San Bruno Downtown Parking Study

Final Parking Management Plan

January 2019

Prepared for:
City of San Bruno

By

CDM Smith

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Executive Summary

Introduction

The downtown San Bruno Parking Management Plan was prepared as a part of the San Bruno Downtown Parking Study. The study included analyzing the existing parking supply and usage, projecting future parking demand, recommending parking management strategies, analyzing options for future new parking supply, and examining the potential costs and revenues of implementing the plan. The study area for the plan includes the portion of the City of San Bruno from San Mateo Avenue between Walnut Street to the north and El Camino Real and Taylor Avenue to the south, including two to three blocks to the east and west of this corridor. The results of each task tasks are summarized here and described in detail in the remaining chapters of this report.

Existing Conditions

The existing conditions analysis included an occupancy and duration survey of parked vehicles within the study area, to establish a baseline understanding of current parking conditions. Overall, this study finds that parking facilities near San Mateo Avenue are well used during the day on both weekdays and weekends, while the residential street blocks are more heavily used in the evenings and overnight, with total overnight parking occupancy close to capacity. In certain instances, individual blocks were observed to be exceeding the capacity of spaces on those blocks. A detailed analysis of occupancy and duration by time of day and location, along with the methodology for data collection, are described in Chapter 1 of this report.

Specifically, this report finds:

- On-street parking on San Mateo Avenue is heavily used during the weekday midday, but other areas are well below capacity at this time. On the weekend, midday parking occupancy is heavier and is sustained throughout the afternoon along both San Mateo Avenue and nearby side streets.
- Off-street parking supply experiences extended periods of occupancies above the 85 percent practical capacity level on both the weekdays and weekends.
- In the evening on both weekdays and weekends, including the overnight count, off-street parking in residential areas is near or over capacity, implying that there is very high demand for residential parking.
- Public off-street facilities are less well-used during the day, when primarily employees and short-term visitors are in the area. On the weekend, they are more well used by visitors who are staying for longer durations or are possibly less familiar with parking options in the area.
- Vehicles on San Mateo Avenue tend to stay for longer durations on weekends than on weekdays, with many vehicles exceeding the 2-hour time limits on the weekend.

Concern over parking issues in downtown San Bruno has intensified over recent years and outreach efforts have found that residents generally find the current conditions unacceptable. Population and job growth and housing costs have resulted in increased occupancy in the housing in surrounding neighborhoods, resulting in demand for parking that exceeds the existing supply. There is also anecdotal evidence that Caltrain commuters and San Francisco International Airport (SFO) travelers park in the neighborhood to avoid parking fees. Spillover parking by downtown employees may have some effects in adjacent neighborhoods during the busiest hours, but this was not found to be a major cause of high parking occupancy.

Parking Demand

While the current parking deficiency is primarily caused by an increase in the area population, future planned development in the area may exacerbate the issues by generating new demand for office and retail uses. A parking demand analysis was developed to project the future parking demand expected to be created by new development, so that the needs of these developments may be addressed by new parking facilities and improved parking management, in order to prevent additional neighborhood impacts. The future parking demand analysis involved developing a parking demand model calibrated to the existing conditions data, and then projecting future demand that may occur as the result of new development in the area. The City provided phased growth projections that were developed as part of the Transit Corridors Specific Plan for residential, office, and retail developments in the downtown area. The demand analysis found that up to 76 additional parking spaces may be needed to meet parking demand in 2030, an additional 109 spaces would need to be added in 2040 (for a total of 185 new parking spaces), and an additional 248 spaces may be needed by 2050, resulting in a total of 433 additional spaces required across all phases to meet projected demand. These projections are based on existing parking demand patterns and projected growth, and thus may be altered as conditions, planned development, and behavior change. The details of the analysis are described in Chapter 2 of this report.

Management Recommendations

A set of phased parking management recommendations were developed to manage the high afternoon and evening parking demand, help users find and use available parking, improve parking availability for residents, and potentially increase the parking supply. Specifically, this plan recommends that the city:

- Adjust enforcement hours to better manage the heavy-use evening period
- Adjust time restrictions, primarily to convert 5-hour spaces to 10-hour spaces for employee use
- Install improved signage to help drivers locate available parking
- Improve parking lot maintenance and security
- Explore temporary use of the Sylvan Avenue Caltrain Station as additional public parking

- Explore converting parallel parking on San Mateo Avenue to diagonal parking to increase capacity
- Install parking meters on San Mateo Avenue to encourage short-term parking and direct long-term parkers into lots
- Formalize overnight parking arrangements in public lots to increase supply available to residents
- Begin process of planning and securing funds for a parking garage

Garage Site Analysis

Potential downtown sites were analyzed on a preliminary basis for constructing a potential parking garage, which would increase the parking supply to meet the additional demand projected by the parking demand analysis. There are several potential sites, but none have been identified at this time because the timing and funding has not been determined. Site analysis will occur in the future as a follow up item.

Financial Analysis

Chapter 5 provides ballpark cost and revenue estimates for the parking management plan and a potential garage. The estimates in this chapter provide a professional opinion of likely costs based on experience with previous parking programs and information from parking equipment and service providers, to be used for planning purposes. Detailed cost estimates should be procured from potential contractors during an RFP process.

It is estimated that the parking management program would require approximately $230,000 in capital costs, including meters, enforcement technology, and signage. Labor costs, which include enforcement, administration, maintenance and collections could cost between $500,000 and $550,000 annually. Depending on the details of the technology selected, additional software and integration costs may be required.

Program revenue would primarily be collected from the 186 parking meters recommended for the short-term on-street spaces. Revenue would be collected 10 hours a day, between 8 AM and 6 PM, 5 days a week. Based on the recommended pricing and existing demand for these spaces, the expected daily revenue per space is $13.80 and the total annual revenue for all metered spaces is estimated to be $640,000. There may be additional revenue from a parking permit program, but this is likely to be a small proportion of total revenues.

There are many variables affecting the cost to construct a parking garage, resulting in a wide range of possible costs even within the Bay Area. Cost estimates for parking garages range from $25,000 per space to $52,000 per space, depending on land costs, site conditions, project complexity, and other factors. Based on the conditions at the potential garage sites, it is estimated that a garage in San Bruno may cost between $35,000 and $45,000 per space.

At $40,000 per space, a 450-space garage would cost $18 million. The City would need to find a way to finance such a large capital project. This could be done through meter revenue (though

this is likely to be insufficient), a parking assessment district, in-lieu parking fees, or public-private partnerships.

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Chapter 1

Existing Conditions

This chapter details the results of the existing conditions data analysis for the San Bruno Downtown Parking Study. The purpose of this data collection analysis is to establish a baseline understanding of current parking conditions, such as utilization and length of stay in the downtown area of the City of San Bruno using recently collected parking behavior data. This analysis will help identify current parking issues and overall demand patterns in the study area.

Study Area and Methodology

CDM Smith conducted a thorough parking inventory and occupancy data survey for the downtown study area in May 2017. This section describes the boundaries of the study area and the data collection and analysis methodologies. For purposes of this report, collected parking data is defined and presented in the following categories:

- **Parking Inventory** - provides a complete count of the parking facilities, both on- and off-street, available for use in the study area.
- **Parking Occupancy** - shows the parking utilization by location and space type throughout the day and is used to understand peak parking demand.
- **Parking Duration and Turnover** - shows how long parkers typically remain parked (duration) and the frequency of vehicles arriving at a space (turnover).

Each of these analyses includes a detailed discussion of parking observations and behavior. The following terms and definitions are used throughout this report:

- **Occupancy:** The number of cars parked in an area, facility, or blockface during one period of observation, usually expressed as the percentage of the total supply of spaces that is occupied by parked cars.
- **Peak:** The time period during which the highest level of occupancy in an area or facility is observed.
- **Practical Capacity:** 85 percent occupancy. This is the standard for measuring efficiently-used parking facilities and represents the highest occupancy level before it becomes difficult for a driver to find parking without having to circle or "cruise" around the surrounding areas and streets. This is usually defined as one open parking spot per typical on-street blockface.

Study Area

The downtown San Bruno study area is centered around San Mateo Avenue between Walnut Street to the north and El Camino Real and Taylor Avenue to the south and including 2 to 3 blocks to the east and west of this corridor. San Mateo Avenue is the core of the study area as it contains

the majority of the businesses within downtown San Bruno. The study area also includes the eight public off-street lots within these blocks, as well as the Caltrain lot and several lots serving private businesses, which serves as de facto additional parking supply within the downtown area. The study area is shown in **Figure 1** below.

Figure 1
San Bruno Parking Study Area

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Methodology

Parking inventory and occupancy/behavior data was collected on two days in May 2017 (Saturday, May 13th and Thursday, May 18th) to account for typical weekday and weekend behavior, with the exception of the three Artichoke Joe's lots east of Huntington Avenue. Occupancies in these lots were collected during a supplemental data collection effort organized by the City on a Thursday and Saturday in July, as they were not included in the original data collection.

Two types of data collection were conducted:

- *License plate survey*: This survey tracks individual vehicles by block by collecting the last four digits of each license plate number. This type of data collection was conducted only along San Mateo Avenue within the study area. License plate data can be used to estimate individual driver behavior for the parking duration and turnover analyses.
- *Occupancy collection*: This counts the number of vehicles in a given facility. Occupancy-only data collection allows for an analysis of utilized parking spots and was conducted on all streets and facilities besides San Mateo Avenue.

For both the license plate data and occupancy data collection, observations were made every two hours from 12 PM to 12 AM to capture the typical daily afternoon and evening behavior; parking was noted by the City to be more used during the midday and evening hours of the day rather than the more typical morning hours from 8 AM to 12 PM. An additional 3 AM occupancy-only count was conducted, excluding San Mateo Avenue, at 3 AM on Friday, May 19th (i.e. overnight after Thursday, May 18th). The 3 AM count is intended to be a snapshot of overnight parking usage, focusing on usage of parking by nearby residents. Overnight parking was determined not to be a problem in the commercial center, so San Mateo Avenue was excluded from the 3 AM count.

Parking Inventory

A total of 1,714 parking spaces were determined to be in the study area during data collection. This inventory includes 162 spaces along San Mateo Avenue, 612 spaces on other on-street blockfaces, and 940 spaces in off-street facilities.[1] The breakdown of spaces by type is presented in **Table 1**. The inventory and regulations by facility are also shown graphically in **Figure 2** for on-street spaces and **Figure 3** for off-street spaces.

Spaces on San Mateo Avenue between Huntington Avenue and El Camino Real have a 2-hour time limit, enforced from 8 AM to 6 PM weekdays and Saturdays, as do some of the cross streets intersecting San Mateo Avenue. Most of the remaining on-street spaces in the study area are unregulated; these spaces are in primarily residential neighborhoods and are generally intended to serve residents who live nearby. Unregulated spaces make up about 75 percent of all on-street

[1] On the residential streets within the study area, parking spaces are not delineated with pavement markings. In these areas, the number of spaces was estimated by measuring the curb space and assuming 20 feet of curb per parking space.

spaces in the study area. There are also 15 on-street loading and 20-minute spaces in the study area for users in need of very short-term parking.

