverting organic materials from landfills in order to avoid methane emissions.	Under research, development and ongoing implementation by CalRecycle.	This regulatory, research and incentive program is being implemented by CalRecycle, primarily through engagement with landfills. The Project would not hinder implementation of the program.
	Anaerobic and Aerobic Digestion	The Anaerobic Digestion Program addresses facilities that utilize organic wastes as feedstock from which to produce biogas, and is	Under research and development by CARB and CalRecycle.	This regulatory, research and incentive program is being implemented by CARB and CalRecycle, primarily through engagement with the solid waste industry and anaerobic digestion facilities. The

Appendix M: Consistency with CARB Scoping Plan (Mission Village)				
Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
RW-3 *(continued)*		intended to encourage the development of anaerobic digestion facilities as an alternative to the landfill disposal of organic solid waste.		Project would not hinder implementation of the program.
	Extended Producer Responsibility (http://www.calrecycle.ca.gov/EPR/)	The Extended Producer Responsibility Program is a strategy to place a shared responsibility for end-of-life product management on the producers (and all entities involved in the product chain), instead of the general public.	Under research, development and ongoing implementation by CalRecycle.	This regulatory program is applicable to product manufacturers, not land use development.
	Environmentally Preferable Purchasing (http://www.calrecycle.ca.gov/EPP/)	The Environmentally Preferable Purchasing Program requires State agencies and other public entities to purchase products that consider a range of attributes (e.g., whether it can be recycled).	Ongoing implementation by the Department of General Services, Procurement Division, in concert with research and development by CARB and CalRecycle.	This regulatory program applies to State agencies, not land use developers.
Forest Sector				
F-1	Sustainable Forest Target (http://bofdata.fire.ca.gov/board_business/binder_materials/2015_/september_2015/fpc/fpc_1.1_ab_32_scoping_plan_2008_appendix_c.pdf)	The Sustainable Forest Target Program is intended to maintain net forest sequestration.	Ongoing by Board of Forestry and Fire Protection, CalFire, and CARB.	The Newhall Ranch Specific Plan preserves more than 8,000 acres of open space. Additionally, mitigation measure **GCC-13** is consistent with the objectives of this program through its potential dedication of funds to qualifying forestry projects.

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
High Global Warming Potential (High GWP) Gases Sector				
H-1	Automotive Refrigerant Regulation (http://www.arb.ca.gov/cc/hfc-mac/hfcdiy/hfcdiy.htm)	The Mobile Air Conditioning Regulation helps prevent unnecessary releases of automotive refrigerants into the air.	Adopted by CARB in January 2009.	This regulatory program applies to any person who sells, supplies, advertises, manufactures, etc. automotive refrigerant in California, and does not directly apply to land use development.
H-2	Sulfur Hexafluoride Limits in Non-Utility and Non-Semiconductor Applications (http://www.arb.ca.gov/cc/sf6nonelec/sf6nonelec.htm)	The Regulation for Reducing Sulfur Hexafluoride Emissions aims to reduce those emissions from non-electric and non-semiconductor applications.	Adopted by CARB in February 2009.	This regulatory program applies to any individual who buys, sells or uses sulfur hexafluoride, and does not directly apply to land use development.
H-3	Reduction of Perfluorocarbons in Semiconductor Manufacturing (http://www.arb.ca.gov/cc/semiconductors/semiconductors.htm)	The Semiconductor Operations Regulation applies to owners or operators of a semiconductor or related devices operation that uses fluorinated gases or heat transfer fluids.	Adopted by CARB in February 2009.	This regulatory program applies to owners or operators of a semiconductor or related devices operation, and does not directly apply to land use development.
H-4	Limit High Global Warming Potential Use in Consumer Products (http://www.arb.ca.gov/consprod/regact/ghgcp/ghgcp.htm)	The Consumer Products Regulation prohibits the use of compounds with global warming potential values of 150 or greater in specified products.	Adopted by CARB in June 2008.	This regulatory program applies to any person who sells, supplies or offers for sale regulated consumer products in California, and does not directly apply to land use development.
H-5	-1 Low Global Warming Potential Refrigerants for New Motor Vehicle	The Refrigerants for New Motor Vehicles Program incentivizes auto manufacturers to use low	Adopted by CARB, as part of the Advanced Clean Cars Program, in January 2012.	This incentive program applies to auto manufacturers, and does not directly apply to land use development.

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Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
H-5 *(continued)*	Air Conditioning Systems (http://www.arb.ca.gov/cc/hfc-mac/mvac-gwp/mvac-gwp.htm)	global warming potential refrigerants in new motor vehicle air condition systems.		
	-2 Air Conditioner Refrigerant Leak Test During Vehicle Smog Check (http://www.arb.ca.gov/cc/hfc-mac/acsmogcheck/acsmogcheck.htm)	The Leak Test/Smog Check Program contemplated the exploration of new motor vehicle air conditioning system leak test and repair requirements.	Measure not feasible at this time.	This regulatory program has not come to pass and – as envisioned – would apply to Smog Check technicians, not land use developers.
	-3 Refrigerant Recovery from Decommissioned Refrigerated Shipping Containers (http://www.arb.ca.gov/cc/hfc-mac/rsc-ghg/rsc-ghg.htm)	The Refrigerant Recovery Program contemplated addressing the recovery of refrigerants from decommissioned refrigerated shipping containers.	Measure not feasible at this time.	This regulatory program has not come to pass and – as envisioned – would apply to maritime participants in the goods movement sector, not land use developers.
	-4 Enforcement of Federal Ban on Refrigerant Release During Dismantling of Motor Vehicle Air	The Federal Ban Enforcement Program contemplated enforcing the federal ban on refrigerant release during the servicing or dismantling of motor	Measure not feasible at this time.	This regulatory program has not come to pass and – as envisioned – would apply to any person maintaining, servicing, repairing, or disposing of appliances, not land use developers.

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Scoping Plan Measure		Description	Status	Project Level Evaluation
H-5 *(continued)*	Conditioning Systems (http://www.arb.ca.gov/cc/hfc-mac/mvac-dismant/mvac-dismant.htm)	vehicle air conditioning systems.		
H-6	-1 High Global Warming Potential Refrigerant Management Program (http://www.arb.ca.gov/cc/rmp/rmp.htm)	The Stationary Equipment Refrigerant Management Program reduces emissions of high global warming potential refrigerants resulting from the installation, use, servicing and dismantling of larger refrigeration systems.	Adopted by CARB in December 2009.	This regulatory program applies to facilities with refrigeration systems with more than 50 pounds of high global warming potential refrigerants, and does not directly apply to land use development.
	-2 Commercial Refrigeration Specifications (http://www.arb.ca.gov/cc/commref/commref.htm)	The Commercial Refrigeration Specifications Program is intended to reduce GHG emissions from large supermarket refrigeration systems.	Energy conservation measures and leak-tight design and installation standards for supermarket refrigeration were added to the 2013 Title 24 Building Code.	This regulatory program applies to the owners and operators of supermarkets, not land use developers.
	-3 Foam Recovery and Destruction Program (http://www.arb.ca.gov/cc/foam/foam.htm)	The Foam Recovery and Destruction Program contemplated addressing GHG emissions from waste insulation foam used in refrigerators, freezers, and buildings.	Measure not feasible at this time.	This regulatory program has not come to pass and – as envisioned – would not apply to land use developers.
	-4 Sulfur Hexafluoride from Gas Insulated Switchgear	The Gas Insulated Switchgear Program requires owners of gas	Adopted by CARB in February 2010.	This regulatory program applies to the owners of gas-insulated switchgear, and not land use developers.

Appendix M: Consistency with CARB Scoping Plan (Mission Village)				
Scoping Plan Measure		**Description**	**Status**	**Project Level Evaluation**
H-6 *(continued)*	(http://www.arb.ca.gov/cc/sf6elec/sf6elec.htm)	insulated switchgear to reduce their sulfur hexafluoride emissions rate by one percent per year, over a ten-year period.		
	-5 Alternative Suppressants in Fire Protection Systems (http://www.arb.ca.gov/cc/altsup/altsup.htm)	The Alternative Suppressants Program contemplated the usage of leakage reduction methods and/or lower global warming potential fire suppression agents.	Measure not feasible at this time.	This regulatory program has not come to pass and – as envisioned – would apply to the manufacture of fire protection systems, and not land use development.
	-6 Residential Refrigeration Early Retirement Program (http://www.arb.ca.gov/cc/residref/residref.htm)	The Early Retirement Program contemplated working with utilities to encourage the recovery of high global warming potential materials from residential refrigerators at the end of their useful lives.	Measure not feasible at this time.	This incentive program has not come to pass and – as envisioned – would not apply directly to land use developers, but rather to future residents that choose to replace existing refrigerators.
H-7	Mitigation Fee on High GWP Gases (https://www.arb.ca.gov/cc/scopingplan/ status_of_scoping_plan_measures.pdf)	The Mitigation Fee Program would establish an upstream fee on high global warming potential gases.	Under evaluation by CARB.	This incentive program has not come to pass.
Agriculture Sector				
A-1	Methane Capture at Large Dairies Utilizing Anaerobic Digestion	The Methane Capture Program is intended to encourage the installation of manure digesters to reduce methane emissions.	Under evaluation by CARB.	This incentive program applies to dairies, not land use development.

Appendix M: Consistency with CARB Scoping Plan (Mission Village)

Scoping Plan Measure	Description	Status	Project Level Evaluation
Cap-and-Trade Regulation (http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm)	The Cap-and-Trade Program regulates the State's largest GHG emitters by imposing compliance obligations for their emissions, which are gradually reduced through a declining emissions cap.	Adopted, with implementation commenced in January 2013.	This regulatory program does not classify land use development as a covered entity. That being said, implementation of the regulatory program serves to reduce emissions at sources that are indirectly related to land use development (e.g., transportation fuel refineries) – **Table 2-1**, Land Use-Related GHG Emissions Sources Covered by Cap-and-Trade Program, above.

Source: CARB, First Update to the Climate Change Scoping Plan: Building on the Framework (May 2014), Appendix B: Status of Initial Scoping Plan Measures.

APPENDIX 2.1-B

Meridian Consultants, *Mission Village Project Consistency with the County of Los Angeles' Community Climate Action Plan*, October 2016

Mission Village Project Consistency

with the

County of Los Angeles’ Community Climate Action Plan

Prepared for:

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October 2016

In 2015, and in furtherance of the goals, policies and programs set forth in its General Plan, the County of Los Angeles' Board of Supervisors adopted the *Unincorporated Los Angeles County Community Climate Action Plan 2020* (dated August 2015). The Plan contains 26 local actions that are intended to reduce greenhouse gas (GHG) emissions from unincorporated community areas; these actions are grouped into five strategy areas: green building and energy; land use and transportation; water conservation and wastewater; waste reduction, reuse and recycling; and, land conservation and tree planting. **Table 1** below assesses the applicability of each emissions reduction measure in the Plan to the Mission Village Project and, where applicable, discusses the consistency of the Mission Village Project with that measure's goals or requirements. As demonstrated below, the Mission Village Project is consistent with all applicable measures.

Table 1
Evaluation of Consistency of Mission Village
with the Unincorporated Los Angeles County Community Climate Action Plan

Measure	Goal	Assessment
Green Building and Energy		
BE-1. Green Building Development	Promote and incentivize at least Tier 1 voluntary standards within CALGREEN for all new residential and non-residential buildings.	**Consistent.** Based on the Community Climate Action Plan (CCAP), implementation of the Tier 1 standards contained in CALGreen will "result in approximately 15% less energy use than the 2013 Title 24 standard for residential development and 10% less energy use than the 2013 Title 24 standard for commercial development." (CCAP, p. C-2.) Here, the 2016 Title 24 standards will go into effect on January 1, 2017. Based on the available phasing information, the Project's building construction phase will not commence until approximately 2021. As such, Project-related development will be subject, at a minimum, to the 2016 Title 24 standards. Further, as provided in mitigation measures **MV 4.23-1/2-1** and **MV 4.23-2/2-2**, the Project's residential and commercial development, as well as the private recreation centers and public facilities, will achieve Zero Net Energy, as defined by the CEC. Achievement of Zero Net Energy exceeds the energy savings of CALGreen's Tier 1 standards.
	Develop a heat island reduction plan and facilitate green building development by removing regulatory and procedural barriers.	**Not Applicable.** The entity responsible for implementation of this emissions reduction strategy is Los Angeles County's Internal Services Department (ISD). To date, the County ISD has not adopted a heat island reduction plan and, therefore, the strategy is not directly applicable to the Project. Note, however, that Project-related development will comply with the parameters of any County-adopted plan to the extent required by law. Further, various elements of the Project are consistent with the objective to minimize urban heat islands. For example, the Project includes approximately 693 acres of open space (approximately 55% of the site), as defined to include natural "preserved" and manufactured open space. Further, the Project's compliance with the County's Low Impact Development Standards (County Code Chapter 12.84) would serve to minimize the amount of impervious surfaces, such as pavement.
BE-2. Energy Efficiency Programs	Conduct energy efficiency retrofits for at least 25% of existing commercial buildings over 50,000 square feet and at least 5% of existing single-family residential buildings.	**Not Applicable.** This emissions reduction strategy is applicable to existing buildings. The Project proposes to construct new buildings that achieve Zero Net Energy, as defined by the CEC, pursuant to mitigation measures **MV 4.23-1/2-1** and **MV 4.23-2/2-2**. Therefore, energy efficiency retrofits are not applicable. Nonetheless, note that mitigation measure **MV 4.23-11/2-11** is consistent with this emissions reduction strategy, through its provision of funding for the implementation of an off-site building retrofit program for existing buildings in the County of Los Angeles.
	Promote innovative, low-interest financing for energy efficiency projects for existing development. Create energy conservation campaigns and partner with utilities and other entities on energy efficiency.	**Not Applicable.** This emissions reduction strategy pertains to existing development. As the Project proposes to construct new buildings, this strategy is not applicable. Nonetheless, note that mitigation measure **MV 4.23-11/2-11** is consistent with this emissions reduction strategy, through its provision of funding for the implementation of an off-site building retrofit program for existing development in the County of Los Angeles.
BE-3. Solar Installations	Promote and incentivize solar installations for new and existing homes, commercial buildings, carports and parking areas, water heaters, and warehouses.	**Consistent.** As provided in mitigation measures **MV 4.23-1/2-1** and **MV 4.23-2/2-2**, the Project's residential and commercial development, as well as the private recreation centers and public facilities, will achieve Zero Net Energy, as that standard is defined by the CEC. Achievement of Zero Net Energy will require the utilization of solar energy power (or other form of renewable energy) (see Appendix C [ConSol report] in **Appendix 2.1-A**). Additionally, in accordance with mitigation measure **MV 4.23-3/2-3**, the swimming pools located at the private recreation centers facilitated on the Project site will use solar hot water heaters to provide 100 percent of the heating needs.

Table 1
Evaluation of Consistency of Mission Village
with the Unincorporated Los Angeles County Community Climate Action Plan

Measure	Goal	Assessment
BE-4. Alternative Renewable Energy Programs	Implement pilot projects for wind, geothermal, and other currently viable forms of alternative renewable energy.	**Not Applicable.** The implementation approaches for this emissions reduction strategy are primarily dependent on the ability of the County's ISD to: (i) develop an Alternative Energy Development Plan that identifies the allowable and appropriate alternative energy facility types in the County, and (ii) adopt the Renewable Energy Ordinance via an amendment to Title 22 (Planning and Zoning) of the County Code to support new renewable energy technologies. (CCAP, p. C-5.) The County's Board of Supervisors held a public hearing on the Renewable Energy Ordinance on July 14, 2015; during the hearing, the Board indicated its intent to approve the Ordinance with a ban on utility-scale wind projects. While this emissions reduction strategy is not directly applicable, the Project is consistent with the spirit of this strategy through its installation of on-site solar facilities (see assessment of **BE-3** above).
BE-5. Wastewater Treatment Plant Biogas	Encourage renewable biogas projects.	**Not Applicable.** The Project is a proposed mixed-use planned community. Implementation of this emission reduction strategy will be achieved through the Los Angeles County ISD's partnerships with the operators of wastewater treatment facilities.
BE-6. Encourage Energy Efficiency Retrofits of Wastewater Equipment	Encourage the upgrade and replacement of wastewater treatment and pumping equipment.	**Not Applicable.** The Project is a proposed mixed-use planned community; and, while the development will utilize sewer pump stations, the implementation of this emissions reduction strategy is targeted to the retrofit of existing wastewater conveyance and treatment equipment. Implementation of this emissions reduction strategy will be achieved through the Los Angeles County ISD's partnerships with the operators of wastewater treatment facilities. (CCAP, p. C-6.)
BE-7. Landfill Biogas	Partner with the owners and operators of landfills with at least 250,000 tons of waste-in-place to identify incentives to capture and clean landfill gas to beneficially use the biogas to generate electricity, produce biofuels, or otherwise offset natural gas or other fossil fuels.	**Not Applicable**. The Project is a proposed mixed-use planned community. Implementation of this emissions reduction strategy will be achieved through the Los Angeles County ISD's partnerships with the operators of landfills. (CCAP, p. C-6.)
Land Use and Transportation		
LUT-1. Bicycle Programs and Supporting Facilities	Construct and improve bicycle infrastructure to increase biking. Increase bicycle parking and "end-of- trip" facilities offered through the unincorporated County.	**Consistent.** The Project is a proposed mixed-use planned community that would accord with the goals and policies set forth in the County's Bicycle Master Plan (March 2012). For example, as illustrated in Figure 1.0-19, Mission Village Portion of the Newhall Ranch Specific Plan Master Trails Plan, and Figure 1.0-20, Mission Village Trails Plan, of the 2011 EIR, a network of on-site trails and bike lanes would provide comprehensive bicycle transit routes within the community that connect the community's internal uses, as well as enhance connectivity to neighboring and adjacent communities. In addition to the on-site trails, on-site major roadways (e.g., Magic Mountain Parkway and Commerce Center Drive) would be designed to include dedicated bike lanes in one or more directions. Finally, as provided in mitigation measure **MV 4.23-6/2-6**, the Project-related development would benefit from the implementation of a comprehensive transportation demand management program that would facilitate bicycle use as an attractive alternative to the use of motor vehicular travel. Relevant facets of the transportation demand management program include, but are not limited to, mobility hubs and a bike-share program. As additional relevant background information, the Newhall Ranch Specific Plan calls for a diverse system of bicycle trails through Mobility Objective #5; Parks, Recreation and Open Space Objective #6; and, the Master Trails Plan. Further, adopted Newhall Ranch Specific Plan mitigation measure 4.10-5 requires the provision of trails for bicycle use throughout the Specific Plan site. The Mission Village Project is consistent with the foundational principles of the Specific Plan, and accordingly would further the goals and policies of the County's Bicycle Master Plan.
	Construct and improve bicycle infrastructure to increase bicyclist access to transit and transit stations/hubs.	**Consistent.** The Project-related development will be served by on-site bus stops to expand the use of transit modes. While the precise locations of the bus stops will be determined in consultation with Santa Clarita Transit, mitigation measure **MV 4.23-6/2-6** includes transportation demand management strategies that would locate bicycle infrastructure in proximity to transit. For example, mitigation measure **MV 4.23-6/2-6**'s transportation demand management program includes the creation of mobility hubs to accommodate, among others, the intersection of bicycle and transit travel modes. Please see Appendix E [Fehr & Peers report] in **Appendix 2.1-A** for an illustration of the Project's Conceptual Transit Plan.

Table 1
Evaluation of Consistency of Mission Village
with the Unincorporated Los Angeles County Community Climate Action Plan

Measure	Goal	Assessment
		As additional relevant background information, and as described above in connection with **LUT-1**, the Newhall Ranch Specific Plan calls for the construction of bicycle access infrastructure throughout the Newhall Ranch Specific Plan's village communities.
LUT-2. Pedestrian Network	Construct and improve pedestrian infrastructure to increase walking and pedestrian access to transit and transit stations/hubs. Construct 15,000 linear feet of pedestrian improvements per year.	**Consistent.** As illustrated in Figure 1.0-19, Mission Village Portion of the Newhall Ranch Specific Plan Master Trails Plan, and Figure 1.0-20, Mission Village Trails Plan, of the 2011 EIR, the Project-related development includes an extensive trail system (approximately 7.5 miles) that is linked to the existing community of Westridge to the south and the City of Santa Clarita to the east. These trails also would enhance inter-connectivity between the various Newhall Ranch Specific Plan villages. Mitigation measure **MV 4.23-6/2-6**'s transportation demand management program also includes the creation of mobility hubs to accommodate, among others, the intersection of pedestrian and transit travel modes. Please see Appendix E [Fehr & Peers report] in **Appendix 2.1-A** for an illustration of the Project's Conceptual Transit Plan. As additional relevant background information, the Newhall Ranch Specific Plan calls for a diverse system of pedestrian and hiking trails through Mobility Objective #5; Parks, Recreation and Open Space Objective #6; and, the Master Trails Plan. Further, adopted Newhall Ranch Specific Plan mitigation measure 4.10-4 requires the provision of pedestrian facilities, such as sidewalks and trails, throughout the Specific Plan site. The Mission Village Project is consistent with the foundational principles of the Specific Plan, and accordingly would further the County's emissions reduction strategy.
LUT-3. Transit Expansion	Work with Los Angeles County Metropolitan Transportation Authority (LA Metro) on a transit program that prioritizes transit by creating bus priority lanes, improving transit facilities, reducing transit-passenger time, and providing bicycle parking near transit stations. Construct and improve bicycle, pedestrian and transit infrastructure to increase bicyclist and pedestrian access to transit and transit stations/hubs.	**Consistent.** As described above in connection with **LUT-1** and **LUT-2**, the Project-related development includes a network of pedestrian- and bicycle-oriented infrastructure improvements that will serve to prioritize transit and increase access to transit. Additionally, the planned community will include on-site bus stops; future bus transit routes are anticipated to be extended along and within the Project site and neighboring vicinity as part of a comprehensive, Valley-wide transit system, and on-site bus stop locations will be determined in consultation with Santa Clarita Transit. Please see Appendix E [Fehr & Peers report] in **Appendix 2.1-A** for an illustration of the Project's Conceptual Transit Plan. As additional relevant background information, adopted Newhall Ranch Specific Plan mitigation measures 4.10-3 and 4.10-9 require the construction of bus stops, and Mission Village mitigation measure 4.7-16 requires the Project developer(s) to coordinate with Santa Clarita Transit to identify appropriate bus stop/turnout locations.
LUT-4. Travel Demand Management	Encourage ride- and bike-sharing programs and employer-sponsored vanpools and shuttles. Encourage market-based bike sharing programs that support bicycle use around and between transit stations/hubs. Implement marketing strategies to publicize these programs and reduce commute trips.	**Consistent.** Mitigation measure **MV 4.23-6/2-6** contains a comprehensive transportation demand management program for the Project-related development. Consistent with this emissions reduction strategy, the comprehensive program would reduce the number of vehicle trips, vehicle miles traveled and GHG emissions through the provision of on-site car-share and bike-share programs; an alternative work schedules and telecommute program; a required commute trip program; and, transit fare subsidies for employees. As additional relevant background information, adopted Newhall Ranch Specific Plan mitigation measure 4.10-9 contains requirements that are targeted towards the reduction of mobile source-related emissions through the advancement of ride- and bike-sharing programs.
LUT-5. Car-Sharing Program	Implement a car-sharing program to allow people to have on-demand access to a shared fleet of vehicles on an as-needed basis.	**Consistent.** Mitigation measure **MV 4.23-6/2-6**'s transportation demand management program includes the provision of an on-site car-sharing program. Participation in the program would be encouraged through the provision of subsidies targeted to the residents of market rate and below market rate housing.
LUT-6. Land Use Design and Density	Promote sustainability in land use design, including diversity of urban and suburban developments.	**Consistent.** The Project is a proposed mixed-use planned community that will contribute to local development diversity by placing job centers, commercial buildings, a school and recreational areas in proximity to residential areas, thereby promoting trip reduction. Additionally, please see **Appendix 2.1-B** for illustrations of the Project's proximity to other resident-serving uses in the Santa Clarita Valley. As additional relevant background information, the underlying design of the Newhall Ranch Specific Plan promotes sustainability through its diversity of land uses and locational criteria. Further, adopted Newhall Ranch Specific Plan mitigation measures 4.10-1 and 4.10-2 require that residential, commercial, mixed-use and business park land uses be situated in close proximity to one another to facilitate non-motorized forms of transportation.

Table 1
Evaluation of Consistency of Mission Village
with the Unincorporated Los Angeles County Community Climate Action Plan

Measure	Goal	Assessment
LUT-7. Transportation Signal Synchronization Program	Improve the network of traffic signals on the major streets throughout Los Angeles (LA) County.	**Consistent.** As provided in mitigation measure **MV 4.23-7/2-7**, the Project applicant will work with the applicable agency(ies) with jurisdiction over the local roadway network to facilitate traffic signal coordination along Commerce Center Drive from SR-126 to Magic Mountain Parkway, and along within Magic Mountain Parkway within the Project site's boundary.
LUT-8. Electric Vehicle Infrastructure	Install 500 electric vehicle (EV) charging facilities at County-owned public venues (e.g., hospitals, beaches, stand-alone parking facilities, cultural institutions, and other facilities) and ensure that at least one-third of these charging stations will be available for visitor use.	**Not Applicable.** This emissions reduction strategy applies to County-owned public venues and is not applicable to the privately-owned Project site That being said, the recommendations provided in mitigation measures **MV 4.23-4/2-4**, **MV 4.23-5/2-5**, and **MV 4.23-12/2-12** are consistent with this emissions reduction strategy. As provided in those mitigation measures, all on-site residences shall be equipped with single-port charging stations; and, thousands of on- and off-site parking spaces in publicly accessible areas within the County of Los Angeles will be provided with access to electric vehicle charging stations.
LUT-9. Idling Reduction Goal	Encourage idling limits of 3 minutes for heavy-duty construction equipment, as feasible within manufacturer's specifications.	**Consistent.** As provided in the CCAP, the entity responsible for implementation of this emissions reduction strategy is Los Angeles County's Department of Regional Planning (DRP). Based on the CCAP, the implementation approaches for this strategy include the development of: (i) an idling ordinance or policy that outlines goals for reduced equipment idling, and (ii) an outreach and education program. (CCAP, p. C-12.) To date, the County has not adopted an idling ordinance. (The County currently is processing a proposed addition to its Municipal Code in furtherance of this strategy. Specifically, Section 22.52.1084.G – if adopted – would require the posting of "no idling" signs (or equivalent) in loading areas.) That being said, the Project-related development will comply with the parameters of any County-adopted ordinance to the extent required by law. In the meantime, the construction-related activities associated with the Project-related development will comply with the idling limits established by state law (i.e., five (5) minutes) under the auspices of CARB. Further, adopted Newhall Ranch Specific Plan mitigation measures SP 4.9-3 and SP 4.10-7, and Mission Village mitigation measure MV 4.7-1 all impose additional restrictions on idling vehicles; Newhall Ranch Specific Plan mitigation measure SP 4.10-7(g) specifically limits idling of heavy-duty construction equipment to less than 2 minutes, consistent with the emissions reduction strategy.
LUT-10. Efficient Goods Movement	Support regional efforts to maximize the efficiency of the goods movement system throughout the unincorporated areas.	**Not Applicable.** The Project is a proposed mixed-use planned community, and not a component of the goods movement system; therefore, this strategy is not applicable. This emission reduction strategy would primarily be implemented by Los Angeles County's Department of Public Works (DPW) by supporting efforts to evaluate zero and/or near-zero emission freight corridors and working with appropriate agencies and partners to identify and replace at-grade railroad crossings to reduce freight delay and vehicle idling. (CCAP, p. C-13.)
LUT-11. Sustainable Pavements Program	Reduce energy consumption and waste generation associated with pavement maintenance and rehabilitation.	**Not Applicable.** This measure would primarily be implemented by Los Angeles County DPW through its identification of potential pavement improvement projects, and its investigation of opportunities to use newer, more effective and more cost-saving materials and cool or porous pavements, as feasible, to reduce urban heat island effect and conserve water. (CCAP, p. C-13.) Therefore, this emissions reduction strategy is not applicable. While the emissions reduction strategy is not applicable, the Project streets will be designed, constructed and maintained per County standards. Further, in accordance with the village- and lot-scale controls utilized to facilitate low impact development, the Project would utilize best management practices, such as porous pavement.
LUT-12. Electrify Construction and Landscaping Equipment	Utilize electric equipment wherever feasible for construction projects.	**Consistent.** As provided in mitigation measure **MV 4.23-10/2-10**, the Project applicant would offset all of the Project's construction-related GHG emissions to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits.
	Reduce the use of gas-powered landscaping equipment.	**Not Applicable.** It is beyond the purview of the Project applicant to regulate the landscaping equipment choices of future Project residents and occupants, as such choices are personal and market driven. That being said, it is noted that the California Electrical Code (Title 24, Part 3, of the California Code of Regulations) requires that outdoor receptacle outlets be installed in new residential development areas, which facilitates the utilization of electric landscaping equipment at the individual's discretion. As provided therein, each single-family residence must be equipped with such outlets at the front

Table 1
Evaluation of Consistency of Mission Village
with the Unincorporated Los Angeles County Community Climate Action Plan

Measure	Goal	Assessment
		and rear of the dwelling; each multi-family residence must be equipped with at least one such outlet; and, outlets must be installed within the perimeters of balconies, decks and/or porches that are accessible from inside any dwelling.
Water Conservation and Wastewater		
WAW-1. Per Capita Water Use Reduction Goal	Meet the State established per capita water use reduction goal as identified by Senate Bill (SB) X7-7 for 2020.	**Consistent.** The Project-related development includes numerous design features that will help the State of California meet requirements to achieve a 20-percent reduction in urban per-capita water use by 2020 in accordance with SBX7-7. These design features include, but are not necessarily limited to, water efficient toilets; low-flow fixtures for showerheads, residential lavatory faucets, residential kitchen faucets, and non-residential kitchen faucets; separate metering devices for non-residential buildings/tenants; automatic irrigation system controllers for landscaping with weather- or soil-moisture-based controllers; separate metering devices for landscaped areas meeting specified thresholds for non-residential development; and, implementation of a water budget for irrigation use. Additionally, the Project-related development will comply with the County's drought-tolerant and native landscaping requirements, as set forth within Part 21 of Chapter 22.52 of Title 22 of the County Code.
WAW-2. Recycled Water Use, Water Supply Improvement Programs, and Storm Water Runoff	Promote the use of wastewater and gray water to be used for agricultural, industrial, and irrigation purposes. Manage storm water, reduce potential treatment, and protect local groundwater supplies.	**Consistent.** The Project will use recycled water to meet the Project's landscape irrigation needs. As illustrated in Figure 1.0-30, Mission Village Reclaimed Water System, of the 2011 EIR, the planned community will include a comprehensive recycled water infrastructure system. Additionally, low impact development measures related to stormwater handling and treatment will be implemented to protect streams, groundwater, surface water quality, and natural drainage characteristics in compliance with the County's Low Impact Development Standards (County Code Chapter 12.84).
Waste Reduction, Reuse, and Recycling		
SW-1. Waste Diversion Goal	For the County's unincorporated areas, adopt a waste diversion goal to comply with all state mandates to divert at least 75% of waste from landfill disposal by 2020.	**Consistent.** The Project-related development will comply with statewide requirements for solid waste diversion. Specifically, the planned community will comply with the County's Green Building Standards Code (Title 31), which addresses sustainability via appropriate planning and design, waste diversion, and other requirements. The development also will establish a Solid Waste Diversion Program requiring that 75 percent of solid waste generated be source reduced, recycled, or composed, once Assembly Bill 341's recycling goal becomes effective in 2020.
Land Conservation and Tree Planting		
LC-1. Develop Urban Forests	Support and expand urban forest programs within the unincorporated areas.	**Consistent.** The implementation of this emissions reduction strategy is primarily dependent on the Los Angeles County Fire Department's (LACoFD) efforts to: (a) conduct a tree inventory to identify tree-deficient neighborhoods and target those areas for tree distribution and planting, (b) support implementation of the tree planting requirements for new developments, consistent with the County's Green Building Ordinance, and (c) prioritize drought-tolerant, native, and non-flammable trees to support water conservation efforts, etc. (CCAP, p. C-18.) The Project will further the implementation of this strategy by planting approximately 4,985 new trees on the Project site, and otherwise complying with Section 21.32.195 – On-Site Trees – of the County's Healthy Design Ordinance.
LC-2. Create New Vegetated Open Space	Restore and revegetate previously disturbed land and/or unused urban and suburban areas.	**Consistent.** The County previously adopted a suite of mitigation measures for the Project that serves to restore and revegetate areas of biological significance within the Project site. (Please see Section 4.3, Biota, of the previously published EIR and the County's May 2011 Mitigation Monitoring and Reporting Program for the Project.)
LC-3. Promote the Sale of Locally Grown Foods and/or Products	Establish local farmers markets and support locally grown food.	**Consistent.** The County's 2013 adoption of its Healthy Design Ordinance serves to improve access to healthy foods by allowing weekly farmers' markets and community gardens within multiple zoning designations (see Title 22, Planning and Zoning, of the County Code). As such, in accordance with the Healthy Design Ordinance, the Project-related development could accommodate on-site farmers' markets, provided the necessary conditional use permits from the County are secured. For example, village centers, neighborhood and community parks, and/or other parking areas could feasibly accommodate local farmers' markets. Further, community gardens are permitted uses within multiple zoning designations recognized in the Healthy Design Ordinance, and do not require the issuance of corresponding conditional use permits.

Table 1
Evaluation of Consistency of Mission Village
with the Unincorporated Los Angeles County Community Climate Action Plan

Measure	Goal	Assessment
LC-4. Protect Conservation Areas	Encourage the protection of existing land conservation areas.	**Consistent**. The Project includes approximately 692.7 acres of open space, which includes 85 acres of designated preserves designed to maximize the long-term persistence of the San Fernando Valley spineflower, a federal candidate and state-listed endangered plant species. The Project's open space acreage also includes the set aside of 212.6 acres of the River Corridor. The Project also is part of the Newhall Ranch Specific Plan, which includes the substantial set aside of open space, including that within the High Country SMA.

Abbreviations:
CARB: California Air Resources Board
CCAP: Community Climate Action Plan
CEC: California Energy Commission
GHG: Greenhouse Gas
RMDP: Resource Management and Development Plan
SCP: Spineflower Conservation Plan

Los Angeles (LA) County Agencies:
DPW: Department of Public Works
DRP: Department of Regional Planning
ISD: Internal Services Department
LACoFD: LA County Fire Department

APPENDIX 2.1-C

Meridian Consultants LLC, *Mission Village Consistency with SCAG's 2012-2035 RTP/SCS and 2016-2040 RTP/SCS, October 2016*

Mission Village Project Consistency

with

SCAG's 2012-2035 RTP/SCS

and

2016-2040 RTP/SCS

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INTRODUCTION

The analysis presented below evaluates the consistency of the Mission Village project (the "Project") with the policies, actions, and strategies set forth in the Southern California Association of Governments' (SCAG) 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (2012-2035 RTP/SCS) and 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016-2040 RTP/SCS). Separate analyses of Project consistency with the 2012-2035 RTP/SCS and the 2016-2040 RTP/SCS follow.

BACKGROUND

SCAG, as the federally-designated metropolitan planning organization (MPO) for six Southern California counties, including the County of Los Angeles, is mandated to create long-range regional plans and strategies for transportation and growth management. Charged by federal law with preparing a Regional Transportation Plan (RTP) every four years, SCAG has traditionally focused on the mobility impacts of the region's growth. Under state law, SCAG is also charged with planning for an adequate regional housing supply in coordination with local governments.

With the passage of SB 375 in 2008, SCAG is now also charged to prepare a Sustainable Communities Strategy (SCS) to be incorporated into the RTP. The purpose of SB 375 is to implement the state's greenhouse gas (GHG) emissions reduction goals by integrating land use planning with the goal of reducing car and light-duty truck travel. Specifically, the SCS is required to demonstrate how the region will meet its GHG reduction targets, as adopted by the California Air Resources Board (CARB). Under SB 375, the primary goal of the SCS is to provide a vision for future growth in Southern California that will decrease per capita greenhouse gas emissions from cars and light-duty trucks. This goal also leads to strategies that reduce per capita vehicle miles traveled (VMT).

PROJECT CONSISTENCY WITH 2012-2035 RTP/SCS

The 2012-2035 RTP/SCS, in contrast to previous RTPs, places greater emphasis on sustainability and integrated planning and identifies mobility, economy, and sustainability as the three principles most critical to the future of the region. As stated on page 12 of the 2012-2035 RTP/SCS, the RTP/SCS will only be successful if sustainability is defined in the broadest manner possible.

In addition to demonstrating the region's ability to attain and exceed the GHG emission-reduction targets set forth by CARB, the SCS outlines a series of actions and strategies for integrating the transportation network with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. Thus, successful implementation of the SCS would result in more complete communities with a variety of transportation and housing choices, while reducing automobile use. With regard to individual developments, such as the Mission Village Project, the SCS emphasizes the following: (1) land use patterns that reduce vehicle trips and VMT, (2) expanded active transportation opportunities (i.e., bicycle and pedestrian facilities), (3) expansion of the public transit network and transit service, (4) transportation demand management (TDM) and transportation system management (TSM) measures, (5) expanded use of alternative fuel vehicles, and (6) greater levels of energy efficiency.

Consistency with Integrated Growth Forecast

SCAG's Integrated Growth Forecast defines future growth in terms of population, housing, and employment and is the foundation upon which the 2012-2035 RTP/SCS was developed. The Integrated Growth Forecast is based on a collaborative effort with local input provided by the cities and counties located within the six-county SCAG region. The Integrated Growth Forecast forecasts that, between 2008 and 2035, the SCAG region will grow by 4.2 million people, 1.5 million households, and 1.7 million jobs. SCAG has allocated this growth into the following five community groups: Urban, City, Town, Suburban, and Rural. The development facilitated by the Project has elements found within SCAG's definitions of the Town and Suburban community types.[1]

The Integrated Growth Forecast includes forecasts of household and job growth for each of these five community types. Between 2008 and 2035, SCAG forecasts that 1.04 million new households and over 1.33 million new jobs would locate within the Town and Suburban community types. These growth levels comprise 69 percent of the household growth and 78 percent of the job growth of the total growth forecasted to occur within the six-county SCAG region. The Project includes 4,055 housing units or households and over 1.5 million square feet of commercial space that would generate 6,146 jobs. Thus, development facilitated by the Project would comprise 0.4 percent and 0.5 percent of the forecasted household and jobs growth, respectively, within the Town and Suburban community types.

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[1] SCAG defines the Town Community type as low- to medium-density housing opportunities that are located close to local-serving retail and daily services. These areas are characterized by an employment core or an independent job center in low- to mid-rise structures. Sidewalks and bike facilities are adequate and the areas benefit from one high-capacity transit facility and local buses. The Suburban Community Type contains a mix of uses, but often has one predominant use, such as residential or office. Residential areas are typically low density with larger lots and are separated from retail and other daily service uses. Though these areas are predominantly served by automobiles, bus service and commuter rail may also operate in certain neighborhoods (see p. 126 of the 2012-2035 RTP/SCS).

As such, development facilitated by the Project would comprise a very small percentage of the overall growth forecasted for the Town and Suburban community types.

In terms of growth within the Santa Clarita Valley, the County of Los Angeles is also forecasting substantial population and employment growth. The County's Santa Clarita Valley Area Plan: One Valley One Vision (Area Plan) forecasts the population in the Santa Clarita Valley to increase by 247,000 to 272,000 people between 2000 and Area Plan buildout, which is reasonably estimated to occur in 2030. In addition, employment is forecasted to increase between 98,322 to 128,850 new jobs within the Santa Clarita Valley at buildout of the Area Plan. Thus, the development facilitated by the Project represents only a portion of the growth that Los Angeles County forecasts will occur within the Santa Clarita Valley.

The 2012-2035 RTP/SCS is also based on development occurring both within existing urban areas and on land that has not previously been developed (i.e., greenfield development). In terms of land consumption, the 2012-2035 RTP/SCS incorporates 334 square miles of greenfield development. The Project Site is identified in the 2012-2035 RTP/SCS as a geographic area forecasted for growth. Within the Project Site, a total of 1,261.8 acres, or approximately 1.97 square miles of land area, would be developed. As the development facilitated by the Project is classified as greenfield development, on-site development would comprise approximately 0.59 percent of the total amount of greenfield development area incorporated into the 2012-2035 RTP/SCS. That is, the 2012-2035 RTP/SCS incorporates greenfield development of approximately 334 square miles, or approximately 213,760 acres, into its forecasts, and the Project would comprise less than 0.6 percent of that anticipated development.

In terms of the location of future development, Exhibits 4.1, 4.2, 4.3, and 4.15 of the 2012-2035 RTP show the areas within the SCAG region where growth is planned to occur (see **Appendix A** of this analysis). A review of these exhibits indicates that the Project Site is an area designated for future population, employment, and household growth. Thus, development of the Project Site has been incorporated into the 2012-2035 RTP/SCS, which has been accepted by CARB as achieving the required regional reductions in GHG emissions.[2] Development of the Project Site is also reflected in the County of Los Angeles' Area Plan (see **Appendix B** of this analysis).

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[2] California Air Resources Board (CARB), Executive Order G-12-039, June 4, 2012, http://www.arb.ca.gov/cc/sb375/exec_order_scag_scs.pdf.

Consistency with Energy-Related Strategies and Policies

Strategies and policies set forth in the 2012-2035 RTP/SCS that address developments such as the Mission Village Project can be grouped into the following three categories: (1) reduction of vehicle trips and VMT, (2) increased use of alternative fuel vehicles, and (3) energy efficiency. The Project's GHG emission-reducing mitigation measures, which include comprehensive TDM measures as identified in the Recirculated Portions of the EIR, in addition to the mitigation measures set forth in the Final EIR (October 2011) collectively support implementation of the 2012-2035 RTP/SCS as they would result in substantive reductions in vehicle trips and VMT; implementation of alternative fuel technology at the Project Site and in the Project vicinity; and the achievement of meaningful levels of energy efficiency. In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels).

Specifically, the Project would result in a reduction in vehicle trips and VMT via the community design established for the Project Site, the availability of a large number of major destinations within proximity to the Project Site (see **Figures 1** and **2**), an on-site transit system and active transportation network that would connect to the overall network that links the Newhall Ranch villages to each other and the Santa Clarita Valley, as well as a comprehensive TDM program. In addition, due to its overall location, the Los Angeles County Board of Supervisors previously determined that the Newhall Ranch project site, which includes Mission Village, avoids leapfrog development and accommodates projected regional growth in a location that would be adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers, in furtherance of SB 375 policies. Development facilitated by the Project would also be implemented as a complete mixed-use community comprised of mutually supportive land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities, including a school, parks, and a library. These on-site land uses are interconnected by an on-site transit network, consisting of transit stops, a mobility hub, and a bus transfer station, as well as an extensive network of bicycle and pedestrian trails that also connect to the overall trail system that links the Newhall Ranch villages to each other and provides connections to the existing and planned regional transit and trail systems within the Santa Clarita Valley. Tripmaking and associated VMT would also be reduced due to the proximity of on-site land uses to one another. Specifically, over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas (see **Figures 3**and **4**)[3], and within walking and bicycling distances to the on-site school, parks, recreation centers, and trail system.

With regard to employment opportunities, the Project includes over 1.5 million square feet of commercial uses and is located near the Valencia Commerce Center, Valencia Industrial Center, and the Valencia Corporate Center, which, collectively have been approved for over 25 million square feet of development and, as such, are some of the largest employment centers in the Santa Clarita Valley. Thus, vehicle trips and VMT would be reduced due to the proximity of these employment centers to the on-site residential areas and the interconnection of these uses via the extensive network of bicycle and pedestrian trails that would be developed and provide connections to the overall trail system that links the Newhall Ranch villages to each other and to the existing and planned regional trail systems within the Santa Clarita Valley. In addition, the use of alternative transportation modes within the Project Site would be further facilitated via a network of Complete Streets implemented in accordance with the Complete Streets Act of 2008 (AB 1358), as applicable.

The Project also would include the implementation of a comprehensive TDM program that would substantively reduce vehicle trips and VMT. A key measure of the effectiveness of the Project's comprehensive TDM program is its effect on total VMT. The 2012-2035 RTP/SCS forecasts that daily VMT per capita within the SCAG region will decrease from 25.4 in 2008 to 23.4 in 2035. Within Los Angeles County, the 2012-2035 RTP/SCS forecasts that the daily VMT per capita will decrease from 23.5 in 2008 to 20.7 in 2035.[4] With implementation of the Project's TDM program, the Project's Total Daily VMT per capita is forecasted to decrease from 17.7 without the Project's VMT reduction measures to 14.9 with implementation of the Project's TDM program.[5] Thus, the Project's VMT reduction measures would result in a 15.5 percent reduction in daily VMT per capita.[6] In comparison with the regional and Los Angeles County daily VMT per capita forecasts, the Project's residents and employees would generate approximately 36 percent less daily VMT per capita than the adopted 2012-2035 RTP/SCS plan's regional daily per capita VMT average, and would generate approximately 28 percent less daily

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3 These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

4 Stantec, SB 375 Consistency Evaluation – SCAG RTP/SCS and Newhall Ranch Mission Village Project Daily Vehicle Miles of Travel (September 2016) (see **Appendix D** of this analysis).

5 Ibid.

6 Fehr & Peers, Mission Village VMT Reduction Strategies, September 2016 (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR).

VMT per capita than the Los Angeles County per capita daily VMT average.[7] As such, the VMT attributable to the Project's residents and employees is consistent with the forecasts included in the 2012-2035 RTP/SCS and would also be consistent with the SB 375 goal to reduce VMT, and the corresponding emission of GHGs, through the creation of more effective and efficient communities. In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels). The Project's key VMT-reducing strategies are summarized below and described in detail in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR.

- Alternative work schedules and telecommute program;
- Commute trip program;
- Transit network expansion;
- Mobility hubs;
- Transit fare subsidies for employees and below market rate households;
- Carshare and bikeshare programs that would offer financial subsidies to encourage participation;
- Neighborhood electric vehicle subsidies;
- Tech-enabled mobility using web/phone-based platforms;
- Pedestrian network;
- Provision of affordable and below market rate housing;
- Traffic calming measures; and
- School bus program.

The second important focus within the 2012-2035 RTP/SCS, with regard to individual developments, such as the Project, is on alternative fuel technology as it directly relates to reductions in GHG emissions. The Project, in response to this policy initiative, would implement a comprehensive GHG emission reduction program that would reduce the Project's GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions). By reducing its GHG emissions to zero, the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels). The key elements of the Project's GHG emission reduction strategies with regard to alternative fuel technology are summarized below and are described in detail in Section 2.1, Global Climate Change and Greenhouse Gas Emissions, of the Recirculated Portions of the EIR.

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[7] Stantec, SB 375 Consistency Evaluation (September 2016).

- Installing electric vehicle charging stations at all on-site residences and within on-site commercial areas;
- Providing subsidies to residences to purchase an electric vehicle;
- Funding program for electric school buses;
- Subsidizing the replacement of diesel or CNG transit buses with electric buses; and
- Installing off-site electric vehicle charging stations.

The third important focus within the 2012-2035 RTP/SCS, with regard to individual developments, such as the Project, is energy efficiency as it also directly relates to reductions in GHG emissions. The key elements of the Project's GHG emission reduction strategies with regard to energy efficiency are summarized below and are described in detail in Section 2.1, Global Climate Change and Greenhouse Gas Emissions, of the Recirculated Portions of the EIR.

- Implementing a California Energy Commission (CEC) Zero Net Energy program for all residential and commercial development areas, private recreation centers, and public facilities;
- Installing solar water heating at swimming pools at private recreation centers;
- All construction-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry;
- All remaining operation-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry; and
- Establishing an existing building off-site retrofit program.

In addition, many of the measures described above also would result in improving energy efficiency at the Project Site. For example, fuel efficiency is achieved via reductions in vehicle trips and VMT, as described above, as well as the implementation of alternative fuel technology, particularly with regard to the use of electric vehicles. Thus, these measures collectively would serve to substantively reduce energy consumption, and corresponding GHG emissions, at the Project Site. As discussed above, the Project's GHG emissions would be reduced to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions). By reducing its GHG emissions to zero, the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels).

The analysis provided above identifies a wide array of measures that have been incorporated into the Project that would: result in substantive reductions in vehicle trips and VMT; implement alternative fuel technology at the Project Site and in the Project vicinity; and achieve meaningful levels of energy efficiency. A detailed analysis of the Project's consistency with the individual actions, strategies, and policies set forth in the 2012-2035 RTP/SCS is presented in Table 1 starting on page 12 of this analysis. Based on the analysis presented above and expanded upon in Table 1, the Project would be consistent with the 2012-2035 RTP/SCS.

PROJECT CONSISTENCY WITH 2016-2040 RTP/SCS

The 2016-2040 RTP/SCS, adopted by SCAG on April 7, 2016 is the most recently adopted SCS for the SCAG region that has been accepted by CARB.[8] The 2016-2040 RTP/SCS notes that substantial progress has been made since adoption of the 2012-2035 RTP/SCS with regard to a number of issues, including, but not limited to, transit, active transportation, and the implementation of sustainability policies. While substantial progress has been made, the 2016-2040 RTP/SCS also states that much more needs to be done. SCAG, based on interaction with local jurisdictions, has defined several major initiatives to achieve its vision for 2040. Initiatives that are applicable to new development such as the Project include: managing demands on the transportation system; optimizing the performance of the transportation system; promoting walking, biking, and other forms of active transportation; leveraging technology; focusing new growth around transit; and preserving natural lands.

Consistency with Integrated Growth Forecast

The 2016-2040 RTP/SCS, including the Demographics & Growth Forecast Appendix, provides growth forecasts for the following three geographic areas: (1) SCAG region, (b) counties, and (c) local jurisdictions. Thus, the 2016-2040 RTP/SCS does not provide growth forecasts for geographic areas such as the Newhall Ranch Specific Plan, within which the Project Site is located, that are smaller than the local jurisdictional level. With regard to the Project Site, the local jurisdictional level that is included in SCAG's growth forecasts is the entire unincorporated area of Los Angeles County. As to this area, the growth forecasts included in the RTP/SCS for the period between 2012 and 2040 are as follows: (1) population growth of 233,000 people; (2) household growth of 99,700 households, and (3) employment growth of 65,500 jobs. In comparison, development facilitated by the Project would include a population of 12,153 people, 4,055 housing units or households, and 6,146 jobs. As such, the Project would comprise 5.2 percent of the forecasted population growth within the unincorporated areas of Los Angeles County, 4.1 percent of the forecasted household growth, and 9.3 percent of the forecasted job

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8 CARB issued Executive Order G-16-066 on June 28, 2016, which accepted SCAG's quantification of GHG emission reductions and SCAG's determination that the 2016-2040 RTP/SCS would, if implemented, achieve the 2020 and 2035 GHG emission reduction targets established by CARB for the SCAG region. http://www.arb.ca.gov/cc/sb375/exec_order_scag_executive_order_g_16_066.pdf

growth. Thus, the Project would be consistent with the growth forecasts included in the 2016-2040 RTP/SCS.

The 2016-2040 RTP/SCS also is based on development occurring both within existing urban areas and on land that previously has not been developed (i.e., greenfield development). As noted above, the Project Site is identified in the 2016-2040 RTP/SCS as a geographic area designated for growth. In terms of land consumption, the 2016-2040 RTP/SCS incorporates 118 square miles, or approximately 75,520 acres, of greenfield development. Within the Project Site, as discussed above, a total of 1,261.8 acres, or approximately 1.97 square miles, would be developed. As the Project would be classified as greenfield development, on-site development would comprise approximately 1.67 percent of the total amount of greenfield development area incorporated into the 2016-2040 RTP/SCS. That is, the 2016-2040 RTP/SCS incorporates greenfield development of approximately 118 square miles, or approximately 75,520 acres, into its forecasts, and the Project would comprise less than two percent of that anticipated development.

In terms of the location of future development, Exhibits 3, 6, and 9 within the Demographics & Growth Forecast Appendix of the 2016-2040 RTP/SCS, show the areas within the SCAG region where growth is planned to occur (see **Appendix C** of this analysis). A review of these exhibits indicates that the Project Site is an area designated for future population, employment, and household growth. Thus, development of the Project Site has been incorporated into the 2016-2040 RTP/SCS. Development of the Project Site is also reflected in the County of Los Angeles' Area Plan (see **Appendix B** of this analysis).

Consistency with Energy-Related Strategies and Policies

While there has been a clear evolution in policymaking between the 2012-2035 RTP/SCS and the 2016-2040 RTP/SCS, the emphasis on increasing mobility and sustainability remains a foundational component for the 2016-2040 RTP/SCS. Further, the performance outcomes and measures that are used to gauge progress towards meeting the goals of the 2016-2040 RTP/SCS are also very similar to those included in the 2012-2035 RTP/SCS. The following provides an overview of the performance outcomes and measures set forth in the 2016-2040 RTP/SCS that are applicable to new development such as the Project:

- Location Efficiency – addresses the interaction between land use planning and the transportation system;
- Mobility and Accessibility – addresses the ability to reach desired destinations;
- Safety and Health – addresses impacts beyond those that are exclusively transportation-related (e.g., air quality);

- Environmental Quality – addresses criteria pollutant and greenhouse gas emissions;
- Economic Opportunity – addresses job growth as well as overall economic growth; and
- Transportation System Sustainability – addresses how well the transportation system performs over time.

In addition, the major themes set forth in the 2016-2040 RTP/SCS are very similar to those included in the 2012-2035 RTP/SCS. The major themes incorporated into both the 2012-2035 RTP/SCS and the 2016-2040 RTP/SCS that are applicable to new development such as the Project are as follows:

- Integrating strategies for land use and transportation;
- Striving for sustainability;
- Increasing capacity through improved system management;
- Giving people more transportation choices;
- Leveraging technology;
- Responding to demographic and housing market changes;
- Supporting commerce, economic growth, and opportunity; and
- Promoting the links among public health, environmental protection, and economic opportunity.

As the major themes that would result in successful implementation of the 2016-2040 RTP/SCS are very similar to those set forth in the 2012-2035 RTP/SCS, the analysis of Project consistency with the 2012-2035 RTP/SCS provided above is also applicable to the 2016-2040 RTP/SCS. As such, the Project's GHG emission-reducing mitigation measures and comprehensive TDM measures as identified in the Recirculated Portions of the EIR, in addition to the mitigation measures set forth in the Final EIR (October 2011), collectively support implementation of the 2016-2040 RTP/SCS as they would result in substantive reductions in vehicle trips and VMT; implementation of alternative fuel technology at the Project Site and in the Project vicinity; and the achievement of meaningful levels of energy efficiency. For example, the Project would result in a reduction in vehicle trips and VMT via the community design established for the Project Site, as well as the availability of a large number of major destinations within proximity to the Project Site (see **Figures 1** and **2**), an on-site transit system and extensive active transportation network that would connect to the overall network linking the Newhall Ranch villages to each other and the Santa Clarita Valley, and a comprehensive TDM program.

As discussed above, a key measure of the effectiveness of the Project's comprehensive TDM program is its effect on total VMT. With implementation of the Project's TDM program, the Project's Total Daily VMT per capita is forecasted to decrease from 17.7 without the Project's VMT reduction measures to

14.9 with implementation of the Project's TDM program. Thus, the Project's VMT reduction measures would result in a 15.5 percent reduction in daily VMT per capita.[9]

While the 2016-2040 RTP/SCS forecasts lower daily VMT per capita than forecasted in the 2012-2035 RTP/SCS, the Project's daily VMT per capita, with implementation of the Project's VMT reduction measures, still remains lower than the daily VMT per capita forecasted to occur with implementation of the 2016-2040 RTP/SCS. Specifically, in comparison with the regional and Los Angeles County daily VMT per capita forecasts, the Project's residents and employees would generate approximately 27 percent less than the forecasted regional average, and approximately 19 percent less than the Los Angeles County average.[10] As such, the VMT attributable to the Project's residents and employees is consistent with the forecasts included in the 2016-2040 RTP/SCS and also would be consistent with the SB 375 goal to reduce VMT, and the corresponding emission of GHGs, through the creation of more effective and efficient communities. In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels).

While the major themes that would result in successful implementation of the 2012-2035 RTP and the 2016/2040 RTP/SCS remained constant between the two, the specifics of the individual strategies, actions, and policies set forth in the two plans are somewhat different. As such, a detailed analysis of the Project's consistency with the individual strategies, actions, and policies set forth in the 2016-2040 RTP/SCS applicable to new development such as the Project is presented in Table 2 starting on page 42 of this analysis. Based on the analysis presented above and expanded upon in Table 2, the Project would be consistent with the 2016-2040 RTP/SCS.

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9 Fehr & Peers, Mission Village VMT Reduction Strategies, September 2016 (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR).

10 Stantec, SB 375 Consistency Evaluation (September 2016).

Table 1
SCAG 2012-2035 RTP/SCS
Mission Village Project Consistency Analysis

Actions and Strategies	Responsible Party(ies)	Consistency Analysis
Land Use Actions and Strategies		
Coordinate ongoing visioning efforts to build consensus on growth issues among local governments and stakeholders.	SCAG	**Not Applicable.** The responsible party identified in the RTP/SCS for implementation of this action/strategy is SCAG and as such, this action/strategy is not applicable to the Project. Nonetheless, the County of Los Angeles, which has local land use jurisdiction with regard to the Project Site, regularly coordinates with SCAG on regional growth issues. In terms of the location of future development, Exhibits 4.1, 4.2, 4.3, and 4.15 of SCAG's 2012-2035 RTP/SCS show the areas within the SCAG region where growth is planned to occur (see **Appendix A** of this analysis). A review of these exhibits indicates that the Project Site is an area designated for future population, employment, and household growth. Thus, development of the Project Site has been incorporated into the 2012-2035 RTP/SCS, which has been accepted by CARB as achieving the required regional reductions in GHG emissions.[11] Development of the Project Site is also reflected in the County of Los Angeles' Area Plan (see **Appendix B** of this analysis). In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels).
Provide incentives and technical assistance to local governments to encourage projects and programs that balance the needs of the region.	SCAG	**Not Applicable.** The responsible party identified in the RTP/SCS for implementation of this action/strategy is SCAG and as such, this action/strategy is not applicable to the Project. Nonetheless, the County of Los Angeles, which has local land use jurisdiction with regard to the Project Site, regularly coordinates with SCAG on its advancement of projects and programs that meet regional needs. SCAG in its role as the Metropolitan Planning Organization (MPO) for the region is required under State law to determine the existing and projected regional housing needs for persons of all income levels. This requirement is met via SCAG's Regional Housing Needs

[11] California Air Resources Board (CARB), Executive Order G-12-039, June 4, 2012, http://www.arb.ca.gov/cc/sb375/exec_order_scag_scs.pdf.

Table 1 (Continued)
SCAG 2012-2035 RTP/SCS
Mission Village Project Consistency Analysis

		Assessment (RHNA). The RHNA is developed for specified planning periods, with the current RHNA covering the period of January 1, 2014 through October 1, 2021. SCAG develops RHNA forecasts for incorporated cities, as well as the unincorporated area of Los Angeles County. The RHNA allocation for unincorporated Los Angeles County for the 2014-2021 planning period is a total of 30,145 households. The RHNA also includes separate forecasts based on household income levels.[12] Development within the Project Site is anticipated to start during the current RHNA planning period. Thus, the amount of housing developed on the Project Site before October 2021 would positively contribute to the County meeting its RHNA allocation on an overall basis, as well as for each of the defined income levels.[13] Jobs/housing balance compares the available jobs and the available housing in a community. Achieving a jobs/housing balance can significantly reduce the total number of vehicle trips on the road network, total vehicle miles traveled, and provide greater quality of life for residents. The County's Santa Clarita Valley Area Plan (Area Plan) indicates that, by 2008, the Valley's jobs/housing ratio is estimated to range from 1.3 to 1.5 jobs per household and that implementation of the Area Plan will maintain a minimum of 1.5 jobs per household. As development within the Project Site is reflected in the Area Plan, on-site housing and employment opportunities would positively contribute to the achievement of this forecasted jobs/housing balance ratio. Thus, the Project would support this action/strategy by providing needed housing, employment opportunities, and supportive uses and amenities, such as a school, parks, library, and a fire station that would serve Project residents and, in conjunction with development throughout the Newhall Ranch villages, would also serve the Santa Clarita Valley region as a whole. In addition, implementation of the Project's comprehensive TDM

12 The RHNA for the 2014-2021 planning period provides the following allocations by household income level for the unincorporated Los Angeles County area: (1) very low income – 7,854 households, (2) low income – 4,650 households, (3) moderate income – 5,060 households, and (4) above moderate income – 12,581 households (see SCAG 5th Cycle Regional Housing Needs Assessment Final Allocation Plan, 1/1/2014 – 10/1/2021).

13 The Newhall Ranch Specific Plan, which applies to the Project Site, includes an affordable housing program (see Section 3.10 of the Newhall Ranch Specific Plan), which provides for the development of on-site housing for households of all income levels.

