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EDWARD YEN
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COUNTY OF LOS ANGELES
EXECUTIVE OFFICE
BOARD OF SUPERVISORS

KENNETH HAHN HALL OF ADMINISTRATION
500 WEST TEMPLE STREET, ROOM 383
LOS ANGELES, CALIFORNIA 90012
(213) 974-1411 • www.bos.lacounty.gov

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July 12, 2024

TO: Supervisor Lindsey P. Horvath, Chair
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FROM: Edward Yen *Edward Yen*
Executive Officer

BOARD REPORT ON ENSURING THE EQUITABLE DECARBONIZATION OF BUILDINGS (ITEM NO. 14, AGENDA OF MARCH 15, 2022)

On March 15, 2022, the Board of Supervisors (Board) directed the Chief Sustainability Office (CSO) to report back to the Board on potential policies and programs, including funding sources, to reduce or eliminate the use of fossil fuels in existing residential and commercial buildings and to report on the impacts of decarbonization on the electrical grid. Additionally, the Board directed the Department of Public Works, in consultation with the CSO and other relevant departments, to report back with recommendations for an ordinance or building code changes aimed at phasing out natural gas equipment and appliances in all new residential and commercial construction and substantial renovations. These recommendations were to be developed in consultation with regional stakeholders. However, in April 2023, the Ninth Circuit Court of Appeals invalidated the City of Berkeley's 2019 ordinance prohibiting natural gas hookups in new construction, thereby questioning the validity of similar ordinances statewide. Consequently, the County's efforts to meet the intent of the Board's motion had to be reconsidered, and related stakeholder engagement efforts were put on hold.

This report contains the CSO's recommendations on how to meet the goals of the Board motion in light of recent legal and policy developments and includes the attached memo which provides an overview of the impacts of decarbonization on the electrical grid.

APPROACH

To develop the recommendations in this report back, the CSO contracted with Arup, a consulting firm specializing in sustainable development, to 1) summarize impacts of decarbonization on the electrical grid, presented in the Grid Resilience Frequently Asked Questions (FAQ) Memo included as Attachment, and 2) assist with analyses and recommendations to guide the County in developing an equitable, effective, and enforceable approach to building decarbonization.

FINDINGS

The CSO's findings are organized into two categories. First, the Grid Resilience FAQ Memo (Memo) offers responses to key questions regarding decarbonization, the resilience of the electric grid, and other related issues for unincorporated areas of L.A. County (Attachment). Specifically, the Memo explains the difference between building electrification and decarbonization, discusses the potential impacts of electrification on the grid, addresses the cost implications of decarbonization, and highlights the importance and necessity of building decarbonization.

Second, the analyses and recommendations for crafting a building decarbonization ordinance emphasize the need to focus on existing buildings rather than new ones. While new buildings are already required to be highly efficient due to stringent State building codes, existing buildings are a major source of greenhouse gas (GHG) emissions, producing 25 percent of the County's emissions. They will continue to be a significant source of GHG emissions for decades due to the slow turnover of the building stock.

To decarbonize existing buildings, the analysis identifies the development of a set of Building Performance Standards (BPS) as the most effective and impactful policy approach for the County. A BPS policy is a powerful tool to achieve deep and lasting building decarbonization. BPS require existing buildings to meet specific energy performance targets over time. The analysis underscores the importance of designing a BPS policy that is broad, flexible, and enforceable to drive long-term market changes necessary for decarbonization. BPS policies are being developed and considered by multiple jurisdictions across the country, including several cities in L.A. County.

A key part of BPS development involves technical analysis to understand what buildings are involved and what the potential is for energy savings and GHG emissions. The first step in developing a BPS is to understand the existing building stock in the territory. The County has begun this process, obtaining technical support from the Lawrence Berkeley National Laboratory (LBNL). To date, LBNL has completed the analysis for buildings over 50,000 square feet (sf) and is in the process of updating the analysis to add

buildings between 20,000 and 50,000 sf. The LBNL will share the additional data with the CSO in the Fall.

Key findings related to the development of a BPS for the County are summarized below:

- **Equitable Approach:** The County needs a comprehensive and equitable approach to decarbonization. This is especially important because decarbonizing existing buildings can have potential negative impacts on renters, such as increased rents and displacement risks. Therefore, policies must include renter protections and ensure that costs and benefits are equitably distributed.
- **Technical and Financial Support:** A BPS will require significant investment, both for the County as the policy administrator in terms of sufficient staff capacity and technical support resources, and for building owners and operators tasked with retrofitting existing buildings to comply with a BPS policy.
- **Local Context:** A BPS policy should be developed with the involvement and input of many stakeholders, including learning from the lived experiences of people who would be most impacted by the policy, including representatives for affordable housing, small and disadvantaged businesses, labor, rural and remote communities, and tribal nations and organizations. Further analyses regarding the local building stock and costs are needed because existing information is lacking and not locally specific. The County should prioritize creating a policy that can serve as a regional template for other local jurisdictions.

RECOMMENDATIONS

Building decarbonization is a critical component of Los Angeles County's efforts to combat climate change and advance sustainability as detailed in the OurCounty Sustainability Plan (Action 85) and the Climate Action Plan (Strategy 5). Buildings are the second-largest source of greenhouse gas emissions in L.A. County and the CAP seeks to achieve a reduction of 703,315 metric tons of carbon dioxide equivalent (MTCO_{2e}) in GHG emissions from buildings annually by 2045. This goal will only be achieved through building decarbonization. As one of the most populous and economically vibrant regions in the United States, Los Angeles County faces significant challenges related to energy consumption, GHG emissions, and air quality. Decarbonizing buildings, including reducing their carbon footprint through energy efficiency, renewable energy integration, and sustainable building practices, is essential for addressing these issues.

Based on the research conducted and the above preliminary findings, the CSO offers the following recommendations for the County:

- **Develop and Implement a Building Performance Standard (BPS):** The County should develop a BPS to require decarbonization of existing buildings, including through electrification and energy efficiency. The BPS should be responsive to local conditions, taking into consideration the building stock and cost analysis specific to L.A. County and local priorities identified through a stakeholder engagement process. It should also build upon existing models such as the "Institute for Market Transformation" framework, which aims to improve the energy performance of buildings and promote sustainable, energy-efficient practices.
- **Develop and Implement Supporting Policies and Programs to Ensure BPS Success:** To ensure BPS success, the County's policies and programs should:
 - Protect housing affordability and prevent displacement through strategies such as renter protections, subsidies, and technical assistance.
 - Ensure sufficient staff capacity for implementation.
 - Engage a broad range of stakeholders.
- **Ensure Regional Policy Alignment:** Aligning with the policies of other local jurisdictions in L.A. County is crucial to avoid confusion among building owners and operators who manage properties in multiple parts of the County. Regional coordination can streamline implementation and compliance efforts.
- **Take a Leadership Role:** The County should develop a strategic approach to decarbonizing the entire portfolio of buildings it owns. Decarbonizing County-owned buildings, both in cities and unincorporated areas, is important for various reasons, including demonstrating the County's leadership in decarbonization efforts, reducing costs through energy efficiency improvements, and providing a testing ground for decarbonization processes and emerging technologies that can be shared with other stakeholders.
- **Advocate for and Support Grid Hardening and Distributed Energy Storage:** The County should work with the local utilities and utility regulators like the California Energy Commission to advocate for and support grid readiness for building electrification, particularly in unincorporated rural areas of the County. This may also include incentives or creative financing opportunities for distributed energy battery storage to improve redundancy for customers more vulnerable to power outages.

