County of Los Angeles
Department of Beaches & Harbors
Parking Operations Evaluation

Dixon Resources Unlimited

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Company Profile

With over 24 years of parking and transportation management experience, Julie Dixon founded Dixon Resources Unlimited (DIXON) with the direct goal of supporting municipal parking programs. Based upon industry awareness and familiarity of parking technology and current developments, DIXON has been sought for feedback and direction from parking programs both nationally and globally. DIXON has directly supported municipalities throughout the United States, developing extensive knowledge and hands-on experience with the solicitation, development, deployment, operation, and maintenance of solutions ranging from municipal parking programs to automated enforcement systems. We have been responsible for establishing policies, defining objectives and delivering on initiatives for municipalities of all sizes, working at all levels within the administration, enforcement and adjudication processes.

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RESOURCES UNLIMITED

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Executive Summary

Purpose

The goal of the Los Angeles County Department of Beaches and Harbors (Department) Parking Operations Evaluation was to evaluate existing parking operations and develop solutions that will maximize existing resources and identify strategies for addressing new technology and growth in parking demand. This evaluation provides an assessment of the current parking operation and will provide guidance to the Department in the formulation of recommendations and strategies for the efficient management of the existing parking supply while adapting for the evolution of the Department's future needs. The review also provides targeted recommendations regarding the adequacy of parking, transportation demand management measures, parking management, pricing, and considers the opportunities for new parking technologies.

Study Area

The primary study area for the Parking Operations study includes 14 parking lots in Marina del Rey and 19 parking lots at 11 County-operated beaches between Nicolas Canyon and White Point-Royal Palms with a total of approximately 11,350 parking spaces. The Department currently contracts with a private company, Modern Parking, Inc. (MPI), for parking lot management services.

Scope of Study

Along with ongoing management of the project, DIXON was tasked with providing the following services:

Task 1- Conduct Meetings and Research Based on Available Data
Task 2- Evaluate the Operational Effectiveness and Efficiency of Current Operations
Task 3- Evaluate New Technology
Task 4- Evaluate Incentive Programs and Fee Structure

Department Current Roadmap

The Department has been working to implement a number of improvements and enhancements to the parking lot operations. The current roadmap (below) identifies a few of the project objectives that are currently being implemented by the Department. The roadmap highlights the proactive measures that have already been identified by the Department to enhance the patron experience throughout the operation. Many of these items coincide with the recommendations outlined within this report.

- Washington Street Parking Lot

    - Trial installation of an integrated vehicle counting system with an interactive message board
    - Mobile payment trial
- Replacing the current single-space meter with credit card enabled single-space meters.
- Developing a trial for a parking guidance equipment evaluation
- Marina del Rey
    - A wayfinding signage program is in progress
- The Department has requested additional security cameras at identified heavier traffic locations to monitor staffing activities and vandalism
- Replacing the attendant kiosks at the Point Dume and White Point lots

Summary of Findings

The summary of the key findings below is based upon stakeholder feedback and the on-site field assessments. Overall, the parking lots were operating at a level comparable to the best practices found in other municipalities. The recommendations outlined within this report will enhance the parking lot operations. It is important to highlight that the Department has been in the process of implementing many of the recommendations outlined.

Existing Conditions – Wayfinding/Ingress & Egress

- Additional wayfinding signage is needed. The addition of wayfinding signage, specifically towards the ingress/egress sections of the parking lots, will greatly improve patrons' access to, mobility within and exit from parking lots.
- In order to mitigate traffic congestion within the larger parking lot locations (Will Rogers, Venice Beach, Zuma) navigation improvements are needed, including, at a minimum, annual restriping, regular parking lot maintenance and additional ingress/egress directional signage.
- Marina del Rey would benefit from an improved branding campaign to attract parking patrons from the nearby parking lot locations.

Existing Conditions – Equipment & Lot Review

- Accurate occupancy counts are needed, currently, the Department relies primarily on personnel to verify physical counts. This becomes a difficult task in the larger parking lots.
- The upgrade to single-space smart meter that accept credit cards will enhance the patrons overall parking experience.
- The addition of new security cameras will further improve the level of security for patrons.
- Preventative maintenance and general lot improvements such as restriping, upgrading outdated booths and graffiti removal need to be addressed on a regularly scheduled basis.

Existing Conditions – Parking Devices versus the Use of Staffing

- Parking lot attendants collect the majority of the revenue compared to pay stations and single-space meters, 75% to 22% respectively. A significant amount of the attended lot transactions are cash. Some of the recommendations highlighted in the technology roadmap identify opportunities to reduce cash handling.

Existing Conditions – Revenue

- Handheld permit device usage and money handling procedures by the parking lot operator need improvement.

Technology Roadmap

Immediate

- Add wayfinding signage
- Implement mobile payment solution
- Updated single-space parking meter technology
- Utilize permit management software program

Short Term

- Enhance the parking information available on the Department website
- Transition to Pay by Plate and implement mobile LPR, including 2 enforcement vehicles and pay station upgrades
- Improve identification of pay station locations
- Install loop counters

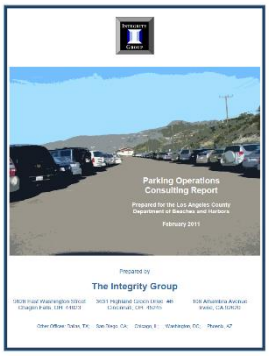
Long Term

- Install integrated loop counters with parking guidance system (PGS) signs
- Fisherman's Village automation (pay-on-foot with validation program)

Task 1: Conduct Meetings and Research Based on Available Data

Review of Existing Data

The DIXON team reviewed and summarized all relevant data from the Department including the 2011 Parking Operations Consulting Report, the Department's existing parking management strategies, overall Department objectives for the long, mid and short-term, as well as parking inventory and revenue. This information provided the baseline methodology approach for the Parking Operations Evaluation.



Review of 2011 Parking Operations Consulting Report

In order to accurately assess the potential solutions during this current Operations Study a review of the five task assignments highlighted in the 2011 Parking Operation Consulting Report follows.

Task 1 – Perform an environmental scan; review and analyze background information and data; and conduct focused meetings with critical stakeholders

With stakeholder input, on site analysis and examination, the consultant concluded that the existing pay stations must be replaced due to limited functionality and outdated technology.
NOTE: The Department took heed of this advice and replaced the aging pay stations with equipment that would stand up to the harsh beach environment while providing a more user-friendly approach for the patron, the technician and back-office management.

Task 2 - Evaluate the use of Pay Stations vs. the use of parking lot staffing and examine the number and placement of the Pay Stations

The consultant examined each lot to study total revenue, percentage of revenue collected by Pay Station and by the Operator, the number of pay stations per space, configuration of the lots, and known patronage characteristics (surfers, tourists, etc.). Recommendations were provided specifying the total number and location of Pay Stations as well as staffing levels. In addition, the 2011 report suggested purchasing shelters for the Pay Stations, replacing the KIS ticket devices, enhancing revenue control efforts, and improving signage.

Task 3 - Evaluate the feasibility of including the Pay Stations as items that have to be provided and maintained by the future parking lot contractor

In order to evaluate the feasibility of the future parking lot contractor maintaining the pay stations, the 2011 Report evaluated three options:

- Option 1 - Operator purchases and maintains the equipment
- Option 2 - Department purchases and Operator maintains the equipment
- Option 3 - Department purchases and Department maintains the equipment

After analyzing all three options, the recommendation was to require the operator to purchase and maintain the pay stations with Department overview.

Task 4 - Evaluate currently available parking automation equipment considering the

Department's needs and beach/marina environment and recommend the equipment best suited to provide for Department's future needs

The study provided a detailed comparison of equipment specifications offered by 14 vendors to the features most mentioned by stakeholders such as:

- Real-time reporting of events that require action (full canister, slot jam, low receipt paper, etc.)
- Web-based platform for data storage, rate programming, and report generation
- Rust-proof cabinet
- Self-contained electrical (solar powered) system
- Several internal communication modes in case one mode encounters reception difficulties
- Simple user interface

The Report narrowed the vendor field based on these factors and settled on three vendors for a closer inspection of their pay station offering. Due to the integrated solar panel and robust nature of the Cale pay station, the consultant recommended the pay stations to the Department in the 2011 Report.

Lastly, *Task 5* required the consultant to evaluate the specification document to be used to solicit a new parking lot contractor to manage the Department's parking operations and incentivize the contractor to maximize revenue generation. The 2011 Report offered suggestions to extend the contract term from three to five years, modify the proposal rating score as well as a handful of incentives for preventative maintenance, supplemental enforcement, concession agreements, sliding percentages and promotional programs.

Stakeholder Meetings

In order to maximize involvement with this current project, Dixon used a multipronged approach was developed to further expand upon input from the 2011 Report. DIXON was tasked with conducting focused meetings with critical stakeholders:

- Department Management Kickoff Meeting
- Parking Management Staff Meeting
- Department Parking Contractor, Modern Parking Inc., MPI Meeting

DIXON also met with the Department's Traffic Engineer to discuss ingress/egress points and possibilities for enhancements. In addition, follow up discussions were conducted with Caltrans and LADOT to discuss the Department's concerns with signal timing.

Department Management Kickoff

The Department Management Kickoff meeting was held to guide the initial analysis and assessment for both short and long-term changes to the Department's parking program. Below are some key items of focus that were outlined during the meeting:

- Revenue analysis
- Annual Permit Programs/Passes
- Ways to further promote Marina del Rey
    - Accessibility, ease of use and access to the various lots
- Enhanced Enforcement Objectives throughout all locations
- Ingress/Egress options at the high-volume beach lots (i.e. Zuma, Will Rogers, and Dockweiler)
    - Mitigate complaints due to gridlock at ingress and egress points
- Possibility of transforming the Department's lots to fully automated systems
    - License Plate Recognition (LPR) software
- Analysis of additional Wayfinding signage/placement to help direct patrons
- Special Event procedures

Parking Management Staff Meeting

Similar to the Department Management Kickoff meeting, a meeting was held with Parking Management to discuss key challenges and concerns of the Department. A few challenges/locations were highlighted as areas of focus:

- Technology challenges
    - Daily reports are paper based documents compiled from electronic information from the T2 system. Currently, aspects of the data entry and work order production is a manual process by choice.
    - There are some general connectivity issues within the lots that affect the T2 handheld equipment and Global pay stations
    - The Department's Operator currently utilizes 25 T2 handheld devices, which, during special events, may not be enough to accurately manage all of the locations
    - There are security cameras installed in four locations (Launch ramp, Dockweiler, Rose and Washington). However, additional security cameras may be needed at some of the remaining lots.
    - There are a total of 35 car counters in use at various locations. Out of the 35, 10 are under repair.

- Financial Challenges
    - If there is a variance in the reconciliation of monies that is below $2, the Attendant has the ability to pay the difference in order to reconcile. HR considers a number of factors, including reconciliation discrepancies, in the decision to let an employee go. It could be

the first time an attendant has a discrepancy, however it all depends on the circumstance.
    - All parking revenue flows into the County's General Fund
- Washington Lot
    - Currently, the Washington lot has 380 parking spaces (371 regular parking spaces, 9 ADA parking spaces) that reach maximum capacity during most weekends providing a significant hindrance on the ingress/egress of the lot
    - The Department is planning to test a vehicle counting system connected to a large message board indicating space availability
        - The message board will be seen from Pacific Ave
        - The systems back-office program will monitor the counts via a website and make any necessary changes on the message board as the vehicle count updates.
    - Benefits include:
        - An improvement to parking operations
        - Real-time directional guidance for space availability in the lot
        - Adjustable signage for advertisements, information distribution, special event procedures, etc.
        - Reduced staffing needs for traffic vehicle counting personnel
- Will Rogers Lot
    - There are three large summer camps that are of special interest to the Department due to their size. These summer camps utilize parking permits allowing patrons free entry to drop off camp goers. Patrons have a half hour to drop off their children: 15 minutes before camp start time and 15 minutes after camp start time.
        - The drop off and pick up of camp goers forces a large amount of traffic in and out of the lot within a half hour period causing major traffic jams at ingress and egress points
        - Vehicles are expected to exit the lot directly after dropping off or picking up camp goers within the half-hour allowance of time
        - On occasion, the parking permit has been observed being abused by vehicles parking for extended periods of time (for free) and by Parking Attendant Staff allowing free entrance outside of the designated time periods
- Maintenance
    - The Department needs dedicated staff for painting, signage and preventative lot maintenance support over and above the technical pay station and gate arm equipment

Department Parking Contractor, Modern Parking, Inc. (MPI), Meeting

A meeting was held with MPI in order to provide an "operator's" perspective towards the Department's parking operation. The majority of the comments made by MPI coincided with the Department's

comments. There was one area, however, where MPI's observations differed. MPI did not report communication issues with the T2 equipment or the Global pay stations. All other comments by MPI mirrored the Department's observations.

MPI outlined some similar challenges that were reflected in the Department meetings. For example, the process of camp drop-offs and pick-ups has a significant impact on the operation. Because of the traffic congestion, vehicles are sometimes forced to enter the parking lots outside of the designated drop off and pick up periods. According to Department rules, the attendant is required to make the patron pay in order to enter the lot if outside of these time periods. In some cases, patrons refuse to pay which forces the attendant to record the vehicle's license plate number and log it in the "Free Entry Log" (Image 1).

FREE ENTRY LOG

Location # _____ **Date:** _____

Name of Parker	Time	Disabled Placard #	Senior Permit #	County Department or Company	U-Turn	RV	Vehicle License Plate	Signature
John Smith	9:30	A563527					5DAU256	John Smith
William Gamboa	9:45		2563				6HGT589	William Gamboa
Steven Smith	9:50			B&H			4TUA647	Steven Smith
	10:00				√		2BHT623	
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Sample Log

Attendant's Name: _____

Arrendant's Signature _____

Image 1: MPI Free Entry Log

MPI also outlined the process for lot openings, shift breaks and bathroom breaks are managed. Currently, the parking lots are distributed into three areas with one Supervisor assigned to each; North, Central and South (Image 2). The Supervisors will visit each location, open the locations and drop off the money bags in the designated lock box. Throughout the day, the Supervisor will visit locations within

their area and provide breaks according to the break schedule and other relief that is needed (i.e. bathroom breaks, peak time periods, etc.). "Floaters" are attendants that also visit multiple locations in one day, help relieve and provide support to attendees as well. At the end of each day, the Supervisors return to the lots to retrieve and count the money and return the money bags to MPI's office.

North	Central	South
Zuma (653)	Rose (660)	Dockweiler (664)
Point Dume (654)	Venice (661)	Bluff (665)
Surfrider (655)	Washington (662)	Grand (666)
Topanga (656)		Torrance (667)
Will Rogers 3 (658)		White Point (668)
Will Rogers 1 (659)		Fisherman's Village (670)
		Lot # 2 (671)
		Lot # 10 (678)
		Parcel 4 & 77 (684)

Image 2: MPI Distribution of parking lots

Review of Similar Parking Operations

In order to develop parking operations strategies for the Department, it is important to evaluate the applicability of innovative approaches to managing parking programs used by cities of similar size and demographics. Due to the unique nature of the Department, DIXON focused on researching the parking operations practices of other similar programs to serve as a comparative basis for recommendations in this study. Several cities were considered and agreed upon the following to include in the comparison: Newport Beach, CA, and Santa Monica, CA. This study considers these cities not because the Department is identical to them, but because they each offer insight into innovative solutions that can be applicable to the Beach parking lots.

DIXON was able to research, analyze, and interview the comparable cities to obtain information on the details of their parking program, how the parking programs are managed/organized, and challenges/successes that each program has experienced.

A brief outline of both comparable cities is provided here and specific attributes of the programs will be referred to throughout the document.

Newport Beach, CA

The City is located in Orange County, California, and is popular for its harbor, beaches and mild weather. Approximately 87,000 residents live in the City year-round, and up to 100,000 tourists visit the City daily during the summer. The City contracts with SP Plus (SP+) to manage parking meter collections, counting, maintenance and enforcement services. The City has approximately 2,300 stand-alone meters that include IPS smart meters and Duncan mechanical meters, 2 public parking lots and 31 Digital multi-space pay stations in pay by plate mode (totaling approximately 4,300 spaces). The City retains control of the parking rates and operating hours. Other technology utilized by Newport Beach is Tannery Creek's License Plate Recognition ("LPR") software for enforcement of timed parking zones. In 2014, parking meters generated approximately $2,864,000 and the parking lots generated

Image 3: Entrance into Balboa Lot

approximately $3,750,000 in gross revenues.