Most spaces in the public off-street facilities in the study area have 5-hour time limits, though a few lots at the northern and southern ends of the study area have 2-hour limited spaces. Daily parking is available for a fee in the Caltrain lot. The private lots included in the survey are restricted to customers and employees of downtown businesses, including Artichoke Joe's Casino, Citibank, and Bank of America.

With the exception of the Caltrain lot, all of the on- and off-street parking in downtown San Bruno is free, and over a third of the total spaces in the study area are unregulated by the City.

Table 1: San Bruno Downtown Parking Inventory

Space Type	Study Area	
	Spaces	%
On-Street – San Mateo Avenue		
20 Minutes	3	2%
2 Hour	137	85%
Unregulated	15	9%
Loading	3	2%
ADA Accessible	3	2%
Total	**162**	**100%**
On-Street – Surrounding Blocks		
2 Hour	49	8%
Unregulated	554	91%
Loading	9	1%
Total	**612**	**100%**
Off-Street – Public Lots		
2 Hour	84	17%
5 Hour	299	60%
Caltrain – Daily Fee	94	19%
ADA Accessible	23	5%
Total	**500**	**100%**
Off-Street – Private Lots		
Customer and Employee	420	95%
ADA Accessible	20	5%
Total	**440**	**100%**
Overall		
Total	**1,714**	**-**

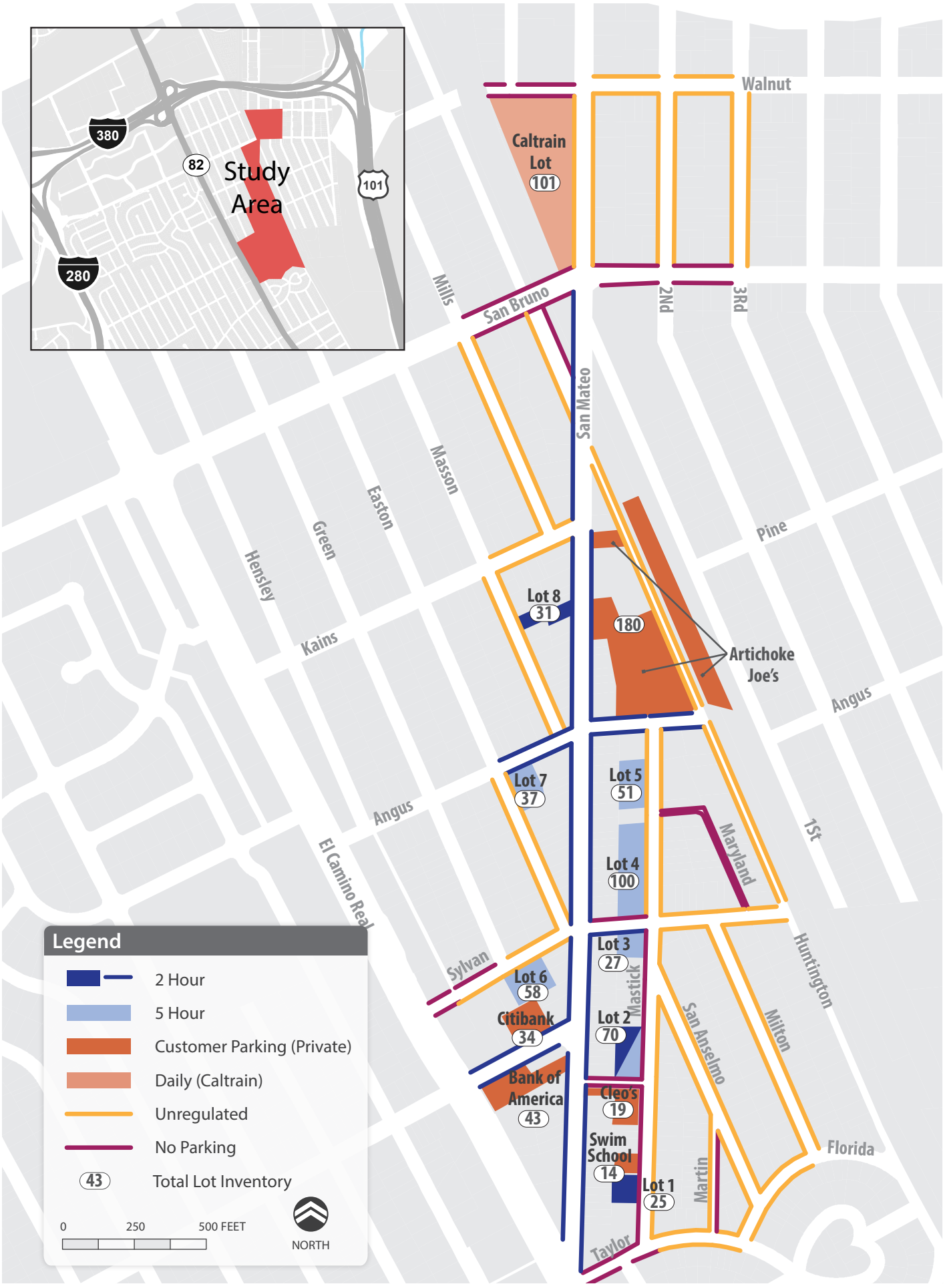

Figure 2
Parking Types by Facility

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Parking Occupancy

The occupancy analysis presented below examines the utilization of parking spaces in the study area by location, space type, and time of day. Data is presented in percent occupancy, or the percentage of spaces that are occupied by parked vehicles. A higher occupancy indicates that more vehicles are using the parking spaces in the facility, and thus less spaces are available to vehicles arriving at that time.

Periods of high occupancy are highlighted in the tables. Cells highlighted in light orange indicate when a parking facility meets or exceeds the 85 percent practical capacity level but remains below 95 percent, while cells shaded in dark orange indicate times when occupancy was observed to have reached a critical occupancy level of 95 percent or higher. Cells shaded in red indicates times when occupancy was observed to reach or exceed full capacity, or 100 percent occupancy.

Weekday Occupancy

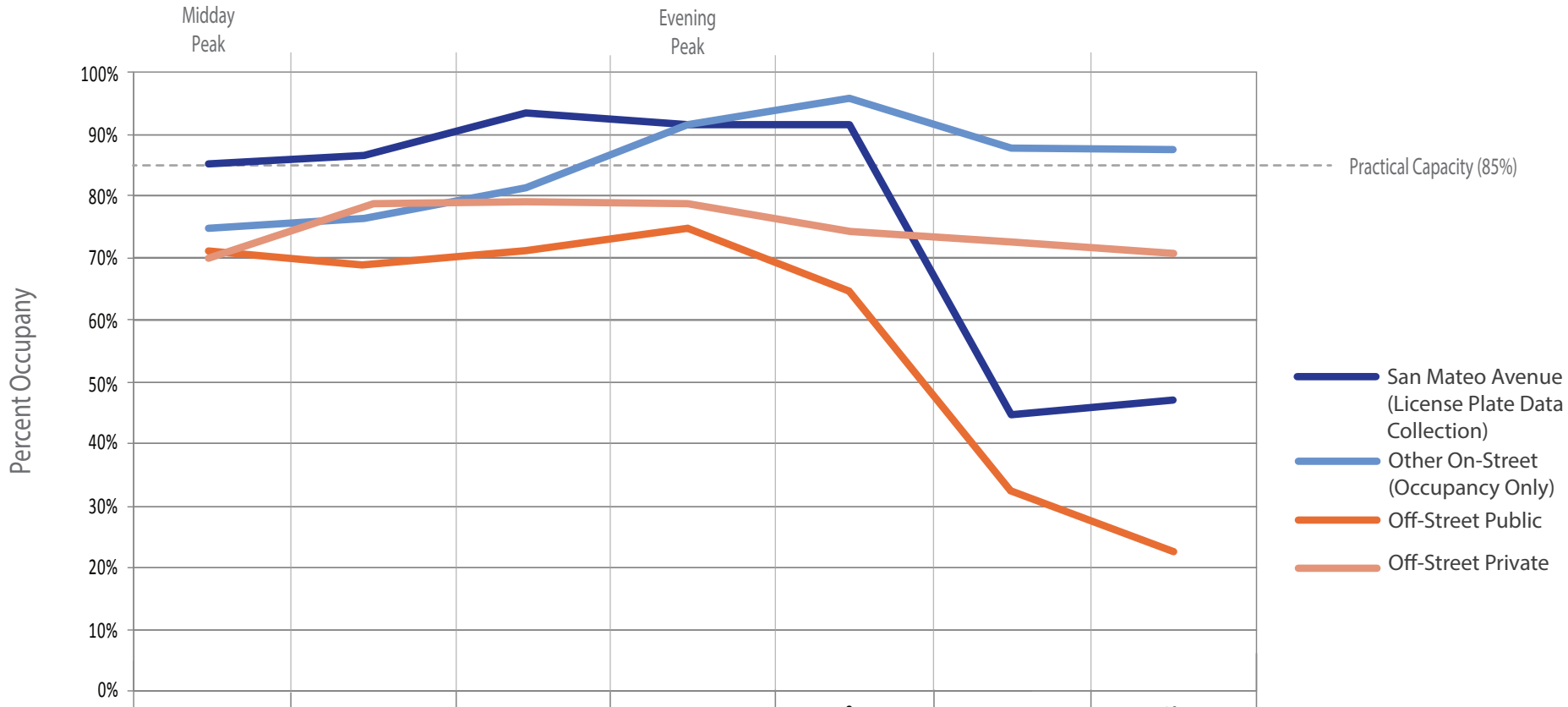
Weekday occupancy, collected on Thursday, May 18th, is shown in **Table 2** below, and graphically in **Figure 3** on the following page. Occupancy in the study area as a whole peaked at 6 PM with 83 percent of spaces occupied. On-street parking occupancy peaked later at 8 PM with 94 percent occupancy, well above the 85 percent practical capacity level, while off-street occupancy peaked earlier at 6 PM, with a lower occupancy of 76 percent.

Occupancy on San Mateo Avenue remained at or above 85 percent from 12 PM to 8 PM, while occupancy on other streets remained above this threshold starting at 6 PM and through the evening and overnight. Enforcement for the 2- and 5-hour time limits ends at 6 PM, and thus some increased occupancy as early as 4 PM may be due to the absence of time limits. San Mateo Avenue and public off-street occupancies drop sharply after 8 PM, but on-street occupancies outside of San Mateo Avenue remain high, because they are primarily residential. Off-street private parking remains high as well, primarily due to the large Artichoke Joe's lots serving customers who stay late in the night. Off-street facility utilization as a whole never exceeded 85 percent practical capacity.