Table 1 (Continued)
SCAG 2012-2035 RTP/SCS
Mission Village Project Consistency Analysis

		program would result in a 15.5 percent reduction in vehicle miles traveled by development occurring within the Project.
Collaborate with local jurisdictions and agencies to acquire a regional fair share housing allocation that reflects existing and future needs.	SCAG, Local Jurisdictions, HCD	**Consistent.** This policy focuses on coordination between SCAG, the local jurisdictions, and the California Department of Housing and Community Development (HCD) with regard to determining an appropriate allocation of housing that reflects existing and future housing needs. Even though this action/strategy is not directly related to the Project, on-site housing development would contribute to meeting the region's future housing needs. As discussed above, the local jurisdictional level, which in the case of the Project is all of unincorporated Los Angeles County, is the smallest geography for which SCAG has adopted growth forecasts. As such, the adopted Integrated Growth Forecast included in the 2016-2040 RTP/SCS for the unincorporated portion of the County, forecasts the following growth between 2012 and 2040: population growth of 233,000 persons; household growth of 99,700 households; and employment growth of 65,500 jobs. In addition, the Area Plan includes the following forecasts at buildout of the Area Plan, which is reasonably estimated to occur in 2030: (1) population of 460,000 to 485,000; and (2) an increase of 98,322 to 128,850 new jobs. As such, the Project would accommodate the growth projected by SCAG and Los Angeles County for the unincorporated areas of Los Angeles County, as well as the Santa Clarita Valley Planning Area by providing needed housing within a site that the Los Angeles County Board of Supervisors previously determined avoids leapfrog development and accommodates projected regional growth in a location adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers. As a result, Project development would also contribute to the furtherance of the housing needs allocation policies of SB 375.
Expand Compass Blueprint program to support member cities in the development of bicycle, pedestrian, Safe Routes to Schools, Safe Routes to Transit, and ADA Transition plans.	SCAG, State	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and the State of California (State) and as such, this action/strategy is not applicable to the Project. In any event, the Project includes a network of bicycle and pedestrian trails, as well as transit stops, a mobility hub, and a bus transfer station to promote alternative

Table 1 (Continued)
SCAG 2012-2035 RTP/SCS
Mission Village Project Consistency Analysis

		transportation and to facilitate mobility and access within the Project vicinity. The Project would work with the school district to develop a Safe Route plan, to the extent deemed necessary, during the planning process for the on-site school. Relatedly, the TDM Plan includes a school bus program that would serve all of the schools within Newhall Ranch, thereby further facilitating safe school travel. In addition, the integral role of the trail system in the community design established for the Project Site is reflected in the Mission Village Trails Plan, EIR Figure 1.0-20 (see **Appendix E** of this analysis). This trail plan sets forth a comprehensive system of bicycle and pedestrian circulation throughout the Project Site that ensures each residence and all community service areas are linked via a practical, aesthetically pleasing trail system. The Project's trail system consists of a hierarchy of trails with varying sizes and functionality, that also connects to the overall trail system linking the Newhall Ranch villages to each other, as well as providing connections to the existing and planned regional trail systems within the Santa Clarita Valley. Specifically, this network of trails would extend existing and planned regional trails into the Project Site and, by doing so, facilitate alternative transportation objectives while also providing additional recreational opportunities for both local and regional residents. These trails would provide access to designated Open Areas, as well as the River Corridor Special Management Area, while also providing connections between homes, shopping, work, entertainment, schools, and civic and recreational facilities. The Mission Village Trails Plan includes the following hierarchy of trails: • Community Trails; • Local Trails; • Pathways; and • Unimproved Trails. To minimize and shorten vehicle trips, over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas,

Table 1 (Continued)
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		whereas all residential development is located within 3 miles of on-site commercial areas (see **Figures 3** and **4**), as well as within walking and bicycling distances to the on-site school, parks, recreation centers, and trail system.[14] The bicycle and pedestrian trails within the Project Site would connect to the Santa Clara River Trail and thus would connect to the overall network linking the Newhall Ranch villages to each other, as well as to other areas of the Santa Clarita Valley. These trails are part of the overall circulation system and would provide on-site residents with an opportunity to reduce vehicle trips. Additionally, the Project would be integrated with the Santa Clarita transit system by including bus stops, a mobility hub, and a bus transfer station to encourage residents to rely less on single-occupancy vehicular travel (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). To further enhance safe travel, sufficient lighting would be provided in all developed areas of the Project Site to ensure safety and visibility.
Continue to support, through Compass Blueprint, local jurisdictions and sub-regional COGs adopting neighborhood-oriented development, suburban villages, and revitalized main streets as livability strategies in areas not served by high-quality transit.	SCAG, State, Local Jurisdictions, Subregional Council of Governments (COGs)	**Consistent.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are regulatory agencies and regional/subregional planning organizations. As such, this action/strategy is not applicable to the Project. That being said, the Mission Village project, as shown in Figures 1.0-6 through 1.0-10 in Section 1.0, Project Description, of the Mission Village Revised Draft EIR (October 2011), contains six complementary neighborhoods (planning areas) with specific land use designations for each planning area. These neighborhoods are the central organizing feature of the Land Use Plan and provide future residents convenient access to commercial, recreational and public facilities. Within the Project Site, the highest intensity of uses is located in and around the Village Center, an area designed in a "main street" setting that includes plazas, courtyards, and promenades connecting the residential, retail, and office uses in this area both horizontally and vertically. This clustering of development around a

[14] These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

Table 1 (Continued)
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		centralized core provides for growth in a concentrated, rather than a dispersed pattern. The Village Center also includes a mobility hub, a bus transfer station, a library, and a community recreation center in a pedestrian friendly environment that connects these uses with extra wide sidewalk areas, which also minimize curb cuts and driveway aprons to facilitate access and social interaction. Planning principles reflected in the Project's design include, but are not limited to the following: (1) designing with nature;[15] (2) placing the highest intensity of uses in and around the Village centers; and (3) a hierarchical organization.[16] As such, the Project would facilitate the development of a neighborhood-oriented community coupled with livability strategies, including the establishment of a diverse system of pedestrian and bicycle trails to promote interconnectivity between various areas on the Project Site that would also connect to the overall network linking the Newhall Ranch villages to each other, as well as to other areas of the Santa Clarita Valley.
Encourage the use of range-limited battery electric and other alternative fueled vehicles through policies and programs, such as, but not limited to, neighborhood oriented development, complete streets, and Electric (and other alternative fuel) Vehicle Supply Equipment in public parking lots.	Local Jurisdictions, COGs, SCAG, County Transportation Commissions (CTCs)	**Consistent.** While the use of alternatively-fueled vehicles by the Project's future residents and occupants ultimately is market driven and beyond the direct control or influence of the Project Applicant, the Project would facilitate the use of range-limited and alternatively-fueled vehicles by creating a neighborhood-oriented development and a street system that would accommodate these vehicles. Further, the Project, through implementation of its proposed GHG reduction strategies, would implement the following measures that facilitate and encourage the use of electric vehicles: (1) 100 percent of the Project's residential units will be equipped with electric vehicle charging stations; (2) 50 percent of all residential units will receive a $1,000 subsidy to purchase one electric vehicle each; (3) charging stations will be installed in commercial areas on the Project Site; (4) charging stations will be installed in off-site areas; (5) funding program for electric school

15 The planning principle of designing with nature reflects the siting of land uses to accommodate and preserve major natural landforms and significant environmental features, such as the river corridor, ridgelines, hillsides, creeks, bluffs, and oak woodlands.

16 The planning principle of hierarchical organization reflects the location of circulation, open areas, housing, and commercial facilities within each community such that all of these elements of the urban environment function as an integrated system, with facilities sized and planned according to the service population.

Table 1 (Continued)
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		buses; and, (6) subsidizing the replacement of diesel or CNG transit buses with electric buses. In addition, the Project's comprehensive TDM program also includes the provision of subsidies for Neighborhood Electric Vehicles (NEV) and a bikeshare program that would offer financial subsidies to encourage participation. As also discussed above, the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions) and, as such, would be carbon neutral (i.e., Project development would not increase GHG emission levels). As referenced above, the Project would also facilitate the development of a neighborhood-oriented community. In addition, in support of the Complete Streets Act of 2008 (AB 1358), the Project would include an extensive bicycle and pedestrian trail network linking the residential, commercial (retail/office), school, library, and park uses on-site while also connecting to the overall trail system that links the Newhall Ranch villages to each other, as well as to other adjacent communities. Many of these trails would be separated from roadways to add to the safety of pedestrians.
Continue to support, through Compass Blueprint, planning for new mobility modes such as range-limited Neighborhood Electric Vehicles (NEVs) and other alternative fueled vehicles.	SCAG, State	**Consistent.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and the State of California and as such, this action/strategy is not applicable to the Project. Notwithstanding, and as discussed above, development facilitated by the Project would implement GHG reduction strategies that will provide electric vehicle charging stations throughout the Project Site's residential and commercial development areas, as well as at publicly accessible off-site locations, thereby facilitating and encouraging the use of electric vehicles. In addition, the Project's comprehensive TDM program includes the establishment of a neighborhood electric vehicle (NEV) program, which will be part of the overall network established throughout the Newhall Ranch villages, as well as providing subsidies to further encourage the use of NEVs.
Collaborate with the region's public health professionals to enhance how SCAG addresses public health issues in its regional planning, programming, and project development activities.	SCAG, State, Local Jurisdictions	**Consistent.** The Project would not impair the County of Los Angeles', SCAG's, or the State's ability to collaborate with the region's public health professionals regarding the integration of public health issues in regional planning. Additionally, the Project would encourage healthy lifestyles through the provision of an extensive on-site bicycle and pedestrian trail network, a community garden program, and allowing farmers' markets. The

Table 1 (Continued)
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		Project would also incorporate measures to reduce air emissions and greenhouse gasses, minimize hazards, and ensure water quality (see **Section 2.1**, Global Climate Change and Greenhouse Gas Emissions of the Recirculated Portions of the EIR; as well as **Section 4.7**, Air Quality, **Section 4.19**, Environmental Safety, and **Section 4.22**, Water Quality, of the EIR for further discussion).
Support projects, programs, and policies that support active and healthy community environments that encourage safe walking, bicycling, and physical activity by children, including, but not limited to development of complete streets, school siting policies, joint use agreements, and bicycle and pedestrian safety education.	Local Jurisdictions, SCAG	**Consistent.** As previously discussed, the development facilitated by the Project would establish a diverse system of pedestrian trails (many of which would be separated from vehicular traffic) and on-road bicycle lanes, which would promote interconnectivity between the various on-site land uses (including the proposed school), provide access to on-site amenities, connect to the on-site trail system that links the Newhall Ranch villages to each other and other areas of the Santa Clarita Valley, and serve as an alternative to automobile use. Additionally, the Project would provide public community and neighborhood parks and private neighborhood recreation centers of adequate size and with appropriate amenities to serve the needs of Project residents and the local community. Specifically, the Project's Land Use Plan includes 26.8 acres of community and neighborhood parks. The neighborhood and community parks would be improved in accordance with the final park plans approved by the County Parks and Recreation Department. Also see the discussion of Complete Streets, above.
Seek partnerships with state, regional, and local agencies to acquire funding sources for innovative planning projects.	Local Jurisdictions, SCAG, State	**Consistent.** The Project would not impair the County of Los Angeles', SCAG's or the State's ability to seek partnerships in furtherance of funding acquisition. Additionally, the Project would support this measure by providing needed housing, employment opportunities, and supportive uses and amenities, such as a school, parks, library, and fire station that, in conjunction with similar facilities located throughout the Newhall Ranch villages, would serve not just Project residents but the Santa Clarita Valley region at large.
Update local zoning codes, General Plans, and other regulatory policies to accelerate adoption of land use strategies included in the 2012–2035 RTP/SCS Plan Alternative, or that have been formally adopted by any subregional COG that is	Local Jurisdictions	**Consistent.** While not necessarily applicable on a project-specific basis, the Project would support this action/strategy via consistency with the County's recently adopted General Plan and Area Plan, which incorporate land use strategies set forth in the 2012–2035 RTP/SCS. Specifically, the Project would be consistent with the General Plan and Area Plan land use designations for the

Table 1 (Continued)
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consistent with regional goals.		Project Site, as well as the population, housing, and employment growth projections included in these plans. On-site development would also be consistent with General Plan and Area Plan land use goals and policies by creating a mixed-use community comprised of mutually supportive land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities while respecting the natural resources and natural features found on-site. In addition, on-site development would implement General Plan and Area Plan policies addressing sustainability and "smart growth" principles by including: an appropriate mix of land uses, job generation, design principles to reduce vehicle miles traveled and commuting distances, access to transit, the provision of open space and recreational amenities, trail connectivity, the preservation of natural areas, water and energy conservation, and the incorporation of green building techniques. General Plan and Area Plan policies addressing economic development would also be met through on-site job creation, the provision of goods and services through community-serving land uses, and the attraction of new businesses. In addition, the proposed layout of the development facilitated by the Project also presents a logical transition in land use type and intensity in terms of the surrounding area. With regard to this point, due to its overall location, the Los Angeles County Board of Supervisors previously determined that the Newhall Ranch project site, which includes Mission Village, avoids leapfrog development and accommodates projected regional growth in a location adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers. Overall, the Project would help implement the defined vision for the Santa Clarita Valley by providing for development consistent with General Plan and Area Plan goals, providing adequate infrastructure, retaining and respecting natural resources, promoting economic vitality, and establishing a high quality of life.
Update local zoning codes, General Plans, and other regulatory policies to promote a more balanced mix of residential, commercial, industrial, recreational and institutional uses located to provide options and to contribute to the resiliency and vitality of neighborhoods and	Local Jurisdictions	**Consistent.** While not necessarily applicable on a project-specific basis, the Project would support this action/strategy by creating a mixed-use community with a mix of complementary and mutually supportive land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities. Also refer to the preceding discussions regarding the planning principles that have been

Table 1 (Continued)
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districts.		incorporated into the Project's Land Use Plan that also address this action/strategy, as well as Project consistency with local land use plans.
Support projects, programs, policies and regulations that encourage the development of complete communities, which includes a diversity of housing choices and educational opportunities, jobs for a variety of skills and education, recreation and culture, and a full-range of shopping, entertainment and services all within a relatively short distance.	Local Jurisdictions, SCAG	**Consistent.** As noted above, the Project would create a complete mixed-use community comprised of mutually supportive land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities, including a school, parks, and a library. The Project is a complete mixed-use community as depicted in the Mission Village Land Use Plan and also reflected in the EIR's traffic analysis, which found that approximately 33% of all Project trips would remain internal to the Project Site. In addition, it is also forecasted that 52 percent of all vehicle trips generated by Newhall Ranch Specific Plan development would remain internal to the Newhall Ranch Specific Plan site (see page 4.8-29 of the Newhall Ranch Specific Plan Revised Draft EIR, March 1999). Additionally, the development facilitated by the Project includes a range of residential housing types, sizes, and styles to serve the needs of a growing and increasingly diverse population within the County of Los Angeles and the region. The on-site housing and employment opportunities would also serve to accommodate the projected increase of more than 70,000 households in northern Los Angeles County between 2010 and 2035.[17] It is also anticipated that the development facilitated by the Project would provide jobs for a variety of skills and education levels. Specifically, the on-site commercial uses would offer a broad range of retail stores (e.g., clothing boutiques, grocery, banking, etc.) and office uses that would offer a broad range of employment opportunities which would provide jobs for a wide variety of skills and education levels (e.g., office professionals, retail clerks, etc.).
Pursue joint development opportunities to encourage the development of housing and mixed-use projects around existing	Local Jurisdictions, CTCs	**Consistent.** The Project would accommodate a portion of the regional growth projected by SCAG in the unincorporated areas of Los Angeles County, a good portion of which is within the previously approved

17 County of Los Angeles, One Valley One Vision Revised Draft Program Environmental Impact Report, State Clearinghouse No. 2008071119, Table 3.19-1 on page 3.19-2, November 2010.

Table 1 (Continued)
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and planned rail stations or along high-frequency bus corridors, in transit-oriented development areas, and in neighborhood-serving commercial areas.		Newhall Ranch Specific Plan site. In addition, due to its overall location, the Los Angeles County Board of Supervisors previously determined that the Newhall Ranch project site, which includes Mission Village, avoids leapfrog development and accommodates projected regional growth in a location adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers. As such, Project development would contribute to the furtherance of SB 375 policies. Transit would be promoted in the Project's community design and would include the following: (1) on-site bus stops, a mobility hub, and a bus transfer station (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR); and (2) transit fare subsidies for employees and below market rate households.
Working with local jurisdictions, identify resources that can be used for employing strategies to maintain and assist in the development of affordable housing.	SCAG, Local Jurisdictions	**Consistent.** The Project would include a range of residential housing types, sizes, and styles to serve the needs of a growing and increasingly diverse population within the County and the region. In addition, development within the Project Site would implement an affordable housing program pursuant to the Newhall Ranch Affordable Housing Implementation Plan, revised June 25, 2010.
Consider developing healthy community or active design guidelines that promote physical activity and improved health.	Local Jurisdictions	**Consistent.** As discussed above, the Project would encourage healthy lifestyles through the provision of an extensive on-site bicycle and pedestrian trail network, a community garden program, and allowing for farmers' markets. These development features implement the provisions of the County's Healthy Design Ordinance by providing better walking environments, encouraging bicycling, and creating community resources that improve access to healthy foods. Additionally, the Project would provide public community and neighborhood parks and private neighborhood recreation centers of adequate size and with appropriate amenities that, in conjunction with similar facilities located throughout the Newhall Ranch villages, would serve the recreational needs of Project residents and the local community. Also see the discussion of Complete Streets, above.
Support projects, programs, policies, and regulations to protect resources areas, such as natural habitats and farmland, from future development.	Local Jurisdictions, SCAG	**Consistent.** The Newhall Ranch Specific Plan, which includes Mission Village, includes 10,348.5 acres of open space, which includes 4,200 acres of High Country preserve and approximately 199 acres within six preserves for the San Fernando Valley spineflower, which

Table 1 (Continued)
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		would remain in its natural condition. Within the Mission Village project itself, there are approximately 692.7 acres of open space, which includes 85.8 acres within three preserves for the San Fernando Valley spineflower. Project development would also respect many of the natural resources and features on site, with grading that generally follows the natural topographic trends on site, natural-looking improvements such as debris and water quality basins that incorporate vegetation or water features, and the restoration of Lion Canyon as an open, vegetated drainage channel. The EIR indicates that development of the Project would result in the conversion of approximately 191 acres of prime farmland, unique farmland, and farmland of statewide importance to nonagricultural uses (see **Section 4.16**, Agricultural Resources, of the EIR). Although the use of these land areas would be converted, the Project Site is designated for urban uses in both the County's General Plan and Area Plan, and development planned for the Project Site has also been approved for urban development by the County of Los Angeles pursuant to the Newhall Ranch Specific Plan.
Create incentives for local jurisdictions and agencies that support land use policies and housing options that achieve the goals of SB 375.	State, SCAG	**Not Applicable.** The responsible parties identified in the RTP/SCS for the implementation of this action/strategy are SCAG and the State of California and as such, this action/strategy is not applicable to the Project. In any event, the Project would be consistent with the goals of SB 375, as demonstrated by this policy-level analysis and the allocation of future growth to the Project vicinity in SCAG's RTP/SCS overall land use pattern maps. In addition, a series of transportation demand management (TDM) strategies will be implemented to achieve emissions reductions by reducing Project-generated VMT. These proposed strategies were determined to reduce the Project's VMT by 15.5 percent.[18] This reduction in VMT will result in a daily per capita VMT of 14.9 miles for the Project compared to a daily per capita VMT of 23.4 and 20.7 miles for the SCAG region and Los Angeles County, respectively.[19] Thus, the Project's residents and employees would generate approximately 36 percent less

18 Fehr & Peers, Mission Village VMT Reduction Strategies, September 2016 (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR).

19 Stantec, SB 375 Consistency Evaluation - SCAG RTP/SCS and Mission Village Project Vehicle Miles of Travel (VMT), September 2016 (see **Appendix D** of this analysis).

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		daily VMT per capita than the adopted 2012-2035 RTP/SCS plan's regional daily per capita VMT average, and would generate approximately 28 percent less daily VMT per capita than the Los Angeles County daily per capita VMT average. As such, the development facilitated by the Project also would be consistent with the SB 375 goal to reduce vehicle miles travelled, and the corresponding emission of GHGs, through the creation of a more effective and efficient community. In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels).
Continue partnership with regional agencies to increase availability of state funding for integrated land use and transportation projects in the region.	State, SCAG	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and the State of California and as such, this action/strategy is not applicable to the Project. Notwithstanding, the Project would not impair the ability of SCAG and the State to increase the availability of funding for certain types of projects.
Engage in a strategic planning process to determine the critical components and implementation steps for identifying and addressing open space resources, including increasing and preserving park space, specifically in park-poor communities.	Local Jurisdictions, SCAG	**Consistent.** The Project would not impair the ability of the County of Los Angeles and SCAG to engage in strategic planning processes to address recreational/park shortages in existing communities. As previously discussed, the Newhall Ranch Specific Plan, which includes Mission Village, includes approximately 10,348.5 acres of open space, which includes 4,200 acres of High Country preserve and approximately 199 acres within six preserves for the San Fernando Valley spineflower, which would remain in their natural condition. Within the Mission Village project itself, there are approximately 692.7 acres of open space, which includes 85.8 acres within three preserves for the San Fernando Valley spineflower. Additionally, the Project would provide public community and neighborhood parks with appropriate amenities that, in conjunction with similar facilities located throughout the Newhall Ranch villages, would serve the recreational needs of Project residents and the local community.
Identify and map regional priority conservation areas for potential inclusion in future plans.	SCAG	**Not Applicable.** The responsible party identified in the RTP/SCS for implementation of this action/strategy is SCAG, and – as of October 2016 – SCAG has not yet identified the priority conservation areas. As such, this action/strategy is not applicable to the Project. In addition, the Project would not impair SCAG's ability to

Table 1 (Continued)
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		implement this action/strategy.
Engage with various partners, including CTCs and local agencies, to determine priority conservation areas and develop an implementable plan.	SCAG, CTCs	**Not Applicable.** The responsible parties identified in the RTP/SCS for the implementation of this action/strategy are SCAG and CTCs and as such, this action/strategy is not applicable to the Project. As of October 2016, SCAG – working with others – has not yet determined priority conservation areas and adopted an implementable plan. In addition, the Project would not impair the ability of SCAG and CTCs to engage with various partners on issues pertaining to conservation areas.
Develop regional mitigation policies or approaches for the 2016 RTP.	SCAG, CTCs	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and CTCs and as such, this action/strategy is not applicable to the Project. In addition, the Project would not impair the ability of SCAG and CTCs to develop regional mitigation policies or approaches for the 2016 RTP. Development of the Project would also occur under the auspices of the RMDP and SCP, which are coordinated mitigation programs for reducing cumulative impacts to certain biological resources, including the Santa Clara River and San Fernando Valley spineflower, to less-than-significant levels. The Project's consistency with the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS) is provided in Table 2, starting on page 42 of this analysis.
Transportation Network Actions and Strategies		
Perform and support studies with the goal of identifying innovative transportation strategies that enhance mobility and air quality, and determine practical steps to pursue such strategies, while engaging local communities in planning efforts.	SCAG, CTCs	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and CTCs and as such, this action/strategy is not applicable to the Project. In addition, the Project would not impair the ability of SCAG and CTCs to perform and support various studies that would implement this action/strategy. As previously discussed, the proposed uses that would be located within the Project Site would be developed on a site with convenient regional access to the I-5, via Magic Mountain Parkway, and SR-126, via Commerce Center Drive. The Project would include an on-site circulation network and additional off-site transportation improvements (as mitigation) to facilitate mobility and access within the Project vicinity. By combining proposed residential, commercial (retail/office), school, park, and library uses on-site, as well as additional residential, retail, and public facility uses and employment centers within the other Newhall Ranch villages and other nearby major employment

Table 1 (Continued)
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		centers, including the Valencia Commerce Center, Valencia Industrial Center, and the Valencia Corporate Center, which collectively have been approved for over 25 million square feet of development, the Project would serve to reduce vehicle trips and thus vehicle miles travelled, thereby contributing to a reduction in air pollutant emissions. In addition, a series of TDM strategies will also be implemented to further reduce Project-generated VMT and vehicle trips. These proposed strategies, as described above, were determined to reduce the Project's VMT by 15.5 percent.[20] This reduction in VMT will result in a daily per capita VMT of 14.9 miles for the Project compared to a daily per capita VMT of 23.4 and 20.7 miles for the SCAG region and Los Angeles County, respectively.[21] Thus, the Project's residents and employees would generate approximately 36 percent less daily VMT per capita than the adopted 2012-2035 RTP/SCS plan's regional daily per capita VMT average, and would generate approximately 28 percent less daily VMT per capita than the Los Angeles County daily per capita VMT average. In addition, the EIR's traffic analysis determined that approximately 33% of all Project trips would remain internal to the Project Site, thereby reducing travel on the regional transportation system.
Cooperate with stakeholders, particularly county transportation commissions and Caltrans, to identify new funding sources and/or increased funding levels for the preservation and maintenance of the existing transportation network.	SCAG, CTCs, Local Jurisdictions	**Consistent.** The Project would support this action/strategy by providing fair share funding for I-5 improvements, an on-site circulation network, and additional off-site transportation improvements (as mitigation) to improve local access, with appropriate design considerations to ensure travel safety and reliability. All roadway improvements would be constructed in accordance with Los Angeles County Department of Public Works (LACDPW) and/or Caltrans requirements, as appropriate. It is also noted that the Project would mitigate any significant impacts to local and regional roadways to less than significant.
Expand the use of transit modes in our subregions such as BRT, rail, limited-stop service, and point-to-	SCAG, CTCs,	**Consistent.** The Project would include on-site bus stops, a mobility hub, and a bus transfer station which would also connect to the overall transit system that links the

20 Fehr & Peers, Mission Village VMT Reduction Strategies, September 2016 (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR).

21 Stantec, SB 375 Consistency Evaluation - SCAG RTP/SCS and Mission Village Project Vehicle Miles of Travel (VMT), September 2016 (see **Appendix D** of this analysis).

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point express services utilizing the [high occupancy vehicle] (HOV) and [high occupancy toll] (HOT) lane networks.	Local Jurisdictions	Newhall Ranch villages to each other, as well as the existing and planned transit system throughout the Santa Clarita Valley (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). As such, these transit facilities, as well as transit fare subsidies for employees and below market rate households, would further expand the use of transit within the Project Site. In addition, the Project would not impair the ability of SCAG, the CTCs, or the County of Los Angeles to expand and extend the use of other transit modes to the Project Site. In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site. Also of note, HOV lanes are currently being developed along I-5 within the Project vicinity.[22] Further, the Project would also contribute fair share funding pursuant to an agreement between the Applicant and Caltrans under which the Applicant will provide fair share funding for improvements to the I-5 between Parker Road and SR-14.
Encourage transit providers to increase frequency and span of service in [transit-oriented development/high quality transit area] (TOD/HQTA) and along targeted corridors where cost-effective and where there is latent demand for transit usage.	SCAG, CTCs	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and CTCs and as such, this action/strategy is not applicable to the Project. In addition, the Project would not impair the ability of SCAG and CTCs to encourage transit providers to increase the frequency and span of service.
Encourage regional and local transit providers to develop rail interface services at Metrolink, Amtrak, and high-speed rail stations.	SCAG, CTCs, Local Jurisdictions	**Consistent.** While this action/strategy is not necessarily applicable on a project-specific basis, the Project would not impair the ability of SCAG, CTCs, or the County of Los Angeles to encourage rail interface services. In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site. Also of note, a

22 Los Angeles County Metropolitan Transportation Authority (Metro), I-5 North Capacity Enhancements Fact Sheet and Phase 2a Project Map; https://www.metro.net/projects/i-5-n-capacity-enhancements/overview-fact-sheet/ and http://media.metro.net/projects_studies/I5enhancements/images/I5_project_map.pdf, respectively (accessed January 12, 2016).

Table 1 (Continued)
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		high speed rail line is planned within the Santa Clarita Valley.[23]
Expand the Toolbox Tuesdays program to include bicycle safety design, pedestrian safety design, ADA design, training on how to use available resources that expand understanding of where collisions are happening, and information on available grant opportunities to improve bicycle and pedestrian safety.	SCAG, State	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and the State of California and as such, this action/strategy is not applicable to the Project. However, the development facilitated by the Project would support this action/strategy by providing an extensive bicycle and pedestrian trail network linking the various uses on-site and connecting to the overall trail system that links the Newhall Ranch villages to each other as well as other adjacent communities, consistent with the Complete Streets Act of 2008 (AB 1358). Many of the on-site pedestrian trails would be separated from roadways to add to the safety of pedestrians.
Prioritize transportation investments to support compact infill development that includes a mix of land uses, housing options, and open/park space, where appropriate, to maximize the benefits for existing communities, especially vulnerable populations, and to minimize any negative impacts.	SCAG, CTCs, Local Jurisdictions	**Consistent.** As discussed above, the Project, as one of the Newhall Ranch villages, would offer a mix of mutually supportive land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities. As also previously discussed, the Newhall Ranch Specific Plan, which includes the Mission Village project, includes 10,348.5 acres of open space, which includes 4,200 acres of High Country preserve and approximately 199 acres within six preserves for the San Fernando Valley spineflower, and 231 acres within three public community parks and 10 neighborhood parks with appropriate amenities, to serve the recreational needs of Project residents and the local community. Within the Mission Village project itself, there are approximately 692.7 acres of open space, which includes 85.8 acres within three preserves for the San Fernando Valley spineflower and 26.8 acres of public community and neighborhood parks with appropriate amenities to serve the recreational needs of Project residents and the local community.
Explore and implement innovative strategies and projects that enhance mobility and air quality, including those that increase the	SCAG, CTCs, Local	**Consistent.** As described above, the Project would be pedestrian-oriented and bicycle-friendly. Pursuant to the Complete Streets Act of 2008 (AB 1358), the Project would include an extensive bicycle and pedestrian trail

23 California High-Speed Rail Authority, Notice of Preparation of a Project Environmental Impact Report/Environmental Impact Statement for the California High-Speed Rail System Palmdale to Burbank Section, July 24, 2014. (http://hsr.ca.gov/docs/programs/statewide_rail/proj_sections/Palmdale_Burbank/palmdale_burbank_NOP_072414.pdf (accessed January 12, 2016).

Table 1 (Continued)
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walkability of communities and accessibility to transit via non-auto modes, including walking, bicycling, and neighborhood electric vehicles (NEVs) or other alternative fueled vehicles.	Jurisdictions	network linking the on-site residential, commercial (retail/office), school, park, and library uses, as well as connecting to the overall trail system that links the Newhall Ranch villages to each other, as well as other adjacent communities. By connecting these uses, the Project would also serve to reduce vehicle trips and thus vehicle miles travelled, thereby contributing to a reduction in air pollutant emissions. As discussed above, the Project, through implementation of its proposed GHG reduction strategies, would implement the following measures that facilitate and encourage the use of electric vehicles: (1) 100 percent of the Project's residential units will be equipped with electric vehicle charging stations; (2) 50 percent of all residential units will receive a $1,000 subsidy to purchase one electric vehicle each; (3) charging stations will be installed in commercial areas on the Project Site; (4) charging stations will be installed in off-site areas; (5) funding program for electric school buses; and (6) subsidizing the replacement of diesel or CNG transit buses with electric buses. In addition, the Project's comprehensive TDM program includes the provision of subsidies for neighborhood electric vehicles (NEVs). As also discussed above, the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions) and, as such, would be carbon neutral (i.e., Project development would not increase GHG emission levels).
Collaborate with local jurisdictions to plan and develop residential and employment development around current and planned transit stations and neighborhood commercial centers.	SCAG, CTCs, Local Jurisdictions	**Consistent.** The majority of the residential units within the Project Site would be located within walking distance of on-site neighborhood commercial centers, thus reducing the number and length of vehicle trips. As discussed above, over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas (see **Figures 3** and **4**), as well as within walking and bicycling distances to the on-site school, parks, recreation centers, and trail system.[24]

[24] These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

Table 1 (Continued)
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		In addition, implementation of the Project's comprehensive TDM program, as discussed above, was determined to reduce the Project's VMT by 15.5 percent.[25] This reduction in VMT will result in a daily per capita VMT of 14.9 miles for the Project compared to a daily per capita VMT of 23.4 and 20.7 miles for the SCAG region and Los Angeles County, respectively.[26] Thus, the Project's residents and employees would generate approximately 36 percent less daily VMT per capita than the adopted 2012-2035 RTP/SCS plan's regional daily per capita VMT average, and would generate approximately 28 percent less daily VMT per capita than the Los Angeles County daily per capita VMT average. As such, the Project also would be consistent with the SB 375 goal to reduce vehicle miles travelled, and the corresponding emission of GHGs, through the creation of more effective and efficient communities. As also discussed above, the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions) and, as such, would be carbon neutral (i.e., Project development would not increase GHG emission levels). The Project Site is also located near the Valencia Commerce Center, Valencia Industrial Center, and the Valencia Corporate Center, which, collectively have been approved for over 25 million square feet of development and, as such, are some of the largest employment centers in the Santa Clarita Valley. The bicycle and pedestrian trails that would be located within the Project Site connect to the Santa Clara River Trail and thus would connect to the overall trail system that links the Newhall Ranch villages to each other, as well as other areas of the Santa Clarita Valley. Additionally, the Project would be integrated with the Santa Clarita transit system, as would the other Newhall Ranch villages, by including on-site bus stops, a mobility hub, and a bus transfer station to encourage residents to rely less on individual vehicular travel (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix

25 Fehr & Peers, Mission Village VMT Reduction Strategies, September 2016 (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR).

26 Stantec, SB 375 Consistency Evaluation - SCAG RTP/SCS and Mission Village Project Vehicle Miles of Travel (VMT), September 2016 (see **Appendix D** of this analysis).

Table 1 (Continued)
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		2.1-A of the Recirculated Portions of the EIR).
Collaborate with local jurisdictions to provide a network of local community circulators that serve new TOD, HQTAs, and neighborhood commercial centers providing an incentive for residents and employees to make trips on transit.	SCAG, CTCs, Local Jurisdictions	**Consistent.** As discussed throughout this analysis, the Project would include community-oriented circulation patterns such as trails and paseos to connect future residents to neighborhood retail and employment centers within the Project Site, as well as throughout the Newhall Ranch villages, without requiring a fuel-dependent mode of travel. As discussed above, over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas (see **Figures 3** and **4**), as well as within walking and bicycling distances to the on-site schools, parks, recreation centers, and trail system.[27] The RTP/SCS states that one of the values of a HQTA is providing households with safe and convenient transportation alternatives to driving alone that would result in reductions in roadway congestion, as well as related benefits resulting from a reduction in vehicle miles travelled and GHG emissions. While the Project Site is not designated as a HQTA by the RTP/SCS, the pattern of development that is incorporated into the Project achieves the benefits of a HQTA in terms of providing households with safe and convenient transportation alternatives to driving alone. Additionally, the Project would be integrated with the overall transit system that links the Newhall Ranch villages to each other and the Santa Clarita Valley by including bus stops, a mobility hub, and a bus transfer station to encourage residents to rely less on individual vehicular travel (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR).
Similar to SCAG's partnership with the City of Los Angeles and LACMTA, offer to all County Transportation Commissions a mutually funded, joint first mile/last mile study for each	SCAG, CTCs	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and CTCs and as such, this action/strategy is not applicable to the Project. In any event, the Project would not impair SCAG's or the CTCs' ability to offer the

27 These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

Table 1 (Continued)
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region.		mutually-funded study.
Develop first-mile/last-mile strategies on a local level to provide an incentive for making trips by transit, bicycling, walking, or neighborhood electric vehicle or other ZEV options.	SCAG, CTCs, Local Jurisdictions	**Consistent.** The Project would not impair the ability of SCAG, CTCs or the County of Los Angeles to develop first-mile/last-mile strategies. In support of this action/strategy, the Project would provide a network of bicycle and pedestrian trails, as well as transit stops, a mobility hub, and a bus transfer station that would connect to the overall network linking the Newhall Ranch villages to each other and to the rest of the Santa Clarita Valley to promote alternative transportation (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). In addition, and as described above, over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas (see **Figures 3** and **4**), as well as within walking and bicycling distances to the on-site school, parks, recreation centers, and trail system.[28] The Project, as described above, will also implement the following measures that facilitate and encourage the use of electric vehicles: (1) 100 percent of the Project's residential units will be equipped with zero emission vehicle or ZEV (electric vehicle) charging stations; (2) 50 percent of all residential units will receive a $1,000 subsidy to purchase one electric vehicle each; (3) charging stations will be installed in commercial areas on the Project Site; (4) charging stations will be installed in off-site areas; (5) funding program for electric school buses; and (6) subsidizing the replacement of diesel or CNG transit buses with electric buses. In addition, the Project's comprehensive TDM program includes the provision of subsidies for neighborhood electric vehicles (NEVs). In addition, the following components of the Project's comprehensive TDM program address first mile/last mile access: (1) transit fare subsidies for employees and below market rate households, (2) carshare and bikeshare programs and subsidies, that would offer financial subsidies to encourage participation, and (3) tech-

[28] These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

Table 1 (Continued)
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		enabled mobility using web/phone-based platforms.
Encourage transit fare discounts and local vendor product and service discounts for residents and employees of TOD/HQTAs or for a jurisdiction's local residents in general who have fare media.	Local Jurisdictions	**Consistent.** The Project would not impair the County's ability to encourage transit fare and other discounts. Mitigation Measure MV 4.7-21 requires retail facilities or special event centers to offer travel incentives such as discounts on purchases for transit riders (see **Appendix F** of this analysis for the full text of this mitigation measure). Furthermore, the Project's comprehensive TDM program also includes transit fare subsidies for employees and below market rate households.
Work with transit providers and local jurisdictions to identify and remove barriers to maintaining on-time performance.	SCAG, CTCs Local Jurisdictions	**Consistent.** The Project would not impair the ability of SCAG, CTCs or the County of Los Angeles to work with transit providers to remove barriers to on-time performance. To this end, the on-site circulation network, off-site transportation improvements (as mitigation), and on-site transit stops would be constructed in accordance with LACDPW, Caltrans, and/or transit service providers' requirements, as appropriate, to ensure safety and reliability and minimize disruptions to transit service. In addition, the Project would implement a program of signal synchronization on the following road segments within the Project Site: (1) Commerce Center Drive from SR-126 to Magic Mountain Parkway; and (2) the segment of Magic Mountain Parkway fronting the Project Site. Additionally, as part of the Project's comprehensive TDM program, the Project would establish a mobility hub, a bus transfer station, and provide for tech-enabled mobility using web/phone-based platforms.
Develop policies and prioritize funding for strategies and projects that enhance mobility and air quality.	State	**Not Applicable.** The responsible party identified in the RTP/SCS for implementation of this action/strategy is the State of California and as such, this action/strategy is not applicable to the Project. In any event, the Project would not impair the State's ability to develop policies and prioritize funding for strategies and projects that enhance mobility and air quality.
Work with the California High-Speed Rail Authority and local jurisdictions to plan and develop optimal levels of retail, residential, and employment development that fully take advantage of new travel markets and rail travelers.	State	**Not Applicable.** The responsible party identified in the RTP/SCS for implementation of this action/strategy is the State of California and as such, this action/strategy is not applicable to the Project. In any event, the Project would not impair the State's ability to implement its proposed high speed rail system. Of note, a high speed rail line is planned within the Santa Clarita Valley and could be used by the Project's future residents, employees, and visitors.

Table 1 (Continued)
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Work with state lenders to provide funding for increased transit service in TOD/HQTA in support of reaching SB 375 goals.	SCAG, State	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and the State of California and as such, this action/strategy is not applicable to the Project. In any event, the Project would not impair SCAG and/or the State with regard to increasing transit funding as called for by this action/strategy.
Continue to work with neighboring Metropolitan Planning Organizations to provide alternative modes for interregional travel, including Amtrak and other passenger rail services and an enhanced bikeway network, such as on river trails.	SCAG, State	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and the State of California and as such, this action/strategy is not applicable to the Project. It is noted, however, that the Project includes an integrated on-site bicycle and pedestrian trail network that would connect to the overall network linking the Newhall Ranch villages to each other, as well as to the Santa Clara River Trail, which connects to other areas of the Santa Clarita Valley.
Encourage the development of new, short haul, cost-effective transit services such as DASH and demand responsive transit (DRT) in order to both serve and encourage development of compact neighborhood centers.	CTCs, Municipal Transit Operators	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are CTCs and Municipal Transit Operators and as such, this action/strategy is not applicable to the Project. However, the Project would not impair any jurisdiction's ability to encourage development of new transit services.
Work with the state legislature to seek funding for Complete Streets planning and implementation in support of reaching SB 375 goals.	SCAG, State	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and the State of California and as such, this action/strategy is not applicable to the Project. Notwithstanding, in support of the goals set forth in the Complete Streets Act of 2008 (AB 1358), the development facilitated by the Project would include an extensive bicycle and pedestrian trail network linking various internal uses and connecting to the overall trail system that links the Newhall Ranch villages to each other, as well as other adjacent communities. Many of the Project's trails would be separated from roadways to add to the safety of pedestrians.
Continue to support the California Interregional Blueprint as a plan that links statewide transportation goals and regional transportation and land use goals to produce a unified transportation strategy.	SCAG, State	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and the State of California and as such, this action/strategy is not applicable to the Project. Nonetheless, as previously discussed, the development facilitated by the Project would integrate land use and transportation via development of a mix of mutually supportive land uses, public services, and amenities, that connect to the other Newhall Ranch communities, as well

Table 1 (Continued)
SCAG 2012-2035 RTP/SCS
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		as being located in close proximity to the regional roadway network.
Transportation Demand Management (TDM) Actions and Strategies		
Examine major projects and strategies that reduce congestion and emissions and optimize the productivity and overall performance of the transportation system.	SCAG	**Not Applicable.** The responsible party identified in the RTP/SCS for implementation of this action/strategy is SCAG and as such, this action/strategy is not applicable to the Project. However, in support of this action/strategy, the Project would contribute to a reduction in air pollutant emissions by reducing vehicle trips and vehicle miles travelled through the development of a supportive mix of on-site residential, commercial (retail/office), school, park, and library uses that are interconnected via an on-site trail system that also connects to the overall network linking the Newhall Ranch villages to each other, as well as to other off-site trail systems. In addition, implementation of the Project's comprehensive TDM program includes measures that will reduce the Project's VMT by 15.5 percent.[29] This reduction in VMT will result in a daily per capita VMT of 14.9 miles for the Project compared to a daily per capita VMT of 23.4 and 20.7 miles for the SCAG region and Los Angeles County, respectively.[30] Thus, the Project's residents and employees would generate approximately 36 percent less daily VMT per capita than the adopted 2012-2035 RTP/SCS plan's regional daily per capita VMT average, and would generate approximately 28 percent less daily VMT per capita than the Los Angeles County daily per capita VMT average. As such, the Project also would be consistent with the SB 375 goal to reduce vehicle miles travelled, and the corresponding emission of GHGs, through the creation of a more effective and efficient community. In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels). Congestion and emissions would also be reduced via a community design, which facilitates and encourages the

29 Fehr & Peers, Mission Village VMT Reduction Strategies, September 2016 (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR).

30 Stantec, SB 375 Consistency Evaluation - SCAG RTP/SCS and Mission Village Project Vehicle Miles of Travel (VMT), September 2016 (see **Appendix D** of this analysis).

Table 1 (Continued)
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		use of public transit by providing on-site bus stops, a mobility hub, and a bus transfer station that are part of the overall system linking the Newhall Ranch villages with each other, as well as the existing and planned system throughout the Santa Clarita Valley (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). In addition, the Newhall Ranch development includes preserving right-of-way for future light rail service along the south side of SR-126 within the Newhall Ranch site. The development facilitated by the Project, in addition to the measures identified above, would also implement the following VMT-reducing strategies to reduce Project-generated trips and encourage transit and alternative transportation: (1) alternative work schedules and telecommute program; (2) commute trip program; (3) transit fare subsidies for employees and below market rate households; (5) carshare and bikeshare programs, that would offer financial subsidies to encourage participation; (6) electric vehicle subsidies; (7) neighborhood electric vehicle (NEV) subsidies; (8) tech-enabled mobility using web/phone-based platforms; (9) provision of affordable and below market rate housing; and (10) school bus program (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR for additional information regarding the Project's VMT-reducing strategies). In addition, the Project would mitigate any significant impacts to local and regional roadways to less than significant, which would serve to facilitate mobility and access as well as minimizing congestion. The Project would also implement a program of signal synchronization on the following road segments within the Project Site: (1) Commerce Center Drive from SR-126 to Magic Mountain Parkway; and (2) the segment of Magic Mountain Parkway fronting the Project Site.
Develop comprehensive regional active transportation network along with supportive tools and resources that can help jurisdictions plan and prioritize new active transportation projects in their cities.	SCAG, CTCs, Local Jurisdictions	**Consistent.** The Project, as one of the Newhall Ranch villages, would promote the development of a comprehensive regional active transportation network through the provision of an on-site circulation system, which includes an extensive bicycle and pedestrian trail network. As previously discussed, the on-site trails would connect to the overall trail system that links the Newhall Ranch villages to each other, as well as to a segment of the Santa Clara River Trail, which connects to the more extensive regional trail system.

Table 1 (Continued)
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Encourage the implementation of a Complete Streets policy that meets the needs of all users of the streets, roads and highways—including bicyclists, children, persons with disabilities, motorists, neighborhood electric vehicle (NEVs) users, movers of commercial goods, pedestrians, users of public transportation and seniors—for safe and convenient travel in a manner that is suitable to the suburban and urban contexts within the region.	Local Jurisdictions, COGs, SCAG, CTCs	**Consistent.** In support of the Complete Streets Act of 2008 (AB 1358), the Project would include an extensive bicycle and pedestrian trail network linking the residential, commercial (retail/office), school, park, and library uses on-site, as well as connecting to the overall trail system that links the Newhall Ranch villages to each other and other adjacent communities. Many of the trails would be separated from roadways to add to the safety of pedestrians. The Project also includes preferential parking for carpools and vanpools, as well as a ride-sharing program with dedicated parking areas. In addition, the on-site circulation network, off-site transportation improvements (as mitigation), and on-site transit stops would be constructed in accordance with LACDPW, Caltrans, and/or transit service providers' requirements, as appropriate, to ensure safety and reliability. Finally, the Project includes a comprehensive TDM program, as described above, to further enhance mobility. Included in the TDM program are a mobility hub, a bus transfer station, and subsidies for neighborhood electric vehicles (NEVs).
Support work-based programs that encourage emission reduction strategies and incentivize active transportation commuting or ride-share modes.	SCAG, Local Jurisdictions	**Consistent.** The Project includes TDM strategies designed to reduce Project-generated trips and encourage transit and alternative transportation, including the development of a comprehensive active transportation network, as well as promoting interconnectivity between the various areas on the Project Site and to the other Newhall Ranch villages and other off-site communities. The Project's following comprehensive VMT-reducing strategies support this action/strategy: (1) alternative work schedules and telecommute program; (2) commute trip program; (3) transit network expansion; (4) transit fare subsidies for employees and below market rate households; (5) carshare and bikeshare programs, that would offer financial subsidies to encourage participation; (6) electric vehicle subsidies; (7) neighborhood electric vehicle (NEV) subsidies; (8) tech-enabled mobility using web/phone-based platforms; and (9) extensive pedestrian network (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR for additional information regarding the Project's VMT-reducing strategies). In addition, the Project's TDM program also includes the provision of preferential parking for carpools and vanpools.
Develop infrastructure plans and educational programs to promote active transportation options and	Local Jurisdictions	**Consistent.** As previously discussed, the Project would establish a diverse system of pedestrian and bicycle trails to promote interconnectivity between the various areas

Table 1 (Continued)
SCAG 2012-2035 RTP/SCS
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other alternative fueled vehicles, such as neighborhood electric vehicles (NEVs), and consider collaboration with local public health departments, walking/biking coalitions, and/or Safe Routes to School initiatives, which may already have components of such educational programs in place.		of the Project Site (including the proposed schools and library), provide access to the on-site amenities and trail system, which includes connections to the overall trail system that links the Newhall Ranch villages to each other and other areas of the Santa Clarita Valley, and serve as an alternative to automobile use. Additionally, the Project would provide public community and neighborhood parks and private neighborhood recreation centers of adequate size and with appropriate amenities that, in conjunction with similar facilities located throughout the Newhall Ranch villages, would serve the needs of residents and the local community. The Project's following comprehensive VMT-reducing strategies also support this action/strategy: (1) transit network expansion; (2) transit fare subsidies for employees and below market rate households; (3) carshare and bikeshare programs, that would offer financial subsidies to encourage participation; (4) electric vehicle subsidies; and (5) neighborhood electric vehicle (NEV) subsidies (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR for additional information regarding the Project's VMT-reducing strategies). Further, the Project would work with the school district to develop a Safe Route Plan, to the extent deemed necessary, during the planning process for the on-site school. Relatedly, the TDM Plan includes a school bus program that would serve all of the schools within Newhall Ranch, thereby further facilitating safe school travel. Also see the discussion of Complete Streets, above.
Encourage the development of telecommuting programs by employers through review and revision of policies that may discourage alternative work options.	Local Jurisdictions, CTCs	**Consistent.** The Project's comprehensive TDM program includes a telecommute program as described in this action/strategy.
Emphasize active transportation and alternative fueled vehicle projects as part of complying with the Complete Streets Act (AB 1358).	State, SCAG, Local Jurisdictions	**Consistent.** As previously discussed, in support of the Complete Streets Act of 2008 (AB 1358), the Project would include an extensive bicycle and pedestrian trail network linking the residential, commercial (retail/office), school, park, and library uses on-site, and connecting to the overall trail system that links the Newhall Ranch villages to each other and other adjacent communities. Many of the trails would be separated from roadways to add to the safety of pedestrians. The Project's comprehensive TDM program, as described above, includes the following measures that support the use of alternative fueled vehicles at the Project Site: (1)

Table 1 (Continued)
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		100 percent of the Project's residential units will be equipped with electric vehicle charging stations; (2) 50 percent of all residential units will receive a $1,000 subsidy to purchase one electric vehicle each; (3) charging stations will be installed in commercial areas on the Project Site; (4) charging stations will be installed in off-site areas; (5) funding program for electric school buses; and (6) subsidizing the replacement of diesel or CNG transit buses with electric buses. In addition, the Project's TDM program also includes the provision of preferential parking for carpools and vanpools.
Transportation System Management (TSM) Actions and Strategies		
Work with relevant state and local transportation authorities to increase the efficiency of the existing transportation system.	SCAG, Local Jurisdictions, State	**Consistent.** The Project would not impair the ability of SCAG, the County of Los Angeles, or the State to work with relevant transportation authorities to increase the efficiency of the existing transportation system. The development facilitated by the Project would include an on-site circulation network and additional off-site transportation improvements (as mitigation) to improve local access, with appropriate design considerations to ensure travel safety and reliability. All such improvements would be constructed in accordance with LACDPW and/or Caltrans requirements, as appropriate. Further, the Project would mitigate any significant impacts to local and regional roadways to the extent feasible. The efficiency of the existing transportation system would also be improved by the Project's program of signal synchronization on the following road segments within the Project Site: (1) Commerce Center Drive from SR-126 to Magic Mountain Parkway; and (2) the segment of Magic Mountain Parkway fronting the Project Site. Additionally, the array of Project design and TDM measures, as described above, that reduce vehicle trips and vehicle miles travelled would also serve to improve the efficiency of the existing transportation system.
Collaborate with local jurisdictions and subregional COGs to develop regional policies regarding [Transportation System Management] (TSM).	SCAG, COGs, Local Jurisdictions	**Consistent.** The Project would not impair the ability of SCAG, the COGs, or the County of Los Angeles to collaborate on the development of regional TSM policies. All Project transportation-related improvements would be developed in consultation with LACDPW, Caltrans, and/or transit service providers, as appropriate, and constructed in compliance with their respective standards. In addition, the Project would implement a program of signal synchronization on the following road segments within the Project Site: (1) Commerce Center Drive from SR-126 to Magic Mountain Parkway; and (2) the segment of Magic Mountain Parkway fronting the

Table 1 (Continued)
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		Project Site.
Contribute to and utilize regional data sources to ensure efficient integration of the transportation system.	SCAG, CTCs	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG and CTCs and, as such, this action/strategy is not applicable to the Project. Nonetheless, as discussed in **Section 4.5,** Traffic/Access, of the EIR, the Project's traffic analysis is based on a traffic model developed jointly by LACDPW and the City of Santa Clarita as the primary tool for forecasting traffic volumes within the Santa Clarita Valley. In addition, SCAG's regional data, including population, housing, and employment forecasts are used where appropriate throughout the EIR.
Provide training opportunities for local jurisdictions on TSM strategies, such as Intelligent Transportation Systems (ITS).	SCAG, Local Jurisdictions	**Consistent.** While not applicable on a project-specific basis, the Project would not impair the ability of SCAG or the County of Los Angeles to provide TSM strategy training. However, the Project would support transportation system management strategies via the provision of: appropriate roadway improvements that meet LACDPW and/or Caltrans requirements, as appropriate; and, an extensive bicycle and pedestrian trail network that connects to the overall trail system linking the Newhall Ranch villages to each other, as well as to other adjacent communities. In addition, the Project would implement a program of signal synchronization on the following road segments within the Project Site: (1) Commerce Center Drive from SR-126 to Magic Mountain Parkway; and (2) the segment of Magic Mountain Parkway fronting the Project Site. Additionally, as part of the Project's comprehensive TDM program, the Project would provide for tech-enabled mobility using web/phone-based platforms.
Collaborate with local jurisdictions and subregional COGs to continually update the ITS inventory.	SCAG, COGs, Local Jurisdictions	**Consistent.** The Project would not impair the ability of SCAG, the COGs, or the County of Los Angeles to collaborate on updates to the ITS inventory. See the discussion above regarding the Project's support of transportation system management strategies.
Collaborate with CTCs to regularly update the county and regional ITS architecture.	SCAG, CTCs, Local Jurisdictions	**Consistent.** The Project would not impair the ability of SCAG, the CTCs, or the County of Los Angeles to collaborate on updates to the ITS architecture. See the discussion above regarding the Project's support of transportation system management strategies.
Collaborate with the state and federal Government and subregional COGs to examine potential innovative TDM/TSM	SCAG, State,	**Not Applicable.** The responsible parties identified in the RTP/SCS for implementation of this action/strategy are SCAG, the State, and the COGs and as such, this action/strategy is not applicable to the Project. However,

Table 1 (Continued)
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strategies.	COGs	the Project would not impair any jurisdiction's ability to examine potential TDM/TSM strategies.
Clean Vehicle Technology Actions and Strategies		
Develop a Regional [plug-in electric vehicle] (PEV) Readiness Plan with a focus on charge port infrastructure plans to support and promote the introduction of electric and other alternative fuel vehicles in Southern California.	SCAG	**Not Applicable.** The responsible party identified in the RTP/SCS for implementation of this action/strategy is SCAG and as such, this action/strategy is not applicable to the Project. However, the Project would not impair SCAG's ability to develop a Regional PEV Readiness Plan; indeed, such a plan was issued by SCAG in December 2012. Further, the Project would also facilitate and encourage the use of electric vehicles with implementation of the following Project GHG reduction measures: (1) 100 percent of the Project's residential units will be equipped with electric vehicle charging stations; (2) 50 percent of all residential units will receive a $1,000 subsidy to purchase one electric vehicle each; (3) charging stations will be installed in commercial areas on the Project Site; (4) charging stations will be installed in off-site areas; (5) funding program for electric school buses; and (6) subsidizing the replacement of diesel or CNG transit buses with electric buses. In addition, the Project's comprehensive TDM program also includes the provision of subsidies for neighborhood electric vehicles NEVs).
Support subregional strategies to develop infrastructure and supportive land uses to accelerate fleet conversion to electric or other near zero-emission technologies. The activities committed in the two subregions (Western Riverside COG and South Bay Cities COG) are put forward as best practices that others can adopt in the future. (See Appendix: Vehicle Technology, for more information.)	SCAG, Local Jurisdictions	**Consistent.** While the acceleration of fleet conversion by the Project's future residents and occupants is market driven and beyond the direct control or influence of the Project Applicant, the Project would not impair the County of Los Angeles' or SCAG's ability to support subregional strategies in furtherance of that conversion. Further, and as described above, the Project would also facilitate and encourage the use of electric vehicles with implementation of the following Project GHG reduction and TDM measures: (1) installation of electric vehicle charging stations at on-site residential and commercial locations as well as off-site locations; (2) subsidies for electric and neighborhood electric vehicles (NEVs); and (3) funding subsidies for electric school and transit buses. In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels).

Notes: SCAG = Southern California Association of Governments; HCD = California Department of Housing and Community Development; COG = subregional council of governments; CTCs = county transportation commission; TOD = transit-oriented development; HQTA = High Quality Transit Area; LACMTA = Los Angeles County Metropolitan Transportation Authority.
Source: SCAG 2012–2035 Regional Transportation Plan/Sustainable Communities Strategy, Chapter 4: Sustainable Communities Strategy, Tables 4.3 through 4.7, April 2012.

Table 2
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2016 RTP/SCS GOALS	
Align the plan investments and policies with improving regional economic development and competitiveness.	**Not Applicable.** This RTP/SCS goal focuses on balancing plan objectives and improving regional economic development and competitiveness. This goal is directed at the RTP/SCS itself, and as such, is not applicable to the Project. That being said, the Project contributes to this goal by advancing RTP/SCS policies, as discussed below, and contributing to regional economic development, unto itself, as well as being part of the overall Newhall Ranch development. In terms of the location of future development, Exhibits 3, 6, and 9 of the 2016-2040 RTP show the areas within the SCAG region where growth is planned to occur (see **Appendix C** of this analysis). A review of these exhibits indicates that the Project Site is an area designated for future population, employment, and household growth. Thus, development of the Project Site has been incorporated into the 2016-2040 RTP/SCS. Development of the Project Site is also reflected in the County of Los Angeles' Area Plan (see **Appendix B** of this analysis). The Project's population and employment growth is also accounted for in other demographic forecasts that include the Project Site. As discussed above, the local jurisdictional level, which in the case of the Project is all of unincorporated Los Angeles County, is the smallest geography for which SCAG has adopted growth forecasts. As such, the adopted Integrated Growth Forecast for the unincorporated area included in the 2016-2040 RTP/SCS, forecasts the following growth between 2012 and 2040: population growth of 233,000 persons; household growth of 99,700 households; and employment growth of 65,500 jobs. In addition, the adopted Los Angeles County Santa Clarita Valley Area Plan (One Valley One Vision, 2012) includes the following forecasts at buildout of the plan, which is reasonably estimated to occur in 2030: (1) population of between 460,000 to 485,000; and (2) an increase of between 98,322 to 128,850 new jobs Thus, the Project would accommodate the growth projected by SCAG for the unincorporated areas of Los Angeles County, as well as the growth forecasted by the County for the Santa Clarita Valley Planning Area. In addition, the Project would be providing needed housing within a site that the Los Angeles County Board of Supervisors previously determined in its approval of the Newhall Ranch Specific Plan, which includes Mission

Table 2 (Continued)
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	Village, avoids leapfrog development and accommodates projected regional growth in a location adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers. As a result, Project development would contribute to the furtherance of the housing needs allocation policies of SB 375.
Maximize mobility and accessibility for all people and goods in the region.	**Consistent.** The development facilitated by the Project would provide access to a host of alternative transportation modes (e.g., transit, pedestrian, and bicycle), as well as an on-site circulation network and additional off-site transportation improvements (as mitigation) that would collectively facilitate mobility and access within the Project vicinity. Mobility and accessibility would also be enhanced via implementation of the Project's comprehensive Transportation Demand Management (TDM) Program. The Project also assists in achieving this goal as the Project is part of the overall alternative transportation and circulation network that is planned for the Newhall Ranch site and is located on a site with convenient regional access to I-5, via Magic Mountain Parkway, and SR-126, via Commerce Center Drive, thus further integrating comprehensive land use and transportation facilities planning in a manner that would maximize mobility and accessibility.
Ensure travel safety and reliability for all people and goods in the region.	**Consistent.** The Project assists in achieving this goal by providing an on-site circulation network and additional off-site transportation improvements (as mitigation). The on- and off-site roadway improvements would enhance local access, with appropriate design considerations to ensure travel safety and reliability. In addition, all such improvements would be constructed in accordance with LACDPW and/or Caltrans requirements, as appropriate.
Preserve and ensure a sustainable regional transportation system.	**Consistent.** The Project would assist in achieving this goal via improvements to the roadway and active transportation networks, as well as measures that reduce vehicle trips. The on-site circulation network, which is a component of the overall circulation system established for the Newhall Ranch development, is designed to provide sufficient capacity for traffic generated by the Project. Transportation system sustainability is also realized through the provision of additional off-site transportation improvements (as mitigation). As discussed above, all roadway improvements would be

Table 2 (Continued)
SCAG 2016-2040 RTP/SCS
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	constructed in accordance with LACDPW and/or Caltrans requirements, as appropriate. In addition, the Project would be a mixed-use community comprised of mutually supportive land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities while respecting the natural resources and natural features found on-site. The development of the Project as a complete mixed-use community is also reflected in the EIR's traffic analysis, which found that approximately 33% of all Project trips would remain internal to the Project Site, thereby reducing travel on the regional transportation system. The Project would also contribute to the sustainability of the regional transportation system by reducing congestion through a community design that facilitates and encourages the use of public transit by providing on-site transit stops, a mobility hub, and a bus transfer station within the Project Site, as part of the Project's TDM program (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). The on-site transit network would also be integrated into the overall transit system that links the Newhall Ranch villages to each other, as well as being part of a comprehensive Valley-wide transit system. These features of the Project, individually and collectively, as well as implementation of the Project's comprehensive TDM program, would reduce travel demand on the regional transportation system, thereby contributing to its overall sustainability. In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site. As discussed above, the Project would also implement TDM measures to reduce trips. Specifically, the Project's comprehensive VMT-reducing strategies include the following: (1) alternative work schedules and telecommute program; (2) commute trip program; (3) transit network expansion; (4) transit fare subsidies for employees and below market rate households; (5) carshare and bikeshare programs, that would offer financial subsidies to encourage participation; (6) electric vehicle subsidies; (7) neighborhood electric vehicle (NEV) subsidies; (8) tech-enabled mobility using web/phone-

Table 2 (Continued)
SCAG 2016-2040 RTP/SCS
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	based platforms; (9) provision of affordable and below market rate housing; (10) extensive pedestrian network; and (11) school bus program (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR for additional information regarding the Project's VMT-reducing strategies). In addition, the Project's TDM program includes the provision of preferential parking for carpools and vanpools. The development facilitated by the Project also supports the goals of AB 1358 (Complete Streets Act of 2008) by incorporating complete street designs and providing an extensive alternative transportation network consisting of bicycle and pedestrian trails that link the various internal uses while also providing connections to the overall trail system that links the Newhall Ranch villages to each other and other adjacent communities. Many of the trails would be separated from roadways to add to the safety of pedestrians. In addition, implementation of the policies and programs set forth in the RTP/SCS serve to achieve this goal. As the growth facilitated by the Project is accounted for in the RTP/SCS (see analysis above), the Project further contributes to the achievement of this goal.
Maximize the productivity of our transportation system.	**Consistent.** The community design incorporated into the Project, as well as the other Newhall Ranch villages, supports the productivity of the transportation system through: the establishment of a mixed-use community comprised of mutually supportive land uses; on-site programs that reduce vehicle trips and vehicle miles travelled (e.g., TDM); congestion reduction measures; encouraging transit use; and an extensive alternative transportation network consisting of bicycle and pedestrian trails that connect on-site areas, as well as providing connections to the overall trail system that links the Newhall Ranch villages to each other, as well as the regional trail network. In addition, the on-site circulation network and additional off-site transportation improvements (as mitigation) would mitigate any significant impacts to local and regional roadways to the extent feasible. These characteristics and features of the Project also promote the productivity of the transportation system by facilitating mobility and access while ensuring travel safety and reliability.
Protect the environment and health of our	**Consistent.** The development facilitated by the Project

Table 2 (Continued)
SCAG 2016-2040 RTP/SCS
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residents by improving air quality and encouraging active transportation (e.g., bicycling and walking).	would minimize air pollutant emissions by reducing vehicle trips and vehicle miles travelled through the development of a supportive mix of on-site residential, commercial (retail/office), school, park, and library uses. Refer to Section 4.7, Air Quality, of the EIR for further discussion of project design features and mitigation measures that reduce air pollutant emissions generated by the Project. The development facilitated by the Project also includes a network of bicycle and pedestrian trails, bikeshare program, as well as transit stops, a mobility hub, and a bus transfer station within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR) to promote alternative transportation that would connect the mix of on-site land uses discussed above. The integral role of the trail system in the community design established for the Project Site is reflected in the Mission Village Trails Plan, EIR Figure 1.0-20 (see **Appendix E** of this analysis). This trail plan sets forth a comprehensive system of bicycle and pedestrian circulation throughout the Project Site that ensures that each residence and all community service areas are linked via a practical, aesthetically pleasing trail system. The Project's trail system consists of a hierarchy of trails with varying sizes and functionality, that connects to the overall trail system linking the Newhall Ranch villages to each other, as well as providing connections to the existing and planned regional trail systems within the Santa Clarita Valley. Specifically, this network of trails would extend the existing and planned regional trails into the Project Site and, by doing so, facilitate alternative transportation objectives in terms of access to on-site and off-site destinations. Bicycle use within the Project Site would also be facilitated via the implementation of an on-site bikeshare program that also offer financial subsidies to encourage participation. To minimize and shorten vehicle trips, over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas,

Table 2 (Continued)
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	whereas all residential development is located within 3 miles of on-site commercial areas (see **Figures 3** and **4**)[31], as well as within walking and bicycling distances to the on-site school, parks, recreation centers, and trail system. Through the features outlined above, the Project, unto itself as well as in conjunction with the other Newhall Ranch villages, would also support the RTP/SCS strategy with regard to Neighborhood Mobility Areas (NMA) by encouraging the use of active and other non-automobile modes of transportation (e.g., transit) for short trips (i.e., trips that are less than three miles in length). In addition, the Project would support the NMA strategy by implementing a Complete Streets program to further encourage the use of active and other non-automobile modes of transportation for short trips.
Actively encourage and create incentives for energy efficiency, where possible.	**Consistent.** Development facilitated by the Project would achieve energy efficiency by implementing a Zero Net Energy program for on-site residential and commercial development areas, as well as private recreation centers and public facilities.[32] Energy efficiency is also incorporated into the Project by implementing a broad program of sustainability and "smart growth" principles. Specific measures include the following: a broad mix of complementary land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities; a community design that reduces vehicle miles traveled and commuting distances; access to transit; the provision of open space and recreational amenities; pedestrian and bicycle trail connectivity; the preservation of natural areas; water and energy conservation; and the incorporation of green building techniques. Energy efficiency would also be promoted as the development pattern facilitated by the Project presents a logical transition in land use type and intensity in terms of the surrounding area. With regard to this point, the Los

[31] These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

[32] Zero Net Energy refers to the practice whereby energy use in buildings is reduced as much as possible through energy efficiency, with all of the remaining energy demand of the building being met via photovoltaic and/or other renewable energy systems.