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The above recommendations are intended to help Los Angeles County achieve its decarbonization goals while ensuring equity and economic viability. Over the next few months, the CSO will finalize its analyses and recommendations in a detailed report to be shared with the Board.

Should you have any questions concerning this matter, please contact Rita Kampalath, Chief Sustainability Officer, at (323) 459-3939 or rkampalath@csolacounty.gov.

EY:RK:jg

Attachment

c: County Counsel
Public Works

County of Los Angeles
Grid Resilience Frequently Asked Questions (FAQ) Memo
Prepared by Arup
June 28, 2024

This memo provides responses to the following key questions regarding building decarbonization, the resilience of the electric grid, and other related issues for unincorporated areas of Los Angeles County, including:

1. What is the difference between building electrification and decarbonization?
2. How will building electrification affect the grid?
3. Does building electrification worsen resilience?
4. Will electrification make Public Safety Power Shutoff events worse?
5. Will decarbonization make energy more expensive?
6. Are there situations where electrification is not possible?
7. How is the electric utility planning for electrification?
8. What are the consequences of not decarbonizing our buildings?

1. What is the difference between building electrification and decarbonization?

Building decarbonization is a fuel neutral term used to describe a wide range of strategies that reduce greenhouse gas (GHG) emissions from buildings, including reducing energy use and switching to less carbon-intensive fuels. **Building electrification** is a type of decarbonization strategy that replaces equipment that currently uses fossil fuels with electric equipment to take advantage of the cleaner energy provided from the electricity grid.

- **Energy efficiency** is one of the most important decarbonization strategies. It reduces overall demand, emissions, and energy bills through strategies such as improved insulation and efficient equipment.
- **Distributed energy resources** bring clean energy generation directly to the place where energy is used. Examples include solar panels as well as batteries, which store renewable energy when it is abundant (i.e. when the sun is shining) to be used when energy from the grid is “dirtier” or more expensive.
- **Demand management**, including controls such as smart thermostats and behavioral changes, can help shift building energy use when grid energy has the highest carbon content from fossil fuels. Microgrids can be used to balance energy demands and sources to help customers reduce demand, reduce their bills, and potentially provide backup from batteries when the power does go out.
- **Electrification** involves switching out equipment that currently relies on burning natural gas to equipment that uses electricity, including space and water heating, stoves, and dryers.

California’s energy supply is transitioning toward renewable sources with the goal of a 100% clean energy by 2045. This further increases the benefits of electrification. California’s grid now

includes 39% renewables, including solar and wind, and 61% of energy comes from non-fossil fuel sources (including large scale hydroelectric and nuclear power).¹

2. How will building electrification affect the grid?

Achieving the State net zero and County carbon neutrality goal by 2045 will require economy-wide decarbonization. This will include, among other things, electrification of both buildings and the transportation system, and that transition will increase the demand on the electric grid. Regulatory and oversight agencies like the California Public Utilities Commission (CPUC) and the California Independent System Operator, along with utilities, including those serving L.A. County, are all preparing and planning for this change.^{2,3} (See more details in Answer 7).

California SB 100 sets a target of 60% renewable energy by 2030 and 100% carbon free energy by 2045. Getting the grid ready for this transition entails increasing grid capacity through additional renewable resources, increasing demand flexibility using smart meters and other technologies, and expanding and modernizing the transmission and distribution systems.⁴ These changes are already being incorporated into long range planning and budgeting by State agencies. Studies using stress test modeling show that California can actually meet an 85% clean energy target by 2030 without compromising reliability.⁵ By decarbonizing the energy grid, building electrification becomes an increasingly impactful strategy to achieve the County's carbon neutrality goal.

If all buildings were fully electrified today, the grid would not be ready to handle the growth in demand. However, that is not a realistic hypothetical—it will take time as well as funding and other resources to engage, incentivize and implement building electrification at scale, and most retrofits will likely not occur until current equipment (such as space and water heating systems) is closer to the end of life. According to interviews with Southern California Edison (SCE), building electrification will not bring large new loads that warrant large infrastructure upgrades, though panels and “last mile” distribution (at the customer side/meter) may be necessary to accommodate larger local demand. Increasing peak loads within the capacity limits of transmission will not trigger any costly upgrades of the grid. SCE has accounted for local infrastructure upgrades in its budget request and plans to increase customer engagement to understand shifting loads. Loads from building electrification are also starting to be incorporated into statewide planning.

The picture is somewhat different in rural communities, which already experience more instability in electrical supply. Rural communities typically have a lower load to begin with, so the supporting electrical system may have less capacity to support the additional load of electrification. Work needs to be done in collaboration with rural communities to bring the benefits of decarbonization while also increasing local energy resilience. In such cases, investment in electrification can potentially help deliver new resources to rural communities and rectify some disparities in access.

Peak energy demand in Southern California generally occurs during hot summer days. Most cooling is already electric, so electrification would not significantly increase this load. In fact, heat pumps, which provide both heating and cooling, are more efficient than traditional gas burning air conditioning. Electrification will have the biggest impact on winter peaks because most space heating is currently provided by natural gas. As that gas load is instead met by electricity, winter peaks are expected to rise significantly, but will still be lower than summer peaks, limiting the need for expanded infrastructure.⁶ As a result, the grid already has capacity to support a significant amount of electrification. Other technologies, including building controls and time of use rates,

can enable and encourage customers to shift loads to off-peak times. Utilities are also actively managing loads across the grid system to meet the demand while limiting the need to build more capacity.

3. Does building electrification worsen resilience?

A resilient energy system is one that can maintain or restore power after an unexpected disruption. This might mean pairing different energy sources to create redundancy. Gas provides some level of redundancy because some gas stoves can be used when the electricity is out. However, other gas equipment, including space and water heating, are much less likely to work during outages because they have electrical components. The gas distribution system is also vulnerable to disruption from earthquakes, fires, storms, and blackouts. Also, natural gas is highly flammable and explosive, which can compound damage from other events.⁷ For instance, according to a study by the California Seismic Safety Commission, nearly half of building fire ignitions that occurred during the 1994 Northridge earthquake were gas-related.

There are other ways to boost redundancy in order to keep the power on in buildings, and in fact electricity is easier to back up than gas. Electrical uses can already be backed up with generators, but these rely on polluting diesel fuel. However, solar panels combined with batteries can be used to back up essential energy needs. Electric vehicles equipped with two-way charging are emerging that can also serve as backup batteries for buildings. As these technologies become more widespread, all electric buildings may ultimately be more resilient than buildings that use gas today.⁸

For rural communities in L.A. County, the loss of redundancy may be more of an issue as these communities are already susceptible to outages overall. Because many rural and remote communities are located in areas with higher risk of wildfire, they are more likely to be impacted by disruption from Public Safety Power Shutoff (PSPS) events or other outages. Many rural households rely on propane, which is not as powerful a greenhouse gas as methane (natural gas) but is still a fossil fuel. It also requires delivery by truck rather than through a pipe system, which can create vulnerabilities during times of disruption. Work is needed, in close collaboration with these communities, to determine whether, when, and how they shift toward electrification, as well as the potential to shift toward community scale microgrids that generate and store renewable energy locally to build more energy resilience.