Table 2: Overall Weekday Parking Occupancy

Space Type	Total Spaces	PM						AM	
		12	2	4	6	8	10	12	3
On-Street	774	76%	78%	84%	91%	94%	78%	79%	70%
San Mateo Avenue	*162*	*85%*	*86%*	*93%*	*91%*	*91%*	*44%*	*47%*	*N/A*[2]
Other Streets	*612*	*74%*	*76%*	*81%*	*91%*	*95%*	*87%*	*87%*	*89%*
Off-Street	940	71%	73%	74%	76%	70%	52%	51%	42%
Public	500	71%	69%	71%	75%	65%	33%	33%	23%
Private	440	70%	78%	78%	78%	75%	73%	71%	64%
Overall	1,714	73%	75%	79%	83%	81%	64%	63%	55%

[2] Overnight data collection was not conducted along San Mateo Avenue because overnight parking was not identified as an issue in the commercial center.



	12p	2p	4p	6p	8p	10p	12av
On-Street Spaces							
San Mateo Ave	85%	86%	93%	91%	91%	44%	47%
Other Blocks	74%	76%	81%	91%	95%	87%	87%
Overall	76%	78%	84%	91%	94%	78%	79%
Off-Street Spaces							
Public Lots	71%	69%	71%	75%	65%	33%	33%
Private Lots	70%	78%	78%	78%	75%	73%	71%
Overall	71%	73%	74%	76%	70%	52%	51%
All Spaces							
Overall	73%	75%	79%	83%	81%	64%	63%

Figure 3
Weekday Overall Occupancy

Weekday on-street occupancy is detailed by space type in **Table 3** below. Overall, on-street parking occupancy peaks in the evening at 8 PM. On San Mateo Avenue, the peak is earlier at 4 PM, but occupancy remains above the 85 percent practical capacity level throughout the afternoon until 8 PM. This indicates high demand for on street spaces in the commercial center during the dinner rush, which ends by 10 PM. The 2-hour spaces along side streets show a similar pattern, with a peak at 8 PM, with 90 percent of spaces occupied, and a steep drop to 33 percent by 10 PM. Overall, parking nears but does not exceed capacity during the late afternoon and evening, indicating that visitors looking for parking close to their destination may need to search for a while to find parking.

The unregulated spaces on San Mateo Avenue are above capacity at 12 PM and 2 PM due to vehicles parked in driveways and other no-parking zones. This included some vehicles parked in front of an auto repair shop which may have been stored in front of the driveway while the shop worked on other vehicles. "Other" parking space types includes loading, 20-minute, and ADA accessible parking within the San Mateo Avenue area.

On streets west and east of San Mateo Avenue, occupancies were generally higher in the evening, after 8 PM. In unregulated spaces, which are located on primarily residential streets, occupancy peaks at 95 percent at 8 PM, and stayed high for the rest of the evening, as well as during the overnight count. This indicates the use of these streets as parking supply for nearby residents, many of whom may be using their vehicles at work, school, and typical daily activities during the day and returning for the evening. The high occupancy indicates that there is high demand for residential parking, and residents returning later in the evening may have to search for parking far away from their residence or park illegally at red curbs or in driveways to stay close to their home.

Table 3: Weekday On-Street Occupancy

Space Type	Total Spaces	PM						AM	
		12	2	4	6	8	10	12	3
San Mateo Avenue									
2 Hour	137	85%	85%	96%	96%	96%	42%	45%	-
Unregulated	15	127%	127%	87%	80%	80%	73%	73%	-
Other	9	22%	44%	56%	44%	44%	33%	33%	-
Total	**162**	**85%**	**86%**	**93%**	**91%**	**91%**	**44%**	**47%**	**-**
Other On-Street Parking									
2 Hour	49	55%	57%	61%	78%	90%	33%	22%	12%
Unregulated	554	76%	78%	82%	91%	96%	92%	93%	97%
Loading	9	89%	67%	133%	122%	33%	89%	56%	0%
Total	612	74%	76%	81%	91%	95%	87%	87%	89%
Overall									
Total	774	76%	78%	84%	91%	94%	78%	79%	70%

Off-street occupancy is shown by space type and facility in **Table 4**. Overall, off-street parking in the study area reaches a peak occupancy of 77 percent at 6 PM. However, there are many different types of parking lots and regulations in the area, which each have different demand patterns. The public lots, which have 2-hour or 5-hour time limits, reach peak occupancy at 6 PM, while the private lots have higher occupancies earlier in the afternoon. The Caltrain lot likely fills in the morning when commuters arrive at the station, as it is close to full at 12 PM, and begins emptying by 4 PM.

Public Lots 1, 2, and 3, which all front on Mastick Avenue between Taylor Avenue and Sylvan Avenue, experience very high occupancies between 4 PM and 8 PM, with all three facilities reaching capacity at 6 PM for both types of spaces. Lots 5, 7, and 8, all near Angus Avenue, also reach high occupancies at 6 PM. The popularity of these lots at this time is likely from visitors and patrons going to downtown San Bruno for dinner and other evening activities and who may not need more than two hours of parking and are possibly more influenced by the locations of the lots than the time limits. Lot 8, at the north end of the study area, has a high occupancy at 12 AM but drops by 3 AM, indicating late night visitor usage, possibly spillover parking demand from the nearby Artichoke Joe's, which remains near 92 percent occupancy late into the night. Lot 7, on the other hand, increases from about half-full in the late evening to 86 percent occupancy at 3 AM, indicating overnight usage such as potential spillover from residents who arrived too late to find street parking.

Table 4: Weekday Off-Street Occupancy

Facility and Space Type	Total Spaces	PM						AM	
		12	2	4	6	8	10	12	3
2 Hour									
Public Lot 1	24	79%	71%	92%	100%	83%	25%	25%	25%
Public Lot 2	30	97%	93%	100%	100%	100%	30%	20%	30%
Public Lot 8	30	23%	40%	50%	87%	77%	73%	87%	20%
5 Hour									
Public Lot 2	38	97%	89%	97%	100%	89%	26%	16%	0%
Public Lot 3	25	72%	80%	96%	100%	100%	44%	52%	56%
Public Lot 4	96	50%	54%	56%	76%	70%	52%	51%	4%
Public Lot 5	49	76%	71%	69%	88%	57%	16%	22%	33%
Public Lot 6	56	61%	45%	43%	55%	66%	23%	21%	18%
Public Lot 7	35	77%	63%	49%	91%	94%	49%	40%	86%
Customer and Employee Parking									
Swim School Lot	11	100%	100%	109%	91%	91%	27%	18%	36%
Cleo's Lot	18	67%	44%	50%	89%	72%	33%	17%	11%
Artichoke Joe's	320	74%	86%	86%	89%	85%	93%	92%	81%
Citibank Lot	32	41%	28%	25%	16%	25%	3%	3%	3%
Bank of America Lot	39	74%	77%	79%	36%	33%	8%	3%	15%
Daily									
Caltrain Lot	94	95%	96%	93%	44%	26%	20%	21%	19%
Overall									
Off-Street	897	72%	75%	76%	77%	71%	53%	52%	43%

Peak Occupancy Maps

The maps in **Figure 4** and **Figure 5** show occupancy by block and off-street facility for the midday peak of 12 PM, and 8 PM when off-street occupancy peaks. At noon, although the spaces on San Mateo Avenue average 85 percent occupancy, only two blocks are above this level. The remaining blocks are likely close to 85% but still have enough open spaces for circling vehicles to find parking quickly. A few of the residential streets have high occupancies, while others have lower occupancies. There is not a clear location-based pattern of parking usage at this time, and the mix of blocks with high usage and low usage may mean that drivers arriving do not have a difficult time finding an open parking space.

At 8 PM, occupancies throughout the study area are higher. More blockfaces on San Mateo Avenue are above 85 percent occupancy, and many off-street spaces are over 95 percent occupancy. It would be much harder for an arriving driver to find an on-street parking space at this time, but there is open space in lots 4, 5, and 6. Occupancy appears to be higher on Kains Avenue at this time, indicating more activity in the central downtown area and less activity near the Caltrain Station.