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	Angeles County Board of Supervisors previously determined that the Newhall Ranch project site, which includes Mission Village, avoids leapfrog development and accommodates projected regional growth in a location adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers.
Encourage land use and growth patterns that facilitate transit and active transportation.	**Consistent.** The Mission Village project, as shown in Figures 1.0-6 through 1.0-10 in Section 1.0, Project Description, of the Mission Village Revised Draft EIR (October 2011), contains six complementary neighborhoods (planning areas) with specific land use designations for each planning area. These neighborhoods are the central organizing feature of the Land Use Plan and provide future residents convenient access to commercial, recreational and public facilities. Within the Project Site, the highest intensity of uses is located in and around the Village Center, an area designed in a "main street" setting that includes plazas, courtyards, and promenades that connect the residential, retail, and office uses in this area both horizontally and vertically. This clustering of development around a centralized core provides for growth in a concentrated, rather than a dispersed pattern. The Village Center also includes a mobility hub, a bus transfer station, a library, and a community recreation center in a pedestrian friendly environment that connects these uses with extra wide sidewalk areas, which also minimize curb cuts and driveway aprons to facilitate access and social interaction. Planning principles reflected in the Project's design include, but are not limited to the following: (1) designing with nature; (2) placing the highest intensity of uses in and around the Village centers; and (3) a hierarchical organization[33]. As such, the Project would facilitate the development of a neighborhood-oriented community coupled with livability strategies, including the establishment of a diverse system of pedestrian and bicycle trails (see discussion above regarding the Mission Village Trails Plan), as well as transit

33 The planning principle of hierarchical organization reflects the location of circulation, open areas, housing, and commercial facilities within each Village such that all of these elements of the urban environment function as an integrated system, with facilities sized and planned according to the service population.

Table 2 (Continued)
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	stops, a mobility hub, and a bus transfer station located within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR) to promote alternative transportation and to facilitate mobility and access within the Project vicinity. On-site transit facilities would be integrated with the overall transit system that links the Newhall Ranch villages to each other, as well as to the overall Santa Clarita transit system, thereby providing opportunities for residents to rely less on single-occupancy vehicle travel. In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site. As discussed above, the Project, unto itself as well as in conjunction with the other Newhall Ranch villages, would also support the RTP/SCS strategy with regard to NMAs by encouraging the use of active and other non-automobile modes of transportation (e.g., transit) for short trips and by implementing a Complete Streets program to further encourage the use of active and other non-automobile modes of transportation for short trips.
Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies.	**Not applicable.** This RTP/SCS goal will be implemented by agencies with jurisdiction over security issues and is not applicable to the Project; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over security issues to implement this RTP/SCS goal.
2016 RTP/SCS GUIDING POLICIES	
Transportation investments shall be based on SCAG's adopted regional Performance Indicators.	**Not applicable.** This guiding policy sets the parameters to guide transportation investments identified in the RTP/SCS and is not applicable to the Project as it relates to funding decisions made by SCAG and other transportation agencies; nonetheless, the Project would not impair SCAG's ability to implement this guiding policy. In addition, the Project would implement transportation improvements that respond to the impacts that are attributable to the Project. These improvements would be constructed in accordance with LACDPW and/or Caltrans requirements, as appropriate.
Ensuring safety, adequate maintenance, and efficiency of operations on the existing multimodal transportation system should be the highest RTP/SCS priorities for any incremental funding in	**Not applicable.** This guiding policy prioritizes funding to improve the existing multimodal transportation system and is not applicable to the Project as it relates to funding decisions made by SCAG; however, the Project would not

Table 2 (Continued)
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the region.	impair SCAG's ability to implement this guiding policy. In addition, and as discussed above, the Project would include improvements that support multimodal transportation, including a network of bicycle and pedestrian trails; transit stops; a mobility hub, and a bus transfer station located within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR); bikeshare and carshare programs that would offer financial subsidies to encourage participation; and transit fare subsidies for employees and below market rate households. Further, Mitigation Measure MV 4.7-21 requires the following that would also support multimodal transportation: (1) providing residents with information regarding the availability of existing shuttle service providers and public transit between residential areas and commercial core areas as well as transit centers; (2) commercial uses subject to South Coast Air Quality Management District (SCAQMD) Rule 2202, would implement a lunch shuttle service from a worksite(s) to food establishments; (3) establish a shuttle service from residential core areas to the commercial core areas; and (4) provide shuttles from the commercial core areas to major transit stations (see **Appendix F** of this analysis for the full text of this mitigation measure). In addition, the Project's integrated on-site bicycle and pedestrian trail network and transit system would connect with the trail and transit systems linking the Newhall Ranch villages to each other, as well as connecting to other areas of the Santa Clarita Valley.
RTP/SCS land use and growth strategies in the RTP/SCS will respect local input and advance smart growth initiatives.	**Not applicable.** This guiding policy establishes the parameters that will be used to guide RTP/SCS land use and growth strategies and is not applicable to the Project as it relates to the content of the RTP/SCS; nonetheless, the Project would not impair SCAG's ability to implement this guiding policy. In terms of the location of future development, Exhibits 3, 6, and 9 of the 2016-2040 RTP show the areas within the SCAG region where growth is planned to occur (see **Appendix C** of this analysis). A review of these exhibits indicates that the Project Site is an area designated for future population, employment, and household growth. Thus, development of the Project Site has been incorporated into the 2016-2040 RTP/SCS. Development

Table 2 (Continued)
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	of the Project Site is also reflected in the County of Los Angeles' Area Plan (see **Appendix B** of this analysis). Further, and as discussed above, the Project implements a broad program of sustainability and "smart growth" principles. Specific measures include the following: an appropriate mix of land uses, job generation, design principles to reduce vehicle miles traveled and commuting distances, access to transit, the provision of open space and recreational amenities, trail connectivity, the preservation of natural areas, water and energy conservation, and the incorporation of green building techniques. In addition, the development facilitated by the Project presents a logical transition in land use type and intensity in terms of the surrounding area. With regard to this point, due to its overall location, the Los Angeles County Board of Supervisors previously determined that the Newhall Ranch project site, which includes Mission Village, avoids leapfrog development and accommodates projected regional growth in a location adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers.
Transportation demand management (TDM) and active transportation will be focus areas, subject to Policy 1.	**Consistent.** The Project would implement TDM measures, as described above, to reduce Project-generated trips (e.g., alternative work schedules and telecommute program, commute trip program, transit network expansion, carshare and bikeshare programs, tech-enabled mobility using web/phone-based platforms, etc.). In addition, the Project's TDM program also includes the provision of preferential parking for carpools and vanpools. The Project also includes, as discussed above, a comprehensive alternative transportation network consisting of transit stops, a mobility hub, and a bus transfer station located within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR) as well as an extensive bicycle and pedestrian trail system that links the various internal uses. In addition, the Project's integrated on-site bicycle and pedestrian trail network and transit system would connect with the trail and transit systems that link the Newhall Ranch villages to each other, as well as providing connections to the existing and planned regional transit and trail systems within the Santa Clarita

Table 2 (Continued)
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	Valley. Specifically, the on-site network of pedestrian and bicycle trails would extend the existing and planned regional trails into the Mission Village project and, by doing so, facilitate alternative transportation objectives in terms of access to on-site and off-site destinations. Many of these trails would be separated from roadways to add to the safety of pedestrians.
HOV gap closures that significantly increase transit and rideshare usage will be supported and encouraged, subject to Policy 1.	**Consistent.** This guiding policy encourages HOV gap closures in terms of transportation investments. HOV lanes are currently being developed along I-5 within the Project vicinity[34] and the Applicant has entered into an agreement with Caltrans to provide fair share funding for improvements to the I-5 between Parker Road and SR-14.
The RTP/SCS will support investments and strategies to reduce non-recurrent congestion and demand for single occupancy vehicle use, by leveraging advanced technologies.	**Not applicable.** This guiding policy focuses on investments and strategies to reduce congestion that are to be incorporated into the RTP/SCS and is not applicable to the Project as it relates to the content of the Plan; nonetheless, the Project would not impair SCAG's ability to implement this guiding policy. Notwithstanding, the Project's comprehensive TDM program would implement advanced technologies through the use of web/phone-based platforms. In addition, non-recurrent congestion and demand for single occupancy vehicle use would also be reduced through a community design that locates a broad range of land uses within proximity to one another and also facilitates and encourages the use of public transit by providing on-site transit stops, a mobility hub, and a bus transfer station within the Project Site that would connect to the overall network that links the Newhall Ranch villages to each other as well as being part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site.

[34] Los Angeles County Metropolitan Transportation Authority (Metro), I-5 North Capacity Enhancements Fact Sheet and Phase 2a Project Map; https://www.metro.net/projects/i-5-n-capacity-enhancements/overview-fact-sheet/ and http://media.metro.net/projects_studies/I5enhancements/images/I5_project_map.pdf, respectively (accessed January 12, 2016).

Table 2 (Continued)
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	The Project would also mitigate any significant impacts to local and regional roadways to the extent feasible, as required by CEQA, which would serve to facilitate mobility and access as well as minimizing congestion.
The RTP/SCS will encourage transportation investments that result in cleaner air, a better environment, a more efficient transportation system, and sustainable outcomes in the long run.	**Not applicable.** This guiding policy sets the parameters to guide transportation investments identified in the RTP/SCS and is not applicable to the Project as it relates to funding decisions made by SCAG and other transportation agencies; nonetheless, the Project would not impair SCAG's ability to implement this guiding policy. In addition, and as described above, the development facilitated by the Project would implement a broad program of sustainability and "smart growth" principles that would reduce emissions and create a better environment as referenced in this guiding policy. Specific measures that are incorporated into the development facilitated by the Project include the following: a broad mix of complementary land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities; design principles to reduce vehicle miles traveled and commuting distances; access to transit; the provision of open space and recreational amenities; pedestrian and bicycle trail connectivity; the preservation of natural areas; water and energy conservation; and the incorporation of green building techniques. The development facilitated by the Project would also contribute to a more efficient transportation system by reducing congestion and emissions through its community design, which facilitates and encourages the use of public transit by providing on-site transit stops, a mobility hub, and a bus transfer station within the Project Site that would connect to the overall network that links the Newhall Ranch villages to each other as well as being part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site. The Project also incorporates measures to reduce air emissions and greenhouse gasses, minimize hazards, and ensure water quality (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions of this

Table 2 (Continued)
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	Recirculated Portions of the EIR; as well as Section 4.7, Air Quality, Section 4.19, Environmental Safety, and Section 4.22, Water Quality, of the EIR for further discussion).
Monitoring progress on all aspects of the Plan, including the timely implementation of projects, programs, and strategies, will be an important and integral component of the Plan.	**Not applicable.** This guiding policy emphasizes the importance of monitoring implementation of the RTP/SCS and is not applicable to the Project as it relates to implementation of the Plan itself; nonetheless, the Project would not impair SCAG's ability to implement this guiding policy.
LAND USE STRATEGIES	
2016 RTP/SCS Land Use Policies	
Identify regional strategic areas for infill and investment	**Consistent.** Development facilitated by the Project would be consistent with the County's existing land use designations for the Project Site which contemplate urban development. In addition, due to its overall location, the Los Angeles County Board of Supervisors previously determined that the Newhall Ranch project site, which includes Mission Village, avoids leapfrog development and accommodates projected regional growth in a location adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers. As such, Project development would also contribute to the furtherance of SB 375 policies.
Structure the plan on a three-tiered system of centers development	**Not applicable.** This land use policy indicates that the RTP/SCS would be structured on a three-tiered system of centers development and is not applicable to the Project as it relates to the structure of the Plan itself; nonetheless, the Project would not impair SCAG's ability to implement this land use policy. Notwithstanding, the three tiers of centers that are defined in the RTP/SCS relative to transportation infrastructure are as follows: existing, planned, and potential. As the Project constitutes a planned center, it integrates land use planning and transportation investments through an efficient design of the on-site circulation system, off-site transportation improvements (as mitigation) that facilitate mobility and access within the Project vicinity, integration of transit into the proposed development, and implementation of TDM strategies to reduce trips and vehicle miles travelled. In addition, the Project's on-site circulation and transit system would connect to the overall network that links the Newhall Ranch villages to each other, as well as to

Table 2 (Continued)
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	other areas of the Santa Clarita Valley. Further, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site.
Develop "Complete Communities"	**Consistent.** The Project would implement this land use policy by developing a balanced mix of land uses (residential, employment, shopping, parks, library, private recreation facilities) and a comprehensive alternative transportation network consisting of an extensive pedestrian and bicycle trail system that interconnects the on-site activity centers with the overall network that links the Newhall Ranch villages to each other and to the existing and planned off-site Santa Clarita Valley regional trail system. In addition, transit opportunities are also integrated into the Project by including on-site transit stops, a mobility hub, and a bus transfer station within the Project Site that would be part of the overall transit system linking the Newhall Ranch villages to each other, and which is also part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). These alternative transportation improvements would expand the use of transit modes and encourage residents to rely less on individual vehicular travel. In addition, businesses located within the on-site commercial (retail/office) areas would have the option of offering transit fare discounts to their employees. The Newhall Ranch development also includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site.
Develop nodes on a corridor	**Consistent.** The RTP/SCS Livable Corridors strategy, which implements this land use policy, focuses on revitalizing commercial strips by retrofitting the existing urban environment in ways that promote integrated transportation and land use planning that results in increased economic activity and improved mobility options. Although the focus of the Livable Corridors strategy is on revitalizing existing commercial strips, the Project would achieve the same policy objectives through a community design integrating transportation and land use planning that results in increased economic activity within an area identified by the RTP/SCS for population and employment growth, consistent with Los Angeles County growth projections for the Santa Clarita Valley.

Table 2 (Continued)
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	The Project also would improve mobility options through the implementation of a comprehensive TDM program, creating transit opportunities, and providing a comprehensive alternative transportation (e.g., pedestrian and bicycle) network throughout the Project Site that connects with the overall transit and alternative transportation system linking the Newhall Ranch villages to each other, as well as to the rest of the Santa Clarita Valley. In furtherance of this policy, the Project would also implement GHG reduction measures including the installation of electric vehicle charging stations in the commercial areas on the Project Site, the installation of off-site electric vehicle charging stations, and establishing an existing building off-site retrofit program. In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels).
Plan for additional housing and jobs near transit	**Consistent.** The Project, as discussed above, would facilitate the development of a neighborhood-oriented community that provides a balanced mix of land uses, including, but not limited to, residential areas and employment centers that include transit stops, a mobility hub, and a bus transfer station located within the Project Site that would facilitate mobility and access within the Project Site while also providing connections to the overall network that links the Newhall Ranch villages to each other and surrounding areas (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). The on-site transit facilities would also be part of a comprehensive Valley-wide transit system, which would provide opportunities for reductions in single-occupancy vehicular travel. In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site. In terms of the location of future development, Exhibits 3, 6, and 9 of the 2016-2040 RTP show the areas within the SCAG region where growth is planned to occur (see **Appendix C** of this analysis). A review of these exhibits indicates that the Project Site is an area designated for future population, employment, and household growth. Thus, development of the Project Site has been

Table 2 (Continued)
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	incorporated into the 2016-2040 RTP/SCS. Development of the Project Site is also reflected in the County of Los Angeles' Area Plan (see **Appendix B** of this analysis).
Plan for changing demand in types of housing	**Consistent.** Development facilitated by the Project would include a range of residential housing types, sizes, and styles to serve the needs of a growing and increasingly diverse population within the County and the region. Successful implementation of the RTP/SCS is based on a forecast that 49 percent of the housing in the region by 2040 would be multi-family units. Residential development within the Project Site is proposed to consist of over 91 percent multi-family units. Thus, development facilitated by the Project would further assist in the implementation of the RTP/SCS by providing a much higher percentage of multi-family units than what is forecasted to achieve successful implementation of the Plan. In addition, development within the Project Site would implement an affordable housing program pursuant to Section 3.10 of the Newhall Ranch Specific Plan, further addressing the changing demand for housing types.
Continue to protect stable, existing single-family areas	**Consistent.** Development facilitated by the Project would not affect the stability of adjacent single-family areas within Westridge and other single-family areas further to the south (Stevenson Ranch), east (Santa Clarita), and north (Val Verde).
Ensure adequate access to open space and preservation of habitat	**Consistent.** As previously discussed, the Newhall Ranch Specific Plan, which includes the Mission Village project, includes approximately 10,348.5 acres of open space, which includes 4,200 acres of High Country preserve and approximately 199 acres within six preserves for the San Fernando Valley spineflower, a state-listed endangered plant species. Within the Mission Village project itself, there are approximately 692.7 acres of open space, which includes 85.8 acres within three preserves for the San Fernando Valley spineflower. The preservation of habitat also would be accomplished throughout the on-site open space network, particularly within the River Corridor Special Management Area, within which urban development would not occur. In addition, the on-site pedestrian and bicycle trail network would provide access to designated Open Areas, as well as the River Corridor Special Management Area, and the Santa Clara River Trail that would provide connections to the trail system within

Table 2 (Continued)
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	the other Newhall Ranch villages and to the existing and planned regional trail systems within the Santa Clarita Valley outside of the Project Site.
Incorporate local input and feedback on future growth	**Consistent.** Although this policy is directed towards agencies with jurisdictional oversight over development, the Project, including its related development – the Newhall Ranch Specific Plan, has undergone extensive public review and participation starting in the early 1990s and continuing through today. In terms of the location of future development, Exhibits 3, 6, and 9 of the 2016-2040 RTP show the areas within the SCAG region where growth is planned to occur (see **Appendix C** of this analysis). A review of these exhibits indicates that the Project Site is an area designated for future population, employment, and household growth. Thus, development of the Project Site has been incorporated into the 2016-2040 RTP/SCS. Development of the Project Site is also reflected in the County of Los Angeles' Area Plan (see **Appendix B** of this analysis).
2016 RTP/SCS Land Use Strategies	
Reflect The Changing Population And Demands	**Consistent.** As discussed above, the Project Site is designated as a population, housing, and employment growth center in the RTP/SCS, the growth represented by the Project is included in the Plan's growth projections, and the Project is reflected on the land use maps and growth projections included in the Los Angeles County Countywide General Plan and the Santa Clarita Valley Areawide Plan -- One Valley One Vision. As such, the growth that would be facilitated by the Project is accounted for in the RTP/SCS. In addition, development facilitated by the Project would include a range of residential housing types, sizes, and styles to serve the needs of a growing and increasingly diverse population within the County and the region. In addition, development facilitated within the Project Site would include an affordable housing program pursuant to Section 3.10 of the Newhall Ranch Specific Plan. The development facilitated by the Project also reflects the shift in land use patterns identified in the RTP/SCS with the development of small lot single-family and multi-family development. Residential development within the Project Site is proposed to consist of approximately 91 percent multi-family units. This level of multi-family development advances the implementation of this land

Table 2 (Continued)
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	use strategy as it is 42 percent higher than the RTP/SCS's forecast that 49 percent of housing by 2040 would be multi-family units.
Focus New Growth Around Transit	**Consistent.** The development facilitated by the Project is based on a community design that integrates transit through the provision of on-site transit stops, a mobility hub, and a bus transfer system that are part of the overall system that links the Newhall Ranch villages to each other, as well as to the existing and planned system throughout the Santa Clarita Valley. This transit system would encourage residents to rely less on individual vehicular travel (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). The on-site transit stops would be implemented in accordance with County standards and transit provider requirements in a manner that would ensure safety and reliability. In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site. The RTP/SCS indicates that this land use strategy focuses on development within High Quality Transit Areas (HQTA). The RTP/SCS states that one of the values of a HQTA is providing households with safe and convenient transportation alternatives to driving alone that would result in reductions in roadway congestion, as well as related benefits resulting from a reduction in vehicle miles travelled and GHG emissions. While the Project Site is not designated as a HQTA by the RTP/SCS, the pattern of development that is facilitated by the Project achieves the benefits of a HQTA in terms of providing households with safe and convenient transportation alternatives to driving alone. Specifically, locating residential development in proximity to shopping and jobs (i.e., over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas -- see **Figures 3** and **4**)[35]; the provision of transit stops, a mobility hub, and a bus

35 These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

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	transfer station located within the Project Site, as discussed above (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR); a comprehensive TDM program; as well as other Project features that are targeted towards reducing driving alone, vehicle miles travelled, and GHG emissions. In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels).
Plan for Growth Around Livable Corridors	**Not Applicable.** As discussed above, the RTP/SCS Livable Corridors strategy focuses on revitalizing commercial strips by retrofitting the existing urban environment in ways that promote integrated transportation and land use planning that results in increased economic activity and improved mobility options. Although the focus of the Livable Corridors strategy is on revitalizing existing commercial strips, the Project would achieve the same policy objectives through a community design, as described above, that successfully integrates transportation and land use planning to increase economic activity within an area identified by the RTP/SCS for population and employment growth, consistent with Los Angeles County's growth projections for the Santa Clarita Valley. The Project also would improve mobility options through the implementation of a TDM program, creating transit opportunities, and providing a comprehensive alternative transportation network (e.g., pedestrian and bicycle) within the Project Site that connects to the overall trail system linking the Newhall Ranch villages to each other, as well as other adjacent communities. In furtherance of this policy, the Project would also implement GHG reduction measures, including the installation of electric vehicle charging stations within the commercial areas on the Project Site, the installation of off-site electric vehicle charging stations, and establishing an existing building off-site retrofit program. As also described above, the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions) and, as such, would be carbon neutral (i.e., Project development would not increase GHG emission levels).
Provide More Options For Short Trips	**Consistent.** Development facilitated by the Project would

Table 2 (Continued)
SCAG 2016-2040 RTP/SCS
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	provide a number of options for short trips through an extensive network of bicycle and pedestrian trails, as well as transit stops, a mobility hub, and a bus transfer station within the Project Site that links the various on-site uses (e.g., residential, commercial, parks, libraries, community facilities, etc.) while also providing connections to the existing and planned trail and transit systems that link the Newhall Ranch villages to each other and the Santa Clarita Valley. As discussed above, over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas (see **Figures 3** ad **4**)[36]. Additional options for short trips would be available through implementation of the Project's TDM program, specifically carshare and bikeshare programs, tech-enabled mobility using web/phone-based platforms, as well as programs supporting the use of electric vehicles and neighborhood electric vehicles (NEVs). In addition, Mitigation Measure MV 4.7-21 requires the following that would also provide options for short trips: (1) providing residents with information regarding the availability of existing shuttle service providers and public transit between residential areas and commercial core areas as well as transit centers; (2) commercial uses subject to SCAQMD Rule 2202 would implement a lunch shuttle service from a worksite(s) to food establishments; (3) establish a shuttle service from residential core areas to the commercial core areas; and (4) provide shuttles from the commercial core areas to major transit stations (see **Appendix F** of this analysis for the full text of this mitigation measure).
Support Local Sustainability Planning	**Consistent.** As discussed above, development facilitated by the Project would incorporate a broad program of sustainability and "smart growth" principles. Specific measures include the following: a broad mix of complementary land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities; design principles to reduce vehicle miles traveled and commuting distances; access to transit; the provision of open space and

36 These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

Table 2 (Continued)
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	recreational amenities; pedestrian and bicycle trail connectivity; the preservation of natural areas; water and energy conservation; and the incorporation of green building techniques. The Project would also support sustainability planning by providing a logical transition in land use type and intensity in relation to the surrounding area. With regard to this point, the Los Angeles County Board of Supervisors previously determined that the Newhall Ranch project site, which includes Mission Village, avoids leapfrog development and accommodates projected regional growth in a location adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers. In addition, development facilitated by the Project would also contribute to a more efficient transportation system by reducing congestion and emissions via a community design that locates a broad range of land uses within proximity to one another, which would facilitate and encourage the use of public transit via on-site transit stops, a mobility hub, and a bus transfer station within the Project Site that would connect to the overall network linking the Newhall Ranch villages to each other, as well as being part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site. The Project also incorporates measures to reduce air emissions and greenhouse gasses, minimize hazards, and ensure water quality (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions of the Recirculated Portions of the EIR; as well as Section 4.7, Air Quality, Section 4.19, Environmental Safety, and Section 4.22, Water Quality, of the EIR for further discussion).

Table 2 (Continued)
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Protect Natural and Farm Lands	**Consistent.** As previously discussed, the Newhall Ranch Specific Plan, which includes the Mission Village project, includes approximately 10,348.5 acres of open space, which includes 4,200 acres of High Country preserve and approximately 199 acres within six preserves for the San Fernando Valley spineflower, a state-listed endangered plant species. Within the Mission Village project itself, there are approximately 692.7 acres of open space, which includes 85.8 acres within three preserves for the San Fernando Valley spineflower. The preservation of habitat would be accomplished throughout the on-site open space network, particularly within the River Corridor Special Management Area, within which urban development would not occur. The development facilitated by the Project would also respect many of the natural resources and features on site, with grading that generally follows the natural topographic trends on site, natural-looking improvements such as debris and water quality basins that incorporate vegetation or water features, and the restoration of Lion Canyon as an open, vegetated drainage channel. The EIR also determined that development of the Project would result in the conversion of approximately 191 acres of prime farmland, unique farmland, and farmland of statewide importance to nonagricultural uses (see Section 4.16, Agricultural Resources, of the EIR). While the Project would result in the conversion of this farmland, the Project Site is designated for urban uses in both the County's General Plan and Areawide Plan, and development planned for the Project Site has also been approved for urban development by the County of Los Angeles pursuant to the Newhall Ranch Specific Plan.
TRANSPORTATION STRATEGIES	
Preserve Our Existing System	**Not applicable.** The RTP/SCS states that this transportation strategy focuses on funding that supports the preservation of the existing transportation system and, as such, is not applicable to the Project; nonetheless, the Project would not impair SCAG's ability to implement this land use policy. Notwithstanding, the Project includes an on-site circulation network and additional off-site transportation improvements (as mitigation) that would facilitate mobility and access within the Project vicinity.

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Manage Congestion	
Transportation Demand Management (TDM)	
Reducing the number of SOV trips and overall vehicle miles traveled (VMT) through ridesharing, which includes carpooling, vanpooling and supportive policies for shared ride services such as Uber and Lyft	**Consistent.** Implementation of the Project's comprehensive TDM program would result in a 15.5 percent reduction in vehicle miles traveled that relies, in part, on the implementation of innovative strategies. The following VMT-reducing strategies would be consistent with SCAG's planning: (1) alternative work schedules and telecommute program; (2) commute trip program; (3) transit network expansion; (4) transit fare subsidies for employees and below market rate households; (5) carshare and bikeshare programs, that would offer financial subsidies to encourage participation; (6) electric vehicle subsidies; (7) neighborhood electric vehicle (NEV) subsidies; (8) tech-enabled mobility using web/phone-based platforms; (9) provision of affordable and below market rate housing; (10) extensive pedestrian network; and (11) school bus program (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR for additional information regarding the Project's VMT-reducing strategies). In addition, the Project's TDM program also includes the provision of preferential parking for carpools and vanpools. In addition, the community design incorporated into the development facilitated by the Project would reduce single-occupancy vehicle (SOV) trips and VMT by locating residential development in proximity to shopping and jobs (i.e., over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas -- see **Figures 3** and **4**)[37]. Development facilitated by the Project would be consistent with this RTP/SCS land use strategy by providing transit stops, a mobility hub, and a bus transfer station within the Project Site that would connect to the overall network linking the Newhall Ranch villages to each other, as well as being part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix

[37] These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

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	2.1-A of the Recirculated Portions of the EIR); as well as other Project features targeted towards reducing driving alone, vehicle miles travelled, and GHG emissions. In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels). Development facilitated by the Project would also permit shared ride services such as taxis, Uber, and Lyft through the provision of the on-site mobility hub.
Redistributing or eliminating vehicle trips from peak demand periods through incentives for telecommuting and alternative work schedules	**Consistent.** Development facilitated by the Project would redistribute/eliminate vehicle trips from peak demand periods through a comprehensive TDM Program that contains strategies targeted to alternative work schedules, telecommuting, and transit fare subsidies for employees and below market rate households.
Reducing the number of SOV trips through the use of other modes of travel such as transit, rail, bicycling and walking	**Consistent.** As described above, the development facilitated by the Project would reduce SOV trips in the following ways: (1) locating on-site residential development in proximity to on-site shopping and jobs (i.e., over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas -- see **Figures 3** and **4**)[38]; (2) an extensive network of bicycle and pedestrian trails that link the various on-site uses (e.g., residential, commercial, parks, libraries, community facilities, etc.) while also providing connections to the overall network that links the Newhall Ranch villages to each other and to the existing and planned regional trail system within the Santa Clarita Valley; (3) the provision of on-site transit stops, a mobility hub, and a bus transfer station within the Project Site that would be part of the overall transit system linking the Newhall Ranch villages to each other, as well as being part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR); and (4) a

[38] Ibid.

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	comprehensive TDM program (e.g., carshare and bikeshare programs, alternative work schedules and telecommute program, and transit fare subsidies for employees and below market rate households).[39]
Rideshare incentives and rideshare matching	**Consistent.** The Project would implement a comprehensive TDM program that supports ridesharing and the provision of preferential parking for carpools and vanpools. In addition, Mitigation Measure MV 4.7-21 requires implementing a pricing structure for single-occupancy employee parking and/or providing discounts to ridesharers (see **Appendix F** of this analysis for the full text of this mitigation measure). As the goal of ridesharing is the reduction of vehicle trips, other measures that reduce vehicle trips also achieve the benefit of ridesharing. In addition, the Project, as discussed above, incorporates and implements several measures that reduce vehicle trips (e.g., locating on-site residential development in proximity to on-site shopping and jobs; an extensive network of bicycle and pedestrian trails; on-site transit stops, a mobility hub, and a bus transfer station located within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix 2.1-A of the Recirculated Portions of the EIR); and a comprehensive TDM program which includes a carshare program).
Parking management and parking cash-out policies	**Consistent.** The goal of parking management and parking cash-out programs is the reduction of vehicle trips. As such, measures that reduce vehicle trips also achieve the benefit of these parking-related strategies. As such, the Project, as discussed above, would incorporate and implement several measures that reduce vehicle trips (e.g., locating on-site residential development in proximity to on-site shopping and jobs; an extensive network of bicycle and pedestrian trails; on-site transit stops, a mobility hub, and a bus transfer station located within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR); and a comprehensive TDM program). The Project's TDM program also includes the provision of

39 Ibid.

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	preferential parking for carpools and vanpools. In addition, Mitigation Measure MV 4.7-21 requires implementing a pricing structure for single-occupancy employee parking and/or providing discounts to ridesharers (see **Appendix F** of this analysis for the full text of this mitigation measure).
Preferential parking or parking subsidies for carpoolers	**Consistent.** The Project's TDM program includes preferential parking for carpools and vanpools. In addition, the goal of a preferential parking program and/or parking subsidies for carpoolers is the reduction of vehicle trips. As such, measures that reduce vehicle trips also achieve the benefit of a preferential parking program and/or parking subsidies for carpoolers. The development facilitated by the Project, as discussed above, would incorporate and implement several measures that reduce vehicle trips (e.g., locating on-site residential development in proximity to on-site shopping and jobs; an extensive network of bicycle and pedestrian trails; on-site transit stops, a mobility hub, and a bus transfer station located within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR document). In addition, Mitigation Measure MV 4.7-21 requires implementing a pricing structure for single-occupancy employee parking and/or providing discounts to ridesharers (see **Appendix F** of this analysis for the full text of this mitigation measure).
Intelligent parking programs	**Not applicable.** Intelligent parking systems are used in existing dense urban centers to reduce driving around looking for a parking spot where the demand for parking greatly exceeds the available supply. While this strategy is not applicable to the Project, the Project would not impair the ability to implement this strategy. Additionally, the parking provided within the Project is designed to meet the demand for parking and thus there would not be a need to implement intelligent programs. In addition, Mitigation Measure MV 4.7-21 requires the implementation of on-site circulation plans in parking lots to reduce vehicle queuing and paid parking systems where drivers pay at a walkup kiosk and exit via a stamped ticket (see **Appendix F** of this analysis for the full text of this mitigation measure).
Promotion and expansion of Guaranteed Ride Home programs	**Consistent.** The goal of Guaranteed Ride Home programs is to provide the means by which employees can meet

Table 2 (Continued)
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	their transportation needs when they have not used their personal vehicles to drive to work. The underlying purpose of a Guaranteed Ride Home program is to increase the number of people that use transportation modes other than their personal motor vehicles to travel to work. The Project's TDM program includes a guaranteed ride home program. The Project would also achieve this objective in a number of other ways, including locating on-site residential development in proximity to on-site jobs and jobs located within the other Newhall Ranch villages, the Valencia Commerce Center, the Valencia Industrial Center, and the Valencia Corporate Center, which are interconnected by the proposed trail and transit network; on-site transit stops, a mobility hub, and a bus transfer station within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR); and a comprehensive TDM program that includes a telecommuting program, carshare and bikeshare programs that also offer financial subsidies to encourage participation, and transit fare subsidies for employees and below market rate households.
Incentives for telecommuting and flexible work schedules	**Consistent.** The TDM program that would be implemented in support of the development facilitated by the Project would include alternative work schedules and telecommute programs.
Integrated mobility hubs and first/last mile strategies	**Consistent.** As discussed above, the TDM program that would be implemented in support of the development facilitated by the Project would include on-site transit stops, a mobility hub, and a bus transfer station within the Project Site that link the various on-site uses (e.g., residential, commercial, parks, libraries, community facilities, etc.) while also providing connections to the overall network that links the Newhall Ranch villages to each other and to the existing and planned regional transit system within the Santa Clarita Valley (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). On-site development would also implement an active transportation program that includes an extensive network of pedestrian and bicycle trails that address first mile/last mile mobility by making it more convenient and

Table 2 (Continued)
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	safe to walk or bicycle to on-site transit stops, the mobility hub, and the bus transfer station. In addition, Mitigation Measure MV 4.7-21 requires the following that would also provide options for first mile/last mile trips: (1) providing residents with information regarding the availability of existing shuttle service providers and public transit between residential areas and commercial core areas as well as transit centers; (2) commercial uses subject to SCAQMD Rule 2202 would implement a lunch shuttle service from a worksite(s) to food establishments; (3) establish a shuttle service from residential core areas to the commercial core areas; and (4) provide shuttles from the commercial core areas to major transit stations (see **Appendix F** of this analysis for the full text of this mitigation measure).
Incentives for employees who bike and walk to work	**Consistent.** The TDM program that would be implemented in support of the Project would include a Transportation Management Organization that will implement programs that incentivize bicycling and walking to work, as well as carshare and bikeshare programs, that would offer financial subsidies, that incentivize active modes of transportation. In addition, Mitigation Measure MV 4.7-21 requires the following that would also provide options for employees that walk and bike to work: (1) commercial uses subject to SCAQMD Rule 2202 would implement a lunch shuttle service from a worksite(s) to food establishments; (2) establish a shuttle service from residential core areas to the commercial core areas; and (3) employers with 250 or more employees are to provide on-site employee services such as cafeterias, banks, etc. (see **Appendix F** of this analysis for the full text of this mitigation measure). Additionally, the Project would facilitate active transportation use by locating on-site residential development in proximity to on-site shopping and jobs (i.e., over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas -- see **Figures 3** and **4**)[40]; and providing

[40] These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p 210 of SCAG 2012-2035 RTP/SCS).

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	an extensive network of bicycle and pedestrian trails that link the various on-site uses (e.g., residential, commercial, parks, libraries, community facilities, etc.) while also providing connections to the overall network that links the Newhall Ranch villages to each other and to the existing and planned regional trail system within the Santa Clarita Valley.
Investments in active transportation infrastructure	**Consistent.** The Project supports this transportation strategy through an extensive investment in on-site active transportation infrastructure. Specifically, the extensive network of bicycle and pedestrian trails, as discussed above, that link the various on-site uses (e.g., residential, commercial, parks, libraries, community facilities, etc.) while also providing connections to the overall network that links the Newhall Ranch villages to each other and to the existing and planned regional trail system within the Santa Clarita Valley. The benefits of this network in terms of trip reduction is greatly enhanced by locating on-site residential development in proximity to on-site shopping and jobs (i.e., over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas -- see **Figures 3** and **4**)[41]. Bicycle use within the Project Site would also be facilitated via the implementation of an on-site bikeshare program, that would offer financial subsidies to encourage participation.
Transportation Systems Management (TSM)	
Corridor Mobility and Sustainability Improvement Plans	**Not applicable.** This RTP/SCS strategy is implemented by plans developed by Caltrans, SCAG, and counties and is not applicable to the Project; nonetheless the Project would not impair the ability of the identified agencies to implement this strategy. Further, the Project would implement a Complete Streets program that supports the implementation of AB 1358 (Complete Streets Act of 2008), which has been identified as one of the components to be included in the plans referenced in this strategy.
Integrated Corridor Management (ICM)	**Not applicable.** This RTP/SCS strategy focuses on elements of the transportation system that move people

41 Ibid.

Table 2 (Continued)
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	and goods along congested corridors and is not applicable to the Project as the focus of this strategy is on the regional freeway system. Nonetheless, the Project would not impair the ability of agencies with jurisdiction over corridor management to implement this strategy. In that regard, the first pilot project that addressed this strategy was along the 210 freeway and current attention is focused on the 110 freeway. Additionally, HOV lanes are currently being developed along the I-5 within the Project vicinity.[42] Further, the Project would also contribute fair share funding pursuant to an agreement between the Applicant and Caltrans under which the Applicant will provide fair share funding for improvements to the I-5 between Parker Road and SR-14. At the local level, the Project would implement a program of signal synchronization on the following road segments within the Project Site: (1) Commerce Center Drive from SR-126 to Magic Mountain Parkway; and (2) the segment of Magic Mountain Parkway fronting the Project Site. Additionally, the Project would establish an advanced traveler information system.
Promote Safety and Security	
Ensure transportation safety, security and reliability for all people and goods throughout the region.	**Not applicable.** This RTP/SCS strategy is addressed by SCAG working with Caltrans and the California Transportation Commission and is not applicable to the Project; nonetheless, the Project would not impair the ability of the identified agencies to implement this strategy. Further, the Project would work with the school district to develop a Safe Route Plan, to the extent deemed necessary, during the planning process for the on-site school. Relatedly, the TDM Plan includes a school bus program that would serve all of the schools within Newhall Ranch, thereby further facilitating safe school travel. In addition, to address safety and visibility, sufficient lighting would be provided in all developed areas of the Project Site, and many of the on-site pedestrian trails

42 Los Angeles County Metropolitan Transportation Authority (Metro), I-5 North Capacity Enhancements Fact Sheet and Phase 2a Project Map; https://www.metro.net/projects/i-5-n-capacity-enhancements/overview-fact-sheet/ and http://media.metro.net/projects_studies/I5enhancements/images/I5_project_map.pdf, respectively (accessed January 12, 2016).

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	would be separated from roadways to further enhance pedestrian safety. The on-site circulation system also addresses this strategy by incorporating appropriate design considerations to ensure travel safety and reliability. Finally, the on-site transit stops would be constructed in accordance with LACDPW, Caltrans, and/or transit service providers' requirements, as appropriate, which would also ensure safety and reliability.
Prevent, protect, respond to and recover from major human-caused or natural events in order to minimize the threat and impact to lives, property, the transportation network and the regional economy.	**Not applicable.** This RTP/SCS strategy is addressed by the regulatory agencies with jurisdiction over the issues raised in this strategy and is not applicable to the Project; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over the referenced issues to implement this strategy. Notwithstanding, the Project would contribute to the implementation of this strategy through the incorporation of the safety measures discussed above.
Provide a policy forum to help develop regional consensus and education on security policies and emergency responses.	**Not applicable.** This RTP/SCS strategy is addressed by the regulatory agencies with jurisdiction over the issues raised in this strategy and is not applicable to the Project; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over the referenced issues to implement this strategy.
Assist in expediting the planning and programming of transportation infrastructure repairs from major disasters.	**Not applicable.** This RTP/SCS strategy is addressed by the regulatory agencies with jurisdiction over the issues raised in this strategy and is not applicable to the Project; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over the referenced issues to implement this strategy.
Encourage the integration of transportation security measures into transportation projects early in the development process by leveraging SCAG's relevant plans, programs and processes (including regional Intelligent Transportation Systems (ITS) architecture).	**Consistent.** As discussed above, the Project would respond to the issues raised in this strategy through the implementation of a program of signal synchronization on the following road segments within the Project Site: (1) Commerce Center Drive from SR-126 to Magic Mountain Parkway; and (2) the segment of Magic Mountain Parkway fronting the Project Site. Additionally, the Project would establish an advanced traveler information system.

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Transit	
Implement and Expand Transit Priority Strategies	**Not applicable.** This RTP/SCS strategy is targeted to existing urbanized areas where bus travel is slowed due to vehicle congestion and is not applicable to the Project as the congestion levels attributable to the Project would not reach levels that warrant implementation of this strategy and the Project would not impair the ability of the agencies with jurisdiction over transit operations to implement this strategy. Notwithstanding, the Project would support this strategy through ongoing coordination with the transit providers that provide service to the Project Site to assess the need to implement the identified transit priority strategies (e.g., transit signal priority).
Implement Regional and Inter-county Fare Agreements and Media	**Not applicable.** This RTP/SCS strategy pertains to agreements among the agencies and entities identified in this strategy and is not applicable to the Project; nonetheless, the Project would not impair the ability of the identified entities to implement this strategy. Additionally, the Project would support the implementation of this strategy via an on-site transit system with pedestrian and bicycle access that addresses first mile/last mile access, as well as implementation of several of the components set forth in the Project's comprehensive TDM program. Specific TDM measures include transit fare subsidies for employees and below market rate households, neighborhood electric vehicle (NEV) subsidies, electric vehicle subsidies, carshare and bikeshare subsidies, that would offer financial subsidies to encourage participation, and tech-enabled mobility using web/phone-based platforms. In addition, Mitigation Measure MV 4.7-21 requires the following that would also provide options for first mile/last mile trips: (1) commercial uses subject to SCAQMD Rule 2202 would implement a lunch shuttle service from a worksite(s) to food establishments; (2) provide shuttles from the commercial core areas to major transit stations; and (3) offer travel incentives such as discounts on purchases for transit riders by retail facilities or special event centers (see **Appendix F** of this analysis for the full text of this mitigation measure).
Implement New BRT and Limited-Scope Bus Service	**Not applicable.** This RTP/SCS strategy is targeted to highly urbanized areas where bus travel is slowed due to vehicle congestion and is not applicable to the Project as the congestion levels attributable to the Project would not reach levels that warrant the implementation of this

Table 2 (Continued)
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	strategy; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over transit operations to implement this strategy. Additionally, development facilitated by the Project would support this strategy via ongoing coordination with the transit providers that provide service to the Project Site to assess the need to implement the identified strategies (e.g., BRT, limited stop service, transit signal priority).
Increase Bicycle Carrying Capacity on Transit and Rail Vehicles	**Not applicable.** This RTP/SCS strategy addresses increasing the bicycle carrying capacity on transit and rail vehicles and is not applicable to the Project as it will be implemented by the transit providers; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over transit operations to implement this strategy.
Expand and Improve Real-Time Passenger Information Systems	**Not applicable.** This RTP/SCS strategy addresses improving the availability of transit information and is not applicable to the Project as it will be implemented by the transit providers; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over transit operations to implement this strategy. Additionally, the development facilitated by the Project will support the implementation of this strategy via a tech-enabled mobility program using web/phone-based platforms.
Implement First/Last Mile Strategies to Extend the Effective Reach of Transit	**Consistent.** The Project would include an extensive network of pedestrian and bicycle trails that address first mile/last mile access to transit. The goal of this strategy is to increase transit use, which would in turn reduce the number of motor vehicle trips on the roadway network. The Project, as discussed above, would incorporate and implement several measures that reduce vehicle trips (e.g., locating on-site residential development in proximity to on-site shopping and jobs; the development of on-site transit stops, a mobility hub, and a bus transfer station within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR); and a comprehensive TDM program).

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Implement Local Circulators	**Consistent.** Development facilitated by the Project would support the implementation of this strategy. Specific measures include the provision of on-site transit opportunities (e.g., transit stops, a mobility hub, and a bus transfer station within the Project Site) that would connect to the overall network linking the Newhall Ranch villages to each other, as well as being part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR); neighborhood electric vehicle (NEV) subsidies; carshare and bikeshare programs, that would offer financial subsidies to encourage participation; and a tech-enabled mobility program using web/phone-based platforms. In addition, Mitigation Measure MV 4.7-21 requires the following: (1) providing residents with information regarding the availability of existing shuttle service providers and public transit between residential areas and commercial core areas as well as transit centers; (2) commercial uses subject to SCAQMD Rule 2202 would implement a lunch shuttle service from a worksite(s) to food establishments; (3) establish a shuttle service from residential core areas to the commercial core areas; and (4) provide shuttles from the commercial core areas to major transit stations (see **Appendix F** of this analysis for the full text of this mitigation measure).
Passenger Rail	**Not applicable.** This strategy would be implemented by agencies with jurisdiction over passenger rail programs and is not applicable to the Project; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over passenger rail service to implement this RTP/SCS strategy.
Active Transportation	
2016 Active Transportation Plan	
Better align active transportation investments with land use and transportation strategies to reduce costs and maximize mobility benefits	**Not applicable.** This strategy addresses investments by transportation agencies to support active transportation and as such, is not applicable to the Project; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over investment decisions to implement this RTP/SCS strategy. Further, the development facilitated by the Project incorporates a community design that facilitates active transportation as over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, and

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	all residential development is located within 3 miles of on-site commercial areas (see **Figures 3** and **4**)[43]. In addition, the Project would include an extensive network of bicycle and pedestrian trails, as well as transit stops, a mobility hub, and a bus transfer station within the Project Site that link the various on-site uses (e.g., residential, commercial, parks, libraries, community facilities, etc.) while also providing connections to the overall network that links the Newhall Ranch villages to each other as well as to the existing and planned regional trail and transit systems within the Santa Clarita Valley (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). These features of the Project would advance alternative transportation objectives in terms of access to on-site and off-site destinations and as a result would also enhance mobility and access within the Project vicinity. In addition, many of the on-site trails would be separated from roadways to add to the safety of pedestrians.
Increase the competitiveness of local agencies for federal and state funding	**Not applicable.** This RTP/SCS strategy addresses actions by local agencies to increase federal and state funding and as such, is not applicable to the Project; nonetheless, the Project would not impair the ability of local agencies to obtain federal and state funding for the expressed purpose.
Develop strategies that serve people from 8-80[44] years old to reflect changing demographics and make active transportation attractive to more people	**Consistent.** The Project includes a comprehensive alternative transportation network consisting of an extensive pedestrian and bicycle trail system that interconnects the on-site activity centers with the overall network that links the Newhall Ranch villages to each other and to the existing and planned off-site Santa Clarita Valley regional trail system. Many of these trails would be separated from roadways to add to the safety of pedestrians and in so doing address the focus of this

43 These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

44 8-80 years old is an age span that is used as a shorthand to refer to widening the potential for all people to use active transportation. The term refers to addressing the needs of school aged children who would be conceivably allowed to walk or bicycle to school unaccompanied if the environment were safer and older senior citizens who prefer physical separation from the noise and speed of vehicles.

Table 2 (Continued)
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	strategy, which is to make the environment safer for older senior citizens. To the extent deemed necessary, the Project would work with the school district to develop a Safe Route Plan. Relatedly, the TDM Plan includes a school bus program that would serve all of the schools within Newhall Ranch, thereby further facilitating safe school travel. In addition, sufficient lighting would be provided in all developed areas of the Project Site to ensure safety and visibility. This strategy also would be implemented by integrating transit opportunities into the development facilitated by the Project via on-site transit stops, a mobility hub, and a bus transfer station within the Project Site that would connect to the overall network linking the Newhall Ranch villages to each other, as well as being part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). These transit improvements would expand the use of transit modes and encourage residents to rely less on individual vehicle travel. In addition, businesses located within the on-site commercial (retail/office) areas would have the option of offering transit fare discounts to their employees. In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site.
Expand regional understanding of the role that short trips play in achieving RTP/SCS goals and performance objectives and provide a strategic framework to support local planning and project development geared toward serving these trips	**Consistent.** Development facilitated by the Project, as described above, would provide a number of options for short trips by locating a broad mix of land uses in proximity to one another (e.g., residential, commercial, parks, libraries, community facilities, etc.). As described above, over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas (see **Figures 3** and **4**)[45]. The on-site land uses described above are also interconnected by an extensive network of bicycle and pedestrian trails, as well

45 These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

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	as transit stops, a mobility hub, and a bus transfer station within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR), which also provide connections to the overall network that links the Newhall Ranch villages to each other, as well as to the existing and planned regional trail and transit systems within the Santa Clarita Valley. Additional options for short trips would be available through implementation of the Project's TDM program, specifically carshare and bikeshare programs, tech-enabled mobility using web/phone-based platforms, as well as programs supporting the use of electric vehicles and neighborhood electric vehicles (NEVs). In addition, Mitigation Measure MV 4.7-21 requires the following that would also provide options for short trips: (1) implementing or contributing to public outreach programs; (2) establishing a shuttle service from residential core areas to the commercial core areas; and (3) commercial uses subject to SCAQMD Rule 2202 would implement a lunch shuttle service from a worksite(s) to food establishments (see **Appendix F** of this analysis for the full text of this mitigation measure).
Expand understanding and consideration of public health in the development of local plans and projects	**Consistent.** The 2016-2040 RTP/SCS identifies this strategy in the context of accommodating growth in walking, bicycling, and other forms of active transportation. As such, this strategy is connecting the provision of active transportation opportunities with expanding the understanding and consideration of public health in the development of local plans and projects. The Project is therefore consistent with this strategy as it provides an extensive on-site pedestrian and bicycle trail network that interconnects the various on-site uses (e.g. residential, commercial, public facilities, etc.) while also connecting to the overall trail system that links the Newhall Ranch villages to each other, as well as providing connections to the existing and planned regional trail systems within the Santa Clarita Valley.

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The Active Transportation Plan has 11 specific strategies based on a comprehensive local bikeway and pedestrian network that uses complete streets principles, and include:	**Consistent.** As discussed above, the Project would include a comprehensive alternative transportation network consisting of the following: (1) an extensive pedestrian and bicycle trail system that interconnects the on-site activity centers with the overall network linking the Newhall Ranch villages to each other and to the existing and planned off-site regional trail system (see Figure 2.4-5 [Master Trails Plan] from the Newhall Ranch Specific Plan and Figures 1.0-19 and 1.0-20 from the Mission Village Revised Draft EIR, all of which are provided in Appendix E of this analysis); and (2) on-site transit opportunities (e.g., transit stops, a mobility hub, and a bus transfer station within the Project Site) that would connect the Newhall Ranch villages with each other as well as being part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). In addition, the Newhall Ranch development includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site. The Project would also implement a Complete Streets program to further encourage the use of active and other non-automobile modes of transportation as set forth in AB 1358 (Complete Streets Act of 2008). Analysis of each of the referenced 11 specific strategies follows below.
Regional Trips Strategies:	**Consistent.** As elaborated upon below, the Project would integrate regional trip strategies in its design and operations.
Regional Greenway Network	**Consistent.** As previously discussed, the Newhall Ranch Specific Plan, which includes the Mission Village project, would contribute to the regional greenway network through the provision of approximately 10,348.5 acres of open space, which equals over 16 square miles of open space. Key components of the open space network within the Newhall Ranch site include the River Corridor and High Country Special Management Areas, as well as the Salt Creek area, all areas within which there would be no urban development. Within the Mission Village project itself, there are approximately 692.7 acres of open space, which includes a portion of the River Corridor Special Management Area.

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	A pedestrian and bicycle trail system that interconnects with the developed land uses on the Project Site, as well as the trail system that links the Newhall Ranch villages to each other, would be part of this open space network, thereby providing opportunities for reductions in tripmaking.
Regional Bikeway Network	**Consistent.** The Project would contribute to the regional bikeway network through an extensive bicycle and pedestrian trail system, as described above, that links the on-site uses while also providing connections to the overall network linking the Newhall Ranch villages to each other as well as to the existing and planned regional trail systems within the Santa Clarita Valley.
California Coastal Trail (CCT) Access	**Not applicable.** This RTP/SCS strategy will be implemented by agencies with jurisdiction over the California Coastal Trail and is not applicable to the Project as the Project Site, at its closest point, is located over 30 miles away from the nearest connection to the California Coastal Trail (which occurs along Highways 1 and 101). Additionally, the Project would not impair the ability of the agencies with jurisdiction over the California Coastal Trail to implement this RTP/SCS strategy. Further, the active transportation network that is incorporated into the Project connects to SR-126, which connects to SR-1 and the California Coastal Trail.
Transit Integration Strategies:	**Consistent.** As elaborated upon below, the development facilitated by the Project would incorporate applicable transit integration strategies into its design and operations.
First/last mile (to transit)	**Not applicable.** The RTP/SCS indicates that this strategy focuses on activity around HQTAs and, therefore, is not applicable to the Project as it is not a RTP/SCS designated HQTA; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over HQTAs to implement this RTP/SCS strategy. Nonetheless, the Project's active transportation network, as discussed above, would provide first mile/last mile connections to on-site transit stops, a mobility hub, and a bus transfer station within the Project Site (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR).

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Livable Corridors	**Not Applicable.** As discussed above, the RTP/SCS Livable Corridors strategy focuses on revitalizing commercial strips by retrofitting the existing urban environment in ways that promote integrated transportation and land use planning that results in increased economic activity and improved mobility options. This RTP/SCS strategy focuses on activity along high-quality bus corridors (i.e., locations where buses arrive every 15 minutes). While this policy does not apply to the Project because there are currently no high quality transit corridors on the Project Site, the Project would incorporate the following features, which are elements of livable corridors: complete streets, intersection improvements, bicycle lanes that provide safe and easy access to on-site commercial nodes, as well as connecting to the overall network that links the Newhall Ranch villages to each other and the regional transportation network. Additional elements of the Project's comprehensive TDM program that encourage transit use and alternative transportation include transit fare subsidies for employees and below market rate households, as well as carshare and bikeshare programs that would offer financial subsidies to encourage participation.
Bike Share Services	**Consistent.** The Project's comprehensive TDM program includes a bikeshare program, that would offer financial subsidies to encourage participation.
Short Trips Strategies:	**Consistent.** As elaborated upon below, the development facilitated by the Project would integrate applicable short trip strategies in its design and operations.
Sidewalk Quality	**Not applicable.** The strategy addresses repairing and improving sidewalks and is not applicable to the Project as sidewalks do not currently exist within the Project Site; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over sidewalk quality to implement this RTP/SCS strategy. Furthermore, sidewalks that will be developed within the Project Site would be designed in accordance with all County requirements, including ADA requirements.
Local Bikeway Networks	**Consistent.** As discussed above, the Project would include an extensive bicycle and pedestrian trail system that links the various on-site uses while also providing connections to the overall network linking the Newhall Ranch villages to each other as well as the existing and planned regional trail systems within the Santa Clarita Valley. Many of the

Table 2 (Continued)
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	trails would be separated from roadways to add to the safety of pedestrians.
Neighborhood Mobility Areas	**Consistent.** The development facilitated by the Project would be consistent with the RTP/SCS Neighborhood Mobility Areas (NMA) strategy as it would establish a mixed-use community comprised of mutually supportive land uses wherein over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, and all residential development is located within 3 miles of on-site commercial areas (see **Figures 3** and **4**)[46]. This land use pattern is supported by an extensive pedestrian and bicycle network, which would encourage the use of active and other non-automobile modes of transportation (e.g., transit) for short trips by providing connections to schools, places of worship, parks, and other destinations as identified in this strategy. In addition, transit opportunities are also integrated into the Project by including on-site transit stops, a mobility hub, and a bus transfer station within the Project Site that would connect to the overall network linking the Newhall Ranch villages to each other as well as being part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). The Project would also support the NMA strategy by implementing a Complete Streets program to further encourage the use of active and other non-automobile modes of transportation for short trips.
Education/Encouragement Strategies:	**Consistent.** As addressed below, the Project would integrate education/encouragement strategies in its design and operations.
Safe Routes to School	**Consistent.** The Project would work with the school district to develop a Safe Route Plan, to the extent deemed necessary, during the planning process for the on-site school. Relatedly, the TDM Plan includes a school bus program that would serve all of the schools within Newhall Ranch, thereby further facilitating safe school

46 These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

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	travel.
Education/Encouragement Campaigns	**Consistent.** The Project would implement EIR Mitigation Measure MV 4.7-21, which implements this strategy by implementing or contributing to public outreach programs (see **Appendix F** of this analysis for the full text of this mitigation measure). It is anticipated that the public outreach programs that would be implemented under this mitigation measure would address this strategy by providing educational information regarding the importance of safety as it relates to the rights and responsibilities of bicyclists, pedestrians, and motorists when sharing the road.
Highways and Arterials	
2016 RTP/SCS Highways and Local Arterials Framework and Guiding Principles:	**Consistent.** As elaborated upon below, the development facilitated by the Project would implement the Highways and Local Arterials Framework and Guiding Principles, as applicable, through its design and operations.
Focus on achieving maximum productivity through strategic investments in system management and demand management	**Consistent.** Development facilitated by the Project would implement transportation system management (TSM) and demand management strategies by improving local access, with appropriate design considerations to ensure travel safety and reliability. TSM strategies would be implemented via the provision of appropriate roadway improvements that meet LACDPW and/or Caltrans requirements, as appropriate, as well as an extensive bicycle and pedestrian trail network. The development facilitated by the Project would also implement TDM measures (e.g., Commute Trip Reduction program) to reduce Project-generated trips and encourage transit and alternative transportation (e.g., Active Transportation). In addition, any significant impacts to local and regional roadways attributable to the Project would be mitigated, as required by CEQA, which would also serve to facilitate mobility and access as well as minimizing congestion.
Focus on adding capacity primarily (but not exclusively) to:	**Consistent.** The Project would include an on-site circulation network and additional off-site transportation improvements (as mitigation) to facilitate mobility and

Table 2 (Continued)
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Close gaps in the system; and Improve access where needed	access within the Project vicinity. Also of note, HOV lanes are currently being developed along I-5 within the Project vicinity.[47] Further, the Project would also contribute fair share funding pursuant to an agreement between the Applicant and Caltrans under which the Applicant will provide fair share funding for improvements to the I-5 between Parker Road and SR-14.
Support policies and system improvements that will encourage the seamless operation of our roadway network from a user perspective	**Consistent.** The development facilitated by the Project would include an on-site circulation network and additional off-site transportation improvements (as mitigation) to improve local access, with appropriate design considerations to ensure travel safety and reliability. All such improvements would be constructed in accordance with LACDPW and/or Caltrans requirements, as appropriate. Further, the Project would mitigate any significant impacts to local and regional roadways. In addition, the Project would implement a program of signal synchronization on the following road segments within the Project Site: (1) Commerce Center Drive from SR-126 to Magic Mountain Parkway; and (2) the segment of Magic Mountain Parkway fronting the Project Site.

[47] Los Angeles County Metropolitan Transportation Authority (Metro), I-5 North Capacity Enhancements Fact Sheet and Phase 2a Project Map; https://www.metro.net/projects/i-5-n-capacity-enhancements/overview-fact-sheet/ and http://media.metro.net/projects_studies/I5enhancements/images/I5_project_map.pdf, respectively (accessed January 12, 2016).

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Any new roadway capacity project must be developed with consideration and incorporation of congestion management strategies, including demand management measures, operational improvements, transit and ITS, where feasible	**Consistent.** The Project would include an on-site circulation network designed to provide the roadway capacity needed to meet the needs of the Project, while also providing off-site transportation improvements (as mitigation). All roadway improvements would be constructed in accordance with LACDPW and/or Caltrans requirements, as appropriate, which would further contribute to a sustainable transportation system. The Project would also contribute to a more efficient transportation system by reducing congestion and emissions via a community design comprised of mutually supportive land uses wherein over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, and all residential development is located within 3 miles of on-site commercial areas (see **Figures 3** and **4**)[48]. This land use pattern would be supported by an extensive pedestrian and bicycle network, which would encourage the use of active and other non-automobile modes of transportation, including on-site transit stops, a mobility hub, and a bus transfer station within the Project Site that would connect to the overall network linking the Newhall Ranch villages to each other, as well as being part of a comprehensive Valley-wide trail and transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). The Newhall Ranch development also includes right-of-way reserved for future light rail service along the south side of SR-126 within the Newhall Ranch site. The Project would also implement transportation system management and demand management strategies via the Project's comprehensive TDM program, as discussed above, as well as by improving local access, with appropriate design considerations to ensure travel safety and reliability.
Focus on addressing non-recurring congestion with new technology	**Consistent.** As discussed above, the Project would reduce non-recurring congestion via a community design comprised of mutually supportive land uses supported by an extensive pedestrian and bicycle network, on-site

48 These distances are identified by SCAG in the 2012-2035 RTP/SCS as the distances when the use of active transportation (e.g., walking and bicycling) is more attractive than driving (see p. 210 of SCAG 2012-2035 RTP/SCS).