4. Will electrification make Public Safety Power Shutoff events worse?

Public Safety Power Shutoffs (PSPS) happen when a utility tries to decrease threats related to wildfires by temporarily shutting down sections of the grid during hot, dry, windy conditions.⁹ They are a last resort tool used by utilities to prevent sparks from power lines from igniting vegetation. The best way to decrease the risk of PSPS events is to harden the grid through strategies such as more fire-resistant wires, putting lines underground, adding new sensors and detection technology, managing vegetation, and other strategies. SCE is actively investing in this work across their service territory. According to SCE, through these efforts, they have reduced the probability of catastrophic wildfires associated with their equipment by about 75%-80% since 2018.¹⁰

The biggest threat to energy reliability is not electrification but the impacts of climate change. Wildfire, flood, wind, and extreme heat are all increasing in frequency and intensity as a result of GHG emissions and all pose growing threats to the reliability of the energy system. Thus, strategies that reduce GHGs, including electrification, are an essential part of protecting energy reliability.

5. Will decarbonization make energy more expensive?

Energy costs are influenced by various factors, from geopolitical forces to local weather. Decarbonization's impact on these costs is complex and should be assessed at both the building and societal scales.

At the building scale, the crux of this question is about whether investing in decarbonization will result in higher energy costs for homes or businesses. This comes down to the initial costs associated with implementing decarbonization strategies, and the amount of energy that is required by buildings. In many cases, decarbonization strategies such as more efficient lighting, insulation, or efficient equipment will result in immediate reduction in energy bills that can fairly quickly offset the initial costs of installation. The return on solar investments may take longer but it is becoming increasingly cost effective, and the costs of battery storage is declining as well.

Electrification can also significantly reduce both the amount of energy required and cost of energy bills. However, isolating the cost of electrification can be challenging and should consider the initial costs of installation as well as potential energy bill savings over time. Few studies have been done on the cost of retrofitting larger commercial buildings. In some studies of residential buildings, the cost of an all-electric new home is lower than the cost of a mixed fuel home,¹¹ while others show the opposite.¹² The variation is likely due to differences in the buildings evaluated and the costs included in the study. Another study based in Los Angeles showed that electrifying older affordable housing would result in lower energy bills, but those costs would not be sufficient to offset potential rent increases from installation costs being passed on to renters.¹³ However, that study looked at electrification alone, and did not include additional energy efficiency measures. Factoring energy efficiency would increase the potential savings on energy bills.

Energy customers are also eligible for federal, state, and other incentives to offset the costs of decarbonization and electrification strategies. These incentives can offset the initial costs of installation so that more people can benefit from energy bill savings. Incentives are particularly important for low-income households and renters who may be highly sensitive to installation costs leading to higher overall household cost burdens.

At a societal scale, there are some additional questions that add complexity to the question of energy cost. These come down to variables that influence the cost of energy itself (i.e. the rates for electricity and natural gas). Some key variables:

- **Electricity prices:** While electricity rates in California are fairly stable, a major infusion of public investment will be needed for both grid and building improvements to address both decarbonization and climate change adaptation. The amount that will be passed to ratepayers in the form of increased rates is still unknown. To date, the CPUC has limited the amount of cost that could be passed on to consumers.
- **Renewables:** The cost of renewables is declining. In fact, the cost of power from solar photovoltaics declined by 89% between 2009 and 2019.¹⁴ This will help California to continue investing in renewables to meet increasing demand and phase out fossil fuels.

- **Electricity demand:** Increasing demand for electricity could drive prices down. One study by the California Public Advocates Office suggests that increased electricity demand due to vehicle electrification actually results in downward pressure on electricity rates (i.e. reducing the unit cost of electricity) for all customers.¹⁵
- **The future of the gas system:** The cost of natural gas is more variable than electricity in the US. It is likely that as more people move away from natural gas, those who remain dependent on it will have to cover a higher share of the cost of maintaining the infrastructure. This can lead to stranded assets or higher costs for those customers or communities. Overall, there will be costs associated with decarbonization at both the building scale and at the societal scale. Energy efficiency can directly decrease costs. Other types of retrofits may increase or decrease costs and may be offset by incentives. While there may (or may not) be increases in electricity rates, natural gas rates are almost certain to rise as the customer base supporting associated infrastructure begins to shrink.

6. Are there situations where electrification is not possible?

While the vast majority of buildings can technically be electrified, the process to do so may be complex. New construction is simpler because buildings can be designed for decarbonization from the beginning; existing buildings will likely need to be retrofitted. Large older buildings where gas systems are deeply integrated into the architecture may pose challenges and at least in the near term be prohibitively expensive. Others, like affordable multi-family housing, may have a mix of central and common area systems, split incentives between landlords and tenants, and highly sensitive occupants who may have nowhere else to go if displaced either during construction or as a result of increased rent.

In the vast majority of these cases, electrification is technically feasible but may be more expensive to accomplish. Generally, advanced planning to prepare electrical infrastructure will be needed in order to facilitate implementation at equipment end of life. Also, there are some cases where people have a strong preference for gas systems as opposed to electric, particularly around stoves. Replacing gas stoves with induction heating stoves is technically straightforward, but it may require electrical upgrades. Some people, for cultural and/or other reasons, prefer to cook on an open flame. Increasingly, chefs are becoming aware of the benefits of induction stoves, including better air quality, faster cooking time, and better control.

According to the American Council for an Energy Efficient Economy, the U.S. can electrify about 90% of its current energy use,¹⁶ but about 10% of uses will be more challenging. Building-related examples include:

- Buildings in very cold locations (e.g. north of Detroit) where backup fuel heating systems may be required during winter peaks to supplement heat pumps.
- Campus buildings that rely on large-scale steam and cogeneration plans, such as those used on many large university campuses.
- Buildings that house large-scale sterilization processes in hospitals or laboratories.
- Industrial buildings that house processes such as chemical feedstock and high temperature processes.

It is important to look at the suite of building decarbonization measures, particularly for those more challenging sectors, to maximize GHG reductions. For those buildings that are hardest to electrify, focusing on efficiency, on-site generation, and other strategies can reduce emissions and allow time for new electric technologies to mature.

7. How is the electric utility planning for electrification?

California Assembly Bill 1279 codifies into law the State's goal of reaching net-zero emissions by 2045, which will require direct emissions reduction of 85%. SCE estimates that the most cost-effective approach will include a mix of increased electricity demand, vehicle electrification, and building electrification. *Pathway 2045: Update to the Clean Power and Electrification* is SCE's strategic report to achieve carbon neutrality. Specifically, SCE expects the following to be electrified by 2045:

- 75% of light-duty vehicles, 67% of medium-duty vehicles and 33% of heavy-duty vehicles
- 70% of buildings (particularly space and water heating)

These electrification efforts will lead to a 60% increase in electricity sales and 40% increase in peak load, and SCE believes it can meet the associated increased load. To facilitate the transition, *Pathway 2045* highlights the importance of incentives, distributed energy resources programs, and rate schedules to support customer conversion to efficient, grid-supporting, electric technologies.

