City of Carlsbad

Parking Data Collection Comparison Memorandum (August 2018)

Final Draft

Glossary of Terms

The following terms and concepts are used throughout this Comparison Memorandum to describe the performance of the parking system or individual components of the parking system.

Effective Capacity

Effective capacity is an industry-accepted occupancy threshold for parking facilities that indicates the efficiency of the facility or system. Based on industry standards, the primary threshold is 85 percent of the total capacity of the parking system and/or certain areas within the system. This is the threshold that indicates whether the parking system is operating effectively. For example, when observed or projected occupancies are under this threshold, users can typically locate spaces easily. When observed or projected occupancies are at or above this threshold, users cannot typically find available parking easily.[1]

In-lieu Fee

In-lieu fee, as provided for in the existing Village and Barrio Master Plan (effective outside the Coastal Zone) and Village Master Plan and Design Manual (effective inside the Coastal Zone), is a cash payment made by a developer to the city instead of providing the total number of minimum parking space or spaces required by the code. These payments are typically calculated on a per space basis to reduce a portion or all a development's parking requirement. Fees are collected and used in a defined area to provide additional parking supply, or parking-related infrastructure and services. Under the existing program, the in-lieu fee program is available only to non-residential projects.

License Plate Recognition Technology (LPR)

License plate recognition technology is a computer-based optical system that can sense the presence of a license plate from its reflective material. Once a license plate is detected, the plate number may be recorded in addition to state of origin. This technology can be used for data collection to better understand parking behaviors and/or perform parking enforcement activities.

Parking Demand

Parking demand is the metric representing the projected quantity of parking generated by employees, patrons, residents, visitors, and others associated with a business or land use within the parking system. Each business or land use generates a certain quantity of demand for

[1] "Parking 101: A parking Primer: A Publication of the International Parking Institute", International Parking Institute, 2015; "Shared Parking, Second Edition", Urban Land Institute

parking spaces to accommodate their users. The total number of spaces generated by business or land use patrons at a given time is the parking demand for that business or land use. This demand is based on the land use intensity (building square footage or number of units) and the land use type (restaurant, office space, retail, single and multi-family residential, etc.). Parking demand may differ from the actual parking supply or standard parking requirements.

Parking Duration

Parking duration is a measure of how long vehicles are parked in a parking space. This metric is analyzed through data collection efforts and is used to help define policies such as parking time limits.

Parking Facility

A parking facility refers to any on- or off-street location designated for parking.

Parking Occupancy

Parking occupancy is the percentage of occupied spaces in a parking facility at a given time. Parking occupancy is calculated by dividing the number of observed or projected vehicles parked in a facility by the number of total spaces in the facility.

Parking System

Parking system refers to the entire collection of parking spaces, parking facilities, technologies, equipment, policies, regulations, and personnel that work together to provide the parking needs of employees, patrons, residents, visitors, and other users in a study area.

Introduction

In 2016, Kimley-Horn developed a Parking Management Plan (PMP) for the City of Carlsbad that contained an analysis of the parking behaviors unique to the Village, Barrio, and Beach study area, a comprehensive data collection process, including field observations for occupancy and duration in each of the three areas within the study, and robust community outreach to document perception related to parking behaviors. The result of the analysis and community outreach was a set of parking management strategies compiled in the PMP that are intended to balance parking demands among the different neighborhoods in the study area, accommodate the various users in the study area (visitors, residents, business owners, etc.), while creating a system that is sustainable.

Since the completion of the PMP in 2016, the City has proactively started looking at the implementation of various components of the PMP recommendations. One such component is to track parking occupancy and duration data on a regular basis with the intention of re-evaluating parking demands for the Village, Barrio and Beach areas. Tracking parking demands annually will help the city make data-driven decisions on how to manage the parking system. Many decisions such as shared parking opportunities, parking time limits, and extension of the in-lieu fee boundaries rely on parking occupancy information. Annual analysis will allow the city to track how parking demands change as a result of decisions made and to allow it to continue to implement beneficial changes proactively to meet the needs of the community.

In 2018, the city implemented the recommendation to track parking occupancy by commissioning another round of data collection to compare to the 2016 data. The analysis in this document compares the July 2016 and August 2018 parking demands and durations for the Village, Barrio, and Beach areas. The intent of this document is to identify trends and inform the implementation of other PMP recommendations related to occupancy and duration.

It is important to note that the inventory of analyzed spaces is not inclusive of all parking spaces in the study area, but rather those spaces that are accessible for data collection and have an impact on the implementation of various parking management strategies. Residential spaces, especially those with gated access or enclosed garages, are generally not included in the study area parking inventory and subsequent parking analysis.

This document provides a comparison of July 2016 and August 2018 results and findings for the entire study area. In addition, this document discusses findings specific to four sub-areas, Village, Barrio, areas outside the Master Plan boundary, and an analysis of the east and west sides of the railroad tracks. These areas differ slightly from the 2016 PMP sub-areas. In 2016,

the PMP examined the Village, Barrio, and Beach areas. In 2018, while the overall study area boundary remains the same, the sub-areas were dissected differently to compare Village, Barrio, east of the tracks versus west of the tracks, and areas outside of the Master Plan boundary. ***Figure 1*** on the following page illustrates the study area and the four sub-areas analyzed in this document. The east and west of the tracks sub-area is simply the portions of the study area on either side of the railroad tracks shown on the figure.

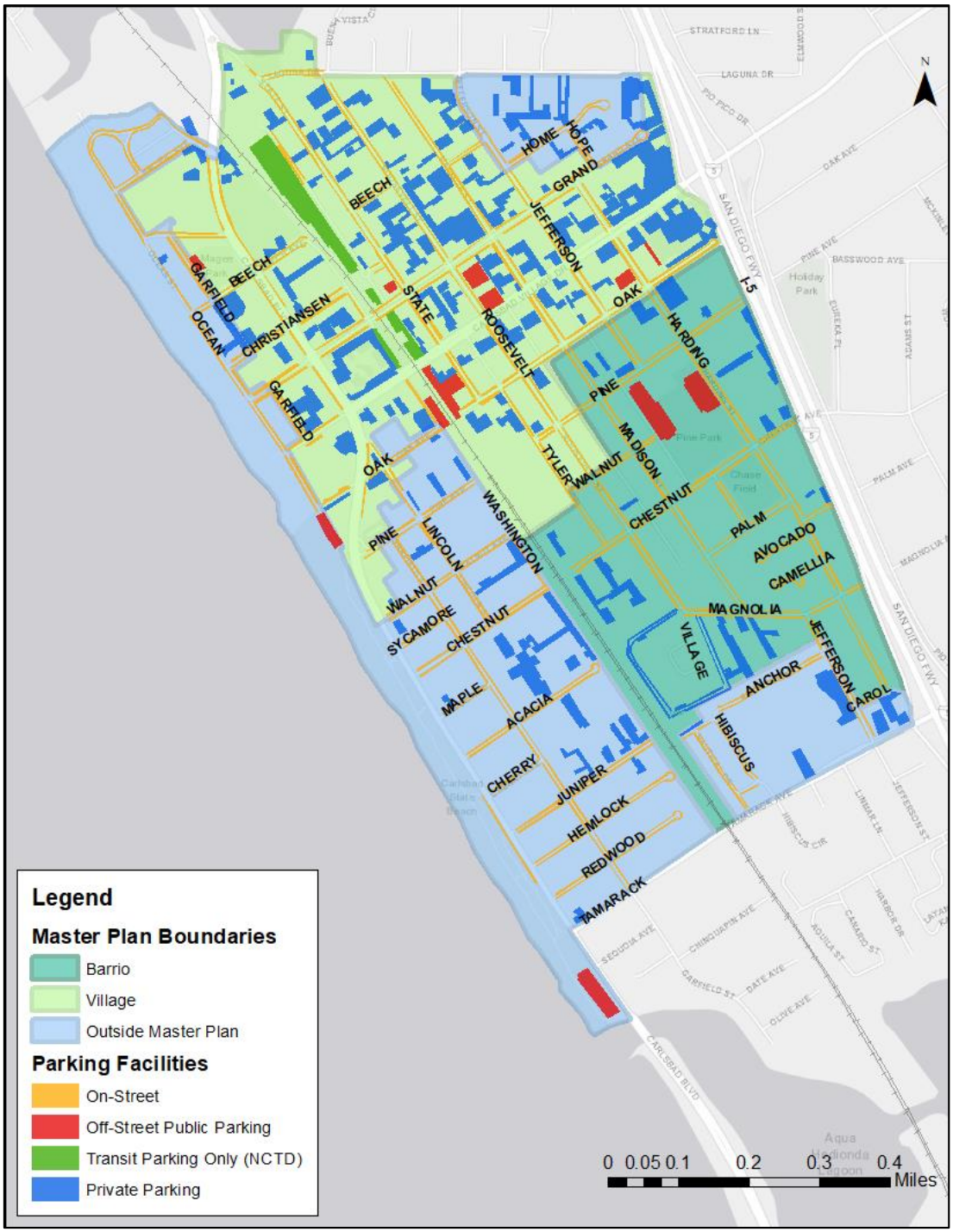
Key Themes

Several key themes were identified throughout the updated supply and demand analysis. While many data points were considered as part of the analysis, this section is intended to highlight recurring themes observed and provide a summation of the data discussed in greater detail throughout this report.

- Inventory decreased by 2 percent between the 2018 and 2016 collections. This reflects a change of approximately 195 spaces, 4 spaces from public off-street supplies and 191 from private off-street supplies.
- Even with the inventory decrease both weekday and weekend peak parking occupancies decreased from 2016 to 2018, but the decrease is also within a range that could be due to daily variance.
- Both weekday and weekend utilization rates were observed to be more consistent throughout the day with fewer peaks, indicating parking demand was stable while also low.
- There was a 6 percentage-point increase in the number of facilities with occupancies between 75 and 84 percent. This suggests that despite lower demand throughout the study area, certain attractive parking locations increased in demand.
- All categories of parking supplies within the Barrio neighborhood (on-street, public off-street, and private parking) continued a pattern of consistent underutilization. On-Street parking in this area peaked during the weekday 9:00 PM - 11:00 PM collection at approximately 48% occupied.
- The Village, specifically within the areas of State Street and Roosevelt Street at their intersections with Carlsbad Village Drive, is an area to monitor. This area was observed to have the greatest parking demands, approaching but not yet exceeding effective capacity of 85% occupancy or higher. Available public parking supplies were observed to be available within a comfortable walking distance (less than a quarter mile – about three Village blocks) at all times throughout data collections.