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	transit stops, a mobility hub, and a bus transfer station within the Project Site that connect to the overall network linking the Newhall Ranch villages to each other, as well as being part of a comprehensive Valley-wide trail and transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). The Project would also implement transportation system management and demand management strategies as discussed above, as well as improve local access with appropriate design considerations that ensure travel safety and reliability while also reducing SOV trips.
Support complete streets opportunities where feasible and practical	**Consistent.** In support of the Complete Streets Act of 2008 (AB 1358), the Project would include an extensive bicycle and pedestrian trail network linking the residential, commercial (retail/office), school, library, and park uses on-site while also connecting to the overall trail system that links the Newhall Ranch villages to each other, as well as other adjacent communities via the existing and planned regional trail system within the Santa Clarita Valley.
Express Lane Network	**Consistent.** This RTP/SCS strategy addresses improvements to the express lane network along the region's freeways. In that regard, HOV lanes are currently being developed along the I-5 within the Project vicinity and the Applicant has entered into an agreement with Caltrans to provide fair share funding for improvements to the I-5 between Parker Road and SR-14.
Goods Movement	**Not applicable.** This RTP/SCS strategy addresses the following: (1) the movement of goods out of the San Pedro bay ports, specifically, the East-West Freight Corridor (connecting to San Bernardino County through downtown Los Angeles); (2) truck bottlenecks at the regional level, and (3) rail improvements supporting the movement of goods. While this RTP/SCS strategy is not applicable to the Project, the Project would not impair the ability of the agencies with jurisdiction over goods movement to implement this RTP/SCS strategy.
Meeting Airport Demand	**Not applicable.** This RTP/SCS strategy addresses the management of airport capacity and demand and is not applicable to the Project; nonetheless, the Project would not impair the ability of the agencies with jurisdiction over managing the regional airport system to implement this

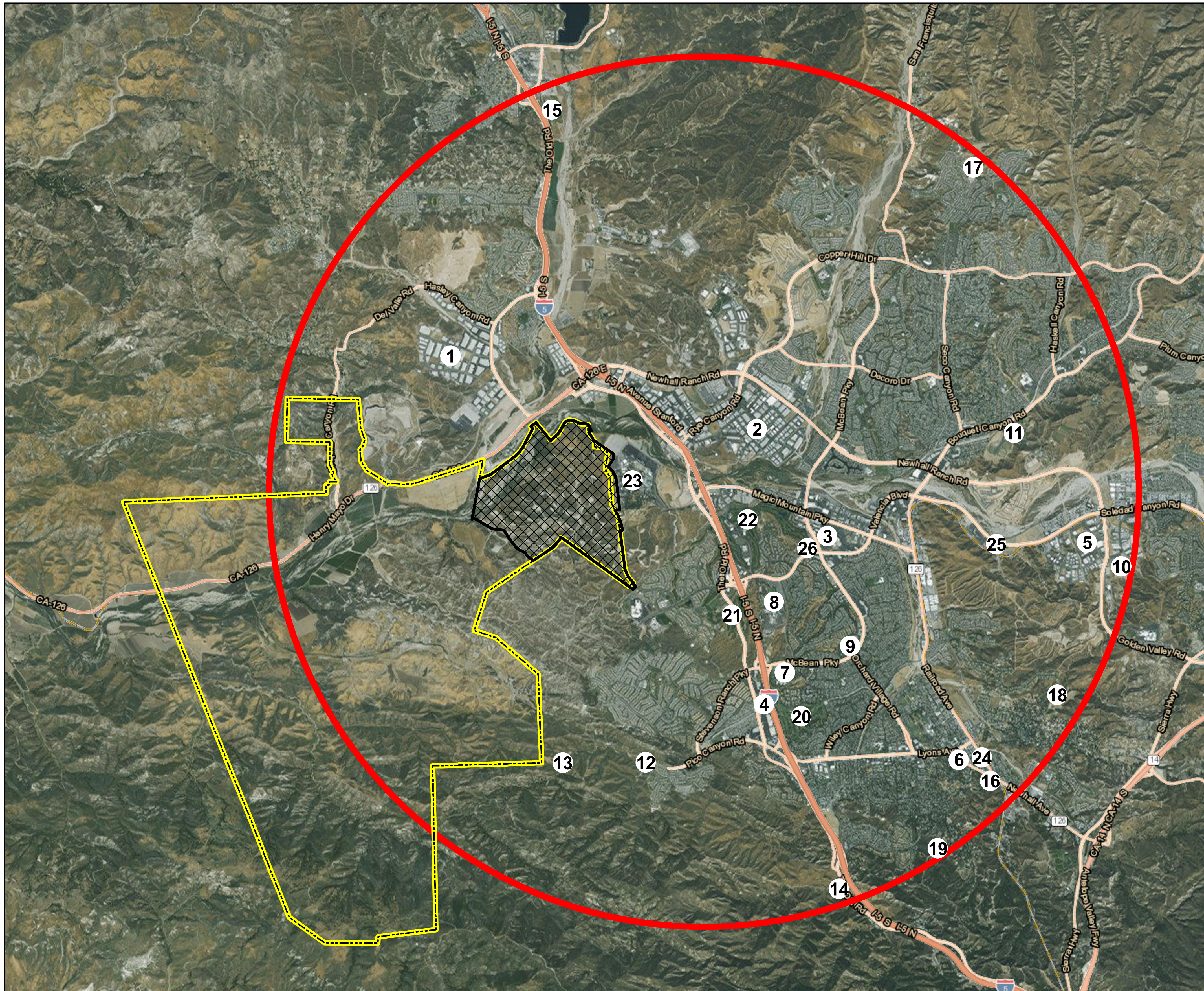
Table 2 (Continued)
SCAG 2016-2040 RTP/SCS
Mission Village Project Consistency Analysis

Consistency Analysis	
	RTP/SCS strategy.
TECHNOLOGICAL INNOVATION AND 21ST CENTURY TRANSPORTATION	
MOBILITY INNOVATIONS	
Zero-Emissions Vehicles	**Consistent.** As the use of zero-emissions vehicles by future on-site residents and occupants is market driven and beyond the direct control or influence of the Project Applicant, the Project would not impair agency strategies that enhance the use of zero-emissions vehicles. Notwithstanding, the Project, as one of its GHG reduction strategies, would implement a TDM program that will provide electric vehicle charging stations throughout the Project's residential and commercial development areas, thereby facilitating and encouraging the use of electric vehicles. In addition, the Project's GHG reduction measures include an electric vehicle subsidy program whereby 50% of the Project's residential units will receive a $1,000 subsidy to purchase one electric vehicle each as well as implementing a neighborhood electric vehicle (NEV) program that offers subsidies to further encourage the use of NEVs and installing off-site electric vehicle charging stations. In addition, as the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions), the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels).
Neighborhood Electric Vehicles (NEVs)	**Consistent.** As the use of neighborhood electric vehicles (NEVs) by future on-site residents and occupants is market driven and beyond the direct control or influence of the Project Applicant, the Project would not impair agency strategies that enhance the use of neighborhood electric vehicles (NEVs). Notwithstanding, and as discussed above, development facilitated by the Project would implement GHG reduction strategies that will include a NEV program that offers subsidies to further encourage the use of NEVs. Also as discussed above, the Project would reduce its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions) and, as such, the Project would be carbon neutral (i.e., Project development would not increase GHG emission levels).
Shared Mobility (Includes the concept of Ridesourcing)	**Consistent.** The RTP/SCS defines shared mobility as a wide variety of new mobility services that include bicycle share, car share, app-based transit services, and ridesourcing. The term shared mobility refers to the way in which these modes are offered as services brokered by

Table 2 (Continued)
SCAG 2016-2040 RTP/SCS
Mission Village Project Consistency Analysis

Consistency Analysis	
	a mobile application and each vehicle is shared amongst multiple users. Shared mobility is implemented through mechanisms that are market driven and beyond the direct control or influence of the Project Applicant. Nonetheless, the Project's comprehensive TDM program includes features that would promote shared mobility such as: carshare and bikeshare programs, that would offer financial subsidies to encourage participation, and would be available at the on-site mobility hub and transit stops; tech-enabled mobility using web/phone-based platforms; and, the implementation of a neighborhood electric vehicle (NEV) program to facilitate participation in the shared mobility programs.

FIGURES



Legend

Mission Village Boundary

Newhall Ranch Boundary

5-Mile Radius from the Intersection of I-5 and Magic Mountain Parkway

Major Destinations

Retail/Employment Centers:
1 Valencia Commerce Center
2 Valencia Industrial Center
3 Valencia Town Center
4 Valencia Marketplace
5 Centerpoint Commercial Center
6 Old Town Newhall Main Street

Colleges/Hospitals:
7 California Institute of Arts
8 College of the Canyons
9 Henry Mayo Hospital

Parks/Open Space:
10 City of Santa Clarita Regional Sports Complex
11 City of Santa Clarita Central Park
12 Wickham Canyon
13 Mentryville
14 Towsley Canyon Park
15 Castaic Sports Complex & Aquatic Center
16 William S Hart Park/Museum
17 Angeles National Forest
18 Quigley Canyon
19 Wildwood Canyon

Golf Courses/Private Recreation:
20 Vista Valencia Golf Course
21 TPC Valencia Golf Course
22 Valencia Country Club
23 Six Flags Magic Mountain

Transit Centers:
24 Newhall Metrolink Station
25 Santa Clarita Metrolink Station
26 McBean Regional Transit Center

0 0.75 1.5 3
APPROXIMATE SCALE IN MILES

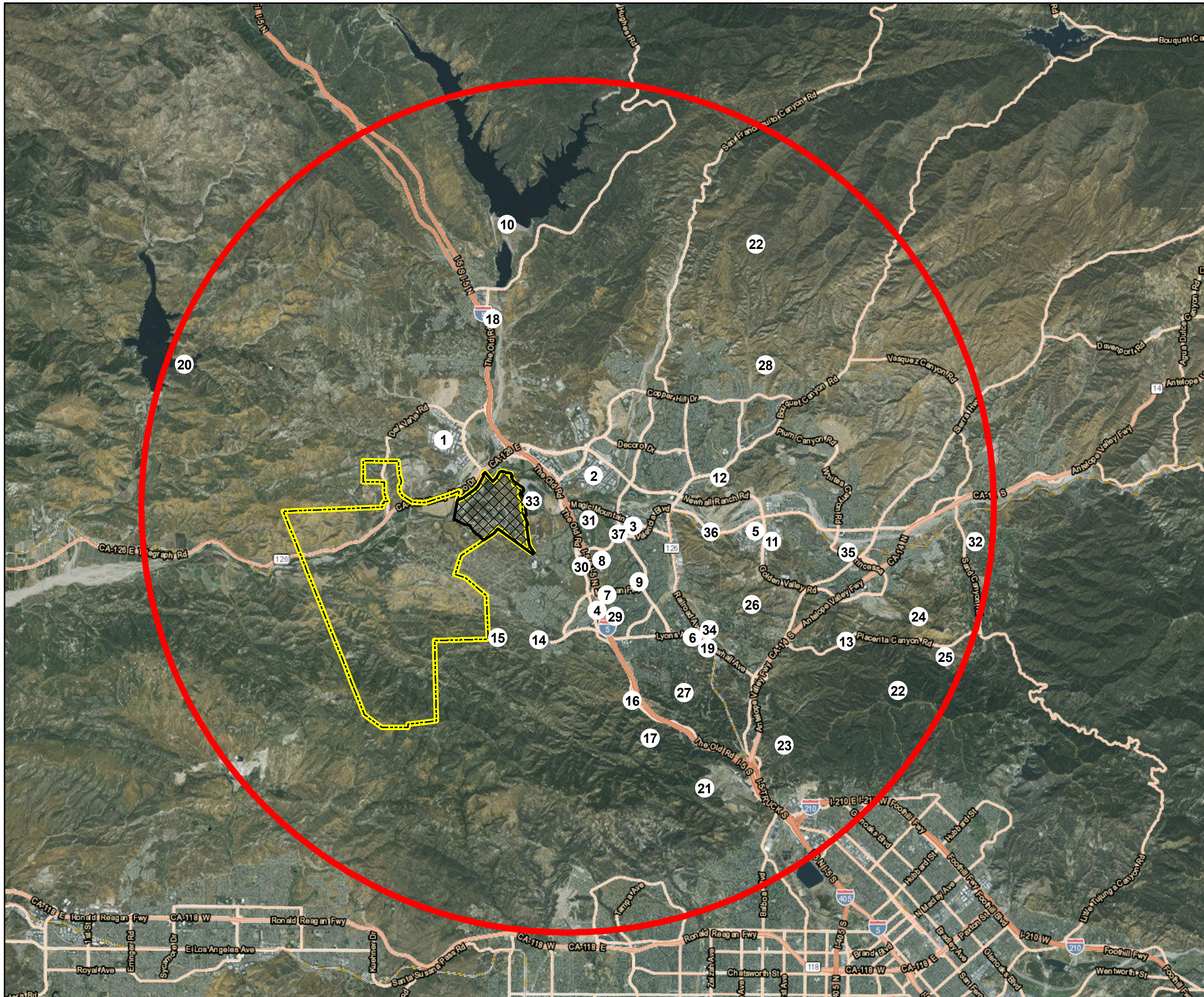
SOURCE: PACE and Meridian Consultants - 2016

FIGURE 1

Meridian Consultants

Santa Clarita Valley Major Destinations Within 5 Miles of I-5/Magic Mountain Parkway

113-001-16



Legend

Mission Village Boundary

Newhall Ranch Boundary

10-Mile Radius from the Intersection of I-5 and Magic Mountain Parkway

Major Destinations

Retail/Employment Centers:
1 Valencia Commerce Center
2 Valencia Industrial Center
3 Valencia Town Center
4 Valencia Marketplace
5 Centerpoint Commercial Center
6 Old Town Newhall Main Street

Colleges/Hospitals:
7 California Institute of Arts
8 College of the Canyons
9 Henry Mayo Hospital

Parks/Open Space:
10 Castaic Lake Recreation Area
11 City of Santa Clarita Regional Sports Complex
12 City of Santa Clarita Central Park
13 Placerita Canyon Recreation Center
14 Wickham Canyon
15 Mentryville
16 Towsley Canyon Park
17 East and Rice Canyons
18 Castaic Sports Complex & Aquatic Center
19 William S Hart Park/Museum
20 Lake Piru
21 Michael Antonovich Open Space
22 Angeles National Forest (northern and eastern sections)
23 Elsmere Canyon
24 Golden Valley Ranch
25 East Walker Ranch
26 Quigley Canyon
27 Wildwood Canyon
28 Haskell Canyon

Golf Courses/Private Recreation:
29 Vista Valencia Golf Course
30 TPC Valencia Golf Course
31 Valencia Country Club
32 Robinson Ranch Golf Course
33 Six Flags Magic Mountain

Transit Centers:
34 Newhall Metrolink Station
35 Via Princessa Metrolink Station
36 Santa Clarita Metrolink Station
37 McBean Regional Transit Center

N

0 1.5 3 6
APPROXIMATE SCALE IN MILES

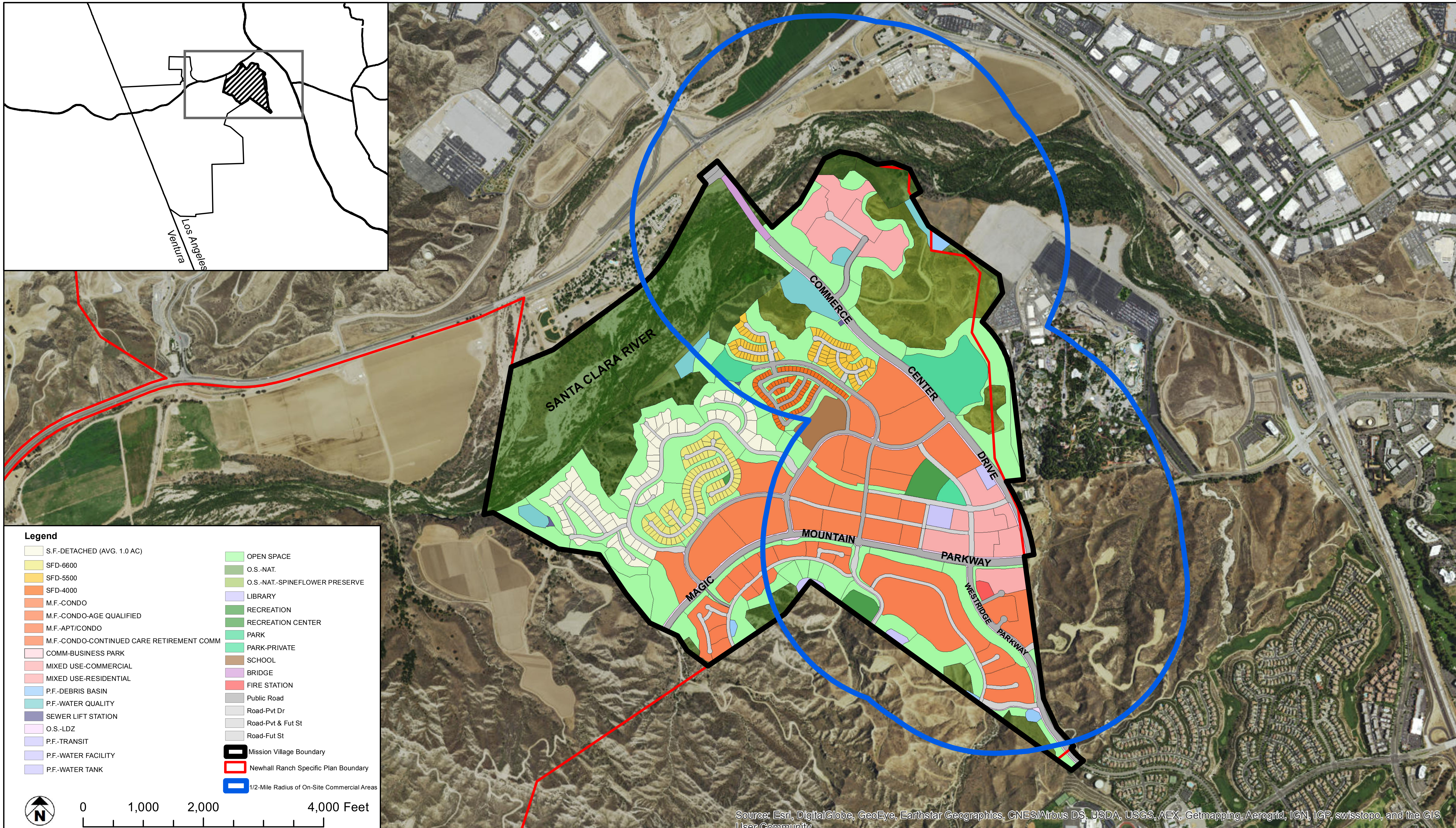
SOURCE: PACE and Meridian Consultants - 2016

FIGURE 2

Meridian Consultants

Santa Clarita Valley Major Destinations Within 10 Miles of I-5/Magic Mountain Parkway

113-001-16



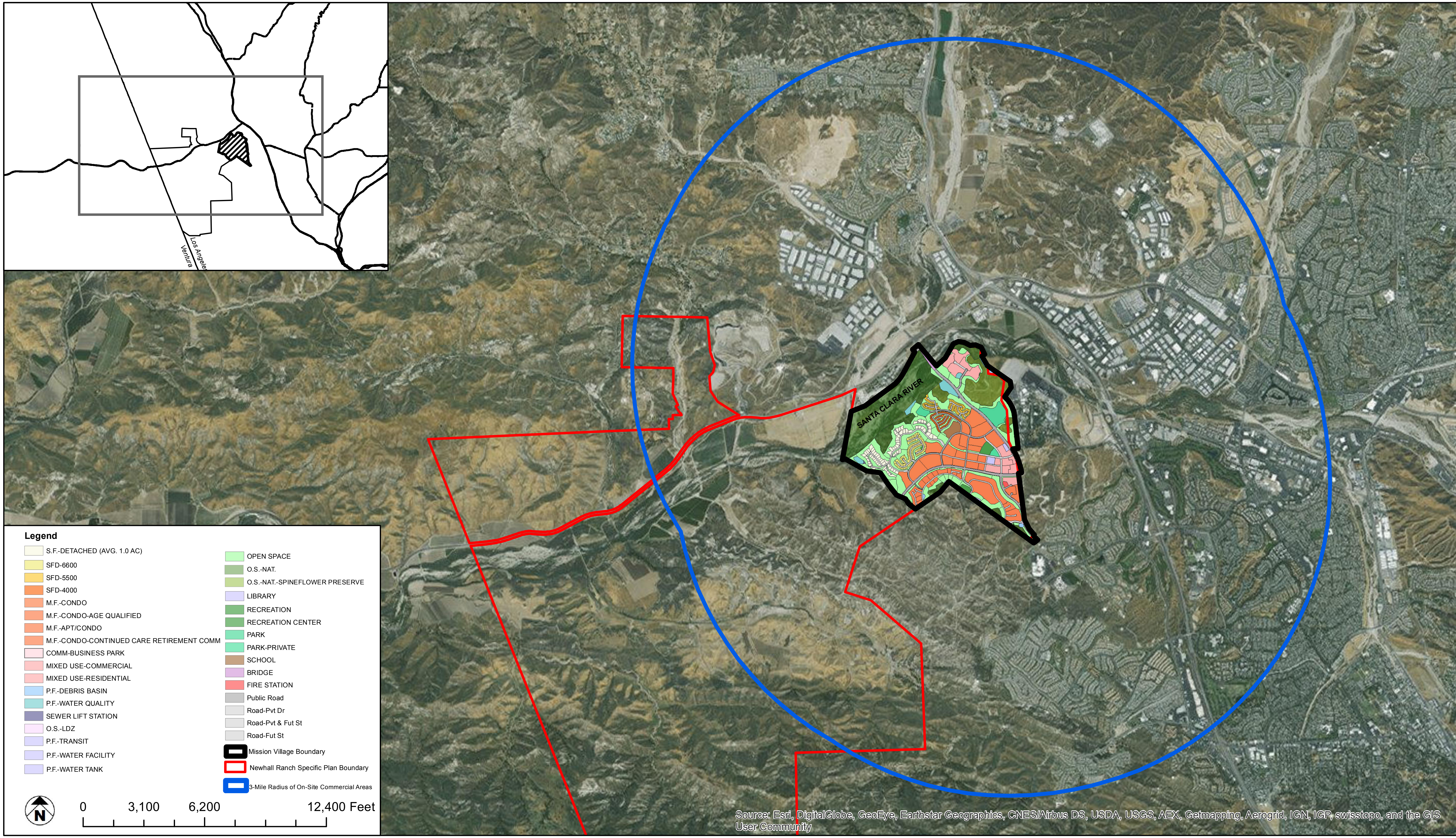
SOURCE: Hunsaker & Associates - 2016

FIGURE 3

Meridian Consultants

Locations Within One-Half Mile of On-Site Commercial Areas

113-001-16



SOURCE: Hunsaker & Associates - 2016

FIGURE 4

Meridian Consultants

Locations Within Three Miles of On-Site Commercial Areas

113-001-16

APPENDIX A

2012-2035 RTP/SCS Exhibits

EXHIBIT 4.1 Population Growth SCAG Region (2008–2035)

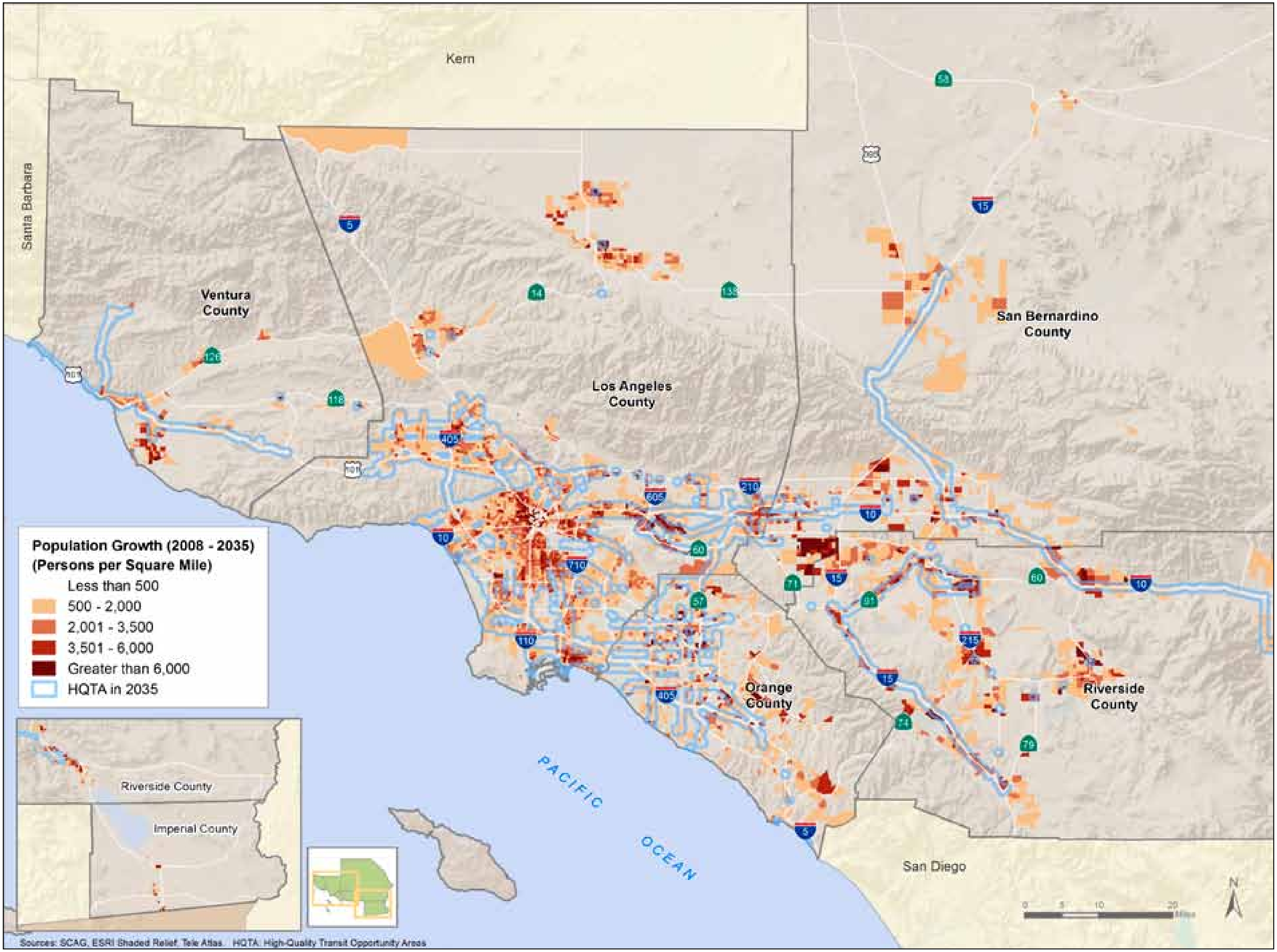
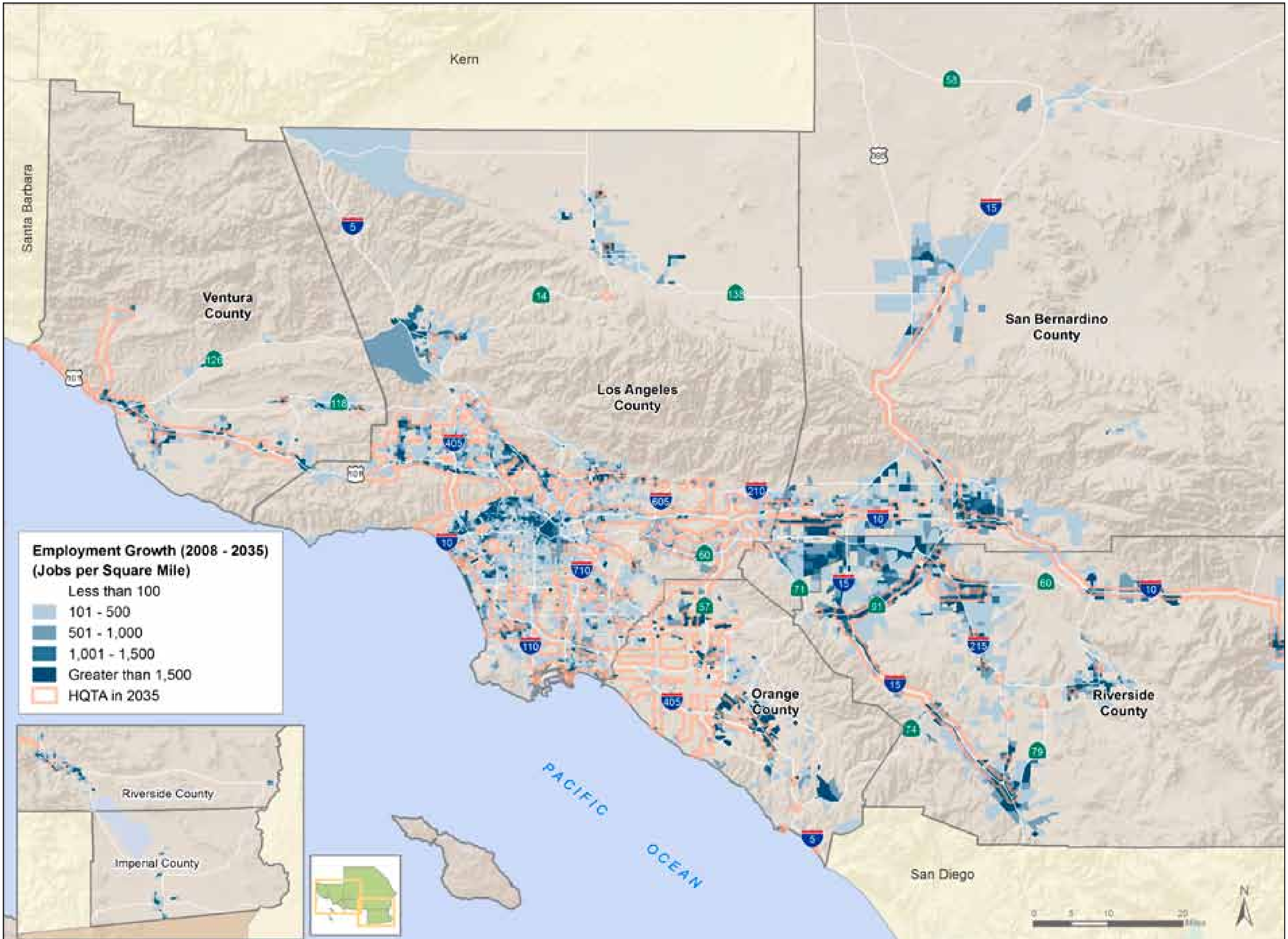
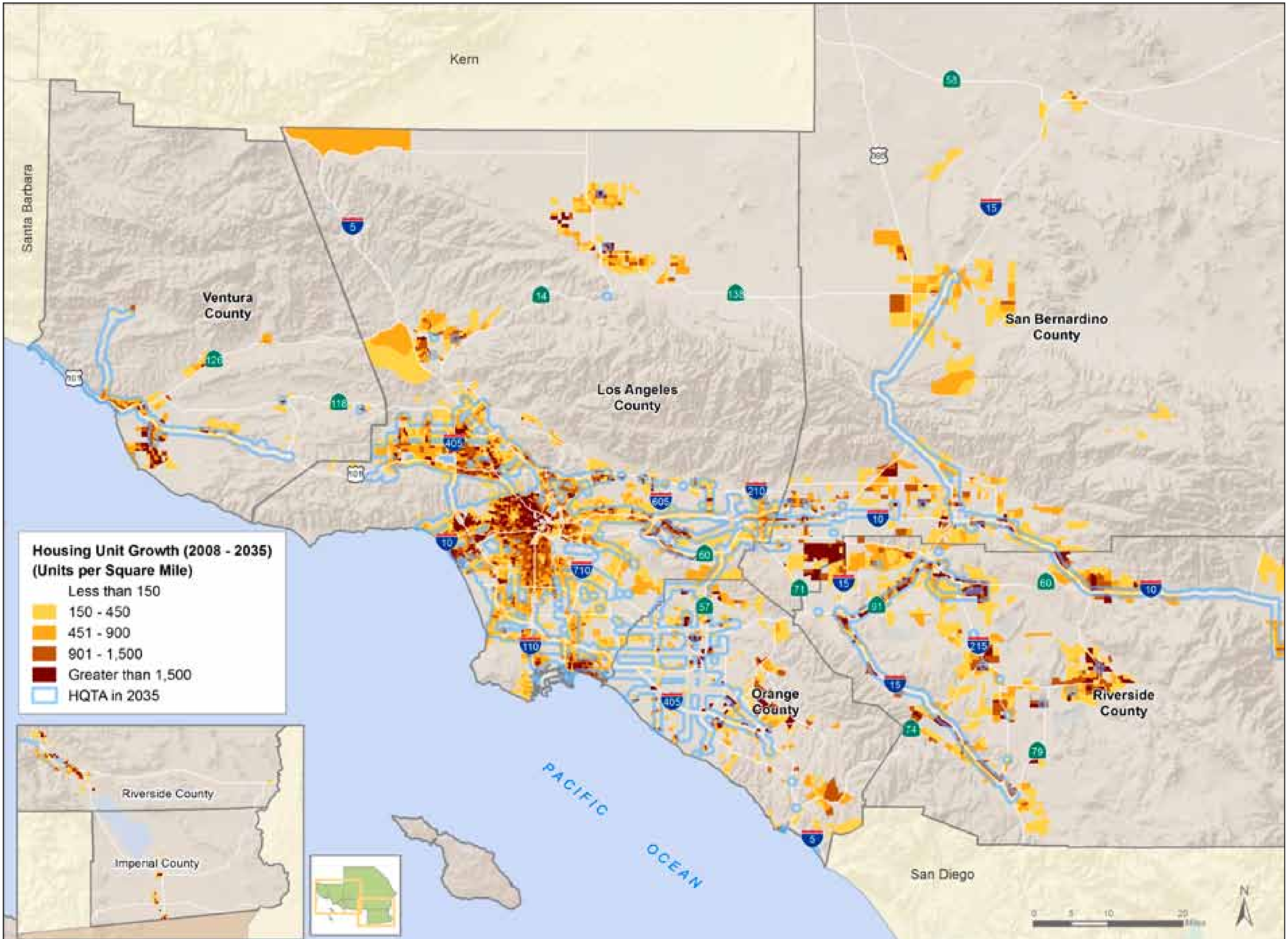


EXHIBIT 4.2 Employment Growth SCAG Region (2008–2035)



Sources: SCAG, ESRI Shaded Relief, Tele Atlas. HQTA: High-Quality Transit Opportunity Areas

EXHIBIT 4.3 Household Growth SCAG Region (2008–2035)

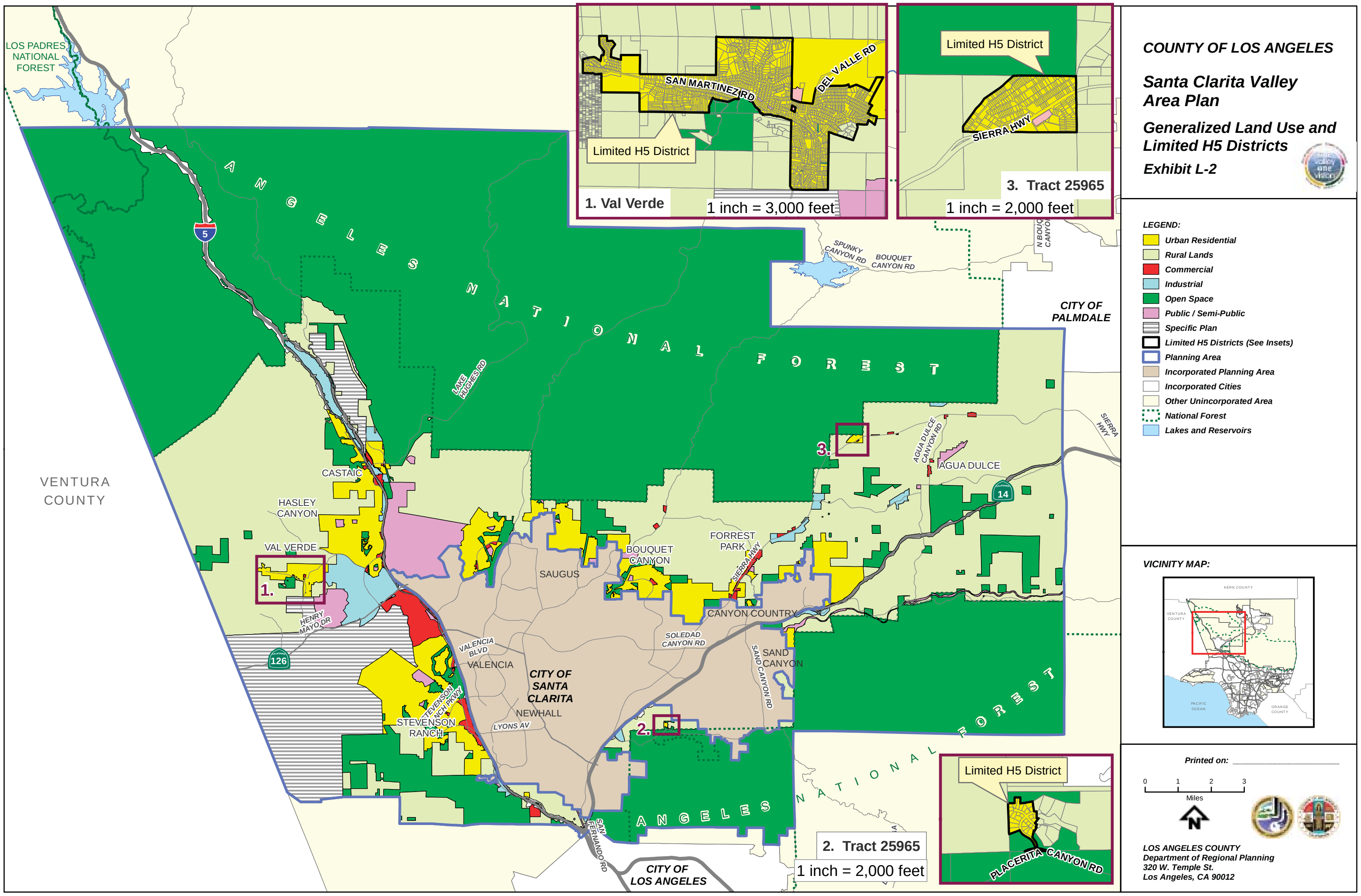


Sources: SCAG, ESRI Shaded Relief, Tele Atlas. HQTA: High-Quality Transit Opportunity Areas

EXHIBIT 4.15 Land Use Pattern Los Angeles County (2035)

APPENDIX B

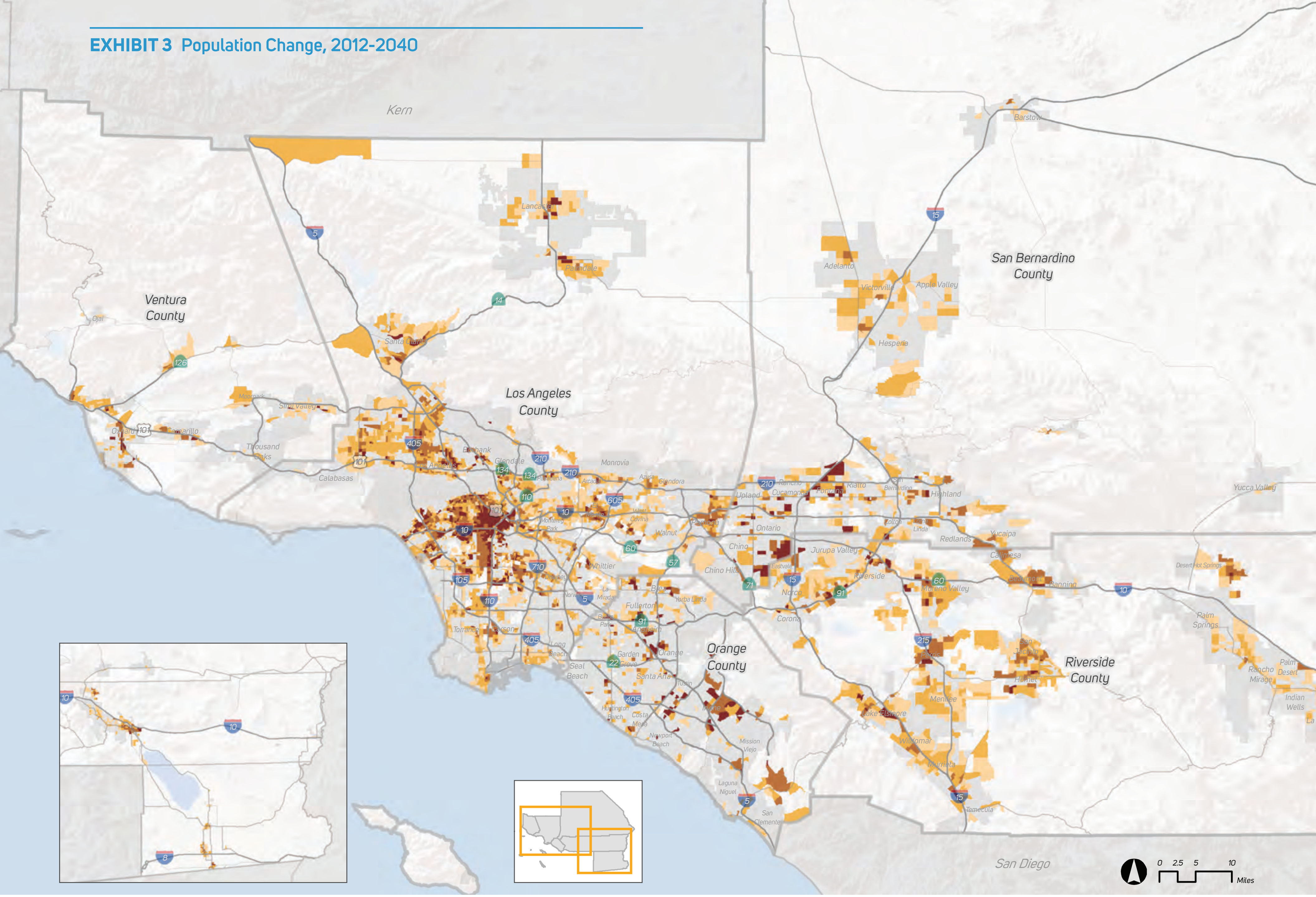
Santa Clarita Valley Area Plan: One Valley One Vision 2012 Land Use Plan


COUNTY OF LOS ANGELES
Santa Clarita Valley Area Plan
Generalized Land Use and Limited H5 Districts
Exhibit L-2
LEGEND:
Urban Residential
Rural Lands
Commercial
Industrial
Open Space
Public / Semi-Public
Specific Plan
Limited H5 Districts (See Insets)
Planning Area
Incorporated Planning Area
Incorporated Cities
Other Unincorporated Area
National Forest
Lakes and Reservoirs
VICINITY MAP:
Printed on:
Miles
LOS ANGELES COUNTY
Department of Regional Planning
320 W. Temple St.
Los Angeles, CA 90012
1. Val Verde
1 inch = 3,000 feet
Limited H5 District
SAN MARTINEZ RD
DEL VALLE RD
3. Tract 25965
1 inch = 2,000 feet
Limited H5 District
SIERRA HWY
2. Tract 25965
1 inch = 2,000 feet
Limited H5 District
PLACERITA CANYON RD
LOS PADRES NATIONAL FOREST
ANGELES NATIONAL FOREST
VENTURA COUNTY
CITY OF PALMDALE
CITY OF LOS ANGELES
CITY OF SANTA CLARITA
CASTAIC
HASLEY CANYON
VAL VERDE
HENRY MAYO DR
SAUGUS
BOUQUET CANYON
FORREST PARK
SIERRA HWY
CANYON COUNTRY
AGUA DULCE
AGUA DULCE CANYON RD
SPUNKY CANYON RD
BOUQUET CANYON RD
LAKE HUGHES RD
VALENCIA BLVD
VALENCIA
NEWHALL
LYONS AV
STEVENSON RANCH
SOLEDAD CANYON RD
SAND CANYON
SAND CANYON RD
SAN FERNANDO RD
5
14
126
OVOV_L2_general_plan_H52_districts_11x17.mxd

APPENDIX C

2016-2040 RTP/SCS Exhibits

EXHIBIT 3 Population Change, 2012-2040



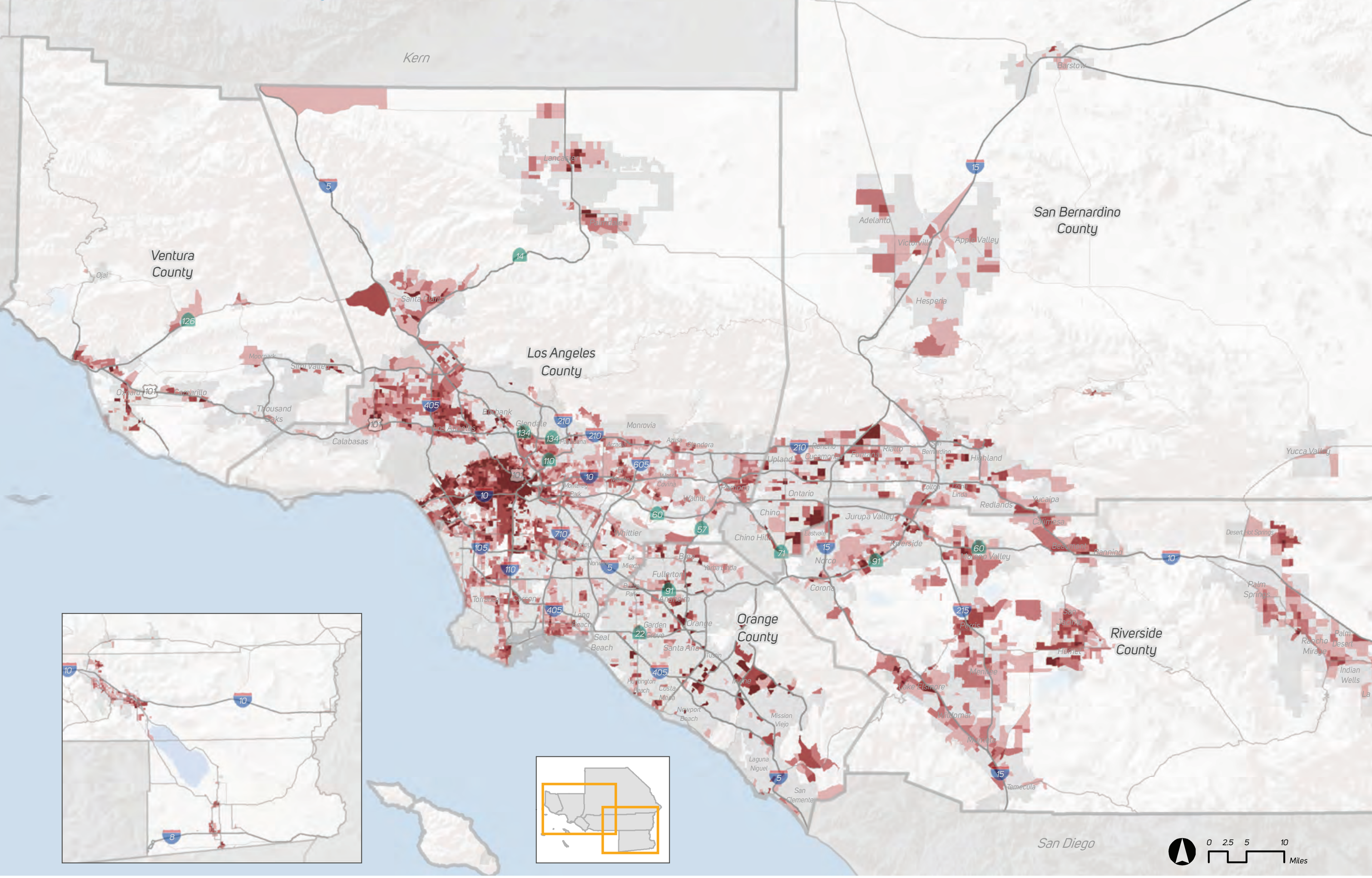
Population Growth, 2012 - 2040 (Persons per Square Mile)

- Less than or Equal to 500
- 501 - 1,000
- 1,001 - 2,500
- 2,501 - 5,000
- Greater than 5,000

Note: Transportation Analysis Zone (TAZ) level data or any data at a geography smaller than the jurisdictional level is included in the draft PGF for regional modeling purpose only, and is advisory and non-binding.

(Source: SCAG, 2015)

EXHIBIT 6 Household Change, 2012-2040



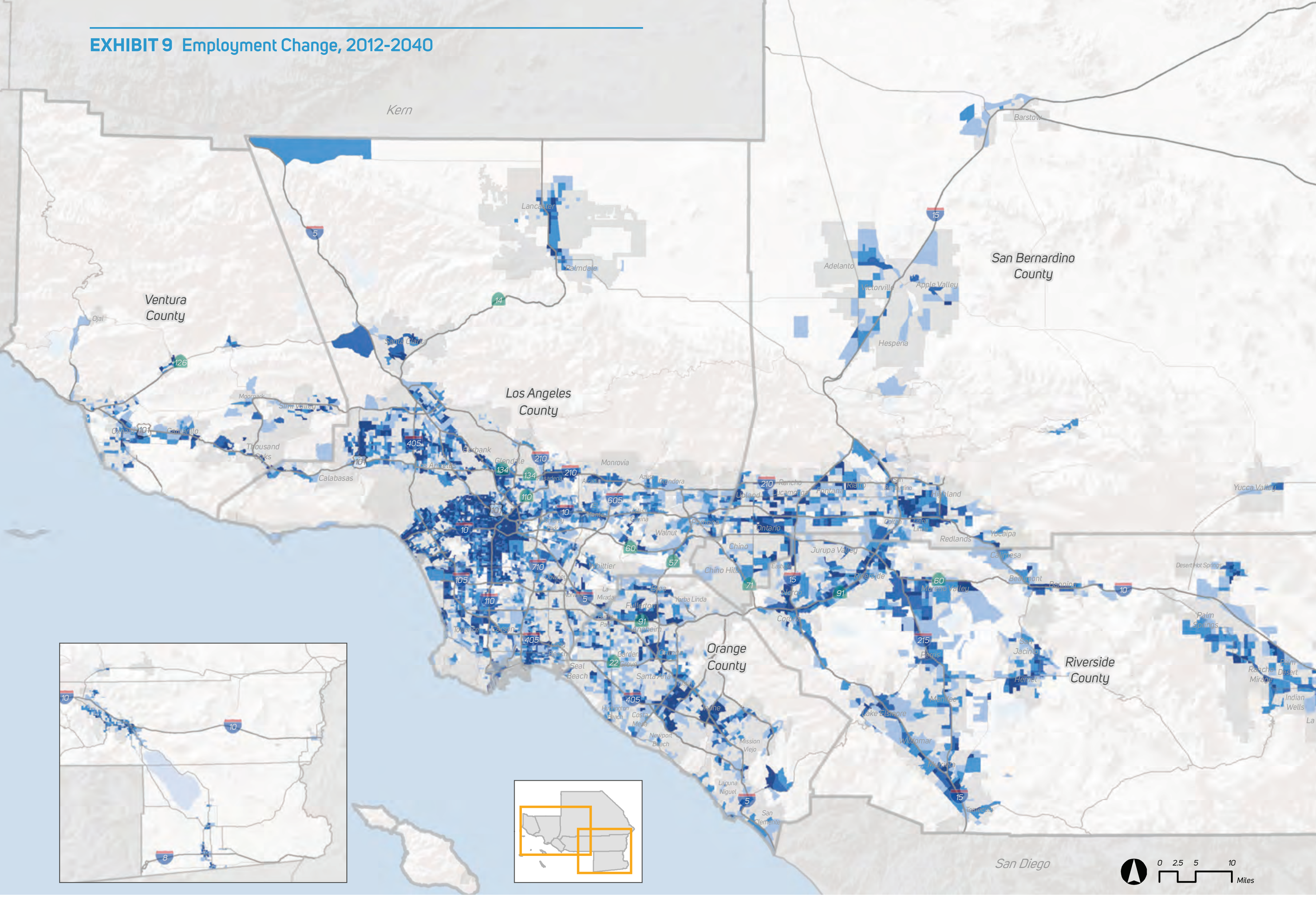
Household Growth, 2012 - 2040 (Households per Square Mile)

- *Less than or Equal to 200*
- *201 - 500*
- *501 - 1,000*
- *1,001 - 2,000*
- *Greater than 2,000*

(Source: SCAG, 2015)

Note: Transportation Analysis Zone (TAZ) level data or any data at a geography smaller than the jurisdictional level is included in the draft PGF for regional modeling purpose only, and is advisory and non-binding.

EXHIBIT 9 Employment Change, 2012-2040



Employment Growth, 2012 - 2040 (Jobs per Square Mile)

- *Less than or Equal to 200*
- *201 - 500*
- *501 - 1,000*
- *1,001 - 2,000*
- *Greater than 2,000*

(Source: SCAG, 2015)

Note: Transportation Analysis Zone (TAZ) level data or any data at a geography smaller than the jurisdictional level is included in the draft PGF for regional modeling purpose only, and is advisory and non-binding.

APPENDIX D

Mission Village Project Vehicle Miles of Traves Analysis

Stantec Memo

To:	Bruce Lackow Meridian Consultants	From:	Daryl Zerfass Stantec
File:	2073010090	Date:	September 2016

Reference: SB 375 Consistency Evaluation - SCAG RTP/SCS and Newhall Ranch Mission Village Project Daily Vehicle Miles of Travel (VMT)

The following analysis assesses the consistency of the estimated daily vehicle miles of travel (VMT) for the Newhall Ranch Mission Village Project with the VMT estimates included in the Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Separate analyses are presented for both the Final 2016-2040 RTP/SCS adopted April 7, 2016, and the previously adopted 2012-2035 RTP/SCS.

SCAG RTP/SCS

SCAG's recently adopted 2016-2040 RTP/SCS includes the following per capita Total VMT estimates for the SCAG region as a whole and for Los Angeles County, specifically, for the 2012 Base Year (existing) and 2040 Plan Year (projected):

Table 1 SCAG Total (Tour-Based) VMT Summary –2016-2040 RTP/SCS

	SCAG Region	Los Angeles County
2012 Base Year	22.8 VMT/Capita	21.5 VMT/Capita
2040 Plan Year	20.5 VMT/Capita	18.4 VMT/Capita

Source: 2016-2040 RTP/SCS (April 2016), page 155.

Note: Based on Stantec's review of the Draft Program EIR for the 2016-2040 RTP/SCS, the numbers presented in this table represent *Total* VMT, as compared to *Home-Based* VMT. Total VMT accounts for all vehicle trips made by residents of a household during the day, in contrast to *Home-Based* VMT, which accounts for only those trips that begin or end at the home.

As to the previously adopted 2012 SCAG RTP/SCS, Stantec derived the following per capita Total VMT estimates for the 2008 Base Year and 2035 Plan Year from data contained in various portions of the 2012-2035 RTP/SCS documentation. As shown in Table 2, the 2012-2035 RTP/SCS VMT estimates are higher than the corresponding 2016-2040 RTP/SCS estimates shown in Table 1.

Reference: SB 375 Consistency Evaluation - SCAG RTP/SCS and Newhall Ranch Mission Village Project Daily Vehicle Miles of Travel (VMT)

Table 2 SCAG Total (Tour-Based) VMT Summary – 2012-2035 RTP/SCS

	SCAG Region	**Los Angeles County**
2008 Base Year	25.4 VMT/Capita	23.5 VMT/Capita
2035 Plan Year	23.4 VMT/Capita	20.7 VMT/Capita

Sources:
SCAG Regional Travel Demand Model and 2008 Model Validation (June 2012), Table 2-3, page 2-5;
2012-2035 RTP/SCS Draft Program EIR (December 2011), Table 3.10-8, page 3.10-8;
2012-2035 RTP/SCS Highways and Arterials Appendix (April 2012), Table A12, page 52, and Table A16, page 56.

Mission Village VMT

Approval of the Mission Village Project would facilitate the development of a mixed-use community that includes 4,055 residential dwelling units, approximately 1.6 million square feet (MSF) of mixed-use commercial development, along with community services such as an elementary school, fire station, library and a park.

VMT estimates for the Mission Village residents and employees have been calculated using data from the Mission Village Environmental Impact Report. Home-Based VMT for residential uses and Home-Based-Work VMT for employment uses have been calculated (see attached Table A – Mission Village VMT Summary). For comparison to SCAG's RTP/SCS Total VMT per capita estimates, the Mission Village Home-Based and Home-Based-Work VMT estimates have been adjusted based on data from the SCAG 2016-2040 RTP/SCS Travel Demand Model to reflect the additional trips made by residents and employees while away from home and work, respectively. This VMT, referred to as "Tour-Based" or Total VMT, accounts for all vehicle travel throughout the day, and is directly comparable to the VMT data reported in the 2012-2035 and 2016-2040 RTP/SCS. (See Table 1, Note.)

Table 3 summarizes the Mission Village Total VMT estimates. As shown on the table, prior to application of any VMT reduction measures, Mission Village would have an average per capita Total VMT of 17.7.

Reference: SB 375 Consistency Evaluation - SCAG RTP/SCS and Newhall Ranch Mission Village Project Daily Vehicle Miles of Travel (VMT)

Table 3 Mission Village Total (Tour-Based) VMT Summary

	Mission Village
Total VMT/Capita (without VMT reduction measures)	17.7
Total VMT/Capita (with VMT reduction measures)[1]	14.9
[1]Fehr & Peers, Mission Village: Transportation Demand Management Plan Evaluation (September 2016)	

VMT Reduction Strategies

To reduce the generation of mobile source-related greenhouse gas emissions, a series of VMT reduction strategies were developed by Fehr & Peers for the Mission Village Project. These strategies achieve emissions reductions by reducing Project-generated VMT. In this regard, Fehr & Peers has determined that the recommended strategies would reduce the Mission Village Project's VMT by 15.5 percent (Fehr & Peers, Mission Village: Transportation Demand Management Plan Evaluation (September 2016)). As shown in Table 3 above, a 15.5 percent reduction in VMT would result in an average per capita Total VMT of 14.9.

Analysis

To analyze the consistency of the Mission Village Project with the 2012-2035 and 2016-2040 RTP/SCS, the per capita Total VMT estimates of the Mission Village Project, calculated above and shown in Table 3, are compared to the VMT data for the region and Los Angeles County as contained in each RTP/SCS and as previously shown in Tables 1 and 2.

Table 4 below presents a comparison of VMT per capita estimates for the Plan Year (2035 and 2040, respectively) provided in the SCAG 2012-2035 RTP/SCS and the 2016-2040 RTP/SCS (shown in Tables 1 and 2, above) relative to the Mission Village Project's average Total VMT per capita with VMT reduction measures (shown in Table 3, above). Table 4 shows that the Mission Village Project's residents and employees would generate per capita Total VMT (14.9) that is less than the projected average Total VMT for both the SCAG region (23.4 and 20.5), and Los Angeles County (20.7 and 18.4) under both the 2012-2035 and 2016-2040 RTP/SCS, respectively.

Reference: SB 375 Consistency Evaluation - SCAG RTP/SCS and Newhall Ranch Mission Village Project Daily Vehicle Miles of Travel (VMT)

Table 4 Comparison of SCAG 2012-2035 and 2016-2040 RTP/SCS Per Capita VMT with Mission Village Per Capita VMT

	SCAG Region	Los Angeles County
SCAG 2012 RTP/SCS VMT/Capita in 2035 Plan Year	23.4	20.7
SCAG 2016 RTP/SCS VMT/Capita in 2040 Plan Year	20.5	18.4
Mission Village VMT/Capita	14.9	14.9
Comparison to 2035 Plan Year	*-8.5 VMT/Capita (-36%)*	*-5.8 VMT/Capita (-28%)*
Comparison to 2040 Plan Year	*-5.6 VMT/Capita (-27%)*	*-3.5 VMT/Capita (-19%)*

As shown in Table 4, above, with implementation of the VMT reduction strategies, the Mission Village Project's residents and employees would generate approximately 36 percent less Total VMT per capita than the 2012-2035 RTP/SCS plan's regional per capita Total VMT average, and would generate approximately 28 percent less Total VMT per capita than the Los Angeles County per capita Total VMT average. As to the 2016-2040 RTP/SCS, the Mission Village Project's residents would generate approximately 27 percent less Total VMT per capita than the regional per capita Total VMT average, and approximately 19 percent less Total VMT per capita than the Los Angeles County per capita Total VMT average.

Conclusion

In conclusion, the VMT comparisons presented above evidence that the VMT attributable to the Mission Village Project's residents and employees is consistent with both the 2012-2035 RTP/SCS and the 2016-2040 RTP/SCS since Total VMT per capita would not exceed the projected plan year Total VMT per capita and, in fact, would be approximately 36 percent and 27 percent less than the Total VMT per capita regional average for each plan year, respectively, and approximately 28 percent and 19 percent less than the County average for each plan year, respectively.

STANTEC CONSULTING SERVICES INC.

Daryl Zerfass, PE, PTP
Principal, Transportation Planning & Traffic Engineering
Phone: (949) 923-6058
Daryl.Zerfass@stantec.com

Attachment: Table A Mission Village VMT Summary

Stantec

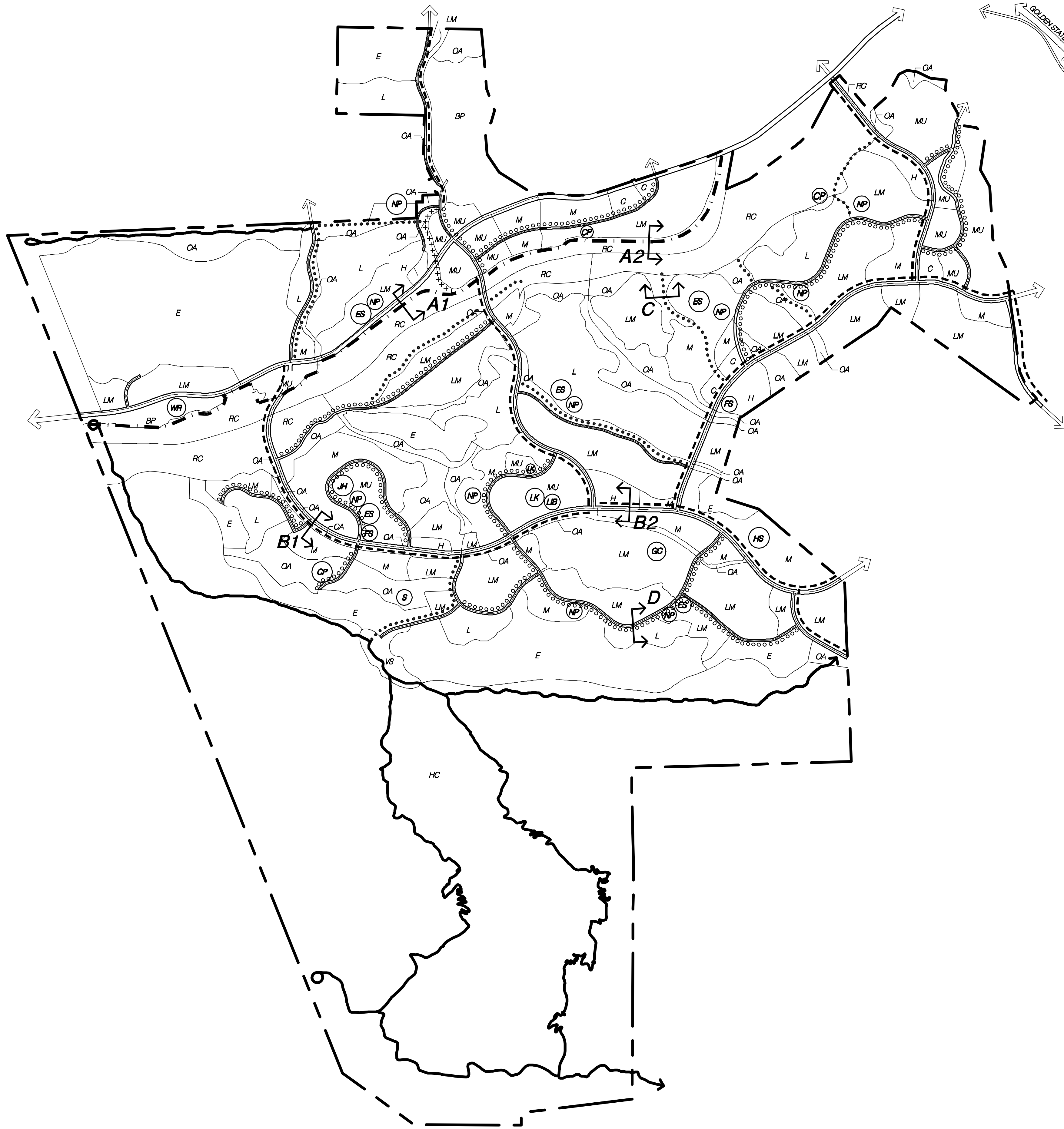
Table A Mission Village VMT Summary

	Mission Village
Residential Home-Based VMT[1]	146,921
Population[1]	11,048
Home-Based VMT / Resident	13.3
Average Total VMT/ Resident [2]	18.2
Employment Home-Based-Work VMT[1]	89,749
Employees[1]	5,963
Home-Based-Work VMT/ Employee	15.1
Average Total VMT/ Employee [2]	16.6
Average Total Resident & Employee VMT/Capita	17.7

[1]Mission Village VMT & GHG Estimates, Ramboll-Environ, September 2016.
[2]Based on factors of 1.369 and 1.105 to convert home-based VMT and home-based-work VMT to total VMT, respectively (source: SCAG 2016-2040 RTP/SCS model data for SCAG region).