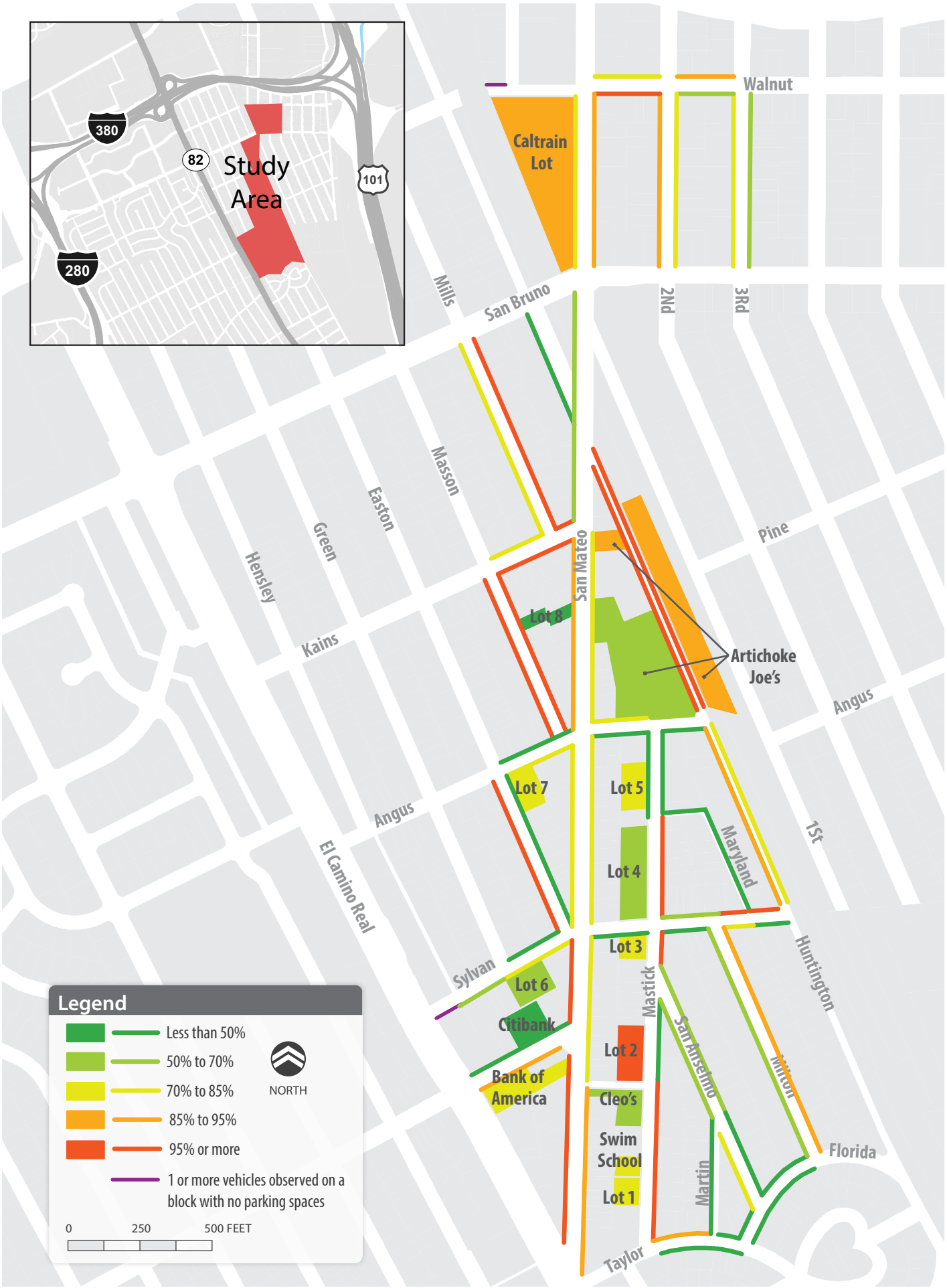


Figure 4
Weekday 12PM Parking Occupancy

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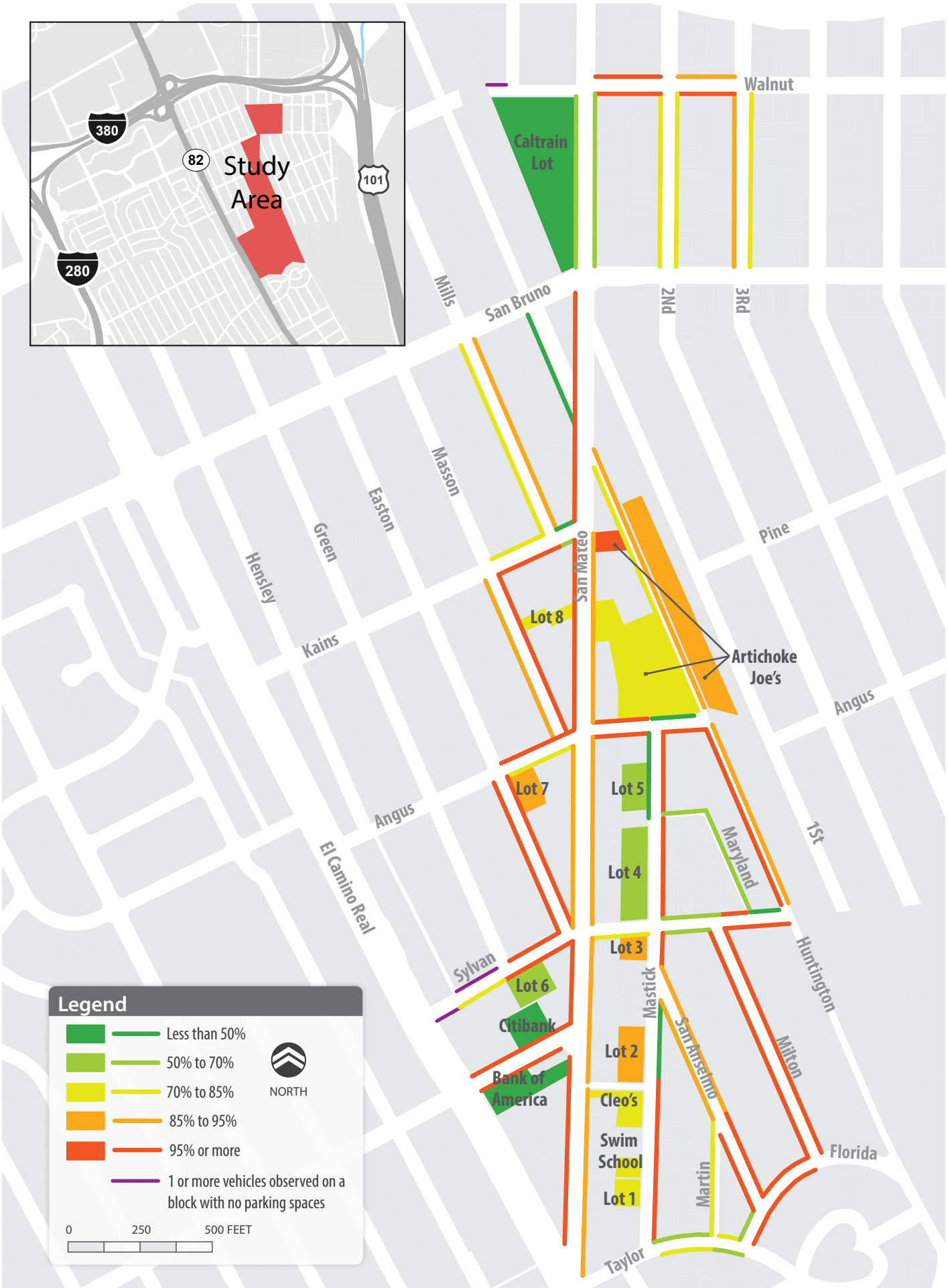


Figure 5
Weekday 8PM Parking Occupancy

Weekend Occupancy

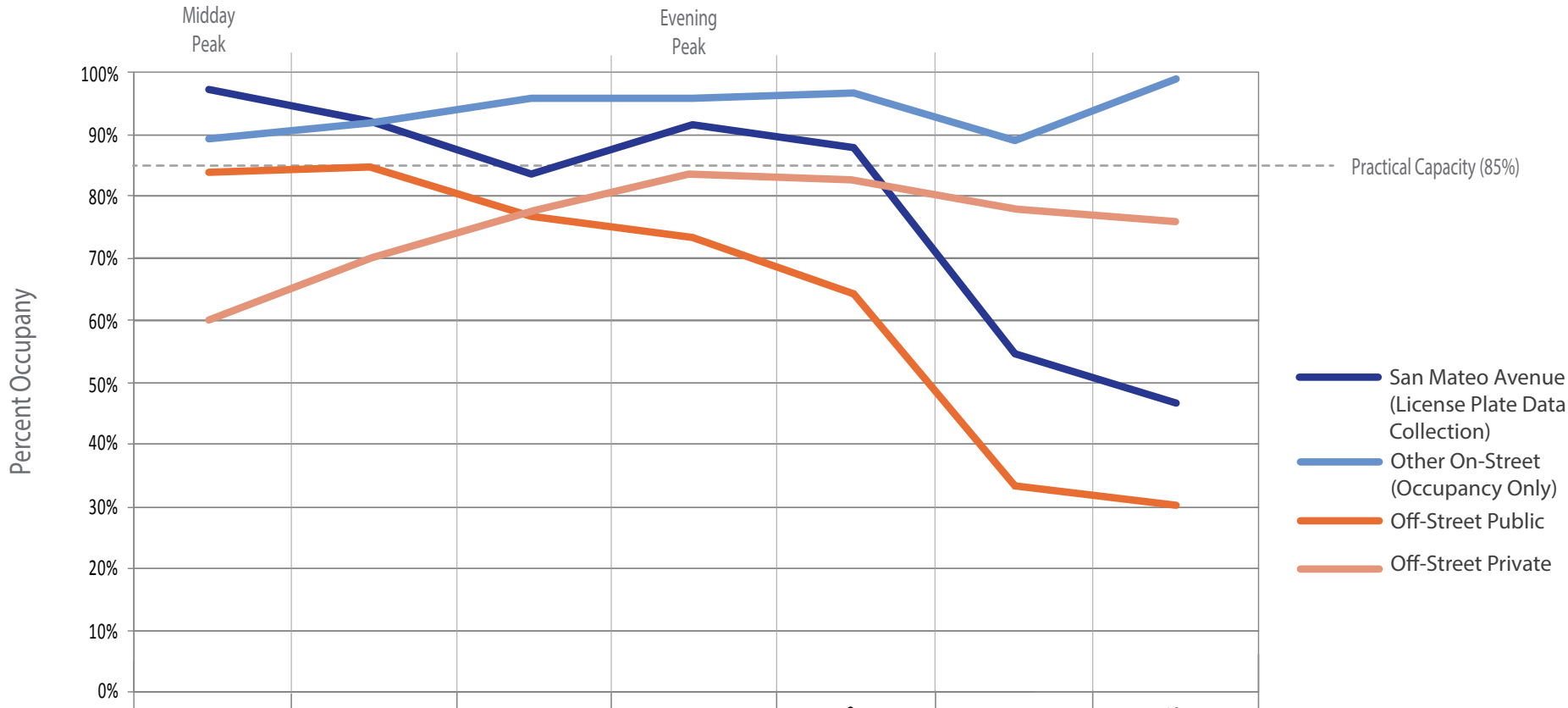
Weekend overall occupancies are summarized in **Table 5** and graphically in **Figure 6**. Within the observed time period, overall occupancies were highest at 6 PM with 86 percent occupancy, but occupancies remained above 80 percent from 12 PM through 8 PM, indicating that there is a high level of activity throughout the day, and that demand is consistently high throughout the midday and evening. On-street occupancies were higher than off-street occupancies throughout the observed time period, with occupancies on San Mateo Avenue and on other streets exceeding the 85 percent practical capacity threshold and approaching the overall capacity level for multiple hours.

Overall, on-street occupancies peak later in the evening, at 6 PM and 8 PM at around 95 percent occupancy, indicating heavy use for dinner, but have consistently high demand throughout the afternoon and evening, showing that there is activity and demand throughout the day. However, the peak for on-street spaces on San Mateo Avenue was at 12 PM, with occupancies close to capacity, indicating that the central area is more popular for lunch or other midday visitors. The peak for other on-street areas was at midnight with 99 percent occupancy, indicative of the residential nature of the streets off and around San Mateo Avenue. Observations of overparking along certain blocks also show the high amount of parking demand for these residential areas during overnight hours.

Off-street occupancies peak at 6 PM with 78 percent occupancy, however occupancy was near this level from 2 PM to 8 PM. These occupancies are slightly higher throughout the day compared to weekday occupancies but remain below the practical capacity level. Public and private facilities have different peak times, with public lots near 85 percent occupancy from 12 PM to 2 PM, and private facilities (primarily driven by the large Artichoke Joe's lots) peaking at 8 PM with 83 percent occupancy. Like the on-street parking, the sustained level of demand, at or above 70 percent occupancy throughout the afternoon, shows consistently high off-street demand on the weekend.