The City of Newport Beach was highlighted as a comparable city due to the advancements made to their parking program. The installation of LPR technology along with pay by phone and real-time loop counters are all technology advancements that the Department is either considering or in the process of implementing. Furthermore, the City's transition from a fully staffed system with Parking Lot Attendants collecting money on behalf of the City, to a fully automated system provides the Department with a view of the challenges and triumphs that will help in future staffing decisions.

Santa Monica, CA

Based on key stakeholder recommendations, our comparable city analysis incorporated the City of Santa Monica due to a variety of factors. In recent years Santa Monica has made a number of infrastructure and technology changes to its parking operations. The City's previous equipment was outdated and antiquated and the City sought to implement innovative and reliable solutions that have been increasingly utilized in parking operations across the country. These improvements included parking guidance and count systems in the City's most utilized lots, new pay station technology in Santa Monica's off-street facilities, smart single-space meters, and an integrated citation management system. Currently, the City of Santa Monica's parking operations are managed by two different entities. The City's beach lots and off-street parking facilities are managed by Standard Parking, commonly known as SP+ (Image 4). The City's on-street meters are managed by the City's parking division. Today, the City of Santa Monica has 5,900 single-space meters and 62 T2 (Digital) Luke II pay stations in off-street lots throughout the City. Like the Department, Santa Monica currently utilizes Xerox for its citation management and processing.

Image 4: Santa Monica beach lot with both T2 Digital Luke pay station as well as cashier

Image 5: Santa Monica occupancy loop at Lot 5 South

As part of the technology overhaul, Santa Monica implemented HiTech's software for its vehicle detection and occupancy count systems (Image 5). The systems were implemented at five of Santa Monica's high occupancy lots which also have daily cashier attendants. The City is also moving closer to piloting mobile LPR in the City's residential parking permit (RPP) zones. Currently, Santa Monica is in negotiations with gtechna, a provider of LPR technologies, and hopes to begin piloting the technology next spring. Keeping with the parking technologies of today, Santa Monica has also incorporated and

continues to utilize ParkMe. ParkMe is a global leader that provides real-time and static (on-street and off-street) parking data to parking operators and potential parking patrons. Image 6 below provides a screen shot of Santa Monica parking availability and pricing in the proximity of the City's 3rd Street Promenade.

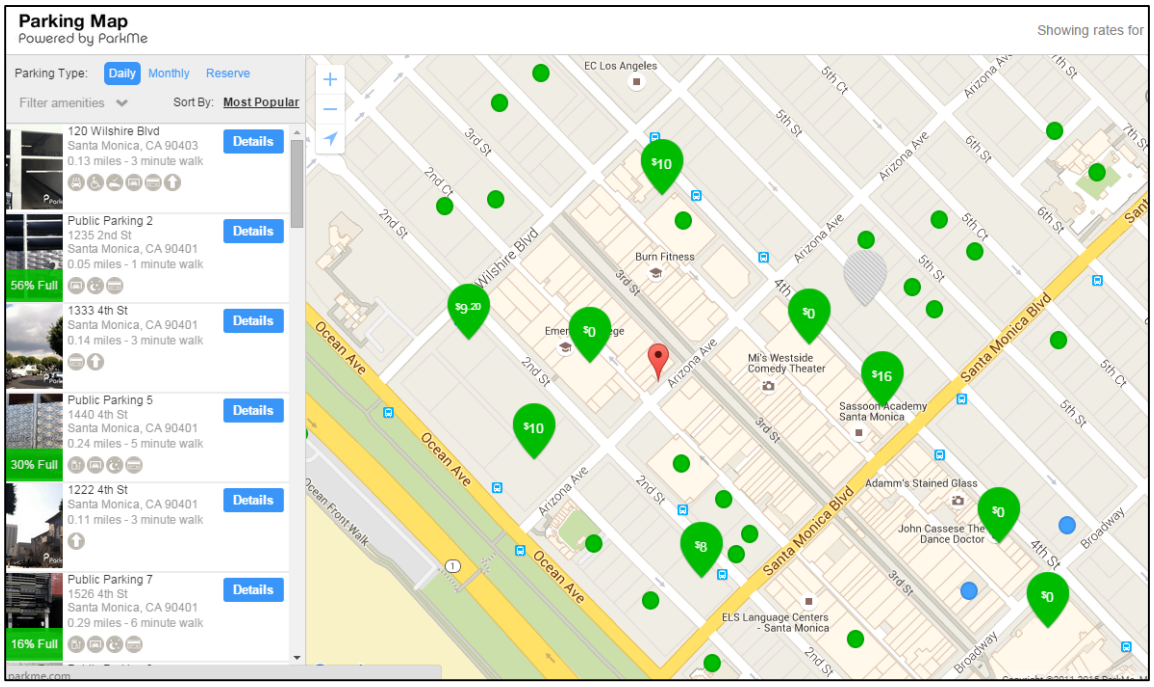

Image 6: Screenshot image of Parkme parking availability in Santa Monica

Task 2:

Operational Effectiveness and Efficiency of Current Operations

The Beach and Marina parking lot locations highlighted in this Operational Evaluation attract a patron base that is typically comprised of tourists, beachgoers and patrons looking to utilize the beautiful landscape that LA County offers. Therefore, parking occupancy at the majority of the locations studied is heavily dependent upon weather, day of the week (weekday vs. weekends) and special events. Weather and special events have significant impacts on occupancy numbers for any given day. Currently, in order to schedule the appropriate number of staff, MPI submits a weekly update of the schedule (to accommodate any necessary staffing increases or decreases due to weather) to the Department for approval. The Department and MPI then adjust this schedule for weather, statistical occupancy information, special events, etc.

The 2011 Parking Operations Consulting Report analyzed 18 parking lots at 11 County-operated beaches between Nicholas Canyon and White Point-Royal Palms along with 13 parking lots in Marina del Rey. Since this study, the Dan Blocker and Will Rogers Coastline lots were added to the County-operated

beaches. In addition, “Lot 77” was added to the Marina del Rey lots located between Chace Park and Lot 4.

Each of the defined parking facilities were visited, including the newly added lots, over a three-day period to analyze a number of items outlined in Image 7. Not all items outlined on the DIXON On-Site Assessment applied to every facility. However, the checklist provided a baseline to review each facility in depth. In addition, enforcement was observed (where possible), known patronage characteristics (tourists, campers, surfers etc.) and short vs. long term parking availability. Patron feedback was relied upon along with MPI staff feedback to retrieve the most detailed information possible. As per RFP-IS-15201475 DIXON’s Task 2 analysis was broken into four key topics:

1. Wayfinding / Ingress & Egress
2. Equipment Review
3. Automated Parking Devices vs. the use of Parking Lot Staffing
4. Revenue

The 2011 Report’s observations were conducted during the “winter” rate period. Consequently, peak traffic ingress and egress and prolonged wait times were not observed. Therefore, our observations were strategically scheduled with peak occupancy times in mind. The on-site analysis occurred during a beautiful sunny weekend from August 14 through August 16, 2015. On-site analysis was intentionally planned to occur during a high volume weekend to observe the true impacts that the weekend, weather and time of day have on each facility. Lastly, in order to analyze the impacts of special events, such as the drop off and pick up of camp goers, certain lot locations were analyzed at the specific times the events were scheduled to occur.

Pay stations

- ☐ Location, condition, quantity, configuration (CC, Coin, BNA)
- ☐ Observe customer use of pay station (peak and off peak) – wait times?
- ☐ Observe collections of pay stations if possible

Booth/Staff

- ☐ Observe collection of fees at peak and off peak periods and staff
- ☐ Technology being used
  - Issues? (Communication, ease of use, quantity of Handhelds)
  - Arms/Gates functional?
- ☐ Use of Kiosks instead of using handhelds
- ☐ Line queues
- ☐ Shift breaks, bathroom breaks - response times etc.
- ☐ Opinion on camp drop offs
- ☐ Opinion on use of prepaid cards
- ☐ Review reconciliation, drop box, pickups
- ☐ Ask estimated average occupancy (weekdays, weekends, holidays, summer vs. winter?
- ☐ Supervisor or Sheriff/PD response time?

Signage/Wayfinding

- ☐ Placement
- ☐ Condition
- ☐ Use of automated wayfinding
- ☐ View from Streets

General Lot configuration

- ☐ Lighting (general and pay station lighting)
- ☐ Painting of spaces
- ☐ Security options/cameras
- ☐ Ingress/Egress points – spike strips?
- ☐ Access to beach, bay, other points of interest etc.
- ☐ Pedestrian, Cyclist (bike racks?), etc., flow
- ☐ Communication issues
- ☐ ADA compliance

Future Improvements

- ☐ LPR, PbP, wayfinding, sensors
- ☐ Wi-Fi possibilities
- ☐ Automated signage, notification boards
- ☐ Incentive programs, senior passes

Image 7: Dixon on-site assessment document

1. Wayfinding/Ingress & Egress

Wayfinding is an integral part of all parking operations. Patrons need to be informed of facility locations, space availability, time restrictions and parking rates. Navigation from place to place within a parking facility is often overlooked and undervalued. Knowing where you are located in a facility, where there are available spaces and knowing how to navigate to those spaces is one of the most fundamental aspects of a successful parking program. During the field assessments, the placement of wayfinding signage or lack thereof was highlighted in a number of lot locations. The addition of wayfinding signage may significantly improve the ability of a patron to enter, leave and return to a property. While every Department lot was visited throughout the analysis, some key lots were identified as lots with significant wayfinding, ingress and egress issues. Though these lots have established ingress and egress points, there are changes that can be applied to many of these lots to create a more efficient and free-flowing traffic pattern.

Will Rogers

Image 8: Will Rogers ingress/egress

The ingress/egress points of the Will Rogers parking lots were gridlocked during camp drop-off and pick-up times. Specifically, during drop off (9:00am – 9:30am) and pick up (3:00pm – 3:30pm) times, vehicles were waiting upwards of 30 minutes to enter or exit the lot at the main entrance to Pacific Coast Highway (PCH) and Temescal Canyon Drive. As a result, patrons create further congestion through the length of the lot attempting to make U-turns in order to return to the northern exit point. Two

additional underutilized exits exist at the North and South end of the lot. Proper wayfinding signage is non-existent at these locations and would substantially improve the flow of traffic within the lots and ultimately to the exit locations. Additionally, the left turn lane from PCH into the entrance of the Will Rogers lot backs up significantly during these times. Vehicles attempting to make the light resulted in the rear-most vehicles stalling in the middle of the intersection while the signal has already turned green for traffic. Proceeding traffic, in turn, caused even further congestion. Furthermore, this excess congestion results in vehicles arriving outside of the designated permit times in order to avoid the gridlock that occurs during permit time periods. The number of cars attempting to enter through both entrance lanes is such that lot staff often are overwhelmed and move patrons through into the lot to prevent further congestion and complaints by patrons.

After speaking with the Department's Traffic Engineer, we were able to review some possibilities to enhance the ingress/egress of the Will Rogers entrance. Based upon on-site observations, a restriping plan is needed. This plan will allow for additional ingress/egress points to help mitigate congestion during peak hours of operation (Image 9 current setup) (Image 10 - after "Restriping Plan").

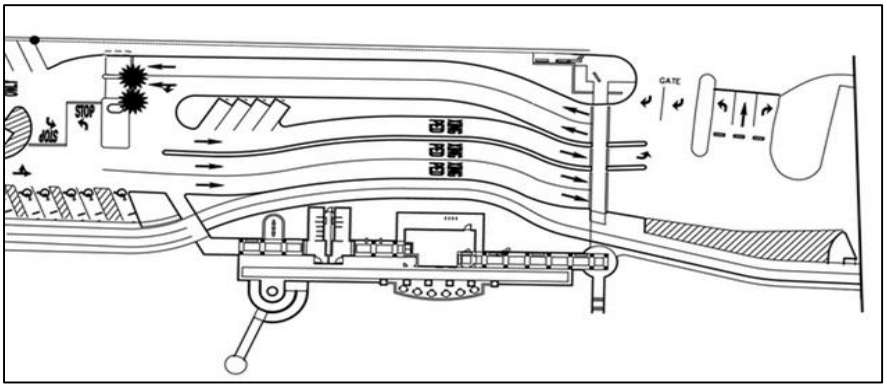

Image 9: Will Rogers current setup

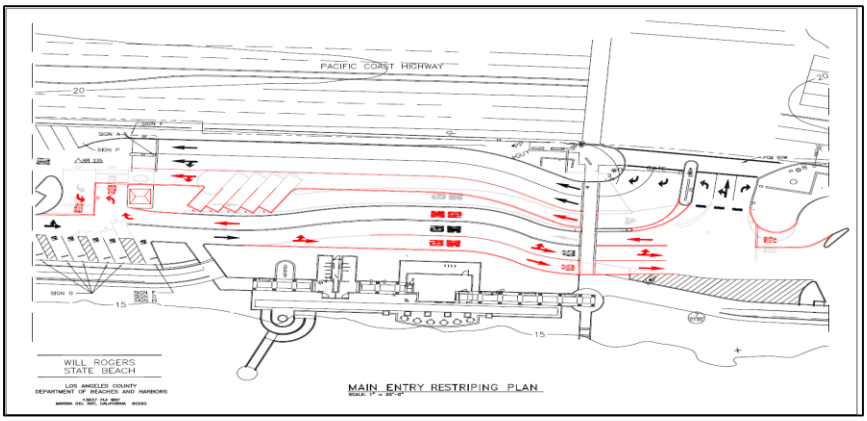

Image 10: Restriping plan

Zuma Lots

Image 11: Zuma entrance area

The entrance into the highly populated Zuma lot is confusing to the patrons who were interviewed. While observing the Zuma entrance, vehicles entering the lot from PCH typically pull into the right lanes. During low peak periods the far left lanes are the lanes open and staffed with attendants due to the location of the staff booth (Image 11). The fact that the West entrance lanes are the only lanes open much of the time, requires vehicles to merge across five lanes at times to correctly pull into the staffed lanes. The merging of vehicles during these low peak periods, causes traffic jams. During high peak periods, all of the lanes are staffed and this issue is avoided. However, proper signage at the entrance of this lot directing traffic when lanes are closed would significantly improve the flow of traffic into the lot. Signage to inform patrons upon entering the lot that certain lanes are currently not operational and to proceed to open lanes will decrease much of the congestion that is currently observed. Image 12 illustrates vehicles merging multiple lanes in order to correctly access staffed entry points.

Image 12: Zuma entrance

Directional wayfinding within Zuma lots is lacking as well. For example, between Zuma lot 10 and Zuma lot 11 (Image 13) there are no wayfinding signs directing patrons to park or exit. As a result, a visitor unfamiliar with the lot or visiting Zuma for the first time, may drive for a longer period of time looking for an exit. Directional signage within all twelve lots, specifically interactive signage with occupancy

counts, would be ideal to point patrons in the right direction and avoid confusion. Interactive signage would also mitigate congestion and idling in the parking aisles of the lots. Rather than searching for available parking spaces aimlessly, the interactive wayfinding signage will direct patrons to locations of availability in a timely manner and offer a more efficient flow of traffic between lots. Interactive signage is ideal for a lot the size of Zuma, which has such a large number of spaces. Informing patrons of where available spaces exist reduces the risk of patrons blocking aisles by slowly circling the lot creating congestion for other patrons including those attempting to reverse out of spaces and exit. Often times patrons waiting for one spot will block other patrons in.

Image 13: Zuma lack of wayfinding

Malibu Surfrider

During the on-site assessment, the Malibu Surfrider lot was operating at 100% occupancy. Upon arrival, the parking attendant placed a "Lot Full" sign in front of the initial entrance of the lot (Image 14). However, multiple vehicles negotiated their way into the lot while we were performing our assessment. The attendant was the only staff on duty at the time and was thus unable to leave his post in order to judge the actual occupancy of the lot at that time. Currently, the only method to verify accurate occupancy is to physically walk or drive the parking lot in order to confirm available spaces. Due to the high patron demand at the entrance, there was no opportunity to verify space availability. The vehicles that were allowed to enter the lot proceeded to circle or idle, waiting for parking spaces and causing traffic jams, confusion and safety issues.

Image 14: Lot Full

The lot attendant also faced the issue of attempting to determine permitted RVs based on size. Checking permitted RVs created further congestion, confusion and arguments on the part of patrons. If RVs were no longer allowed to park within the Malibu lot, a significant amount of congestion and confusion could be avoided. A recommendation would be to remove RV parking from the Malibu Surfrider lot and allot RV parking spaces on-street. The size of the Malibu lot itself is very small which is not conducive to large RVs. This would entail working with Caltrans, who would coordinate with the City of Malibu and the Coastal Commission to identify RV specified parking spaces on the street. Also, verification of RV on street parking ordinances would have to occur in order for this to be a viable solution.