APPENDIX E

Mission Village and Newhall Ranch Trail Plans



NEWHALL RANCH
SPECIFIC PLAN

Prepared For: Newhall Ranch Company

LEGEND

REGIONAL RIVER TRAIL

COMMUNITY TRAIL

EQUESTRIAN TRAIL COMPONENT OF COMMUNITY TRAIL

LOCAL TRAIL

PATHWAY

UNIMPROVED TRAIL

TRAIL SECTIONS

SECTIONS A1 & A2	EXHIBIT 2.4-6
SECTIONS B1 & B2	EXHIBIT 2.4-7
SECTIONS C & D	EXHIBIT 2.4-8

English 0 1000' 2000'

Metric 0 225m 450m 900m

NORTH

100 ACRES 400 ACRES

EXHIBIT 2.4-5

MASTER TRAILS PLAN

MAY 2003

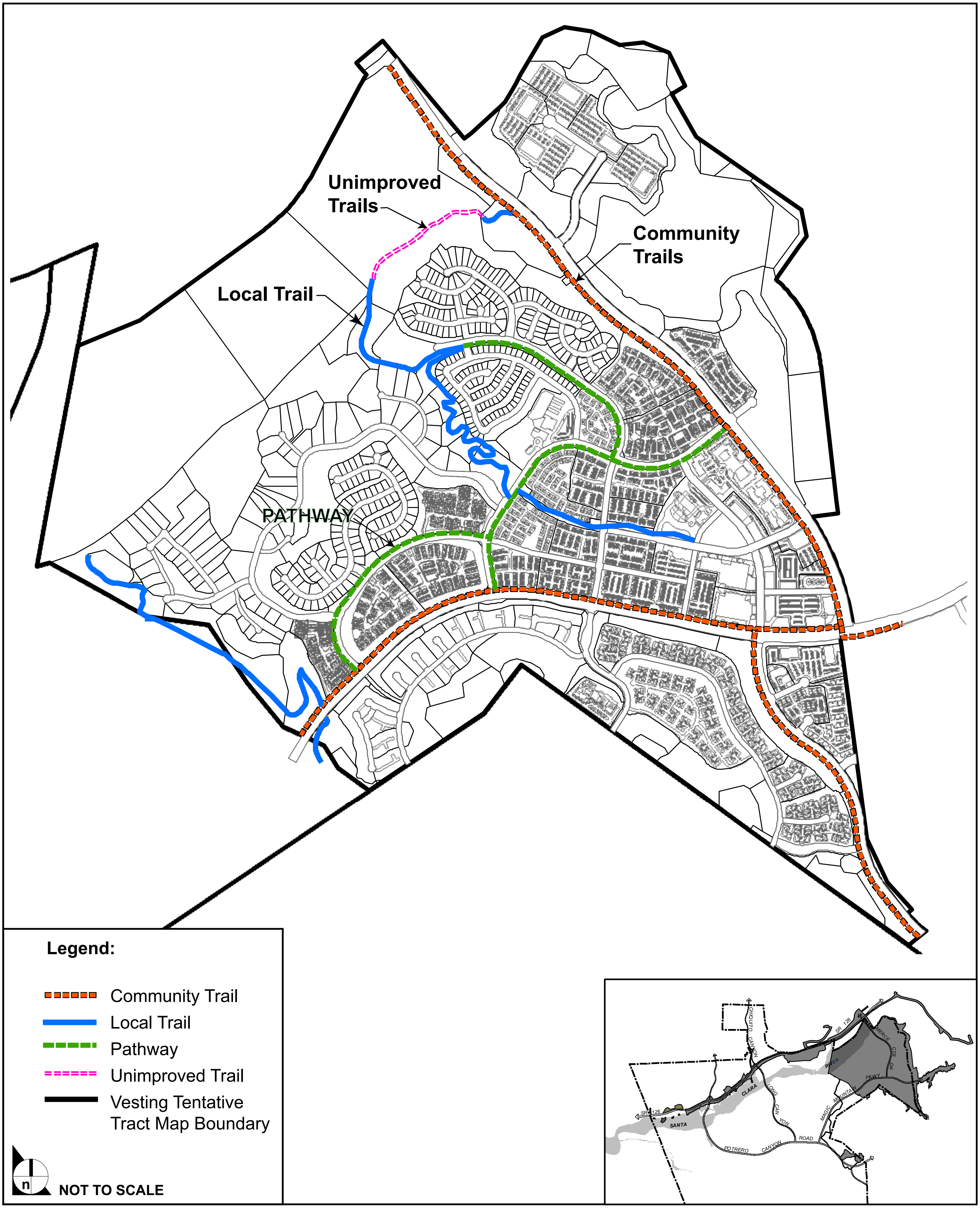
m:\newhall1\sp-revise-0403\trails.dwg

SOURCE: FORMA Exhibit 2.4-5 Master Trails Plan – May 2003

FIGURE **1.0-19**

Mission Village Portion of the Newhall Ranch Specific Plan Master Trails Plan

32-99•03/10



SOURCE: Psomas - February 2010, Impact Sciences, Inc. – May 2010

FIGURE 1.0-20

Mission Village Trails Plan

32-99•05/10

APPENDIX F

Mission Village Applicable Mitigation Measure

~ Providing temporary dedicated turn lanes for movement of construction trucks and equipment on and off of the site.

g. Prohibit truck idling in excess of two minutes.

Off-Road Mobile Source Construction Emissions

h. Use pile drivers powered by an alternative to diesel fuel.

i. Suspend use of all construction equipment operations during second stage smog alerts.

j. Prevent trucks from idling longer than two minutes.

k. Use electricity from power poles rather than temporary diesel-powered generators.

l. Use electricity from power poles rather than temporary gasoline-powered generators.

m. Use mobile equipment powered by an alternative to diesel fuel.

n. Use on-site mobile equipment powered by an alternative to gasoline.

<u>Operational Mitigation Measures</u>

(a) Point Source Operational Emissions

MV4.7-17 Any dry cleaners proposing to locate on site shall utilize the services of off-site cleaning operations at already SCAQMD-permitted locations. No on-site dry cleaning operations utilizing perchloroethylene or any other cleaning solvent containing toxic air contaminants shall be permitted within Mission Village.

(b) Mobile Source Operational Emissions

MV4.7-18 The project developer(s) shall coordinate with Santa Clarita Transit to identify appropriate bus stop/turnout locations.

MV 4.7-19 Kiosks containing transit information shall be constructed by the project applicant adjacent to selected future bus stops prior to initiation of bus service to the site.

(c) Area Source Operational Emissions

MV 4.7-20 Wood-burning fireplaces and stoves shall be prohibited in all residential units. Use of wood in fireplaces shall be prohibited through project CC&Rs.

MV 4.7-21 [Replaces Mitigation Measure SP 4.10-9] Prior to the approval of each future subdivision proposed in association with Mission Village, each of the operational emission reduction measures listed below, which are based on Tables 11-6 and 11-7 of the SCAQMD's *CEQA Air Quality Handbook*, shall be implemented.

On Road Mobile Source Operational Emissions

Residential Uses

a. Provide residents with information regarding the availability of existing shuttle service providers and public transit between residential and commercial core areas.

b. Construct on-site or off-site bus stops (e.g., bus turnouts, passenger benches, and shelters).

c. Construct off-site pedestrian facility improvements, such as overpasses and wider sidewalks.

d. Include retail services within or adjacent to residential subdivisions.

e. Provide residents with information regarding the availability of existing shuttle service providers and public transit between residential areas and transit centers.

f. Contribute to regional transit systems (e.g., right-of-way, capital improvements, etc.).

g. Synchronize traffic lights on streets impacted by development.

h. Construct, contribute, or dedicate land for the provision of off-site bicycle trails linking the facility to designated bicycle commuting routes.

Commercial Uses

i. Provide preferential parking spaces for carpools and vanpools and provide 7 foot 2 inch minimum vertical clearance in parking facilities for vanpool access.

j. Implement on-site circulation plans in parking lots to reduce vehicle queuing.

k. Improve traffic flow at drive-throughs by designing separate windows for different functions and by providing temporary parking for orders not immediately available for pickup.

l. Set up resident worker training programs to improve job/housing balance.

m. Develop a program to minimize the use of fleet vehicles during smog alerts (for business not subject to Regulation XV (now Rule 2202) or XII).

n. Use low-emissions fleet vehicles:

- TLEV
- ULEV
- LEV
- ZEV

o. Reduce employee parking spaces for those businesses subject to Regulation XV (now Rule 2202).

p. For commercial uses subject to Rule 2202, implement a lunch shuttle service from a worksite(s) to food establishments.

q. For commercial uses subject to Rule 2202, implement compressed workweek schedules where weekly work hours are compressed into fewer than five days.

- 9/80
- 4/40
- 3/36

r. Employers with 250 or more employees are to provide on-site child care and after-school facilities or contribute to off-site development within walking distance.

s. Require retail facilities or special event centers to offer travel incentives such as discounts on purchases for transit riders.

t. Employers with 250 or more employees are to provide on-site employee services such as cafeterias, banks, etc.

u. Establish a shuttle service from residential core areas to the commercial core areas.

v. Construct on-site or off-site bus stops (e.g., bus turnouts, passenger benches, and shelters).

w. Implement a pricing structure for single-occupancy employee parking and/or provide discounts to ridesharers.

x. Include residential units within a commercial project.

y. Utilize parking in excess of code requirements as on-site park-n-ride lots or contribute to construction of off-site lots.

z. Any two of the following:

- Construct off-site bicycle facility improvements, such as bicycle trails linking the facility to designated bicycle commuting routes, or on-site improvements, such as bicycle paths.
- Include bicycle parking facilities, such as bicycle lockers and racks.
- Include showers for bicycling employees' use.

aa. Any two of the following:

- Construct off-site pedestrian facility improvements, such as overpasses, wider sidewalks.
- Construct on-site pedestrian facility improvements, such as building access that is physically separated from street and parking lot traffic and walk paths.
- Include showers for pedestrian employees' use.

ab. Provide shuttles from the commercial core areas to major transit stations.

ac. Contribute to regional transit systems (e.g., right-of-way, capital improvements, etc.).

ad. Charge visitors to park at specialty commercial/entertainment developments.

ae. Synchronize traffic lights on streets impacted by development.

af. Reschedule truck deliveries and pickups to off-peak hours.

ag. Set up paid parking systems where drivers pay at walkup kiosk and exit via a stamped ticket to reduce emissions from queuing vehicles.

ah. Require on-site truck loading zones.

ai. Implement or contribute to public outreach programs.

aj. Require employers not subject to Regulation XV (now Rule 2202) to provide commuter information area.

Stationary Source Operational Emissions

Residential

ak. Use solar or low emission water heaters.

al. Use central water heating systems.

am. Use built-in energy-efficient appliances.

an. Provide shade trees to reduce building heating/cooling needs.

ao. Use energy-efficient and automated controls for air conditioners.

ap. Use double-paned windows.

aq. Use energy-efficient low-sodium parking lot lights.

ar. Use lighting controls and energy-efficient lighting.

as. Orient buildings to the north for natural cooling and include passive solar design (e.g., daylighting).

at. Use light-colored roofing materials to reflect heat.

au. Increase walls and attic insulation beyond Title 24 requirements.

Commercial Uses

av. Use solar or low emission water heaters.

aw. Use central water heating systems.

ax. Provide shade trees to reduce building heating/cooling needs.

ay. Use energy-efficient and automated controls for air conditioners.

az. Use double-paned windows.

ba. Use energy-efficient low-sodium parking lot lights.

bb. Use lighting controls and energy-efficient lighting.

bc. Use light-colored roofing materials to reflect heat.

bd. Increase walls and attic insulation beyond Title 24 requirements.

be. Orient buildings to the north for natural cooling and include passive solar design (e.g., daylighting).

2.2.3 Findings

The Board finds that the above mitigation measures are feasible, are adopted, and will substantially lessen the Mission Village project's air quality impacts. Pursuant to Public Resources Code section 21081, subdivision (a)(1), changes or alterations have been required in, or incorporated into, the Project which would mitigate, in part, the significant air quality impacts attributable to the Project, as identified in the Final EIR. However, there are no feasible mitigation measures that would reduce all the identified significant impacts to a level below significant. Therefore, these impacts must be considered unavoidably significant even after

APPENDIX 2.1-D

Meridian Consultants LLC, ***Analysis of Mission Village Project Eligibility for SB 375 CEQA Streamlining, October 2016***

Analysis of Mission Village Project Eligibility for SB 375 CEQA Streamlining

Prepared for:

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October 2016

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ANALYSIS OF MISSION VILLAGE PROJECT ELIGIBILITY FOR SB 375 CEQA STREAMLINING

INTRODUCTION

The analysis presented below evaluates the eligibility of the Newhall Ranch Specific Plan's Mission Village project (the "Project") to qualify for California Environmental Quality Act (CEQA) streamlining pursuant to the provisions of the Sustainable Communities and Climate Protection Act of 2008 (Sustainable Communities Act, SB 375, Chapter 728, Statutes of 2008). The analysis presented below consists of the following four sections: (1) Background; (2) SB 375 CEQA Streamlining Criteria; (3) Analysis of Project Eligibility for SB 375 CEQA Streamlining; and (4) Conclusion.

BACKGROUND

The California Global Warming Solutions Act of 2006 (Assembly Bill 32 or AB 32), the state's landmark climate change legislation, established a specific requirement that statewide greenhouse gas (GHG) emissions be reduced to 1990 levels by 2020 (Health & Safety Code, §38550). In order to achieve this reduction mandate, AB 32 requires the California Air Resources Board (CARB) to adopt rules and regulations that achieve the maximum technologically feasible and cost-effective GHG reductions. Other legislative actions, including the Sustainable Communities and Climate Protection Act of 2008 (SB 375), have been taken in furtherance of AB 32's GHG reduction mandate.

Recognizing that nearly 40 percent of California's GHG pollution comes from transportation,[1] the central purpose of SB 375 is to reduce GHG emissions from cars and light trucks through coordinated land use planning, regional transportation plans, and funding priorities, with the goal of creating more sustainable communities. The primary method for achieving this goal is through a better integration of regional transportation, land use, and planned housing, so as to provide improved access to jobs, services, public transit, and active transportation options.[2] SB 375 specifically requires that Metropolitan Planning Organizations (MPOs) include a Sustainable Communities Strategy (SCS) in Regional Transportation Plans (RTPs) that will "set forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce the greenhouse gas emissions from automobiles and light trucks to achieve, if there is a feasible way to do so, the greenhouse gas emission reduction targets approved" by CARB for the area under the jurisdiction of the

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1 California Greenhouse Gas Emission Inventory – 2015 Edition, California Air Resources Board, June 30, 2015; http://www.arb.ca.gov/cc/inventory/data/data.htm.

2 First Update to the Scoping Plan, pp. 49-50, available at http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf.

MPO. (Government Code, §65080(b)(2)(B).) Once adopted by the MPO, the RTP/SCS guides the transportation policies and investments for the region.

In 2010, CARB established emission reduction targets for 2020 and 2035 for each region covered by a MPO. The Southern California Association of Governments (SCAG) is the MPO for the region that includes the Project Site. For the SCAG region, CARB adopted the following regional targets for the reduction of mobile source-related GHG emissions: (1) reduction of GHG emissions by 8 percent per capita by 2020, and (2) reduction of GHG emissions by 13 percent per capita by 2035. These targets apply to the SCAG region as a whole, and not to individual cities or subregions.

SCAG, pursuant to the provisions of SB 375, has prepared a SCS as an integral part of its RTP. The SCS contains land use, housing, and transportation strategies that will enable the SCAG region to meet its GHG emission reduction targets. The most recently adopted SCS for the SCAG region that has been accepted by CARB is the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016-2040 RTP/SCS). SCAG's 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (2012-2035 RTP/SCS) served as the SCS for the SCAG region prior to SCAG adoption and CARB acceptance of the 2016-2040 RTP/SCS.

In accordance with the requirements discussed above, SCAG determined that implementation of the 2016-2040 RTP/SCS would result in a 8 percent per capita GHG reduction by 2020 and an 18 percent per capita GHG reduction by 2035. Based on a technical evaluation of SCAG's 2016-2040 RTP/SCS, CARB staff determined that SCAG's 2016-2040 RTP/SCS, if implemented, would meet the GHG reduction targets that CARB established for the SCAG region for 2020 and 2035. Subsequently, on June 28, 2016, CARB issued Executive Order G-16-066, which accepted SCAG's quantification of GHG emission reductions and SCAG's determination that the 2016-2040 RTP/SCS would, if implemented, achieve the 2020 and 2035 GHG emission reduction targets established by CARB for the SCAG region.[3]

Notwithstanding, the analysis of Project eligibility for SB 375 CEQA streamlining that is presented below addresses *both* SCAG's previously applicable 2012-2035 RTP/SCS and SCAG's currently applicable 2016-2040 RTP/SCS. The analysis of Project eligibility for SB 375 CEQA streamlining with regard to SCAG's 2012-2035 RTP/SCS is presented first, followed by the analysis relative to SCAG's 2016-2040 RTP/SCS.

[3] CARB, CARB Executive Order G-16-066, June 28, 2016. http://www.arb.ca.gov/cc/sb375/exec_order_scag_executive_order_g_16_066.pdf.

SB 375 CEQA STREAMLINING CRITERIA

Under SB 375, certain residential and mixed-use projects that meet the following criteria are eligible for CEQA streamlining, provided that CARB has accepted the MPO's determination that the project area's SCS achieves the GHG emission reduction targets established by CARB for the region (Public Resources Code §21159.28).

First, the project must be consistent with the use designation, density, building intensity, and applicable policies specified for the project area in a CARB-accepted SCS.

Second, the project must be either a residential or mixed-use residential project where at least 75 percent of the total building square footage of the project consists of residential use, or a project that is a Transit Priority Project (TPP).

Third, the project must incorporate all feasible mitigation measures, performance standards, or criteria set forth in the applicable environmental documents. In the case of SCAG's 2012-2035 RTP/SCS, as well as SCAG's 2016-2040 RTP/SCS, the applicable environmental document is the Program Environmental Impact Report (PEIR) that was prepared for each of these plans.

In cases where all three criteria are met, SB 375 states that no environmental analysis is required of: (1) project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network; (2) growth-inducing impacts; and (3) a reduced residential density alternative that addresses the effects of car and light-duty truck trips generated by the project.

Analysis of Project Eligibility for SB 375 CEQA Streamlining

1. Project Consistency with Land Use-Related Designations and Applicable Policies

A. Land Use-Related Designations

(i) 2012-2035 RTP/SCS

The criteria for determining if a project within the SCAG region is eligible for CEQA Streamlining under SB 375 starts with an assessment of a project's consistency with the use designation, density, and building intensity specified in the 2012-2035 RTP/SCS. Exhibits 4.1, 4.2, and 4.3 of the 2012-2035 RTP/SCS show the areas within the SCAG region where growth is planned to occur (see **Appendix A** of this analysis). A review of these exhibits indicates that the Project Site is an area designated for future population, employment, and household growth. Thus, development of the Project Site has been incorporated into the 2012-2035 RTP/SCS, which has been accepted by CARB as achieving the required regional reductions in GHG emissions.

To conduct the required modeling analysis for the 2012–2035 RTP/SCS, SCAG distributed the regional growth forecast data to transportation analysis zones (TAZs) to determine the interaction of land use and transportation on a localized basis. The 2012-2035 RTP/SCS states that this TAZ-level data was developed for modeling purposes only and that the growth and land use assumptions actually utilized by SCAG for the 2012-2035 RTP/SCS are derived from broader jurisdictional level sources (such as all of the unincorporated areas of the County of Los Angeles in this case), and not sub-geographies (such as the Santa Clarita Valley Area Plan, which incorporates the planned growth approved as part of the Newhall Ranch Specific Plan). Thus, the regional growth forecast data presented in the RTP/SCS is for modeling purposes only and, as a result, SCAG defers to the local jurisdictions for the applicable land use data.

As the Project Site is located within the unincorporated area of Los Angeles County, the County of Los Angeles is the local agency with jurisdiction over the land use plans and regulations that define the development allowed on the Project Site. Accordingly, the assessment of Project consistency with the use designation, density, and intensity of development permitted at the Project Site is based on a review of the planning documents that have been adopted by the County of Los Angeles. In this regard, the County of Los Angeles has adopted a number of community plans, which are part of the General Plan, designed to address the needs of local communities and specific geographic areas throughout the County. The Project Site is located within the jurisdictional boundaries of the Santa Clarita Valley Area Plan: One Valley One Vision 2012 (Area Plan). As such, the Area Plan is the applicable planning document that specifies the use designations, as well as the density and building intensity standards for the Project Site, and serves as the basis for the analysis provided below.

The Project Site is located within the eastern portion of the approved Newhall Ranch Specific Plan. Thus, the Area Plan's land use designation for the Project Site is "Specific Plan," which reflects the County's adoption of the Newhall Ranch Specific Plan in 2003. As a result, the land use-related designations set forth in the Newhall Ranch Specific Plan serve as the basis for comparison of Project consistency with the Area Plan's land use designation for the Project Site. The Los Angeles County Board of Supervisors, in certifying the Final EIR and approving the Mission Village project, determined that the Mission Village project is consistent with the Newhall Ranch Specific Plan.[4] Specifically, the Board of Supervisors found

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[4] County of Los Angeles, Board of Supervisors, *CEQA Findings and Statement of Overriding Considerations for the Mission Village Project (A Portion of the Newhall Ranch Specific Plan), page 2, October, 2011.*

that the land uses included as part of the Mission Village tract map site are consistent with the approved Specific Plan, which designates the tract map site for residential, mixed-use, commercial land uses and various public facilities.[5]

The Mission Village project is located within planning areas TM-01, TM-10, and TM 14-34 of the Newhall Ranch Specific Plan. Under the approved Specific Plan, 5,465 dwelling units are planned along with a maximum of approximately 1.95 million square feet of commercial/mixed use development within these designated planning areas. In comparison to the permissible level of development, the proposed Mission Village project includes 4,055 dwelling units and 1,555,100 square feet of commercial mixed-use development. Thus, the amount of residential and commercial development proposed within the Mission Village site is less than the amount of development permitted by the adopted Newhall Ranch Specific Plan and, for this reason, Mission Village would be consistent with the development approved for the Newhall Ranch Specific Plan.

Based on the type and organization of land use patterns and the amount of development that would be built under the Project, the development proposed within the Mission Village site is consistent with the use designations and the building density and intensity standards established by the County of Los Angeles for the Project Site.

(ii) 2016-2040 RTP/SCS

Exhibits 3, 6, and 9 within the Demographics & Growth Forecast Appendix of the 2016-2040 RTP/SCS show the areas within the SCAG region where growth is planned to occur (see **Appendix B** of this analysis). A review of these exhibits indicates that the Project Site is designated as an area of future population, employment, and household growth. Thus, development of the Project Site has been incorporated into the 2016-2040 RTP/SCS.

As was also the case with the 2012-2035 RTP/SCS, SCAG distributed the regional growth forecast data to transportation analysis zones (TAZs) to conduct the required modeling analysis for the 2016–2040 RTP/SCS. With regard to the use of TAZ level data, the regional growth forecast data presented in the RTP/SCS is advisory only since sub-jurisdictional forecasts like those contained in the Santa Clarita Valley Area Plan are not included, and, as a result, the local jurisdiction's applicable land use data should be reviewed instead.[6] The County of Los Angeles, as described above, is the agency with jurisdiction over

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5 *Ibid, p. 3.*

6 With regard to the use of TAZ level data, the Final 2016-2040 RTP/SCS states the following: "TAZ level data or any data at a geography smaller than the jurisdictional level has been utilized to conduct required modeling analyses and is therefore

the land use regulations that apply to development within the Project Site. Thus, the assessment of Project consistency with the use designation, density, and intensity of development permitted at the Project Site is based on a review of the planning documents that have been adopted by the County of Los Angeles. As a result, the use designations, as well as the density and building intensity standards established for the Project Site, as set forth in the Area Plan, serve as the basis for the analysis of Project consistency with these land use-related designations.

As the basis of analysis is the same for the 2012-2035 RTP/SCS and the 2016-2040 RTP/SCS, the analysis provided above for the 2012-2035 RTP/SCS also applies to the 2016-2040 RTP/SCS. As stated above, the use designation, density and building intensity standards established for the Project Site are consistent with the use designation, building density, and building intensity standards set forth in the Area Plan and, by extension, the RTP/SCS.

B. Project Consistency with Applicable Policies

(i) 2012-2035 RTP/SCS

A detailed analysis of the Project's consistency with the individual actions, strategies, and policies set forth in the 2012-2035 RTP/SCS is presented in Appendix 2.1-C of the Recirculated Portions of the EIR. A summary of that analysis is presented here. Based on the analysis presented in Appendix 2.1-C and summarized here, the Project would be consistent with the applicable policies set forth in the 2012-2035 RTP/SCS.

The 2012-2035 RTP/SCS provides growth forecasts, forecasts of land consumption, and a wide array of strategies, policies, and actions that would achieve the goals of the plan. The 2012-2035 RTP/SCS forecasts development occurring both within existing urban areas and on land that has not previously been developed (i.e., greenfield development). In terms of land consumption, the 2012-2035 RTP/SCS incorporates 334 square miles, or approximately 213,670 acres, of greenfield development. As discussed above, the Project Site is identified in the 2012-2035 RTP/SCS as a geographic area forecasted for growth. The Mission Village tract map site includes a total of 1,261.8 acres, or approximately 1.97 square miles, of land area. As the Project's tract map site is classified as greenfield development, the Project's tract map site would comprise approximately 0.59 percent of the total amount of greenfield development area

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advisory only and non-binding given that sub-jurisdictional forecasts are not adopted as part of the 2016 RTP/SCS. TAZ level data may be used by jurisdictions in local planning as it deems appropriate. There is no obligation by a jurisdiction to change its land use policies, General Plan, or regulations to be consistent with the 2016 RTP/SCS", Final 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy, Southern California Association of Governments, April 2016, page 70.

incorporated into the 2012-2035 RTP/SCS. That is, the 2012-2035 RTP/SCS incorporates greenfield development of approximately 334 square miles, or approximately 213,760 acres, into its forecasts, and the Project's tract map site would comprise less than 0.6 percent of that anticipated development.

With regard to new communities such as the proposed Project, the strategies, policies, and actions that would achieve the goals of the 2012-2035 RTP/SCS can be grouped into the following three categories: (1) reduction of vehicle trips and vehicle miles travelled (VMT), (2) increased use of alternative fuel vehicles, and (3) energy efficiency. The Project's GHG emission-reducing mitigation measures and comprehensive TDM measures as identified in the Recirculated Portions of the EIR, in addition to the mitigation measures set forth in the Final EIR (October 2011) collectively support implementation of the 2012-2035 RTP/SCS as they would result in substantive reductions in vehicle trips and VMT; implementation of alternative fuel technology at the Project Site and in the Project vicinity; and the achievement of meaningful levels of energy efficiency. For example, the Project would result in a reduction in vehicle trips and VMT via: the community design established for the Project Site; an on-site transit system that would be part of the overall transit system connecting all of the Newhall Ranch villages; an extensive on-site active transportation network that also would be part of the overall system connecting all of the Newhall Ranch villages; and a comprehensive TDM program. Refer to Appendix 2.1-C of the Recirculated Portions of the EIR for additional information and analysis regarding the Project's implementation of these 2012-2035 RTP/SCS strategies.

A key measure of the effectiveness of the Project's comprehensive TDM program is its effect on total VMT. The 2012-2035 RTP/SCS forecasts that daily VMT per capita within the SCAG region will decrease from 25.4 daily VMT per capita in 2008 to 23.4 daily VMT per capita in 2035. Within Los Angeles County, the 2012-2035 RTP/SCS forecasts that the daily VMT per capita will decrease from 23.5 in 2008 to 20.7 in 2035. With implementation of the Project's TDM program, the Project's Total Daily VMT per capita is forecasted to decrease from approximately 17.7 without the Project's VMT reduction measures to approximately 14.9 with implementation of the Project's TDM program.[7] Thus, the Project's VMT reduction measures would result in a 15.5 percent reduction in daily VMT per capita.[8] In comparison with the regional and Los Angeles County daily VMT per capita forecasts, the Project's residents and employees would generate approximately 36 percent less daily VMT per capita than the adopted 2012-2035 RTP/SCS plan's regional average, and would generate approximately 28 percent less than the Los Angeles County daily VMT per capita average. As such, the VMT attributable to the Project's residents and employees is

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7 SB 375 Consistency Evaluation – SCAG RTP/SCS and Mission Village Project Vehicle Miles of Travel (VMT), Stantec, September 2016 (see **Appendix C** of this analysis).

8 Fehr & Peers, Mission Village VMT Reduction Strategies, September 2016 (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR).

consistent with the forecasts included in the 2012-2035 RTP/SCS and also would be consistent with the SB 375 goal to reduce VMT, and the corresponding emission of GHGs, through the creation of more effective and efficient communities. Refer to Appendix 2.1-C of the Recirculated Portions of the EIR for additional information and analysis regarding the Project's reduction in vehicle trips and VMT.

The Project's GHG emission-reducing mitigation measures also would facilitate the increased use of alternative fuel vehicles through the provision of on-site and off-site electric vehicle charging stations, electric school and transit buses, subsidies for residents to purchase electric vehicles, and the implementation of a neighborhood electric vehicle program. Energy efficiency would be achieved with implementation of the Project's comprehensive TDM program, as and California Energy Commission (CEC)-compliant Zero Net Energy program for all on-site residential and commercial development areas, private recreation centers, and public facilities. Refer to Appendix 2.1-C of the Recirculated Portions of the EIR for additional information and analysis regarding the Project's use of alternative fuel vehicles and measures that achieve energy efficiency.

(ii) 2016-2040 RTP/SCS

A detailed analysis of the Project's consistency with the individual actions, strategies, and policies set forth in the 2016-2040 RTP/SCS is presented in Appendix 2.1-C of the Recirculated Portions of the EIR. A summary of that analysis is presented here. Based on the analysis presented in Appendix 2.1-C and summarized here, the Project would be consistent with the applicable policies set forth in the 2016-2040 RTP/SCS.

The 2016-2040 RTP/SCS, as with the 2012-2035 RTP/SCS, provides growth forecasts, forecasts of land consumption, and a wide array of strategies, policies, and actions that would achieve the goals of the plan. The 2016-2040 RTP/SCS also continues the basic growth patterns included in the 2012-2035 RTP/SCS in that future growth is forecasted to occur within both existing urban areas and through growth in new communities (e.g., greenfield sites), such as the proposed Project. The Project Site is identified in the 2016-2040 RTP/SCS as a geographic area forecasted for growth. In terms of land consumption, the 2016-2040 RTP/SCS incorporates 118 square miles, or approximately 75,520 acres, of greenfield development. The Project's tract map site, as discussed above, includes a total of 1,261.8 acres, or approximately 1.97 square miles, of land area. As the Project's tract map site is classified as greenfield development, the Project's tract map site would comprise approximately 1.67 percent of the total amount of greenfield development area incorporated into the 2016-2040 RTP/SCS. That is, the 2016-2040 RTP/SCS incorporates greenfield development of approximately 118 square miles, or approximately 75,520 acres, into its forecasts, and the Project's tract map site would comprise less than two percent of that anticipated development.

With regard to new communities such as the proposed Project, the focus of the strategies, policies, and actions that achieve the goals of the 2016-2040 RTP/SCS are unchanged from those included in the 2012-2035 RTP/SCS. As such, the strategies, policies, and actions that would achieve the goals of the 2016-2040 RTP/SCS fall into the following three categories: (1) reduction of vehicle trips and VMT, (2) increased use of alternative fuel vehicles, and (3) energy efficiency.

As described above, the Project's GHG emission-reducing mitigation measures and comprehensive TDM measures as identified in the Recirculated Portions of the EIR, in addition to the mitigation measures set forth in the Final EIR (October 2011) collectively support implementation of the 2016-2040 RTP/SCS as they would result in substantive reductions in vehicle trips and VMT; implementation of alternative fuel technology at the Project Site and in the Project vicinity; and the achievement of meaningful levels of energy efficiency. For example, the Project would result in a reduction in vehicle trips and VMT via: the community design established for the Project Site; an on-site transit system that would be part of the overall transit system connecting all of the Newhall Ranch villages; an extensive on-site active transportation network that also would be part of the overall system connecting all of the Newhall Ranch villages; and a comprehensive TDM program. Refer to Appendix 2.1-C of the Recirculated Portions of the EIR for additional information and analysis regarding the Project's implementation of these 2016-2040 RTP/SCS strategies.

As also described above, a key measure of the effectiveness of the Project's comprehensive TDM program is its effect on total VMT. With implementation of the Project's TDM program, the Project's Total daily VMT per capita is forecasted to decrease from approximately 17.7 without the Project's VMT reduction measures to approximately 14.9 with implementation of the Project's TDM program.[9] Thus, the Project's VMT reduction measures would result in a 15.5 percent reduction in daily VMT per capita.[10] While the 2016-2040 RTP/SCS forecasts lower daily VMT per capita than forecasted in the 2012-2035 RTP/SCS, the Project's daily VMT per capita, with implementation of the Project's VMT reduction measures, still remains lower than the daily VMT per capita forecasted to occur with implementation of the 2016-2040 RTP/SCS. Specifically, in comparison with the regional and Los Angeles County daily VMT per capita forecasts, the Project's residents and employees would generate approximately 27 percent less than the forecasted regional average, and approximately 19 percent less than the Los Angeles County average. As

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9 SB 375 Consistency Evaluation – SCAG RTP/SCS and Mission Village Project Vehicle Miles of Travel (VMT), Stantec, September 2016 (see **Appendix C** of this analysis).

10 Fehr & Peers, Mission Village VMT Reduction Strategies, September 2016 (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR).

such, the VMT attributable to the Project's residents and employees is consistent with the forecasts included in the 2016-2040 RTP/SCS and also would be consistent with the SB 375 goal to reduce VMT, and the corresponding emission of GHGs, through the creation of more effective and efficient communities. Refer to Appendix 2.1-C of the Recirculated Portions of the EIR for additional information and analysis regarding the Project's reduction in vehicle trips and VMT.

The Project's GHG emission-reducing mitigation measures, as discussed above, also would facilitate the increased use of alternative fuel vehicles through the provision of on-site and off-site electric vehicle charging stations, electric school and transit buses, subsidies for residents to purchase electric vehicles, and the implementation of a neighborhood electric vehicle program. In addition, energy efficiency would be achieved with implementation of the Project's comprehensive TDM program, and California Energy Commission (CEC)-compliant Zero Net Energy program for all on-site residential and commercial development areas, private recreation centers, and public facilities. Refer to Appendix 2.1-C of the Recirculated Portions of the EIR for additional information and analysis regarding the Project's use of alternative fuel vehicles and measures that achieve energy efficiency.

2. Project Conformance with Residential Criteria

The next criterion for a project to qualify for SB 375 CEQA streamlining is that the project either must be a residential or mixed-use residential project where at least 75 percent of the total building square footage of the project consists of residential use, or a TPP. The following analysis addresses the Project's consistency with this criterion.

Mission Village is one of the villages that collectively form the Newhall Ranch Specific Plan development (Newhall Ranch development). As such, the proper context in which to evaluate the Project's consistency with this criterion is in terms of the overall Newhall Ranch Specific Plan. The Newhall Ranch Specific Plan is comprised of a series of mixed-use villages, which, in turn, are comprised of mutually supportive land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities, including schools, parks/recreation areas, and a library. The Newhall Ranch Specific Plan villages would be interconnected by an on-site transit network, consisting of transit stops and mobility hubs, as well as an extensive network of bicycle and pedestrian trails that would connect to the existing and planned regional transit and trail systems within the Santa Clarita Valley.

A total of 20,885 residential units and 5,993,000 square feet of non-residential square footage would be developed within the Newhall Ranch Specific Plan area. Based on an average of 1,900 square feet per residential unit,[11] development within the Newhall Ranch Specific Plan would result in a total of 39,681,500 square feet of residential development. Thus, Newhall Ranch Specific Plan development would result in a total of 45,674,500 square feet (39,681,500 residential +5,993,000 non-residential = 45,674,500). Based on these square footages, Newhall Ranch Specific Plan residential development would comprise approximately 87 percent of the total development on the Newhall Ranch site (39,681,500 / 45,674,500 = 86.88%).

As Newhall Ranch Specific Plan residential development would comprise more than 75 percent of the total Newhall Ranch development, and the Newhall Ranch development is a mixed-use residential development, the Project would meet this criterion to qualify for SB 375 CEQA streamlining.

3. Project Incorporation of RTP/SCS Program EIR Mitigation Measures

A. 2012-2035 RTP/SCS

The PEIR for the 2012-2035 RTP/SCS identifies mitigation measures for each environmental topic analyzed in the PEIR. PEIR Section 3.6, Greenhouse Gas Emissions, includes those mitigation measures applicable to the analysis of potential CEQA streamlining eligibility for project-specific and cumulative impacts from cars and light-duty truck trips on global warming. The PEIR Mitigation Monitoring and Reporting Program (MMRP) identifies SCAG or the local jurisdiction as the party responsible for implementing each PEIR mitigation measure. Accordingly, the analysis presented below addresses those GHG-related measures for which the local jurisdiction is identified as the responsible party as these measures relate to the implementation of individual development projects; measures for which SCAG is identified as the responsible party relate to actions that will be taken by SCAG to implement the 2012-2035 RTP/SCS and, thus, are not analyzed further as they are not applicable to an individual development, such as the proposed Project. In addition to the GHG-related mitigation measures identified in PEIR Section 3.6, SCAG also has identified example mitigation measures in Appendix G of the PEIR as measures that can be implemented by local agencies to reduce the impacts of individual development projects. The analysis presented below also addresses the extent to which the Project implements the example GHG mitigation measures included in Appendix G of the PEIR.

PEIR Mitigation Measure MM-GHG15 states that local agencies should comply with CEQA requirements to mitigate GHG impacts as applicable and feasible and may refer to the example mitigation measures in Appendix G of the PEIR to reduce the environmental impacts of individual development projects. (See Table 1 for the full text of MM-GHG15.) Accordingly, the analysis of PEIR Mitigation Measure MM-GHG15

11 The Newhall Land and Farming Company, 2016.

is presented first and is followed by analysis of the example mitigation measures set forth in PEIR Appendix G.

The Project would implement a series of GHG emission-reducing mitigation measures that address mobile source emissions (e.g., Transportation Demand Management [TDM] program), emissions related to energy use (e.g., Zero Net Energy residential and commercial development areas, private recreation centers, and public facilities), and emissions generated during Project construction (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions, of the Recirculated Portions of the EIR). In addition to reducing GHG emissions from these sources, all remaining operation-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, by obtaining certified carbon credits from a recognized carbon registry, as well as implementing an off-site retrofit program and an off-site electric vehicle infrastructure program. The Project, by reducing its GHG emissions to zero, would be carbon neutral (i.e., Project development would not increase GHG emission levels).

The key elements of the Project's GHG emission reduction strategies are summarized below and are described in detail in Section 2.1, Global Climate Change and Greenhouse Gas Emissions, of the Recirculated Portions of the EIR:

- Installing electric vehicle charging stations at all on-site residences and in on-site commercial areas;
- Providing subsidies to residents to purchase an electric vehicle;
- Funding program for electric school buses;
- Subsidy program for the replacement of diesel or compressed natural gas (CNG) transit buses with electric buses;
- Implementing a CEC-compliant Zero Net Energy program for all residential and commercial development areas, private recreation facilities, and public facilities;
- Using solar water heating of swimming pools at private recreation centers;
- All construction-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry;
- Funding the installation of off-site electric vehicle charging stations and the implementation of an off-site building retrofit program; and
- Fully offseting to zero all remaining operational emissions by funding activities that directly reduce or sequester GHG emissions or, if necessary, by obtaining certified carbon credits from a recognized carbon registry.

Thus, with inclusion of these GHG emission reduction strategies and the mitigation measures set forth in the Final EIR prepared for the Project (October 2011), the Project would incorporate the substantive requirements of PEIR Mitigation Measure MM-GHG15.

The example GHG mitigation measures set forth in Appendix G of the PEIR generally address actions to be taken by local jurisdictions, as opposed to measures applicable to individual development projects; these measures, therefore, are not applicable to the Project. However, there is one example mitigation measure that includes actions to be taken by project proponents: example Mitigation Measure GHG2.

Example Mitigation Measure GHG2 addresses the implementation of a broad range of measures during Project construction and operations that reduce GHG emissions. These include fuel and energy efficiency measures, measures to reduce GHG emissions during construction, solid waste recycling during construction, and the planting of shade trees. The Project would implement the measures set forth in example Mitigation Measure GHG2 through a combination of the GHG emission-reducing mitigation measures described above, design strategies, statewide regulatory standards and initiatives, mitigation measures included in the Final EIR (October 2011), and additional commitments by the Project applicant that would further achieve GHG reductions. (See Table 1 for the full text of example Mitigation Measure GHG2.)

Example Mitigation Measures GHG1 and GHG3 through GHG8 apply to local jurisdictions (i.e., SCAG member cities and county governments) and, therefore, are not directly applicable to the Project. While not directly applicable, the Project would not inhibit the implementation of these measures by the County of Los Angeles, the local agency with jurisdiction over the Project. Moreover, the Project would implement all of these example mitigation measures by its consistency with Los Angeles County's Community Climate Action Plan, establishing public outreach activities, facilitating pedestrian and bicycle modes of transportation, implementing solid waste reduction and water conservation measures, and incorporating energy efficiency measures within on-site residential and commercial development areas. The only exception is example Mitigation Measure GHG8, which addresses the implementation of educational programs within schools, which is beyond the ability of the Project applicant to implement. (See Table 1 for the full text of example Mitigation Measures GHG1 and GHG3 through GHG8.)

A detailed analysis of the Project's implementation of GHG Mitigation Measure MM-GHG15, as well as the example mitigation measures set forth in PEIR Appendix G is presented in Table 1 starting on page 20 of this analysis. As shown by the analysis presented above and expanded upon in Table 1, the Project would incorporate the substantive requirements of the GHG mitigation measures set forth within the 2012-2035 RTP/SCS.

B. 2016-2040 RTP/SCS

The Final PEIR for the 2016-2040 RTP/SCS identifies mitigation measures for each of the environmental topics analyzed in the PEIR. For each environmental topic, these mitigation measures are presented under the following two subheadings: (1) SCAG Mitigation Measures, and (2) Project Level Mitigation Measures. The analysis presented below addresses those GHG-related measures identified as Project Level Mitigation Measures; measures identified as SCAG Mitigation Measures are measures that relate to actions that will be taken by SCAG to implement the 2016-2040 RTP/SCS and, for this reason, these measures are not analyzed further as they are not applicable to an individual development such as the proposed Project.

SCAG modified the approach for presenting mitigation measures in the Final PEIR for the 2016-2040 RTP/SCS, when compared to the approach used in the PEIR for the 2012-2035 RTP/SCS. Specifically, the Final PEIR for the 2016-2040 RTP/SCS presents all aspects of the mitigation measures solely within the EIR section for each environmental topic, whereas the PEIR for the 2012-2035 RTP/SCS, as described above, presents its mitigation measures in two places (i.e., the EIR section for each environmental topic and example mitigation measures for local agencies in Appendix G of the PEIR). In essence, SCAG streamlined the presentation of the mitigation measures in the Final PEIR for the 2016-2040 RTP/SCS by consolidating all recommended mitigation measures for each environmental topic in a single place. Specific to GHG, all mitigation has been incorporated into Final PEIR Mitigation Measure MM-GHG-3(b). (See Table 2 for the full text of Mitigation Measure MM-GHG-3(b).)

While the presentation of the mitigation measures changed between the PEIR for the 2012-2035 RTP/SCS and the Final PEIR for the 2016-2040 RTP/SCS, the content of the GHG mitigation measures in the two documents is very similar. Specifically, measures addressing energy efficiency, transit use and active transportation (pedestrian and bicycle), construction practices, solid waste management, water conservation, and the planting of shade trees are common to the PEIR for both the 2012-2035 RTP/SCS and the 2016-2040 RTP/SCS. Building on this common base, the Final PEIR for the 2016-2040 RTP/SCS expands some of the measures included in the PEIR for the 2012-2035 RTP/SCS, particularly those relating to fuel efficiency, as well as employee trip reduction and parking management strategies. The Final PEIR for the 2016-2040 RTP/SCS also added some new measures that recommend the following: (1) incorporating into a project the GHG reduction measures that are identified in an adopted plan to reduce GHG emissions, (2) land use siting and design measures that reduce GHG emissions, and (3) the use of off-site measures to mitigate a project's GHG emissions.

As discussed above, the Project would implement a series of GHG emission-reducing mitigation measures that collectively would reduce GHG emissions related to mobile source emissions, emissions related to energy use, and emissions generated during Project construction. In addition, the Project's recommended mitigation framework requires that all remaining operation-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, by obtaining certified carbon credits from a recognized carbon registry. The Project, by reducing its GHG emissions to zero, would be carbon neutral (i.e., Project development would not increase GHG emission levels).

The key elements of the Project's GHG emission reduction strategies are summarized above and are described in detail in Section 2.1, Global Climate Change and Greenhouse Gas Emissions, of the Recirculated Portions of the EIR. The Project's GHG emission-reducing mitigation measures, design strategies, statewide regulatory standards and initiatives, and the mitigation measures set forth in the Final EIR prepared for the Project (October 2011) would incorporate the substantive requirements of the GHG reduction measures common to both the 2012-2035 RTP/SCS and the 2016-2040 RTP/SCS, as well as those measures from the 2016-2040 RTP/SCS that further address fuel efficiency, employee trip reduction, and parking management strategies.

With regard to the new measures included in Mitigation Measure MM-GHG-3(b), such as Climate Action Plan consistency and land use siting and design, the Project would be consistent with the Unincorporated Los Angeles County Community Climate Action Plan (see Appendix 2.1-B of the Mission Village Recirculated Portions of the EIR). The Project also would implement land use siting and design measures that would reduce GHG emissions through the creation of complementary neighborhoods (planning areas) that provide a wide range of land uses that give future residents convenient access to commercial, recreational, and public facilities. Within the Project Site the highest intensity of uses is located in and around the Village Center, an area designed in a "main street" setting that includes plazas, courtyards, and promenades that connect the residential, retail, and office uses in this area both horizontally and vertically. This clustering of development around a centralized core provides for growth in a concentrated, rather than a dispersed pattern. The Village Center also would include a mobility hub, bus transfer station, a library, and a community recreation center in a pedestrian friendly environment that connects these uses with sidewalk areas that facilitate access and social interaction. Through the Project's community design, livability strategies have been incorporated into the Project that include the establishment of an extensive network of on-site pedestrian and bicycle trails that would be part of the overall system that would connect all of the Newhall Ranch villages, as well as on-site transit facilities (bus stops, a mobility hub, and a bus transfer station) that would also be part of the overall transit system that would connect all of the Newhall Ranch villages to promote alternative transportation and to facilitate mobility and access within the Project Site and within the Project vicinity. The Project also would support the 2016-2040 RTP/SCS strategy with regard to Neighborhood Mobility Areas (NMA) by encouraging the use of active and other non-automobile modes of transportation (e.g., transit) for short trips.

With regard to employment opportunities, the Project includes over 1.5 million square feet of commercial uses and is located near the Valencia Commerce Center, Valencia Industrial Center, and the Valencia Corporate Center, which, collectively, have been approved for over 25 million square feet of development and, as such, are some of the largest employment centers in the Santa Clarita Valley. Thus, vehicle trips and VMT would be reduced due to the proximity of these employment centers to the on-site residential areas and the interconnection of these uses via the extensive network of bicycle and pedestrian trails that would be developed, and also would provide connections to the overall trail system connecting all of the Newhall Ranch villages and the existing and planned regional trail systems within the Santa Clarita Valley. In addition, the Project would implement a Complete Streets program, pursuant to the Complete Streets Act of 2008 (AB 1358), as applicable, to further encourage the use of active and other non-automobile modes of transportation for short trips.

In addition, due to its overall location, the Los Angeles County Board of Supervisors previously determined that the Newhall Ranch project site, which includes Mission Village, avoids leapfrog development and accommodates projected regional growth in a location that is adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers. While the Project Site is not designated as a High Quality Transit Area (HQTA) by the 2016-2040 RTP/SCS, the pattern of Project development would achieve the benefits of a HQTA in terms of providing households with safe and convenient transportation alternatives to driving alone.

The Project's GHG emission-reducing mitigation measures, as described above, also include the following off-site measures that reduce the Project's GHG emissions: (1) installation of electric vehicle charging stations, and (2) implementation of a building retrofit program. These off-site measures, in addition to reducing the Project's GHG emissions, also implement the recommendations presented in Final PEIR Mitigation Measure MM-GHG-3(b).

A detailed analysis of the Project's incorporation of the substantive requirements of GHG Mitigation Measure MM-GHG-3(b) is presented in Table 2 starting on page 31 of this analysis. Based on the analysis presented above and expanded upon in Table 2, the Project would incorporate the substantive requirements of the GHG mitigation measures set forth within the Final PEIR for the 2016-2040 RTP/SCS.

CONCLUSION

As CARB has accepted the GHG reduction levels achieved by the 2016-2040 RTP/SCS, and previously as set forth in the 2012-2035 RTP/SCS, the Project must meet the following criteria to be exempt from conducting further analysis of GHG emissions from cars and light-duty trucks:

- The project is consistent with the use designation, density, and building intensity for the project area as set forth in the applicable RTP/SCS;
- The project is consistent with the applicable policies for the project area as set forth in the applicable RTP/SCS;
- The project is a residential or mixed-use residential project where at least 75 percent of the total building square footage of the project consists of residential use, or a project that is a TPP; and
- The project incorporates all feasible mitigation measures, performance standards, or criteria set forth in the PEIR for the applicable RTP/SCS.

The analysis provided above demonstrates that the Project is consistent with the use designation, density, and intensity levels that have been established for the Project Site. In addition, the Project is part of a mixed-use project with more than 75 percent of the total building square footage consisting of residential development. Further, as shown above, the Project would be consistent with the applicable policies set forth in both the 2012-2035 and 2016-2040 RTP/SCS. Finally, the analysis provided above demonstrates that the Project would incorporate the substantive requirements of all applicable mitigation measures, performance standards, and criteria set forth in the PEIR for both the 2012-2035 and 2016-2040 RTP/SCS. As all SB 375 CEQA streamlining requirements have been met, additional analysis of GHG impacts from cars and light-duty trucks is not required pursuant to the provisions set forth in SB 375 and Public Resources Code § 21159.28.

Table 1
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

Mitigation Measures	Consistency Analysis
2012-2035 RTP/SCS	
MM-GHG15: Local agencies can and should comply with the requirements of CEQA to mitigate impacts from greenhouse gas emissions as applicable and feasible. Local agencies may refer to Appendix G of this PEIR for examples of potential mitigation to consider when appropriate in reducing environmental impacts of future projects.	**Consistent.** The Project would implement a series of GHG emission-reducing mitigation measures that, in conjunction with other design strategies and statewide regulatory standards and initiatives, would reduce GHG emissions to a less than significant level by reducing its GHG emissions to zero (see Section 2.1 of the Recirculated Portions of the EIR). The Project, by reducing its GHG emissions to zero, would be carbon neutral (i.e., Project development would not increase GHG emission levels). The following is an overview of the mitigation measures that would be implemented by the Project (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions, of the Recirculated Portions of the EIR for additional information): <u>Mobile Source Emissions</u> • 100% of the Project's residential units would be equipped with electric vehicle charging stations. • 50% of the Project's residential units would receive a $1,000 subsidy to purchase one electric vehicle each. • The Project would achieve a 15.5 percent reduction in total vehicle miles traveled through the implementation of a comprehensive TDM program (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). • Electric vehicle charging stations would be installed throughout the commercial areas on the Project Site. • Funding program for electric school buses. • Subsidy program for the replacement of diesel or CNG transit buses with electric buses.

Table 1 (Continued)
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

	• Installation of off-site electric vehicle charging stations. Energy Emissions • Zero Net Energy for all residential development areas. • Zero Net Energy for all commercial development areas, private recreation centers, and public facilities. • Solar water heating of swimming pools at the on-site private recreation centers. Construction Emissions • All construction-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry. Additional GHG Emission Reduction Strategies • Existing building retrofit program. • All remaining operation-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry. In summary, the Project's GHG emission-reducing mitigation measures would incorporate the substantive requirements of MM-GHG15.
Appendix G: Examples of Measures that Could Reduce Impacts from Planning, Development and Transportation Projects	
GHG1: SCAG member cities and the county governments may adopt and implement Climate Actions Plans (CAPS, also known as Plans for the Reduction of Greenhouse Gas Emissions as described in CEQA Guidelines Section 15183.5 Tiering and Streamlining the Analysis of Greenhouse Gas Emissions)	**Not Applicable.** This example mitigation measure focuses on local jurisdictions adopting and implementing Climate Action Plans and, as such, is not applicable to the Project. While this example mitigation measure is targeted for implementation by local jurisdictions, the Project would not inhibit its implementation.

Table 1 (Continued)
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

ADDITIONAL ACTIVITY Climate Action Plans generally follow the steps and contain components described below. a) Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within their respective jurisdictions; b) Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable; c) Identify and analyze the GHG emissions resulting for specific actions or categories of actions anticipated within their respective jurisdictions; d) Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level; e) Establish a mechanism to monitor the plan's progress toward achieving that level and to require amendment if the plan is not achieving specified levels; and f) Be adopted in a public process following environmental review. CAPs may, when appropriate, incorporate planning and land use measures from the California Attorney General's latest list of example policies to address climate change at both the plan and project level. Specifically, at the plan level, land use plans may, when appropriate, incorporate planning and land use measures from the California Attorney General's latest list of example policies to address climate change (http://ag.ca.gov/globalwarming/pdf/ GP_policies.pdf), including, but not limited to policies from that web page such as: • Smart growth, jobs/housing balance, transit-oriented development, and infill development through land use designations, incentives and fees, zoning, and public-private partnerships	The Los Angeles County Board of Supervisors adopted the Unincorporated Los Angeles County Community Climate Action Plan (Plan) in October 2015. This Plan implements and meets the requirements of this mitigation measure for the unincorporated areas of Los Angeles County, which includes the Project Site. An analysis of this Plan with regard to the Project has been conducted. This analysis determined that the Project is consistent with this Plan (see Appendix 2.1-B of the Mission Village Recirculated Portions of the EIR).

Table 1 (Continued)
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

• Create transit, bicycle, and pedestrian connections through planning, funding, development requirements, incentives and regional cooperation, and create disincentives for auto use • Energy and water-efficient buildings and landscaping through ordinances, development fees, incentives, project timing, prioritization, and other implementing tools In addition, member cities and the county governments may incorporate, as appropriate, policies to encourage implementation of the Attorney General's list of project specific mitigation measures available at the following web site: http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf, including, but not limited to measures from the web page such as: • Adopt a comprehensive parking policy that discourages private vehicle use and encourages the use of alternative transportation • Build or fund a major transit stop within or near development • Provide public transit incentives such as free or low-cost monthly transit passes to employees, or free ride areas to residents and customers • Incorporate bicycle lanes, routes and facilities into street systems, new subdivisions, and large developments • Require amenities for non-motorized transportation, such as secure and convenient bicycle parking. They may also incorporate, when appropriate, planning and land use measures from additional resources listed by the California Attorney General at the following webpage: http://ag.ca.gov/globalwarming/ceqa/resources.php. In addition, CAPs may also incorporate analysis of climate change adaptation, in recognition of the likely and potential effects of climate change in the future regardless of the level of mitigation and in conjunction with Executive Order S-13-08, which seeks to enhance the	

Table 1 (Continued)
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

State's management of climate impacts including sea level rise, increased temperatures, shifting precipitation, and extreme weather events by facilitating the development of State's first climate adaptation strategy.	
GHG2: Project sponsors may require Best Available Control Technology (BACT) during construction and operation of projects, including: a) Solicit bids that include use of energy and fuel efficient fleets; b) Solicit preference construction bids that use BACT, particularly those seeking to deploy zero- and/or near zero emission technologies; c) Employ use of alternative fueled vehicles; d) Use lighting systems that are energy efficient, such as LED technology; e) Use CEQA Guidelines Appendix F, Energy Conservation, to create an energy conservation plan; f) Streamline permitting process to infill, redevelopment, and energy-efficient projects; g) Use an adopted emissions calculator to estimate construction-related emissions; h) Use the minimum feasible amount of GHG-emitting construction materials that is feasible; i) Use of cement blended with the maximum feasible amount of flash or other materials that reduce GHG emissions from cement production; j) Use of lighter-colored pavement where feasible; k) Recycle construction debris to maximum extent feasible; and l) Plant shade trees in or near construction projects where feasible.	**Consistent.** The substantive requirements of Items a), b), and c) of this example mitigation measure would be incorporated by the Project's GHG emission-reducing mitigation measures. As described in detail in the analysis of Project consistency with 2012 PEIR Mitigation Measure MM-GHG15, above, applicable Project GHG emission-reducing mitigation measures include the following: (1) equipping all residential units with electric vehicle charging stations (Mitigation Measure MV 4.23-4/2-4); (2) providing subsidies to residences to purchase an electric vehicle (Mitigation Measure MV 4.23-4/2-4); (3) installing electric vehicle charging stations in commercial areas on the Project Site (Mitigation Measure MV 4.23-5/2-5); (4) funding program for electric school buses (Mitigation Measure MV 4.23-8/2-8); (5) subsidy program for the replacement of diesel or CNG transit buses with electric buses (Mitigation Measure MV 4.23-9/2-9); and (6) installing off-site electric vehicle charging stations (Mitigation Measure MV 4.23-12/2-12). In addition, pursuant to Mitigation Measure MV 4.23-10/2-10, all construction-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry. The Project, by reducing its GHG emissions to zero, would be carbon neutral (i.e., Project development would not increase GHG emission levels). The substantive requirements of Items a), b), and c) of this example mitigation measure would be further incorporated by the following mitigation measures that address construction activities: MV 4.7-1, MV 4.7-3, MV 4.7-4, MV 4.7-13, and MV 4.7-16 (see Section 2.2.2.2 Mission Village Mitigation Measures of the Mission Village CEQA Findings and Statement of Overriding Considerations, October 2011). The full text of these mitigation measures is provided in **Appendix D** of this analysis.

Table 1 (Continued)
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

	The substantive requirements of Items d), and e) of this example mitigation measure would be incorporated by the GHG emission-reducing mitigation measures described above. As described in detail in the analysis of Project consistency with 2012 PEIR Mitigation Measure MM-GHG15, above, applicable Project GHG emission-reducing mitigation measures include the following: (1) all on-site residential and commercial development areas, as well as the private recreation centers and public facilities, would operate in accordance with the Project's Zero Net Energy program (Mitigation Measures MV 4.23-1/2-1 and MV 4.23-2/2-2); and (2) the swimming pools at the on-site private recreation centers would use solar water heating (Mitigation Measure MV 4.23-3/2-3). Further, pursuant to Mitigation Measure MV 4.23-13/2-13, all remaining operation-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry, which also will contribute to the incorporation of the substantive requirements of these components of this example mitigation measure. The Project, by reducing its GHG emissions to zero, would be carbon neutral (i.e., Project development would not increase GHG emission levels). Implementation of Item f) of this example mitigation measure is under the jurisdiction of the County of Los Angeles and is not applicable to the Project. While this example mitigation measure is targeted for implementation by local jurisdictions, the Project does not inhibit its implementation. The California Emission Estimator Model version 2013.2.2 (CalEEMod) was used as the primary tool to quantify the Project's GHG emissions (see Appendix 2.1-A of the Recirculated Portions of the EIR). CalEEMod is a statewide program designed to calculate GHG emissions from development projects in California, and was developed by the SCAQMD with input from other California air districts. Thus, the substantive requirements of Item g) of this example mitigation measure have been incorporated. The Project would not impair the use of the types of construction materials and production methods identified in Items h) and i) of this example mitigation measure. Further, pursuant to Mitigation Measure MV 4.23-10/2-

Table 1 (Continued)
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

	10, all construction-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry. The Project, by reducing its GHG emissions to zero, would be carbon neutral (i.e., Project development would not increase GHG emission levels). Thus, the substantive requirements of Items h) and i) of this example mitigation measure have been incorporated. The substantive requirements of Items j) and l) of this example mitigation measure are incorporated by the Project. The Project development would include an extensive tree planting program. The inclusion of new vegetation would increase shade throughout the Project Site, which currently is characterized by dry farming, agricultural crops, and low brush. The substantive requirements of Item k) of this example mitigation measure is incorporated by EIR Mitigation Measure MV 4.10-1, which requires that prior to the issuance of grading permits, the Project applicant prepare a Waste Management Plan pursuant to Los Angeles County Code, title 20, chapter 20.87, Construction and Demolition Debris Recycling (see Section 2.3.2.2 Mission Village Mitigation Measures of the Mission Village CEQA Findings and Statement of Overriding Considerations, October 2011). The full text of this mitigation measure is provided in **Appendix D** of this analysis.
GHG3: Local jurisdictions may establish a coordinated, creative public outreach activities, including publicizing the importance of reducing GHG emissions and steps community members may take to reduce their individual impacts.	**Not applicable.** This example mitigation measure recommends that local jurisdictions establish public outreach activities that educate the public as to the importance of GHG-related issues and as such, is not applicable to the Project. While this example mitigation measure is targeted for implementation by local jurisdictions, the Project would not inhibit its implementation. The Project applicant has also committed to implementing an educational program, targeted at both residents and commercial businesses, regarding services that could affect water use and quality. The Valencia Water Company, which would provide water supply service to the Project site, operates a water conservation management program that includes, at no cost, visits to

Table 1 (Continued)
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

	residences to inspect the residence for leaks, installation of water saving devices, and sharing conservation information with the occupant. Pursuant to EIR Mitigation Measure SP-4.15-3, the initial purchaser of each residential unit within the Specific Plan area would be provided with educational or instructional materials addressing recyclable materials. In addition, the local waste management provider would distribute and/or have available online informational materials regarding reducing waste and its recycling services during the ordinary course of business. Both the Los Angeles County Metropolitan Transportation Authority and Santa Clarita Transit provide extensive transportation services in the vicinity of the Project Site. Information on these services would be readily available, via the agencies' websites, to all future residents and occupants of the Project. In addition, pursuant to EIR Mitigation Measure SP-4.10-14, the sellers of new residential units would be required to distribute brochures and other relevant information published by the SCAQMD (or a similar organization) to new homeowners regarding the importance of reducing vehicle miles traveled, as well as information on local opportunities for public transit and ridesharing. In addition, EIR Mitigation Measure MV 4.7-21 states that the Project applicant will implement or contribute to public outreach programs.
GHG4: Pedestrian and Bicycle Promotion: Local jurisdictions may work with local community groups and business associations to organize and publicize walking tours and bicycle events, and to encourage pedestrian and bicycle modes of transportation.	**Not applicable.** This example mitigation measure focuses on local jurisdictions working with local community groups and business associations and as such, is not applicable to the Project. While this example mitigation measure is targeted for implementation by local jurisdictions, the Project does not inhibit its implementation. Moreover, the Project includes an extensive network of trails that encourage pedestrian and bicycle modes of transportation by connecting a supportive mix of on-site residential, commercial (retail/office), school, park, and library uses. The integral role of this trail system in the community design established for the Project Site is reflected in the Mission Village Trails Plan, EIR Figures 1.0-19 and 1.0-20 (see **Appendix E** of this analysis). This trail plan sets forth a comprehensive system of bicycle and pedestrian circulation throughout the Project Site that ensures each

Table 1 (Continued)
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

	residence and all community service areas are linked via a practical, aesthetically pleasing trail and sidewalk system. The Project's trail system consists of a hierarchy of trails with varying sizes and functionality that connects to the overall trail system connecting all of the Newhall Ranch villages (see Figure 2.4-5 [Master Trails Plan] from the Newhall Ranch Specific Plan – see **Appendix E** of this analysis), as well as providing connections to the existing and planned regional trail systems within the Santa Clarita Valley. Specifically, this network of trails would extend the existing and planned regional trails into the Project Site and, by doing so, facilitate alternative transportation objectives in terms of access to on-site and off-site destinations. Bicycle use within the Project Site would also be facilitated via the implementation of an on-site bikeshare program that would offer financial subsidies to encourage participation (see Mitigation Measure MV 4.23-6/2-6).
GHG5: Waste Reduction: Local jurisdictions may organize workshops on waste reduction activities for the home or business, such as backyard composting, or office paper recycling, and may schedule recycling drop-off events and neighborhood chipping/mulching days.	**Not applicable.** This example mitigation measure focuses on local jurisdictions organizing workshops on waste reduction activities and scheduling recycling events. As such, it is not applicable to the Project. While this example mitigation measure is targeted for implementation by local jurisdictions, the Project does not inhibit its implementation. Moreover, the Project would meet the requirements of all applicable solid waste diversion, storage, and disposal regulations, which include providing recycling areas that are conveniently located, secured and protected against environmental conditions, clearly marked, and adequate in capacity, number and distribution. In addition, pursuant to EIR Mitigation Measure SP-4.15-3, the initial purchaser of each residential unit within the Specific Plan area would be provided with educational or instructional materials addressing recyclable materials. In addition, the local waste management provider would distribute and/or have available online informational materials regarding reducing waste and its recycling services during the ordinary course of business.
GHG6: Water Conservation: Local jurisdictions may support and/or sponsor workshops on water conservation activities, such as selecting and	**Not applicable.** This example mitigation measure focuses on local jurisdictions organizing workshops on water conservation activities and as such, is not applicable to the Project. While this example mitigation measure is targeted for implementation by local jurisdictions, the Project does not inhibit its

Table 1 (Continued)
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

planting drought tolerant, native plants in landscaping, and installing advanced irrigation systems.	implementation. Moreover, the Project would implement the following water conservation measures: (1) use of native (or non-native/non-invasive) and drought-tolerant vegetation when revegetating the Project Site; (2) use of reclaimed/recycled water for landscape irrigation, and the infrastructure needed to deliver and use this water would be provided as part of the Newhall Ranch Water Reclamation Plant; (3) implement an educational program, targeted at both residents and commercial businesses, regarding services that could affect water use and quality; (4) rely on evapotranspiration (i.e., weather-sensitive sprinklers) to reduce water demand and runoff; and (5) compliance with all applicable state, regional, and local regulations regarding water efficiency. In addition, the Valencia Water Company, which would provide water supply service to the Project Site, is a member of the California Urban Water Conservation Council ("CUWCC"). The primary mission of the CUWCC is to increase efficient water use statewide through partnerships among urban water agencies, public interest organizations, and private entities. Accordingly, the CUWCC has committed to implementing numerous Best Management Practices to improve water efficiency. These Best Management Practices address residential surveys; retrofits; audits; metering; landscaping; clothes washers; public information; school education; wholesaler incentives; rates; waste prohibitions; etc. In terms of implementation, the Valencia Water Company operates a water conservation management program which includes, at no cost, visits to residences to inspect the residence for leaks, installing water saving devices, and sharing conservation information with the occupant.