- Outside the Master Plan area and areas east and west of the track did not provide considerable additional insights into parking demands. As anticipated, the area west of the railroad tracks was observed to have slightly heightened occupancies relative to the areas east of the tracks. The area west of the track, however, did not exceed effective capacity and available public parking supplies were within a comfortable walking distance of all individual facilities at or above 85 percent utilization.
- Average duration of stay between 2016 and 2018 increased by 2 percent in the cohort of vehicles parked 2 hours or less. The longest durations were observed in the Barrio neighborhood, with 23 percent of observed on-street vehicles in this area parked for 12 hours or more which coincides with the duration of data collection. This indicates a higher frequency of utilizing on-street parking supplies for personal vehicles relative to the Village or outside the Master Plan areas.

Figure 1: Data Collection Study Area



Parking Data Collection Methodology

The intent of this 2018 round of data collection and analysis is to effectively compare any parking changes within the last two years. As such, the parking data collection in 2018 was conducted during the same season and time periods as was done in 2016 to present an "apples to apples" comparison of the data. In 2016, the data was collected in July, which represented the peak season. A separate "shoulder" season count was conducted separately from this analysis and was discussed under a separate report comparing the 2016 and 2018 shoulder seasons. For this recent round of collection, the data was also collected in August 2018 during a typical peak season weekday and weekend. Parking inventory, occupancy, and duration data was collected throughout the study area to determine and evaluate parking demands.

The data was collected in the same manner as in 2016, with the use of License Plate Recognition (LPR) technology. The mobile LPR equipment uses a dual camera configuration, placed on the roof of the data collection vehicle. The vehicle drives continuous loops through each collection area, counting the number of vehicles parking off-street and on-street. Data was collected from all accessible off-street and on-street parking facilities shown in ***Figure 1*** on the previous page.

Data was collected between the hours of 6 AM - 9 PM for the entire study area, with an additional run between 9 PM - 11 PM to capture additional on-street and off-street occupancies, as well as duration in the Barrio Area.

Parking Inventory Changes

Since the previous data collection in July 2016 for the PMP and as of the date of this study (August 2018), three developments were completed and five are under construction (***Table 1***). Some of these projects have impacted or will impact the parking supply within the Village, Barrio and Beach Area. However, it is important to clarify that developments providing residential parking, whether as private individual or common garages, may not be included in the parking inventory because parking cannot be consistently verified or is often inaccessible because of gates or private property restrictions. These types of facilities, while important to their respective development's parking needs, do not contribute to the parking supply available for the implementation of parking management strategies. Therefore, some projects identified in the table (e.g., 800 Grand Avenue) impact the parking inventory only if they remove spaces counted in the 2016 data collection. In addition, certain facilities have also been reclassified to better reflect the users they serve (e.g. public to NCTD). Accordingly, the parking inventory has

been updated (***Table 2***) to include the reclassification of spaces, removed parking due to completed development, and a space count correction, all as identified in ***Table 1***.

Table 1: July 2016 to August 2018 Inventory Changes

DEVELOPMENT	LOCATION	PARKING INVENTORY IMPACT	PARKING TYPE	NOTES
Seagrove Townhomes (completed project)	2500 Block of State Street	None (see notes)	Private	New development of 47 townhomes featuring 97 parking spaces on-site, most in private, individual garages. The project replaced a mix of commercial uses served by approximately 54 spaces, resulting in a net gain of 43 off-street spaces. However, as most spaces are in private garages, the added parking is not included in the parking inventory. Further, formerly existing commercial spaces were not counted in the 2016 inventory due to project construction.
Blue Water Grill Expansion (completed project)	417 Carlsbad Village Drive	10 Spaces Removed	Private	Inventory updated to reflect removed spaces in this study.
Pine Avenue Park Community Center and Garden (completed project)	3209 Harding Street	41 Spaces Removed	Public	Community Center construction removed a parking lot. Inventory updated to reflect removed spaces in this study.
Harding Community Center Lot	3096 Harding Street (behind center)	14 Spaces Reclassified	Public	In 2016 this was considered private. Updated to be classified as public for 2018 and future data collection efforts.
Harding Community Center Lot	3075 Harding Street	30 Spaces Reclassified	Public	In 2016 this was considered private. Updated to be classified as public for 2018 and future data collection efforts.
Washington Street NCTD Lot	Along Washington Street between Carlsbad Village Drive and Grand Avenue	30 Spaces Reclassified	NCTD	In 2016 this was considered public. Updated to be classified as an NCTD lot for 2018 and future data collection efforts.

**Spaces to be added are based on the project staff report and will be verified after project completion.*

Table 1: July 2016 to August 2018 Inventory Changes (Continued)

DEVELOPMENT	LOCATION	PARKING INVENTORY IMPACT	PARKING TYPE	NOTES
Madison Street and Grand Avenue Private Lot	Northeast corner of Madison Street and Grand Avenue	50 Spaces Removed	Private	Duplicate entry from 2016 inventory. Removed to reflect current inventory.
800 Grand Ave Condominiums (under construction)	800 Grand Avenue	76 Spaces Removed	Private	Inventory updated to reflect removed spaces in this study. All new spaces on-site (66 total) for this residential project are in a private common garage and will not be counted in the parking inventory.
The Grand Madison Mixed-Use (under construction)	725 Grand Avenue	18 Spaces Removed	Private	Inventory updated to reflect removed spaces in this study. All new spaces on-site (20 total) are for the residential portion of the project, are in a private common garage, and will not be counted in the parking inventory.
Beachwalk at Madison Condominiums (under construction)	2664-2668 Madison Street	None (see notes)	Private	New development of six condominiums on a vacant lot. Since each unit has two-car private garage, project parking will not be counted in the parking inventory.
Magnolia Avenue Townhomes (under construction)	749 Magnolia Avenue	None (see notes)	Private	New development of 16 condominiums. No removed parking is reported since project replaces detached homes and garages not counted in 2016 inventory. Further, as each unit has a two-car private garage, new project parking will not be counted in the parking inventory.
Springhill Suites (under construction)	3136 Carlsbad Boulevard	125 spaces to be added*	Private	New 104-room hotel with 125 on-site parking spaces. The project replaced a mix of uses, including a restaurant and motel, that were demolished at the time of the 2016 inventory.

**Spaces to be added are based on the project staff report and will be verified after project completion.*

During the July 2016 data collection, the PMP study area consisted of 11,657 on-street and off-street parking spaces. In August 2018, the same study area decreased by 2 percent (195 less spaces) resulting in a total of 11,462 spaces (explained in "Notes" column of ***Table 1***). ***Table 2*** summarizes the parking inventory for both 2016 and 2018 by facility type.

Table 2: July 2016 vs. August 2018 PMP Parking Inventory

PARKING TYPE	2016 (SPACES)	2018 (SPACES)
NCTD Transit Lots	511	541
Public Off-Street	730	703
On-Street	4,971	4,971
Private Off-Street	5,445	5,247
Study Area	11,657	11,462

As noted, the August 2018 study area inventory decreased by 2 percent, or a total of 195 spaces compared to the July 2016 study area inventory, which is consistent with the inventory changes seen in the May 2018 data collection findings. The inventory changes are due to the removal of 41 public spaces at the new Pine Avenue Park community center and garden, 10 private spaces at the expanded Blue Water Grill, 76 private spaces at 800 Grand Avenue (former office complex), 18 private spaces at the Grand Avenue Mixed Use (former medical office building), and a 2016 inventory discrepancy (duplicate entry) of 50 private spaces at one facility that was verified during the recent data collection efforts (explained in "Notes" column of ***Table 1***).

Moreover, one future development described in ***Table 1***, Springhill Suites, will further change the parking inventory as it may impact the implementation of parking management strategies. Upon project completion, the study area inventory will be updated for future analysis to reflect the changes in total parking supply caused by the new development.

In addition to the parking inventory changes associated with the recently completed developments and user-type reclassifications, one facility was inaccessible during the August 2018 data collection that was captured in the 2016 data collection. A property manager at the Village apartments requested that the private on-street parking in the complex, located south of Magnolia Avenue along Village Drive (a private loop street serving the complex), not be collected. This parking is reflected as empty (i.e., identified as 0 - 50% occupancy on the parking occupancy figures that follow) throughout the August 2018 collection period and reclassified as private parking for this report and future collections.

Parking Occupancy Comparison

One critical metric utilized in analyzing parking data is occupancy, which is a measurement of how much of a facility is being used at a given time. Occupancy can be used to indicate the parking efficiency associated with each facility. When analyzing parking occupancy, the primary

industry accepted threshold for identifying demand constraints for a system is when occupancies reach 85% - 90% consistently. When occupancies for a parking system reach this level of occupancy, parking efficiency starts to deteriorate, and changes need to be implemented to maintain efficiency of the system. The 10% - 15% remaining capacity accounts for those vehicles leaving a space and the few spaces that are scattered throughout the system or a facility that one might have to circle to find. For the purposes of this analysis, the critical threshold of 85 percent was used to determine how well the parking in the study area is operating.

During August 2018, the study area observed a weekday peak at 12 PM - 3PM with an occupancy of 49 percent and a weekend peak at 3 PM - 6 PM with an occupancy of 44 percent. ***Table 3*** compares the peak times and occupancies, based on average occupancies for the entire system for each parking facility type, on the days surveyed in July 2016 and August 2018.

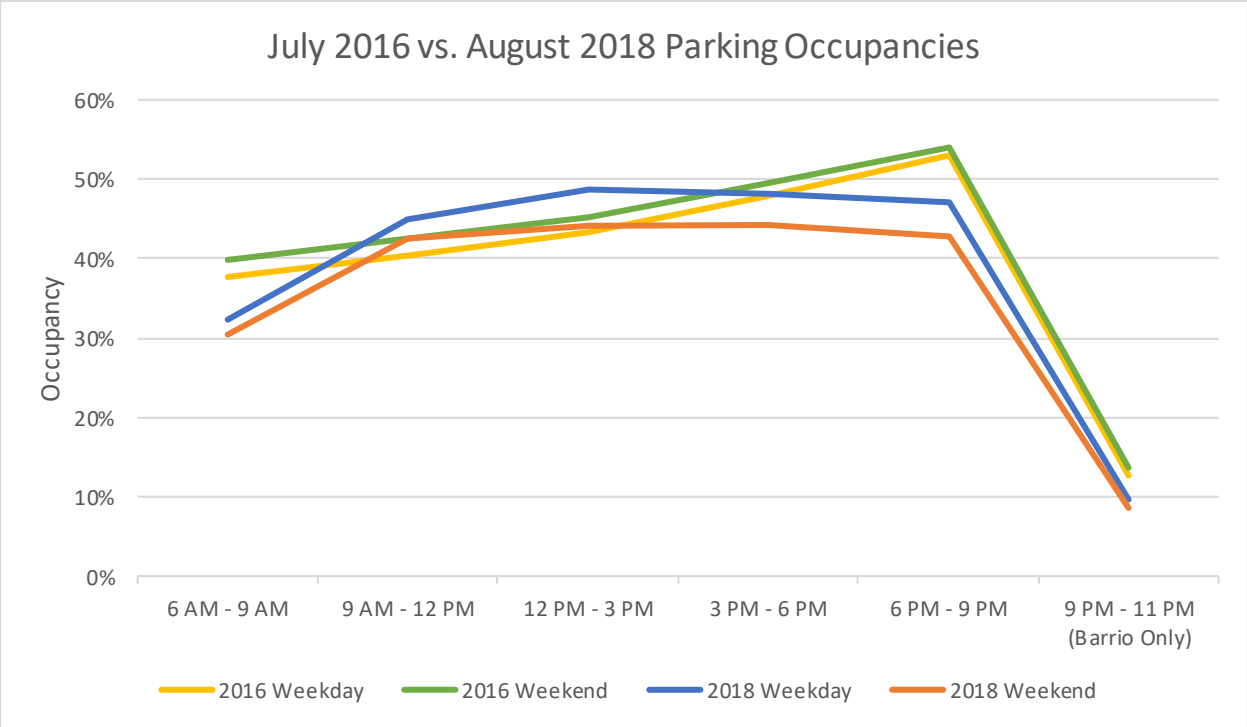
The August 2018 data collection period revealed different peak occupancies and times from the July 2016 collection. In the 2016 data collection period, parking occupancy in the study area was observed to have a weekday peak of 53 percent occupancy at 6 PM - 9 PM and a weekend peak of 54 percent occupancy at 6 PM - 9 PM. As previously mentioned in the parking data collection methodology, data was collected between the hours of 6 AM - 9 PM with one additional count between 9 PM and 11 PM. Due to community comments received, the City made the decision to extend the collection hours to 11 PM to capture residential parking demands in the Barrio neighborhood. The results in ***Figure 2***, on the following page, reflect the inclusion of the data collected during the later evening for both 2016 and 2018 in the Barrio area. The late evening demands in this neighborhood did not result in a change to the overall peak for the study area.