SCE has applied for \$677 billion in funding with 88% meant for residential customers and the other 12% applied to commercial buildings. SCE also hopes to target residents and businesses in Environmental and Social Justice (ESJ) communities which are predominantly communities of color or low-income communities. Moreover, SCE has plans to invest \$5 billion annually into grid improvements to harden infrastructure to climate change and reduce power shutoffs, in addition to deploying energy storage to improve reliability. It is also developing Time-of-Use rate structures and demand response programs that rewards customers who shift demand to support grid reliability or when the grid is powered by carbon-free energy.

8. What are the consequences of not decarbonizing our buildings?

Buildings are the second largest source of GHG emissions after transportation in L.A. County, which means that without building decarbonization, L.A. County will not achieve its 2045 carbon neutrality goals. While L.A. County alone cannot stop climate change, it plays an important role in reducing emissions and serving as a model for other jurisdictions. According to California's Fourth Climate Change Assessment, without intervention, the cost impact of climate change on the State is \$113 billion annually by 2050. Direct and indirect impacts like extreme heat and wildfires will affect everyone but the burden will be disproportionately felt by disadvantaged communities. Building decarbonization is essential to stemming these impacts and achieving the statewide net zero goals.

Beyond GHG emissions, buildings are also a significant contributor to air pollution. Natural gas from home stoves can release nitrogen oxide (NOx) and other carcinogens that are associated with asthma, chronic lung disease, and increased mortality.¹⁷ The South Coast Air Quality Management District has determined that commercial and residential buildings are the single largest source of NOx pollutants, and commercial cooking and residential use of natural gas is a larger source of particulate matter (PM2.5) than all cars and trucks combined in the region. These pollutants are a

significant cause of respiratory diseases like asthma, which disproportionately impacts Black children in L.A. County.¹⁸

Unabated, climate change will have devastating consequences to the planet and without building decarbonization, avoiding those consequences will not be possible. While implementing an equitable building decarbonization strategy for new and existing buildings is a complex undertaking, the benefits to the environment and public health are significant.

Even without consideration of climate change, California’s energy infrastructure is aging and in need of continual maintenance and upgrades. This will require investment. The marginal additional investment required to supplement grid maintenance with plans for grid modernization, decarbonization and hardening, the State may be able to transform the grid in a way that is safer, cleaner and more reliable for all people.

¹ California Energy Commission. “New Data Shows Investments to Build California’s Clean Energy Grid of the Future are Paying Off.” 9 May 2024. <https://www.energy.ca.gov/news/2024-05/new-data-shows-investments-build-californias-clean-energy-grid-future-are-paying>

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⁴ *Rulemaking 16-02-007 2019-2020 Electric Resource Portfolios to Inform Integrated Resource Plans and Transmission Planning*. 21 March 2020. <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M330/K357/330357384.PDF>

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¹⁰ Southern California Edison. *2023-2025 Wildfire Mitigation Plan Factsheet*. Edison International. 2023 March 24. https://download.newsroom.edison.com/create_memory_file/?f_id=6421e583b3aed34951d9462a&content_verified=True

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BOARD OF SUPERVISORS

KENNETH HAHN HALL OF ADMINISTRATION
500 WEST TEMPLE STREET, ROOM 383
LOS ANGELES, CALIFORNIA 90012
(213) 974-1411 • www.bos.lacounty.gov

MEMBERS OF THE BOARD

HILDA L. SOLIS

HOLLY J. MITCHELL

LINDSEY P. HORVATH

JANICE HAHN

KATHRYN BARGER

July 12, 2024

TO: Supervisor Lindsey P. Horvath, Chair
Supervisor Hilda L. Solis
Supervisor Holly J. Mitchell
Supervisor Janice Hahn
Supervisor Kathryn Barger

FROM: Edward Yen *Edward Yen*
Executive Officer

BOARD REPORT ON ENSURING THE EQUITABLE DECARBONIZATION OF BUILDINGS (ITEM NO. 14, AGENDA OF MARCH 15, 2022)

On March 15, 2022, the Board of Supervisors (Board) directed the Chief Sustainability Office (CSO) to report back to the Board on potential policies and programs, including funding sources, to reduce or eliminate the use of fossil fuels in existing residential and commercial buildings and to report on the impacts of decarbonization on the electrical grid. Additionally, the Board directed the Department of Public Works, in consultation with the CSO and other relevant departments, to report back with recommendations for an ordinance or building code changes aimed at phasing out natural gas equipment and appliances in all new residential and commercial construction and substantial renovations. These recommendations were to be developed in consultation with regional stakeholders. However, in April 2023, the Ninth Circuit Court of Appeals invalidated the City of Berkeley's 2019 ordinance prohibiting natural gas hookups in new construction, thereby questioning the validity of similar ordinances statewide. Consequently, the County's efforts to meet the intent of the Board's motion had to be reconsidered, and related stakeholder engagement efforts were put on hold.

This report contains the CSO's recommendations on how to meet the goals of the Board motion in light of recent legal and policy developments and includes the attached memo which provides an overview of the impacts of decarbonization on the electrical grid.

APPROACH

To develop the recommendations in this report back, the CSO contracted with Arup, a consulting firm specializing in sustainable development, to 1) summarize impacts of decarbonization on the electrical grid, presented in the Grid Resilience Frequently Asked Questions (FAQ) Memo included as Attachment, and 2) assist with analyses and recommendations to guide the County in developing an equitable, effective, and enforceable approach to building decarbonization.

FINDINGS

The CSO's findings are organized into two categories. First, the Grid Resilience FAQ Memo (Memo) offers responses to key questions regarding decarbonization, the resilience of the electric grid, and other related issues for unincorporated areas of L.A. County (Attachment). Specifically, the Memo explains the difference between building electrification and decarbonization, discusses the potential impacts of electrification on the grid, addresses the cost implications of decarbonization, and highlights the importance and necessity of building decarbonization.

Second, the analyses and recommendations for crafting a building decarbonization ordinance emphasize the need to focus on existing buildings rather than new ones. While new buildings are already required to be highly efficient due to stringent State building codes, existing buildings are a major source of greenhouse gas (GHG) emissions, producing 25 percent of the County's emissions. They will continue to be a significant source of GHG emissions for decades due to the slow turnover of the building stock.

To decarbonize existing buildings, the analysis identifies the development of a set of Building Performance Standards (BPS) as the most effective and impactful policy approach for the County. A BPS policy is a powerful tool to achieve deep and lasting building decarbonization. BPS require existing buildings to meet specific energy performance targets over time. The analysis underscores the importance of designing a BPS policy that is broad, flexible, and enforceable to drive long-term market changes necessary for decarbonization. BPS policies are being developed and considered by multiple jurisdictions across the country, including several cities in L.A. County.

A key part of BPS development involves technical analysis to understand what buildings are involved and what the potential is for energy savings and GHG emissions. The first step in developing a BPS is to understand the existing building stock in the territory. The County has begun this process, obtaining technical support from the Lawrence Berkeley National Laboratory (LBNL). To date, LBNL has completed the analysis for buildings over 50,000 square feet (sf) and is in the process of updating the analysis to add

buildings between 20,000 and 50,000 sf. The LBNL will share the additional data with the CSO in the Fall.