Table 1 (Continued)
SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Program EIR Mitigation Measures

GHG7: Energy Efficiency: Local jurisdictions may organize workshops on steps to increase energy efficiency in the home or business, such as weatherizing the home or building envelope, installing smart lighting systems, and how to conduct a self-audit for energy use and efficiency.	**Not applicable.** This example mitigation measure focuses on local jurisdictions organizing workshops on steps to increase energy efficiency in the home or business and as such, is not applicable to the Project. While this example mitigation measure is targeted for implementation by local jurisdictions, the Project does not inhibit its implementation. Moreover, and as described above, energy efficiency within the Project Site will be achieved by the GHG emission-reducing mitigation measures described above. As described in detail in the analysis of Project consistency with 2012 PEIR Mitigation Measure MM-GHG15, above, applicable Project GHG emission-reducing mitigation measures include the following: (1) all on-site residential and commercial development areas, as well as the private recreation centers and public facilities would operate in accordance with the Project's Zero Net Energy program (Mitigation Measures MV 4.23-1/2-1 and MV 4.23-2/2-2); and (2) the swimming pools at the on-site private recreation centers would use solar water heating (Mitigation Measure MV 4.23-3/2-3).
GHG8: Schools Programs: Local jurisdictions may develop and implement a program to present information to school children about climate change and ways to reduce GHG emissions, and may support school-based programs for GHG reduction, such as school based trip reduction and the importance of recycling.	**Not applicable.** This example mitigation measure focuses on local jurisdictions developing and implementing programs to educate school children regarding GHG related issues. As such, it is not applicable to the Project and the Project does not inhibit its implementation.

Table 2
SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Draft Program EIR Mitigation Measures

Mitigation Measures	Consistency Analysis
MM-GHG-3(b): Consistent with the provisions of Section 15091 of the State CEQA Guidelines, SCAG has identified mitigation measures capable of avoiding or reducing the potential to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases that are within the jurisdiction and authority of California Air Resources Board, local air districts, and/or Lead Agencies. Where the Lead Agency has identified that a project has the potential for significant effects, the Lead Agency can and should consider mitigation measures to mitigate the significant effects of greenhouse gas impacts to ensure compliance with all applicable laws, regulations, governing CAPs, general plans, adopted policies and plans of local agencies, and standards set forth by responsible public agencies for the purpose of reducing emissions of greenhouse gases, as applicable and feasible. Consistent with Section 15126.4(c) of the State CEQA Guidelines, compliance can be achieved through adopting greenhouse gas mitigation measures that have been used for projects in the SCAG region as set forth below, or through comparable measures identified by Lead Agency: • Measures in an adopted plan or mitigation program for the reduction of emissions that are required as part of the Lead Agency's decision. • Reduction in emissions resulting from a project through implementation of project features, project design, or other measures, such as those described in Appendix F of the State CEQA Guidelines. • Off-site measures to mitigate a project's emissions.	**Consistent.** The Project would implement a series of GHG emission-reducing mitigation measures that, in conjunction with other design strategies and statewide regulatory standards and initiatives, would reduce GHG emissions during construction and operations to a less than significant level by reducing its GHG emissions to zero (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions, of the Recirculated Portions of the EIR). The Project, by reducing its GHG emissions to zero, would be carbon neutral (i.e., Project development would not increase GHG emission levels). The implementation of these measures would be assured via the Mitigation Monitoring and Reporting Program (MMRP) that will be part of the certification of the Final Additional Analysis by the County of Los Angeles. The following provides an analysis of Project incorporation of the substantive requirements of each of the measures set forth in the bullets included in MM-GHG-3(b). <u>First Bullet of this Mitigation Measure</u> The Los Angeles County Board of Supervisors adopted the Unincorporated Los Angeles County Community Climate Action Plan (Plan) in August 2015. This Plan implements and meets the guidance provided in the first bullet of this mitigation measure for the unincorporated areas of Los Angeles County, which includes the Project Site. The Project is consistent with this Plan (see Appendix 2.1-B of the Mission Village Recirculated Portions of the EIR). Thus, the Project incorporates the substantive requirements of the first bullet of this mitigation measure. The following is an overview of the GHG emission-reducing mitigation measures that will be implemented by the Project (see Section 2.1, Global Climate Change and Greenhouse Gas Emissions, of the Recirculated Portions of the EIR for additional information): <u>Mobile Source Emissions</u> • 100% of the Project's residential units would be equipped with electric vehicle charging stations.

Table 2 (Continued)
SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Draft Program EIR Mitigation Measures

• Measures that consider incorporation of Best Available Control Technology (BACT) during design, construction and operation of projects to minimize GHG emissions, including but not limited to: o Use energy and fuel efficient vehicles and equipment. Project proponents are encouraged to meet and exceed all EPA/NHTSA/CARB standards relating to fuel efficiency and emission reduction; o Use alternative (non-petroleum based) fuels; o Deployment of zero- and/or near zero emission technologies as defined by CARB; o Use lighting systems that are energy efficient, such as LED technology; o Use the minimum feasible amount of GHG-emitting construction materials that is feasible; o Use cement blended with the maximum feasible amount of fly ash or other materials that reduce GHG emissions from cement production; o Incorporate design measures to reduce GHG emissions from solid waste management through encouraging solid waste reduction, recycling and reuse; o Incorporate passive solar and other design measures to reduce energy consumption and increase production and use of renewable energy; o Incorporate design measures like Water Sense fixtures and water capture to reduce water consumption; o Use lighter-colored pavement where feasible; o Recycle construction debris to maximum extent feasible; o Protect and plant shade trees in or near construction projects where feasible; and o Solicit bids that include concepts listed above.	• 50% of the Project's residential units would receive a $1,000 subsidy to purchase one electric vehicle each. • The Project would achieve a 15.5 percent reduction in total vehicle miles traveled through the implementation of a comprehensive TDM program (see Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). • Electric vehicle charging stations would be installed throughout the commercial areas on the Project Site. • Funding program for electric school buses. • Subsidy program for the replacement of diesel or CNG transit buses with electric buses. • Installation of off-site electric vehicle charging stations. <u>Energy Emissions</u> • Zero Net Energy for all residential development areas. • Zero Net Energy for all commercial development areas, private recreation centers, and public facilities. • Solar water heating of swimming pools at the on-site private recreation centers. <u>Construction Emissions</u> • All construction-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry. <u>Additional GHG Emission Reduction Strategies</u> • Existing building retrofit program. • All remaining operation-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry. <u>Second Bullet of this Mitigation Measure</u>

Table 2 (Continued)
SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Draft Program EIR Mitigation Measures

• Measures that encourage transit use, carpooling, bike-share and car-share programs, active transportation, and parking strategies, including, but not limited to, transit-active transportation coordinated strategies, increased bicycle carrying capacity on transit and rail vehicles; • Incorporating bicycle and pedestrian facilities into project designs, maintaining these facilities, and providing amenities incentivizing their use; providing adequate bicycle parking and planning for and building local bicycle projects that connect with the regional network; • Improving transit access to rail and bus routes by incentives for construction of transit facilities within developments, and/or providing dedicated shuttle service to transit stations; and • Adopting employer trip reduction measures to reduce employee trips such as vanpool and carpool programs, providing end-of-trip facilities, and telecommuting programs. • Designate a percentage of parking spaces for ride-sharing vehicles or high-occupancy vehicles, and provide adequate passenger loading and unloading for those vehicles; • Land use siting and design measures that reduce GHG emissions, including: o Developing on infill and brownfields sites; o Building high density and mixed use developments near transit; o Retaining on-site mature trees and vegetation, and planting new canopy trees; Measures that increase vehicle efficiency, encourage use of zero and low emissions vehicles, or reduce the carbon content of fuels, including constructing or encouraging construction of electric vehicle charging stations or neighborhood	The second bullet of this mitigation measure addresses a project's reductions in emissions and includes a specific reference to Appendix F of the State CEQA Guidelines, which addresses the analysis of energy conservation in CEQA documents. The Project would implement a broad program of sustainability and "smart growth" principles that would reduce emissions and create a better environment as referenced in this mitigation measure. Specific measures incorporated into the Project that achieve a reduction in emissions include the following: (1) a broad mix of complementary land uses that offer housing, employment, shopping, recreation, and other community-serving activities and opportunities; (2) design principles to reduce vehicle miles traveled and commuting distances; (3) access to transit; (4) the provision of open space and recreational amenities; (5) pedestrian and bicycle trail connectivity; (5) the preservation of natural areas; (6) water and energy conservation; and (7) the incorporation of green building techniques. The Project would also contribute to a more efficient transportation system by reducing congestion and emissions through its community design, which facilitates and encourages the use of public transit by providing on site transit stops, a mobility hub, and a bus transfer station. These transit facilities would be part of the overall transit system that would connect all of the Newhall Ranch villages as well as be part of a comprehensive Valley-wide transit system (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). The Project also incorporates measures to reduce air emissions and greenhouse gas emissions, as described above and in greater detail in Section 2.1, Global Climate Change and Greenhouse Gas Emissions of this Recirculated Portions of the EIR, as well as Section 4.7, Air Quality of the 2011 Final EIR. Appendix F of the State CEQA Guidelines, as discussed above, addresses the issue of energy conservation in CEQA documents. As described in detail in the analysis of Project consistency with the first bullet of this mitigation measure, above, Project GHG emission-reducing mitigation measures that address energy efficiency include the following: (1) all on-site residential and commercial development areas, as well as the private recreation centers and public facilities would operate in accordance with the Project's Zero Net Energy program (Mitigation Measures MV 4.23-1/2-1 and MV 4.23-2/2-2); and (2) the swimming pools at the

Table 2 (Continued)
SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
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electric vehicle networks, or charging for electric bicycles; and o Measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse.	on-site private recreation centers would use solar water heating (Mitigation Measure MV 4.23-3/2-3). Additional ways the Project would reduce its GHG emissions are discussed throughout this analysis. <u>Third Bullet of this Mitigation Measure</u> Project GHG emission-reducing mitigation measures that address off-site measures, as described in detail in the analysis of Project consistency with the first bullet of this mitigation measure, above, include the following: (1) installing off-site electric vehicle charging stations (Mitigation Measure MV 4.23-12/2-12); and (2) establishing an existing building retrofit program (Mitigation Measure MV.23-11/2-11). <u>Fourth Bullet of this Mitigation Measure</u> The fourth bullet of this mitigation measure sets forth a wide array of measures that minimize GHG emissions. The following analysis addresses this bullet point as well as all of the measures included as sub-bullets. The analysis provided above also addresses the measures identified in the fourth bullet of this mitigation measure with regard to the use of energy, fuel efficient vehicles and equipment, and the deployment of zero- and/or near-zero emission technologies. In addition to the measures outlined above, the following EIR mitigation measures also address the reduction of GHG emissions during Project construction: MV 4.7-1, MV 4.7-3, MV 4.7-4, MV 4.7-13, and MV 4.7-16 (see Section 2.2.2.2 Mission Village Mitigation Measures of the Mission Village CEQA Findings and Statement of Overriding Considerations, October 2011). The full text of these mitigation measures is provided in **Appendix D** of this analysis. The Project would not impair the use of the types of construction materials and production methods identified in the fourth bullet of this mitigation measure. Further, pursuant to Mitigation Measure MV 4.23-10/2-10, all construction-related GHG emissions will be fully offset to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining certified carbon credits from a recognized carbon registry.

Table 2 (Continued)
SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Draft Program EIR Mitigation Measures

	With regard to solid waste management, the Project would meet the requirements of all applicable solid waste diversion, storage, and disposal regulations, which include providing recycling areas that are conveniently located, secured and protected against environmental conditions, clearly marked, and adequate in capacity, number and distribution. In addition, pursuant to EIR Mitigation Measure SP-4.15-3, the initial purchaser of each residential unit within the Specific Plan area would be provided with educational or instructional materials addressing recyclable materials. In addition, the local waste management provider would distribute and/or have available online informational materials regarding reducing waste and its recycling services during the ordinary course of business. With regard to water conservation, the Project would implement the following water conservation measures: (1) use of native (or non-native/non-invasive) and drought-tolerant vegetation when revegetating the Project Site; (2) use of reclaimed/recycled water for landscape irrigation, and the infrastructure needed to deliver and use this water would be provided as part of the Newhall Ranch Water Reclamation Plant; (3) implementing an educational program, targeted at both residents and commercial businesses, regarding services that could affect water use and quality; (4) rely on evapotranspiration (i.e., weather-sensitive sprinklers) to reduce water demand and runoff; and (5) compliance with all applicable state, regional, and local regulations regarding water efficiency. In addition, the Valencia Water Company, which would provide water supply service to the Project Site, is a member of the California Urban Water Conservation Council ("CUWCC"). The primary mission of the CUWCC is to increase efficient water use statewide through partnerships among urban water agencies, public interest organizations, and private entities. Accordingly, the CUWCC has committed to implementing numerous Best Management Practices to improve water efficiency. These Best Management Practices address residential surveys; retrofits; audits; metering; landscaping; clothes washers; public information; school education; wholesaler incentives; rates; waste prohibitions; etc. In terms of implementation, the Valencia Water Company operates a water conservation management program that includes, at no cost, visits to residences to inspect the residence for leaks, installation of water saving devices, and the sharing of conservation information with the occupant. With regard to the use of lighter-colored pavement and the planting of shade trees, the Project would include an extensive tree planting program. The inclusion of new vegetation

Table 2 (Continued)
SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Draft Program EIR Mitigation Measures

	would increase shade throughout the Project site, which currently is characterized by dry farming, agricultural crops, and low brush. With regard to the recycling of construction debris, pursuant to EIR Mitigation Measure MV 4.10-1, the Project applicant, prior to the issuance of grading permits, would prepare a Waste Management Plan pursuant to Los Angeles County Code, title 20, chapter 20.87, Construction and Demolition Debris Recycling (see Section 2.3.2.2 Mission Village Mitigation Measures of the Mission Village CEQA Findings and Statement of Overriding Considerations, October 2011). The full text of this mitigation measure is provided in **Appendix D** of this analysis. As all of the measures outlined above would be incorporated into the Project, the Project applicant would be soliciting bids to implement these measures. <u>Fifth through Ninth Bullets of this Mitigation Measure</u> The analysis of Project incorporation of the substantive requirements of the first through fourth bullets of this mitigation measure provided above also applies to Project implementation of the fifth through ninth bullets of this mitigation measure. The following provides information regarding additional measures not discussed above that implement the fifth through ninth bullets of this mitigation measure. The Project is based on a community design that integrates transit through the provision of transit stops, a mobility hub, and a bus transfer station that link the various on-site uses (e.g., residential, commercial, parks, libraries, community facilities, etc.) (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). This community design also facilitates first mile/last mile mobility by making it more convenient and safe to walk or bicycle to the on-site transit stops, mobility hub, and bus transfer station. These transit facilities would be part of the overall transit system that would connect all of the Newhall Ranch villages as well as be part of a comprehensive Valley-wide transit system. The on-site transit stops would be implemented in accordance with County standards and transit provider requirements in a manner that would ensure safety and reliability. In addition, the Project includes right-of-way reserved for future light rail service along the south side of SR 126 within the Project Site.

Table 2 (Continued)
SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
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	The Project's comprehensive TDM Program (see Mitigation Measure MV 4.23-6/2-6) includes a series of strategies that address the fifth through ninth bullets of this mitigation measure. These include the following, which would reduce on-site tripmaking and GHG emissions generated by residents and employees: (1) on-site bus stops, a mobility hub, and bus transfer station (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR), as described above; (2) alternative work schedules and telecommute programs; (3) commute trip programs; (4) programs to provide school buses; (5) transit fare subsidies for employees and below market rate households; (6) electric vehicle subsidies; (7) neighborhood electric vehicle (NEV) subsidies; (8) tech-enabled mobility; and (9) carshare and bikeshare programs that would offer financial subsidies to encourage participation. The Project would also implement EIR Mitigation Measures MV 4.7-19 and MV 4.7-21, that require the following with regard to the issues addressed in the fifth through ninth bullets: (1) kiosks containing transit information will be constructed by the project applicant adjacent to selected future bus stops prior to initiation of bus service to the site; (2) provide residents with information regarding the availability of existing shuttle service providers and public transit between residential and commercial core areas and transit centers; (3) provide preferential parking spaces for carpools and vanpools and provide 7 foot 2 inch minimum vertical clearance in parking facilities for vanpool access; (4) utilize parking in excess of code requirements as on-site park-n-ride lots or contribute to construction of off-site lots; and (5) provide shuttles from the commercial core areas to major transit stations. The full text of Mitigation Measures MV 4.7-19 and MV 4.7-21 is provided in **Appendix D** of this analysis. The Project includes a comprehensive active transportation network consisting of an extensive pedestrian and bicycle trail system. The integral role of the pedestrian and bicycle trail system in the community design established for the Project Site is reflected in the Mission Village Trails Plan, EIR Figure 1.0-20 (see **Appendix E** of this analysis). The trail plan sets forth a comprehensive system of bicycle and pedestrian circulation throughout the Project Site that ensures each residence and all community service areas are linked via a practical, aesthetically pleasing trail and sidewalk system. The Project's trail system consists of a hierarchy of trails with varying sizes and functionality that connect to the overall trail system to be implemented throughout the other Newhall Ranch villages, as well as providing connections to the existing and planned regional trail systems within the Santa Clarita Valley. Specifically, this network of trails would extend the existing and planned regional trails into

Table 2 (Continued)
SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
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	the Project Site and, by doing so, facilitate alternative transportation objectives in terms of access to on-site and off-site destinations. In addition, many of these trails would be separated from roadways to ensure the safety of pedestrians. Bicycle use within the Project Site would also be facilitated via the implementation of an on-site bikeshare program that would offer financial subsidies to encourage participation (Mitigation Measure MV 4.23-6-2-6). Tenth Bullet of this Mitigation Measure The analysis of Project incorporation of the substantive requirements of the first through ninth bullets of this mitigation measure provided above also applies to Project incorporation of the tenth bullet of this mitigation measure. The following provides information regarding additional measures not discussed above that implement the tenth bullet of this mitigation measure. The Mission Village Land Use Plan, as shown in Figure 1.0-1 in Section 1.0, Executive Summary/Introduction, of the Recirculated Portions of the EIR, incorporates siting and design measures that would reduce GHG emissions. Specifically, the Project contains six complementary neighborhoods (planning areas) with specific land use designations for each planning area. These neighborhoods are the central organizing feature of the Land Use Plan and provide future residents convenient access to commercial, recreational and public facilities. Within the Project Site the highest intensity of uses is located in and around the Village Center, an area designed in a “main street” setting that includes plazas, courtyards, and promenades that connect the residential, retail, and office uses in this area both horizontally and vertically. This clustering of development around a centralized core provides for growth in a concentrated, rather than a dispersed pattern. The Village Center also includes a mobility hub, bus transfer station, a library, and a community recreation center in a pedestrian friendly environment that connects these uses with extra wide sidewalk areas that facilitate access and social interaction. This approach to land use planning and the arrangement of on-site land uses create a neighborhood-oriented community that coupled with livability strategies, including the establishment of a diverse system of pedestrian and bicycle trails, as well as transit stops, a mobility hub, and a bus transfer station promotes alternative transportation and facilitates mobility and access within the Project itself as well as to the other Newhall Ranch villages and

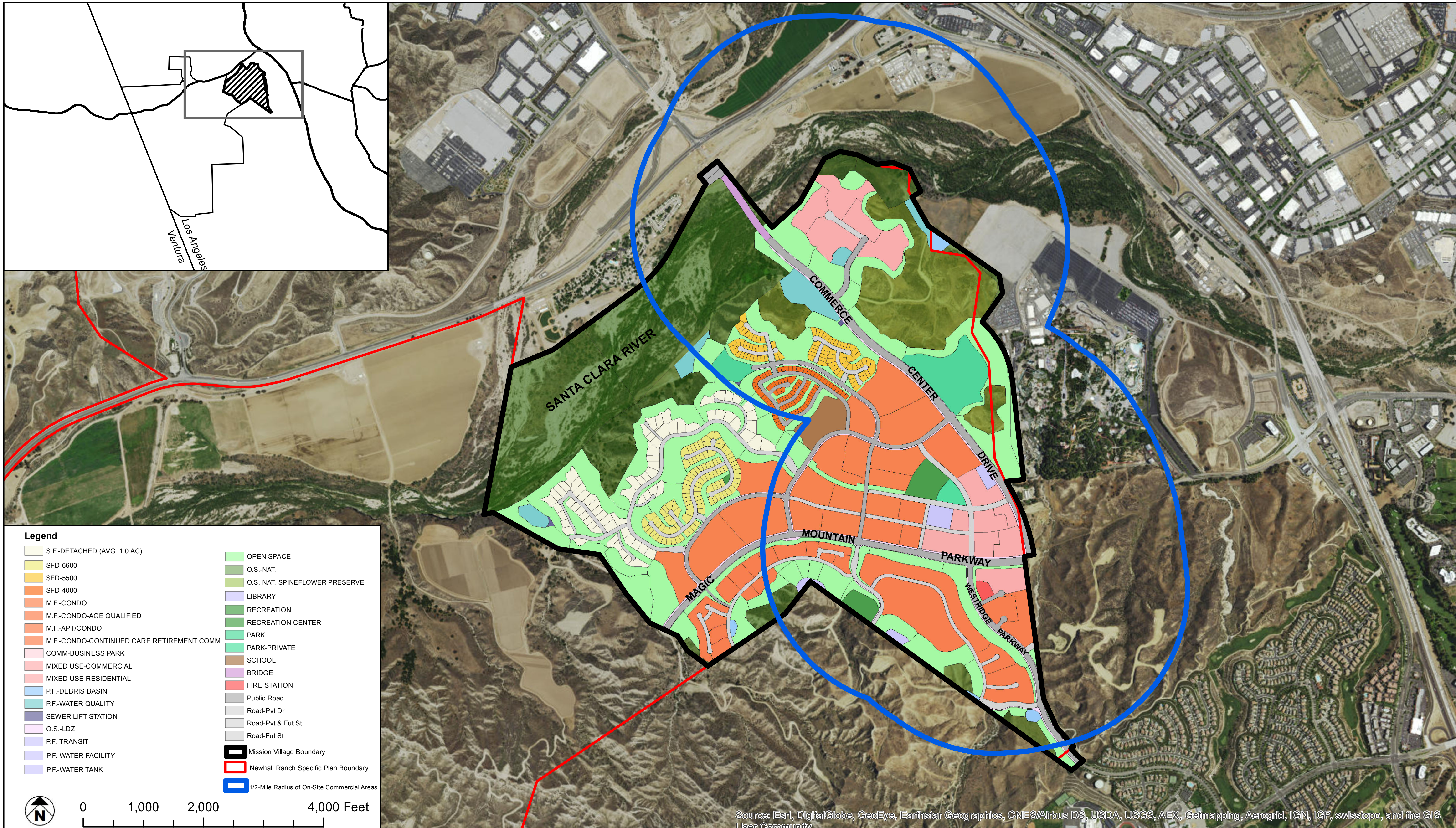
Table 2 (Continued)
SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Draft Program EIR Mitigation Measures

	to the Santa Clarita valley (see Exhibit 2, Mission Village Conceptual Transit Plan, and Exhibit 3, Conceptual Transit Plan, in Appendix E within Appendix 2.1-A of the Recirculated Portions of the EIR). With regard to employment opportunities, the Project includes over 1.5 million square feet of commercial uses and is located near the Valencia Commerce Center, Valencia Industrial Center, and the Valencia Corporate Center, which collectively have been approved for over 25 million square feet of development and as such are some of the largest employment centers in the Santa Clarita Valley. Thus, vehicle trips and VMT would be reduced due to the proximity of these employment centers to the on-site residential areas and the interconnection of these uses via the extensive network of bicycle and pedestrian trails that would be developed both within the Project Site as well as throughout the Newhall Ranch villages. The Project would also support the 2016-2040 RTP/SCS strategy with regard to Neighborhood Mobility Areas (NMA) by encouraging the use of active and other non-automobile modes of transportation (e.g., transit) for short trips and by implementing a Complete Streets program, pursuant to the Complete Streets Act of 2008 (AB 1358), as applicable, to further encourage the use of active and other non-automobile modes of transportation for short trips. In addition, due to its overall location, the Los Angeles County Board of Supervisors has already determined that the Newhall Ranch project site, which includes Mission Village, avoids leapfrog development and accommodates projected regional growth in a location that is adjacent to existing, approved, and planned infrastructure, urban services, transportation corridors, transit facilities, and major employment centers. While the Project Site is not designated as a HQTA by the 2016-2040 RTP/SCS, the pattern of development that is facilitated by the Project achieves the benefits of a HQTA in terms of providing households with safe and convenient transportation alternatives to driving alone. Specifically, locating residential development in proximity to shopping and jobs (i.e., over 69 percent of the on-site areas designated for residential development are located within ½ mile of on-site commercial areas, whereas all residential development is located within 3 miles of on-site commercial areas, as shown in **Figures 1** and **2**; the provision of transit stops, a mobility hub, and bus transfer station located within the Project Site (as discussed above) that are part of the overall transit system that would connect all of the Newhall Ranch villages;

Table 2 (Continued)
SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
Mission Village Consistency with Draft Program EIR Mitigation Measures

	a comprehensive TDM program; as well as other Project features that are targeted towards reducing driving alone, vehicle miles travelled, and GHG emissions.

FIGURES



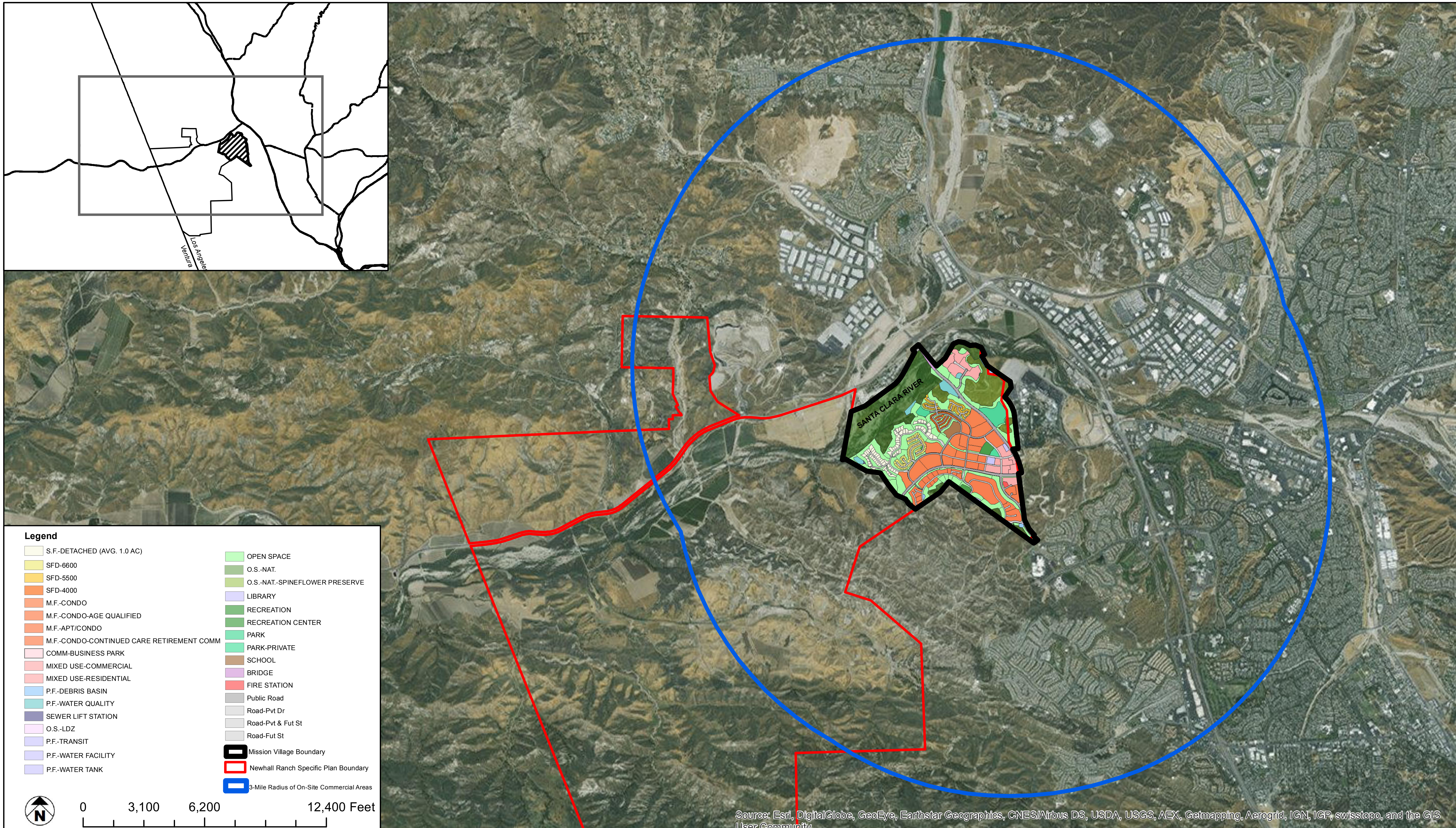
SOURCE: Hunsaker & Associates - 2016

FIGURE 1

Meridian Consultants

Locations Within One-Half Mile of On-Site Commercial Areas

113-001-16



SOURCE: Hunsaker & Associates - 2016

FIGURE 2

Meridian Consultants

Locations Within Three Miles of On-Site Commercial Areas

113-001-16

APPENDIX A

2012-2035 RTP/SCS Exhibits

EXHIBIT 4.1 Population Growth SCAG Region (2008–2035)

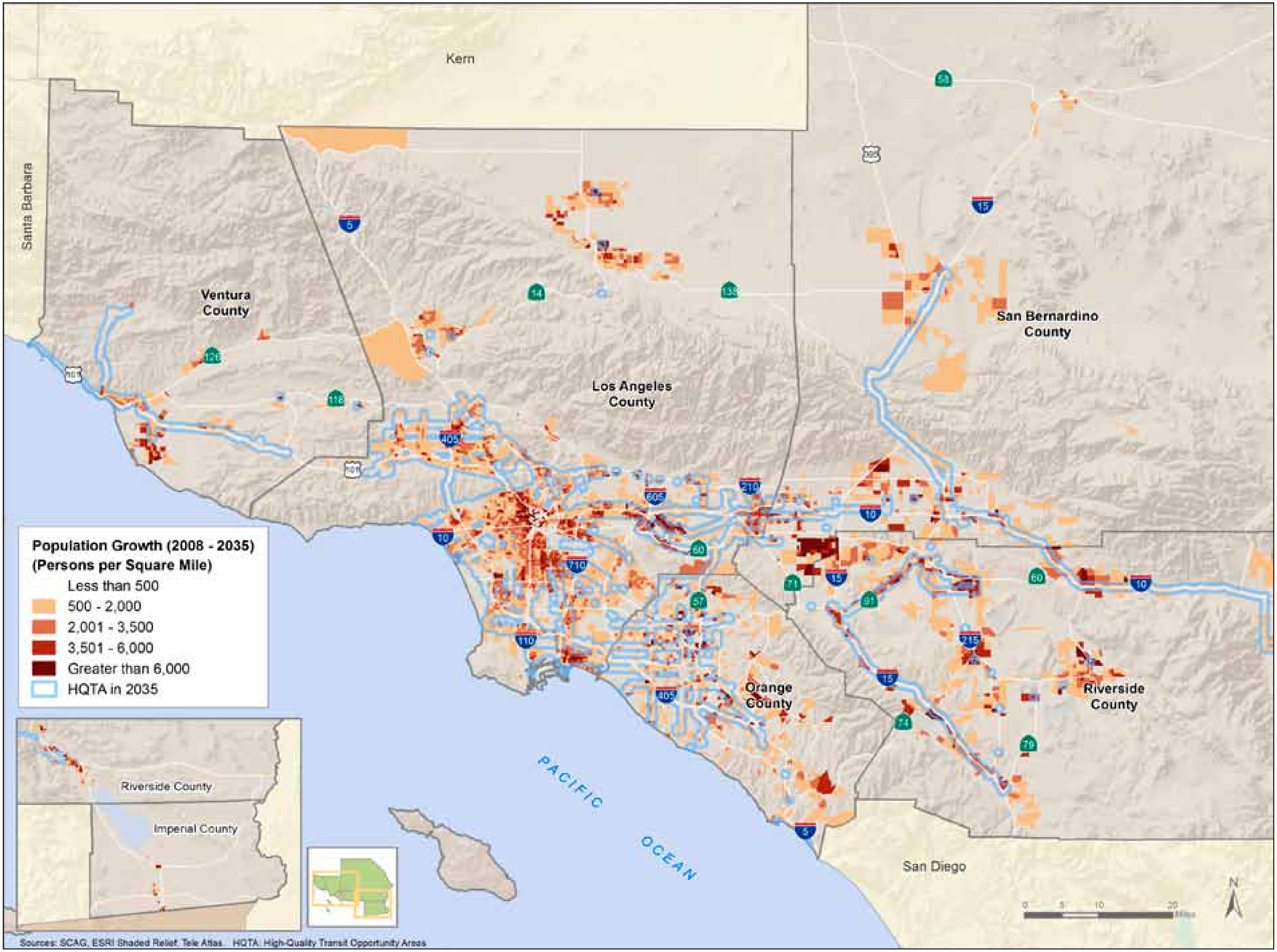


EXHIBIT 4.2 Employment Growth SCAG Region (2008–2035)

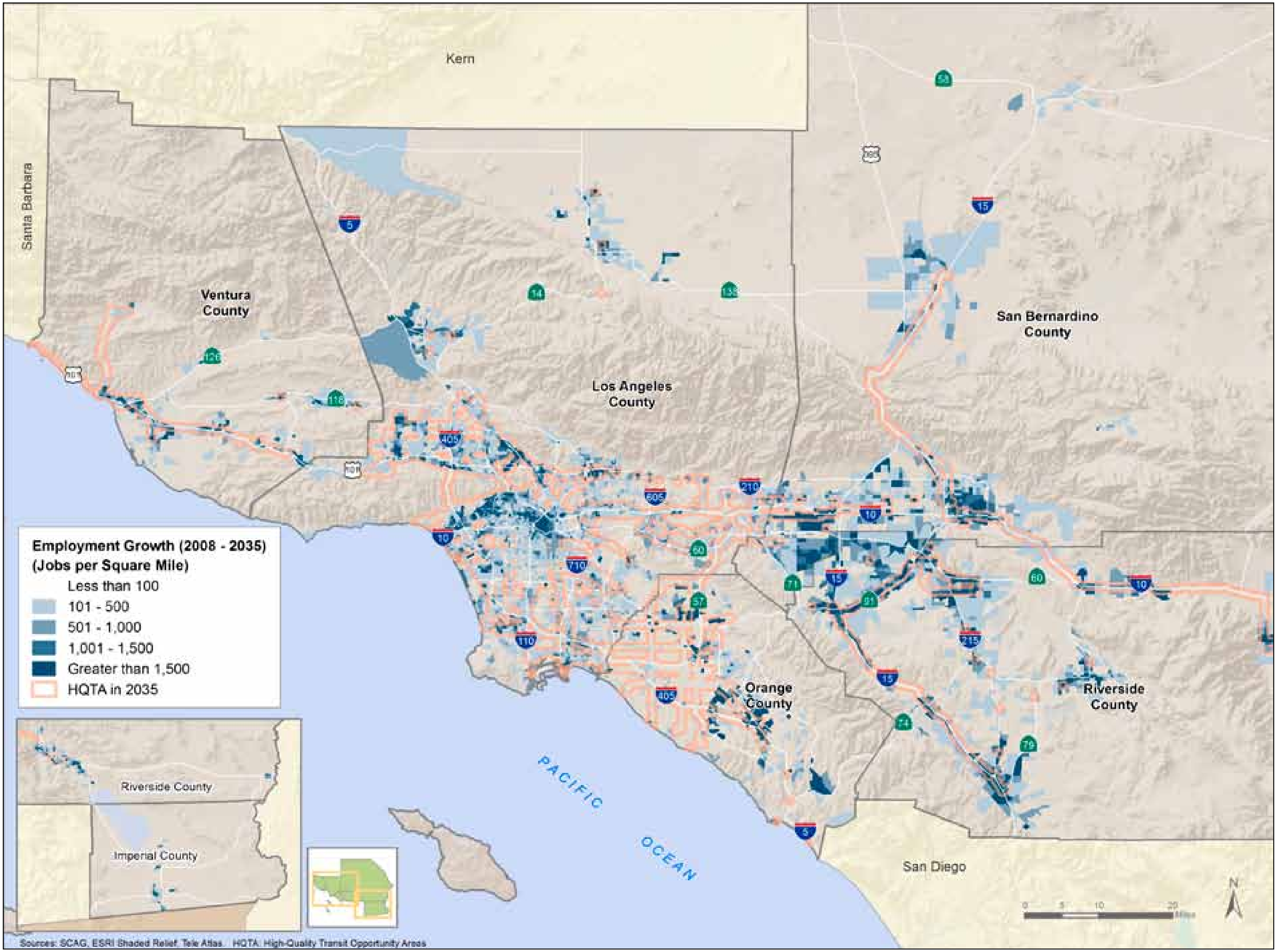


EXHIBIT 4.3 Household Growth SCAG Region (2008–2035)

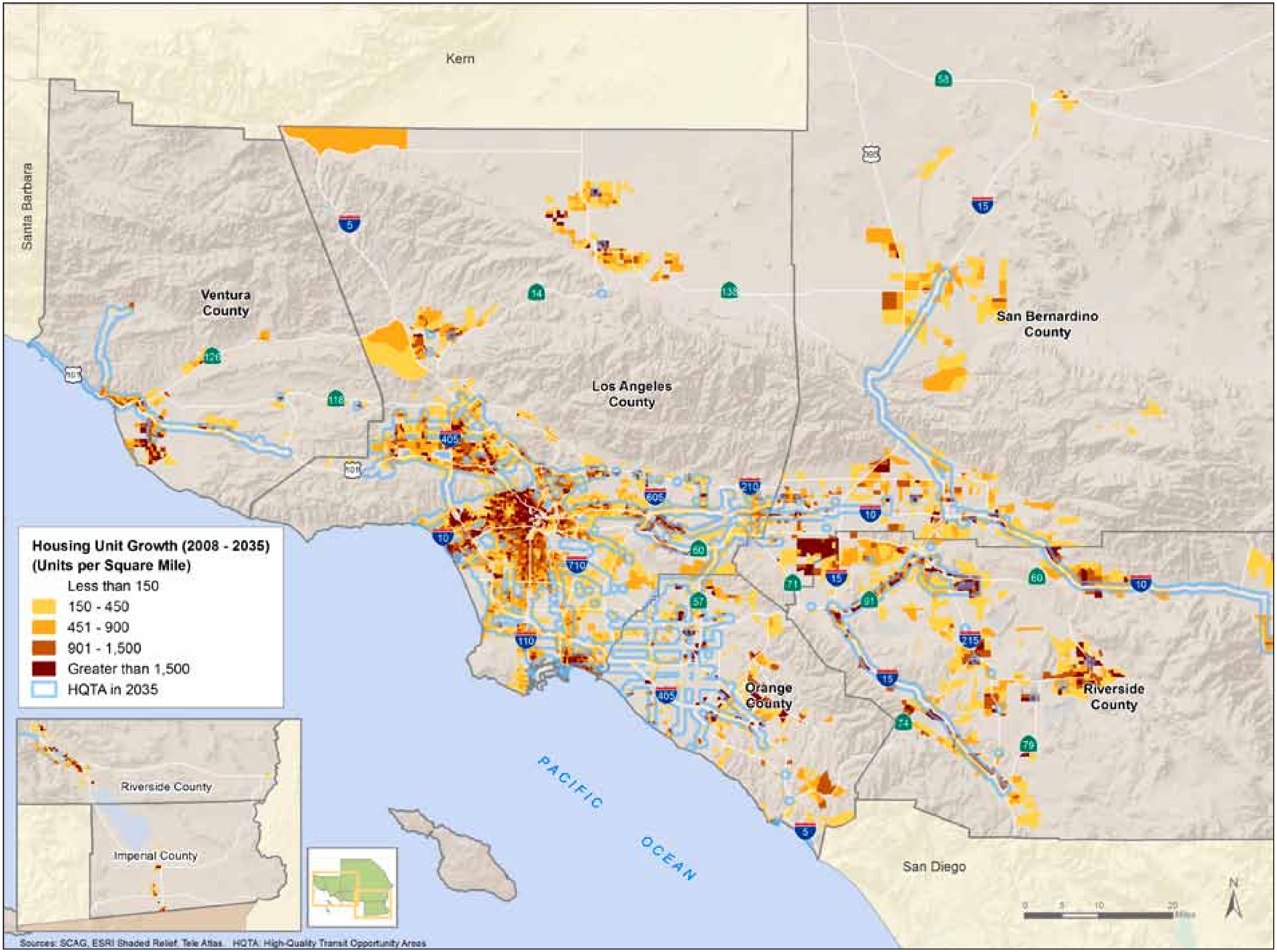
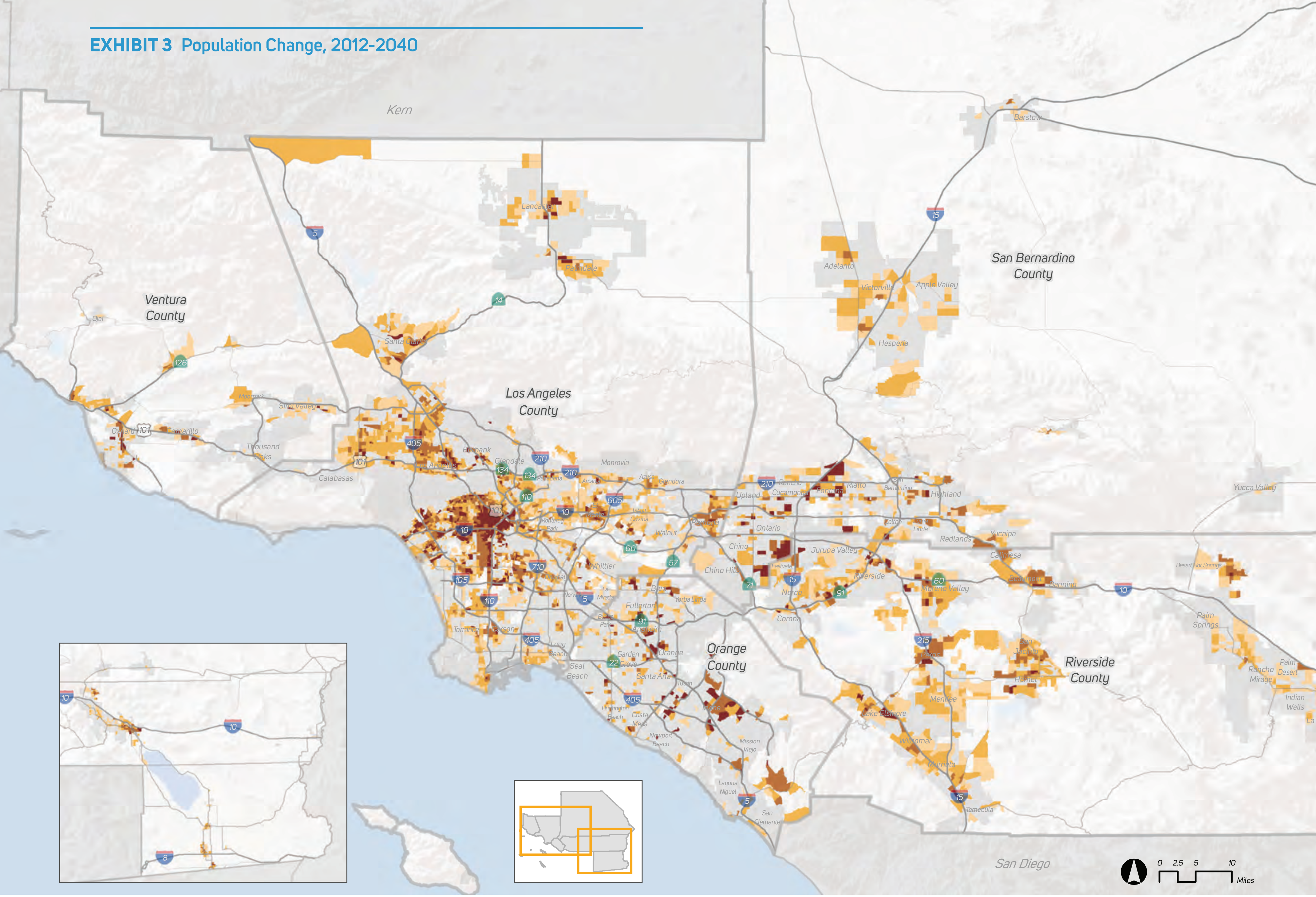


EXHIBIT 4.15 Land Use Pattern Los Angeles County (2035)

APPENDIX B

2016-2040 RTP/SCS Exhibits

EXHIBIT 3 Population Change, 2012-2040



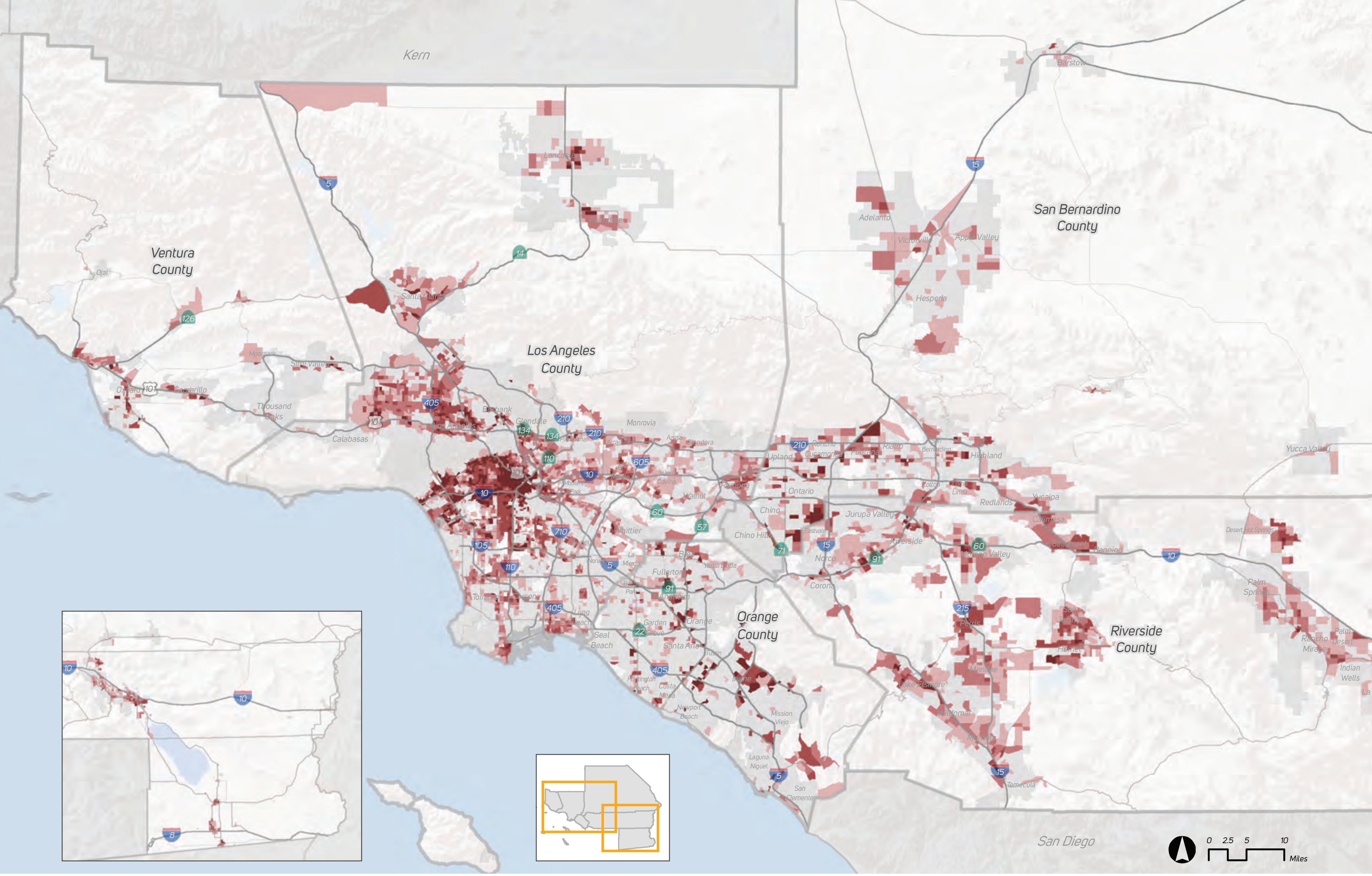
Population Growth, 2012 - 2040 (Persons per Square Mile)

- Less than or Equal to 500
- 501 - 1,000
- 1,001 - 2,500
- 2,501 - 5,000
- Greater than 5,000

(Source: SCAG, 2015)

Note: Transportation Analysis Zone (TAZ) level data or any data at a geography smaller than the jurisdictional level is included in the draft PGF for regional modeling purpose only, and is advisory and non-binding.

EXHIBIT 6 Household Change, 2012-2040



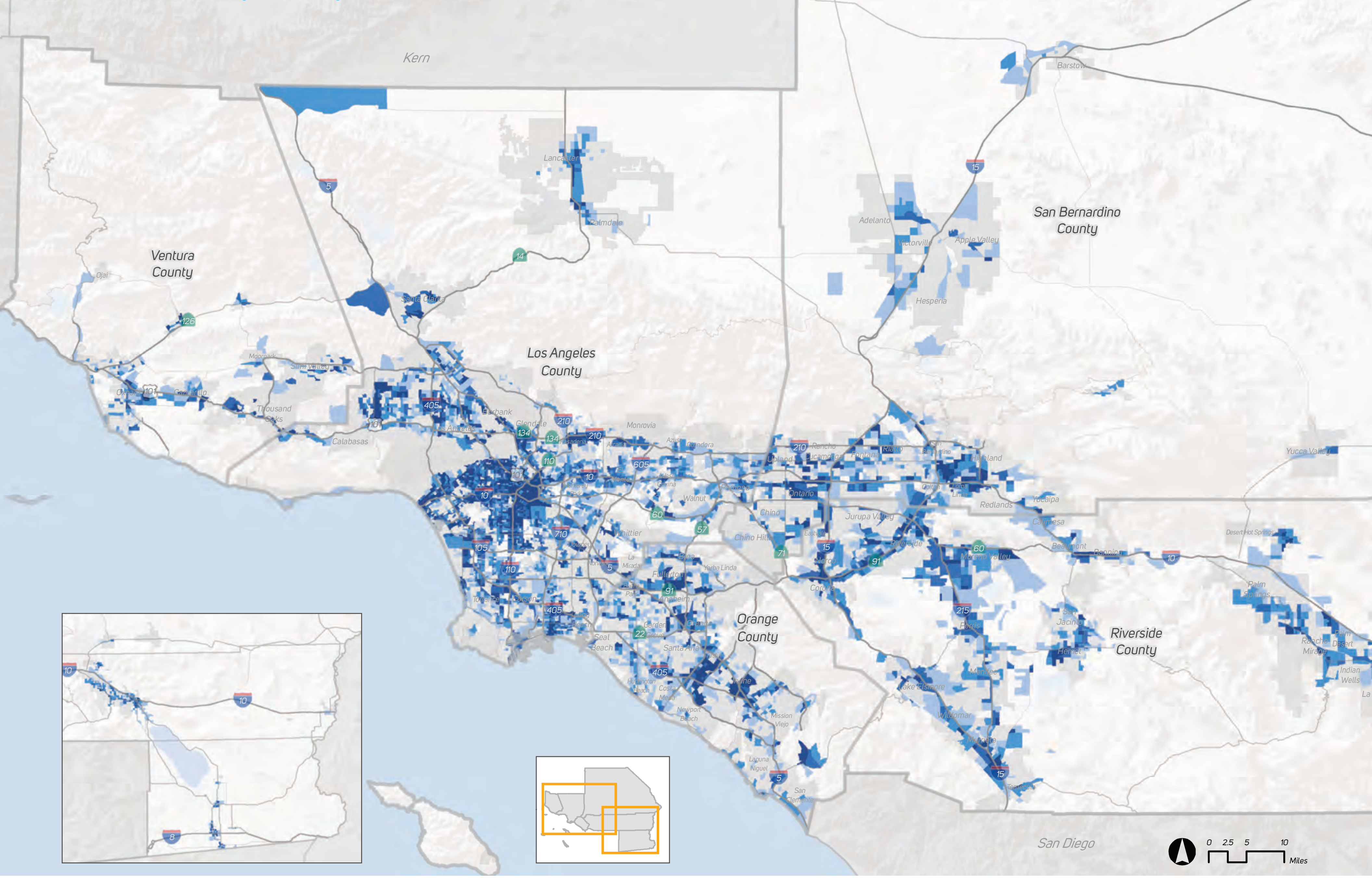
Household Growth, 2012 - 2040 (Households per Square Mile)

- Less than or Equal to 200
- 201 - 500
- 501 - 1,000
- 1,001 - 2,000
- Greater than 2,000

(Source: SCAG, 2015)

Note: Transportation Analysis Zone (TAZ) level data or any data at a geography smaller than the jurisdictional level is included in the draft PGF for regional modeling purpose only, and is advisory and non-binding.

EXHIBIT 9 Employment Change, 2012-2040



Employment Growth, 2012 - 2040 (Jobs per Square Mile)

- Less than or Equal to 200
- 201 - 500
- 501 - 1,000
- 1,001 - 2,000
- Greater than 2,000

Note: Transportation Analysis Zone (TAZ) level data or any data at a geography smaller than the jurisdictional level is included in the draft PGF for regional modeling purpose only, and is advisory and non-binding.

(Source: SCAG, 2015)

APPENDIX C

Mission Village Project Vehicle Miles of Travel Analysis

Stantec

Memo

To:	Bruce Lackow Meridian Consultants	From:	Daryl Zerfass Stantec
File:	2073010090	Date:	September 2016

Reference: SB 375 Consistency Evaluation - SCAG RTP/SCS and Newhall Ranch Mission Village Project Daily Vehicle Miles of Travel (VMT)

The following analysis assesses the consistency of the estimated daily vehicle miles of travel (VMT) for the Newhall Ranch Mission Village Project with the VMT estimates included in the Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Separate analyses are presented for both the Final 2016-2040 RTP/SCS adopted April 7, 2016, and the previously adopted 2012-2035 RTP/SCS.

SCAG RTP/SCS

SCAG's recently adopted 2016-2040 RTP/SCS includes the following per capita Total VMT estimates for the SCAG region as a whole and for Los Angeles County, specifically, for the 2012 Base Year (existing) and 2040 Plan Year (projected):

Table 1 SCAG Total (Tour-Based) VMT Summary –2016-2040 RTP/SCS

	SCAG Region	Los Angeles County
2012 Base Year	22.8 VMT/Capita	21.5 VMT/Capita
2040 Plan Year	20.5 VMT/Capita	18.4 VMT/Capita

Source: 2016-2040 RTP/SCS (April 2016), page 155.

Note: Based on Stantec's review of the Draft Program EIR for the 2016-2040 RTP/SCS, the numbers presented in this table represent *Total* VMT, as compared to *Home-Based* VMT. Total VMT accounts for all vehicle trips made by residents of a household during the day, in contrast to *Home-Based* VMT, which accounts for only those trips that begin or end at the home.

As to the previously adopted 2012 SCAG RTP/SCS, Stantec derived the following per capita Total VMT estimates for the 2008 Base Year and 2035 Plan Year from data contained in various portions of the 2012-2035 RTP/SCS documentation. As shown in Table 2, the 2012-2035 RTP/SCS VMT estimates are higher than the corresponding 2016-2040 RTP/SCS estimates shown in Table 1.

Table 2 SCAG Total (Tour-Based) VMT Summary – 2012-2035 RTP/SCS

	SCAG Region	Los Angeles County
2008 Base Year	25.4 VMT/Capita	23.5 VMT/Capita
2035 Plan Year	23.4 VMT/Capita	20.7 VMT/Capita
Sources: SCAG Regional Travel Demand Model and 2008 Model Validation (June 2012), Table 2-3, page 2-5; 2012-2035 RTP/SCS Draft Program EIR (December 2011), Table 3.10-8, page 3.10-8; 2012-2035 RTP/SCS Highways and Arterials Appendix (April 2012), Table A12, page 52, and Table A16, page 56.		

Mission Village VMT

Approval of the Mission Village Project would facilitate the development of a mixed-use community that includes 4,055 residential dwelling units, approximately 1.6 million square feet (MSF) of mixed-use commercial development, along with community services such as an elementary school, fire station, library and a park.

VMT estimates for the Mission Village residents and employees have been calculated using data from the Mission Village Environmental Impact Report. Home-Based VMT for residential uses and Home-Based-Work VMT for employment uses have been calculated (see attached Table A – Mission Village VMT Summary). For comparison to SCAG's RTP/SCS Total VMT per capita estimates, the Mission Village Home-Based and Home-Based-Work VMT estimates have been adjusted based on data from the SCAG 2016-2040 RTP/SCS Travel Demand Model to reflect the additional trips made by residents and employees while away from home and work, respectively. This VMT, referred to as "Tour-Based" or Total VMT, accounts for all vehicle travel throughout the day, and is directly comparable to the VMT data reported in the 2012-2035 and 2016-2040 RTP/SCS. (See Table 1, Note.)

Table 3 summarizes the Mission Village Total VMT estimates. As shown on the table, prior to application of any VMT reduction measures, Mission Village would have an average per capita Total VMT of 17.7.

Reference: SB 375 Consistency Evaluation - SCAG RTP/SCS and Newhall Ranch Mission Village Project Daily Vehicle Miles of Travel (VMT)

Table 3 Mission Village Total (Tour-Based) VMT Summary

	Mission Village
Total VMT/Capita (without VMT reduction measures)	17.7
Total VMT/Capita (with VMT reduction measures)[1]	14.9
[1]Fehr & Peers, Mission Village: Transportation Demand Management Plan Evaluation (September 2016)	

VMT Reduction Strategies

To reduce the generation of mobile source-related greenhouse gas emissions, a series of VMT reduction strategies were developed by Fehr & Peers for the Mission Village Project. These strategies achieve emissions reductions by reducing Project-generated VMT. In this regard, Fehr & Peers has determined that the recommended strategies would reduce the Mission Village Project's VMT by 15.5 percent (Fehr & Peers, Mission Village: Transportation Demand Management Plan Evaluation (September 2016)). As shown in Table 3 above, a 15.5 percent reduction in VMT would result in an average per capita Total VMT of 14.9.

Analysis

To analyze the consistency of the Mission Village Project with the 2012-2035 and 2016-2040 RTP/SCS, the per capita Total VMT estimates of the Mission Village Project, calculated above and shown in Table 3, are compared to the VMT data for the region and Los Angeles County as contained in each RTP/SCS and as previously shown in Tables 1 and 2.

Table 4 below presents a comparison of VMT per capita estimates for the Plan Year (2035 and 2040, respectively) provided in the SCAG 2012-2035 RTP/SCS and the 2016-2040 RTP/SCS (shown in Tables 1 and 2, above) relative to the Mission Village Project's average Total VMT per capita with VMT reduction measures (shown in Table 3, above). Table 4 shows that the Mission Village Project's residents and employees would generate per capita Total VMT (14.9) that is less than the projected average Total VMT for both the SCAG region (23.4 and 20.5), and Los Angeles County (20.7 and 18.4) under both the 2012-2035 and 2016-2040 RTP/SCS, respectively.

Reference: **SB 375 Consistency Evaluation - SCAG RTP/SCS and Newhall Ranch Mission Village Project Daily Vehicle Miles of Travel (VMT)**

Table 4 Comparison of SCAG 2012-2035 and 2016-2040 RTP/SCS Per Capita VMT with Mission Village Per Capita VMT

	SCAG Region	Los Angeles County
SCAG 2012 RTP/SCS VMT/Capita in 2035 Plan Year	23.4	20.7
SCAG 2016 RTP/SCS VMT/Capita in 2040 Plan Year	20.5	18.4
Mission Village VMT/Capita	14.9	14.9
Comparison to 2035 Plan Year	*-8.5* VMT/Capita *(-36%)*	*-5.8* VMT/Capita *(-28%)*
Comparison to 2040 Plan Year	*-5.6* VMT/Capita *(-27%)*	*-3.5* VMT/Capita *(-19%)*

As shown in Table 4, above, with implementation of the VMT reduction strategies, the Mission Village Project's residents and employees would generate approximately 36 percent less Total VMT per capita than the 2012-2035 RTP/SCS plan's regional per capita Total VMT average, and would generate approximately 28 percent less Total VMT per capita than the Los Angeles County per capita Total VMT average. As to the 2016-2040 RTP/SCS, the Mission Village Project's residents would generate approximately 27 percent less Total VMT per capita than the regional per capita Total VMT average, and approximately 19 percent less Total VMT per capita than the Los Angeles County per capita Total VMT average.