Table 3: July 2016 and August 2018 Peak Parking Occupancies by Facility Type

PARKING TYPE	2016 WEEKDAY (6 PM - 9 PM)	2016 WEEKEND (6 PM - 9 PM)	2018 WEEKDAY (12 PM - 3PM)	2018 WEEKEND (3 PM - 6 PM)
On-Street	50%	53%	52%	54%
Public Off-Street	34%	51%	62%	59%
Private Off-Street	35%	36%	40%	32%
NCTD Transit Lots	61%	45%	79%	49%
Study Area	53%	54%	49%	44%

Figure 2 on the following page shows the daily occupancy trends between July 2016 and August 2018.

Figure 2: July 2016 vs. August 2018 Parking Occupancy Trends



The figure above illustrates the occupancy trends throughout the day for both July 2016 and August 2018 weekday and weekend data. The intent of this figure is to show how the occupancies have increased throughout the day since 2016. Although the 2018 data resulted in different peak hours than 2016, the general trends show relatively consistent occupancies for the weekday and weekend collections.

In ***Table 3*** on page 11, parking occupancies for both July 2016 and August 2018 weekday and weekend data are broken down by facility type, as well as, the study area as a whole. Comparing the entire study area for 2016 and 2018, occupancies have shown a 4 percent decrease for the weekday peak from 53 percent to 49 percent, and a 10 percent decrease for the weekend peak from 54 percent to 44 percent. The decrease total demand suggests the study area as a whole continues to be underutilized.

Although the August 2018 results show the study area having plenty of parking supply available during the weekday and weekend peaks (12 PM - 3PM and 3 PM - 6 PM), some facilities are either approaching and/or exceeding the effective capacity threshold. ***Figure 3***, which

illustrates August 2018 weekday data collected, consists of several on-street and private off-street facilities with occupancies approaching and/or exceeding the 85 percent effective capacity threshold (represented by the orange and red colors) mainly in the Village area (i.e., generally along the State Street corridor and north of Pine Avenue). ***Figure 4***, which illustrates the August 2018 weekend data collected, shows on-street facilities throughout the Beach areas (i.e., west of the railroad tracks) with occupancies approaching and/or exceeding this threshold. During the 2018 weekend collection, several private off-street facilities in the Beach area experienced occupancies over 75 percent which are still underutilized, but over time may change if vehicles are unable to find an available spot in a surrounding facility exceeding the 85 percent effective capacity.

The decrease in parking occupancies from the July 2016 weekend peak to the August 2018 weekend peak may have happened despite several unique events that occurred throughout the day. There were two small events in the Barrio on Saturday evening extending into the night. One event was at the Harding Community Center at the corner of Harding Street and Oak Avenue. Patrons were parking on Oak Avenue and Harding Street within a one-block radius in every direction. The second event was likely a large family gathering at a private residence at the corner of Roosevelt Street and Pine Avenue. Patrons were parking along Pine Avenue to the north of Roosevelt Street, and along the north side of Roosevelt Street. On Saturday morning and early afternoon there were soccer games at Pine Avenue Park (southwest corner of Chestnut Avenue and Harding Street) and Magee Park (north of the intersection of Carlsbad Boulevard and Beech Avenue).

Even with these scattered events, demand for parking showed a slight decline. This could be due to relatively fewer special events than previous collections during the peak season, increased use of alternative forms of transportation, or other variables that impact parking demands. As was the case in 2016, the parking supply in the study area overall remains underutilized.

Figure 3: 2018 August Weekday Peak Parking Occupancy (12 PM – 3PM)

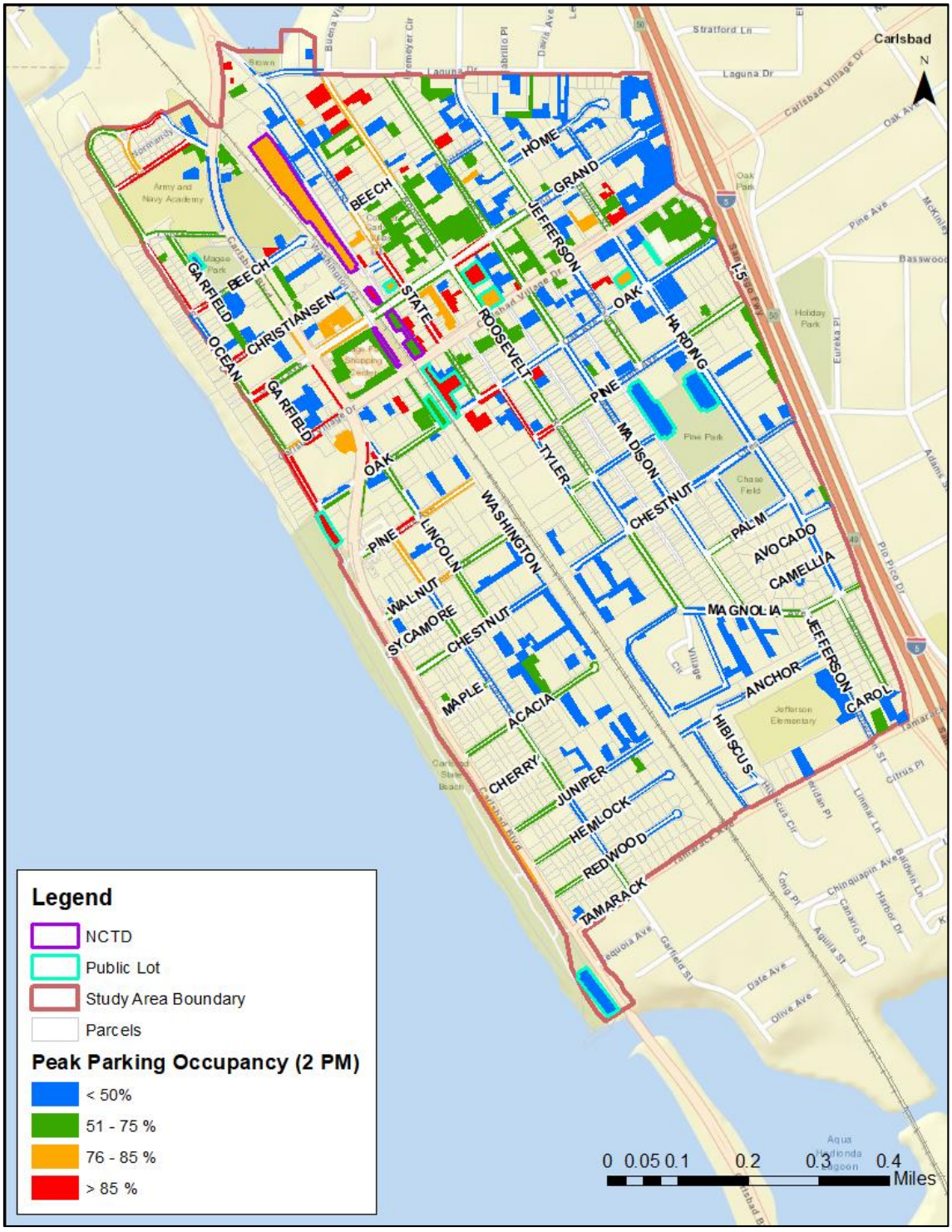
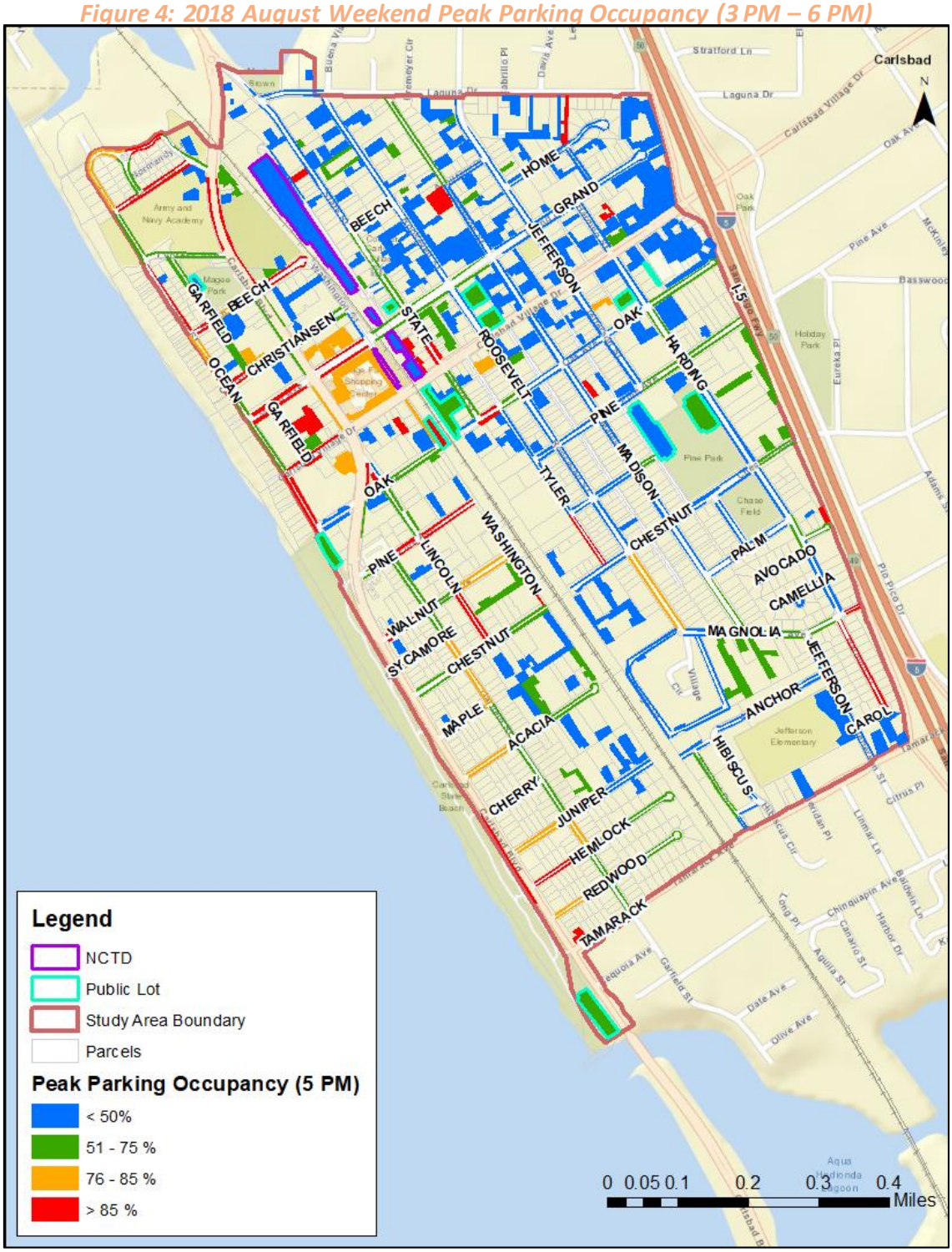