Key findings related to the development of a BPS for the County are summarized below:

- **Equitable Approach:** The County needs a comprehensive and equitable approach to decarbonization. This is especially important because decarbonizing existing buildings can have potential negative impacts on renters, such as increased rents and displacement risks. Therefore, policies must include renter protections and ensure that costs and benefits are equitably distributed.
- **Technical and Financial Support:** A BPS will require significant investment, both for the County as the policy administrator in terms of sufficient staff capacity and technical support resources, and for building owners and operators tasked with retrofitting existing buildings to comply with a BPS policy.
- **Local Context:** A BPS policy should be developed with the involvement and input of many stakeholders, including learning from the lived experiences of people who would be most impacted by the policy, including representatives for affordable housing, small and disadvantaged businesses, labor, rural and remote communities, and tribal nations and organizations. Further analyses regarding the local building stock and costs are needed because existing information is lacking and not locally specific. The County should prioritize creating a policy that can serve as a regional template for other local jurisdictions.

RECOMMENDATIONS

Building decarbonization is a critical component of Los Angeles County's efforts to combat climate change and advance sustainability as detailed in the OurCounty Sustainability Plan (Action 85) and the Climate Action Plan (Strategy 5). Buildings are the second-largest source of greenhouse gas emissions in L.A. County and the CAP seeks to achieve a reduction of 703,315 metric tons of carbon dioxide equivalent (MTCO_{2e}) in GHG emissions from buildings annually by 2045. This goal will only be achieved through building decarbonization. As one of the most populous and economically vibrant regions in the United States, Los Angeles County faces significant challenges related to energy consumption, GHG emissions, and air quality. Decarbonizing buildings, including reducing their carbon footprint through energy efficiency, renewable energy integration, and sustainable building practices, is essential for addressing these issues.

Based on the research conducted and the above preliminary findings, the CSO offers the following recommendations for the County:

- **Develop and Implement a Building Performance Standard (BPS):** The County should develop a BPS to require decarbonization of existing buildings, including through electrification and energy efficiency. The BPS should be responsive to local conditions, taking into consideration the building stock and cost analysis specific to L.A. County and local priorities identified through a stakeholder engagement process. It should also build upon existing models such as the "Institute for Market Transformation" framework, which aims to improve the energy performance of buildings and promote sustainable, energy-efficient practices.
- **Develop and Implement Supporting Policies and Programs to Ensure BPS Success:** To ensure BPS success, the County's policies and programs should:
 - Protect housing affordability and prevent displacement through strategies such as renter protections, subsidies, and technical assistance.
 - Ensure sufficient staff capacity for implementation.
 - Engage a broad range of stakeholders.
- **Ensure Regional Policy Alignment:** Aligning with the policies of other local jurisdictions in L.A. County is crucial to avoid confusion among building owners and operators who manage properties in multiple parts of the County. Regional coordination can streamline implementation and compliance efforts.
- **Take a Leadership Role:** The County should develop a strategic approach to decarbonizing the entire portfolio of buildings it owns. Decarbonizing County-owned buildings, both in cities and unincorporated areas, is important for various reasons, including demonstrating the County's leadership in decarbonization efforts, reducing costs through energy efficiency improvements, and providing a testing ground for decarbonization processes and emerging technologies that can be shared with other stakeholders.
- **Advocate for and Support Grid Hardening and Distributed Energy Storage:** The County should work with the local utilities and utility regulators like the California Energy Commission to advocate for and support grid readiness for building electrification, particularly in unincorporated rural areas of the County. This may also include incentives or creative financing opportunities for distributed energy battery storage to improve redundancy for customers more vulnerable to power outages.

Each Supervisor
July 12, 2024
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The above recommendations are intended to help Los Angeles County achieve its decarbonization goals while ensuring equity and economic viability. Over the next few months, the CSO will finalize its analyses and recommendations in a detailed report to be shared with the Board.

Should you have any questions concerning this matter, please contact Rita Kampalath, Chief Sustainability Officer, at (323) 459-3939 or rkampalath@csolacounty.gov.

EY:RK:jg

Attachment

c: County Counsel
Public Works

County of Los Angeles
Grid Resilience Frequently Asked Questions (FAQ) Memo
Prepared by Arup
June 28, 2024

This memo provides responses to the following key questions regarding building decarbonization, the resilience of the electric grid, and other related issues for unincorporated areas of Los Angeles County, including:

1. What is the difference between building electrification and decarbonization?
2. How will building electrification affect the grid?
3. Does building electrification worsen resilience?
4. Will electrification make Public Safety Power Shutoff events worse?
5. Will decarbonization make energy more expensive?
6. Are there situations where electrification is not possible?
7. How is the electric utility planning for electrification?
8. What are the consequences of not decarbonizing our buildings?

1. What is the difference between building electrification and decarbonization?

Building decarbonization is a fuel neutral term used to describe a wide range of strategies that reduce greenhouse gas (GHG) emissions from buildings, including reducing energy use and switching to less carbon-intensive fuels. **Building electrification** is a type of decarbonization strategy that replaces equipment that currently uses fossil fuels with electric equipment to take advantage of the cleaner energy provided from the electricity grid.

- **Energy efficiency** is one of the most important decarbonization strategies. It reduces overall demand, emissions, and energy bills through strategies such as improved insulation and efficient equipment.
- **Distributed energy resources** bring clean energy generation directly to the place where energy is used. Examples include solar panels as well as batteries, which store renewable energy when it is abundant (i.e. when the sun is shining) to be used when energy from the grid is “dirtier” or more expensive.
- **Demand management**, including controls such as smart thermostats and behavioral changes, can help shift building energy use when grid energy has the highest carbon content from fossil fuels. Microgrids can be used to balance energy demands and sources to help customers reduce demand, reduce their bills, and potentially provide backup from batteries when the power does go out.
- **Electrification** involves switching out equipment that currently relies on burning natural gas to equipment that uses electricity, including space and water heating, stoves, and dryers.

California’s energy supply is transitioning toward renewable sources with the goal of a 100% clean energy by 2045. This further increases the benefits of electrification. California’s grid now

includes 39% renewables, including solar and wind, and 61% of energy comes from non-fossil fuel sources (including large scale hydroelectric and nuclear power).¹

2. How will building electrification affect the grid?

Achieving the State net zero and County carbon neutrality goal by 2045 will require economy-wide decarbonization. This will include, among other things, electrification of both buildings and the transportation system, and that transition will increase the demand on the electric grid. Regulatory and oversight agencies like the California Public Utilities Commission (CPUC) and the California Independent System Operator, along with utilities, including those serving L.A. County, are all preparing and planning for this change.^{2,3} (See more details in Answer 7).

California SB 100 sets a target of 60% renewable energy by 2030 and 100% carbon free energy by 2045. Getting the grid ready for this transition entails increasing grid capacity through additional renewable resources, increasing demand flexibility using smart meters and other technologies, and expanding and modernizing the transmission and distribution systems.⁴ These changes are already being incorporated into long range planning and budgeting by State agencies. Studies using stress test modeling show that California can actually meet an 85% clean energy target by 2030 without compromising reliability.⁵ By decarbonizing the energy grid, building electrification becomes an increasingly impactful strategy to achieve the County's carbon neutrality goal.