Table 5: Weekend Overall Occupancy

Space Type	Total Spaces	PM						AM
		12	2	4	6	8	10	12
On-Street	774	91%	92%	93%	95%	94%	82%	88%
San Mateo Avenue	*162*	*97%*	*92%*	*83%*	*91%*	*88%*	*55%*	*47%*
Other Streets	*612*	*89%*	*92%*	*95%*	*95%*	*96%*	*89%*	*99%*
Off-Street	940	73%	78%	77%	78%	73%	54%	52%
Public	*500*	*84%*	*85%*	*77%*	*73%*	*64%*	*34%*	*31%*
Private	440	60%	70%	77%	84%	83%	78%	76%
Overall	1,714	81%	84%	84%	86%	83%	67%	68%



	12p	2p	4p	6p	8p	10p	12av
On-Street Spaces							
San Mateo Ave	97%	92%	83%	91%	88%	55%	47%
Other Blocks	89%	92%	95%	95%	95%	89%	99%
Overall	91%	92%	93%	95%	94%	82%	88%
Off-Street Spaces							
Public Lots	84%	85%	77%	73%	64%	34%	31%
Private Lots	60%	70%	77%	84%	83%	78%	76%
Overall	73%	78%	77%	78%	73%	54%	52%
All Spaces							
Overall	81%	84%	84%	86%	83%	67%	68%

Figure 6
Weekend Overall Occupancy

Table 6 shows the on-street occupancy by space type for weekend parking conditions. San Mateo Avenue spaces peak at 12 PM, with both 2-hour and unregulated spaces close to 100 percent occupancy. This may indicate that on-street spaces are most heavily used at lunchtime on the weekends. The 2-hour spaces on San Mateo Avenue peak again with 100 percent occupancy at 6 PM, serving dinner and evening visitors.

In other areas of downtown San Bruno, on-street parking peaks between 4 PM and 8 PM, also likely due to dinner visitors. Occupancy in 2-hour parking spaces, which are located on side streets that intersect with San Mateo Avenue, peaks at 8 PM with 90 percent of spaces occupied. In general, these 2-hour spaces are less well used than the unregulated spaces or the 2-hour spaces on San Mateo Avenue, which may indicate a higher demand for short-term parking close to destinations or for long-term parking. Unregulated spaces, primarily in residential areas, are consistently above the 85 percent practical capacity level for the entire observation period, with a peak of 99 percent occupancy at 4 PM and a large peak at 12 AM (midnight) with 105 percent occupancy, indicating extensive demand and overoccupancy of the residential areas. Occupancy in the unregulated spaces is also above 85 percent occupancy for the entire afternoon and evening. Because many of these spaces are in residential areas, this high demand is at least partially due to more residents remaining at home on the weekend and lowering available spaces, but also could include visitors who wish to park outside of the 2-hour time limited spaces.

Table 6: Weekend On-Street Occupancy

Space Type	Total Spaces	PM						AM
		12	2	4	6	8	10	12
San Mateo Avenue								
2 Hour	137	99%	94%	89%	100%	93%	56%	45%
Unregulated	15	100%	93%	53%	47%	73%	67%	73%
Other	9	78%	67%	56%	44%	33%	22%	33%
Total	**162**	**97%**	**92%**	**83%**	**91%**	**88%**	**55%**	**47%**
Other On-Street Parking								
2 Hour	49	71%	76%	55%	86%	90%	27%	10%
Unregulated	554	92%	94%	99%	97%	97%	95%	105%
Loading	9	22%	56%	89%	78%	111%	67%	189%
Total	**612**	**89%**	**92%**	**95%**	**95%**	**96%**	**89%**	**99%**
Overall								
Total	**774**	**91%**	**92%**	**93%**	**95%**	**94%**	**82%**	**88%**

Weekend off-street occupancies are detailed by space type and facility in **Table 7**. The public off-street facilities are more heavily used on the weekend than on the weekday, with almost all facilities reaching full capacity at some point during the day. Higher demand in the off-street facilities may indicate a demand for longer-term parking, but it also includes the few lots with 2-hour parking, so it may also indicate that weekend visitors prefer off-street parking. Because on-street parking on San Mateo Avenue has very high occupancies as well, weekend visitors who cannot find parking on the central street may prefer to park in lots rather than search for street parking elsewhere.

Most public lots are most heavily used close to 12 PM, and some have a second, smaller peak at 6 PM, indicating high demand during lunch and dinner. This is similar to the demand for San Mateo Avenue on-street spaces on the weekend.

Two of the private lots that serve San Mateo Avenue businesses also have high occupancy at 12 PM and throughout the afternoon. The Artichoke Joe's lots peak at 10 PM, and is almost at 100 percent occupancy at this time, indicating that late evening demand is very high for their customer base. The two lots serving banks had low utilization throughout the day, as did the Caltrain Lot. These lots are primarily used as customer parking for their private land uses as banks while Caltrain facilities are most highly used on the weekdays.

Table 7: Weekend Off-Street Occupancy by Space Type and Facility

Facility and Space Type	Total Spaces	PM						AM
		12	2	4	6	8	10	12
2 Hour								
Public Lot 1	24	100%	113%	100%	104%	92%	46%	13%
Public Lot 2	30	100%	97%	100%	100%	83%	23%	23%
Public Lot 8	30	67%	80%	67%	100%	100%	60%	87%
5 Hour								
Public Lot 2	38	95%	95%	95%	95%	97%	34%	26%
Public Lot 3	25	100%	92%	100%	96%	84%	80%	56%
Public Lot 4	96	100%	98%	83%	79%	74%	47%	48%
Public Lot 5	49	100%	96%	78%	94%	92%	24%	27%
Public Lot 6	56	88%	84%	84%	68%	39%	16%	9%
Public Lot 7	35	71%	100%	74%	94%	89%	49%	37%
Customer and Employee Parking								
Swim School Lot	11	118%	118%	118%	109%	64%	36%	55%
Cleo's Lot	18	117%	100%	100%	94%	83%	39%	6%
Artichoke Joe's	320	63%	75%	87%	93%	97%	98%	98%
Citibank Lot	32	9%	19%	16%	44%	25%	3%	6%
Bank of America Lot	39	38%	41%	33%	38%	31%	10%	3%
Daily								
Caltrain Lot	94	56%	54%	52%	17%	12%	16%	17%
Overall								
Off-Street	**897**	**74%**	**79%**	**78%**	**79%**	**74%**	**56%**	**53%**

Peak Occupancy Maps

Occupancy by block and off-street facility is shown for the weekend peaks at 12 PM and 6 PM in **Figure 7** and **Figure 8.** At 12 PM on the weekend, parking in the southern part of the study area is more heavily used than near the Caltrain Station, but there are blocks with empty spaces throughout the study area, indicating that it may be easier to find an on-street parking space. However, the lots are very heavily used, which implies that many visitors are in the area, as opposed to residents who are more likely to park on-street. High occupancy in the off-street facilities reduces the options for people who are looking for parking.

At 6 PM, the occupancy patterns are similar to 12 PM, with heavy activity throughout the area except near the Caltrain Station. The lots are slightly less full than at 12 PM but the on-street parking is more heavily used, possibly indicating more residents parking near their home. There is more availability in the off-street facilities, but most remain above the practical capacity threshold, implying that it would be difficult for an arriving vehicle to find a parking space on- or off-street.

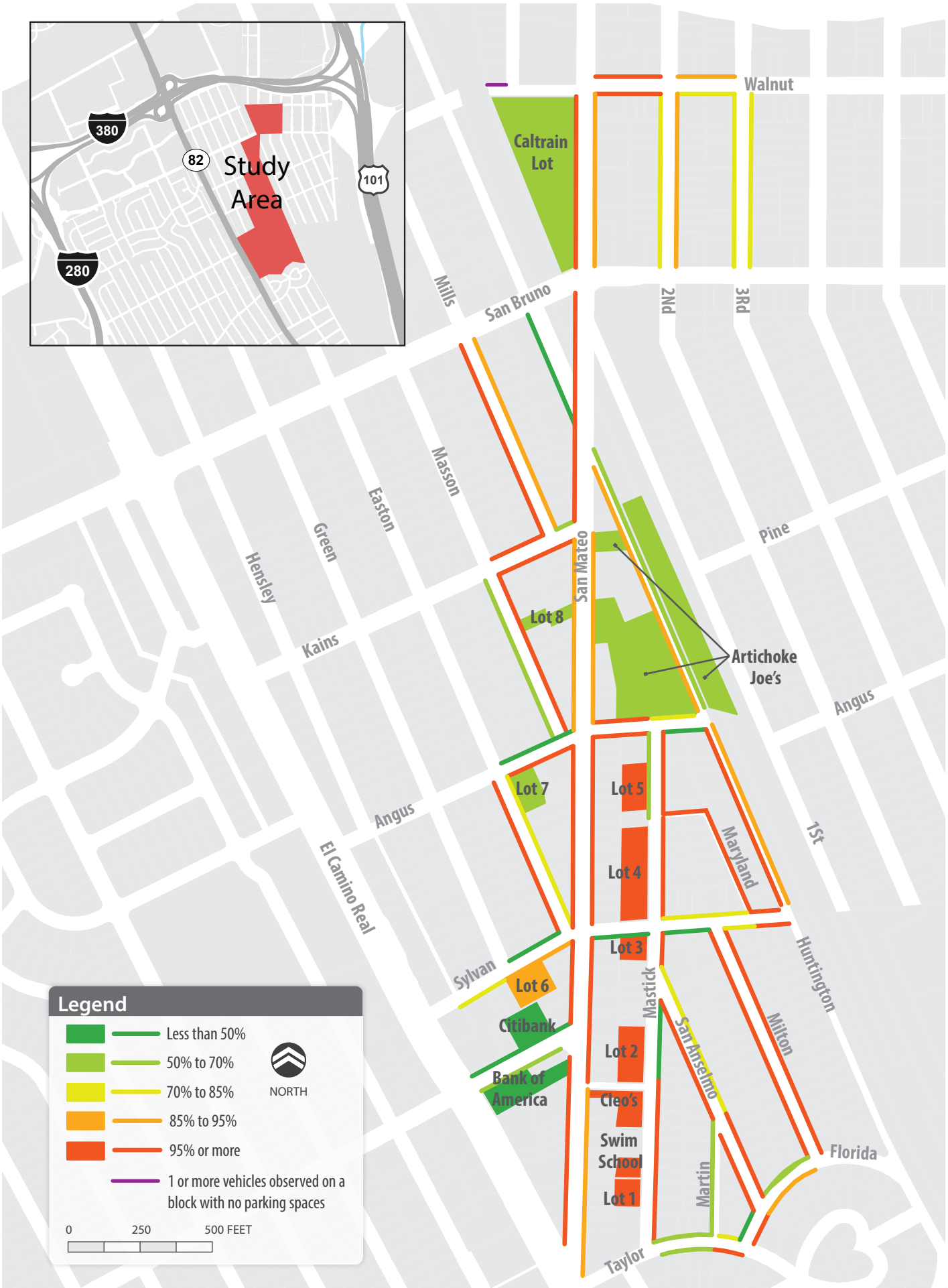


Figure 7
Weekend 12PM Parking Occupancy

CDM Smith

Figure 8
Weekend 6PM Parking Occupancy

Duration and Turnover

Parking duration and turnover are measurements of parking behavior that address how long individual vehicles stay parked in a single area, and how often individual spaces in an area are used by parked vehicles. Duration is the amount of time a parked vehicle stays parked in a facility. Turnover is the frequency with which spaces are made available to arriving customers, measured as the number of unique vehicles that use a space throughout the day. Duration and turnover data were collected for on-street parking on San Mateo Avenue within the study area, where most of the parking is time-limited to 2 hours per stay.