Figure 4: 2018 August Weekend Peak Parking Occupancy (3 PM – 6 PM)



Parking Thresholds

As stated previously, occupancy data is a metric widely used to evaluate the effectiveness of a parking system. At 85 percent occupied, a parking system is considered to be at effective capacity and changes need to be implemented to make more parking available for people. Conversely, underutilized parking is also not desirable as it indicates that the parking is inconvenient. A typical "sweet spot" for parking occupancy is 75 percent. At this level, the area is active and lively, but people can find available parking. Additionally, facilities at the 75 percent threshold are ones that should be observed from year to year for occupancy changes. Additional demand in these facilities can easily tip these facilities into the 85 percent threshold. While 75 percent occupancy is desirable, it must be actively maintained through annual observations and management.

This section of this document examines the facilities that are operating at an acceptable level of 75 percent and up to an occupancy of 84 percent, at or above the 85 percent effective capacity, or are considered underutilized (below 75 percent) and present options for future growth or shared parking opportunities.

75 Percent Threshold

In July 2016, the weekday peak (6 PM – 9 PM) had a total of 15 facilities that had occupancies between 75 percent and 84 percent. This accounts for 3 percent of the spaces (385 spaces of the total 11,657 spaces) in the study area. In August 2018, the weekday peak (12 PM – 3PM) had 21 facilities with occupancies between 75 percent and 84 percent and accounted for 9 percent of the spaces for a total 1,084 spaces of the 11,462 spaces in the study area. Given the net loss in spaces in the study area account for less than 2 percent of the 11,462 spaces, this increase in instances of facilities experiencing occupancies between 75 and 84 percent cannot be attributed completely to the change in supply.

Figure 5 illustrates the location of the facilities with occupancies between 75 percent and 84 percent for July 2016 and August 2018. As the map shows, most of these parking facilities are located in the Village and north Beach Area. This is expected since this part of the study area is mostly commercial and will have increasing demands at a higher rate than the more residential parts of the study area. Additionally, the facilities that are within this acceptable range shown in ***Figure* 5** are mostly off-street private facilities.

In July 2016, the weekend peak (6 PM – 9 PM), had a total of 28 facilities with occupancies between 75 percent and 84 percent. This accounts for 9 percent of the spaces (1,051 spaces of the total 11,657 spaces) in the study area. During the August 2018 weekend peak (3 PM – 6

PM), 23 facilities were observed to have occupancies between 75 percent and 84 percent. This accounts for 8 percent of the spaces for a total of 887 spaces in the study area.

Unlike the 2016 and 2018 weekday peaks (6 PM – 9 PM & 12 PM – 3PM), the facilities for both 2016 and 2018 weekend data were not concentrated in one specific area, rather they were spread out through the entire study area. ***Figure 6*** illustrates the facilities with occupancies between 75 percent and 84 percent for the weekend collections. The map indicates that during the weekend, the on-street facilities in the Beach areas are more affected by increased parking demands. This is likely due to the beach and park visitors parking on neighborhood streets during the weekend.

Figure 5: Weekday Peak Parking Facilities 75 to 84 Percent Occupancy
(Peak Hours: 2016 – 6 PM – 9 PM, 2018 – 12 PM – 3PM)

Figure 6: Weekend Peak Parking Facilities 75 to 84 Percent Occupancy
(Peak Hours: 2016 – 6 PM – 9 PM, 2018 – 3 PM – 6 PM)

85 Percent Threshold

During the weekday peak (6 PM – 9 PM) in July 2016, 28 facilities were observed to have occupancies of 85% or greater, which accounts for 10 percent of the spaces (1,196 spaces out of the 11,657 total spaces) in the study area. In August 2018, during the weekday peak (12 PM – 3PM), 37 facilities were observed to have occupancies of 85% or greater, which accounts for 10 percent of the spaces (1,102 of the 11,462 total spaces) in the study area.

The parking facilities consisting of these spaces are shown in ***Figure 7***. The map indicates that the August 2018 weekday data resulted in an increase in on-street and private off-street facilities mainly in the Village and north Beach areas. Similar to the 75 percent analysis, portions of State Street, Roosevelt Street and Madison Street, north of Carlsbad Village Drive, observed higher demand in 2018 than 2016. Off-street facilities also experienced an increase in frequency of occupancies exceeding 85 percent in 2018 when compared to 2016. As shown in ***Figure 7***, facilities on the north end of Roosevelt Street, as well along Grand Avenue and Oak Avenue, among others, have experienced increases in occupancies during the peak period since 2016, with several facilities now exceeding 85 percent occupied.

In July 2016, during the weekend peak (6 PM – 9 PM) 28 facilities were observed to have occupancies of 85 percent or greater. This accounts for 9 percent of the spaces (1,033 spaces of the 11,657 total spaces) within the study area. Most of the facilities in 2016 were in the Village area. During the weekend peak (3 PM – 6 PM) in August 2018, 45 facilities were observed to have occupancies of 85% or greater. This accounts for 10 percent of the spaces (1,142 spaces of the 11,462 total spaces) in the study area, resulting in an increase of 109 spaces with observed occupancies of 85 percent or greater. ***Figure 8*** illustrates the weekend parking facilities greater than or equal to the 85 percent threshold.

The data represented in ***Figure 8***, shows an increase of on-street facilities within the Beach areas with occupancies greater than 85 percent during the August 2018 weekend peak (3 PM – 6 PM) compared to the July 2016 weekend peak (6 PM – 9 PM).

This analysis revealed areas of high demand in the Village during the week and high demand in the Beach area during the weekend. Despite these pockets of demand and some special event activity, there were no areas without available supply in close proximity and within a comfortable walking distance.

Figure 7: Weekday Peak Parking Facilities 85 Percent Occupancy or Greater

(Peak Hours: 2016 – 6 PM – 9 PM, 2018 – 12 PM – 3PM)