If all buildings were fully electrified today, the grid would not be ready to handle the growth in demand. However, that is not a realistic hypothetical—it will take time as well as funding and other resources to engage, incentivize and implement building electrification at scale, and most retrofits will likely not occur until current equipment (such as space and water heating systems) is closer to the end of life. According to interviews with Southern California Edison (SCE), building electrification will not bring large new loads that warrant large infrastructure upgrades, though panels and “last mile” distribution (at the customer side/meter) may be necessary to accommodate larger local demand. Increasing peak loads within the capacity limits of transmission will not trigger any costly upgrades of the grid. SCE has accounted for local infrastructure upgrades in its budget request and plans to increase customer engagement to understand shifting loads. Loads from building electrification are also starting to be incorporated into statewide planning.

The picture is somewhat different in rural communities, which already experience more instability in electrical supply. Rural communities typically have a lower load to begin with, so the supporting electrical system may have less capacity to support the additional load of electrification. Work needs to be done in collaboration with rural communities to bring the benefits of decarbonization while also increasing local energy resilience. In such cases, investment in electrification can potentially help deliver new resources to rural communities and rectify some disparities in access.

Peak energy demand in Southern California generally occurs during hot summer days. Most cooling is already electric, so electrification would not significantly increase this load. In fact, heat pumps, which provide both heating and cooling, are more efficient than traditional gas burning air conditioning. Electrification will have the biggest impact on winter peaks because most space heating is currently provided by natural gas. As that gas load is instead met by electricity, winter peaks are expected to rise significantly, but will still be lower than summer peaks, limiting the need for expanded infrastructure.⁶ As a result, the grid already has capacity to support a significant amount of electrification. Other technologies, including building controls and time of use rates,

can enable and encourage customers to shift loads to off-peak times. Utilities are also actively managing loads across the grid system to meet the demand while limiting the need to build more capacity.

3. Does building electrification worsen resilience?

A resilient energy system is one that can maintain or restore power after an unexpected disruption. This might mean pairing different energy sources to create redundancy. Gas provides some level of redundancy because some gas stoves can be used when the electricity is out. However, other gas equipment, including space and water heating, are much less likely to work during outages because they have electrical components. The gas distribution system is also vulnerable to disruption from earthquakes, fires, storms, and blackouts. Also, natural gas is highly flammable and explosive, which can compound damage from other events.⁷ For instance, according to a study by the California Seismic Safety Commission, nearly half of building fire ignitions that occurred during the 1994 Northridge earthquake were gas-related.

There are other ways to boost redundancy in order to keep the power on in buildings, and in fact electricity is easier to back up than gas. Electrical uses can already be backed up with generators, but these rely on polluting diesel fuel. However, solar panels combined with batteries can be used to back up essential energy needs. Electric vehicles equipped with two-way charging are emerging that can also serve as backup batteries for buildings. As these technologies become more widespread, all electric buildings may ultimately be more resilient than buildings that use gas today.⁸

For rural communities in L.A. County, the loss of redundancy may be more of an issue as these communities are already susceptible to outages overall. Because many rural and remote communities are located in areas with higher risk of wildfire, they are more likely to be impacted by disruption from Public Safety Power Shutoff (PSPS) events or other outages. Many rural households rely on propane, which is not as powerful a greenhouse gas as methane (natural gas) but is still a fossil fuel. It also requires delivery by truck rather than through a pipe system, which can create vulnerabilities during times of disruption. Work is needed, in close collaboration with these communities, to determine whether, when, and how they shift toward electrification, as well as the potential to shift toward community scale microgrids that generate and store renewable energy locally to build more energy resilience.

4. Will electrification make Public Safety Power Shutoff events worse?

Public Safety Power Shutoffs (PSPS) happen when a utility tries to decrease threats related to wildfires by temporarily shutting down sections of the grid during hot, dry, windy conditions.⁹ They are a last resort tool used by utilities to prevent sparks from power lines from igniting vegetation. The best way to decrease the risk of PSPS events is to harden the grid through strategies such as more fire-resistant wires, putting lines underground, adding new sensors and detection technology, managing vegetation, and other strategies. SCE is actively investing in this work across their service territory. According to SCE, through these efforts, they have reduced the probability of catastrophic wildfires associated with their equipment by about 75%-80% since 2018.¹⁰

The biggest threat to energy reliability is not electrification but the impacts of climate change. Wildfire, flood, wind, and extreme heat are all increasing in frequency and intensity as a result of GHG emissions and all pose growing threats to the reliability of the energy system. Thus, strategies that reduce GHGs, including electrification, are an essential part of protecting energy reliability.

5. Will decarbonization make energy more expensive?

Energy costs are influenced by various factors, from geopolitical forces to local weather. Decarbonization's impact on these costs is complex and should be assessed at both the building and societal scales.

At the building scale, the crux of this question is about whether investing in decarbonization will result in higher energy costs for homes or businesses. This comes down to the initial costs associated with implementing decarbonization strategies, and the amount of energy that is required by buildings. In many cases, decarbonization strategies such as more efficient lighting, insulation, or efficient equipment will result in immediate reduction in energy bills that can fairly quickly offset the initial costs of installation. The return on solar investments may take longer but it is becoming increasingly cost effective, and the costs of battery storage is declining as well.

Electrification can also significantly reduce both the amount of energy required and cost of energy bills. However, isolating the cost of electrification can be challenging and should consider the initial costs of installation as well as potential energy bill savings over time. Few studies have been done on the cost of retrofitting larger commercial buildings. In some studies of residential buildings, the cost of an all-electric new home is lower than the cost of a mixed fuel home,¹¹ while others show the opposite.¹² The variation is likely due to differences in the buildings evaluated and the costs included in the study. Another study based in Los Angeles showed that electrifying older affordable housing would result in lower energy bills, but those costs would not be sufficient to offset potential rent increases from installation costs being passed on to renters.¹³ However, that study looked at electrification alone, and did not include additional energy efficiency measures. Factoring energy efficiency would increase the potential savings on energy bills.

Energy customers are also eligible for federal, state, and other incentives to offset the costs of decarbonization and electrification strategies. These incentives can offset the initial costs of installation so that more people can benefit from energy bill savings. Incentives are particularly important for low-income households and renters who may be highly sensitive to installation costs leading to higher overall household cost burdens.

At a societal scale, there are some additional questions that add complexity to the question of energy cost. These come down to variables that influence the cost of energy itself (i.e. the rates for electricity and natural gas). Some key variables:

- **Electricity prices:** While electricity rates in California are fairly stable, a major infusion of public investment will be needed for both grid and building improvements to address both decarbonization and climate change adaptation. The amount that will be passed to ratepayers in the form of increased rates is still unknown. To date, the CPUC has limited the amount of cost that could be passed on to consumers.
- **Renewables:** The cost of renewables is declining. In fact, the cost of power from solar photovoltaics declined by 89% between 2009 and 2019.¹⁴ This will help California to continue investing in renewables to meet increasing demand and phase out fossil fuels.

- **Electricity demand:** Increasing demand for electricity could drive prices down. One study by the California Public Advocates Office suggests that increased electricity demand due to vehicle electrification actually results in downward pressure on electricity rates (i.e. reducing the unit cost of electricity) for all customers.¹⁵
- **The future of the gas system:** The cost of natural gas is more variable than electricity in the US. It is likely that as more people move away from natural gas, those who remain dependent on it will have to cover a higher share of the cost of maintaining the infrastructure. This can lead to stranded assets or higher costs for those customers or communities. Overall, there will be costs associated with decarbonization at both the building scale and at the societal scale. Energy efficiency can directly decrease costs. Other types of retrofits may increase or decrease costs and may be offset by incentives. While there may (or may not) be increases in electricity rates, natural gas rates are almost certain to rise as the customer base supporting associated infrastructure begins to shrink.