Venice Blvd Parking Lot

Image 15: Venice Beach Parking Lot

The Venice Beach parking lot traffic patterns only allow for one-way traffic down each parking aisle (Image 15). According to the current striping and signage, vehicles are not permitted to proceed down a parallel aisle to look for spaces. If the vehicle cannot find a space on the specific aisle that is chosen, the vehicle must exit the lot completely or proceed the wrong way down a one-way aisle. Repainting the arrows to allow for vehicles to drive in both directions in the aisles and updating directional signage would allow patrons more leeway to search for spaces in other aisles.

Another item of concern within the Venice Beach lot is the lack of a proper turnaround at the North end of the parking lot towards the tennis courts. Furthermore, the spaces located at this section of the lot are ADA parking spaces. The width of the parking lot alone impedes vehicles from turning around, having ADA spaces in this section of the parking lot with no proper turn around point adds accessibility challenges to this area. (Image 16). Due to the size of the Venice Blvd lot and consistently high occupancy levels observed, removing spaces to provide for a proper turnaround is not a viable option. Therefore, the recommendation we would propose would be to extend the lot at the North end to include a loop turn. This would involve removing some landscaping at this location (highlighted in red on Image 16.

Image 16: North end of Venice

Other Lots of Interest

Image 17: Vandalized signs

Other items of concern regarding wayfinding, ingress and egress challenges were observed in some of the smaller, less utilized locations. For instance, in the White Point/Royal Palms lower lot, most of the wayfinding and informational signs were vandalized with spray paint or damaged in other ways (Image 17). As result, it may be difficult for a motorist to determine parking rules and regulations. Equally important to wayfinding, well maintained and informative signage will give the parking patron the feeling of parking in a well maintained and safe lot. Graffiti and damage to signage found in these smaller lots adjacent to beautiful beach areas may result in patrons parking in more populous lots. This results in congestion in the more populous lots and underutilization of these smaller lots. Vandalism in these lots is often ongoing. The damage is cleaned up frequently by MPI and the Department; however, personnel continuously have to manage multiple job responsibilities. Scheduling staff on a more consistent basis to specific maintenance/vandalism removal routes will help the Department in its efforts to provide safe and clean parking locations for patrons.

The **Marina del Rey** lots would benefit from a more branded wayfinding system throughout all of the lot locations. Consistent and branded wayfinding can not only help direct patrons to locations but would add to the overall feel of the Marina del Rey culture of a recreational active lifestyle. A significant issue concerning the Marina del Rey lots is competing parking available outside of the Marina. A true brand would be the first step to distinguish the Marina del Rey locations as unique and welcoming. It is worth noting that many of the parking lot signs located in this district are difficult to locate and are in awkward locations obscured by the abundance of trees and bushes on the street facing portions of the lot (Image 18). For example, the Department's Marina del Rey Lot #13, located along Via Marina, is a lot that is difficult to recognize as a public lot. Since a patron is focused on the road, it is difficult to see the signage to this lot as it is blocked from view by the heavy foliage. The Department currently has a small "P" sign beyond the current signage; however, it is posted on a pole on the median. This may be confusing to the patron since the parking is on the right side of the road. In addition, no further signage exists between the small "P" sign and the entrance sign.

Image 18: Hard to locate parking signage in Marina del Rey

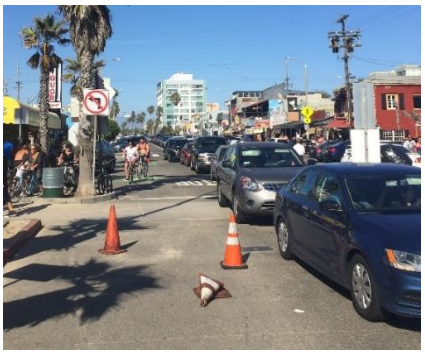

Image 19: Washington Blvd back up

The **Washington Blvd**. lot was backed up all of the way down Washington Blvd. with vehicles trying to enter the lot. Interactive wayfinding signs along with loops would benefit this location greatly to allow patrons to avoid long wait times when there are no spaces available. (NOTE: Wayfinding solutions for this location are in progress) Interactive signs notifying patrons of availability at the onset of Washington Blvd. (i.e. Pacific Ave. and Washington Blvd.) would help mitigate the bottleneck that occurs during peak times (Image 19). The approach to mitigating the Washington Blvd. issues may not even apply to the lot itself but to the surrounding streets and avenues that funnel into the lot's entrance on Washington Blvd. As a result, the Department should consider coordinating with the City of Los Angeles Council District 11 and LADOT to provide patrons with advance information on the availability of parking in the Washington lot through an interactive wayfinding program. Based on the popularity and famed location that is Venice, it will be difficult to completely eliminate the traffic and congestion. Instead, the Department should work to educate patrons of alternative parking options elsewhere in the immediate area.

Below is a recap of the recommendations for the wayfinding, ingress and egress challenges highlighted during Task 2.

Wayfinding, Ingress & Egress		
Lot	**Recommendation**	
Will Rogers	1	Add wayfinding signage identifying additional exit points throughout the lot
	2	Proceed with the Department's proposal to modify the entry/exit at the main entrance
Zuma Lots	1	Add wayfinding to direct vehicles into staffed access points at the initial entrance of the Zuma lot
	2	Add wayfinding within the Zuma lots towards exits and available parking locations
Malibu Surfrider	1	Once "Lot Full" sign is in place, no more vehicles should be allowed to enter the lot until vehicles depart
	2	Possibly remove RV admittance into the lot and relocate RV permits elsewhere (possibly on-street)
Venice Blvd	1	Repaint directional arrows and updating signage
	2	Add a proper turn around point at the North end of the lot
	3	Revisit the location of the disabled parking spaces located at the North end of the lot
White Point/ Royal Palms	1	Replace damaged signage
Marina del Rey	1	Create a brand for Marina del Rey and update wayfinding to be consistent with the brand
Washington Blvd.	1	Add interactive wayfinding signs in order to direct customers to areas of availability

2. Equipment/Lot Review

The Task 2 onsite assessment also included a review of the current status of pay stations, the parking lot lighting, security operations/cameras and a general lot overview. Throughout the assessment, there were a few consistencies noted:

- patrons consistently viewed the pay stations as being effective and easy to use
- pay station communications was a non-issue
- there were not enough pay stations at some identified locations

Although the pay station equipment was in overall good condition, the Department must recognize that pay station equipment traditionally should be updated every five to seven years, especially in areas with rugged weather conditions like the salt and sand of the beach lots. The general upkeep, safety and security of the beach parking lots will ensure that visitors have a favorable experience. Although all lots were analyzed during the field assessment, the following lots had specific areas of interest highlighted in the scope of this project.

Zuma Lots

There were a number of equipment issues within the Zuma parking lots. Some issues are easily fixed, while others will require the purchase of infrastructure by the Department. With the Zuma lot accounting for 13.75% of the Department's overall Beach Lot revenue for FY 14-15, security cameras are necessary for the safety of the parking attendants and the protection of the Department's revenue. In addition, similar to all of the other lots surveyed, space availability is assessed by a staff member driving around the lot looking for empty spaces. This practice is inefficient, especially when dealing with such a large lot. While vehicle counters are in place at the entrance of most of the lots, no counters exist at the exit points of the lots. With counters installed at the exit points of the lots, staff can utilize the information, along with the payment information being received from the handheld devices, to receive a more calculated occupancy level in real time. Utilizing these tools would allow the vehicle counting staff to be allocated to other job responsibilities. While the numbers given by the vehicle counters may not be perfect, their numbers, especially in large lots, would be more accurate than an individual driving around counting spaces at any given time. Redundant Security cameras will provide the safety and oversight to ensure the lot is monitored at all times. Both of these additions (vehicle counters and security cameras) would provide advancements to an already technologically sound lot.

On an unrelated but important note, within the Zuma lot, a number of trashcans were left directly in the middle of parking spaces. These spaces were essentially "occupied" by the trashcans so that no vehicle was able to pull into the spot. While this may be a practice among savvy patrons holding spaces for their friends, the fact that there were so many of these instances makes the assumption that upon collection of the trash, the cans are placed into the spaces instead of a more appropriate location (Image 20).

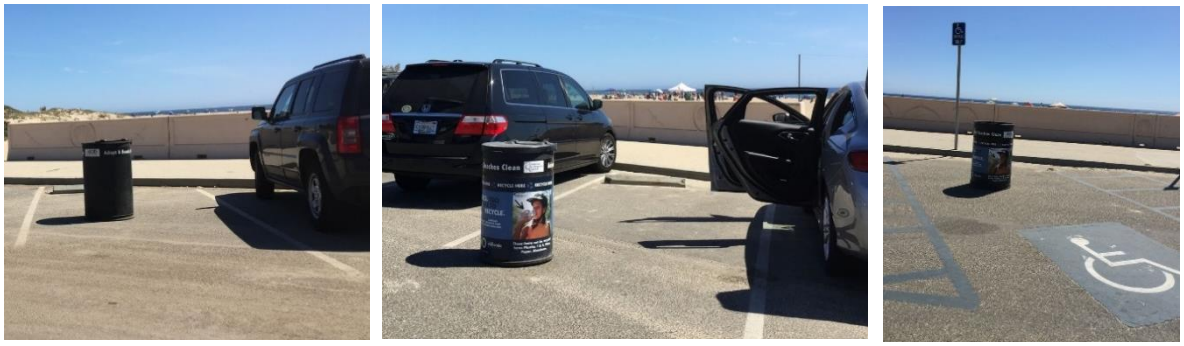

Image 20: Trash cans in parking spaces

Topanga Lot

Image 21: Topanga patrons parking on-street

At the Topanga parking lot, the majority of patrons parked on-street along PCH to avoid paying for parking. The lot was virtually empty while the street parking was at maximum capacity (Image 21). There

were no time restrictions observed for on-street parking allowing vehicles to remain parked all day long as long as the vehicle did not park overnight (no parking: 10PM to 5AM). The individuals who did park in the lot, paid the meters and had positive feedback on their experience. The only way to combat this issue is to work with Caltrans to implement restricted time zones or paid parking along the stretch of PCH that is parallel with the Topanga parking lot. The City would add revenue, turn over vehicles and force some vehicles into the lot so that the number of vehicles parked directly on PCH will decrease. PCH is a major highway and this joint venture would help with safety concerns and general access.

Point Dume

Image 22: Point Dume entrance

During the field assessment period of the Point Dume lot, the entrance to the lot backed up with about 15-20 vehicles trying to enter the lot and only one attendant working the booth (Image 22). Without appropriate staffing or vehicle counters at the entrance and exit of the lot to help check availability within the lot, the attendant continued to allow vehicles into the lot with no real idea of occupancy counts within the lot. Due to the long stretch of Westward Beach Road between the attendant booth and actual parking spaces, vehicle counters at the exit point of this location would be an ideal solution to accurately manage occupancy levels.

Image 23: Point Dume booth

Similar to the vandalism that was observed at the White Points/Royal Palms parking lot, the attendant booth at the Point Dume location was very old and weathered (Image 23). By replacing the booth at this location, the Point Dume location would have a more welcoming appeal.
NOTE: The Department has issued a request for the purchase of replacement kiosks for both Point Dume and White Point. The request for purchase is pending availability in the budget.

One further equipment observation noted was the distance between the pay and display pay stations located in the Point Dume lot. Currently, these pay stations are only utilized during slow time periods. Thus, the current setup of a combination of staff attendants and pay stations is acceptable. The distance between the pay stations is sufficient since patrons will simply park next to the pay station due to ample parking within the lot. During high volume time periods, patrons pay a staff attendant at the entrance of the lot. If the Department chooses to move forward with an unstaffed lot setup, the number of pay stations would have to increase. In order to achieve patron compliance with the parking rules, parking and paying for parking must be an easy process. There are currently only five pay stations located in the Point Dume lot that cover 109,200 square feet and 382 spaces (7 ADA spaces included). For instance, the distance between the first and second pay station is approximately 525 feet (Image 24). If pay stations are to be used to submit payment in an unstaffed lot setup, additional units must be installed within this lot in order for it to be feasible for a patron to access, pay at the pay station and return to their vehicle to display the ticket. The current setup is acceptable as is, however if the Department decides to go to an unstaffed lot setup, it is recommended that at least three (3) additional pay stations be installed within the Point Dume lot for adequate pay and display coverage.

Image 24: Distance between pay stations

Dockweiler Lots

Image 25: Entrance to Dockweiler lot

The Dockweiler Lot was observed during peak occupancy on a sunny Saturday afternoon. Four MPI staff attendants were working the Dockweiler location. Upon approaching the lot, the entrance was blocked off with traffic cones and a "Lot Full" sign obstructing entrance into the lot. Furthermore, one staff attendant and a LAPD police officer were located at the entrance point directing traffic to other lots (Image 25) while the remaining staff attendants were located at the booth. A few patrons were able to enter the lot for various reasons (i.e. they needed access to their RV location) but for the most part, individuals were being forced to relocate to another lot. The presence of the police officer helped the staff attendant a great deal. Within a short period of time observing various patrons trying to 'talk their way' into the lot, patrons were aggressive towards the MPI staff. Whenever a conversation escalated, the police officer simply walked over to the vehicle and diffused the situation. Without the presence of the police officer at this location during this peak time period, the staff attendants would have been dealing with aggressive patrons on their own. Due to the popularity and location of the Dockweiler lot, the Department should consider retaining a police officer during peak operating hours. In addition, automated wayfinding signs located North and South of the Dockweiler entrance directing patrons to other lots would allow for a less tense environment. Allowing real-time online parking availability maps would also help mitigate the traffic and expectations prior to arriving at the location.

Dockweiler Bluff Lot

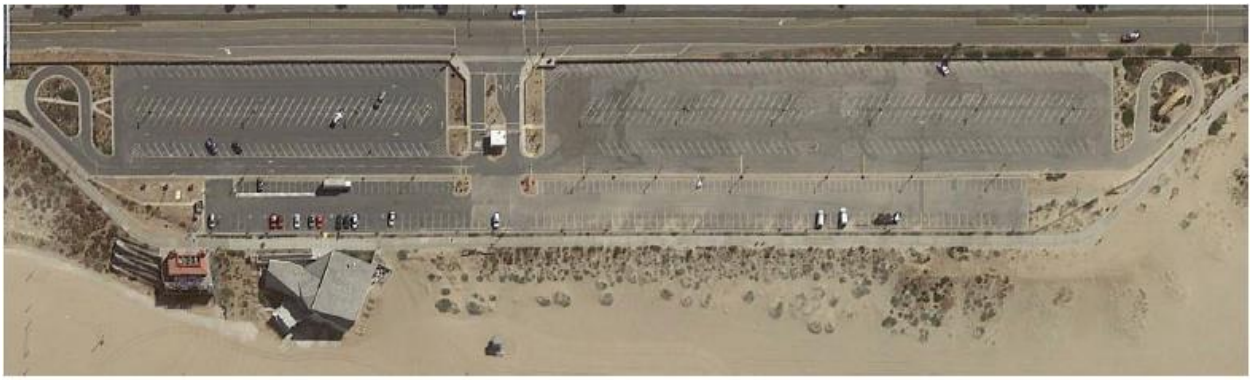

Image 26: Dockweiler Bluff lot

The Dockweiler Bluff Lot (Image 26) was the only location assessed that had a pay station out of service (Image 27). All of the other pay stations in all of the lots were fully functional. Given the harsh weather conditions and the number of meters that exist throughout the lots, the overall operating condition of the pay stations was impressive.

Image 27: Pay Station out of order

Image 28: Coin only meters

The Dockweiler Bluff lot has coin only, outdated single space parking meters (Image 28). It is recommended that the Department update the single space parking meters to either add additional pay stations or, if not possible, add credit card enabled single space parking meters.
NOTE: The Department has issued an RFP to replace all outdated single space meters throughout the Department's lots with credit card enabled single space meters.

Upon further review of the general lot layout, the lack of a proper turn around point was identified towards the SW corner of the lot near the hang gliding area (Image 29). When this section of the lot is full with vehicles, it is extremely hard to turn around which causes bottlenecks and traffic jams. The Department should consider extending the SW corner of the lot to incorporate a proper turnaround.

Image 29: Lack of turn around

Similar to many of the other beach lots, the entrance of the Dockweiler Bluff lot had a "Lot Full" sign displayed. However, there were plenty of parking spaces available to patrons. The parking attendants would only know the occupancy of the lot if they circulated the lot and counted the number of open spaces. This location would benefit greatly from vehicle counters at the egress points of the lot since vehicle counters already exist at the entrance.