Parking Duration

Parking duration for all space types in the core area is detailed in **Table 8** and **Table 9**. The tables show the percentage of observed vehicles by approximate duration. Because duration data was only collected every two hours, the exact duration is not available, so the tables show the duration range based on the number of times the vehicle was observed parked on the same block.

On the weekday, the large majority of the vehicles observed were parked for less than 2 hours, consistent with the fact that a majority of spaces in the duration data collection area are 2-hour time-limited. 13 percent of vehicles observed parking in 2-hour spaces stayed for more than the allotted two hours. This may include parkers who arrive later in the day, after enforcement has ended. Vehicles parked in unregulated spaces tended to say for longer durations, with only 60 percent saying for less than two hours. All vehicles parked in the 20-minute spaces stayed for less than two hours, but a few of the vehicles parked in loading spaces were there for very long durations. These observed durations indicate that, even in the evenings, there is not high demand on the weekday for more spaces with longer time limits. This is likely because there are several nearby lots with 5-hour time limits and the surrounding streets are unregulated.

On the weekend, parking durations tend to be slightly longer. 17 percent of vehicles parked in 2-hour spaces exceeded the posted time limit, and more than half of vehicles parked in unregulated spaces stayed for more than two hours. This indicates that there is a slightly higher demand on the weekend for longer durations. Because there are higher occupancies on the weekends, those who wish to stay for longer durations may have a harder time finding parking in unregulated or 5-hour spaces.

Table 8: Weekday Parking Duration (San Mateo Avenue)

Space Type	Total Spaces	Parking Duration (Hours)					
		<2	2 to 4	4 to 6	6 to 8	8 to 10	10 to 12
20 Minutes	3	100%	0%	0%	0%	0%	0%
2 Hour	137	87%	9%	2%	1%	0%	0%
Unregulated	15	59%	22%	10%	6%	0%	4%
Loading	3	67%	0%	0%	17%	17%	0%
ADA Accessible	3	75%	0%	0%	0%	25%	0%

Table 9: Weekend Parking Duration (San Mateo Avenue)

Space Type	Total Spaces	Parking Duration (Hours)					
		<2	2 to 4	4 to 6	6 to 8	8 to 10	10 to 12
20 Minutes	3	83%	17%	0%	0%	0%	0%
2 Hour	137	83%	11%	4%	1%	1%	0%
Unregulated	15	48%	24%	9%	3%	6%	6%
Loading	3	71%	0%	0%	14%	0%	14%
ADA Accessible	3	75%	0%	0%	0%	25%	0%

Vehicle Turnover

Turnover is the average number of vehicles per day parked in each spot. Turnover rates by space type are shown in **Table 10** and **Table 11**. Because license plate data was only collected every two hours, it is possible that vehicles parked for less than two hours were not observed. Thus, average turnover rates are likely somewhat higher than what is shown in the tables below. Turnover in the 2-hour spaces is very similar on the weekdays and the weekends, with almost 5 vehicles per day. This is consistent with the fact most vehicles stay for less than the 2-hour time limit enforced during the day. There are almost four vehicles per day parked in unregulated spaces on the weekends, whereas there are only two per day on the weekends. This is consistent with the observation that visitors tend to stay for longer time periods on the weekends, and the fact that more residents stay parked in the area on the weekend.

Table 10: Weekday Parking Turnover (San Mateo Avenue)

Space Type	Total Spaces	Unique vehicles per space per day
20-Minutes	3	1.33
2-Hour	137	4.50
Unregulated	15	3.40
Loading	3	2.00

Table 11: Weekend Parking Turnover (San Mateo Avenue)

Space Type	Total Spaces	Unique vehicles per space per day
20-Minutes	3	2.00
2-Hour	137	4.43
Unregulated	15	2.20
Loading	3	2.33

Chapter 2

Parking Demand Analysis

This chapter documents the assumptions and methodology, as well as summarizes the results from the parking demand model developed by CDM Smith for the City of San Bruno's downtown study area. This analysis follows from the results of the Existing Conditions Analysis, using the observed existing parking demand as well as existing land uses to calibrate a model to the unique conditions in San Bruno. This model, based on the Urban Land Institute's (ULI) shared parking methodology, was then used to project parking demand based on future development expected in the downtown area.

Demand Model Area

The study area used for the demand model was the same as used for the existing conditions. It includes San Mateo Avenue between Walnut Street to the north and El Camino Real and Taylor Avenue to the south, and two to three blocks of primarily residential streets to the east and west of the corridor. San Mateo Avenue is the core of the study area and contains a majority of the businesses within downtown San Bruno. The parking facilities included in the study area include 2-hour spaces on and near San Mateo Avenue, major off-street facilities serving local businesses, including the Artichoke Joe's Lot, and unregulated residential streets surrounding San Mateo Avenue. The study area includes the Caltrain Parking Lot, but this facility and the parking demand observed there was excluded from the demand analysis, as demand for that lot is not determined by development nearby.

Existing Land Uses

The land uses in the study area are a mix of residential and commercial, including retail stores, restaurants, and office space. **Table 12** below summarizes the square footage of commercial space and number of residential units used for this analysis. This data is based on parcel data provided by the City, and excludes some uses considered to be completely self-parked, meaning they do not contribute to demand in public parking facilities. Excluded land uses include hotels, gas stations, and car dealerships.

The land use categories used are consistent with the ULI parking demand factors used in the model. The largest single land use category is Retail and Personal Services, a broad category encompassing most common shopping and service uses, encompassing 147,315 square feet of building space in the study area. Altogether, restaurant uses are the second largest use by building square footage, at 76,183 square feet. Office, medical, and banking uses total 63,311 square feet of study area buildings, with religious uses and fitness studios at 22,100 square feet and 13,850 square feet respectively. The Artichoke Joe's Casino is considered separately and discussed in the following paragraph.

Table 12: Downtown San Bruno Existing Land Uses

Land Use	Existing Square Footage (sq. ft.)
Retail and Personal Services	147,315
Fine/Casual Dining Restaurant	37,600
Family Restaurant	28,583
Fast Food Restaurant	10,000
Casino (Artichoke Joe's)	50,970
Fitness Studio/	13,850
Church	22,100
Offices under 25,000 square ft.	28,311
Medical/Dental Office	19,900
Banks	15,100
Total Commercial/Retail Square Footage	**373,729**
Residential (units)	436

The Artichoke Joe's casino is included in its own Casino category in the model, which is similar to the ULI Nightclub land use category but altered based on observed parking demand in the Artichoke Joe's lots. Although Artichoke Joe's has its own dedicated parking facilities, it was included in the model to account for the fact that there may be spillover parking from Artichoke Joe's into nearby parking facilities, or from other land uses into the Artichoke Joe's lots, due to the large size of the lots and their proximity to other uses in the study area.

Existing Parking Inventory and Occupancy

The existing parking inventory and occupancy data were collected on one Thursday and one Saturday in May 2017. Observations of the number of parked cars in each facility were made every two hours between 12 PM and 12 AM to capture the typical afternoon and evening parking behavior, plus one 3 AM weekday occupancy check to estimate the overnight parking occupancy. The 3 AM parking data was not used for the demand model because it does not include time-of-day factors for 3 AM.

Overall, parking occupancy peaks at 6 PM, with 83% of spaces occupied on the weekday and 86% of spaces occupied on the weekend at this time. Occupancies remain high throughout the study area during the afternoon and is very high in on-street facilities late into the evening, indicating high residential demand.

Table 13 and **Table 14** show the results of this data collection for three time points by day of the week. In order to calibrate the model, parking demand was split into two categories: employee/resident, and customer/visitor. Employees and residents were assumed to be long-term parkers and assumed to park in unregulated parking spaces. Customers and visitors were assumed to be short-term parkers, and assumed to park in time-regulated spaces, including the 5-hour spaces in the off-street facilities. In the evening, when parking time limits are no longer enforced, these distinctions may no longer be representative of who is using the parking spaces. After this time, the employee/resident and customer/visitor ratios were not used to

calibrate the model, as it is not clear from the observed data which vehicles belong to which category.

Table 13: Downtown San Bruno Weekday Parking Occupancy

Space Type	User Type	Inventory	Midday – 12 PM	Evening – 6 PM (Peak)	Late Night - 12 AM
On-Street	Short Term (Customer/Visitor)	216	171 (79%)	195 (90%)	608 (79%)
	Long-Term (Employee/Resident)	557	420 (75%)	505 (91%)	
Off-Street	Short Term (Customer/Visitor)	419	274 (64%)	345 (81%)	476 (51%)
	Long-Term (Employee/Resident)	420	390 (76%)	372 (72%)	
Total	**Short Term (Customer/Visitor)**	**635**	**445 (69%)**	**540 (84%)**	**1,084 (63%)**
	Long-Term (Employee/Resident)	**977**	**810 (76%)**	**877 (82%)**	

Table 14: Downtown San Bruno Weekend Parking Occupancy

Space Type	User Type	Inventory	Midday – 12 PM	Evening – 6 PM (Peak)	Late Night - 12 AM
On-Street	Short Term (Customer/Visitor)	216	193 (89%)	196 (91%)	679 (88%)
	Long-Term (Employee/Resident)	557	509 (91%)	536 (96%)	
Off-Street	Short Term (Customer/Visitor)	419	373 (88%)	362 (85%)	488 (52%)
	Long-Term (Employee/Resident)	420	307 (60%)	373 (73%)	
Total	**Short Term (Customer/Visitor)**	**635**	**566 (88%)**	**558 (87%)**	**1,167 (68%)**
	Long-Term (Employee/Resident)	**977**	**816 (76%)**	**909 (85%)**	

Future Land Use Scenarios

The City has estimated the development expected to occur during the next 30 years and grouped the expected growth into three ten-year phases. The development projections are based on one project currently under construction (Plaza Apartments), one project in the planning approval process (111 San Bruno Avenue), and assumptions about future development contained in the Transit Corridors Specific Plan. Future development includes residential and office development occurring between 2019 and 2050, with most of the office development occurring in the third phase. **Table 15** shows the estimated square footage and number of units for land uses in the study area for each of the three phases. These values are cumulative, showing the total amount of development in the study area assumed for each phase. In some cases, the square footage of a use type decreases due to existing uses being replaced by new development.