6. Are there situations where electrification is not possible?

While the vast majority of buildings can technically be electrified, the process to do so may be complex. New construction is simpler because buildings can be designed for decarbonization from the beginning; existing buildings will likely need to be retrofitted. Large older buildings where gas systems are deeply integrated into the architecture may pose challenges and at least in the near term be prohibitively expensive. Others, like affordable multi-family housing, may have a mix of central and common area systems, split incentives between landlords and tenants, and highly sensitive occupants who may have nowhere else to go if displaced either during construction or as a result of increased rent.

In the vast majority of these cases, electrification is technically feasible but may be more expensive to accomplish. Generally, advanced planning to prepare electrical infrastructure will be needed in order to facilitate implementation at equipment end of life. Also, there are some cases where people have a strong preference for gas systems as opposed to electric, particularly around stoves. Replacing gas stoves with induction heating stoves is technically straightforward, but it may require electrical upgrades. Some people, for cultural and/or other reasons, prefer to cook on an open flame. Increasingly, chefs are becoming aware of the benefits of induction stoves, including better air quality, faster cooking time, and better control.

According to the American Council for an Energy Efficient Economy, the U.S. can electrify about 90% of its current energy use,¹⁶ but about 10% of uses will be more challenging. Building-related examples include:

- Buildings in very cold locations (e.g. north of Detroit) where backup fuel heating systems may be required during winter peaks to supplement heat pumps.
- Campus buildings that rely on large-scale steam and cogeneration plans, such as those used on many large university campuses.
- Buildings that house large-scale sterilization processes in hospitals or laboratories.
- Industrial buildings that house processes such as chemical feedstock and high temperature processes.

It is important to look at the suite of building decarbonization measures, particularly for those more challenging sectors, to maximize GHG reductions. For those buildings that are hardest to electrify, focusing on efficiency, on-site generation, and other strategies can reduce emissions and allow time for new electric technologies to mature.

7. How is the electric utility planning for electrification?

California Assembly Bill 1279 codifies into law the State's goal of reaching net-zero emissions by 2045, which will require direct emissions reduction of 85%. SCE estimates that the most cost-effective approach will include a mix of increased electricity demand, vehicle electrification, and building electrification. *Pathway 2045: Update to the Clean Power and Electrification* is SCE's strategic report to achieve carbon neutrality. Specifically, SCE expects the following to be electrified by 2045:

- 75% of light-duty vehicles, 67% of medium-duty vehicles and 33% of heavy-duty vehicles
- 70% of buildings (particularly space and water heating)

These electrification efforts will lead to a 60% increase in electricity sales and 40% increase in peak load, and SCE believes it can meet the associated increased load. To facilitate the transition, *Pathway 2045* highlights the importance of incentives, distributed energy resources programs, and rate schedules to support customer conversion to efficient, grid-supporting, electric technologies.

SCE has applied for \$677 billion in funding with 88% meant for residential customers and the other 12% applied to commercial buildings. SCE also hopes to target residents and businesses in Environmental and Social Justice (ESJ) communities which are predominantly communities of color or low-income communities. Moreover, SCE has plans to invest \$5 billion annually into grid improvements to harden infrastructure to climate change and reduce power shutoffs, in addition to deploying energy storage to improve reliability. It is also developing Time-of-Use rate structures and demand response programs that rewards customers who shift demand to support grid reliability or when the grid is powered by carbon-free energy.

8. What are the consequences of not decarbonizing our buildings?

Buildings are the second largest source of GHG emissions after transportation in L.A. County, which means that without building decarbonization, L.A. County will not achieve its 2045 carbon neutrality goals. While L.A. County alone cannot stop climate change, it plays an important role in reducing emissions and serving as a model for other jurisdictions. According to California's Fourth Climate Change Assessment, without intervention, the cost impact of climate change on the State is \$113 billion annually by 2050. Direct and indirect impacts like extreme heat and wildfires will affect everyone but the burden will be disproportionately felt by disadvantaged communities. Building decarbonization is essential to stemming these impacts and achieving the statewide net zero goals.

Beyond GHG emissions, buildings are also a significant contributor to air pollution. Natural gas from home stoves can release nitrogen oxide (NOx) and other carcinogens that are associated with asthma, chronic lung disease, and increased mortality.¹⁷ The South Coast Air Quality Management District has determined that commercial and residential buildings are the single largest source of NOx pollutants, and commercial cooking and residential use of natural gas is a larger source of particulate matter (PM2.5) than all cars and trucks combined in the region. These pollutants are a

significant cause of respiratory diseases like asthma, which disproportionately impacts Black children in L.A. County.¹⁸

Unabated, climate change will have devastating consequences to the planet and without building decarbonization, avoiding those consequences will not be possible. While implementing an equitable building decarbonization strategy for new and existing buildings is a complex undertaking, the benefits to the environment and public health are significant.

Even without consideration of climate change, California’s energy infrastructure is aging and in need of continual maintenance and upgrades. This will require investment. The marginal additional investment required to supplement grid maintenance with plans for grid modernization, decarbonization and hardening, the State may be able to transform the grid in a way that is safer, cleaner and more reliable for all people.

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⁴ *Rulemaking 16-02-007 2019-2020 Electric Resource Portfolios to Inform Integrated Resource Plans and Transmission Planning*. 21 March 2020. <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M330/K357/330357384.PDF>

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¹⁰ Southern California Edison. *2023-2025 Wildfire Mitigation Plan Factsheet*. Edison International. 2023 March 24. https://download.newsroom.edison.com/create_memory_file/?f_id=6421e583b3aed34951d9462a&content_verified=True

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MOTION BY SUPERVISOR KATHRYN BARGER

MARCH 15, 2022

AMENDMENT TO ITEM #14

Southern California continues to experience intensifying frequency and scale of wildfires. These fires have resulted in a devastating loss of life, property, and infrastructure. With the continuing threat of wildfires, Public Safety Power Shutoffs (PSPS) events have been utilized by utility companies, such as Southern California Edison, to preemptively cut power to electrical lines that may fail in certain weather conditions. However, PSPS can leave communities and essential facilities without power for days at a time, which create significant risks and hardships, particularly for vulnerable communities and individuals.

In the County of Los Angeles (County), PSPS primarily impacts the incorporated cities and unincorporated communities of the Fifth District. On average, PSPS outages last one to two days and are projected to continue at that length for the foreseeable future. These outages lead to businesses being unable to operate, residents suffering through extreme temperatures without heating or cooling, and residents who rely on electrically powered medical devices scrambling for emergency solutions.

Power shutoffs leave residents without cell service, internet service, and telephone land lines effectively cutting off all communications. Other utility providers, including telecommunication companies, have limited back-up battery power, leaving residents with no ability to receive updates or emergency notifications from emergency responders and even SCE. In addition, many of the Fifth District’s rural communities subject to PSPS events have a significant percentage of residents that receive potable water from water wells, and power shut-offs leave residents without access to drinking water and limits first responders the ability to defend these communities during wildfires.