Other Lots of Interest

Other items of concern regarding equipment and general lot challenges appeared consistently in multiple lots. For instance, while analyzing both the **White Point Bluff (Upper) Parking Lot** and the **Torrance Lot** locations, vehicles tended to park on-street, above the lot, in order to avoid paying at the lots (Image 30). Most of these on-street locations did not have posted parking time limits. If the Department was able to work with the various agencies involved (the City, CALTRANS, LADOT, etc.) they could define their mutual parking goals and, potentially identify the need for either paid or timed zone on-street parking. This should provide more accessibility and mitigate on street congestion. By engaging and coordinating with the various stakeholders, the long term solution should ensure proper utilization and improved parking management.

Image 30: White Point Bluff (Upper) on street

Pay station Lighting

An area of specific interest to the Department has been the visibility/lighting of the Global pay stations within the Department's beach lots (the Marina lots have adequate lighting). There are two aspects to the issue of pay station visibility; one is actually locating the pay station within the lot, the other is being able to view the pay station while trying to complete a transaction. During the on-site assessment, being able to complete a transaction at the pay station was not an issue due to the LCD screen and illuminated keypad. Finding the pay stations in a dark lot, however, was an issue. Illuminating the pay station in any way would provide for the most accommodating user experience**.** Any lighting impacts need to be in compliance with coastal commission regulations.

NOTE: The Department is currently working with their pay station vendor to evaluate two pay station lighting options. Option 1 is an illuminated P sign mounted to each side of the pay station. Powered by the meter battery, charged by the meter solar panel. Option 2 is a pole mounted illuminated P sign with solar panel attached (see Image 31). Powered by the meter battery and charged by the external pole-top solar panel.

Image 31: Pay station lighting

Below is a recap of the recommendations for the equipment and general lot challenges highlighted during Task 2.

Equipment & Lot Review		
Lot	**Recommendation**	
Zuma	1	Addition of security cameras
	2	Add vehicle counters at the entrance and exit points of the lot
	3	Ensure trash cans are not placed directly in the middle of parking spaces
Topanga	1	Work with the various agencies to implement time restriced zones or paid parking along PCH
Point Dume	1	Add vehicle counters at the exit of the lot
	2	Replace the attendant booth
Dockweiler Lot	1	Ensure police officer is stationed at Dockweiler Entrance during peak operating hours
	2	Lot 1 needs restriping
Dockweiler Bluff Lot	1	Update single space meters to accept credit cards
	2	Add a turn around point at the SW corner of the lot (hang glider area)
	3	Add vehicle counters at the exit points of the lot
White Point Bluff (Upper) Lot & Torrance Lot	1	Open discussion with the appropriate agencies to implement time restricted zones or paid parking for on-street parking areas surrounding the County lots
	2	Update single space meters to accept credit cards or replace with additional pay stations
Washington Lot	1	Needs restriping

3. Automated Parking Devices versus the use of Parking Lot Staffing

The assessment also included an evaluation of the operational effectiveness of parking lot staffing versus the use of pay and display machines. The 2011 report included a similar review and, this assessment utilized the similar methodology by reviewing revenue data from the pay stations compared to the revenue data from the parking lot booths. While this is a simple way to analyze the effectiveness of both systems, a number of factors are not taken into account. For instance:

- The majority of revenue during high peak hours are collected by staffed booth attendants instead of pay stations.
- Pay stations are typically used during off peak hours to collect revenue.
- Although the Department provides proactive enforcement, there will never be 100% compliance by patrons. Some patrons will always try to cheat the system and find ways to not pay.

Based solely upon using revenue to measure the effectiveness of the operation, it is recommended that the Department should proceed with the current combination of parking lot staffing with pay station equipment, as long as the locations are consistently enforced. Once some of the technology advancements outlined within this report are implemented, the Department can consider trialing an unstaffed lot with LPR enforcement and pay station technology. This will be described during the "Recommendation Roadmap".

Month	Attendant Cash	Attendant Credit Cards	Total Attendant Revenue	Pay Station Cash	Pay Station Credit Cards	Short-Term Meters	Total Meter Revenue	TOTAL REVENUE
Jul-14	$1,708,289.95	$235,170.50	$1,943,460.45	$79,721.16	$188,762.75	$11,475.07	$279,958.98	$2,223,419.43
Aug-14	$1,638,086.33	$272,991.75	$1,911,078.08	$62,890.90	$178,892.75	$10,423.65	$252,207.30	$2,163,285.38
Sep-14	$935,972.69	$181,544.00	$1,117,516.69	$50,612.99	$141,272.00	$9,455.58	$201,340.57	$1,318,857.26
Oct-14	$405,312.64	$57,302.00	$462,614.64	$45,755.08	$109,757.75	$6,294.47	$161,807.30	$624,421.94
Nov-14	$299,378.35	$44,594.50	$343,972.85	$30,857.70	$81,654.75	$5,082.78	$117,595.23	$461,568.08
Dec-14	$205,423.05	$27,241.00	$232,664.05	$24,250.72	$72,073.00	$3,077.35	$99,401.07	$332,065.12
Jan-15	$289,776.25	$43,696.00	$333,472.25	$38,608.73	$106,189.75	$6,610.34	$151,408.82	$484,881.07
Feb-15	$352,458.70	$52,861.00	$405,319.70	$43,791.03	$117,419.00	$6,860.57	$168,070.60	$573,390.30
Mar-15	$643,013.42	$86,110.50	$729,123.92	$73,610.92	$179,747.00	$9,556.19	$262,914.11	$992,038.03
Apr-15	$555,574.53	$73,017.50	$628,592.03	$63,285.60	$137,873.25	$7,430.37	$208,589.22	$837,181.25
May-15	$617,260.58	$129,650.50	$746,911.08	$46,208.54	$137,221.50	$7,768.74	$191,198.78	$938,109.86
Jun-15	$1,123,474.86	$235,295.50	$1,358,770.36	$67,229.31	$177,425.50	$10,248.50	$254,903.31	$1,613,673.67
Total	$8,774,021.35	$1,439,474.75	$10,213,496.10	$626,822.68	$1,628,289.00	$94,283.61	$2,349,395.29	$12,562,891.39

Image 32: Attendant revenue collected vs pay station revenue collected by month

On average over FY 14-15, parking attendants accounted for 78% of the Department's overall revenue intake while pay stations accounted for 22%. See Image 32 and 33 for detail.

Month	% of Attendant Revenue	% of Pay Station Revenue
July-2014	87%	13%
August-2014	88%	12%
September-2014	85%	15%
October-2014	74%	26%
November-2014	75%	25%
December-2014	70%	30%
January-2015	69%	31%
February-2015	71%	29%
March-2015	73%	27%
April-2015	75%	25%
May-2015	80%	20%
June-2015	84%	16%
Average % of Revenue Collected	**78%**	**22%**

Image 33: Average % of revenue collected

However, with the addition of more technology, interactive wayfinding systems, additional vehicle counters, and LPR technology, the Department should see a change in the effectiveness of pay stations (meters) versus that of the parking attendant. Reviewing comparable case studies that were highlighted previously in this document (i.e. Newport Beach and Santa Monica) one can see that gradual changes in technology can help decrease the number of staff needed to manage even the largest, most popular locations. There will always be a need for a customer service presence; however, the need for staff attendants handling money can be minimized by adopting additional technology.

4. Revenue

Contrary to policy, during peak periods at some high occupancy lots, the operator's attendants were observed pre-printing multiple tickets (receipts) at once for cash transactions in order to expedite the payment process and entrance into the lot (Image 34). Pre-printing a string of tickets at one time applies a time stamp to a large portion of tickets with the time that the printing occurred instead of when the patron actually arrived at the lot. Therefore, there are reconciliation impacts that show large numbers of tickets being "issued" all at the same time since all of the tickets are stamped with the same time. Furthermore, if all tickets are not sold via cash, there is an excess of tickets printed compared to actual revenue received creating a reconciliation challenge. The attendant should void out any ticket that is not issued, however, there is the ability for fraud here since the attendant could sell the excess tickets for a higher fee than what is currently being charged and keep the difference. For example, an attendant could sell an $8 ticket that was printed (in bulk) prior to 4pm, after 4pm (when the rate changes to $3) for the full $8 instead of $3. The attendant would keep the $5 and record the ticket as a $3 purchase. The Enforcement Officer would have no idea that the ticket was supposed to have been voided.

Image 34: Pre-printed multiple tickets

If a patron opted to use a credit card, the parking attendant would take the credit card into the booth, run the credit card through the portable handheld device, and then return with the receipt, ticket and credit card. The most extreme case of this was observed at the **Malibu Surfrider lot**. The parking attendant on duty was standing at the entrance of the gate taking cash and handing out tickets, which were pre-printed as described previously. If a patron opted to use a credit card, the attendant would walk approximately 150 feet back to the booth to run the credit card transaction (Image 35). While it is understood that attempting to mitigate parking queues entering a lot, the action of bringing the credit card back to the booth instead of having the handheld on the attendant at all times adds significant time to the payment process.

Image 35: Malibu Surfrider lot entrance

A revenue concern regarding the camp parking passes at the **Will Rogers** parking lot was identified during the 9:00AM – 9:30AM drop off time period. During this period, a camp employee was standing a

few yards from the attendant booth with a stack of camp permits in hand. This camp employee was instructed to hand out permits to patrons who did not have their proper permit displayed or had not received a permit or had forgotten it. The presence of a camp employee distributing permits at the booth provides no accountability for a process or system. With any permit program, permits should be numbered and assigned. Permits, like parking, are an asset and there is a financial cost associated with each permit and parking space occupied. The current camp permit process negates the existing access controls and parking lot oversight. Front line staff are challenged on a daily basis and the camp should be held accountable for their access control accountability, including the cost associated with mass distribution of parking permits.

Lot attendant cash handling was observed at each of the staffed beach lot locations. Revenue security was a concern, specifically in the **Zuma Lot.** The level of cash transaction activities and volume of customer interactions has created a lax process for overall cash controls. Monies are left unattended and security processes are not being followed which provides an opportunity for theft/fraud. While this may slow processes, revenue security procedures must be followed. Whether a cash box drop or a locked cash drawer with a bill feed, the lot attendants must be diligent in their money handling processes. With no cameras located at this location, the theft would be a loss. Within the parking industry there are open and closed parking systems. Open parking revenue systems allows the parking collectors access to the money while closed systems do not. The staff attendant booths should be handled in a much more professional manner. Money should be documented and deposited into the respective safe as soon as possible. The safety of the parking attendant and the safety of the Department's money depends on a system that can emulate a closed parking meter system.

Lastly, the clock in/clock out procedures of operator staff needs to be consistent throughout all staffed parking lots. Field interviews identified that, at some lots, the operator's staff utilized a clock in clock out method with a time stamp similar to (Image 36) to document attendant breaks and shifts. Other lots, staff would simply print a ticket that would show total revenue at the time the attendant clocked out and then print another ticket to show the total revenue when the attendant clocked back in (Image 37). The Supervisor, or whoever covered the attendant for that break, would be responsible for the difference in revenue while the attendant was clocked out. By creating a consistent procedure across all lots, the operator's staff can be held accountable for all revenue reconciliation.

Image 36: Clock in/out

Image 37: Ticket in/out

Below is a recap of the recommendations for the revenue challenges highlighted during Task 2.

Revenue Recommendations	
1	Ensure handheld permit devices are being used in the field correctly
2	Allocate and reconcile the number of permits necessary for the summer camps
3	Introduce stricter guidelines for the handling of monies (emulating a closed collection system)
4	Create consistent clock in/clock out procedures

Task 3: Evaluate New Technology

Parking is the first and last experience for the majority of the visitors to the Los Angeles County Beaches and the introduction of parking technology solutions would provide an easier and more efficient parking experience. The Department is currently in the process of testing an integrated solution at the Washington Lot utilizing a vehicle messaging system, space counters and pay-by-phone services. The results of this technology evaluation will have significant impact on the overall operational approach to managing the high-demand parking lot locations. In addition, the Department is in the process of concluding a solicitation for credit card enabled, single-space smart parking meter upgrade. This was a need that was identified throughout the field assessment and, like the Washington Lot solution, this technology upgrade will also have a positive impact on operations, revenue and, most importantly, the customer service experience.

This section will outline technology solutions that incorporate the Department's Strategic Plan, Goals and Objectives, while achieving the overall objective of optimizing parking operations and promoting service excellence. In order to implement new technology, the Department must endure the County processes simply to evaluate and test infrastructure. The timelines and planning necessary to obtain approvals, along with managing a program of this size, easily identifies the need for additional resources for the Department. With this understanding and the fact that parking technology is expensive, this section will outline a parking technology roadmap for use with both short and long term planning. A technology roadmap will make it possible to manage, track and visualize the future of the Department's parking operations. When considering parking technology, there are five core functional areas that should be evaluated:

- Financial Analysis
- Operations
- Asset Management
- Workforce Management
- Maintenance

Each of these functional areas will provide a critical foundation for the development and future planning of the Department's parking solution. Whether implementing demand based rates, access control by permit or pay by phone services, these functional areas should be considered when developing specifications and deliverables. An integral component of this foundation is to implement a decision support system that provides the Department with a robust and reliable plan that provides modularity and flexible/open design solutions that can grow and expand with the Department's evolving needs.

Any technical solution should always consider the end user experience and the overall accountability of the parking system, including easy to use reporting tools and system access capabilities. Most importantly, parking technology can be expensive and the solutions, while similar, have unique features that should be considered by the Department. Even with the outlined solutions, it is strongly

recommended that the Department conduct independent 'hands-on' testing in order to ensure that the technology is a good fit for the location needs. For example, an enforcement handheld provides a simple service of issuing parking citations, however, the different handheld options offer a unique level of comfort and ease of operation that is specific to the user group. An enforcement handheld that may be optimal for City X may not be a good fit for the Department. Technology recommendations are provided, however, practical testing is suggested, similar to the Washington Lot technology installation, and necessary to ensure the right fit for the Department. Once tested and accepted, parking technology should be implemented incrementally in order to structure a pro-active education and information campaign for both the internal and external users. Additionally, an incremental implementation will allow the Department to establish and define operational protocols and procedures to ensure accurate reporting and a thorough preventative maintenance program.

Based upon the stakeholder feedback and site evaluation findings, the following were primary considerations throughout the evaluation of the new parking technology that will be outlined in this section:

- Improve lot access efficiency
    - Minimize lines or back up at entrance gates (accessibility)
- Decrease transaction time (Easy In / Fast Out)
- Provide a user-friendly experience
- Flexible solution
- Capture & maximize revenue
    - Minimize leakage
- Improve wayfinding
- Promote Marina del Rey

License Plate Recognition (LPR)

LPR technology is not simply used as an enforcement device throughout the parking industry. In addition to enforcement, LPR offers a variety of parking applications for consideration by the Department that include, but are not limited to, access control, security monitoring and parking permit management. LPR is a specialized solution because every vehicle has a distinct and unique license plate number and with the proposed solutions, the license plate becomes the identifier or *permit* to park in the parking lot.

Many agencies have successfully supplemented their enforcement resources with the implementation of LPR technology. As an enforcement device, LPR cameras are attached to enforcement vehicles that patrol the parking lots and can be used to manage parking violations, occupancy limits, scofflaw capture and payment status. LPR can also be used for monitoring safety and security concerns. For example, stolen or wanted vehicles can easily be identified using LPR or if the Department issues a BOL (be on the lookout), officer safety concerns can be mitigated by the alerts issued by the LPR technology.

The opportunity for LPR implementation offers a number of considerations that must be evaluated by the Department. First, in the parking lots supported by pay stations, transitioning from the current pay & display methodology to a pay by plate solution provides a simplified approach to parking management. The license plate becomes the payment record rather than a printed receipt. Since each license plate is unique to the attached vehicle it becomes the common reference point for the entire process. Pay by plate is an easy configuration to monitor and enforce. This would allow the Code Enforcement Officer (CEO) to drive the parking lot, using enforcement vehicles mounted with mobile LPR technology, in order to verify vehicle payment status by license plate rather than physically walking by each vehicle throughout the entire parking lot to check the dashboard for a valid payment permit. When a license plate is captured by the LPR system, it recognizes or *reads* the characters on the plate and verifies the vehicle's payment status. LPR typically provide significant improvements on CEO efficiency and, as a result, there is usually an increase in revenue, both due to enforcement compliance and increased utilization of the pay stations. The use of LPR for enforcement would require a technology interface (or integration) between the Department's pay station and LPR vendor. It is recommended that if the Department proceeds with this service feature that the interface be included as a specification requirement in any solicitation and that the integration development cost be included in the overall solution. Additionally, an integration with the enforcement handheld devices will be necessary in order to maximize the efficiency of the CEOs and minimize the burden of equipment that they are required to carry.