Table 15: Development Projection Change in Land Use

Land Use	Existing Square Footage/Units	Phase 1 - 2030	Phase 2 – 2040	Phase 3 - 2050
Retail and Personal Services	147,315	150,222	146,353	145,897
Fine/Casual Dining Restaurant	37,600	39,669	39,731	44,694
Family Restaurant	28,583	30,156	32,484	24,256
Fast Food Restaurant	10,000	10,550	11,365	12,685
Casino (Artichoke Joe's)	50,965	50,965	50,965	50,965
Fitness Studio	13,850	13,850	12,050	12,050
Religious Institution	22,100	22,100	13,000	13,000
Office under 25,000 sq. ft.	28,311	28,311	103,011	234,311
Office 25,000 to 100,000 sq. ft.	-	-	28,500	181,400
Office 100,000 to 500,000 sq. ft.	-	-	297,000	297,000
Medical/Dental Office	19,900	19,900	19,900	19,900
Banks	15,100	9,000	9,000	0
Total Commercial/Retail Square Footage	**373,724**	**392,492**	**797,284**	**1,058,719**
Total Residential Units	**436**	**753**	**941**	**1,247**

The development projections were provided by the City in three categories: residential, office, and retail. Retail development space could be occupied by a variety of uses, including restaurants. To account for the differing parking generation rates at restaurants compared to retail uses, the projected new retail square footage was split among the Retail and Personal Services, Fine/Casual Dining, Family Restaurant, and Fast Food Restaurant categories according to the proportions of square footage in existing buildings. While in reality the proportions of types of retail and restaurant uses may differ, this is a reasonable approximation that accounts for the varied parking usage patterns of these land uses.

Potential redevelopment in Downtown and the area adjacent to the Caltrain Station has the capacity for over 800,000 square feet of new office space and approximately 60,000 square feet of new retail, restaurant, and other commercial uses by 2050. A number of mixed-use development sites have the capacity for 772 new residential units. Compared to the existing land uses, the amount of retail and restaurant uses would only change slightly, and in some cases decrease, due to the fact the many developments would replace existing retail and restaurant uses. Office and residential uses would increase significantly. Overall, the total commercial/retail square footage and the number of residential units could approximately triple within the study area under these development projections.

Parking Model Methodology

A shared parking model was developed for the San Bruno project area based upon the Urban Land Institute (ULI) methodology which includes case studies, data collection, and other observations regarding multi-use developments and shared parking alternatives to segregated

parking requirements.[3] Shared parking assumes that various uses within a single shopping center, downtown, or other small geographic area will share one or more parking facilities, rather than have dedicated parking for each use. The shared parking framework is used in order to improve efficiencies for parking facilities, particularly due to time of day differences for differing land uses' parking demand. The spreadsheet model uses principles identified in the ULI Shared Parking manual to find the time of day where the cumulative parking demand would be at its peak in order to define the maximum parking demand and thus the proposed parking supply, rather than totaling each land use's parking demand individually, which results in an oversupply of parking and additional costs if parking is built but not needed.

The modeling process was divided into two main phases: model calibration and modeling future demand. The model was first calibrated to existing conditions to estimate demand forecasts that take local conditions and characteristics into account. Then, this calibrated model was applied to the future development assumptions to estimate future parking demand. As a result, a customized demand-based parking spreadsheet model was tailored to San Bruno's existing parking conditions and its unique split of land uses.

Model Calibration

Calibrating the model is the process of adjusting the default values provided by the ULI model so that the model can accurately estimate the parking demand generated by existing development. The existing land uses were first input into the model and the results compared with existing parking occupancies. Then the default parking generation values (the number of parking spaces needed for each type of use by time of day) were adjusted to move the estimated parking demand closer to the observed occupancy, based on other parking behaviors such as duration and anecdotal information about parking usage patterns and types of parking users in the area. This was an iterative process which involved making small tweaks to the parking generation values. The parking model was deemed fully calibrated when the estimated parking demand for each hour during which data was collected on both the weekday and the weekend was within 1% of the observed parking demand.

Assumptions

- Vacant properties and properties with their own dedicated parking supply were excluded from the model, with the exception of residential properties.
- The TCP includes draft parking requirement recommendations that allow for a range between about 1.28 spaces per unit and up to about 1.5 spaces per unit, depending on proximity to transit and measures that encourage transit usage, amongst other factors.[4] These parking requirements were anticipated to be reduced from the City standard of 2.0 to 3.0 spaces per unit after a study determined this would be sufficient for future dense, mixed-use development with access to transit. As such, the new residential units are assumed to not generate any parking in public areas for residents. However, visitors to

[3] Shared Parking, 2nd Edition, Urban Land Institute, 2005.

[4] The TCP parking standards require 0.75 parking space per studio, 1.0 parking space per one-bedroom unit, and 1.0 to 2.0 spaces per two-bedroom unit and larger.

these units are assumed to add to the public parking demand as experience shows that visitors tend to park on-street even when off-street parking is available to them.

- These assumptions are likely to hold if the area densifies and adds transit service and amenities as planned, but demand could be higher than expected if development patterns are too similar to the existing conditions, which have resulted in very high residential parking demand.
- The Artichoke Joe's Casino was also included in the model, even though it has a dedicated parking supply, because it accounts for a large proportion of the parking demand and is highly integrated into the downtown streetscape. It is possible that there is a small amount of spillover into other parking facilities, or unauthorized parking by visitors to other businesses, but it was assumed that the total demand for Artichoke Joe's, which has its own land use category in the model, was approximately equal to the observed demand in the three Artichoke Joe's lots.
- The maximum residential parking demand was determined by the 12 AM parking occupancies. It was assumed that, at this time, a small proportion of vehicles parked in the study area belonged to customers and employees of the few restaurants and bars open late in the area, but most of the remaining vehicles that were not parked in the Artichoke Joe's lots belonged to residents.
- The ratio of customers to employees was also used as a check on the model. However, this metric was difficult to estimate for the existing conditions data, as this information was not known for all vehicles and could only be deduced based on the location and type of parking used. Thus, it was only used as a reasonable check on the model results and not as a requirement for calibration.

Estimating Demand Projections

Following final calibration of the existing conditions model, the calibrated model was applied to the future development projections to determine expected parking demand. First, the amount of development by land use type for each scenario was estimated. Only three land use types were included in the projections from the City: residential, office, and retail. Restaurant uses generate much more parking demand during the peak compared to "Retail and Personal Services," both of which would fall under the retail category in the projected land use data. To account for this, it was assumed that the square footage of retail space provided in the new developments would be divided among the three restaurant types and "Retail and Personal Services" in proportions equal to the existing distribution of land uses.

The future parking supply for each future phase was also estimated using the future land use data. The development projections assume three existing parking lots would be replaced with potential future developments in 2030 and 2040; the supply from these lots was subtracted from the existing supply. Then the additional parking provided for retail and commercial uses was added to this supply to estimate the parking supply for the future demand scenario. Residential parking provided by the new developments was not included in this total, as residential parking supply at existing residential properties was not used in the model calibration, and because residential parking demand in these facilities is not projected using the model.

Using these inputs, the calibrated parking model was used to project the total number of vehicles parked in downtown for each hour of the day. The model produces projected parking demand for each land use, and the total parking demand for the area, taking into account the varying peak hours of each land use. The resulting parking demand was compared to the projected parking supply to determine the number of additional parking spaces needed, if any, to meet the demand. This process is described in the following section.

Parking Demand Model Results

Table 16 details the model's results for the existing conditions calibration and the development projections. The table shows the actual parking demand observed during the Existing Conditions Analysis, the modeled existing conditions used to calibrate the model, and the three modeled development projection phases.

The land use totals assumed for each scenario are summarized in **Table 16** (detail above in **Table** 15). The potential for growth in retail and restaurant uses is much smaller compared to the existing amount of retail space. The projected public parking supply, which includes existing on- and off-street parking and new commercial and office parking to be created within new developments and excludes dedicated residential parking, is expected to stay constant during the first phase in 2030, increase by approximately 1,200 spaces in the second phase in 2040, and increase by another 1,300 by 2050.

Table 16: Parking Demand Model Results

	Actual Counts	Modeled Development Phases			
		Existing	2030	2040	2050
Land Uses					
Retail/Services/Restaurants (Sq. Ft)	310,418	310,418	317,513	339,878	327,112
Office/Medical/Bank (Sq. Ft.)	63,311	63,311	57,211	457,411	732,611
Residential (units)	436	436	753	941	1,248
Available Public Parking Supply					
Lots and Street Spaces, Total	1,613	1,613	1,612	2,839	4,168
Parking Demand					
Weekday Midday (12 PM Existing and 2030, 2 PM 2040 and 2050)	1,163	1,160	1,155	2,734	3,853
	72%	72%	72%	96%	92%
Weekday Evening (6 PM)	1,376	1,385	1,409	1,774	2,050
	85%	86%	87%	62%	49%
Weekend Midday (12 PM Existing and 2030, 2 PM 2040 and 2050)	1,329	1,329	1,338	1,453	1,478
	82%	82%	83%	51%	35%
Weekend Evening (6 PM)	1,451	1,454	1,482	1,484	1,492
	90%	90%	92%	52%	36%

Note: Cells highlighted in orange, X%, indicate occupancies over 85%, considered the practical capacity level.

The projected parking demand is expected to grow so that the peak period (weekday and weekend evenings in the existing and 2030 phases, and weekday midday in the 2040 and 2050 phases) parking demand exceeds the 85% practical capacity level in each phase. In 2040, the

weekday and weekend midday peak shifts from 12 PM to 2 PM, likely due to the increase in office uses, which have slightly lower demand during the lunch hour.

Table 17 below shows the peak parking demand by land use category for the weekday midday and evening. In the existing conditions and the 2030 development phase, a majority of the parking demand is estimated to be generated by retail uses. In 2040 and 2050, almost all of the growth in midday parking demand is generated by office developments. In the weekday evening, the growth in Office parking demand is the largest, but retail is still the largest parking demand generator.

Table 17: Phase 1 Hourly Parking Demand and Occupancy

Day of Week	Land Use	Peak Parking Demand			
		Existing	2030	2040	2050
Weekday Midday (12 PM Existing and 2030, 2 PM 2040 and 2050)	Residential	228	228	245	243
	Retail	742	760	736	747
	Office	192	167	1,753	2,863
	Total	**1,162**	**1,195**	**2,734**	**3,853**
Weekday Evening (6 PM)	Residential	496	500	501	498
	Retail	827	847	847	853
	Office	62	62	426	699
	Total	**1,385**	**1,453**	**1,774**	**2,050**

The total parking supply under the projected 2050 development assumptions would be 4,168 spaces. The peak demand estimated by the demand model under these development assumptions is 3,853 vehicles at 2 PM on a weekday. These results indicate that the demand will not exceed the supply of public parking, but occupancy in parking facilities will be close to capacity. Most parking facilities have a practical capacity at which point it becomes difficult to find parking and drivers begin to "cruise" to find a space, as they cannot park conveniently near their destination. A practical capacity level of 85% for public parking facilities is a well-accepted level used for street parking and other facilities with relatively high turnover. At an occupancy of 95%, the projected peak parking demand indicates that drivers would have difficulty finding parking and may circle the area, creating more traffic congestion as well as the appearance of an inadequate parking supply. The concept of practical capacity was used to estimate the additional parking supply needed to ensure adequate parking availability by applying the 85% capacity rule to on-street spaces, existing public lots, and retail parking planned for future development in this analysis. This analysis also assumes a 95% occupancy for existing parking dedicated to a private use (primarily the Artichoke Joe's lots) and parking planned for future office uses, as these are generally used for long-term parking with lower turnover. If the demand for one type of parking is below the practical capacity, while the other is above it, the analysis assumes the under-capacity parking type will fill up to practical capacity with the excess from the other type before needing additional parking supply. The results of this analysis are shown below in **Table 18.**

Table 18: Practical Capacity and Additional Parking Needed for Future Demand

Year	Parking Type	Parking Inventory	Peak Hour Demand	Total Additional Parking Required for Practical Capacity*	Total Supply with Additional Parking
2030	Public	1,172	914	76	1,688
	Private	440	568		
2040	Public	1,183	583	185	3,024
	Private	1,656	2,151		
2050	Public	1,319	737	433	4,601
	Private	2,849	3,116		

*Practical capacity assumes maximum occupancy of 85% in public and retail parking facilities, 95% in office and other private parking facilities.