-MORE-

MOTION

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I, THEREFORE, MOVE that the Board of Supervisors direct the Department of Public Works, in consultation with the County's Chief Sustainability Office, the Department of Regional Planning, the Los Angeles County Fire Department, and other relevant departments to report back within 120 days with recommendations for an ordinance or building code changes that would phase out the use of natural gas equipment and appliances in all new residential and commercial construction and substantial renovations, where feasible and in consideration of the varying climate, geography, and infrastructure challenges that rural communities face, starting in 2023.

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KB:aso

REVISED MOTION BY SUPERVISORS SHEILA KUEHL
AND HOLLY J. MITCHELL

March 15, 2022

Ensuring the Equitable Decarbonization of Buildings

Studies continue to show that the impacts of local air pollution and global climate change disproportionately affect low-income communities as well as communities of color, regardless of income. Black and Latinx populations are exposed to higher levels of toxic air pollution and, as a result, suffer from higher rates of cardiovascular disease. As an example, the newly released Los Angeles County Department of Public Health Climate Change & Health Equity Report states that one in four Black children in Los Angeles are afflicted with asthma, which is more than triple the rate in white children. Just last year, the County’s Chief Sustainability Office (CSO) released a comprehensive Climate Vulnerability Assessment showing that, while 50% of the County’s population is Hispanic/Latinx, this population comprises 67% of the people in communities that have a high vulnerability to extreme heat.

Residential and commercial buildings are among the most significant sources of both local air pollution and greenhouse gases. The South Coast Air Quality Management District (SCAQMD) has indicated that residential and commercial buildings are the largest stationary source of emissions of nitrogen oxides (NOx) which

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is a key component of ozone. To meet the federal health-based standard for ozone, the region needs to reduce NOx emissions 70% by 2037. The SCAQMD also reports that commercial cooking and residential natural gas combustion are a larger source of fine particulate (PM2.5) in the region than all cars and trucks combined. Similarly, buildings are the second largest source of greenhouse gas emissions in the County after transportation. So, to meet our local air pollution reduction goals and our climate goals, it is imperative that we reduce emissions from the building sector.

The Board of Supervisors (Board) has taken a significant step forward by changing the default electrical energy mix for residents and business in unincorporated Los Angeles County to 100% renewable energy through the Clean Power Alliance. However, the use of natural gas in residential and commercial buildings continues to be a major source of indoor and ambient air pollution and greenhouse gases. Recent studies have shown that natural gas-burning stoves and furnaces produce a number of dangerous pollutants, including particulate matter (PM), nitrogen dioxide (NO₂), carbon monoxide (CO), and formaldehyde. As a result, studies have shown that children in homes that use natural gas have a 42% higher risk of experiencing asthma symptoms and are 24% more likely to be diagnosed with lifetime asthma.

Over fifty cities and counties in California have already adopted building codes to reduce or eliminate the use of natural gas in new construction and some jurisdictions have begun enacting policies to address natural gas use in existing buildings. The Board recently adopted a motion calling for a report on Zero Net Energy standards for new large-scale developments. This type of policy can and should be expanded to cover all new construction regardless of scale. Additionally, the Department of Public Works (DPW) is now developing an existing building energy and water use reporting ordinance that will allow the County to collect data to inform future

policymaking.

Equipment such as electric heat-pumps are more efficient than combustion-based equipment, less costly to operate, and filter indoor air, providing protection from wildfire smoke or other ambient air pollution. And, because they provide both heating and cooling, heat pumps can provide air conditioning in low-income households which may not have had, or could not afford, traditional air conditioning equipment. This will be increasingly important as we face longer, more severe, and more frequent heat storms. As pointed out by the County's recent Climate Vulnerability Assessment, it is low-income communities and communities of color that will be disproportionately impacted by extreme heat.

To ease this transition, financial incentives to replace gas-fired equipment such as space and water heaters, cooktops, and other appliances should be among the first approaches used to begin this market transformation. The County should identify state and federal funding that may be available and work with local electric utilities such as Southern California Edison and the Clean Power Alliance to support these efforts.

Recently, the City of Los Angeles adopted a motion to set out a process for considering policies to address these issues in a way that protects low-income utility customers, supports workers that may be affected by such policies, and prevents unintended consequences for tenants related to housing affordability and availability, informed by recommendations from two recent reports by Strategic Actions for a Just Economy (SAJE) and Inclusive Economics. These reports pointed to the centrality of tenant protections and family-sustaining jobs for any building decarbonization policy. The City's motion directs that communities that have suffered from historic and ongoing burdens of racist policies and practices be centered in the development of a building decarbonization program to ensure environmental, energy,

and housing justice. The County should be part of any such discussions with these communities as well as with stakeholders from the building sector, labor, tenant rights organizations, and communities throughout unincorporated Los Angeles County as it begins consideration of similar policies.

Additionally, as policies to phase out the use of dirty fossil fuels are developed, government agencies must be mindful of ensuring the resiliency of our energy system in the face of a changing climate. The Board has recently moved to create a Climate Resilience Initiative and that office must be engaged in these efforts to ensure ongoing supply and reliability of energy for residents and businesses.

WE, THEREFORE, MOVE that the Board of Supervisors:

1. Direct the Chief Sustainability Office, in collaboration with the Climate Resilience Initiative in the Chief Executive Office, the Departments of Public Works, Regional Planning, and others, to:
 - a) initiate and/or participate in ongoing stakeholder engagement processes, such as those led by the City of Los Angeles and those recommended in the California Equitable Home Electrification Program, that include environmental and environmental justice advocates, tenant rights organizations, housing advocates, the affordable housing development community, the building industry, ~~labor~~ impacted building trades unions, utilities, town councils, and others on approaches to decarbonizing new and existing buildings in a way that protects low-income utility customers, that supports workers that may be affected by such policies, that prevents unintended consequences on housing affordability and availability, and that ensures the resiliency of our energy system;

- b) engage with state and federal agencies, electric utilities, advocates, academics, and others to determine the extent to which the increased electric demand resulting from efforts to decarbonize buildings can be met with existing and planned new clean energy resources and steps necessary to strengthen the electricity transmission and distribution system to ensure these energy supplies can be delivered reliably;
 - c) proactively advocate for and seek state and federal funding to support efforts to decarbonize existing buildings and ensure adequate energy supplies and grid resilience; and
 - d) report back to the Board within 120 days on potential policies and programs, including funding sources, to reduce or eliminate the use of fossil fuels in existing residential and commercial buildings.
2. Direct the Department of Public Works, in consultation with the County's Chief Sustainability Office, the Department of Regional Planning, the Los Angeles County Fire Department, and other relevant departments to report back within 120 days with recommendations for an ordinance or building code changes that would phase out the use of natural gas equipment and appliances in all new residential and commercial construction and substantial renovations, where feasible, starting in 2023.
 3. Delegate authority to the Executive Office of the Board to enter into any contracts or agreements necessary to support the Chief Sustainability Office in its efforts to conduct stakeholder engagement, assess electricity supply and grid reliability, and/or seek out and apply for state and federal funds.
 4. Authorize the Executive Officer of the Board to execute any necessary

documents to have the County join the National Building Performance Standards Coalition to foster collaboration among state, county, and city governments on equitably reducing greenhouse gas emissions from the building sector and enhancing federal support for the County's efforts in this regard.

S:SF:EnsuringtheEquitableDecarbonizationofBuildings

MOTION BY SUPERVISORS SHEILA KUEHL AND
HOLLY J. MITCHELL

March 15, 2022

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