Based upon the vast geography supported by the CEOs, it is recommended that the Department utilize LPR technology for enforcement. The license plate becomes the payment record, as the common reference point for the entire process. A pro-active marketing campaign upon installation in order to educate patrons about the change in methodology will be essential. This approach, combined with signage and the potential implementation of other alternative payment option (pay by phone or pay via web application) will further simplify the process of parking in the beach lots. Once patrons get accustomed to the new operating procedures, the process becomes seamless.

The City of Fort Lauderdale successfully implemented an LPR solution with their Global Parking Solutions pay stations to support a pay by plate in over 39 parking lots (3342+ parking spaces) throughout the City. With over a 1400% increase in scofflaw identification, the City confirmed that the LPR technology 'paid for itself in the first two months' (Bryan Greene, City of Fort Lauderdale, Transportation & Mobility Department). Prior to the LPR installation, their enforcement officers based their enforcement routes on speculated trends. Using the data gathered by the LPR technology, the City was able to better understand utilization and parking trends and was able to allocate resources and coordinate routes to optimize efficiency of their personnel.

The cost of the LPR equipment is approximately $50,000 per vehicle installed. There would also be a need to upgrade the existing Global pay station keyboards to support pay by plate (approx. cost of $790 per pay station, including installation and programming). Signage would need to be updated throughout the parking lots, however, the cost for any signage update could be affiliated with any signage updates

for the implementation of pay by phone services. In addition to signage, there is an option to increase the visibility of the Global pay stations by mounting the newly available illuminated 'P' sign to the pay station at a cost of $230 each. The vendor recommends attaching two signs to each pay station, i.e. one on each side ($460 per pay station). Another option to increase the visibility of the pay station is an illuminated 'P' sign with a pole and mounting bracket with a 10W solar panel. The cost for this solution is $2,350 per pay station.

While the initial costs for LPR technology is significant, other agencies have experienced compelling cost savings and optimized their performance efficiencies using similar technology. Based upon the vast area monitored by the CEOs, it is recommended that the Department outfit a minimum of two (2) enforcement vehicles with LPR equipment in order to measure the effectiveness of the technology. The Department can also consider running a trial with the LPR equipment. Many vendors will provide up to a 90-day trial for minimal costs.

Another LPR opportunity in the introduction of an advanced parking permit program that utilizes license plates as the registered identifier rather than access control cards or physically displayed sticker permits or hangtags. When a vehicle enters the equipped access control lane, the fixed mounted LPR technology would validate that the license plate is a valid, permitted vehicle. The license plate would be verified in real-time and the access gate would open, allowing the authorized vehicle to enter. This approach is not an optimal design for all locations, however, it would provide a significant automation and customer service opportunity for the access issues experienced by the Department for the summer camp programs at Will Rogers and Zuma.

One of the vendor systems evaluated, Genetec, uses two fixed mounted cameras per dedicated lane that work in conjunction with the access gate, allowing only vehicles with valid permits to enter. One of the Genetec cameras utilizes infrared technology to illuminate the license plate characters thus ensuring they can be read in any type of weather condition. The second Genetec camera physically reads the license plate characters and validates the information to the permit management database and business rule requirements for lot entrance. License plates can be updated to the permit database in real-time and designated entry times can be specified. Permit users would have an online account to manage their assigned license plate(s) or 'permits'. Business rules can be developed and designed specifically to address permits that are assigned to multiple users (or license plates). For example, surf camp permits (license plates) can access the gate during the designated entry times and the occupancy allowance for how long a vehicle can remain in the lot would be included in the permit rules and operating procedures.

Mobile LPR would be used in the parking lot to enforcement vehicles that overstay the parking time restrictions. The online permit program can be administered to allow for the registrant to monitor and manage their own permits (or license plates). For example, one would register a specified number of plates that can access the parking lot during the designated time thereby allowing the flexibility of having a caregiver or other parent drop off the camper during the regulated times using the automated

access lanes. The only significant drawback to a system like this would be a situation where a vehicle could occupy then back out of the designated access lane. That being said, typically established business rules along with a defined protocol can address and mitigate problems like this. Overall, this is a solution that provides an alternative, customer service approach to the challenges faced at Will Rogers and Zuma during the summer camp season. The Genetec fixed mount access control solution has been successfully deployed and is operational at Disney Studios in Burbank, CA and Brigham Young University in Utah. While these reference sites (a movie studio and university) primarily support repeat users and do not reflect the typical transient beach population experienced by the Department, the technology provides an alternative solution to address the summer day camp entry challenges. The cost to equip an access control lane is approximately $18,000, plus a monthly camera support fee of approximately $200/mo. This recommendation is targeted for the popular summer day camp lots that are plagued with entry congestion and should be considered for the impact on efficiency and effectiveness and the significant improvement to customer service and access control.

The vendor matrix (Image 38) includes a summary of three (3) LPR vendors – Genetec, gtechna and Tannery Creek.

Genetec holds a patent on digital chalking and has a significant presence throughout Southern California, where they are currently contracted with the Los Angeles County Sheriff's Department and are also in the process of integrating/sharing data with the Los Angeles Police Department. gtechna works with other Los Angeles County Departments providing their integrated, exclusive 3M technology solutions. Tannery Creek utilizes laser technology for improved image accuracy capture in the snow or inclement weather.

	Vendor		
Features	**Genetec**	**gtechna**	**TanneryCreek**
Current Implementations	Chicago, IL; Los Angeles, CA; Los Angeles County, CA; San Diego, CA; Houston, TX	Washington DC; Seattle, WA; Pittsburgh PA; Baltimore, MD	Calgary Parking Authority, (CAN); Montreal (CAN),Saskatoon, (CAN); Madison, WI; Santa Rosa, CA
Integration (List Vendors)	Cale, Digital Payment, IPS, Ventec, T2, OmniPark, Complus, Voss, Amano, Pay by Phone, Parkmobile, Passport, Xerox, Duncan	Mackay, Hectronics, Cale, IPS	Digital Payment Technology, EDC-AIMS, CALE, Calgary Parking Authority
Issuing Citations (Process)	Provide visual evidence to ticketing processing company for them to use to create a ticket	3M, ELSAG - Only system that can issue citations directly from computer in vehicle	Mobile & Mail out
Parking Enforcement Integration (Amber Alerts, Stolen Vehicles, Etc.)	Yes	Yes	Yes
Use of Digital Chalking	Yes - Have actual patent on Digital Chalking and supply all Digital Chalking to all LPR companies under their patent.	Yes - By LPR Vehicle or, PEO on foot with Android Phone /Tablet.	Yes - With or without license plate in any weather.
Software Enforcement Abilities	Not directly involved in enforcement - strictly focus on comparing license plate to designated list from customer.	One software that can work both in LPR vehicle as well as hand held enforcement on foot.	None
Automatic Zone Adjustments	No - Each zone is configured individually however each new zone is pre-populated to the top of the list by a GPS function	Yes - Time Zones, Pay by Plate, Pay by Space, Pay by Phone or at Meter.	Yes - As per the parking zone definitions and GPS real-time adjustments.
Reporting Functions	Multiple reports that can be customized to client needs. Can be exported, ran within system and automatically generated.	Customized to client needs	Standard and customized reports such as: # of citations per street, zone, PEO daily, weekly, etc.
Laser Technology	No	No	Yes
Vehicle Operation (1 or 2 people)	1	1	1
Cars Processed Per Second	Limited by speed of driver - captures up to 200 mph.	Limited by speed of driver - captures up to 150 mph.	2 minimum
GPS Accuracy of Camera	6'-9'	20'	**Standard:** to within a 6 ft. radius in good condition **Optional:** to within 8 ft. in all conditions
Capture Range	4'-120' depending on lens of camera.	60 Degree field of vision from lens: 16mm(13-25') 24mm(20-35') 35mm(30-60') 50mm(45-125")	Profile camera captures lots of background data so the capture range is defacto infinity. About 50% of the photo contains background info. License plate photo is primarily the back of the car.
Backoffice (Reporting/System Control)	Reporting and Display as discussed in Reporting Functions	Command Center captures/reads photos,GPS coordinates. Numerous types of reports are available.	Yes - Included citation storage and presentation, parking zone definition, policy definition, mail out tickets, personnel assignment, reports, export/import, sync and scofflaw, permit enrollment
Customer Support	Yes - 8am-8pm is standard however 24-7 is offered also.	24-7	Yes - 8am-8pm EST. All client support calls are immediately routed to a knowledgeable (engineering level person. We do site visits if necessary.
Bilingual Support	Yes	English Only	English is standard. French if requested

Image 38: LPR Vendor Matrix

Pay by Phone

Pay by phone or pay by web application is a convenient payment alternative that allows a patron to establish an account using their phone and credit card to add and, potentially, extend their parking time remotely. This service provides a level of consistency and ease of use and should be an enhancement to any of the pay station parking lots. In either pay station methodology (pay & display or pay by plate), the pay by phone/web user will use their license plate as the unique payment identifier which will allow enforcement to recognize payment status. An account can be established using the license plate for ease of future use.

Overall, enforcement of the pay by plate solution is simplified with utilization of LPR. If pay & display is retained and/or if LPR is not implemented, CEOs will need to utilize a web application in order to determine vehicle payment status of a pay & display or pay by plate vehicle. This will require either web-enabled enforcement devices or that CEOs carry a separate web-enabled smart phone. The current enforcement handheld used by the Department is used by a number of municipalities and has the capability to access a mobile payment website. However, the equipment is supported via an existing Sheriff's Department vendor agreement with Xerox. The Department will need to evaluate any potential Xerox development costs that may be required to enable verifying mobile payment status on the existing handhelds. If the Department were to independently solicit new enforcement handheld technology, the cost for new handhelds can vary from $500 to $2800 per unit and there may be integration development costs in order to utilize with the existing vendor agreement.

Numerous agencies have successfully implemented pay by phone/web services primarily due to patron convenience, however, overall utilization of pay by phone/web services average approximately 3% to 10% of the overall parking transactions for a metered location. Traditionally, patrons pay for a transaction fee when using pay by phone/web services. Typically, the transaction fees ranges from $0.10 to $0.35. While offering patron convenience, especially the opportunity to add time remotely, the burden of enforcing these transactions can often be challenging for the enforcement officers.

Historically, pay by phone/web vendors offer a turnkey service model which incorporate the signage and service promotion with no direct or out of pocket costs to the municipality. Some vendors provide additional service benefits including an optional validation program (described in Incentive Programs) and *white label* service. The white label service is a feature that allows the Department to brand their parking program and the associated services. Rather than a patron using the vendor websites, the Department should brand the service LABeachParking.com. This would allow the Department to market and promote all beach parking information and allow for online payment and pay by phone services via a website owned by the Department. Regardless of the brand or updated approach, the Department's existing website must be enhanced to better promote parking information for the beach parking lots. There is limited information available regarding the parking rates and hours of operation for each beach parking lot. In order for patrons to prepare for their visit and be able to plan accordingly, the website should be updated with relevant information about the parking fees.

Whether pay by plate or pay & display, there would not be any integration requirement for the pay by phone/web vendor with the parking lot pay station. However, integration with the CEO enforcement

handheld software is recommended. Rather than carrying a separate device, the enforcement handheld should either provide the opportunity to validate a license plate using a web application, or preferably, the opportunity for the license plate to be validated when a CEO inputs a license plate.

If the Department proceeds with an advanced automated parking permit system, there is also an opportunity to utilize pay by phone/web at these gated locations. In order to implement and utilize this innovative feature, accurate, real-time vehicle occupancy counts would be critical. While waiting in line at the booth, signage would offer the opportunity to pay by phone/web. By utilizing this feature at peak locations that offer two lane access, the automated access control system would be updated in real-time and allow the registered vehicle access via the LPR monitored lanes (outlined earlier for potential consideration at Zuma or Will Rogers for summer camp permit management). System business rules would have to be established subject to occupancy counts in order to ensure that a parking transaction cannot be completed if lot capacity reaches an established threshold. This option would provide a patron convenience features at gated locations that should further mitigate lines and congestion back up.

In 2014, the City of Newport Beach successfully implemented an integrated pay by plate solution at their beach parking locations including the Corona Del Mar and Balboa Pier parking lots. This transition included a change from a traditionally attended parking lot to a pay by plate pay station solution which incorporated the City's existing pay by phone vendor and a newly implemented mobile LPR unit. In combination with the technology, the City also introduced a pro-active parking ambassador program which included dedicated parking customer service agents at each parking lot who provide general information, guidance and parking enforcement services. There was a learning curve throughout last summer, however the City actively promoted and marketed the service level transition. The primary benefit was the reduction in the vehicle lines, which traditionally backed up the roadways during the peak summer operations. The lots were also equipped with loop counters in order to regulate capacity and the parking ambassador(s) were on site to manage lot closures when necessary.

Loyola Marymount University (LMU) also successfully implemented a pay by plate and gateless solution for its parking facilities which previously allowed free parking campus wide. The LMU solution engages license plate recognition (LPR) vehicles, pay by plate pay stations, pay by phone services and a virtual permit system for monthly and annual passes for students and faculty. Prior to implementing the solution, there had been no paid parking and minimal enforcement. After implementation, the parking revenues were double the original forecast primarily due to higher than anticipated enforcement levels and compliance with the mandatory permit program. While we are not recommending a gateless solution for the Beach locations, the integration of the permit, pay by phone, pay by plate and LPR technology has proven to operate effectively for the University.

The vendor matrix (Image 39) includes a summary of four (4) pay by phone vendors: Pango, Parkmobile, Passport, PayByPhone.

The Global Parking pay stations are currently integrated with Parkmobile, Passport and PayByPhone. Currently, the beach parking lots are pay & display locations (requiring a patron to display their payment receipt on their dashboard), therefore the integration with the existing Department pay stations is not relevant to the current enforcement operation. There is no immediate advantage for integration in this scenario. In order to enforce mobile payments in a pay & display operation, the CEO must verify the dashboard for a displayed receipt and, if no receipt is displayed, they must carry a web-enabled device to check the payment status via the mobile payment vendor application prior to the issuance of a citation. If the Department converts to pay by plate, the integration between the pay station and mobile payment vendor will be a necessity.

Each of the vendors offers a variety of options including the ability to receive meter expiration alerts and time extension provisions. Passport and PayByPhone have the highest rankings in the application stores. Pango is primarily based on the East Coast and does not currently offer integration with as many vendors as the other providers.