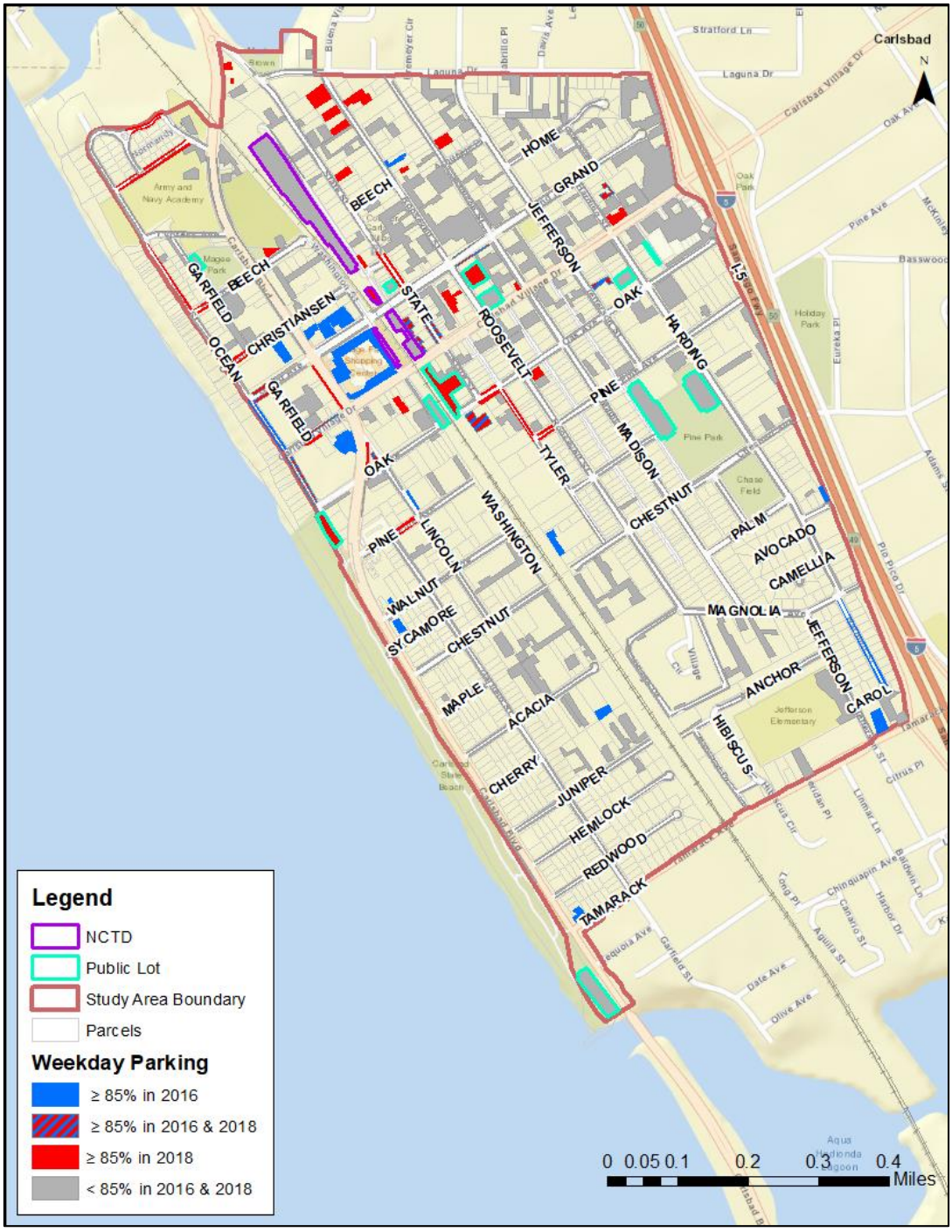
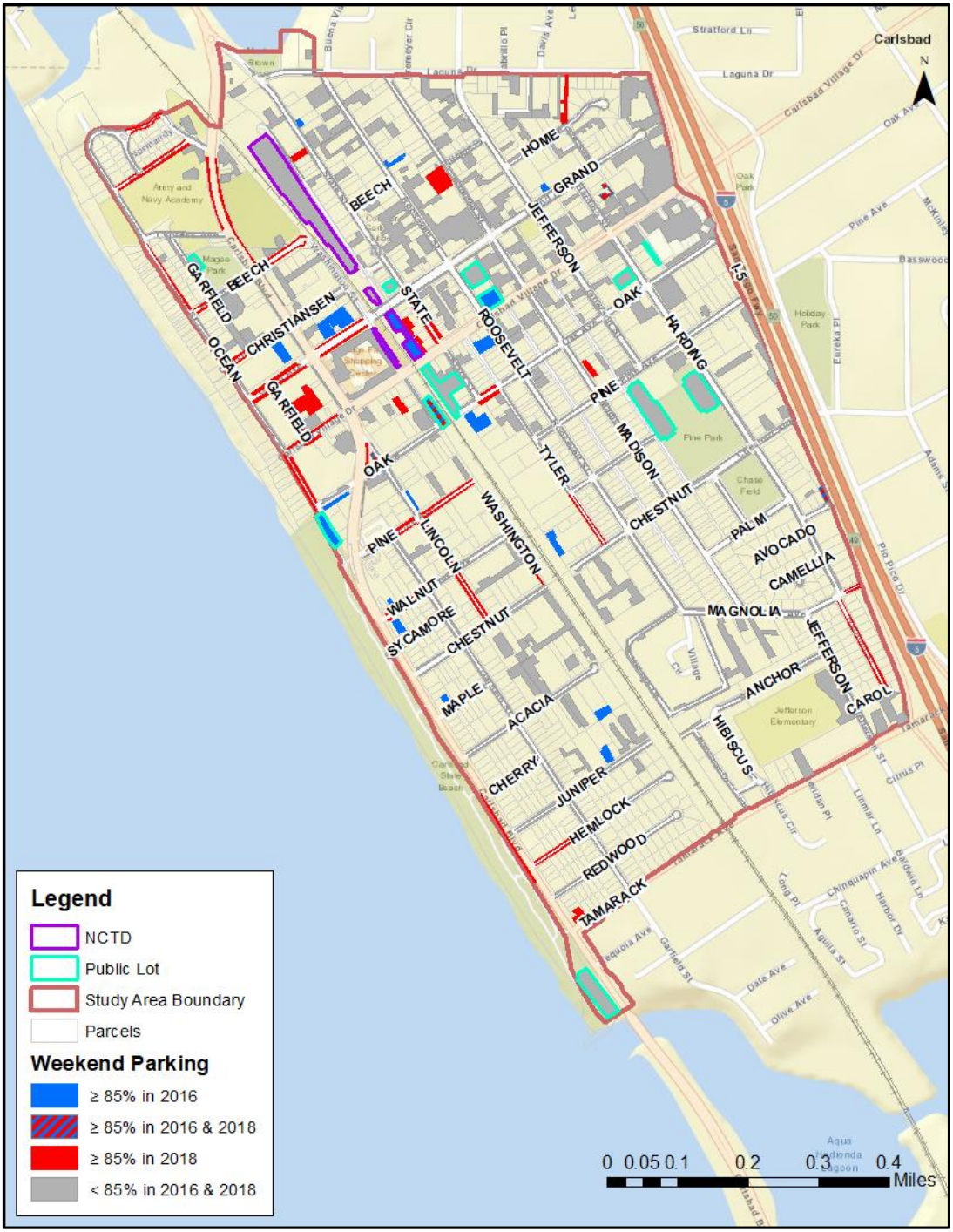


Figure 8: Weekend Parking Peak Facilities 85 Percent Occupancy or Greater (2016 – 6 PM – 9 PM, 2018 – 3 PM – 6 PM)



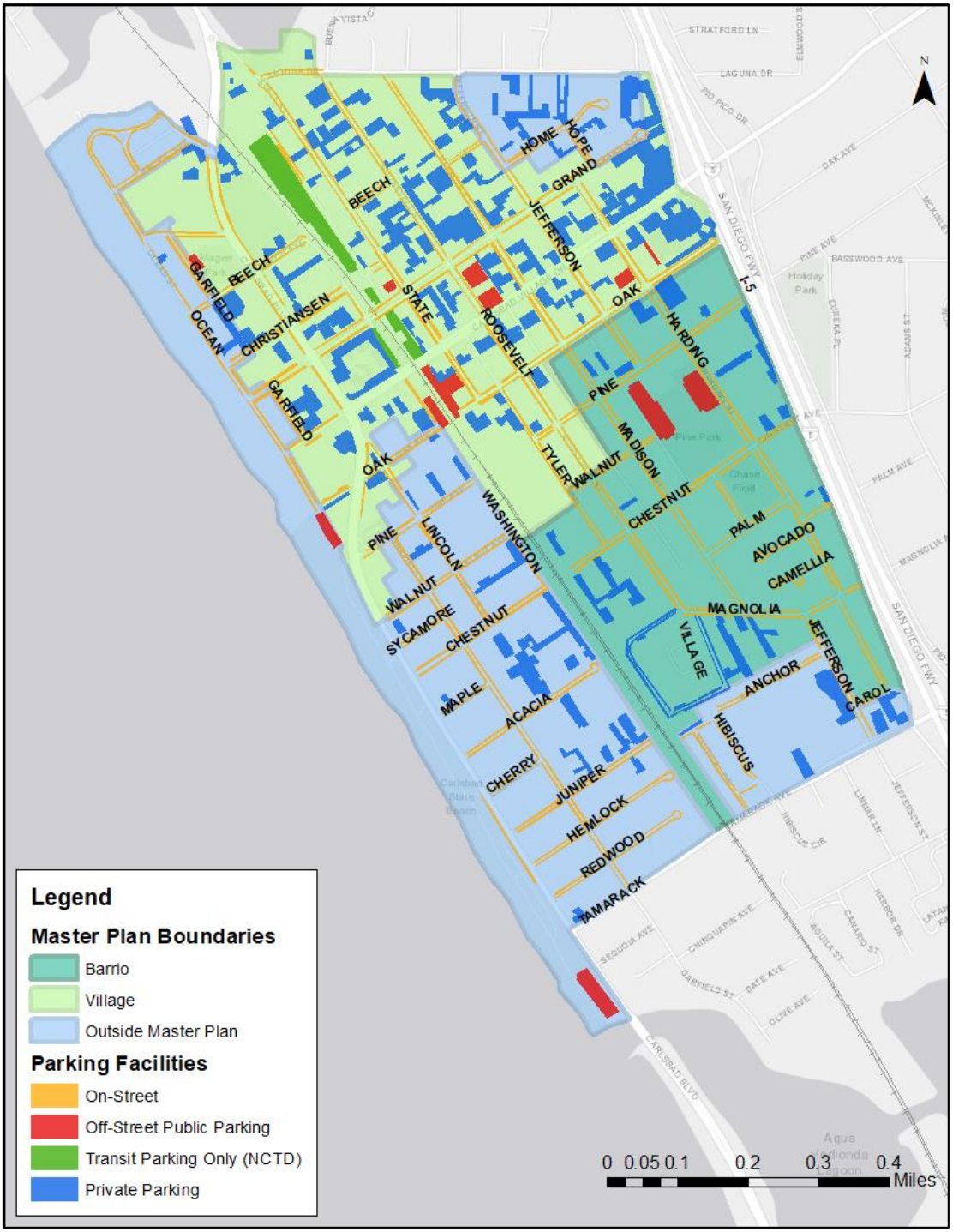
Sub-Area Analyses

The previous section reviewed the data analysis and findings for the study area as a whole in comparison to 2016 July data. However, the study area is comprised of four sub-areas that have differing characteristics and should be reviewed separately to highlight specific trends and challenges unique to each area.

- The Barrio area, as defined by the Village and Barrio Master Plan
- The Village area, also as defined by the Village and Barrio Master Plan
- "Outside Master Plan" areas, which encompass primarily the beach neighborhoods south and west of the master plan but also residential areas south of the Barrio around Jefferson Elementary School and east of the Village in the neighborhood bordered generally by Grand Avenue, Jefferson Street, and Laguna Drive
- Areas east and west of the railroad tracks, which include and sometimes separate the other sub-areas.

Figure 9 illustrates the boundaries of the Village and Barrio Master Plan and the Outside Master Plan sub-areas and ***Figure 10,*** on page 30, highlights the areas east and west of the railroad tracks. Separating the data in these sub-area boundaries allows the data to be analyzed in a way that focuses on facilities that have a higher impact on that specific area. This analysis can also be helpful for making parking management decisions as different strategies may have to be implemented differently or at different times in each sub-area, depending on what the data indicates.

Figure 9: Village and Barrio Master Plan Boundaries



Barrio Area

The Barrio area is located in the southeast portion of the study area, generally bounded by Interstate 5 to the east, the railroad corridor to the west, Oak Avenue to the north and Tamarack Avenue to the south. This area is mainly residential; however, there are a few local businesses along Roosevelt and Tyler Streets in its northwest end. The Pine Avenue Park, Community Center and Gardens are located within the center of this area. Parking within the Barrio contains mainly public on-street and private off-street, with the exception of two public off-street facilities at Pine Avenue Park. ***Table 4*** below, compares the August 2018 average parking occupancies throughout the day for each facility type within this area.

Table 4: August 2018 Parking Occupancies by Facility Type Master Plan Barrio Area

PARKING TYPE	DAY	6 AM – 9 AM	9 AM – 12 PM	12 PM – 3 PM	3 PM – 6 PM	6 PM – 9 PM	9 PM – 11 PM
On-Street	Weekday	40%	36%	35%	38%	44%	48%
	Weekend	43%	39%	40%	38%	43%	47%
Public Off-Street	Weekday	37%	47%	47%	8%	15%	5%
	Weekend	6%	35%	35%	36%	3%	3%
Private Off-Street	Weekday	30%	25%	25%	32%	46%	44%
	Weekend	42%	24%	24%	31%	38%	38%

The results in ***Table 4*** show occupancies for on-street facilities within the Barrio at or over 35 percent throughout both the weekday and weekend days surveyed and reaching 48 percent during the weekday peak hour (9 PM – 11 PM). Occupancies for on-street facilities within the Barrio area were consistently underutilized for all time periods across weekday and weekend days.