Conclusion

In conclusion, the VMT comparisons presented above evidence that the VMT attributable to the Mission Village Project's residents and employees is consistent with both the 2012-2035 RTP/SCS and the 2016-2040 RTP/SCS since Total VMT per capita would not exceed the projected plan year Total VMT per capita and, in fact, would be approximately 36 percent and 27 percent less than the Total VMT per capita regional average for each plan year, respectively, and approximately 28 percent and 19 percent less than the County average for each plan year, respectively.

STANTEC CONSULTING SERVICES INC.

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Principal, Transportation Planning & Traffic Engineering
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Attachment: Table A Mission Village VMT Summary

Stantec

Table A Mission Village VMT Summary

	Mission Village
Residential Home-Based VMT[1]	146,921
Population[1]	11,048
Home-Based VMT / Resident	13.3
Average Total VMT/ Resident [2]	18.2
Employment Home-Based-Work VMT[1]	89,749
Employees[1]	5,963
Home-Based-Work VMT/ Employee	15.1
Average Total VMT/ Employee [2]	16.6
Average Total Resident & Employee VMT/Capita	17.7

[1]Mission Village VMT & GHG Estimates, Ramboll-Environ, September 2016.
[2]Based on factors of 1.369 and 1.105 to convert home-based VMT and home-based-work VMT to total VMT, respectively (source: SCAG 2016-2040 RTP/SCS model data for SCAG region).

APPENDIX D

Mission Village Applicable Mitigation Measures

the impacts relative to the localized significance thresholds to less than significant levels. Therefore, construction-related emissions for the proposed Project would be considered significant and unavoidable.

MV 4.7-1 The project applicant shall require that prior to the commencement of construction its contractors shall develop a Construction Traffic Emission Management Plan to minimize emissions from vehicles including, but not limited to, scheduling truck deliveries to avoid peak hour traffic conditions, consolidating truck deliveries, and prohibiting truck idling in excess of 5 minutes.

MV 4.7-2 The project applicant shall require that its contractors suspend the use of all construction equipment during first-stage smog alerts.

MV 4.7-3 The project applicant shall require that its contractors maintain construction equipment by conducting regular tune-ups according to the manufacturers' recommendations.

MV 4.7-4 The project applicant shall require that its contractors use electric welders to avoid emissions from gas or diesel welders.

MV 4.7-5 The project applicant shall require that its contractors reduce traffic speeds on all unpaved roads to 15 miles per hour or less.

MV 4.7-6 The project applicant shall require that its contractors water active sites at least three times daily during dry weather.

MV 4.7-7 The project applicant shall require that its contractors replace ground cover as quickly as possible.

MV 4.7-8 The project applicant shall require that its contractors schedule construction activities that affect traffic flow to off-peak hours (e.g., between 7:00 PM and 6:00 AM and between 10:00 AM and 3:00 PM).

MV 4.7-9 The project applicant shall require the contractor to provide temporary controls, such as a flag person, during all phases of construction to maintain smooth traffic flow.

MV 4.7-10 The project applicant shall require the contractor route construction trucks away from congested streets and sensitive receptor areas (e.g., residences, schools, hospitals, etc.).

MV-4.7-11 The project applicant shall install shaker plates at construction site exits, to minimize dirt track out and dust generation.

MV-4.7-12 The project applicant shall operate street sweepers that comply with SCAQMD Rules 1186 and 1186.1 on roads adjacent to the construction site in a nearly continuous manner so as to minimize dust emissions. Paved parking and staging areas shall be swept daily.

MV 4.7-13 The project applicant shall all on-site construction equipment to meet U.S. EPA Tier 2 of higher emissions standards according to the following:

April 2010 through December 31, 2011: All offroad diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier 2 offroad emissions standards. In addition, all construction equipment shall be outfitted with the BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

January 1, 2012, through December 31, 2014: All offroad diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier 3 offroad emissions standards. In addition, all construction equipment shall be outfitted with the BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

Post-January 1, 2015: All offroad diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier 4 offroad emissions standards. In addition, all construction equipment shall be outfitted with the BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

MV 4.7-14 An information sign shall be posted at the entrance to each construction site that identifies the permitted construction hours and provides a telephone number to call and receive information about the construction project or to report complaints regarding excessive fugitive dust generation. Any reasonable complaints shall be rectified within 24 hours of their receipt.

MV 4.7-15 [Replaces Mitigation Measure SP 4.10-6] The applicant shall implement all rules and regulations adopted by the Governing Board of the SCAQMD which are applicable to the development of the subdivision (such as Rule 402 – Nuisance, Rule 403 – Fugitive Dust, Rule 1113 – Architectural Coatings) and which are in effect at the time of development. The purpose of Rule 403 is to reduce the amount of particulate matter entrained in the ambient air as a result of man-made fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to any activity or man-made condition capable of generating fugitive dust such as the mass and remedial grading associated with the project as well as weed abatement and stockpiling of construction materials (i.e., rock, earth, gravel). Rule 403 requires that grading operations either (1) take actions specified in Tables 1 and 2 of the Rule for each applicable source of fugitive dust and take certain notification and record keeping actions, or (2) obtain an approved Fugitive Dust Control Plan. A complete copy of the SCAQMD's

Unpaved Roads

j. Apply water three times daily, or non-toxic soil stabilizers according to manufacturers' specifications, to all unpaved parking or staging areas or unpaved road surfaces.

k. Reduce traffic speeds on all unpaved roads to 15 miles per hour or less.

l. Pave construction roads that have a traffic volume of more than 50 daily trips by construction equipment, 150 total daily trips for all vehicles.

m. Pave all construction access roads at least 100 feet on to the site from the main road.

n. Pave construction roads that have a daily traffic volume of less than 50 vehicular trips.

MV 4.7-16 [Replaces Mitigation Measure SP 4.10-7] Prior to the approval of each future subdivision proposed in association with Mission Village, each of the construction emission reduction measures listed below, which are based on Tables 11-2 and 11-3 of the SCAQMD's CEQA Air Quality Handbook, shall be implemented.

On-Road Mobile Source Construction Emissions

a. Configure construction parking to minimize traffic interference.

b. Provide temporary traffic controls when construction activities have the potential to disrupt traffic to maintain traffic flow (e.g., signage, flag person, detours).

c. Schedule construction activities that affect traffic flow to off-peak hours (e.g., between 7:00 PM and 6:00 AM and between 10:00 AM and 3:00 PM).

d. Develop a trip reduction plan to achieve a 1.5 average vehicle ridership ("AVR") for construction employees.

e. Implement a shuttle service to and from retail services and food establishments during lunch hours.

f. Develop a construction traffic management plan that includes the following measures to address construction traffic that has the potential to affect traffic on public streets:

˜ Rerouting construction traffic off congested streets;
˜ Consolidating truck deliveries; and

˜ Providing temporary dedicated turn lanes for movement of construction trucks and equipment on and off of the site.

g. Prohibit truck idling in excess of two minutes.

Off-Road Mobile Source Construction Emissions

h. Use pile drivers powered by an alternative to diesel fuel.

i. Suspend use of all construction equipment operations during second stage smog alerts.

j. Prevent trucks from idling longer than two minutes.

k. Use electricity from power poles rather than temporary diesel-powered generators.

l. Use electricity from power poles rather than temporary gasoline-powered generators.

m. Use mobile equipment powered by an alternative to diesel fuel.

n. Use on-site mobile equipment powered by an alternative to gasoline.

<u>Operational Mitigation Measures</u>

(a) Point Source Operational Emissions

MV4.7-17 Any dry cleaners proposing to locate on site shall utilize the services of off-site cleaning operations at already SCAQMD-permitted locations. No on-site dry cleaning operations utilizing perchloroethylene or any other cleaning solvent containing toxic air contaminants shall be permitted within Mission Village.

(b) Mobile Source Operational Emissions

MV4.7-18 The project developer(s) shall coordinate with Santa Clarita Transit to identify appropriate bus stop/turnout locations.

MV 4.7-19 Kiosks containing transit information shall be constructed by the project applicant adjacent to selected future bus stops prior to initiation of bus service to the site.

(c) Area Source Operational Emissions

MV 4.7-20 Wood-burning fireplaces and stoves shall be prohibited in all residential units. Use of wood in fireplaces shall be prohibited through project CC&Rs.

MV 4.7-21 [Replaces Mitigation Measure SP 4.10-9] Prior to the approval of each future subdivision proposed in association with Mission Village, each of the operational emission reduction measures listed below, which are based on Tables 11-6 and 11-7 of the SCAQMD's *CEQA Air Quality Handbook*, shall be implemented.

On Road Mobile Source Operational Emissions

Residential Uses

a. Provide residents with information regarding the availability of existing shuttle service providers and public transit between residential and commercial core areas.

b. Construct on-site or off-site bus stops (e.g., bus turnouts, passenger benches, and shelters).

c. Construct off-site pedestrian facility improvements, such as overpasses and wider sidewalks.

d. Include retail services within or adjacent to residential subdivisions.

e. Provide residents with information regarding the availability of existing shuttle service providers and public transit between residential areas and transit centers.

f. Contribute to regional transit systems (e.g., right-of-way, capital improvements, etc.).

g. Synchronize traffic lights on streets impacted by development.

h. Construct, contribute, or dedicate land for the provision of off-site bicycle trails linking the facility to designated bicycle commuting routes.

Commercial Uses

i. Provide preferential parking spaces for carpools and vanpools and provide 7 foot 2 inch minimum vertical clearance in parking facilities for vanpool access.

j. Implement on-site circulation plans in parking lots to reduce vehicle queuing.

k. Improve traffic flow at drive-throughs by designing separate windows for different functions and by providing temporary parking for orders not immediately available for pickup.

l. Set up resident worker training programs to improve job/housing balance.

m. Develop a program to minimize the use of fleet vehicles during smog alerts (for business not subject to Regulation XV (now Rule 2202) or XII).

n. Use low-emissions fleet vehicles:

- TLEV
- ULEV
- LEV
- ZEV

o. Reduce employee parking spaces for those businesses subject to Regulation XV (now Rule 2202).

p. For commercial uses subject to Rule 2202, implement a lunch shuttle service from a worksite(s) to food establishments.

q. For commercial uses subject to Rule 2202, implement compressed workweek schedules where weekly work hours are compressed into fewer than five days.

- 9/80
- 4/40
- 3/36

r. Employers with 250 or more employees are to provide on-site child care and after-school facilities or contribute to off-site development within walking distance.

s. Require retail facilities or special event centers to offer travel incentives such as discounts on purchases for transit riders.

t. Employers with 250 or more employees are to provide on-site employee services such as cafeterias, banks, etc.

u. Establish a shuttle service from residential core areas to the commercial core areas.

v. Construct on-site or off-site bus stops (e.g., bus turnouts, passenger benches, and shelters).

w. Implement a pricing structure for single-occupancy employee parking and/or provide discounts to ridesharers.

x. Include residential units within a commercial project.

y. Utilize parking in excess of code requirements as on-site park-n-ride lots or contribute to construction of off-site lots.

z. Any two of the following:

- Construct off-site bicycle facility improvements, such as bicycle trails linking the facility to designated bicycle commuting routes, or on-site improvements, such as bicycle paths.
- Include bicycle parking facilities, such as bicycle lockers and racks.
- Include showers for bicycling employees' use.

aa. Any two of the following:

- Construct off-site pedestrian facility improvements, such as overpasses, wider sidewalks.
- Construct on-site pedestrian facility improvements, such as building access that is physically separated from street and parking lot traffic and walk paths.
- Include showers for pedestrian employees' use.

ab. Provide shuttles from the commercial core areas to major transit stations.

ac. Contribute to regional transit systems (e.g., right-of-way, capital improvements, etc.).

ad. Charge visitors to park at specialty commercial/entertainment developments.

ae. Synchronize traffic lights on streets impacted by development.

af. Reschedule truck deliveries and pickups to off-peak hours.

ag. Set up paid parking systems where drivers pay at walkup kiosk and exit via a stamped ticket to reduce emissions from queuing vehicles.

ah. Require on-site truck loading zones.

ai. Implement or contribute to public outreach programs.

aj. Require employers not subject to Regulation XV (now Rule 2202) to provide commuter information area.

Stationary Source Operational Emissions

Residential

ak. Use solar or low emission water heaters.

al. Use central water heating systems.

am. Use built-in energy-efficient appliances.

an. Provide shade trees to reduce building heating/cooling needs.

ao. Use energy-efficient and automated controls for air conditioners.

ap. Use double-paned windows.

aq. Use energy-efficient low-sodium parking lot lights.

ar. Use lighting controls and energy-efficient lighting.

as. Orient buildings to the north for natural cooling and include passive solar design (e.g., daylighting).

at. Use light-colored roofing materials to reflect heat.

au. Increase walls and attic insulation beyond Title 24 requirements.

Commercial Uses

av. Use solar or low emission water heaters.

aw. Use central water heating systems.

ax. Provide shade trees to reduce building heating/cooling needs.

ay. Use energy-efficient and automated controls for air conditioners.

az. Use double-paned windows.

ba. Use energy-efficient low-sodium parking lot lights.

bb. Use lighting controls and energy-efficient lighting.

bc. Use light-colored roofing materials to reflect heat.

bd. Increase walls and attic insulation beyond Title 24 requirements.

be. Orient buildings to the north for natural cooling and include passive solar design (e.g., daylighting).

2.2.3 Findings

The Board finds that the above mitigation measures are feasible, are adopted, and will substantially lessen the Mission Village project's air quality impacts. Pursuant to Public Resources Code section 21081, subdivision (a)(1), changes or alterations have been required in, or incorporated into, the Project which would mitigate, in part, the significant air quality impacts attributable to the Project, as identified in the Final EIR. However, there are no feasible mitigation measures that would reduce all the identified significant impacts to a level below significant. Therefore, these impacts must be considered unavoidably significant even after

2.3.2.2 Mission Village Mitigation Measures

To further reduce the Project's solid waste impacts, the following mitigation measure is incorporated:

MV 4.10-1 Prior to the issuance of grading permits, the project applicant shall prepare a Waste Management Plan pursuant to Los Angeles County Code, Title 20, Chapter 20.87, Construction and Demolition Debris Recycling. The Waste Management Plan shall include provisions for the recycling of a minimum of 50 percent of the construction and demolition debris, and the submittal of corresponding reports to the Los Angeles County Environmental Programs Division.

2.3.3 Findings

The Board finds that the above mitigation measures are feasible, are adopted, and will substantially lessen the Mission Village project's solid waste impacts. Pursuant to Public Resources Code section 21081, subdivision (a)(1), changes or alterations have been required in, or incorporated into, the Project which would mitigate, in part, the significant solid waste services impacts attributable to the Project, as identified in the Final EIR. However, there are no feasible mitigation measures that would reduce all the identified significant impacts to a level below significant. Therefore, these impacts must be considered unavoidably significant even after implementation of all feasible mitigation measures. Pursuant to Public Resources Code section 21081, subdivision (a)(3), as described in the Statement of Overriding Considerations, the Board has determined that specific economic, legal, social, technological, or other considerations make infeasible the alternatives identified in the EIR, and the identified solid waste impacts are thereby acceptable because of specific overriding considerations (*see* **Section 8.0**, below), which outweigh the significant unavoidable solid waste impacts of the Project.

2.4 AGRICULTURAL RESOURCES

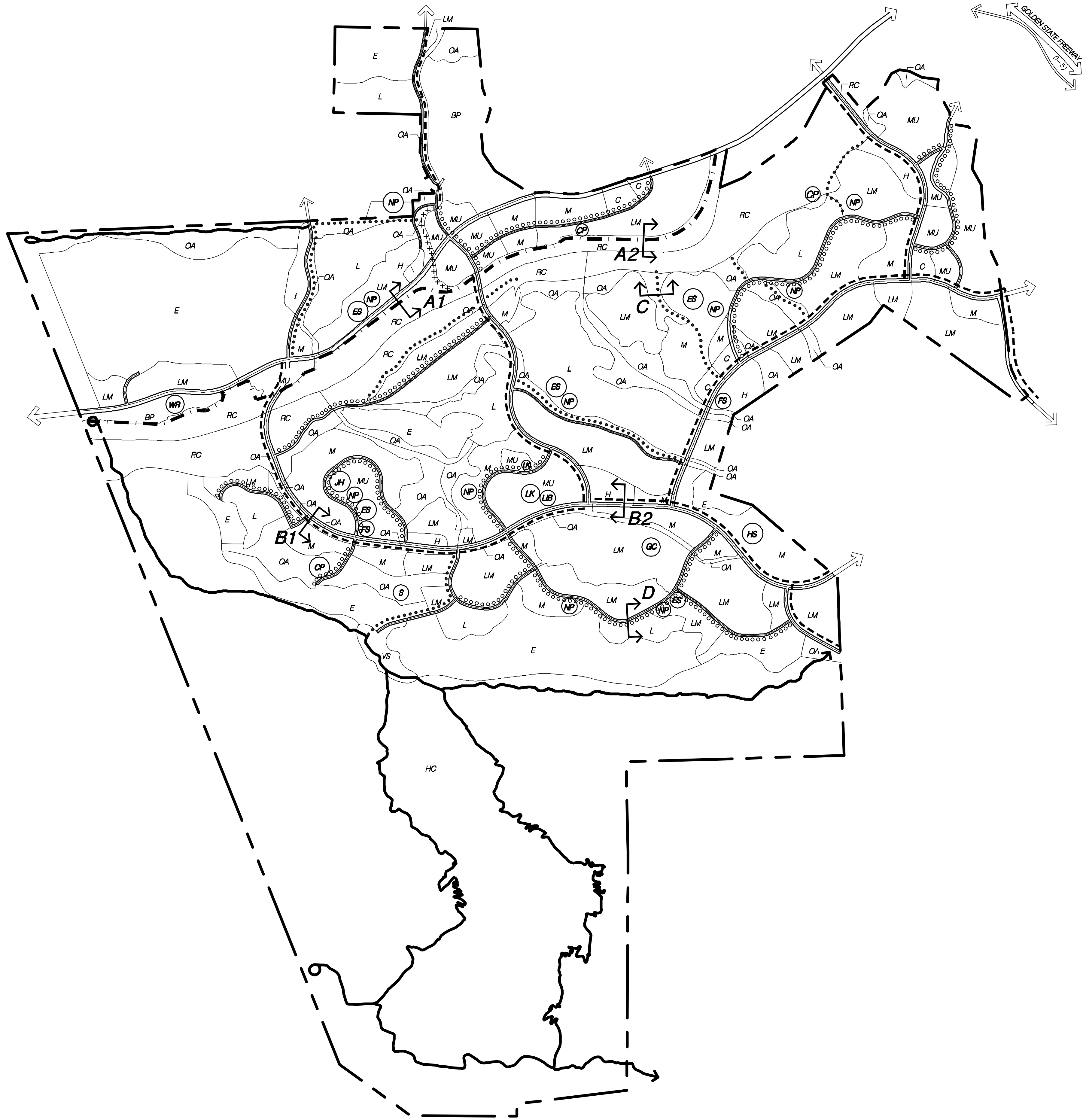
2.4.1 Significant Unavoidable Impacts

The Specific Plan's Program EIR identified the conversion of agricultural land to urban uses as a significant unavoidable impact associated with Specific Plan build-out on a project-specific and cumulative basis. The analysis also found that future residents of the Specific Plan may be incidentally exposed to agricultural-related activities; however, mitigation measures were recommended and adopted to reduce this impact to below a level of significance.

Development of the proposed Mission Village tract map and related off-site improvements would convert 160.7 acres of Prime Farmland, 30.1 acres of Unique Farmland, 0.6 acres of Farmland of Statewide Importance, 2.5 acres of Farmland of Local Importance, and 875.6 acres of grazing land to non-agricultural urban land uses. The Mission Village project's irreversible loss of 160.7 acres of Prime Farmland and 30.1 acres of Unique Farmland, and 0.6 acre of Farmland of Statewide Importance is consistent with the findings of the Specific Plan Program EIR and is considered a significant impact; based on the applicable significance thresholds, the loss of grazing land is not considered a significant impact. No feasible mitigation exists to reduce the identified significant impacts resulting from the conversion of prime agricultural land to a less than significant level and, therefore, these impacts are significant and unavoidable.

APPENDIX E

Mission Village and Newhall Ranch Trails Plans



NEWHALL RANCH
SPECIFIC PLAN

Prepared For: Newhall Ranch Company

LEGEND

- REGIONAL RIVER TRAIL
- COMMUNITY TRAIL
- EQUESTRIAN TRAIL COMPONENT OF COMMUNITY TRAIL
- LOCAL TRAIL
- PATHWAY
- UNIMPROVED TRAIL

TRAIL SECTIONS

SECTIONS A1 & A2	EXHIBIT 2.4-6
SECTIONS B1 & B2	EXHIBIT 2.4-7
SECTIONS C & D	EXHIBIT 2.4-8

English 0 1000' 2000'
Metric 0 225m 450m 900m
NORTH
100 ACRES 400 ACRES

EXHIBIT 2.4-5
MASTER TRAILS PLAN

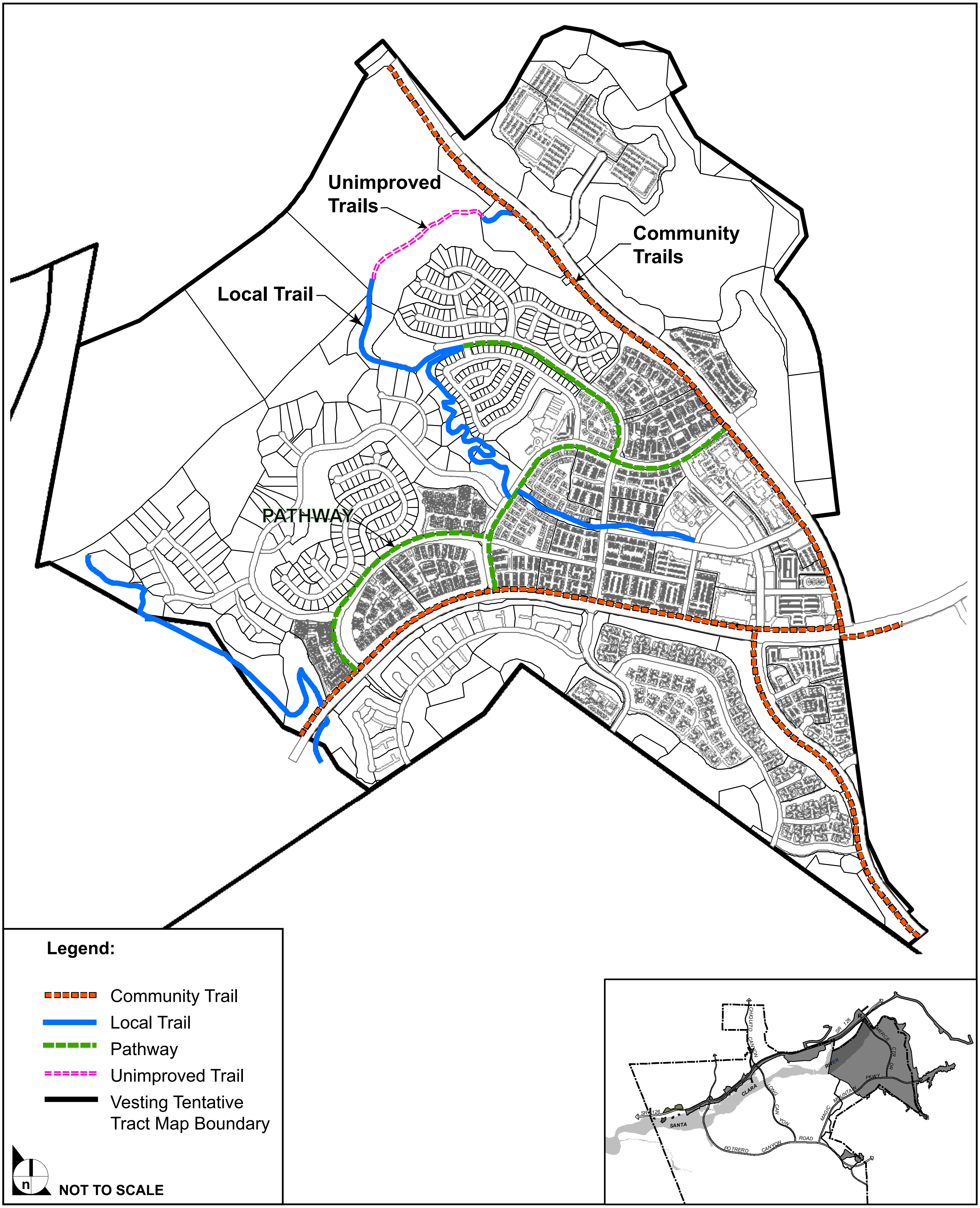
MAY 2003
m:\newhall1\sp-revise-0403\trails.dwg

SOURCE: FORMA Exhibit 2.4-5 Master Trails Plan – May 2003

FIGURE **1.0-19**

Mission Village Portion of the Newhall Ranch Specific Plan Master Trails Plan

32-99•03/10



SOURCE: Psomas - February 2010, Impact Sciences, Inc. – May 2010

FIGURE **1.0-20**

Mission Village Trails Plan

APPENDIX 2.1-E

California Department of Fish and Wildlife, *Additional Environmental Analysis, Section 2, Global Climate Change / GHG Emissions, November 2016*

2 GLOBAL CLIMATE CHANGE/GREENHOUSE GAS EMISSIONS

This section presents a summary of the current state of climate change science and greenhouse gas (GHG) emissions sources in California; a summary of applicable laws, regulations, and executive orders (EOs); quantification of project-generated GHG emissions; and discussion about their potential contribution to the cumulative impact of global climate change. The significance of the GHG emission impact of implementing the Newhall Ranch Resource Management and Development Plan (RMDP) and Spineflower Conservation Plan (SCP), collectively called the project herein, is assessed prior to the consideration of mitigation measures. Mitigation measures to reduce a potentially significant GHG impacts are described, based on independent review and analysis by CDFW, in consultation with ARB, of information and materials submitted by the project applicant.

Through the implementation of mitigation measures, including both emission reduction actions and offset projects/credits, the project applicant has committed to achieve zero net GHG emissions to eliminate the project's contribution of GHG emissions to the cumulative impact of climate change. The analysis in this section evaluates whether substantial evidence exists to demonstrate the feasibility and reliability of achieving the proposed zero net GHG emissions. Project emissions are analyzed at full buildout, which is planned to occur in 2030.

Table 2-1, shows project-generated GHG emissions, itemized by sector, including the unmitigated emissions, proposed reductions by mitigation measures, and post-mitigation emissions. Detailed analysis of project emissions and mitigation measures is provided in Section 2.3, Environmental Impacts and Mitigation Measures.

Table 2-1 Summary of Unmitigated and Post-Mitigation Annual Greenhouse Gas Emissions Associated with the Project at Full Buildout in the Planned Buildout Year (2030)

Emissions Activity/Mitigation Measure	Emissions (MT CO_2e/year)		
	Unmitigated	Reduction	Post Mitigation[1]
Mobile Sources	403,814		
		201,803	
			202,011
Electricity[2]	39,393		
		44,274	
			-4,880[3]
Natural Gas[2]	43,386		
		35,194	
			8,192
Area Sources	367		
		0	
			367
Water Consumption and Wastewater Treatment	8,190		
		0[4]	
			8,190
Solid Waste Generation	23,179		
		0[4]	
			23,179

Table 2-1 Summary of Unmitigated and Post-Mitigation Annual Greenhouse Gas Emissions Associated with the Project at Full Buildout in the Planned Buildout Year (2030)

Emissions Activity/Mitigation Measure	Emissions (MT CO_2e/year)		
	Unmitigated	Reduction	Post Mitigation[1]
Vegetation Removal	1,335		
		1,335	
			0
Construction	6,437		
		6,437	
			0
Sub-Total Annual Emissions (without MM 2-13)[5, 6]	**526,103**	**289,043**	**237,059**
MM 2-13 GHG Reductions		**-237,059**	
Total Annual Emissions	**526,103**		**0**

Notes: MT CO_2e/year = metric tons of carbon dioxide equivalent per year; TDV=Time Dependent Valuation; CEC=California Energy Commission; ZNE=Zero Net Energy

[1] Post mitigation emissions are calculated by subtracting estimated reductions from mitigation measures for each emission source from the unmitigated emission quantities, i.e., Post Mitigation Emissions = Unmitigated Emissions – Emissions Reductions.

[2] Reported unmitigated electricity and natural gas emissions are combined emissions from the CalEEMod output and the swimming pool calculations. To reflect compliance with the 2016 Title 24 Standards, CalEEMod default values were adjusted. The ZNE mitigation measures are split by assuming 78 percent of the mitigation will offset electricity and 22 percent will offset natural gas, consistent with actual emissions reductions from the 2016 Title 24 Standards. Emissions reductions from offsite building retrofits are split assuming 50 percent electricity reduction and 50 percent natural gas reduction. Refer to Technical Report Section 2.3.2 and Tables 2-13a through 2-14b of AEA Appendix 1 for more detailed assumptions.

[3] Emissions reductions from direct and indirect energy consumption appear as a negative to represent TDV energy savings from use of photovoltaics combined with variations in natural gas pricing consistent with CEC's TDV model to achieve ZNE. Refer to Technical Report Tables 4-1a through 4-2d and Technical Report Appendix J of AEA Appendix 1 for more detail.

[4] Emissions reductions from the area sources and water and wastewater treatment sectors were achieved through incorporation of emissions reducing project design features, and, therefore, are not quantified as mitigation reductions.

[5] Sub-Total Annual Emissions shown do not yet account for compensatory reductions proposed by the project applicant through use of direct measures and/or purchase of offset credits required by the GHG Reduction Plan in MM 2-13 except for MM 2-10. The project applicant has proposed commitment to achieve zero net GHG emissions, which would include direct measures and the use of offsets. Please refer to Section 2.3 for further explanation.

[6] Summarized emissions by mitigation measure are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See AEA Appendix 1 for detailed calculations.

2.1 ENVIRONMENTAL SETTING RELEVANT TO GHG EMISSIONS

2.1.1 Greenhouse Gas Emissions and Climate Change

Global climate change refers to changes in average climatic conditions (e.g., temperature, wind patterns, precipitation, and storms). Global warming, which is one aspect of climate change, is the observed increase in the average temperature of the Earth's surface and atmosphere. One identified cause of global warming is an increase of GHGs in the atmosphere; these gases allow the sun's rays to enter the Earth's atmosphere but trap the energy that is radiated back into space, resulting in a warming of the atmosphere called the "greenhouse effect."

THE PHYSICAL SCIENTIFIC BASIS

Emissions of carbon dioxide (CO_2) are a leading cause of global climate change, with other pollutants such as methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons, and sulfur hexafluoride also contributing. (See Health & Saf. Code, § 38505(g).) The magnitude of GHG impacts on global climate change differs because each GHG has a different global warming potential (GWP) (i.e., certain compounds have, on a pound-for-pound basis, greater contributions to global climate change than others). The impact of each GHG is measured as a combination of the volume of its emissions and its GWP using one pound of CO_2 as the common equivalent measure of GWP. (CO_2 has the greatest impact on global climate change because of the relatively large quantities of CO_2 emitted into the atmosphere.) Thus, GHG emissions are typically measured in terms of megagrams or metric tonnes (MT) of CO_2 equivalent (CO_2e). For the purposes of this analysis, a "tonne" refers to a metric ton (i.e., 1,000 kilograms or 2,204.6 pounds). GHG emissions are typically expressed as metric tons of carbon dioxide equivalent (MT CO_2e), where emissions of other GHGs are normalized with respect to the GWP of CO_2.

GREENHOUSE GAS EMISSION SOURCES

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural emissions sectors (ARB 2014a). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (ARB 2014a). Emissions of CO_2 are byproducts of fossil fuel combustion. CH_4, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution (CO_2 dissolving into the water), respectively, two of the most common processes for removing CO_2 from the atmosphere.

The existing project site generally consists of vacant land, some agricultural uses, water wells, active oil and gas operations, abandoned oil wells, and associated access roads. As illustrated in Table 2.1-1, Summary of Existing On-Site GHG Emissions, the existing condition emissions inventory is estimated at approximately 11,021 MT CO_2e per year. Detailed calculations are shown in Technical Report Table ES-1 and Technical Report Appendix A, contained in AEA Appendix 1.

Table 2.1-1 Summary of Existing On-Site GHG Emissions

Emissions-Generating Activity	Existing Emissions (MT CO_2e/year)
Methane emissions associated with oil wells	3,790
Energy use associated with oil wells	3,682
Energy use associated with water	2,987
N_2O emissions associated with fertilizer use	412
Emissions associated with diesel fuel usage	152
Total Existing On-Site GHG Emissions	**11,021**

Notes: MT CO_2e/year = metric tons of carbon dioxide equivalent per year; N_2O=nitrous oxide

Source: Modeling conducted by Ramboll Environ in 2016. See Technical Report Appendix A, contained in AEA Appendix 1 for detailed calculations.

2.1.2 Effects of Climate Change on the Environment

Globally, climate change has the potential to impact numerous environmental resources through anticipated, though uncertain, impacts related to future air temperatures and precipitation patterns.

Scientific modeling predicts that the continued emissions of GHGs at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. At the end of the 21st century, global surface temperature change is likely to exceed 1.5°C (relative to 1850-1900 levels) in all of the four assessed climate model projections but one (Intergovernmental Panel on Climate Change [IPCC] 2014).

The understanding of the role that GHG emissions plays on global climate trends is complex and involves varying uncertainties and a balance of different impacts. In addition to uncertainties about the extent to which human activity rather than solar or volcanic activity is principally responsible for increased warming, there also is evidence that some human activity has cooling, rather than warming, impacts, as discussed in publications by IPCC. IPCC is the leading international and intergovernmental body for the assessment of climate change and was established – in 1988 – by the United National Environment Programme and World Meteorological Organization to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts. Nonetheless, when all impacts and uncertainties are considered together, there is general scientific consensus that human activity contributes significantly to global climate change.

Acknowledging uncertainties regarding the rate at which anthropogenic (i.e., human-caused) GHG emission may continue to increase, and the impact of such emissions on climate change, IPCC devises emission scenarios that use various assumptions about the rates of economic development, population growth, and technological advancement over the course of the next century. These uncertainties are attributable to various factors under human control, such as future population growth and the locations of that growth; the amount, type, and locations of economic development; the amount, type, and locations of technological advancement; adoption of alternative energy sources; legislative and public initiatives to curb emissions; and public awareness and acceptance of methods for reducing emissions. For the IPCC Fifth Assessment Report, a set of four new scenarios, denoted Representative Concentration Pathways (RCP), were developed. RCPs are based on a combination of integrated assessment models, simple climate models, atmospheric chemistry and global carbon cycle models. The four RCPs include a mitigation scenario, two stabilizing scenarios, and one scenario with very high GHG emissions. "The RCPs can thus represent a range of 21st century climate policies, as compared with the no-climate policy of the Special Report on Emissions Scenarios (SRES) used in the AR3 and the AR4."

While the projected impacts of global climate change on weather and climate are uncertain and likely to vary regionally, the following impacts are expected by IPCC:

- it is very likely that the Arctic sea ice cover will continue to shrink and thin, with the Northern Hemisphere spring snow cover and global glacier volume also decreasing;
- it is virtually certain that there will be more frequent hot and fewer cold temperature extremes over most land areas on daily and seasonal timescales, with heat waves occurring at a higher frequency and duration;
- global surface temperature change for the end of the 21st century is likely to exceed 1.5°C relative to 1850 to 1900 for all RCP scenarios except the mitigation scenario. It is likely to exceed 2°C for the highest forcing scenario and one stabilizing scenario, and more likely than not to exceed 2°C for the remaining stabilizing scenario. Warming will continue beyond 2100 under all RCP scenarios except the mitigation scenario;
- the global ocean will continue to warm during the 21st century, with heat penetrating from the surface to the deep ocean and affecting ocean circulation;
- further uptake of carbon by the ocean will increase ocean acidification;
- changes in the global water cycle in response to the warming over the 21st century will not be uniform. The contrast in precipitation between wet and dry regions and between wet and dry seasons will increase, although there may be regional exceptions; and
- most aspects of climate change will persist for many centuries even if GHG emissions cease entirely.

Physical conditions beyond average temperatures could be indirectly affected by the accumulation of GHG emissions. For example, changes in weather patterns resulting from increases in global average temperature are expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Based upon historical data and modeling, the California Department of Water Resources (DWR) projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050 (DWR 2008:4). An increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events (California Natural Resources Agency [CNRA] 2012:5). This scenario would place more pressure on California's levee/flood control system.

Another outcome of global climate change is sea level rise. Sea level rose approximately seven inches during the last century and, assuming that sea-level changes along the California coast continue to track global trends, sea level along the state's coastline in 2050 could be 10-18 inches higher than in 2000, and 31 to 55 inches higher by the end of this century (CNRA 2012: 9).

As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the state if suitable conditions are no longer available (CNRA 2012: 11, 12).

Changes in precipitation patterns and increased temperatures are expected to alter the distribution and character of natural vegetation and associated moisture content of plants and soils. An increase in frequency of extreme heat events and drought are also expected. These changes are expected to lead to increased frequency and intensity of large wildfires (CNRA 2012: 11).

To protect the state's public health and safety, resources, and economy, CNRA — in coordination with other state agencies — has updated the *2009 California Climate Adaptation Strategy* with the 2014 *Safeguarding California: Reducing Climate Risk* plan (CNRA 2014). Additionally, in March 2016, CNRA released *Safeguarding California: Implementation Action Plans*, a document that shows how California is acting to convert the recommendations contained in the 2014 *Safeguarding California* plan into action. The 2016 *Action Plans* document is divided by ten sectors (i.e., agriculture, biodiversity and habitat, emergency management, energy, forestry, land use and community development, oceans and coastal resources and ecosystems, public health, transportation, and water), and shows the path forward by presenting the risks posed by climate change, the adaptation efforts underway, and the actions that will be taken to safeguard residents, property, communities, and natural systems.

Substantial work has been done at the international and national level to evaluate climatic impacts, and climate change and its potential impacts have been studied extensively in California. Cal-Adapt is a climate change scenario planning tool developed by the California Energy Commission (CEC) and the University of California Berkeley Geospatial Innovation Facility. Cal-Adapt currently downscales global climate model data to local and regional resolution under two emissions scenarios; the A-2 scenario represents a business-as-usual (BAU) future emissions scenario, and the B-1 scenario represents a lower GHG emissions future. According to Cal-Adapt, annual average temperatures in Los Angeles County are projected to rise by 3.8-6.4°F by 2100, with the range based on low- and high-emissions scenarios (Cal-Adapt 2016).

2.2 REGULATORY SETTING

2.2.1 Federal

CLEAN AIR ACT

In *Massachusetts v. Environmental Protection Agency* (2007) 549 U.S. 497, the U.S. Supreme Court held that the U.S. Environmental Protection Agency (EPA) has authority under the Clean Air Act (CAA) to regulate CO_2 emissions if those emissions pose an endangerment to the public health or welfare.

In 2009, EPA issued an "endangerment finding" under the CAA, concluding that GHGs threaten the public health and welfare of current and future generations and that motor vehicles contribute to GHG emissions. These findings provide the basis for adopting national regulations to mandate GHG emission reductions under the CAA.

To date, EPA has exercised its authority to regulate mobile sources that reduce GHG emissions via the control of vehicle manufacturers, as discussed immediately below (see "Federal Vehicle Standards"). The EPA also has adopted standards that set a national limit on GHG emissions produced from new, modified, and reconstructed power plants, and has issued the Clean Power Plan, which is targeted toward the reduction of carbon emissions from existing power plants. Under the Clean Power Plan, EPA set state-specific interim and final performance rates for two subcategories of fossil fuel-fired electric generation units: fossil fuel-fired electric steam generating units and natural gas-fueled combined cycle generating units. The Clean Power Plan requires states to develop and implement plans that ensure that the power plants in their state – either individually, together or in combination with other measures – achieve the interim performance rates over the period of 2022 to 2029 and the final performance rates, rate-based goals or mass-based goals by 2030. In February 2016, the U.S. Supreme Court stayed implementation of the Clean Power Plan pending judicial review.

FEDERAL PLAN TO REDUCE GHG EMISSIONS BY 2025

In 2015, the U.S. State Department submitted the nation's GHG emissions reduction target to the United Nations Framework Convention on Climate Change. The submission, referred to as an Intended Nationally Determined Contribution, is a formal statement of the U.S. target to reduce the nation's emissions by 26 to 28 percent below 2005 levels by 2025.

The target is the culmination of a process that examined opportunities under existing regulatory authorities to reduce GHG emissions in 2025 from all sources in every economic sector. Several U.S. laws, as well as existing and proposed regulations thereunder, are relevant to the implementation of the U.S. target, including the CAA (42 U.S.C. § 7401 et seq.), the Energy Policy Act (42 U.S.C. § 13201 et seq.), and the Energy Independence and Security Act (42 U.S.C. § 17001 et seq.) (The White House 2015).

FEDERAL VEHICLE STANDARDS

In response to the *Massachusetts v. Environmental Protection Agency* decision, in 2007, the Bush Administration issued EO 13432 directing EPA, the Department of Transportation (DOT), and the Department of Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the National Highway Traffic Safety Administration (NHTSA) issued a final rule regulating fuel efficiency for and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, President Obama issued a memorandum directing the same federal agencies to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 to 2025 light-duty vehicles. The proposed standards are projected to achieve 163 grams/mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon (mpg) if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014 to 2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles.

In August 2016, EPA and NHTSA adopted the next phase (Phase 2) of the fuel economy and GHG standards for medium- and heavy-duty trucks, which apply to vehicles with model year 2018 and later (EPA 2016). In response to EPA's adoption of the Phase 2 standards, ARB staff plan to propose a Phase 2 program for California, most likely in late 2016 or 2017 (ARB 2016a).

ENERGY INDEPENDENCE AND SECURITY ACT

The Energy Independence and Security Act of 2007 (EISA) facilitates the reduction of national GHG emissions by requiring the following:

- increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and
- while superseded by EPA and NHTSA actions described above, (i) establishing mpg targets for cars and light trucks and (ii) directing NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of the EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

2.2.2 State

Numerous laws, plans, and regulations that require GHG emissions reductions have been implemented or are under development in California. This comprehensive statewide framework is summarized below.

EXECUTIVE ORDER S-3-05

In 2005, former Governor Arnold Schwarzenegger signed EO S-3-05, which established the following GHG emission reduction goals for California:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

In adopting Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, and Senate Bill (32), the Global Warming Solutions Act of 2006: emissions limit, discussed below, the Legislature did not adopt the 2050 horizon-year goal from EO S-3-05.

ASSEMBLY BILL 32, THE CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006

AB 32 (Nunez, 2006), the California Global Warming Solutions Act of 2006, was enacted after considerable study and expert testimony before the Legislature. The heart of AB 32 is the requirement that statewide GHG emissions be reduced to 1990 levels by 2020 (Health & Saf. Code, § 38550). To achieve this reduction mandate, AB 32 requires ARB to adopt rules and regulations in an open public process that achieve the maximum technologically feasible and cost-effective GHG reductions.

AB 32 charges ARB to monitor and regulate sources of GHG emissions to reduce the state's emissions level. In December 2007, ARB approved 427 million MT CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. This limit is an aggregate statewide limit, rather than sector- or facility-specific, and is in accordance with Health & Safety Code Section 38550.

Per Health & Safety Code Section 38561(b), ARB also is required to prepare, approve, and amend a scoping plan that identifies and makes recommendations on "direct emission reduction measures, alternative compliance mechanisms, market-based compliance mechanisms, and potential monetary and nonmonetary incentives for sources and categories of sources that [ARB] finds are necessary or desirable to facilitate the achievement of the maximum feasible and cost-effective reductions of greenhouse gas emissions by 2020."

ARB CLIMATE CHANGE SCOPING PLAN

In 2008, ARB approved the *Climate Change Scoping Plan: A Framework for Change* (2008 Scoping Plan) in accordance with Health & Safety Code Section 38561. During the development of the 2008 Scoping Plan, ARB created a planning framework that is comprised of eight emissions sectors: (1) transportation; (2) electricity; (3) commercial and residential; (4) industry; (5) recycling and waste; (6) high GWP gases; (7) agriculture; and, (8) forest net emissions. It establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions from the eight emissions sectors to 1990 levels by 2020. In the Scoping Plan, ARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of approximately 28.5 percent from the otherwise projected 2020 emissions level; i.e., those emissions that would occur in 2020, absent GHG-reducing laws and regulations (BAU).

To achieve the necessary GHG reductions to meet AB 32's 2020 target, ARB developed a series of reduction measures in the Scoping Plan covering a range of sectors and activities. Broadly, the reduction measures can be separated into capped sectors (i.e., covered by the Cap-and-Trade Program) and uncapped sectors. Emissions from capped sectors, which include the transportation, electricity, industrial, commercial, and residential sectors of the economy, were fixed under the rules of the Cap-and-Trade Program, and the majority of policy proposals developed by ARB and other state agencies pursuing GHG emissions-reducing strategies are designed to secure reductions from these sectors.

In 2011, ARB introduced the *Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (2011 Final Supplement)*, which contains the main strategies California will implement to achieve reduction from the state's projected 2020 emission level under a BAU scenario. ARB's revised 2020 projection takes into account the economic downturn that occurred in 2008, and includes reductions anticipated from the Renewable Portfolio Standard (RPS) and Advanced Clean Cars (ACC) (ARB 2015).

In May 2014, ARB released and has since adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching AB 32 goals and evaluate the progress that has been made between 2000 and 2012 (ARB 2014a:4 and 5). According to the update, California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond 2020 (ARB 2014a:ES-2). The update also reports the trends in GHG emissions from various emission sectors.

Currently, ARB is preparing a 2030 Target Scoping Plan Update to address EO B-30-15 and SB 32, and specifically Governor Brown's statewide GHG emissions reduction target for 2030, as discussed below.

SENATE BILL 375

SB 375 (Steinberg, 2008), the Sustainable Communities and Climate Protection Act, coordinates land use planning, regional transportation plans, and funding priorities to reduce GHG emissions from passenger vehicles through better-integrated regional transportation, land use, and housing planning that provides easier access to jobs, services, public transit, and active transportation options. SB 375 specifically requires the Metropolitan Planning Organization (MPO) relevant to the project area (here, the Southern California Association of Governments [SCAG]) to include a Sustainable Communities Strategy (SCS) in its Regional Transportation Plan (RTP) that will achieve GHG emission reduction targets set by ARB by reducing vehicle miles traveled (VMT) from light-duty vehicles through the development of more compact, complete, and efficient communities.

EXECUTIVE ORDER B-30-15

In April 2015, Governor Brown signed EO B-30-15, which established the following GHG emission reduction goal for California: by 2030, reduce GHG emissions to 40 percent below 1990 levels. This EO also directed all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in EO S-3-05 (see discussion above). Additionally, the EO directed ARB to update its Scoping Plan (see discussion above) to address the 2030 goal. Therefore, in the coming months, ARB is expected to develop statewide inventory projection data for 2030, and identify reduction strategies capable of securing emission reductions that allow for achievement of the EO's new interim goal.

SENATE BILL 32 AND ASSEMBLY BILL 197, STATUTES OF 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which are aimed at California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to requiring ARB to ensure that a statewide GHG emissions are reduced to at least 40 percent below the AB 32 goal of 1990 levels no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the state's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

AB 197 amended the existing Health and Safety Code sections and established new statutory directions, including the following provisions. Section 9147.10 establishes a six-member Joint Legislative Committee on Climate Change Policies to ascertain facts and make recommendations to the Legislature. ARB is required to appear before this committee annually to present information on GHG emissions, criteria pollutants, and toxic air contaminants from sectors covered by the Scoping Plan. Section 38562.5 requires that ARB consider social cost when adopting rules and regulations to achieve emissions reductions, and prioritize reductions at large stationary sources and from mobile sources. Section 38562.7 requires that each Scoping Plan update identify the range of projected GHG and air pollution reductions and the cost-effectiveness of each emissions reduction measure.

ADVANCED CLEAN CARS PROGRAM

In 2012, ARB adopted the ACC program, an emissions-control program for passenger vehicles and light-duty truck for model years 2017–2025, thereby continuing the regulatory framework established under the Pavley standards beyond model year 2016. The program combines the control of smog, soot, and GHG emissions with requirements for greater numbers of zero emission vehicles. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions.

LOW CARBON FUEL STANDARD

EO S-1-07, as issued by former Governor Arnold Schwarzenegger, called for a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by ARB by 2020. Carbon intensity is a measure of the GHG emissions associated with the various production, distribution and use steps in the "lifecycle" of a transportation fuel. In response, ARB adopted the Low Carbon Fuel Standard (LCFS) regulations in 2009, which became fully effective in April 2010. Thereafter, a lawsuit was filed challenging ARB's adoption of the regulations; and, in 2013, a court order was issued compelling ARB to remedy substantive and procedural defects of the LCFS adoption process under CEQA (*POET, LLC v. ARB* (2013) 217 Cal.App.4th 1214). However, the court allowed implementation of the LCFS to continue pending correction of the identified defects. In September 2015, ARB re-adopted the LCFS regulations.

PAVLEY REGULATIONS

AB 1493 (Pavley, 2002) required ARB to adopt regulations to reduce GHG emissions from non-commercial passenger vehicles and light-duty trucks for model years 2009–2016. In September 2004, and pursuant to AB 1493, ARB approved regulations (which are often referred to as the “Pavley standards”) to reduce GHG emissions from new motor vehicles beginning with the 2009 model year. In September 2009, ARB adopted amendments to the Pavley standards to reduce GHG emissions from new motor vehicles through the 2016 model year.

ZERO EMISSIONS VEHICLES

Zero emission vehicles (ZEVs) include plug-in electric vehicles, such as battery electric vehicles and plug-in hybrid electric vehicles, and hydrogen fuel cell electric vehicles.

In 2012, Governor Brown issued EO B-16-2012, which calls for the increased penetration of ZEVs into California’s vehicle fleet to help California achieve a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. In furtherance of that statewide target for the transportation sector, the EO also calls upon ARB, CEC, and the California Public Utilities Commission (CPUC) to establish benchmarks that will: (1) allow over 1.5 million ZEVs to be on California roadways by 2025, and (2) provide the state’s residents with easy access to ZEV infrastructure.

In furtherance of those goals, in February 2013, the Governor’s Interagency Working Group on ZEVs issued the *2013 ZEV Action Plan: A roadmap toward 1.5 million zero-emission vehicles on California roadways by 2025*. Additionally, in May 2014, the National Renewable Energy Laboratory issued the *California Statewide Plug-In Electric Vehicle Infrastructure Assessment* (Infrastructure Assessment report) prepared at the request of the CEC. In the Infrastructure Assessment report, CEC noted that “can’t miss” ZEV charging locations are residential and workplace areas.

California is incentivizing the purchase of ZEVs through implementation of the Clean Vehicle Rebate Project, which is administered by a non-profit organization (The Center for Sustainable Energy) for ARB and currently subsidizes the purchase of passenger near-zero and ZEVs as follows:

- Hydrogen Fuel Cell Electric Vehicles: $5,000
- Battery Electric Vehicles: $2,500
- Plug-In Hybrid Electric Vehicles: $1,500
- Neighborhood Electric Vehicles and Zero Emission Motorcycles: $900

In its 2014 First Update to the Scoping Plan, ARB recognized that the light-duty vehicle fleet “will need to become largely electrified by 2050 to meet California’s emission reduction goals” (ARB 2014a:48). Accordingly, ARB’s ACC program – summarized above – requires about 15 percent of new cars sold in California in 2025 to be a plug-in hybrid, battery electric, or fuel cell vehicle (ARB 2014a:47).

SHORT-LIVED CLIMATE POLLUTANT REDUCTION STRATEGY

SB 605 (Lara, Chapter 523, Statutes of 2014) directed ARB to developed comprehensive short-lived climate pollutant (SLCP) strategy, in coordination with other state agencies and local air quality management and air pollution control districts. Governor Brown has identified reductions in SLCP emissions as one “pillar” to meet the goals of AB 32. ARB staff released a proposed SLCP Strategy in April 2016. Subsequently in September 2016, the Legislature passed and Governor Brown signed Senate Bill 1383 (Lara, Chapter 395, Statutes of

2016) mandating ARB to take certain specific actions with regard to the SLCP strategy. Specifically, it mandated that ARB, no later than January 1, 2018, approve and begin to implement the SLCP strategy developed under Health and Safety Code section 39730 to achieve specified targets identified for each of the pollutants and after carrying out certain procedures and analyses. In response to this new mandate, ARB is revising the SLCP Strategy to reflect the requirements of the bill. SB 1383 identifies specific reduction targets for three SLCPs (i.e., black carbon, fluorinated gases, and methane), which the SLCP Strategy will address.

SENATE BILL X1-2 (2011) AND SENATE BILL 350 (2015)

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50 percent of the total renewable energy for the 2011-2013 compliance period, at least 65 percent for the 2014-2016 compliance period, and at least 75 percent for 2016 and beyond.

Most recently, Governor Edmund G. Brown signed into legislation SB 350 in October 2015, which requires retail seller and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030, with interim goals of 40 percent by 2024, and 45 percent by 2027.

CALIFORNIA BUILDING EFFICIENCY STANDARDS (TITLE 24, PART 6)

Title 24, Part 6 of the California Code of Regulations (CCR) regulates the design of building shells and building components. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. CEC's 2016 Building Energy Efficiency Standards (2016 Building Standards), which become effective on January 1, 2017, are the most current version of these standards.

CPUC, CEC, and ARB also have a shared, established goal of achieving Zero Net Energy (ZNE) for new construction in California. The key policy timelines include: (1) all new residential construction in California will be ZNE by 2020, and (2) all new commercial construction in California will be ZNE by 2030.

The ZNE goal generally means that new buildings must use a combination of improved efficiency and renewable energy generation to meet 100 percent of their annual energy need, as specifically defined by the CEC:

> "A ZNE Code Building is one where the value of the energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building, at the level of a single 'project' seeking development entitlements and building code permits, measured using the [CEC]'s Time Dependent Valuation (TDV) metric. A ZNE Code Building meets an Energy Use Intensity value designated in the Building Energy Efficiency Standards by building type and climate zone that reflect best practices for highly efficient buildings" (CEC 2015:41).

In addition to CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) are commonly referred to as CALGreen, and establish voluntary and mandatory standards pertaining to the planning and design of sustainable site development, energy efficiency, water conservation, material conservation, and interior air quality. CALGreen is periodically amended, and the 2016 CALGreen standards become effective on January 1, 2017.

The Building Energy Efficiency Standards are updated on approximately a three-year cycle. The 2019 standards will would achieve greater energy efficiency as compared to the 2016 standards. Residential and non-residential buildings built later than 2019 will be required to comply with the 2019 standards, as will other future residential and non-residential buildings constructed within the timeframe of future editions of the standards.

2.2.3 Local

SCAG'S REGIONAL TRANSPORTATION PLAN/SUSTAINABLE COMMUNITIES STRATEGY

As previously discussed, SB 375 requires SCAG to incorporate an SCS into its RTP that achieves the GHG emission reduction targets set by ARB. As required by SB 375, ARB adopted year 2020 and 2035 GHG reduction targets for each metropolitan region. The SB 375 targets for the Southern California region under SCAG's jurisdiction in 2020 and 2035 are reductions in per capita GHG emissions of 8 percent and 13 percent, respectively (ARB 2014b).

Pursuant to Government Code Section 65080(b)(2)(K), an SCS does not: (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it.

2012 Sustainable Communities Strategy

In April 2012, SCAG adopted its first-ever SCS, which is included in the *2012–2035 Regional Transportation Plan/Sustainable Communities Strategy* (2012 RTP/SCS). The goals and policies of the SCS that reduce VMT (and result in corresponding GHG emission reductions) focus on transportation and land use planning that include building infill projects, locating residents closer to where they work and play, and designing communities so there is access to high quality transit service. SCAG's 2012 SCS is expected to reduce per capita transportation emissions by 9 percent in 2020 and by 16 percent in 2035. In 2012, ARB accepted SCAG's determination that the 2012 SCS would meet the region's GHG reduction targets (ARB 2012).

2016 Sustainable Communities Strategy

In April 2016, SCAG adopted the 2016-2040 RTP/SCS: A Plan for Mobility, Accessibility, Sustainability and a High Quality of Life (2016 RTP/SCS). SCAG's 2016 SCS is expected to reduce per capita transportation emissions by 8 percent in 2020, 18 percent in 2035, and 21 percent in 2040. In June 2016, ARB accepted SCAG's determination that the 2016 SCS would meet the region's GHG reduction targets for 2020 and 2035.

COUNTY OF LOS ANGELES GENERAL PLAN

The County Board of Supervisors adopted the Los Angeles County General Plan 2035 in October 2015. The General Plan directs future growth and development in the County's unincorporated areas and establishes goals, policies, and objectives that pertain to the entire County.

As part of the General Plan's Air Quality Element, the County adopted a Community Climate Action Plan (CCAP) to reduce GHG emissions associated with community (not municipal) activities in unincorporated Los Angeles County. The CCAP addresses emissions from building energy, land use and transportation, water consumption and waste generation, and sets forth the County's path to a sustainable future that achieves identified GHG reductions. More precisely, the CCAP includes 26 local actions that are grouped into five emissions reduction strategy areas: (1) green building and energy; (2) land use and transportation; (3) water conservation and wastewater; (4) waste reduction, reuse and recycling; and, (5) land conservation and tree planting.

COUNTY OF LOS ANGELES COMMUNITY CLIMATE ACTION PLAN

The County of Los Angeles CCAP provides that public agencies and private developers may use it to comply with project-level review requirements pursuant to CEQA, because it accords to the tiering requirements established by CEQA Guidelines Section 15183.5(b)(1). As such, the CCAP provides that project-specific environmental documents that incorporate applicable emissions reduction strategies can rely on the GHG analysis in the Environmental Impact Report (EIR) certified for the County's General Plan (including the CCAP) to meet project-level CEQA evaluation requirements for the time period covered by the CCAP. Projects that demonstrate consistency with applicable emissions reduction strategies can be determined to have a less-than-significant impact on GHG emissions and global climate change.

The CCAP focuses on compliance with AB 32 and includes GHG reduction strategies up to the year 2020 and provides a projected inventory for 2035. The actions included in the CCAP will help Los Angeles County achieve GHG reductions consistent with statewide goals by 2020. By 2021, the County will develop an update to the CCAP for the years following 2020. Because the current CCAP does not apply to the full project buildout year (2030), for the purposes of this project, the CCAP and its associated environmental documents cannot be relied on for GHG significance determinations. The updated CCAP containing projections and reduction strategies up through the year 2035 would be intended to serve as a qualified plan that may be applied to future project implementation actions occurring after the adoption of the updated CCAP.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

The South Coast Air Quality Management District (SCAQMD) is principally responsible for comprehensive air pollution control in the South Coast Air Basin, which includes Los Angeles, Orange, and the urbanized portions of Riverside and San Bernardino counties. SCAQMD works directly with SCAG, County transportation commissions, and local governments, and cooperates actively with all federal and state government agencies to regulate air quality.

Adopted Threshold for Stationary Source Projects

In 2008, SCAQMD's Governing Board adopted an interim CEQA GHG significance threshold of 10,000 MT CO_2e per year for industrial stationary source projects for which SCAQMD is the CEQA lead agency. When adopting its threshold, the Governing Board authorized the use of offsets as mitigation (SCAQMD 2008).

Draft Threshold for All Other Project Types

For all other projects (i.e., non-stationary source projects), SCAQMD staff developed a draft, multi-tier framework to assist with the CEQA significance evaluation process. The draft framework recognized the relevance of locally adopted GHG reduction plans, and allowed for the use of such plans in the significance evaluation process. Additionally, the draft framework included the development of the following efficiency targets:

> 2020: 4.8 MT CO_2e per year per service population (defined to include residents plus workers)
> 2035: 3.0 MT CO_2e per year per service population (same as above)

If none of the prescribed performance standards are met, the draft framework recognized the use of off-site mitigation.

As of October 2016, SCAQMD's Governing Board has not adopted the draft staff proposal. Therefore, no GHG significance thresholds are approved for use in the South Coast Air Basin by the applicable regional air district (i.e., SCAQMD).

SANTA CLARITA VALLEY AREA PLAN: ONE VALLEY ONE VISION 2012

The Santa Clarita Valley Area Plan: One Valley One Vision 2012 (Area Plan) serves as a long-term guide for development in the Santa Clarita Valley (Valley) Planning Area over the next 20 years. The Area Plan ensures consistency between the General Plans of the County and the City of Santa Clarita (City) to achieve common goals. The primary GHG-related policy of the Area Plan is the requirement that the County create and adopt a Climate Action Plan; that effort is complete, as discussed above.

2.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

2.3.1 Greenhouse Gas Provisions in CEQA Guidelines

In 2007, SB 97 was enacted calling for the preparation and adoption of CEQA Guidelines to address environmental impacts of GHG emissions. CEQA Section 21083.05 was added by the statute and directed that guidelines be developed "for the mitigation of greenhouse gas emissions or the impacts of greenhouse gas emissions as required by this division, including, but not limited to, impacts associated with transportation or energy consumption." A series of CEQA Guidelines amendments were added in 2010 to fulfill the requirements of SB 97. Key provisions relevant to determining the significance of GHG emissions are summarized as follows.

Section 15064.4 was added as one of a set of amendments addressing GHG. The Guidelines state:

(a) "The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project…"

(b) A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:

   (1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

   (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;

   (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible impacts of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

Additionally, under CEQA Guidelines Section 15126.4(c)(3)-(4), a project's GHG emissions can be reduced by "[o]ff-site measures, including offsets that are not otherwise required" and "[m]easures that sequester greenhouse gases." Therefore, the CEQA Guidelines allow projects to reduce GHG emissions by relying on voluntary market offsets that are not otherwise required as well as other offsite and sequestration measures that result in GHG reductions.

2.3.2 Threshold of Significance for the Additional Environmental Analysis

Section 15064 of the CEQA Guidelines provides the foundational guidance for determinations of significant effect on the environment. As noted in subpart (b) of Section 15064, "(t)he determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

Recognizing that GHG emissions contribute to the cumulative impact condition of global climate change, Section 15064(h)(1) is also pertinent. When assessing if a significant environmental effect may occur, Section 15064(h)(1) states that “the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable.” A cumulative impact may be significant when the project’s incremental effect, though individually limited, is cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of other past, current, and reasonably foreseeable probable future projects. As discussed in Section 2.1, Environmental Setting, climate change is the product of incremental contributions of GHGs on a global scale; therefore, a project’s cumulatively considerable GHG emissions, even if relatively small in magnitude compared to world-wide emissions, could ultimately contribute to the progression of climate change.

To define the appropriate approach to the judgment of significance in the case of this project and the Additional Environmental Analysis (AEA) prepared in response to a Supreme Court decision, CDFW has been guided and informed by principles detailed in CEQA Guidelines Sections 15064 and 15064.4 and relevant portions of Guidelines Appendix G. CDFW also recognizes the guidelines’ recommendations for a lead agency to consider the project’s consistency with relevant, adopted plans and the direction in CEQA Guidelines Section 15125(d) to discuss any inconsistencies with applicable regional plans, including plans for the reduction of GHG emissions. In Appendix G of the State CEQA Guidelines, two questions are provided to help assess if the project would result in a potentially significant impact on climate change. Would the project:

- generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?