	Vendor			
Features	**Pango**	**ParkMobile**	**Passport**	**PayByPhone**
App Rating	1.5 iOS, 3.2 Android	2.5 - iOS, 3.7 - Android	4.5 - iOS, 4.5 - Android	4 - iOS, 4.4 - Android
Private Label Applications - In Use Currently	Yes	Yes	Yes	No
Client-Branded Signage	Yes	Yes	Yes	Yes
Gateway Status	Yes	Yes	Yes	Yes
PCI Level 1	Yes	Yes	Yes	Yes
Hosting	Amazon Web and Secure Cloud	Private Cloud	Amazon Web Services	Private Cloud
Login Methods	Email, Facebook, Mobile	Email and requires LPN	Phone number, email, Facebook, Twitter	Phone Number
Payment Methods	Credit Card, Prepaid or Google/Apple Pay	Credit/Debit, ParkMobile Wallet, Pay Pal, Visa Checkout	Passport Wallet, Operator Wallet, Credit/Debit, Validation, Paypal	Credit Card/debit
Wallet Support	Pango Wallet	ParkMobile Wallet	Passport Wallet and Operator-run wallets both available	No Wallet Support
Smartphone Support for Park	Windows, iOS, Blackberry, Android	Windows, iOS, Blackberry, Android	Windows, iOS, Blackberry, Android	Windows, iOS, Blackberry, Android, Amazon
Standard Mobile Support	Native Apps and Mobile Web	IVR, Mobile Web, Desktop Account Management Portal	IVR, SMS, Mobile Web, Desktop Account Management Portal	IVR, Mobile Web, Desktop Account Management Portal
Reminders	$1.99 fee	Yes	Yes	Yes - Text Messages and "Today" View w/ iOS
Parker Call Support	24x7	24x7	24x7	24x7
Parker Sign Up Time	1 min	3 min	2 min	3 min
Recent Wins	Philadelphia, Phoenix, Yonkers, Bronxville	Minneapolis, St Louis, Miami Beach	Chicago, Boston, Toronto	MBTA, Miami, UC Berkely
Largest Install	Philadelphia	Washington DC	Toronto	Paris, France
BackOffice	Business intelligence system with exportable data reports	Reporting and System Control	Reporting and System Control	Reporting and System Control
Event Handling (Automatic Rate Adjustments for Events)	Yes	Yes - Event Overide Solution	Automatic Rate Adjustments on Events	Yes
Parking Type Support	Pay-by-Plate; Pay-by-Space	Pay-by-Plate; Pay-by-Space	Pay-by-Plate; Pay-by-Space	Pay-by-Plate; Pay-by-Space
Zone numbering	Zones defined to the local city and recommended by Pango	Only Zone Number is Needed - Auto-Populated Location	Each whitelabel platform has full zone number control	No overlapping zone numbers - zones assigned by PayByPhone
Validation support	Yes	Yes	Whitelabel validation system, pay by validation, discount after the fact	Yes, Parking Validations are supported by Tenant System and Validation System
Bilingual Support	Yes	Yes	Yes	Yes
Integrations Supported	Calais, IPS, Duncan, Parkeon, & T2/DPT, Xerox, Duncan, AIMS, ComPlus, Cardinal, Genetek & HTS, Federal, Amano, HUB Parking, CTR, & TicketTech	Genetec, Gtechna, Omnipark, Cardihal, Xerox, Complus, T2, Duncan, Vantiv, Heartland, SIX, Chase, Moneris, First Data, Elavon, PayPal, Amex, Android, ICS, Windows 8, RIM, Siemens, IPS, Digital, Global, Cale, Metric Hectronic, ParkMe, Parkopedia, Streetline, 3M, Datapark, UPS, HUB, CTR, TIBA, ZEAG, Shark Byte, Parkonect, Amano McGann, ZipPark, Ticketech, Schedt & Bachmann	AIMS, Brekford, Cale , Cale V2, Calgary Enforcement, Complus, Digital_EMS, Digital_Iris, Duncan, Genetec, GlobalPS, Gtechna, Hectronic, Integrapark, IPS, MacKay, Metric, Parkeon, ParkMobile, Parktoria, PayPak, POM, quatreD, Shweers, Signature Test, T2, Tannery Creek, Turbodata, UP Safety, VATS, Ventek, Xerox	XEROX Enforcement,T2, Cardinal Enforcement, Turbo Data, ParkSmart LPR, Digital Payment Tech, CALE, McKay, IPS, Parkeon, Duncan Meters and Enforcement, Genetec LPR, G-Techna LPR and Enforcement, Complus Enforcement, ACS Enforcement, Parktoria Enforcement, Clancy Enforcement, OmniPark, APS, Brazos Technology, Siemens.

Image 39: Pay by mobile vendor matrix

Interactive Wayfinding Signs/Parking Guidance Systems/Vehicle Counters

Vehicle counting systems coupled with automated wayfinding systems have helped revolutionize how we park today. These systems, along with their integration to everyday phone apps have provided patrons with the ability to plan their parking before leaving their house. The Department has the opportunity to incorporate Transportation Management Planning into their overall Parking Technology Roadmap by addressing advanced travel planning (*First Mile/Last Mile*) into the overall parking solution. *First Mile/Last Mile* is a traffic mitigation approach to encourage patrons to make transportation decisions before they depart for their destination, evaluating alternative modes of transit and, ultimately, when the transit decision is made, understanding the destination goal in order to mitigate and minimize traffic congestion by knowing where to park if they ultimately chose to drive to, in this case, the Beach. An investment in marketing this information should be considered by the Department. This approach should include a revitalized, interactive web page that provides relevant parking and transportation information for each beach destination. A proactive advertising campaign that emphasizes public transit to the beach locations. The promotion of real-time parking feeds from any existing parking counter outputs.

Although useful in a multitude of capacities, Interactive Wayfinding and Parking Guidance Systems (PGS) for this assessment specifically focus on a loop-based vehicle counting system. Similar to the infrastructure being installed at the Washington parking lot, the looped sensors would be placed into the pavement at the entrance and egress of each designated parking lot and would count the vehicles that enter as well as the ones that exit. This count would be used, based on the total spots in lot, to determine the number of available parking spots. The 'count' would be displayed on a digital screen which would be placed at the entrance of the lot. The 'count' information would also update in real-time to online apps that a patron can view from their smart phone to help determine their most suitable parking destination. Other than the Washington parking lot location, if there are existing loops at a parking lot, it is not likely that the loops are connected or that they can have the ability to be repurposed to transmit for the purposes of a PGS sign or for potential real-time online distribution. The cost to simply install or replace existing loops can range from $1,800 to $4,500 for each loop, depending on the road surface conditions and number of lanes to be installed. A typical installation requires two loops per lane and one vendor outlined a cost of approximately $10,000 per lane installed, an estimated $10,000 for each parking guidance system (PGS) sign installed and approximately $1,000 per year for software licensing.

Interactive wayfinding or PGS (Image 40) provides an opportunity to promote parking availability and mitigate congestion at the parking lot entrances. As the Department is in the process of installing and testing the Washington parking lot PGS solution, the message boards and car counting system will have a direct impact on the current car counting personnel and promote parking availability to mitigate congestion. The advancement and integration of PGS is able to provide the public with clear and consistent information in advance of reaching their destination. In addition to interactive signage, information can be posted in real-time, to web-based parking

Image 40: Interactive wayfinding

availability programs. This information can be monitored both remotely and on site by the Department in order to anticipate traffic flow impacts and capacity levels. In the future, if the Department has the ability to adjust pricing and establish demand-based rates, this information can be promoted using these online tools and equipment.

The Department must have an accurate tool to count vehicle entry to provide accurate parking availability. The PGS vendors have all recommended a ground induction loop system that incorporates single lane counters for all entry and exit lanes. The overall level of accuracy reported by the industry is 95%. With this consideration, the Department would need to establish business rules to establish and promote capacity. The benefit of the web-based applications allows for the Department to redirect patrons to alternative beach locations or to prepare them for the capacity issues. Another benefit to the wayfinding signage and the real-time parking information is that lot availability can be linked to a variety of publicly available, free parking applications which provides another opportunity to promote the County Beaches. The City of Santa Monica PGS project used a HiTech loop system and vehicle messaging signs display parking availability. Newport Beach installed loop counters and provided a public application program interface (API) that distributed real-time parking information regarding their two most popular parking lots to websites like ParkMe and Parkopedia.

There is also an opportunity to introduce tiered digital parking availability signs in locations like Zuma and Dockweiler, similar to Image 41. Based upon the parking lot configuration, by listing parking space availability in the separate lot locations, vehicles would minimize congestion as they are directed to the available parking spaces. External wayfinding signage, especially on the approaches to Zuma, Will Rogers, Dockweiler and Venice should consider the distance and approaches to the beach lot entrances. Major roadways are impacted by the beach lot back up and advanced wayfinding messages can have a direct impact on street traffic flow, entrance lines, resources allocation and the overall patron experience.

Image 41: Parking Availability

The PGS/wayfinding signage would indicate parking lot status (open/closed), space availability (Full/Available), event parking details, alternative parking areas and targeted messaging. This methodology would allow the majority of patrons to prepare their direction of travel upon approach thereby possibly reducing the traffic flow impact and discouraging backups. It is encouraged that the Department pursue additional wayfinding signage for the various approaches to the primary beach entrances. The total system investment for the Washington parking lot installation is less than $21,000 and includes a dynamic PGS sign, lane loops installed and the necessary software. This is a great value for the Department, a typical loop counter installation with coverage for one lane in and one lane out with one integrated dynamic sign and the supporting software/server equipment costs $48,000. In order to develop a basic integrated mobile application (provided by the system provider), the Department should estimate $5,000. The overall cost of the mobile application development does vary depending on the type of information to be displayed, any specific branding / graphics requirements,

and additional features such as find my car, directions, 511 traffic information, parking reservations, or 3rd party integrations.

Image 42: Directional Headstone

Identifying the entrance points to the Beach parking lots was not always easy. The Department should consider a consistent signage with branding or an identifying sign/marker that delineates each of the parking lot entrances, similar to the Directional Headstone in Image 42. For locations with loop detectors, the signage can include a digital availability display.

A critical component of any technology installation, especially a PGS solution, is maintenance and upkeep. There are a number of locations that have loop systems that have not been properly maintained and therefore provide no current value to the Department. If a PGS is installed, a responsible party (i.e. subcontractor) must be designated and held accountable for the system upkeep. If this support is to be a subcontracted service, performance standards should be defined and incorporated into the vendor service agreement with performance penalties for system support failures.

In addition to the external signage, the Department needs to reassess the overall directional signage within the parking lots. For example, at Will Rogers, improved signage is needed to locate the primary and alternate exit locations. Lane striping and overall ground markings need significant maintenance and upkeep. There is not a current preventative maintenance schedule in order to ensure that ground markings are refreshed for peak season usage. The Department's preventative maintenance needs should be recognized and prioritized by the County. Either resources need to allocated or the Department should be funded to support an internal maintenance program that includes, at a minimum, annual striping, ground markings and overall signage improvements, replacement and upkeep.

The vendor matrix includes a summary of three (3) PGS vendors: Swarco, Q-Free TCS, and WPS
WPS has implemented a number of projects throughout the Los Angeles area with a customer service office in Glendale. From a technical standpoint, TCS and Swarco appear to offer more service features. The loop technology is simple and straightforward. The overall differentiator is how the information is transmitted to the signage and the available online applications.

	Vendor		
Features	**Swarco**	**Q-Free TCS**	**WPS**
Largest Customers	Westfield's London shopping center, Time Park Norway, Hobby Airport Houston, Monarch Casino Colorado.	The Cosmopolitan (Las Vegas), Charlotte Area Transit System, City of San Jose, University of Louisville	LADOT, Modern Parking, SP+ Parking, Dodgers, Jamison Services
Recent Customer Wins	UC San Diego	Calgary Parking Auhority	City of Glendale
Real-Time System Updates (Y/N)	Yes	Yes	Yes
How Accuracy is Ensured?	Lanes of traffic are divided to control and entrance and exit of each car and thus ensuring that there is no cross traffic. One car enters/exits, one way at one time.	We use 2 prep formed formed loops to create "A-B" logic (tracking directional travel) using an anti-tailgating loop detector allows to see separation between vehicles when faced with a heavy queue.	Acuracy is ensured in the design of the system.
Backoffice (Reporting/System Control)	We can provide our software on a local server, load it on a virtual server or host it in the cloud. The choice is with the customer.	We own and write our own IP. We offer a series of "canned" reports plus an array of filters that will allow custom reports on occupancy statistics. The system will come with a GUI (graphic user interface) where the operator can see each lot in real time. Occupancy health of the devices etc are all seen in real time.	Servers are accessible remotely. Reports can be automatically run daily and/or manually run when needed.
Customer Support	We have local engineering staff in Carlsbad to handle customer issues. We can tie in remotely to diagnose situations before going onsite. Our sensors also self report faults when it occurs or in advance.	Based on the East Coast time but with remote connection we can see the system, control the devices, check the health status, address firm ware uploads, etc. We would use local EC's for the install and first line maintenance. This would also include spare parts kept locally to avoid costly down time	Our customer support office is in Glendale, CA. We are open Mon-Fri 8am to 5pm and on-call 24/7.
Bilingual Support	Yes	Yes	No

Image 43: PGS vendor matrix

Other Technology Considerations

Handheld & Printer Technology

There are two types of handhelds that need to be considered for the Department: an enforcement handheld and a Pay on Entry (POE) handheld.

For the enforcement handheld, the Department is currently relegated to the technology solutions associated with the Xerox/Sheriff's Department contract. There are a number of handheld advancements that are important for the other potential technology solutions that should be introduced throughout the Beaches, including pay by phone services and GPS locating capabilities.

The current CEO Motorola handhelds are a critical tool for the CEO's job responsibilities. The handheld and printer must be robust, ruggedized and reliable in order to support the day-to-day activities of a CEO. Violation image quality and communications are primary concerns of the CEOs. Many vendors are adapting smart phone technology for parking enforcement support. The purchase of a large quantity of smart phone devices is often a much cheaper option for municipalities than the purchase of proprietary-based enforcement handhelds. With the proper protective casing or a ruggedized cover, warranty support and the ability to purchase off the shelf hardware, many municipalities are experience substantial saving by not having to replace enforcement devices as a result of dropping or some other form of damage. These smartphone devices are able to be connected via Bluetooth to wireless devices and can also be configured to limit the Internet access and other applications, in order to prevent abuse by enforcement officers. As long as the Department is subject to the Sheriff's Department citation processing contract, it must assert its preferences and outline its technology needs, otherwise, the CEOs will not be able to support the technology advancements identified throughout this evaluation.

The current vendor uses the T2 Flex parking access and revenue control system (PARCS) throughout the attended parking lot locations. The PARCS system is supported by 25 POE handhelds. This inventory is insufficient simply based upon the number of attended lanes (27). This doesn't even consider supplement inventory for busy days and the need for multiple attendants working a lane. The current POE handhelds were described as slow and cumbersome by the lot attendants. There was a general consensus that the credit card transaction times are slow and that the attendants, in general, push the use of cash in order to expedite service, especially on a busy day.

In general, cell phone coverage was satisfactory throughout the parking lot locations, therefore, it seems that a handheld with current communications software should have the capacity to provide efficient and improved transaction times. For future solicitations, the Department should require that vendors identify a multi-faceted communications plan that provides alternative options or vendor support plans in order to ensure the best quality of signal and uptime throughout all of the beach locations.
An evaluation of POE handhelds is essential to support a reliable and accountable payment system. The Department should consider the opportunity to implement technology solutions that minimize direct cash transactions. This will minimize shrinkage potential and improve overall auditing. Credit card

transactions are automatically and reliably recorded, making reconciliation and auditing much easier. This, combined with convenience, and with the fact that a large percentage of people no longer carry cash identifies the importance of a simple credit card solution. Additionally, if the Department relied upon the POE handhelds, there would no longer be a requirement for permit ticket stock. The printed sales receipt should provide the sales record detail for the patron and the PARCS would provide the Department and subcontractor with the tracking and audit tools necessary to validate sales, revenue reconciliation and, most importantly, provide onsite, real-time field audits. This approach, in addition to the existing daily, weekly and monthly reconciliation processes that are provided by both the contractor and the Department will provide an additional layer of accountability to the financial procedures.

The POE handheld needs to provide mobility and flexibility and must have the capacity to vend gates/access, collect and communicate counts and handle multiple rate structures. Importantly, depending upon the Department selected permit management solution, there is the opportunity to integrate barcode scanning in order for the lot attendant to simply scan a parking permit to verify access. For example, this could be an alternate vehicle access solution for the summer camp drop offs and pick up. Permits would be coded and the scanners would validate authorized entry or payment requirements.

Europay, MasterCard, and Visa (EMV) and Payment Card Industry (PCI) Compliance

It is imperative for the Department to understand what changes to EMV and PCI requirements are approaching. The Department should work with the County to ensure compliance that the peak and any proposed rate values are compliant with the net values allowed by EMV standards. Furthermore, there are several key changes that the Department should be aware of:

- Stricter security requirements for POS terminals
- Additional requirements for Hosted Order Page security
- Stricter scope documentation requirements
- The phasing out of SSL and early TLS -TLS 1.0

It has come to our attention that because of these recent changes in security standards and subsequent technology changes, as of June 1, 2016, three T2 handheld devices—Casio IT9000, Motorola MC9500 and Motorola MC75A —will no longer be able to process credit card transactions using PermitNow. Because these same changes in standards and technology could affect security in T2's hosting environment, T2 will no longer support these handhelds after Aug. 15, 2018. This affects all T2 customers using these handhelds in any capacity—be it for enforcement or PermitNow. The devices will no longer be able to communicate with T2hosted Flex databases to exchange data after Aug. 15, 2018. The Department needs to be aware of these items and how the upcoming changes will affect operations.

Parking Access Revenue Control Systems (PARCS)

An integrated PARCS reporting solution is a necessity for accurate and reliable reporting of the revenue reconciliation process. The T2 Flex System is a popular web-based solution that offers a number of system reports and service features. Since the beaches are lacking in accurate counting tools, the Department is not able to receive the full reconciliation benefits of the current PARCS software. It is imperative that technology integration requirements be mandated for all selected parking technology improvements and solutions. Prior to issuing a solicitation, an integration outline should be developed to identify the system communication requirements. This may sound complicated, but it is actually quite simple. For example, if a loop counting system is installed, optimally, the loop output from ingress/egress controls should communicate with the following technology solutions (if installed):

- Parking Guidance Signs
- Application Programming Interface (API)
    - Real time parking availability information for web applications
- Parking Access Revenue Control System
    - PARCS communicates with the POE handheld for payment tracking
    - Receipts/access tickets issued by type and value
- Access Control Hardware (if applicable)
    - i.e. gate arms

This type of system design will allow for a solution that can be reconciled accurately on a daily basis and variances can be identified and addressed upon cash out at the end of each shift. Additionally, lot personnel would have accurate access to inventory capacity and would be able to anticipate proactive line management changes, especially during peak season. The PGS solution can be programmed to promote different thresholds of availability. For example, when only 10% of a lot is available, the external signage will change to "Full" and staff are alerted and have the advanced opportunity to close off an entrance, if needed while maintaining any designated threshold for proximity parking that can be used for disabled access.