Given that there is high concentration of residential properties in this area, on-street facilities generally reflect increased demand during hours after and before work hours, which is shown during the 6 AM – 9 AM and 9 PM – 11 PM counts. As for private off-street facilities within this area, the data shows an increase in parking demand during the weekday to 46% at 6 PM – 9 PM after typical work hours are over.

Village Area

The Village area is located north of the Barrio area predominately between Interstate 5 to the east, the Pacific Ocean to the west, Laguna Drive to the north and Oak Avenue and Walnut Avenue to the south. However, there are a couple "pockets" within these boundaries that will

be analyzed in the next section. Refer to ***Figure 9*** for the Village area boundary. This area consists of various land uses, such as apartments, general retail, offices, restaurants, and single-family homes. ***Table 5*** below, compares the August 2018 average parking occupancies throughout the day for each facility type within this area.

Table 5: August 2018 Parking Occupancies by Facility Type Master Plan Village Area

PARKING TYPE	DAY	6 AM – 9 AM	9 AM – 12 PM	12 PM – 3 PM	3 PM – 6 PM	6 PM – 9 PM
On-Street	Weekday	24%	54%	62%	55%	54%
	Weekend	21%	53%	58%	54%	58%
Public Off-Street	Weekday	23%	81%	81%	79%	65%
	Weekend	18%	76%	76%	69%	70%
Private Off-Street	Weekday	21%	48%	48%	48%	40%
	Weekend	23%	34%	34%	33%	28%
NCTD Transit Lots	Weekday	45%	79%	79%	76%	49%
	Weekend	22%	38%	38%	49%	47%

Table 5 occupancy results shows the Village Area experiencing higher demand for both on-street and off-street facilities than the Barrio Area. On-street parking occupancies reach a peak of 62% on weekdays at 12 PM – 3 PM. Occupancies are the highest in public off-street facilities, with occupancies exceeding 80% on weekdays between 9 AM – 3 PM. Weekend occupancies in public off-street facilities are 76% during those time frames. Although public off-street facilities have relatively high occupancies, they still fall below the 85 percent effective capacity threshold.

Outside Master Plan Areas

Areas "outside" the master plan consists of predominately beach neighborhoods, with a couple residential areas north of the Village and south of the Barrio areas. The beach portion of this area is primarily bounded by the Pacific Ocean to the west, the railroad corridor to the east, Ocean Street to the north, and Tamarack Avenue to the south. Uses here include a mix of residences, some businesses, and Army and Navy Academy facilities. The residential area north of the Village is generally east of Jefferson Street and north of Grand Avenue. The area south of the Barrio borders Tamarack Avenue and is centered around Jefferson Elementary School. Please refer to ***Figure 9*** for more detailed boundary information.

Table 6 below compares the August 2018 average parking occupancies throughout the day for each facility type within this area.

Table 6: August 2018 Weekday and Weekend Parking Occupancies by Facility Type

Outside Master Plan Areas (Predominately Beach Area)

PARKING TYPE	DAY	6 AM – 9 AM	9 AM – 12 PM	12 PM – 3 PM	3 PM – 6 PM	6 PM – 9 PM
On-Street	Weekday	42%	38%	53%	53%	55%
	Weekend	44%	53%	58%	65%	63%
Public Off-Street	Weekday	19%	44%	44%	79%	65%
	Weekend	61%	74%	74%	67%	9%
Private Off-Street	Weekday	49%	29%	29%	31%	44%
	Weekend	32%	34%	34%	31%	32%

Table 6 illustrates a similar trend in this area as in the Village Area, where parking occupancies in the public off-street facilities are greater than occupancies in on-street or private off-street facilities. On-street parking occupancies are consistent from 12 PM to 9 PM on weekdays and reach a peak of 65% on weekends at 3 PM to 6 PM. Occupancies are the highest in public off-street facilities, with occupancies of 74% on weekends between 9 AM – 3 PM. Although public off-street facilities have higher occupancies in relation to other facilities during the peak, they still fall below the 85 percent effective capacity threshold.

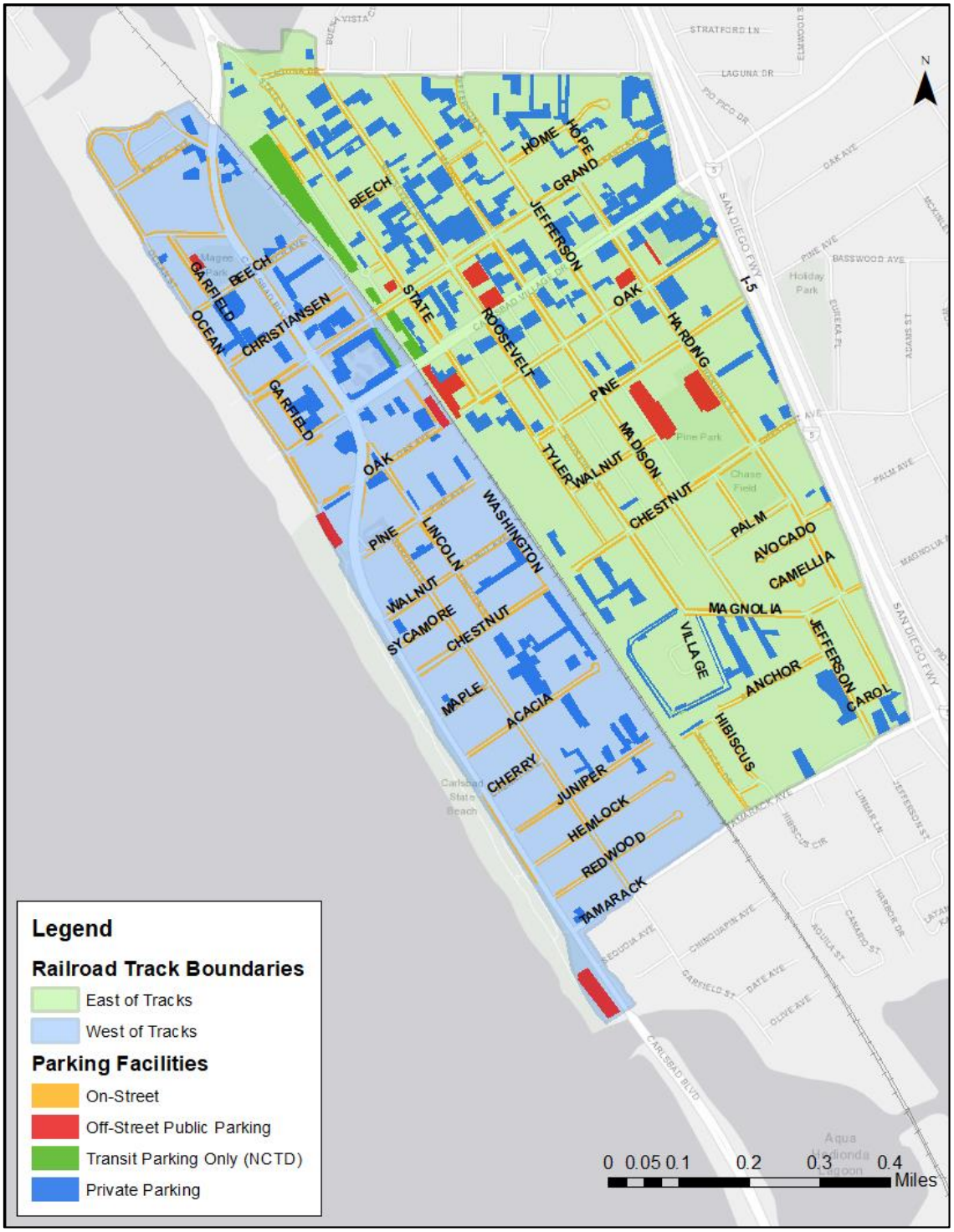
On-street facilities experienced demand as high as 53 percent for the peak weekday period (12 PM – 3 PM) and 65 percent for the peak weekend periods (3 PM – 6 PM). Evening occupancies across weekdays and weekends for all parking types were below effective capacity. Given the

results from the 2018 data, some of the on-street and off-street facilities during the weekday peak (12 PM – 3 PM) and weekend end peak (3PM – 6 PM) were overutilized as seen on ***Figures 3, 4, 7 and 8***. Otherwise, the parking system as a whole in this area has plenty of availability as evidenced by the ***Table 6*** data.

Areas East and West of the Railroad Tracks

The railroad tracks analysis consists of comparing occupancy data for both on and off-street parking facilities east and west of the railroad tracks. East of the tracks consists of Village and Barrio areas, while west of the tracks is predominately beach and a portion of the Village neighborhood. A map of the boundary area used in the comparison analysis is shown in ***Figure 10***.

Figure 10: Areas East and West of the Railroad Tracks



East of the tracks analysis

In ***Table 7*** below, average occupancies east of the tracks, with some exceptions, generally increased for each facility type until 12 PM – 3 PM, and then leveled off or decreased. In general, the peak for all facilities was the 9 AM – 3 PM timeframe. The NCTD Transit Lots experienced the highest peak parking demand of all the facilities, at 80% occupied during the 9 AM – 3 PM weekday timeframe. Transit lots and on-street parking were the only facilities to experience upswings in occupancy after 3 PM, with both parking types realizing slight to moderate increases only on weekends.

Table 7: August 2018 Parking Occupancies by Facility Type East of the Tracks

PARKING TYPE	DAY	6 AM – 9 AM	9 AM – 12 PM	12 PM – 3 PM	3 PM – 6 PM	6 PM – 9 PM	9 PM – 11 PM (BARRIO ONLY)
On-Street	Weekday	31%	44%	46%	44%	45%	23%
	Weekend	31%	43%	43%	39%	45%	25%
Public Off-Street	Weekday	30%	69%	69%	43%	42%	2%
	Weekend	9%	57%	57%	54%	43%	1%
Private Off-Street	Weekday	28%	43%	43%	41%	36%	10%
	Weekend	27%	28%	28%	26%	27%	7%
NCTD Transit Lots	Weekday	47%	80%	80%	76%	46%	n/a
	Weekend	22%	36%	36%	47%	46%	n/a

The area's variety of land uses, such as restaurants, offices, apartments, single-family homes, and a transit station, as well as special events and spillover beach traffic, play a factor in the variety of occupancies noticed throughout the day in the Village and Barrio areas east of the railroad tracks. Private off-street parking occupancies, for example, are likely lower on weekends when businesses within the area are closed (approximately 27% of nonresidential land uses within the study area east of the railroad tracks are classified as office, government office, or medical office; compared to approximately 49% retail and restaurant nonresidential land uses). Conversely, consistent on-street parking demand probably reflects ongoing demand for the area's varied uses. Nevertheless, the parking facilities east of the railroad tracks were underutilized for both weekdays and weekends, with peak occupancies below the 85 percent effective capacity threshold.