In response to the Supreme Court’s decision, the project applicant approached CDFW to propose extensive, tailored mitigation strategies to minimize GHG emissions from project land developments and then, for emissions that cannot be fully avoided, compensate through offsets, resulting in zero net GHG emissions compared to existing conditions (i.e., no net increase in GHG emissions). The project applicant has proposed the commitment to achieve zero net GHG emissions using feasible and reliable emission-reduction actions related to the land development project, the implementation of direct measures to reduce GHG emissions offsite, and the procurement of GHG offsets. The intended net outcome would be to eliminate any contribution of GHG emissions to the cumulative impact of global climate change.

In light of the project applicant’s proposed commitment and modifications to the project, and in consideration of the direction from the CEQA Guidelines, the threshold of significance for the Newhall Ranch RMDP and SCP Project will be to feasibly and reliably attain the project applicant’s commitment to achieve no net increase in GHG emissions. With such an outcome, the project would not increase GHG emissions, which is applicable to Section 15064.4(b)(1). Similarly for cumulative impacts, because of the commitment to achieve zero net GHG emissions, the project’s incremental contribution to climate change would be eliminated, and therefore it would not be cumulatively considerable. With no increase in GHG emissions compared to existing conditions, any inconsistencies with relevant plans would be avoided. If, through the zero GHG emissions commitment, the project demonstrates that it may be implemented and operate without increasing emissions of GHGs beyond the existing conditions, the project-level and cumulative impact to global climate change would be less than significant.

In the evaluation of GHG-related impacts, CDFW has exercised its independent lead agency review and analysis, pursuant to Public Resources Code section 21082.1(c)(1). CDFW has applied its judgment and discretion, in consultation with ARB, in estimating the project’s emissions, defining the zero net commitment detailed in the additional analysis, making the project-specific impact significance determination and cumulative considerable contribution determination, and including mitigation measures to achieve the project commitment.

The intent of this analysis is not to present the use of a zero GHG emissions commitment as a generally applied threshold of significance for GHG impacts. Its use herein is related directly to the facts surrounding the project and the project applicant's proposed commitment. Achieving zero net GHG emissions is the appropriate threshold for the proposed project in this case. CDFW recognizes there are multiple pathways available under CEQA for a lead agency to assess and analyze the significance of project-specific GHG emissions. Consistent with the CEQA Guidelines principles highlighted above, determining the significance of related effects is a matter of lead agency discretion, requiring careful judgment on a project-by-project basis. Achieving zero net emissions is just one way to reach a less-than-significant conclusion; it is not the only approach; and it may not be needed or appropriate for all projects.

2.3.3 Analysis Methods

Project-related operational emissions of GHGs were estimated for the following sources: area sources (e.g., landscaping-related fuel combustion sources), energy use associated with residential and non-residential buildings, water and wastewater treatment and distribution, solid waste, and mobile sources (e.g., passenger vehicles). In addition, the one-time increase in emissions associated with construction activities and vegetation changes was quantified. The typical types of GHG emissions resulting from mixed-use developments, such as the proposed project, are CO_2, CH_4, and N_2O. GHG emissions are measured in terms of MT CO_2e, which is calculated as the product of the mass emitted of a given GHG and its GWP.

The impact analysis in the AEA first estimates GHG emissions from the project construction and operation prior to consideration of mitigation measures. The project applicant has proposed mitigation measures to reduce and compensate for GHG emissions in response to the Supreme Court's decision on the previous 2010 Final EIR. The project applicant's proposal includes the commitment that the project would achieve zero net GHG emissions through the implementation of emission-reduction measures applied to project elements and activities, direct measures to reduce GHG emissions offsite, and the procurement of compensatory GHG offsets. CDFW has independently reviewed and analyzed, in consultation with ARB, the proposed mitigation measures. This section concludes by assessing the significance of the project's GHG emissions after consideration of the proposed mitigation measures.

Short-term construction-generated and long-term operational GHG emissions were calculated using the California Emissions Estimator Model (CalEEMod) Version 2013.2.2 computer program (SCAQMD 2013). CalEEMod uses widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the EPA AP-42 emission factors, and ARB's on-road and off-road equipment emission models such as the EMission FACtor model (EMFAC) and the Emissions Inventory Program model (OFFROAD). EMFAC is an emission factor model used to calculate emissions rates from on-road vehicles (e.g., passenger vehicles). The emission factors used by CalEEMod are based on the ARB EMFAC2011 program. OFFROAD is an emission factor model used to calculate emission rates from off--road mobile sources (e.g., construction equipment, agricultural equipment). The off-road diesel emission factors used by CalEEMod are based on the ARB OFFROAD2011 program.

The 2013.2.2 version of CalEEMod does not incorporate the updated version of EMFAC (2014) which includes various updates, notably the incorporation of EPA and ARB regulations and standards. The updates were in response to regulations enacted through California's ACC Program and NHTSA Phase 1 standards. Therefore, EMFAC2014 information was incorporated into the analysis in lieu of CalEEMod's default use of EMFAC2011 information. Notably, EMFAC2014 (unlike EMFAC2011) excludes GHG emission reductions from LCFS.

In addition, CalEEMod contains default values and methodologies consistent with existing regulations for each region. Appropriate statewide default values can be used if regional default values are not defined. Default factors for Los Angeles County area (within the SCAQMD jurisdiction) were used for the GHG emission inventory, unless otherwise noted in the methodology descriptions below.

CalEEMod uses GWPs from the IPCC Second Assessment Report, which is 310 for N_2O and 21 for CH_4. Therefore, the GWPs in the IPCC Fourth Assessment Report of 298 for N_2O and 25 for CH_4 were manually incorporated to CalEEMod output as the Fourth Assessment Report to be consistent with current GWPs used by ARB in its current emission inventories.

Modeling assumptions are included in the Technical Report contained in AEA Appendix 1. Where appropriate, directions to Technical Report sections, tables, and appendices within AEA Appendix 1 that relate to specific modeling details are provided to support the GHG analysis.

CONSTRUCTION EMISSIONS

Model assumptions for construction-related emissions were based on project-specific information (i.e., number and type of units, construction phasing based on site location, start date of construction, area to be graded, area to be paved, and year of operation); and default values in CalEEMod that are based on the project's location and land use types. The project's construction schedule consists of six stages, with construction-related activities commencing in March 2018 and concluding in December 2030. This schedule conservatively assumes that construction may continue to the end of 2030 when the project reaches full operation. While some construction phases are conservatively identified to conclude in the second half of the 2030 calendar year, the project's absorption schedule anticipates that the project would be fully constructed and occupied during the 2030 calendar year.

For each of the stages, the major construction phases included are grading, trenching or improvements, paving, building construction, and architectural coating. GHG emissions from these construction phases are largely attributable to fuel use from construction equipment and worker commuting vehicles. Construction-related emissions were estimated using CalEEMod Version 2013.2.2. The construction schedule, off-road equipment lists and equipment specifications used in CalEEMod are project specific estimates, and consistent with the total level of construction equipment activity analyzed in the *Final Joint Environmental Impact Statement/EIR (EIS/EIR) for the RMDP and SCP Project* GHG analysis.

Adjustments were made to CalEEMod's default parameters for the number of worker and vendor trips. CalEEMod default assumptions result in an over-estimation of the number of vendor and worker trips during the building construction and architectural coating phases due to the model's assumption that all buildings are constructed simultaneously during every year of construction activity. The project proposes to phase development such that construction-related activities would occur on various portions of the total development area from year-to-year. Therefore, an adjustment factor was applied to correct CalEEMod's number of vendor and worker trips based on the estimated number of residential dwelling units and non-residential square footage being built and painted in each calendar year. Additional details on construction-related inputs to CalEEMod are shown in Technical Report Tables 2.3-1 through 2.3-5 and Technical Report Appendix B, contained in AEA Appendix 1.

AREA SOURCES

Area sources in CalEEMod are direct sources of GHG emissions. The area source GHG emissions included in this analysis result from landscaping-related fuel combustion sources, such as lawn mowers. GHG emissions due to natural gas combustion in buildings, including fireplaces, are excluded from this section as they are included in the emissions associated with building energy use. Additional details on area source inputs to CalEEMod are shown in Technical Report Table 2-11 and Technical Report Appendix B, contained in AEA Appendix 1.

ENERGY USE

Natural gas combustion used for space heating, water heating, and cooking is a direct source of GHG emissions from the project. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions.

Residential building energy use data for the project was generated by ConSol using the CEC-approved CBECC-Res 2016 software. The total residential energy use rates were input into CalEEMod. CalEEMod default values were used in combination with building energy use data prepared by ConSol using CEC-approved building energy modeling software (EnergyPro 6.8 and 7.1). The project was assumed to comply with the 2016 Title 24 efficiency standards; however, CalEEMod provides default values based on the 2008 Title 24 Standards. Therefore, the 2016 Title 24 energy efficiency improvement from 2008 Title 24 were applied to the relevant default energy intensity factors to estimate energy demand for the project. More detailed assumptions regarding residential building energy use is contained in Technical Report Tables 4-1a through 4-1d and Technical Report Appendix C, contained in AEA Appendix 1.

The project's non-residential building energy use data was generated using default values in CalEEMod in combination with building energy use data prepared by ConSol using CEC-approved building energy modeling software (EnergyPro 6.8 and 7.1). Because CalEEMod is based on the 2008 Title 24 Standards, percentage reductions were applied to CalEEMod default energy intensity factors to estimate the energy savings resulting from implementation of the 2016 Title 24 Standards. Additional assumptions about non-residential building energy are shown in Technical Report Tables 4-2a through 4-2d and Technical Report Appendix C of AEA Appendix 1.

The swimming pools at the project's private recreation centers were assumed to use electricity for filters and pumps, and natural gas for water heating. See Technical Report Table 2-14a of AEA Appendix 1 for more detail.

Further, the CalEEMod default CO_2 intensity factor was modified to reflect compliance with 50 percent RPS for 2030 based on SCE Power/Utility Protocol (PUP) reports. CalEEMod intensity factors for CH_4 and N_2O were retained to provide a more conservative estimate for these emissions. Additional detail is contained in Technical Report Appendix B contained in AEA Appendix 1.

MOBILE SOURCES

Mobile Sources GHG emissions associated with on-road mobile sources are generated from residents, workers, customers, and delivery vehicles visiting the land uses developed as part of the project. Mobile-source emissions were estimated using CalEEMod, with adjustments based on EMFAC2014 emission factors, and estimates of project-generated vehicle trips from the traffic study conducted for the project by Stantec, which was derived using the Santa Clarita Valley Consolidated Traffic Model (SCVCTM).

SCVCTM takes into account five standardized trip types: home-based work trip, home-based shopping trips, home-based "other" (i.e., non-work, non-shopping) trips, other-based work trips, and other-based other trips. Trip generation numbers were adjusted to reflect the characteristics of a planned community (i.e., mixed-use development) which have higher internal trip capture rates than single-use developments. VMT data, which is generated by multiplying trip length with total number of daily trips, was adjusted by applying an internalization factor appropriate to each trip purpose to more appropriately reflect the anticipated vehicle travel patterns in the proposed project. Detailed assumptions regarding SCVCTM are located in Technical Report Section 2.3.5, Mobile Sources, and Technical Report Appendix D contained in AEA Appendix 1.

CalEEMod, in combination with VMT estimates provided by SCVCTM, was used to calculate mobile source GHG emissions. CalEEMod provides the option to assign different trip lengths for different trip types; however, to calculate a more conservative estimate and ensure that the total annual VMT was consistent with estimates from SCVCTM, a consistent trip length was applied for all trip types. Further, CalEEMod's default approach is to specify a certain percentage of vehicle trips as pass-by or diverted trips, and assigns shorter trip length to these trips. To provide a more accurate and conservative VMT estimate, this default was overridden by designating all trips as primary trips rather than diverted or pass-by trips.

Additionally, to more accurately demonstrate the benefits from adopted regulatory programs such as Pavley and ACC, as discussed in Section 2.2, Regulatory Setting, EMFAC 2014, recently released by ARB, was incorporated into the analysis. Further, EMFAC 2014, unlike EMFAC 2011, excludes GHG emissions reductions from LCFS and results in more conservative estimates of mobile source GHG emissions. EPA/NHTSA's Phase 1 and Phase 2 advanced fuel economy and GHG standards for medium- and heavy-duty trucks were also incorporated. Additional details on the project's VMT calculations, internal trip capture adjustments, and mobile source emission factors are provided in Technical Report Tables 2-17a through 2-18b and Technical Report Appendix D, all contained in AEA Appendix 1.

WATER CONSUMPTION

Indirect GHG emissions also result from the production of electricity to convey, treat, and distribute the project's water and wastewater. GHG emissions from water consumption and wastewater treatment were estimated based on the volume of water that would be required by the project. The project's demand, recycled water usage, and wastewater generation values were based on Alternative D2 of the *Final Joint EIS/EIR for the RMDP and SCP Project*, and scaled by the change in land use square footage and number of dwelling units between the project and Alternative D2. The scaling factors and subsequent water use quantities are shown in Technical Report Tables 2-15a through 2-15e in AEA Appendix 1.

The project's estimated water usage reflects a demand reduction for indoor potable water that is based on compliance with applicable regulatory water conservation and recycled water requirements. Specifically, the project would comply with the CALGreen Standards, which require a 20 percent reduction in indoor potable water use through the use of water saving fixtures and/or flow restrictors. Because the CALGreen Standards were adopted in 2010, after the development of the water usage estimates presented in the *Final Joint EIS/EIR for the RMDP and SCP Project*, the indoor water usage was reduced to reflect project compliance with the CALGreen Standards.

The project's estimated water usage also reflects that recycled water would be used to satisfy a portion of its demand for the outdoor, irrigation-related water demand, consistent with the mandate by the State Water Resources Control Board's (SWRCB's) recycled water policy (SWRCB 2013).

The CALGreen Standards, as well as the County of Los Angeles's Green Building Standards Code (Municipal Code Title 31) and previously adopted Newhall Ranch Specific Plan (NRSP) mitigation measures, and the local water purveyor (Valencia Water Company), would also require the incorporation of features to reduce the project's outdoor water demand. The analysis conservatively does not reduce the project's outdoor water usage to reflect these requirements.

For indirect emissions associated with the supply, treatment, and distribution of the project's water, CalEEMod default assumptions were used for the project's Valencia Commerce Center and Entrada planning areas, which would rely upon a blend of locally-sourced and State Water Project water. The default assumptions represent the average embodied energy for the supply, treatment, and distribution of water for Southern California, which are determined by a study commissioned by the CEC (CEC 2006). Because the NRSP area would exclusively use locally-sourced groundwater, different factors were used to account for the energy embodied in the NRSP's water use. Detailed water use estimates are provided in Technical Report Appendix B contained in AEA Appendix 1.

The CalEEMod default assumptions conservatively estimate the GHG emissions associated with the distribution of the wastewater generated by the project's NRSP area. The Newhall Ranch Water Reclamation Plant (WRP) would be located within the NRSP area, and not outside the project as assumed by the default electricity intensity factor for wastewater treatment.

The direct and indirect emissions associated with the Newhall Ranch WRP's wastewater treatment processes are captured through the wastewater emissions estimates in CalEEMod for each of the project land uses in the NRSP that would send wastewater to the WRP; because the WRP is designed with the capacity to treat 6.8 million gallons per day (mgd) of wastewater, emissions were estimated based on the maximum capacity to provide a conservative estimate. See Technical Report Tables 2-15a through 2-15d in AEA Appendix 1 for more detailed assumptions.

SOLID WASTE

Indirect GHG emissions associated with solid waste generated by the proposed land uses were estimated using the applicable module in CalEEMod and solid waste generation rate based on the City of Santa Clarita 2012 actual disposal rates. The analysis assumes that additional waste would be diverted from landfills by a variety of means, such as reducing the amount of waste generated, and increasing the amount of waste recycled, and/or composted to meet the statewide goal of 75 percent waste diversion (AB 341, Chapter 476, Statutes of 2011). Various plans and regulations applicable to the project support achieving the statewide diversion goal, including: (1) SW- 1: Waste Diversion Goal of the County's Community Climate Action Plan, which calls for compliance with all state mandates associated with diverting at least 75 percent of waste from landfill disposal by 2020; (2) the County's Green Building Standards Code (Municipal Code Title 31), which includes a number of sustainability requirements that apply to waste diversion; and, (3) AB 1826, which requires applicable commercial businesses to separate food scraps and yard trimmings, and arrange for recycling services for that organic waste. Various design elements of the project, such as the provision and location of recycling receptacles would also further the achievement of AB 341 goals. Additional detail regarding solid waste-related GHGs are shown in Technical Report Table 2-16 contained in AEA Appendix 1.

VEGETATION CHANGE

The loss in sequestered carbon was also estimated in CalEEMod using the vegetation module. Permanent vegetation changes occur as a result of land use development constitute a one-time change in the carbon sequestration capacity of a project site. Thus, total one-time GHG emissions from the loss in carbon sequestration were estimated and then amortized over the operational life of the project (assumed to be 30 years for this analysis). This approach is consistent with SCAQMD's recommendations on the use of the vegetation module in CalEEMod (SCAQMD 2013). Land use change was based on CDFW's Draft Joint EIS/EIR for the RMDP and SCP Project (April 2009; SCH No. 2000011025), Volume XVI – Appendix 8.0 [ENVIRON International Corporation, Climate Change Technical Report (February 2009)]. Accounting for the loss in sequestered carbon in this way allows for the evaluation of whether ongoing operation of the proposed land uses would be efficient enough to "recoup" these one-time emissions. See Technical Report Section 2.2.2 and Technical Report Tables 2-10a and 2-10b in AEA Appendix 1 for more detailed assumptions.

2.3.4 Impact Analysis

Impact 2-1: Project-Generated GHG Emissions

The project is estimated to generate annualized construction emissions of 6,437 MT CO_2e amortized over 30 years (193,119 MT CO_2e total), net annualized vegetation change emissions of 1,335 MT CO_2e amortized over 30 years (40,059 MT CO_2e total based on net change in carbon sequestration/land use changes), and 518,330 MT CO_2e operations-related emissions at project buildout in 2030. Before consideration of mitigation measures proposed by the project applicant, total project emissions would be 526,103 MT CO_2e/year in 2030. This level of GHG emissions has the potential to result in a considerable contribution to cumulative emissions related to global climate change, and would be **potentially significant without the implementation of further mitigation**. The project applicant has proposed as mitigation the commitment for the project to achieve zero net GHG emissions (i.e., no net increase above existing conditions) through a combination of feasible and reliable emission-reduction actions, direct measures to reduce GHG emissions offsite, and the procurement of compensatory GHG offsets. With the implementation of the proposed mitigation measures and resulting achievement of zero net GHG emissions, the project would not make any contribution to cumulative GHG emissions, so the **GHG impact would be less than significant with mitigation.**

Construction-related activities that would generate GHGs include worker commute trips, haul trucks carrying supplies and materials to and from the project area, and off-road construction equipment (e.g., dozers, loaders, excavators) operating onsite. Construction of the land uses proposed under the project would occur over six stages with mass grading and utilities construction to begin in 2018. The construction emissions that would occur within each stage is summarized in Table 2.3-1.

Table 2.3-1 Summary of Greenhouse Gas Emissions by Construction Stage[1]

Stage	Year	Emissions (MT CO_2e/year)		
		Off-Road[2]	On-Road[3]	Total
1	2018	3,487	1,045	4,532
	2019	4,465	801	5,266
	2020	4,320	692	5,013
	2021	2,827	1,089	3,916
	2022	272	699	970
	2023	272	690	961
	2024	272	686	958
	2025	272	680	952
	2026	272	674	946
	2027	272	669	941
	2028	284	694	978
	Total	**17,014**	**8,418**	**25,432**
2	2018	2,909	311	3,220
	2019	4,564	670	5234
	2020	396	249	645
	2021	285	382	667
	2022	285	377	662
	2023	285	372	657
	2024	286	372	659
	Total	**9,010**	**2,735**	**11,745**
3	2020	10,233	796	11,029
	2021	8,812	949	9,761
	2022	2,751	1,593	4,345
	2023	3,290	1,600	4,890
	2024	5,268	1,924	7,192
	2025	7,722	2,116	9,837
	2026	737	1,455	2,192
	2027	737	1,444	2,181
	2028	734	1,429	2,163
	2029	737	1,426	2,163
	2030	816	1,419	2,235
	Total	**41,835**	**16,152**	**57,987**
4	2023	15,236	907	16,143
	2024	17,162	1,494	18,656
	2025	17,004	1,480	18,484
	2026	2,200	2,448	4,648
	2027	1,234	2,382	3,616
	2028	1,145	2,355	3,500
	2029	1,149	2,351	3,501
	2030	1,279	2,341	3,620
	Total	**56,410**	**15,757**	**72,166**

Table 2.3-1 Summary of Greenhouse Gas Emissions by Construction Stage[1]

Stage	Year	Emissions (MT CO_2e/year)		
		Off-Road[2]	On-Road[3]	Total
5	2018	3,587	676	4,263
	2019	2,101	276	2,378
	2020	656	266	922
	2021	473	422	894
	2022	384	411	795
	2023	384	406	789
	2024	387	407	793
	2025	385	401	786
	2026	385	398	783
	Total	**8,741**	**3,662**	**12,403**
6	2020	4,763	727	5,491
	2021	1,535	596	2,131
	2022	252	394	646
	2023	252	390	642
	2024	252	388	640
	2025	252	385	637
	2026	252	382	634
	2027	252	380	632
	2028	252	378	630
	2029	252	376	628
	2030	289	385	674
	Total	**8,604**	**4,782**	**13,386**
Grand Total				**193,119[4]**
30-Year Amortized				**6,437**

Notes: MT CO_2e/year=metric tons of carbon dioxide equivalent per year; EPA=Environmental Protection Agency0

[1] Sources of GHG emissions occur during construction activities such as grading, trenching, paving, building construction, and application of architectural coatings.

[2] This analysis assumes that the off-road, diesel-powered construction equipment greater than 50 horsepower used to grade the project site shall meet the EPA's Tier 3 standards at a minimum; construction equipment shall achieve the Tier 4 standards, where feasible.

[3] Emissions associated with worker and vendor trips for building construction and architectural coating were scaled by the adjustment factor to adjust for double-counting associated with analyzing phased construction in CalEEMod.

[4] Summarized emissions by year are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See Technical Report Tables 2-3 through 2-9 and Technical Report Appendix B, contained in AEA Appendix 1 for detailed calculations.

The project would generate a total of 193,119 MT CO_2e over the duration of construction activities (2018-2030). Total construction emissions were amortized over the project's 30-year life, consistent with guidance from SCAQMD. Amortized construction emissions are also shown in Table 2.3.3.

The project would also include changes in vegetation types, which, as discussed under the heading, Analysis Methods, alters the carbon sequestration potential of a project site. Acres of vegetation change and type by area, as well as the corresponding emissions of CO_2 are provided in Table 2.3-2 below.

Table 2.3-2 Vegetation Change Evaluation

Area	Type of Vegetation Change	Land Use Change[1]		
		Existing (acres)	Final (acres)	Emissions[2] (MT CO_2e/year)
ES	Cropland	44.0	0	273
	Grassland	5.8	0	25
	Trees	1.7	0	189
	Scrub	149.3	0	2,135
	Total Vegetation Change	**200.8**	**0**	**2,621**
NRSP	Cropland	2,036.3	138	11,769
	Wetlands	8.8	0	0
	Trees[3]	107.0	0	11,877
	Grassland	950.5	0	4,097
	Trees	82.6	0	9,169
	Scrub	1,903.4	0	27,219
	Total Vegetation Change	**5,088.6**	**138**	**64,130**
VCC	Cropland	86.0	0	533
	Grassland	63.3	0	273
	Trees	18.5	0	2,054
	Scrub	37.6	0	538
	Wetland	0.6	0	0
	Total Vegetation Change	**206.0**	**0**	**3,397**
Total		**5,495.4**	**138**	**70,149**[5]
CO_2e Sequestered from Net New Trees[4]				**-30,090**
Total CO_2e Emissions Released				**40,059**
30-Year Amortized				**1,335**

Notes: MT CO_2e/year=metric tons of carbon dioxide equivalent per year; CDFW=California Department of Fish and Wildlife; EIS/EIR=Environmental Impact Statement/Environmental Impact Report; RMDP=Resource Management Development Plan; SCP=Spineflower Conservation Plan; ES=Entrada South; NRSP=Newhall Ranch Specific Plan; VCC=Valencia Commerce Center

[1] Land use change was based on the CDFW Draft Joint EIS/EIR for the RMDP and SCP Project, Table 4-2-B.

[2] Emissions were calculated using CalEEMod 2013.2.2 values.

[3] Two sets of tree land use changes were modeled based on the land designation of "Broad Leaf Upland" and "Riparian and Bottomland" in the table cited above (Table 4-2-B).

[4] Total CO_2e sequestered over 20-year active growth period of new trees is reported as recommended by the Intergovernmental Panel on Climate Change. The negative value indicates CO_2 emissions sequestered, as opposed to emissions released. Total number of new trees is 42,500.

[5] Summarized emissions by area are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See Technical Report Tables 2-10a and 2-10b in AEA Appendix 1 for detailed calculations.

The project would result in a total of 40,059 MT CO_2e from vegetation change associated with project implementation. These emissions reflect emissions of CO_2e from loss in vegetation type combined with sequestration of CO_2e from the planting of new trees. Total emissions are amortized over the project's 30-year life, consistent with guidance from SCAQMD. Amortized vegetation change emissions are also shown in Table 2.3-3.

Operation of the project would result in GHG emissions associated with motor vehicle trips to and from the project area; combustion of natural gas for space and water heating; consumption of electricity and water; conveyance, treatment, and discharge of wastewater; transport and disposal of solid waste; and use of equipment for landscaping. The removal of trees and vegetation would also result in the loss of sequestered carbon. Table 2.3-3 summarizes all the direct and indirect sources of GHG emissions associated with the project upon full buildout in 2030, along with existing emissions from the project site. The emissions estimates are based on the application of existing regulations pertaining to vehicle emissions, building standards, and electricity generation. See heading, Analysis Methods, above for further information.

As shown in Table 2.3-3, upon full buildout, GHG emissions associated with construction and operation of the proposed project would be 526,103 MT CO_2e/per year in 2030. This level of GHG emissions has the potential to result in a considerable contribution to cumulative emissions related to global climate change, and would be potentially significant without the implementation of further mitigation.

Table 2.3-3 Summary of Annual Greenhouse Gas Emissions Comparing Existing Emissions with Unmitigated Project Emissions at Full Buildout (2030)

Emissions Activity	Emissions (MT CO_2e/year)	
	Existing[1]	Unmitigated
Mobile Sources	152	403,814
Electricity	–	39,393
Natural Gas	–	43,386
Area Sources[1]	7,883	367
Water Consumption and Wastewater Treatment	2,987	8,190
Solid Waste Generation	–	23,179
Vegetation Removal	–	1,335
Construction	–	6,437
Total Annual Emissions	**11,021**	**526,103**[2]

Notes: MT CO_2e/year=metric tons of carbon dioxide equivalent per year; N_2O=nitrous oxide

[1] Existing emissions are categorized as follows:

Area Sources: methane emission associated with oil wells, energy use associated with oil wells, N_2O emissions associated with fertilizer use.

Water Consumption: energy use associated with water.

Mobile Sources: emissions associated with diesel fuel usage.

[2] Summarized emissions per sector are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See AEA Appendix 1 for detailed calculations.

The project applicant has proposed a commitment to CDFW to reach zero net emissions, in response to the California Supreme Court ruling in November 2015. Without incorporation of emission-reduction measures, the project would not be able to meet this commitment. Because the project's emissions would be a potentially considerable contribution to cumulative emissions influencing global climate change and in light of the project applicant's zero net GHG emissions commitment, the project applicant has proposed mitigation measures that would result in no net increase in GHG emissions above existing conditions. The mitigation measures presented below have been independently reviewed and analyzed by CDFW, in consultation with ARB, and modified, where needed, from the project applicant's original proposal. With the implementation of the following 13 mitigation measures, the project would feasibly and reliably achieve the zero net emissions commitment.

Consistent with SCAQMD recommendations, the mitigation considered the following geographic priorities: (1) project design feature/on-site reduction measures; (2) off-site within neighborhood; (3) off-site within district; (4) off-site within state; and (5) off-site out of state (SCAQMD 2008).

Mitigation Measure 2-1: Residential Zero Net Energy

Prior to the issuance of residential building permits, the project applicant or its designee shall submit a Zero Net Energy Confirmation Report (ZNE Report) prepared by a qualified building energy efficiency and design consultant to Los Angeles County for review and approval. The ZNE Report shall demonstrate that the residential development within the RMDP/SCP project site subject to application of Title 24, Part 6, of the California Code of Regulations has been designed and shall be constructed to achieve ZNE, as defined by CEC in its 2015 Integrated Energy Policy Report, or otherwise achieve an equivalent level of energy efficiency, renewable energy generation or greenhouse gas emissions savings.

A ZNE Report may, but is not required to:

- Evaluate multiple buildings and/or land use types. For example, a ZNE Report may cover all of the residential and commercial buildings within a neighborhood/community, or a subset thereof.
- Rely upon aggregated or community-based strategies to support its determination that the subject buildings are designed to achieve ZNE. For example, shortfalls in renewable energy generation for one or more buildings may be offset with excess renewable generation from one or more other buildings, or off-site renewable energy generation. As such, a ZNE Report could determine a building is designed to achieve ZNE based on aggregated or community-based strategies even if the building on its own may not be designed to achieve ZNE.
- Make reasonable assumptions about the estimated electricity and natural gas loads and energy efficiencies of the subject buildings.

Project-related emissions of GHGs from the residential energy sector (i.e., electricity and natural gas) would be substantially reduced through implementation of Mitigation Measure 2-1. Through the incorporation of zero-energy technology into new residential development, as prescribed by a qualified energy efficiency and design consultant, fossil fuel-related sources of GHGs associated with energy use would not occur from project-related activities.

Mitigation Measure 2-1 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before construction begins. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-1 prior to approving or issuing residential building permits. Issuance of residential buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-1 as specified.

As shown below in Table 2.3-4, implementation of Mitigation Measure 2-1 would reduce operations-related GHG emissions by 30,659 MT CO_2e/year from residential electricity and natural gas use. Details on this measure, including estimated reductions, supporting data and implementation mechanisms are provided in Technical Report Tables ES-3 and 4-1a through 4-1d and Technical Report Appendix C, all contained in AEA Appendix 1

Mitigation Measure 2-2: Non-Residential Zero Net Energy

Prior to the issuance of building permits for commercial development and private recreation centers, and prior to the commencement of construction for the public facilities, respectively, the project applicant or its designee shall submit a Zero Net Energy Confirmation Report (ZNE Report) prepared by a qualified building energy efficiency and design consultant to Los Angeles County for review and approval. The ZNE Report shall demonstrate that the commercial development, private recreation centers, and public facilities within the RMDP/SCP project site subject to application of Title 24, Part 6, of the California Code of Regulations have been designed and shall be constructed to achieve ZNE, as defined by CEC in its 2015 Integrated Energy Policy Report, or otherwise achieve an equivalent level of energy efficiency, renewable energy generation or GHG gas emissions savings.

(“Commercial development” includes retail, light industrial, office, hotel, and mixed-use buildings. “Public facilities” are fire stations, libraries, and elementary, middle/junior high and high schools.)

A ZNE Report may, but is not required to:

- Evaluate multiple buildings and/or land use types. For example, a ZNE Report may cover all of the residential and non-residential buildings within a neighborhood/community, or a subset thereof.
- Rely upon aggregated or community-based strategies to support its determination that the subject buildings are designed to achieve ZNE. For example, short falls in renewable energy generation for one or more buildings may be offset with excess renewable generation from one or more other buildings, or off-site renewable energy generation. As such, a ZNE Report could determine a building is designed to achieve ZNE based on aggregated or community-based strategies even if the building on its own may not be designed to achieve ZNE.
- Make reasonable assumptions about the estimated electricity and natural gas loads and energy efficiencies of the subject buildings.

Project-related emissions of GHGs from the non-residential energy sector (i.e., electricity and natural gas) would be substantially reduced through implementation of Mitigation Measure 2-2. Through incorporation of zero-energy technology into all non-residential development associated with the project, as prescribed by a qualified energy efficiency and design consultant, fossil fuel-related sources of GHGs associated with energy use would not occur from project-related activities.

Mitigation Measure 2-2 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before construction begins. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-2 prior to approving or issuing non-residential building permits and prior to commencement of construction for public facilities. Issuance of non-residential building permits and/or commencement of construction shall be contingent upon the project applicant or its designee providing adequate evidence that Mitigation Measure 2-2 has been implemented as specified.

As shown below in Table 2.3-4, implementation of Mitigation Measure 2-2 would reduce operations-related GHG emissions by 24,512 MT CO_2e/year from non-residential electricity and natural gas use. Details on this measure, including estimated reductions, supporting data and implementation mechanisms are provided in Technical Report Tables ES-3 and 4-2a through 4-2d and Technical Report Appendix C, all contained in AEA Appendix 1.

Mitigation Measure 2-3: Swimming Pool Heating

Prior to the issuance of private recreation center building permits, the project applicant or its designee shall submit swimming pool heating design plans to Los Angeles County for review and approval. The design plans shall demonstrate that all swimming pools located at private recreation centers on the RMDP/SCP project site have been designed and shall be constructed to use solar water heating or other technology with an equivalent level of energy efficiency.

Project-related emissions of GHGs from the energy sector (specifically natural gas) associated with heating swimming pools would be eliminated through incorporation of low-emission heating design for pools constructed as a result of project implementation. Swimming pools shall be designed and constructed to use solar water heating or other technology with an equivalent level of energy efficiency; therefore, no combustion of natural gas would occur during heating and operation of the swimming pools.

Mitigation Measure 2-3 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before construction begins. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-3 prior to approving or issuing private recreation center building permits. Issuance of private recreation center building permits will contingent upon the project applicant or its designee providing adequate evidence that Mitigation Measure 2-3 has been implemented as specified.

As shown below in Table 2.3-4, implementation of Mitigation Measure 2-3 would reduce operations-related GHG emissions by 22,356 MT CO_2e/year from natural gas use. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 2-14a, contained in AEA Appendix 1.

Mitigation Measure 2-4: Residential Electric Vehicle Chargers and Vehicle Subsidy

Prior to the issuance of residential building permits, the project applicant or its designee shall submit building design plans, to Los Angeles County for review and approval, which demonstrate that each residence within the RMDP/SCP project site subject to application of Title 24, Part 6, of the California Code of Regulations shall be equipped with a minimum of one single-port electric vehicle (EV) charging station. Each charging station shall achieve a similar or better functionality as a Level 2 charging station.

Additionally, prior to the issuance of the first building permit for the RMDP/SCP project site, the project applicant or its designee shall establish and fund a dedicated account for the provision of subsidies for the purchase of ZEVs, as defined by ARB. The project applicant or its designee shall provide proof of the account's establishment and funding to Los Angeles County.

The dedicated account shall be incrementally funded, for each village-level project, in an amount that equals the provision of a $1,000 subsidy per residence – on a first-come, first-served basis – for 50 percent of the village's total residences subject to application of Title 24, Part 6, of the California Code of Regulations.

Project-related emissions of GHGs from the transportation sector would be substantially reduced through incorporation of EV charging stations. Use of ZEVs results in a reduction of GHG emissions from fossil fuel-combusting engines. Further, the electricity supplied to EV charging stations may originate from renewable resources provided by public utilities, as specified through RPS, or on-site sources of renewable energy. As discussed above in Section 2.2, Regulatory Setting, deployment of SB 350 would require public utilities to achieve a 50 percent renewable portfolio by 2030, the year of project buildout.

Mitigation Measure 2-4 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before construction begins. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-4 prior to approving or issuing residential building permits. Issuance of residential buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-4 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-4 would reduce operations-related GHG emissions by 53,735 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-3, contained in AEA Appendix 1.

Mitigation Measure 2-5: Commercial Development Area Electric Vehicle Chargers

Prior to the issuance of commercial building permits, the project applicant or its designee shall submit building design plans, to Los Angeles County, which demonstrate that the parking areas for commercial buildings on the RMDP/SCP project site shall be equipped with EV charging stations that provide charging opportunities to 7.5 percent of the total number of required parking spaces. ("Commercial buildings" include retail, light industrial, office, hotel, and mixed-use buildings.)

The EV charging stations shall achieve a similar or better functionality as a Level 2 charging station. In the event that the installed charging stations use more superior functionality/technology than Level 2 charging stations, the parameters of the mitigation obligation (i.e., number of parking spaces served by EV charging stations) shall reflect the comparative equivalency of Level 2 charging stations to the installed charging stations on the basis of average charge rate per hour. For purposes of this equivalency demonstration, Level 2 charging stations shall be assumed to provide charging capabilities of 25 range miles per hour.

Project-related emissions of GHGs from the transportation sector would be substantially reduced through incorporation of EV charging stations. Use of ZEVs results in a reduction of GHG emissions from fossil fuel-combusting engines. Further, the electricity supplied to EV charging stations may originate from renewable resources provided by public utilities, as specified through RPS, or on-site sources of renewable energy. As discussed above in Section 2.2, Regulatory Setting, deployment of SB 350 would require public utilities to achieve a 50 percent renewable portfolio by 2030, the year of project buildout.

Mitigation Measure 2-5 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before construction begins. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-5 prior to approving or issuing commercial building permits. Issuance of commercial buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-5 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-5 would reduce operations-related GHG emissions by 39,109 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-4, contained in AEA Appendix 1.

Mitigation Measure 2-6: Transportation Demand Management Plan

The project applicant-submitted Newhall Ranch Transportation Demand Management Plan (TDM Plan), located in Technical Report Appendix E contained in AEA Appendix 1, shall be implemented to reduce VMT resulting from project build out with oversight from Los Angeles County. The TDM Plan is designed to influence the transportation choices of residents, students, employees, and visitors, and serves to enhance the use of alternative transportation modes both on and off the project site through the provision of incentives and subsidies, expanded transit opportunities, bikeshare and carshare programs, technology-based programs, and other innovative means. Implementation of relevant elements of the TDM Plan will be included as a condition of approval by Los Angeles County when approving tentative subdivision maps for land developments that are part of the project.

Accordingly, the TDM Plan identifies key implementation actions that are critical to the effectiveness of the VMT-reducing strategies, as well as timeline and phasing requirements, monitoring standards, and performance metrics and targets tailored to each of the strategies.

In accordance with the TDM Plan, a non-profit Transportation Management Organization (TMO) or equivalent management entity shall be established to provide the services required, as applicable.

Implementation of the TDM plan would reduce project-related emissions of GHGs from the transportation sector through incorporation of measures and strategies designed to influence behavior and increase the efficiency of transportation modes. Implementation of the TDM strategy will result in increased rates of alternative modes of transportation, such as walking, bicycling, and public transit use, with a subsequent decrease in single-occupancy vehicle dependency through vanpooling, car-sharing, and ride-matching programs, which will reduce transportation-related GHG emissions on a community-wide scale. Incorporation of measures to improve the efficiency of transportation systems will lower rates of emissions associated with idling and braking. Pursuant to SB 375, TDM strategies have been developed by MPOs and incorporated into RTP/SCSs. These plans are reviewed by ARB, which has concluded that TDM produces a notable reduction in GHG emissions from automobiles (ARB 2016b).

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-6 would reduce operations-related GHG emissions by 60,179 MT CO_2e/year from the transportation sector. Details on this measure, including estimated reductions, supporting data and implementation mechanisms, along with components of the project applicant-submitted TDM plan are provided in Technical Report Tables ES-3 and 4-5 and Technical Report Appendix E, all contained in AEA Appendix 1.

Mitigation Measure 2-7: Traffic Signal Synchronization

Prior to the issuance of traffic signal permits, the project applicant or its designee shall work with Los Angeles County and the California Department of Transportation (Caltrans), as applicable, to facilitate traffic signal coordination along:

- State Route 126 from the Los Angeles County line to the Interstate 5 north-bound ramps;
- Chiquito Canyon Road, Long Canyon Road, and Valencia Boulevard within the RMDP/SCP project site;
- Magic Mountain Parkway from Long Canyon Road to the Interstate 5 north-bound ramps; and
- Commerce Center Drive from Franklin Parkway to Magic Mountain Parkway.

To effectuate the signal synchronization and specifically the operational and timing adjustments needed at affected traffic signals, the project applicant or its designee shall submit traffic signal plans for review and approval, and/or pay needed fees as determined by Los Angeles County or Caltrans, as applicable.

A majority of the signals that will be synchronized will be new signals constructed/installed by the project. Thus, for these signals, the project will provide the necessary equipment at the signal controller cabinet, as well as within the new roadways themselves, to enable and facilitate synchronization. The project is responsible for paying 100 percent of the applicable fee amount for the signal synchronization work, with assurance that the necessary funding will be available to fully implement this measure.

The improved synchronization of the aforementioned intersections will improve vehicle efficiency, thus decreasing transportation-related emissions of GHGs associated with project implementation. Emissions from inefficient travel (e.g., idling) shall be mitigated through signal synchronization and improved vehicle movement.

Mitigation Measure 2-7 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure prior to issuance of traffic signal permits. Los Angeles County and Caltrans shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-7 prior to issuing traffic signal permits. Issuance of traffic signal permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-7 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-7 would reduce operations-related GHG emissions by 8,214 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-6 and Technical Report Appendix I, all contained in AEA Appendix 1.

Mitigation Measure 2-8: Electric School Bus Program

Consistent with the parameters of the Newhall Ranch TDM Plan, the project applicant or its designee shall provide Los Angeles County with proof that funding has been provided for the purchase, operation and maintenance of electric school buses in furtherance of the school bus program identified in the project's TDM Plan. The proof of funding shall be demonstrated incrementally as the school bus program is paced to village-level occupancy and student enrollment levels.

Use of electric school buses would mitigate transportation-related emissions of GHGs by reducing the use of GHG-emitting fossil fuels during operation of school buses. Proof of funding shall be demonstrated incrementally as the school bus program is paced to village-level occupancy and student enrollment levels.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-8 would reduce operations-related GHG emissions by 157 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-7 in AEA Appendix 1.

Mitigation Measure 2-9: Electric Transit Bus Program

Prior to the issuance of the first 2,000th residential building permit within the RMDP/SCP project site and every 2,000th residential building permit thereafter, the project applicant or its designee shall provide Los Angeles County with proof that it has provided a subsidy of $100,000 per bus for the replacement of up to 10 diesel or compressed natural gas transit buses with electric buses to the identified transit provider(s).

Use of electric transit buses would mitigate transportation-related emissions of GHGs by reducing the use of GHG-emitting fossil fuels (i.e., diesel fuel and natural gas) during operation of transit buses.

Mitigation Measure 2-9 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before an incremental number of residential building permits are issued. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-9 prior to issuing building permits. Issuance of buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-9 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-9 would reduce operations-related GHG emissions by 619 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-8 in AEA Appendix 1.

Mitigation Measure 2-10: Offsetting Construction and Vegetation Change Emissions

Prior to issuing grading permits for village-level development within the RMDP/SCP project site, Los Angeles County shall confirm that the project applicant or its designee shall fully mitigate the related construction and vegetation change GHG emissions (the “Incremental Construction GHG Emissions”) by relying upon one of the following compliance options, or a combination thereof, in accordance with the project applicant-submitted Newhall Ranch GHG Reduction Plan (GHG Reduction Plan; see Technical Report Appendix F contained in AEA Appendix 1):

- Directly undertake or fund activities that reduce or sequester GHG emissions and retire the associated GHG reduction credits in a quantity equal to the Incremental Construction GHG Emissions; or

- Obtain and retire carbon credits that have been issued by a recognized and reputable carbon registry, as described in the GHG Reduction Plan, in a quantity equal to the Incremental Construction GHG Emissions.

Involvement in at least one of the actions listed above would be sufficient to offset the GHG emissions associated with construction- and vegetation change-related to project implementation. The sum of purchased GHG reduction credits and/or carbon credits shall equal the total emissions generated during construction activities and vegetation removal as amortized over the life of the project (i.e., 30 years). Carbon credits shall be of sufficient criteria to meet the standards of an adequate carbon credit through a reputable carbon registry. Carbon credits purchased to offset construction and vegetation emissions shall be real, additional, quantifiable, enforceable, validated, and permanent. The year of full buildout (2030), the project applicant shall engage in a one-time purchase of carbon offsets that can demonstrate GHG reductions shall continue over the life of the project on a yearly basis.

Mitigation Measure 2-10 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure prior to issuance of grading permits. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-10 prior to issuing grading permits. Issuance of grading permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-10 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-10 would reduce construction- and vegetation change-related GHG emissions by 7,808 MT CO_2e/year. Details on this measure, including estimated reductions, supporting data and implementation mechanisms are provided in Technical Report Tables ES-2 and ES-3 and Technical Report Appendices F and K, all contained in AEA Appendix 1.

Mitigation Measure 2-11: Building Retrofit Program

Prior to the issuance of building permits for every 100 residential units or 100,000 square feet of commercial development for each village-level project, the project applicant or its designee shall provide proof of funding of the proportional percentage of the Building Retrofit Program (Retrofit Program), as included in Technical Report Appendix G contained in AEA Appendix 1, to Los Angeles County. ("Commercial development" includes retail, light industrial, office, hotel and mixed-use buildings.) Building retrofits covered by the Retrofit Program can include, but are not limited to: cool roofs, solar panels, solar water heaters, smart meters, energy efficient lighting (including, but not limited to, light bulb replacement), energy efficient appliances, energy efficient windows, insulation, and water conservation measures.

The Retrofit Program shall be implemented within the geographic area defined to include Los Angeles County and primarily within disadvantaged communities, as defined by the Retrofit Program, or in other areas accepted by the Los Angeles County Planning Director.

Funding shall be applied to implement retrofits strategies identified in the Retrofit Program or other comparable strategies accepted by the Los Angeles County Planning Director.

The Retrofit Program would reduce emissions through the replacement of existing and less efficient technologies and addition of low-emission infrastructure. Cool roofs and improved insulation keep the internal temperatures of buildings low, thus reducing dependency on heating, ventilation and air conditioning systems and the indirect GHG emissions produced from their energy use. Solar panels and solar water heaters employ the sun's energy to heat and power buildings to meet energy demands while reducing GHG emissions from electricity and natural gas. Use of energy efficient lighting, meters, appliances, and windows lower the overall energy demand of a building or structure requiring less energy; therefore, lowering the rate of energy-related fossil fuel combustion. Implementation of water conservation strategies further reduce GHG emissions associated with water and wastewater treatment and conveyance.

Mitigation Measure 2-11 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure prior to issuance of building permits for a proportional number of residential units or square feet of commercial space. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-11 prior to issuing building permits. Issuance of buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-11 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-11 would reduce operations-related GHG emissions by 1,000 MT CO_2e/year from the energy sector. Detailed calculations showing the estimated reduction, along with supporting data, are shown in Technical Report Tables ES-3 and 4-9 and Technical Report Appendix G, all contained in AEA Appendix 1.

Mitigation Measure 2-12: Off-Site Electric Vehicle Chargers

Prior to the issuance of the first building permit for the RMDP/SCP project site, the project applicant or its designee shall provide Los Angeles County with proof of installation of EV charging stations capable of serving 20 off-site parking spaces. Thereafter, the project applicant or its designee shall provide Los Angeles County proof of installation of EV charging stations prior to the issuance of residential and commercial building permits per the following ratios: one (1) off-site parking space shall be served by an electric vehicle charging station for every 30 dwelling units, and one (1) off-site parking space shall be served by an electric vehicle charging station for every 7,000 square feet of commercial development. ("Commercial development" includes retail, light industrial, office, hotel and mixed-use buildings.) Off-site EV charging stations capable of servicing 2,036 parking spaces would be required if the maximum allowable development facilitated by the RMDP/SCP project occurs; fewer EV charging stations would be required if maximum build-out under the RMDP/SCP project does not occur.

The EV charging stations shall achieve a similar or better functionality as a Level 2 charging station and may service one or more parking spaces. In the event that the installed charging stations use more superior functionality/technology than Level 2 charging stations, the parameters of the mitigation obligation (i.e., number of parking spaces served by EV charging stations) shall reflect the comparative equivalency of Level 2 charging stations to the installed charging stations on the basis of average charge rate per hour. For purposes of this equivalency demonstration, Level 2 charging stations shall be assumed to provide charging capabilities of 25 range miles per hour.

The EV charging stations shall be located within the geographic area defined to include Los Angeles County, and in areas that are generally accessible to the public. For example, the charging stations may be located in areas that include, but are not limited to, retail centers, employment centers, recreational facilities, schools, and other categories of public facilities.

The project would contribute to reductions from the transportation sector through incorporation of off-site EV charging stations. Use of ZEVs results in a reduction of GHG emissions from fossil fuel-combusting engines. Further, the electricity supplied to EV charging stations may originate from renewable resources provided by public utilities, as specified through RPS, or on-site sources of renewable energy. As discussed above in Section 2.2, Regulatory Setting, deployment of SB 350 would require public utilities to achieve a 50 percent renewable portfolio by 2030, the year of project buildout.

Mitigation Measure 2-12 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure prior to issuance of an incremental number of building permits for residential and commercial uses. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-12 prior to issuing building permits. Issuance of buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-11 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-12 would reduce operations-related GHG emissions by 39,813 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-4 in AEA Appendix 1.

Mitigation Measure 2-13: Implement a GHG Reduction Plan

In addition to Mitigation Measures 2-1 through 2-12, the project applicant shall offset GHG emissions to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining carbon credits through the Newhall Ranch GHG Reduction Plan. The project applicant-submitted Newhall Ranch GHG Reduction Plan focuses on achieving GHG reductions or sequestration through the direct investment in specific programs or projects in coordination with an accredited carbon registry, such as the Climate Action Reserve. If these direct investment efforts do not achieve an adequate amount of GHG reductions, the project applicant can obtain carbon credits from accredited carbon registries.

SCAQMD recommends that mitigation be considered in the following prioritized manner: (1) project design feature/on-site reduction measures; (2) off-site within neighborhood; (3) off-site within district; (4) off-site within state; and (5) off-site out of state (SCAQMD 2008). Prior to issuing building permits for development within the project site, Los Angeles County shall confirm that the project applicant or its designee shall fully offset the project's remaining (i.e., post implementation of Mitigation Measures 2-1 through 2-12) operational GHG emissions over the 30-year project life associated with such building permits ("Incremental Operational GHG Emissions) by relying upon one of the following compliance options, or a combination thereof, in accordance with the Newhall Ranch GHG Reduction Plan:

- Demonstrate that the project applicant has directly undertaken or funded activities that reduce or sequester GHG emissions ("Direct Reduction Activities") that are estimated to result in GHG reduction credits, as described in the GHG Reduction Plan, and retire such GHG reduction credits in a quantity equal to the Incremental Operational GHG emissions;

- Provide a guarantee that it shall retire carbon credits issued in connection with Direct Reduction Activities in a quantity equal to the Incremental Operational GHG emissions;

- Undertake or fund Direct Reduction Activities and retire the associated carbon credits in a quantity equal to the Incremental Operational GHG Emissions; or

- If it is impracticable to fully offset Incremental Operational Emissions through the Direct Reduction Activities, the project applicant or its designee may purchase and retire carbon credits that have been issued by a recognized and reputable, accredited carbon registry in a quantity equal to the Incremental Operational GHG Emissions.

Compliance with MM 2-13 shall be demonstrated incrementally prior to obtaining building permits, and shall in the context of the project overall follow the preferred geographic hierarchy recommended by SCAQMD, discussed above. Incremental Operational GHG emissions shall be equal to the sum of the number of proposed residential units covered by the applicable building permit multiplied by 108.89 MT CO_2e and every thousand square feet of proposed commercial development covered by the applicable building permit multiplied by 506.86 MT CO_2e.

See Technical Report Appendix K, contained in AEA Appendix 1 for detailed derivation of these estimates for the project.

Implementation of Mitigation Measure 2-13 shall be adequate to fully mitigate the Incremental Operational GHG Emissions through direct investment in GHG reduction activities and/or the efficacy of carbon credits and the reductions they produce. The parameters of the compliance options provided above ensure that the carbon offsets purchased by the project applicant meet the criteria of a successful and effective offset. To be accredited by a recognized carbon registry, carbon offsets must demonstrate that they are real, additional, quantifiable, enforceable, validated, and permanent. Carbon offsets purchased following project implementation shall meet these standards, and shall produce levels of carbon offsetting on a yearly basis to mitigate the Incremental Operation GHG Emissions during project implementation.

The carbon offsets associated with the aforementioned compliance responses are considered appropriate and applicable mitigation for the Incremental Operational GHG Emissions produced by the project following deployment of Mitigation Measures 2-1 through 2-12. Accredited projects and programs participating in local, regional, and global carbon markets shall be subject to the standards enforced by carbon registries. If it is found that a project or program loses its ability to meet the criteria of being real, additional, quantifiable, enforceable, validated, and permanent, it loses its accreditation as an active carbon reducing or sequestrating action. The carbon credits purchased as a result of Mitigation Measure 2-13 shall be subject to the same standards. In the event that a project or program providing offsets to the project applicant loses its accreditation, the project applicant shall comply with the rules and procedures of retiring offsets specific to the registry involved and will undertake additional direct investments or purchase an equivalent number of credits to recoup the loss.

Project Emissions with Implementation of Mitigation Measures 2-1 through 2-13

GHG reductions associated with each mitigation measure were quantified and are reported in AEA Appendix 1, along with underlying assumptions and supporting data. Mitigation Measures 2-1 through 2-12 reduce the project's GHG emissions by 289,043 MT CO_2e/year. The project would need additional reductions pursuant to Mitigation Measure 2-13 to meet its zero net emissions commitment. Implementation of Mitigation Measure 2-13 further reduces project-related GHG emissions to zero net emissions. Table 2.3-4 shows estimated reductions associated with each mitigation measure and how the project will meet its commitment to achieve zero net emissions of GHGs. References to corresponding tables in AEA Appendix 1 are included to provide additional details on reduction quantification.

Table 2.3-4 Summary of Greenhouse Gas Emissions Reductions Associated with Mitigation Measures at Full Buildout (2030)

Mitigation Measure	Emissions Reduction (MT CO_2e/year)	Source (AEA Appendix 1)
Mobile Sources		
MM 2-4: Residential EV Chargers and Vehicle Subsidy	53,724	Tables ES-3 and 4-3 Appendix H
MM 2-5: Commercial Development Area EV Chargers	39,109	Tables ES-3 and 4-4
MM 2-6: Transportation Demand Management Plan	60,168	Tables ES-3 and 4-5 Appendix E
MM 2-7: Traffic Signal Synchronization	8,212	Tables ES-3 and 4-6 Appendix I
MM 2-8: Electric School Bus Program	157	Tables ES-3 and 4-7
MM 2-9: Electric Transit Bus Subsidy	619	Tables ES-3 and 4-8
MM 2-12: Off-Site EV Chargers	39,813	Tables ES-3 and 4-4
Electricity[1]		
MM 2-1: Residential Zero Net Energy	18,930	Tables ES-3, 4-1a, 4-1b, 4-1c, and 4-1d Appendix C
MM 2-2: Commercial Zero Net Energy	24,843	Tables ES-3, 4-2a, 4-2b, 4-2c, and 4-2d Appendix C
MM 2-11: Building Retrofit Program	500	Tables ES-3 and 4-9 Appendices G and J
Natural Gas[1]		
MM 2-1: Residential Zero Net Energy	11,726	Tables ES-3, 4-1a, 4-1b, 4-1c, and 4-1d Appendix C
MM 2-2: Commercial Zero Net Energy	612	Tables ES-3, 4-2a, 4-2b, 4-2c, and 4-2d Appendix C
MM 2-3: Swimming Pool Heating	22,356	Tables ES-3 and 2-14a
MM 2-11: Building Retrofit Program	500	Tables ES-3 and 4-9 Appendices G and J
Vegetation Removal		
MM 2-10: Offsetting Construction and Vegetation Change Emissions	1,335	Tables ES-2 and ES-3 Appendices F and K
Construction		
MM 2-10: Offsetting Construction and Vegetation Change Emissions	6,437	Tables ES-2 and ES-3 Appendices F and K
Subtotal GHG Reductions by Measures 1 – 12 (Mitigation)	289,043	Table ES-3
Offset of Remaining Emissions (GHG Reduction Plan)		
MM 2-13: Zero GHG Plan (Mobile)	202,011	Table ES-2
MM 2-13: Zero GHG Plan (electricity) [1]	-4,880[2]	Table ES-2
MM 2-13: Zero GHG Plan (Natural Gas) [1]	8,192	Table ES-2

Table 2.3-4 Summary of Greenhouse Gas Emissions Reductions Associated with Mitigation Measures at Full Buildout (2030)

Mitigation Measure	Emissions Reduction (MT CO_2e/year)	Source (AEA Appendix 1)
MM 2-13: Zero GHG Plan (Area Sources)	367	Table ES-2
MM 2-13: Zero GHG Plan (Water Consumption and Wastewater Treatment)	8,190	Table ES-2
MM 2-13: Zero GHG Plan (Solid Waste Generation)	23,179	Table ES-2
Subtotal GHG Reductions by Measure 13 (GHG Reduction Plan)	237,059	Table ES-2
Total Reductions	**526,103**[3]	

Notes: MT CO_2e/year=metric tons of carbon dioxide equivalent per year; MM=mitigation measure; EV=electric vehicle; TDV=Time Dependent Valuation; CEC=California Energy Commission; ZNE=Zero Net Energy

[1] The zero net energy mitigation measures (MM 2-1 and MM 2-2) are applied by assuming 80% of the mitigation applies to electricity and 20% of the mitigation applies to natural gas consumption associated with the respective land use type (residential and non-residential)

[2] Emissions reductions from direct and indirect energy consumption appear as a negative to represent TDV energy savings from use of photovoltaics combined with variations in natural gas pricing consistent with CEC's TDV model to achieve ZNE.

[3] Summarized emissions by mitigation measure are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See AEA Appendix 1 for detailed calculations.

GHG emissions are anticipated to decrease into the future based on ongoing improvements in technology and implementation of regulations to reduce GHGs (i.e., the reductions of energy-related emissions due to 50 percent RPS based on SB 350 and the reductions in mobile source-related emissions due to fleet turnover and fuel efficiency improvements due to Pavley and ACC). Based on modeling performed for the project and incorporation of the above-mentioned mitigation measures, carbon offsets totaling 237,059 MT CO_2e/year would be required over the 30-year project life to meet the zero net commitment. This translates to 7,026,846 MT CO_2e in total carbon offsets required. Technical Report Appendix K contained in AEA Appendix 1 includes detailed calculations of the remaining net operational emissions over the project's operational life of 30 years, and the relationship to the proposed residential and commercial land uses and the offset ratios identified in MM 2-13. This estimate of offsets is conservative in that it likely overstates the amount of GHG emissions that would need to be offset because additional regulatory programs and technology will likely be developed in the future under new state mandates, which will reduce the actual GHG emissions associated with the project at buildout.

Table 2.3-5 shows project emissions for each source after implementation of Mitigation Measures. The Sub-Total emissions value remaining after implementation of Mitigation Measures 2-1 through 2-12 represents the amount that would need to be offset through implementation of Mitigation Measure 2-13 to meet the zero net emissions commitment for the project.

Table 2.3-5 Summary of Annual Greenhouse Gas Emissions at Full Buildout

Emissions Activity	Emissions (MT CO_2e/year)		
	Existing	Unmitigated	Post Mitigation
Mobile Sources	152	403,814	202,011
Electricity[1]	–	39,393	-4,880[2]
Natural Gas[1]	–	43,386	8,192
Area Sources	7,883	367	367
Water Consumption and Wastewater Treatment	2,987	8,190	8,190
Solid Waste Generation	–	23,179	23,179
Vegetation Removal	–	1,335	0

Table 2.3-5 Summary of Annual Greenhouse Gas Emissions at Full Buildout

Emissions Activity	Emissions (MT CO_2e/year)		
	Existing	Unmitigated	Post Mitigation
Construction	–	6,437	0
Sub-Total Annual Emissions	11,021	526,103	237,059
MM 2-13 GHG Reductions			-237,059
Total Annual Emissions[2]			0[3]

Notes: MT CO_2e/year=metric tons of carbon dioxide equivalent per year; MM=mitigation measure; TDV = Time Dependent Valuation; CEC=California Energy Commission; ZNE = zero net energy

[1] Unmitigated electricity and natural gas emissions are split based on the CalEEMod output and the swimming pool calculation. The ZNE mitigation measures are split by assuming 78% of the mitigation offsets electricity and 22% offsets natural gas, consistent with actual emissions reductions. The off-site building retrofits are split assuming 50% electricity and 50 % natural gas. Refer to Technical Report Section 2.3.2 and Tables 2-13a through 2-14b of AEA Appendix 1 for more detailed assumptions.

[2] Emissions reductions from direct and indirect energy consumption appear as a negative to represent TDV energy savings from use of photovoltaics combined with variations in natural gas pricing consistent with CEC's TDV model to achieve ZNE. Refer to Technical Report Tables 4-1a through 4-2d and Appendix J of AEA Appendix 1 for more detail.

[3] Summarized emissions by sector are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See AEA Appendix 1 for detailed calculations.

<u>Significance after Mitigation</u>

Adoption and implementation of Mitigation Measure 2-1 through 2-13 would reduce mobile source-, electricity-, natural gas-, vegetation removal-, and construction-related emissions by 526,103 MT CO_2e/year (see Tables 2.3-2, 2.3-3, and 2.3-4). These measures reduce the projected unmitigated GHG emissions levels of the project (unmitigated emissions of 526,103 MT CO_2e/year above existing conditions) that would otherwise occur on the project site, leading to no net contributions of GHG emissions from the project, or zero net emissions. Because the project would result in no net increase of GHG emissions after implementation of mitigation measures, there would be no contribution of GHG emissions to cumulative GHG emissions influencing global climate change.

In addition, because the project would result in no net increase of GHG emissions, it would not conflict with any plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. The state, and by extension regional and local climate policy is rooted in achieving emissions level below the reference year of 1990 and is based on levels established by scientific evidence to avoid the most adverse impacts of climate change. Therefore, relevant plans, such as ARB's Scoping Plan, SCAG's RTP/SCS, and Los Angeles County's CCAP, all establish non-zero targets (i.e., some level of positive net emissions above existing conditions for land developments to accommodate planned growth) to achieve future GHG emissions targets. By achieving the project applicant's commitment to reach zero net emissions, the feasibility and reliability of which has been demonstrated in the analysis above, the project would lead to no net increase in GHG emissions and would not, therefore, result in any adverse change that could conflict with any relevant plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

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Secretary for Environmental Protection

Air Resources Board

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Edmund G. Brown Jr.
Governor

November 3, 2016

Chuck Bonham, Director
California Department of Fish and Wildlife
1416 9th Street, 12th Floor
Sacramento, California 95814

Dear Mr. Bonham:

As you requested, California Air Resources Board (ARB) staff reviewed the technical basis for the net zero greenhouse gas (GHG) determination in the Additional Environmental Analysis prepared for the Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan.

ARB staff consulted with Department of Fish and Wildlife staff and technical experts at Ascent Environmental, the principal consultant assisting the Department. In doing so, ARB staff reviewed the technical documentation provided for the evaluation of the project's total estimated GHG emissions and the reductions in emissions to be achieved through the mitigation measures. Based on staff's review, ARB finds the documentation provides an adequate technical basis to determine that the project would not result in any net additional GHG emissions after the mitigation measures are fully implemented.

If you have any questions regarding staff's analysis, please contact Mr. Kurt Karperos by email at kurt.karperos@arb.ca.gov or by phone at (916) 322-2739.

Sincerely,

Richard W. Corey
Executive Officer

cc: Kurt Karperos
Deputy Executive Officer