Permits

The Department should implement an advanced parking permit program. The permit program would still provide the ability to purchase permits via the current mail-in and in person options, but, it would also enable the ability to purchase and renew permits online. This permit system would provide the Department the opportunity to develop other specialized permit programs beyond the Annual Beach and Senior Parking Passes that may enable increased utilization of the beaches during non-peak seasons as well as potentially offer a revitalization opportunity for Marina del Rey activities.

Specialized permit programs should be developed to encourage off-peak and non-prime usage of the Beach and Marina facilities. The Department can create specialty permits i.e. a winter only permit that allows unlimited access during non-peak months for a fixed price or a morning-use permit that would cater to beach walkers or surfers. A specialized permit program allows the Department to automate and manage a multitude of programs. Permits can be purchased online and there are vendor programs

that can offer turnkey permit fulfillment services. This will lessen the burden on the Department. A specialized permit program would also enable special event sales capacities at the discretion of the Department. In addition, summer camp permits could be managed using the permit program. Online verification tools can be incorporated to verify any required information including date of birth or resident address, if applicable.

The integration of the permit system, an LPR system and the PARCS solution will be an integral feature of an overall effective system. Since it is not likely that LPR would be installed at all lot locations, vehicle license plates would be registered within the permit system along with the actual issued permit. The physical permits would be barcoded or contain RFID (radio frequency identification device) technology that can be scanned or verified with the lot attendant POE handheld to validate authorized entry and a valid access permit. For the parking lots equipped with LPR technology, patrons would be able to access via these designated lanes. There would be a learning curve associated with this process, instructions would need to be clear and concise and facility access would need to be clearly marked. Overall, patron convenience and accessibility would be the primary objectives of an expanded parking permit program. These parking lot entrance notifications should be used as an opportunity to promote the specialty permit programs. With the integration capabilities, there would be an opportunity for permit sales at the attended booths.

A specialized permit program offers the Department the opportunity to further advance the overall Strategic Plan, Goals and Objectives. This should be viewed as a primary opportunity to optimize the parking operations, introduce economic opportunities during non-peak times, promote access to the Beach resources and improve overall customer service.

The Sheriff's Department agreement with Xerox provides the Department with the CEO handhelds, citation processing and special collection services. The current agreement does not appear to provide support for permit management software. The Department should consider an automated permit program that provides for easy tracking of permits, sales and renewals. Either expand the existing Xerox scope of work or manage a new solicitation. An automated permit management software program can range in price from $10,000 to $13,000 with enhancement features in support of a digital permit program for an additional purchase price of approximately $3,200 to $6,000.

Task 4: Evaluate Incentive Programs and Fee Structure

Incentive Programs

Parking validation programs can be costly and difficult to manage, especially without advanced technology solutions. Fisherman's Village currently offers two (2) hours of free parking with merchant validation. While this incentive to receive free parking can be a motivation to park, other similar programs have developed alternative solutions which minimize the impacts on operations management and personnel support needs.

Both Seaport Village (San Diego, CA) and Shoreline Village (Long Beach) offer a validation opportunity to patrons with a $10 minimum merchant purchase requirement. The key differentiator from Fisherman's Village is that even with validation, parking is not free. Parking is recognized as an asset and there is still a reduced charge applied to patrons. At Shoreline Village, the cost with validation is $2 for the first two hours and $2 for every 20 minutes or fraction thereafter. For Seaport Village, the cost with validation is $4 for the first three (3) hours and $3 for every 30 minutes thereafter. Seaport Village offers a fully automated, pay-on-foot solution that required a significant amount of signage in order to educate patrons. There is also a flat free rate option for special events.

Importantly, at Seaport Village, in order to participate in the parking validation program, merchants are required to rent validator equipment for $25 per month per business. The validator program also includes a maximum number of validations allowed per month and the City monitors the number of validations by merchant each month.

In July 2015, Stern's Wharf (Santa Barbara) ended their long-time 90-minutes free parking validation program. Previously, there was no charge to the merchants for the validation program and as the City was considering installing validators, they decided it was too expensive to invest in the required hardware. Instead, after a thorough assessment of utilization, the City found that over 90% of the patrons were using the 90-minute free validation offer. As a result, rather than install additional validation equipment, the City opted to expand their 90-minute free parking option to Stern's Wharf with no physical validation requirement. Gate equipment was updated and the City found that their new Ski-Data solution was faster and handled the 90-minutes free calculation expediently at the gate.

Similar to Stern's Wharf, the City of Glendale suggested that the 90 minutes free policy eliminates most of the validation headaches for a municipality. The management of a validation program is time consuming and labor intensive and the free parking policy allows the City to bypass many of the incremental issues raised by this type of program.

The Department faces many of the challenges that have been or are currently being addressed by other similar operations. The offer of two (2) free hours of validated parking minimizes the value of the parking asset. The Department should consider an approach similar to Shoreline Village or Seaport Village with a reduced rate with validation, rather than offering free parking, offer a reduced rate. For example, the current Fisherman's Village rate is $1.00 for every 20 minutes, the Department would

continue to offer a two (2) hour validation offer that provides two (2) hours of parking for $2.00. This retains the incentive of reduced parking (66%), however, it reinforces that there is a value to parking. The Department can also consider providing a two (2) hour validation rate for $1.00. This is an 83% reduction from the posted rate, however, it still provides some value for the parking asset and the use of the parking facility.

There are significant limitations with the current Fisherman's Village validation program that result in, essentially, the Department providing two (2) complementary hours of parking to any patron requesting a validation. There is no minimum purchase requirement to receive a validation and there are no accurate measures to monitor merchant validation distribution. The current validation system (SYSPARC) is manual and inadequate and does not provide enough merchant accounts to allow for independent validation tracking. Due to the limited number of accounts, vendors have been assigned shared accounts resulting in an inability to accurately track validation distribution by merchant.
The Department should implement both a reduced rate with validation along with a merchant validation participation program, similar to Seaport Village that requires some minimal value to participate in the program. Web-based validation systems are readily available and have been successfully implemented with both positive patron and merchant feedback. Implementing a merchant monthly cost, similar to the Seaport Village $25/month, and mandating validation thresholds (monthly maximums) provides financial and performance accountability to the overall parking program. The monthly validator rental fee is a straight pass through cost that is charged to each participating Seaport Village merchant. The web-based solutions have advanced since the initial Seaport Village deployment. Not only are there more validation options available for the Department's consideration, the solutions are inclusive and affordable, including a web portal link where all that is required by the business is a computer and internet access (no specialized validator equipment). There is also a phone application that can be used by both the merchant and patron with no addition charge for this service.
The City of Oakland has a strong validation program that provides merchants with a 50% discount for validated parking at one of their garages in a commercial district outside of the central business district. However, it must be noted, that validation programs like these are labor intensive and, depending on the size of the program, may require dedicated personnel.
Implementing merchant validators is the optimal recommendation for Fisherman's Village, however, there is a cost for this solution that was considered prohibitive by Stern's Wharf and would require updated infrastructure within the Fisherman's Village parking lot. Regardless of the validation program, the Department can proceed with the reduced rate parking option with minimal infrastructure investment.

Along with the proposed parking validation structure, the Department should consider fully automating the Fisherman's Village parking lot, similar to Seaport Village. By fully automating the parking lot, the Department can mitigate congestion at the attendant gate. Signage and parking policy education must be actively promoted throughout the facility in order to expedite departure issues and promote ease of use. Pay-on-foot, along with alternative payment options (i.e. mobile payments) can minimize the gate congestion during mass exodus events like when harbor cruise guests depart the parking lot. Please note, there is still a need for parking personnel to be located within the parking lot to provide a

customer service support role for the pay-on-foot technology, especially to mitigate any issues during a large group departure. Seaport Village has experienced some personnel cost savings as a result of the lot automation, however the location has supplemented the previous booth attendants with customer service parking ambassadors to assist patrons with using the pay-on-foot technology. The Seaport Village technology conversion included the installation of four (4) entry/exit gates with supporting infrastructure, signage and three (3) pay-on-foot stations (2 credit card only, 1 credit card & cash) for a cost of approximately $450,000.

The lot at Newport Beach Balboa Pier is a 24/7 lot that accommodates the Balboa Pier attractions, such as beach and long term parking patrons traveling on overnight fishing excursions and trips to Catalina. Previously, the location was an attended, gated facility and mass exodus departures and wait times were daunting and challenging. There were minimal parking validation options provided so when the City converted to a pay by plate solution and removed the gates from the location, it completely changed the customer experience. Patrons pay in advance at pay stations thereby avoiding mass exodus congestion at the departure gates. Patrons are also able to use their mobile phones as a payment processing option. Additionally, validation (coupon) codes can be provided in advance to patrons for special events or for future shopping visits. Enforcement became proactive throughout the lot all as a result of the transition to pay by plate. The Global pay station solution used throughout the County beach locations would easily be implemented at Fisherman's Village and the rate structure should incorporate a reduced rate structure that eliminates the need for validation. The assumed validation should be incorporated into the posted fee structure creating a hybrid solution of the various assessed similar parking programs.

The Department should also consider implementing a paid parking solution in Dock 52. Simply installing Global pay stations in Dock 52 would identify the value to this parking asset which is also important to the operation of Fisherman's Village. Similar to Marina Lot 4, the pay stations already support a discounted validation program. A rate structure can be developed to provide a reduced rate for the Fisherman's Village parking area, but also offer an incentive to all day patrons, Fisherman's Village employees or recreational users. The Dock 52 location should also be promoted as an alternative parking location for special events and harbor cruises with proper signage. CEO enforcement of this location would likely need to be increased since it was previously a free parking and is an active lot, especially for weekend recreational users.

Parking Lot Management Services Vendor Incentives

The current parking lot management services vendor agreement provides an annual incentive of 15% of the revenue increase from the previous year (excluding taxes paid and revenue generated by fee increases and service expansion). If the region has favorable weather, patrons travel to the beaches, thereby creating a potential increase in revenue. This incentive does not include any defined performance measures or any service level targets. Simply stated, the vendor receives a bonus when the Department generates additional revenue due to an increase in facility utilization.

The existing contract already incorporates the authorization for the Department Director to increase additional services for parking attendants and supervisor by up to 10% in any contract year due to favorable weather, events or extended operation. Therefore, the vendor is already being compensated at their contracted rates. There is no additional out-of-pocket expense or non-compensated cost to the vendor because they are being authorized and paid for the additional services provided to support increased utilization.

For future solicitations, the Department should remove the current 15% annual incentive and formulate performance targets that can easily be monitored and, more importantly, measured. Performance measures should include an average target wait time at attended locations or patron satisfaction surveys.

Fee Structure Analysis

Comparable Analysis with Surrounding Locations

A proactive approach to determining an appropriate fee and rate structure is to complete a comparable analysis based on parking operations of similar size and/or scope. While the Department may have limitations on rate increases for the near-term due to Coastal Commission recommendations, the pricing details outlined provide a summary of the rate structures that surrounding jurisdictions have implemented in order to maximize revenue.

Department Midday Max Rate Analysis (Weekend)		
Lot Name	**Hours**	**Rate**
Nicholas Canyon	6am-6pm	$ 10.00
Zuma	6am-6pm	$ 14.00
Topanga,Surfrider, Pt. Dume	6am-6pm	$ 14.00
Will Rogers 5	8am-6pm	$ 13.00
Will Rogers 3	9am-5pm	$ 15.00
Will Rogers 1	8am-6pm	$ 15.00
Rose	8am-6pm	$ 18.00
Venice	8am-6pm	$ 18.00
Washington	8am-6pm	$ 18.00
Dockweiler	All Day	$ 13.00
Bluff	6am-6pm	$ 13.00
Grand	6am-6pm	$ 13.00
Torrance	6am-6pm	$ 7.00
White Point	6am-6pm	$ 10.00
Boat trailer	All Day	$ 13.00
Vehicles	All Day	$ 10.00
Lot 4, Dock 77	All Day	$ 10.00
Lot 5	All Day	$ 7.00
Lot 7	All Day	$ 10.00
Lot 8	All Day	$ 7.00
Lot 9	All Day	$ 10.00
Lot 10	All Day	$ 15.00
Lot 11	All Day	$ 10.00
Lot 12	All Day	$ 7.00
Lot 13	All Day	$ 15.00
Average Rate		**$ 12.12**

Image 44: Department Max Rate Analysis

Comparables Max Daily Rate Analysis		
Lot Name	**Hours**	**Rate**
Huntington Beach	All Day	$15.00
Laguna Beach	All Day	$10.00
Oceanside	All Day	$8.00
Santa Monica (3 Lot Average)	All Day	$13.67
Average Rate		**$11.67**

Image 45: Comparable Max Rate Analysis

Based on the Department's current fee structure, the daily rate analysis identified four (4) separate daily rate maximums (Huntington Beach, Laguna Beach, Oceanside and Santa Monica) for comparison purposes. The Department's current Summer Weekend daily rate maximum is consistent with the average daily rate maximum of the four (4) comparable locations (Images 44 & 45). The Summer Weekend daily maximum rate is within $1.00 of the comparable locations average rate.

During holidays and special events, the maximum daily rate is typically charged at the beach parking lots with no options for early bird or evening rates. The comparable rate analysis identified that Huntington Beach and Newport Beach both utilize a holiday and special event pricing structure. Huntington Beach charges $27.00 on the 4th of July and $20.00 for all other holiday and special events. The holiday rate for the City of Newport Beach is $24.00 per day. The Department should implement a holiday rate structure consistent with Huntington Beach and Newport Beach. Since other agencies have successfully implemented a holiday rate structure to address peak demand and utilization, the Department should solicit approval for this demand-based model.

There is an opportunity for the Department to reconsider the early morning (sunrise) and evening (sunset) reduced rate structures. The hours of operation for sunrise and sunset rates vary by location. The comparable analysis identified that none of the other agencies assessed provide a discounted rate based upon arrival time. Currently, patrons benefit significantly at the reduced rate locations. By arriving early in the morning, patrons pay a substantially lesser fee and are allowed to occupy a parking space for the entire day. These sunrise spaces are being drastically undervalued, especially on the weekends.

The Department should consider the following options:

1. Eliminate the sunrise and sunset rate structure during the peak summer season.
2. Increase the sunrise and sunset rates and apply a consistent rate model to each location offering the reduced pricing option.
3. The sunrise and sunset fees should be at least 50% (or higher) of the daily maximum rate for summer weekdays and weekends. An alternative reduced rate model can be developed for the winter season in order to stimulate utilization during non-peak periods.

The Department's Fee Structure (Image 46) identifies the disparities between the daily maximum rates and the sunrise/sunset fees. For example, at Will Rogers Lot 5, the sunrise and sunset weekday hours are $4.00 while the daily maximum rate is $8.00. There is no increase for the sunrise and sunset rate of $4.00 for the weekend, even though the daily maximum is increased to $13.00. The weekday/weekend reduced rate formula for Will Rogers Lot 1 is inconsistent for the sunrise and sunset rate. The weekday ratio is 55% of the maximum daily rate but the weekend ratio is only 46% of the maximum daily rate.

There Department can continue to offer a sunrise and sunset fee in order to stimulate utilization during non-peak period. However, the rate formula should be adjusted to ensure that a consistent formula is applied to all locations offering this rate option. Additionally, an increase to these reduced rates during summer season should be considered, especially for weekend usage. In consideration of Coastal Commission, none of the other locations assessed provide this rate option and the proposed rate would not exceed the current daily rate model.

Hourly Meter Rates

The comparable analysis (Image 47) determined that parking meter (pay station and single-space meter) rates are consistent with the similar and nearby jurisdictions, including the City of Los Angeles. As the hourly meter rates are within $0.50 of comparable average, the Department should consider an approach that correlate the beach parking meter rate schedule to coincide with the neighboring jurisdiction. For example, if the nearby street parking meter rates increase, the Department should assess the opportunity and impact of the rate increase on the parking lot. This creates a level of transparency and consistency to ensure that the beach parking lots are not impacted by patrons seeking cheaper parking options.