West of the tracks analysis

Table 8 compares average occupancy trends by facility type for both August 2018 weekday and weekend data.

Table 8: August 2018 Parking Occupancies by Facility Type West of the Tracks

PARKING TYPE	DAY	6 AM – 9 AM	9 AM – 12 PM	12 PM – 3 PM	3 PM – 6 PM	6 PM – 9 PM
On-Street	Weekday	42%	44%	63%	63%	64%
	Weekend	41%	60%	70%	78%	74%
Public Off-Street	Weekday	19%	48%	48%	89%	68%
	Weekend	59%	77%	77%	69%	18%
Private Off-Street	Weekday	32%	36%	36%	43%	53%
	Weekend	28%	41%	41%	42%	35%

In ***Table 8***, public parking, whether on-street or public off-street, experienced the highest parking demands of all facilities west of the railroad. Public off-street parking saw peak occupancies spike over the 85 percent threshold during the 3 PM – 6 PM timeframe on the weekday, while weekend occupancies for public off-street facilities were consistent from 9 AM – 6 PM. On-street parking facilities saw parking occupancies at 60% and above during the weekday and weekend from 12 PM – 9 PM.

Similar to the "Outside Master Plan" analysis, the area West of the Tracks is along or within one to three blocks of the beach, which is why this area experienced high public on-street and off-street parking demands. Surrounding public and private off-street facilities have the availability to accommodate the area demands and still provide a comfortable walking distance to the beach areas.

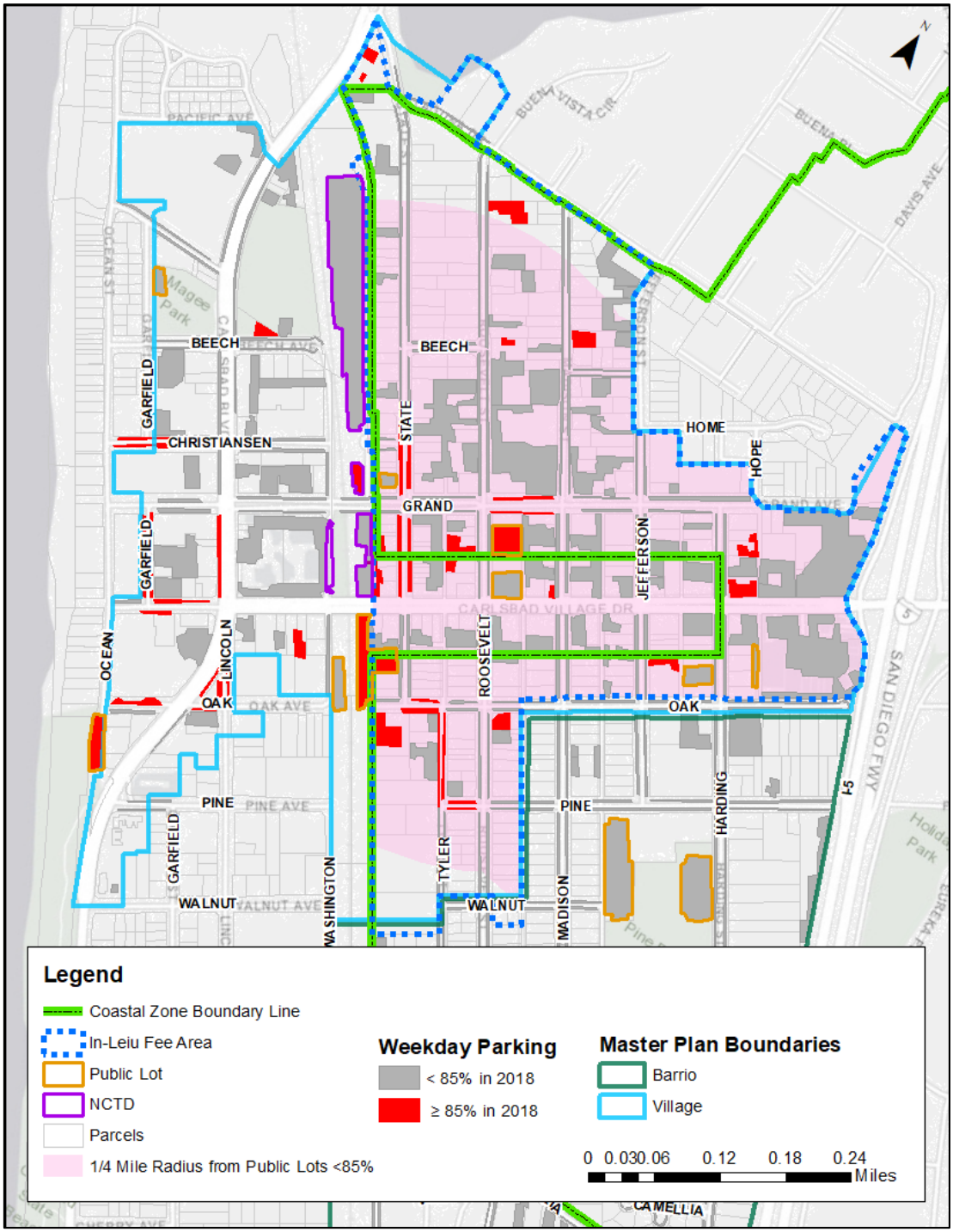
In-Lieu Fee Program Areas

The Village and Barrio Master Plan's Parking In-Lieu Fee Program allows developers to pay for the construction or maintenance of parking spaces that are not provided on-site via a fee in lieu of construction. Fees collected can be used for shared or leased parking or potentially other mobility improvements that reduce parking demand. Outside the Coastal Zone, non-residential uses eligible to participate in the program may satisfy up to 100 percent of their parking requirement through payment of a fee. Participation is subject to requirements and findings, including a provision where the uses must be within a defined area of the master plan and must be within a quarter mile (outside the Coastal Zone) of an off-street public parking lot with an

occupancy under 85 percent. ***Figures 11*** and ***12*** provide information to help determine eligibility and show that most parcels in the in-lieu fee area are within a quarter-mile of a public lot with peak utilization under 85% with the exception of several parcels on the north edge of the in-lieu fee area along Laguna Drive and State Street. Note that the "public lots" identified in the figures are the only lots on which program participation based on occupancy is determined and from which the required quarter mile radius is measured.

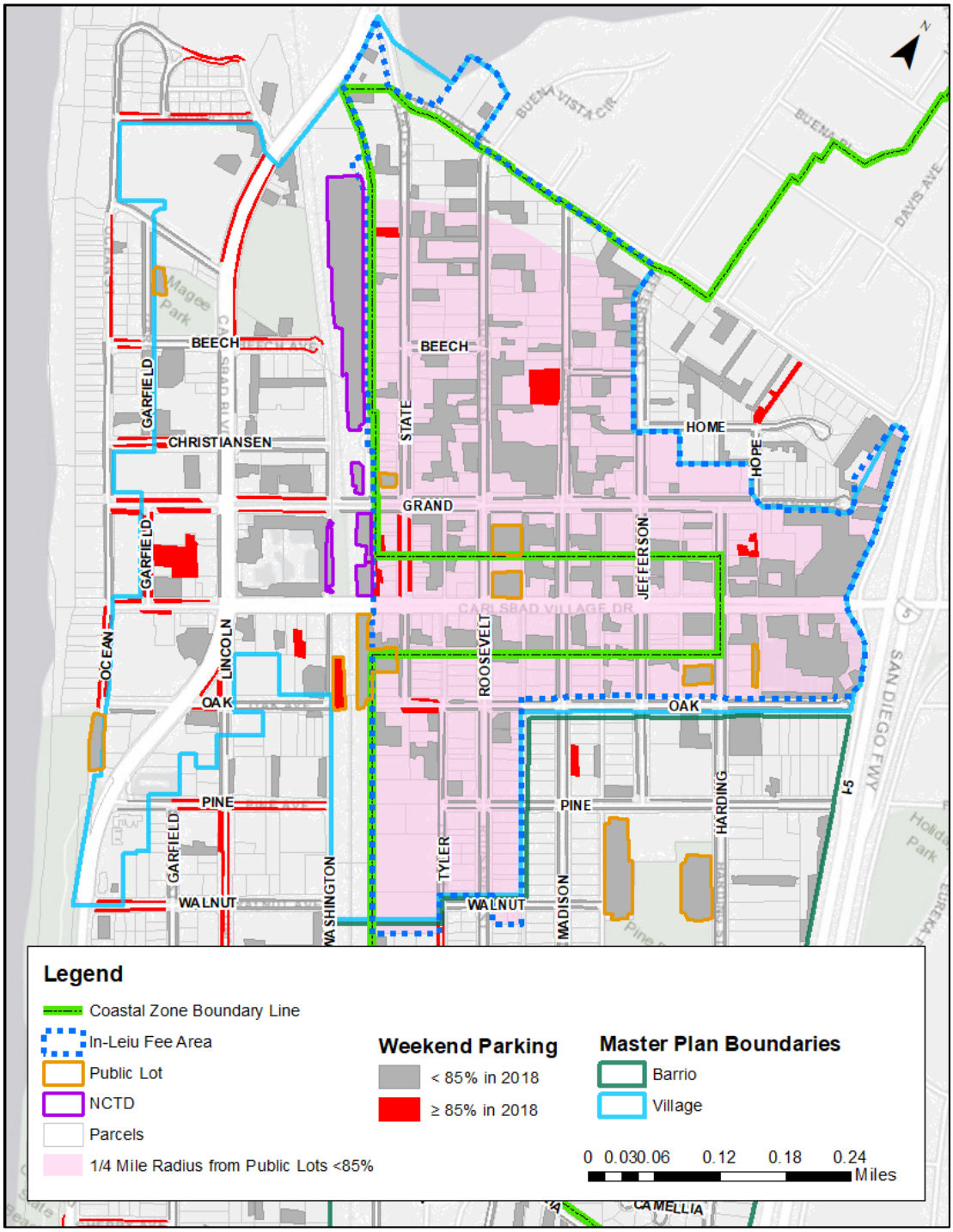
Complete information on the Parking In-Lieu Fee Program may be found in Section 2.6.6 and Table 2-4 of the Village and Barrio Master Plan. Further, eligibility to participate in the Parking In-Lieu Fee Program, as well as the different program requirements that apply in the Coastal Zone, shall be verified with the city's Planning Division. The Coastal Zone boundary is shown on ***Figures 11*** and ***12***.

Figure 11: Parking In-Lieu Fee Program Information – August 2018 Weekday Parking



Note: Eligibility to participate in the Parking In-Lieu Fee Program shall be verified with the city's Planning Division.

Figure 12: Parking In-Lieu Fee Program Information - August 2018 Weekend Parking



Note: Eligibility to participate in the Parking In-Lieu Fee Program shall be verified with the city's Planning Division.