Image 46: Department's Fee Structure

	Winter				Summer				
Lot Name	**Hours**	**Monday Thru Friday**	**Hours**	**Weekends**	**Hours**	**Monday Thru Friday**	**Hours**	**Weekends**	**Date of Fee Increase**
Nich. Cyn	6am-9am	$ 3.00	6am-4pm	$ 8.00	6am-9am	$ 3.00	6am-6pm	$ 10.00	**7/7/2014**
	9am-4pm	$ 6.00	4pm-close	$ 3.00	9am-6pm	$ 8.00	6pm-close	$ 3.00	
	4pm-close	$ 3.00			6pm-close	$ 3.00			
Zuma	6am-9am	$ 3.00	6am-4pm	$ 8.00	6am-9am	$ 3.00	6am-6pm	$ 14.00	**8/1/2015**
	9am-4pm	$ 6.00	4pm-close	$ 3.00	9am-6pm	$ 8.00	6pm-close	$ 3.00	
Meters: $.25/10 Minutes	4pm-close	$ 3.00			6pm-close	$ 3.00			
Dan Blocker	6am-Dusk	$.25 Cents for every 10 minutes			6am-Dusk	$.25 Cents for every 10 minutes			**Opened 12/23/14**
Topanga,Surfrider, Pt. Dume	6am-9am	$ 3.00	6am-4pm	$ 8.00	6am-9am	$ 3.00	6am-6pm	$ 14.00	**8/1/2015**
	9am-4pm	$ 6.00	4pm-close	$ 3.00	9am-6pm	$ 8.00	6pm-close	$ 3.00	
	4pm-close	$ 3.00			6pm-close	$ 3.00			
Coastline	6am-Dusk	$.25 Cents for every 10 minutes			6am-Dusk	$.25 Cents for every 10 minutes			**Opened 02/25/15**
Will Rogers 5	6am-9am	$ 4.00	6am-9am	$ 4.00	6am-9am	$ 4.00	6am-8am	$ 4.00	
	9am-5pm	$ 6.00	9am-5pm	$ 8.00	9am-5pm	$ 8.00	8am-6pm	$ 13.00	**9/5/2015**
	5pm-close	$ 4.00	5pm-close	$ 4.00	5pm-close	$ 4.00	6pm-close	$ 4.00	
Will Rogers 3	6am-9am	$ 4.00	6am-9am	$ 5.00	6am-9am	$ 5.00	6am-9am	$ 7.00	
	9am-5pm	$ 6.00	9am-5pm	$ 9.00	9am-5pm	$ 9.00	9am-5pm	$ 15.00	**9/5/2015**
Meters: $.25/10 Minutes	5pm-close	$ 4.00	5pm-close	$ 5.00	5pm-close	$ 5.00	5pm-close	$ 6.00	
Will Rogers 1	6am-9am	$ 4.00	6am-9am	$ 5.00	6am-9am	$ 5.00	6am-8am	$ 7.00	
	9am-5pm	$ 6.00	9am-5pm	$ 9.00	9am-5pm	$ 9.00	8am-6pm	$ 15.00	**9/5/2015**
	5pm-close	$ 4.00	5pm-close	$ 5.00	5pm-close	$ 5.00	6pm-close	$ 6.00	
Rose	6am-9am	$ 4.00	6am-8am	$ 5.00	6am-9am	$ 5.00	6am-8am	$ 9.00	
	9am-5pm	$ 6.00	8am-6pm	$ 9.00	9am-5pm	$ 9.00	8am-6pm	$ 18.00	**9/5/2015**
	5pm-close	$ 4.00	6pm-close	$ 5.00	5pm-close	$ 5.00	6pm-close	$ 9.00	
Venice	6am-9am	$ 4.00	6am-8am	$ 5.00	6am-9am	$ 5.00	6am-8am	$ 9.00	
	9am-5pm	$ 6.00	8am-6pm	$ 9.00	9am-5pm	$ 9.00	8am-6pm	$ 18.00	**9/5/2015**
	5pm-close	$ 4.00	6pm-close	$ 5.00	5pm-close	$ 5.00	6pm-close	$ 9.00	
Washington	6am-9am	$ 4.00	6am-8am	$ 5.00	6am-9am	$ 5.00	6am-8am	$ 9.00	
	9am-5pm	$ 6.00	8am-6pm	$ 9.00	9am-5pm	$ 9.00	8am-6pm	$ 18.00	**9/5/2015**
	5pm-close	$ 4.00	6pm-close	$ 5.00	5pm-close	$ 5.00	6pm-close	$ 9.00	
(**) Dockweiler	All Day	$ 6.00	All Day	$ 8.00	All Day	$ 8.00	All Day	$ 13.00	**9/5/2015**
Bluff	6am-9am	$ 3.00	6am-9am	$ 3.00	6am-9am	$ 3.00	6am-6pm	$ 13.00	**9/5/2015**
	9am-4pm	$ 6.00	9am-4pm	$ 8.00	9am-6pm	$ 8.00	6pm-close	$ 3.00	
Meters: $.25/10 Minutes	4pm-close	$ 3.00	4pm-close	$ 3.00	6pm-close	$ 3.00			
Grand	6am-9am	$ 3.00	6am-9am	$ 3.00	6am-9am	$ 3.00	6am-6pm	$ 13.00	**9/5/2015**
	9am-4pm	$ 6.00	9am-4pm	$ 8.00	9am-6pm	$ 8.00	6pm-close	$ 3.00	
Meters: $.25/10 Minutes	4pm-close	$ 3.00	4pm-close	$ 3.00	6pm-close	$ 3.00			
Torrance	6am-close	$ 2.00	6am-9am	$ 3.00	6am-close	$ 3.00	6am-6pm	$ 7.00	**7/7/2014**
			9am-4pm	$ 6.00			6pm-close	$ 3.00	
			4pm-close	$ 3.00					
White Point	6am-9am	$ 3.00	6am-9am	$ 3.00	6am-9am	$ 3.00	6am-6pm	$ 10.00	**7/7/2014**
	9am-4pm	$ 6.00	9am-4pm	$ 8.00	9am-6pm	$ 8.00	6pm-close	$ 3.00	
Meters: $.25/10 Minutes	4pm-close	$ 3.00	4pm-close	$ 3.00	6pm-close	$ 3.00			
62nd Avenue	$0.25/10 minutes Maximum $13.00				$0.25/10 minutes Maximum $13.00				**Metered Parking**
Lot Name	**Hours**	**Monday Thru Friday**	**Hours**	**Weekends**	**Hours**	**Monday Thru Friday**	**Hours**	**Weekends**	
Fisherman's Village	**$1.00 every 20 minutes / Maximum $15.00**								**7/2/2015**
Launch Ramp									
Boat trailer	All Day	$ 13.00	All Day	$ 13.00	All Day	$ 13.00	All Day	$ 13.00	**7/2/2015**
Vehicles	All Day	$ 10.00	All Day	$ 10.00	All Day	$ 10.00	All Day	$ 10.00	**7/2/2015**
Chace Park	$0.25/10 minutes Maximum 90 Minutes				$0.25/10 minutes Maximum 90 Minutes				**Metered Parking**
View Park	$0.25/10 minutes Maximum 2 Hours				$0.25/10 minutes Maximum 2 Hours				**Metered Parking**
MARINA-LOT 9 CHANGED TO $.25 FOR EVERY 10 MINUTES NOVEMBER 2010. ALL OTHER MARINA LOTS CHANGED ON JULY 2011									
Lot 4, Dock 77	All Day	$ 6.00	All Day	$ 8.00	All Day	$ 8.00	All Day	$ 10.00	**7/7/2014**
Lot 5	All Day	$ 5.00	All Day	$ 5.00	All Day	$ 7.00	All Day	$ 7.00	**7/7/2014**
Lot 7	All Day	$ 6.00	All Day	$ 6.00	All Day	$ 10.00	All Day	$ 10.00	**7/7/2014**
Lot 8	All Day	$ 5.00	All Day	$ 5.00	All Day	$ 7.00	All Day	$ 7.00	**7/7/2014**
Lot 9	All Day	$ 6.00	All Day	$ 6.00	All Day	$ 10.00	All Day	$ 10.00	**7/7/2014**
Lot 10	All Day	$ 6.00	All Day	$ 8.00	All Day	$ 10.00	All Day	$ 15.00	**7/2/2015**
Lot 11	All Day	$ 6.00	All Day	$ 6.00	All Day	$ 10.00	All Day	$ 10.00	**7/7/2014**
Lot 12	All Day	$ 5.00	All Day	$ 5.00	All Day	$ 7.00	All Day	$ 7.00	**7/7/2014**
Lot 13	All Day	$ 6.00	All Day	$ 8.00	All Day	$ 10.00	All Day	$ 15.00	**7/2/2015**

Image 47: Comparable Fee Analysis

Del Mar, CA	**Cost**
Beach/On-Street Parking	$3.00 per hour
Shopping Area/Sub-Level Garage	$1.00 per hour $2.00 after June 1 (demand based)
Hermosa Beach, CA	**Cost**
On-Street Meters	$1.25 per hour
Huntington Beach, CA	**Cost**
Pier Plaza Parking (adjacent to Huntington Beach Pier)	$1.50 per hour ($15 daily maximum/car)
Main Promenade Parking Structure	
Maximum Daily Rate - Non-Peak	$15.00
Evening rate (after 9:00 pm) Flat Rate	$5.00
Holiday	
Fourth of July - Flat Rate	$27.00
Maximum Daily Rate - Peak (Memorial Day thru Labor Day)	$17.00
Maximum Daily Rate - Peak Season Holidays and Events Memorial Weekend / Labor Day Weekend / U.S. Open / AVP	$20.00
Municipal Lot	
Day Use Parking (Municipal Parking Lot between First Street and Beach Blvd)	$15.00
Cars	
Vehicles over 20 ft in length (per occupied space)	$15.00
Buses	
Buses 24 passengers or less	$50.00
Buses 25 passengers or more	$100.00
Laguna Beach, CA	**Cost**
Act V Lot (1900 Laguna Cyn Rd)	$7.00 Daily Summer Rate
Forest/Laguna Cyn Lot (635 Laguna Cyn Rd)	$10.00 Daily Summer Rate $3.00 Daily Non-Summer Rate
Manhattan Beach, CA	**Cost**
City Beach Lots	
El Porto, 26th Street, and Pier Lots	$1.50 per hour
Oceanside, CA	**Cost**
Beach Metered Parking	
1200 North Pacific @ Harbor Dr	$2.00 per hour; $8.00 all day
1400 North Pacific Street	$8.00 4am-8pm; $20.00 overnight 8pm-4am (Sept 16 – May 14)
900 North Pacific 24-hour lot	$5.00 8am-6pm; $2.00 6pm-8am; $7.00 all day
300 Block North The Strand	$2.00 per hour; $8.00 all day until 11pm; Lot closed 11pm – 6am
100 North The Strand	$2.00 per hour; $8.00 all day until 11pm; Lot closed 11pm – 6am
600 South The Strand	$2.00 per hour; $8.00 all day; Lot closed 10pm-6am (May -Sep)

Image 47 *cont.*

Redondo Beach, CA	**Cost**
Surface Lot/Garages	
Pier/Plaza Parking Structure	Summer: $2.00 per hour; $0.50 for first hour weekdays 8am-6pm Winter: $1.50 per hour; $0.50 for first hour weekdays 8am-6pm
Metered Parking	
All meters owned by the City	$0.25 per 15 minutes
San Clemente, CA	**Cost**
Metered Parking	
Six primary parking lots:	$1.50 per hour
Calafia (On street near State Park Entrance)	meters: 9am – 6pm
Camino Capistrano (Poche)	meters: 9am – 6pm
North Beach	Lot and meters: 9am-6pm
Linda Lane	meters: 10am-5pm
Pier Bowl	Lots 10am-5pm: meters 10am-5pm
T-Street	meters 9am-7pm
Santa Monica, CA	**Cost**
Surface Lot/Garages	
Beach House Lot (415-445 Pacific Coast Hwy)	$3.00 per hour max of $12.00
Pier Deck	$3.00 per hour, $15.00 max
Lot 4 thru Lot 9 North (along Pacific Coast Hwy)	Summer Mon-Fri $8.00; Wknds/Holidays $10.00 Winter Mon-Fri $6.00; Wknds/Holidays $8.00
Lot 1 North (1550 Pacific Coast Hwy)	Summer $12.00 everyday Winter Mon-Fri $6.00; Wknds/Holidays $8.00
Structure 1 thru 9 (throughout downtown)	First 90 minutes free $1.00 for next hour, $1.50 each add'l 30 min. $14.00 max daily
Stearns Wharf: Santa Barbara, CA	**Cost**
Surface Lots	
Single Vehicle (20 feet or under)	$2.50 per hour $20.00 per day
ADA parking	First 2.5 hours free with validation $2.50 per hour thereafter
Seaport Village: San Diego, CA	**Cost**
Surface Lots	
All lots	$8.00 per hour $32.00 max per day
Shoreline Village: Long Beach, CA	**Cost**
Surface Lots	
Parking is limited to 8 hours	$2.00 fpr 20 minutes $24.00 for lost tickets Credit card minimum: $5.00

Demand Based Pricing

With operational vehicle counters, the Department can use accurate occupancy data analysis to identify areas in which parking rates can be higher than they are in surrounding areas to encourage the spreading of demand to lower-occupancy areas at peak times. Pricing is a proven method for reducing parking demand and encouraging turnover in areas with high occupancy. However, the Department has significant limitations on their approach to pricing and flexibility due to the feedback received from the Coastal Commission.

While the leading practice is to adjust parking prices at the parking lots on a regular basis based on observed changes in demand, a first and more palatable step for the Department might be to identify several of the areas with highest demand and universally raise prices to the same higher rate in those areas. Or the Department can adjust parking prices based on occupancy data, raising prices in high-demand areas and lowering prices in areas with high availability.

Congestion studies have shown that price signals can be effective at persuading people to search for parking in areas with higher rates of availability, reducing parking search time for most patrons and reducing congestion related to parking search behavior. The Department is proactive in monitoring comparable program pricing, so it might be worth collaborating with similar agencies to approach the Coastal Commission for consideration of, at least, a formalized special event or holiday rate model. This would be the first step towards having the opportunity to create a demand based model while always being considerate of the need to provide an affordable and accessible beach parking experience.

Los Angeles County Department of Beaches and Harbors Parking Roadmap

The County of LA Department of Beaches and Harbors Study provides a multi-faceted approach to a parking plan for the County. The solutions provided in this study are outlined and presented as immediate, short-term and long term steps in addressing the critical issues and parking challenges identified during the field assessments (Image 48). Some of these recommendations are immediate updates that can have a direct impact on parking conditions over the next 6 to 18 months. These are all tiered and flexible planning tasks that need to be outlined with an ongoing evaluation plan to ensure that the Department is addressing the needs and growth of the various lot locations.

Once the Department implements the operational recommendations, a reassessment of the impacts should be evaluated within 4 to 6 months in order to determine the effectiveness of the consistently applied parking policies. It is at that time that the Department should consider future parking plans, including the potential for updated technology or a consideration for a fully automated system. Based upon the results of this study, the Department can accommodate the current and growing demand for parking by addressing the issues described within this report.

A true parking roadmap must be a living document that is evaluated through every step of the Department's process. The summary below provides a high level overview of the recommendations that are outlined within this study.

Image 48: Technology Roadmap

Recommendation	Timeline	Cost	Benefit
Cost Symbols (one-time or annual cost): $: Less than $100,000 $$: 100,000-$250,000 $$$: $250,000-$500,000 $$$$: Greater than $500,000			
Increase wayfinding signage	Immediate	$$	Improved wayfinding will improve the patron experience within each lot and improve traffic flow
Implement mobile payment solution	Immediate	$	Mobile payment provides an additional customer service payment options
Update single space parking meter technology	Immediate	$	Smart meters will provide credit card payment options to patrons and provide improved audit capabilities
Utilize permit management software program	Immediate	$	Permit management program will provide options for web-based permit sales and improved management and tracking tools
Enhance the parking information available on the Department website	Short Term	$	Allows for advanced planning and preparing patrons for their beach experience
Transition to Pay by Plate & implement mobile LPR (2 enforcement vehicles / pay station upgrades)	Short Term	$$	The conversion to pay by plate parking will introduce enforcement efficiencies and CEOs will not be required to verify each vehicle dashboard
Improve identification of pay station locations	Short Term	$$	An illuminated 'P' sign will provide an easy identifier for the pay station locations
Install loop counters	Short Term	$ per location	Improve parking lot occupancy counts
Install integrated loop counters with parking guidance system signs	Short/Long Term	$ to $$ per location	Will address congestion mitigation issues at the most popular beach locations and provide accurate information for support personnel
Fisherman's Village Automation (Pay-On-Foot with Validation)	Long Term	$$$	Improved efficiencies and operational oversight while providing a flexible management and validation system