Average Parking Duration Comparison

Along with the occupancy data, the LPR technology also measures how long vehicles are parked in the study area. This data, known as *duration*, was analyzed for the on-street parking facilities. A duration of 2 hours or less is considered *short-term* parking. Comparing the July 2016 data to the August 2018 data, the average duration for the study area shows 65 percent of users parking for 2 hours or less, an increase of 2 percent from 2016. In the Barrio only, in 2016, 15 percent of motorists parked for more than 10 hours. In 2018, 27 percent of patrons parked for more than 10 hours in the Barrio, an increase of 12 percent in long-term parkers.

The length-of-stay data for both July 2016 and August 2018 study areas for on-street facilities and by neighborhood is shown in ***Figures 11, 12, and 13.***

Figure 11: Comparison by Year of Average Duration for On-Street Facilities

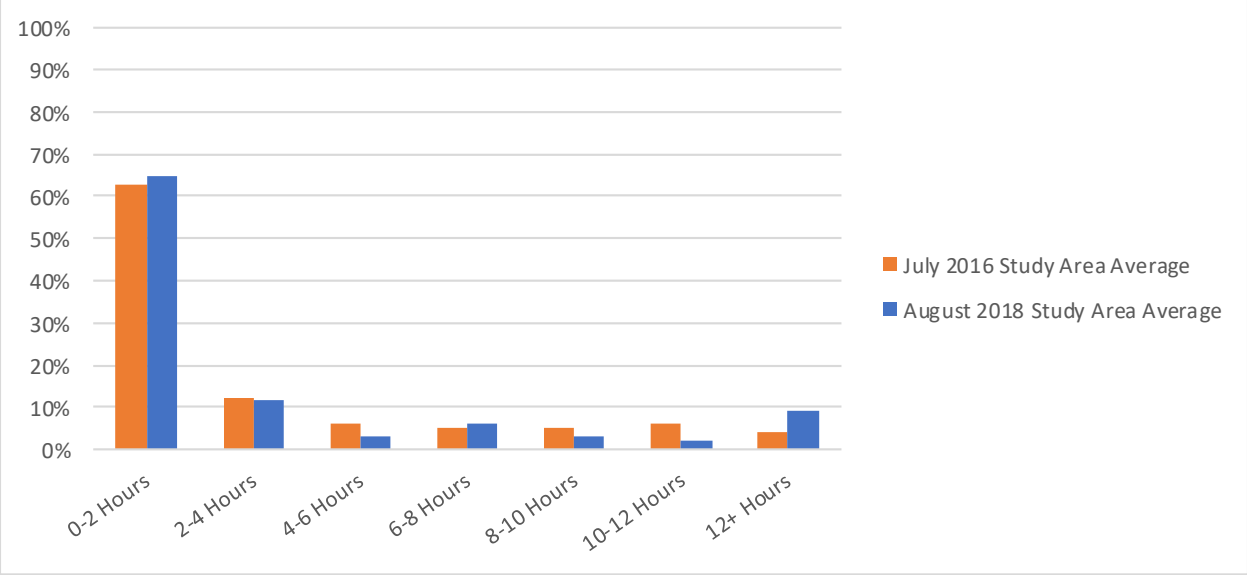


Figure 12: July 2016 Average Duration for On-Street Facilities by Area

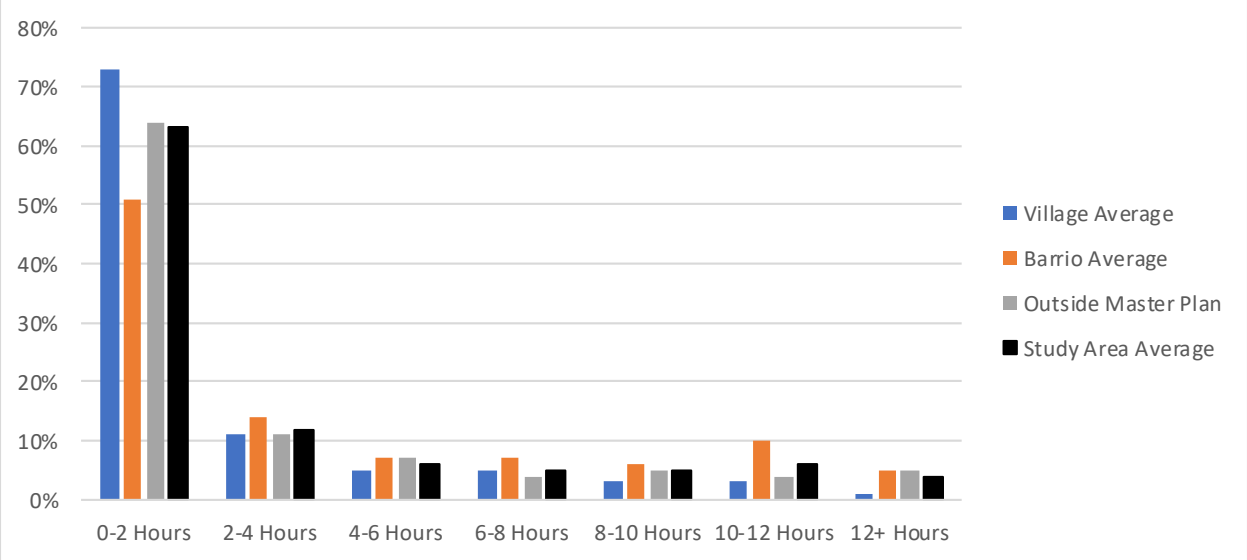
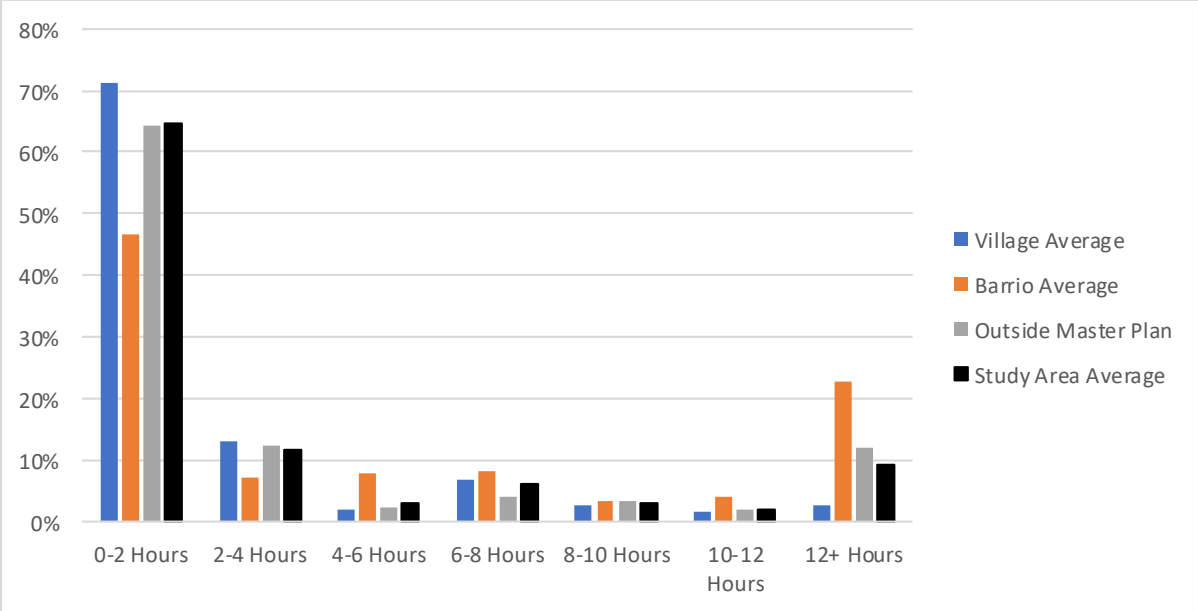


Figure 13: August 2018 Average Duration for On-Street Facilities by Area



Conclusions

The August 2018 results show the peak to be during the weekday at 12 PM – 3 PM with an observed occupancy of 49 percent; a 4 percent decrease from the July 2016 weekday peak (53 percent at 6 PM – 9 PM). The weekend data also shows a decrease of 10 percent with a peak occupancy of 44 percent, compared to 54 percent in July 2016.

The duration analysis indicates that in 2018 there was an increase in long-term on-street parkers in the Barrio area, as indicated on page 35.

After comparing the August 2018 weekday peak (12 PM – 3PM) data to July 2016 weekday peak (6 PM – 9 PM) data for on-street and off-street facilities with occupancies between 75 and 84 percent, the 2018 data experienced an increase of 6 percent. The 2018 data experienced 1,084 spaces of the total 11,462 spaces with occupancies between 75 and 84 percent for a total of 9 percent of the total spaces. During the August 2018 weekend peak (3 PM – 6 PM), there were 23 facilities that experienced occupancies between 75 and 84 percent resulting in 8 percent of the total spaces for a decrease of 1 percent compared to 2016 weekend peak (6 PM – 9 PM) data. Even though these facilities have not reached the 85 percent threshold, they should be monitored for additional increases in demand.

The August 2018 peak data for both weekday (12 PM – 3 PM) and weekend (3 PM – 6 PM) were analyzed and compared to the July 2016 weekday and weekend peak data (6 PM – 9 PM) for occupancies greater than 85 percent. The 2018 weekday data resulted in 37 facilities (10 percent of total spaces) with occupancies over 85 percent for no increase compared to 2016 data (10 percent of total spaces). As for the weekend data, 2018 experienced 45 facilities over 85 percent, 1,142 spaces out of the 11,462 total spaces, which was a 1 percent increase compared to 2016 data (1,033 spaces of 11,657 total spaces). Despite these pockets of demand, there were no areas without available supply in close proximity and within a comfortable walking distance.

Along with the effective capacity threshold analysis, the sub-area analysis resulted in their own conclusions after separating the data differently. The “Outside Master Plan” areas experienced high on-street and off-street demands during both the weekday and weekend peak hours; as August is the peak season, this pattern could be explained by an influx of tourists. In the Village area, some facilities observed higher occupancies than others, some of which were approaching or exceeding the 85 percent threshold. Although, these higher occupancy, “more attractive” facilities may frustrate the search for available parking, the overall parking system within the Village area is underutilized.

Similar to the Village area, the East and West of the tracks analysis showed select public facilities experiencing higher demands; however, overall parking remains underutilized.

The comparison of the data collected for July 2016 and August 2018 may suggest a stable or decreasing demand for parking in the study area. This trend will be monitored during the 2019 off-season and/or the 2019 peak season. For the facilities that have reached or exceeded the 85 percent threshold, parking management strategies should be considered where appropriate. As discussed in the 2016 Carlsbad Parking Management Plan, management strategies to redistribute parking demands for a more balanced system may include curb lane management, parking time limits, shared parking, demand-based pricing, wayfinding or other strategies.