Table 18 also shows the additional parking supply that would be required for facilities to remain below practical capacity during the peak period. During the peak hour on the weekday, up to 76 additional spaces would be needed in 2030, an additional 109 spaces would need to be added in 2040 (for a total of 185 additional parking spaces), and an additional 248 spaces would be needed in 2050, resulting in a total of 433 additional parking spaces required across all phases. Because this estimate is based on existing parking demand, which is in a context of relatively low-density, auto-dependent development, some of this demand may be reduced through increasing density and improvements to transit and bike access. However, with such a large difference between the projected capacity and demand, existing issues of parking spillover and occupancies nearing or exceeding capacity are likely to be exacerbated. These effects may be mitigated through adding to the parking supply within downtown.

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Chapter 3

Parking Management Recommendations

This chapter presents the recommended parking strategies for parking facilities in downtown San Bruno, based on existing parking occupancy and behavior data and future parking demand projections.

Parking Program Goals

The goals to be addressed by the parking management strategies are:

- Encourage use of transit, walking, biking, and carpooling by customers and residents in downtown
- Provide a reliable parking supply for those residents who do not have another option
- Protect the on-street parking supply in nearby residential neighborhoods
- Ensure adequate employee parking supply while maintaining convenient parking for patrons
- Make use of new technologies and consider evolving transportation trends
- Establish a comprehensive and easy-to-understand parking program

Management Recommendations

In order to address both current and future parking issues, this report recommends parking management strategies to be implemented in phases. The measures implemented immediately or in the short-term will reduce the pressures on the existing parking supply. In the short term, this plan recommends measures to address existing neighborhood parking impacts to the extent they are caused by outside influences, but the plan cannot solve the problem of too many cars owned by residents themselves. Future strategies recommended in this plan aim to fully meet additional demand resulting from new development. In the mid-term and long-term, the transit corridors plan parking standards require enough parking to be provided to meet the demand of residents in new development, and management strategies and additional supply will address parking generated by greater commercial activity expected in the downtown area.

The range of possible parking management strategies that could be implemented in San Bruno includes pricing, adjusting time limits, permit programs, and adding additional parking through shared arrangements or new facilities. The following strategies are recommended for downtown San Bruno given the results of the existing conditions and demand analysis described above as well as the stated program goals.

Immediate/Short Term Strategies

Some parking management strategies require little capital investment, labor, or additional study. These strategies could be implemented almost immediately with appropriate policy amendments and signage.

Adjust enforcement hours

In downtown San Bruno, parking is most heavily impacted in the evenings, with the highest on- and off-street occupancies between 6 PM and 8 PM. Currently, parking enforcement ends at 6 PM, coinciding with the increase in demand and likely exacerbating parking problems. Extending enforcement of parking restrictions two to three hours, to 8 PM or 9 PM, would help improve parking availability for evening visitors. If a residential parking permit (RPP, discussed below) program is established, it may not be effective at ensuring availability for residents if enforcement ends too early. To help mitigate the increased labor costs of this extension, enforcement could also be shifted to start later in the morning, for example starting at 10 AM instead of 8 AM. In addition, enforcement should extend beyond downtown into the neighborhoods to address parking by Caltrain users, SFO patrons, and limo services using the public streets for vehicle storage.

Adjust Time Restrictions

The time restrictions for public parking throughout downtown are currently 2-hours or 5-hours. Two-hour time limits are useful for patrons of retail, restaurant establishments, and services or classes that are under 2 hours. Five-hour time limits are useful to the few patrons with appointments longer than 2 hours but are not long enough for employees, and are not short enough to encourage adequate turnover for the majority of retail customers. This plan recommends that 5-hour parking in the off-street lots be converted to a combination of 2-hour and 10-hour parking. Specifically, to provide sufficient short-term parking in central locations, it is recommended that the 5-hour parking in lots 2, 3, and 5 be converted to 2-hour parking and the 5-hour parking spaces in lots 6 and 7 be converted to 10-hour spaces. Lot 4 could be split between 2-hour and 10-hour spaces, with the spaces around the north and east sides of the lot converting to 10-hours and the remaining spaces converting to 2-hours. This would result in a total of 262 off-street 2-hour spaces and 137 off-street 10-hour spaces. Currently, Lot 4 is one of the least well-used off-street facilities. These changes would reserve the most popular lots for short term parkers while maintaining parking for employees and long-term parkers.

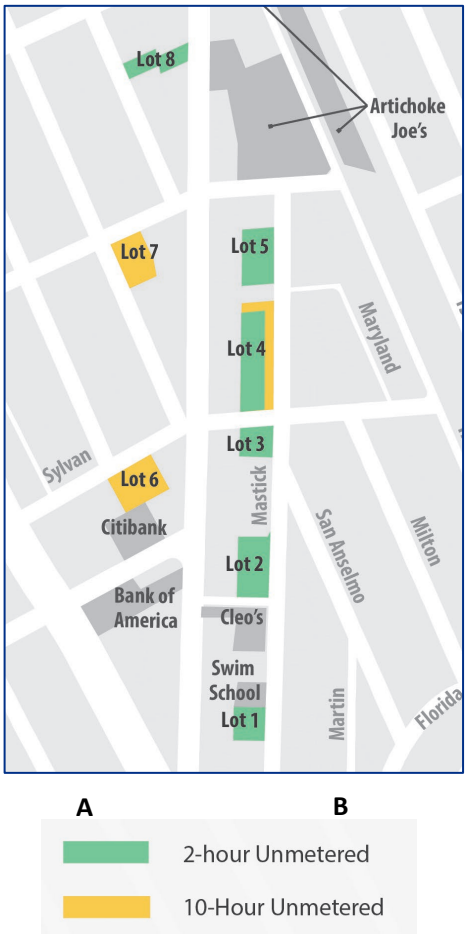


Figure 9: Off-street time limit recommendations

Install Improved Signage

Comments received during the public outreach for this project indicated that patrons and visitors to downtown, even long-time residents, do not always understand where to find off-street parking or which parking facilities are available to the public. Improved signage could direct drivers to the appropriate parking facilities. The signage can also be incorporated into a downtown branding. If parking pricing or other management strategies are implemented in the future, the signage should also clearly explain the policy and direct parkers to free, off-street parking if they prefer.

Figure 10: Proposed parking signage in Downtown Monterey. These signs include digital displays for available parking in nearby garages. This could eventually be incorporated if public parking structures are built in San Bruno.

Parking Lot Maintenance and Security

Feedback from stakeholder interview participants included complaints regarding the maintenance and security of the existing parking lots. These areas are not visible from the main streets and do not have good lighting. There were reports of illegal dumping of trash and furniture, and insufficient trash pickup and maintenance. To encourage more patrons to use these areas, the City should increase regular maintenance of these areas. Increased parking enforcement and lighting could also improve security. Additionally, the City or a business association or Chamber of Commerce could consider downtown ambassadors who could provide assistance with parking and wayfinding, as well as provide additional security for downtown patrons and employees.

Explore Temporary Use of Sylvan Avenue Caltrain Station

The former Sylvan Avenue Caltrain Station contains approximately 100 parking spaces. The City could explore temporarily using this facility to add to the public parking supply in the short term before Caltrain needs the right-of-way for Caltrain electrification. The City could work with Artichoke Joe's to share the land for employee use.

Explore Restriping San Mateo Avenue

The parallel parking on San Mateo Avenue could be converted to diagonal parking, pending further engineering analysis. This would narrow the roadway and potentially require significant construction to alter the roadway.

Study Afternoon Drop-Off Solutions

During the late afternoon, parents drop off children at after school activities located along San Mateo Avenue. Drivers will often stop in the middle of the street to let children out directly in

front of the business, rather than taking the time to find parking farther away or in the back of the businesses. This creates a dangerous situation as the cars block the street and children cross traffic lanes to get to their activities. To reduce this behavior, the following solutions could be implemented, but they would each require special rules and enforcement, and should be studied further before implementation:

- A temporary loading zone could be established in front of businesses with heavy drop-off activity which would only be in effect during the peak drop-off times, approximately 4 PM to 6 PM. An educational/information program would be necessary to avoid confusion and encourage parents to use the zones. A pilot program to test the concept at one or two high intensity drop-off locations might be a good way to proceed. This could be implemented as a pilot program at one or more sites to determine if it is a feasible solution.
- Increased enforcement could be used as a disincentive for this behavior. To be effective, officers would need to be posted at these locations during the peak drop-off times to give warnings and citations.
- Along with the increased lot maintenance and security described above, a campaign encouraging parents to use the lots behind these buildings could be implemented. Downtown ambassadors could be posted at these locations during drop-off times to increase security, and businesses could be encouraged to improve backdoor entrances for this purpose.

Mid-Term Parking Management

In the next one to five years, very little of the projected development is likely to be completed. During this time, parking will continue to be heavily impacted. The City should take advantage of this time to begin to implement larger scale parking management improvements, which are too capital or labor intensive to be implemented immediately but should be in place before new development causes large increases in demand.

San Mateo Avenue: Metered Parking

On-street parking in front of businesses is the most desirable and most valuable parking, as it is used by short-term visitors who need a convenient place to park, and who are not willing to circle for parking if they cannot find it immediately. A low initial hourly rate could be set and adjusted as development progresses and demand patterns change. Rather than implementing strict time limits, pricing could be used to discourage long-term parking but allow flexibility for parkers to stay a little longer if necessary. Initial rates of $2 per hour for the first two hours and $4 per hour for each additional hour are recommended but should be reviewed and adjusted periodically to ensure occupancy goals are being met. Pricing is not currently recommended for the public lots, but a pricing policy could lay out the framework for this in the future, including an occupancy-based trigger for when this would be implemented, if at all.

Off-Street Facilities

Residential On-Street Parking: Residential Permit Parking

This is an option to improve parking availability on residential blocks for residents by requiring a residential permit on participating blocks. The data indicates that residential demand is near or

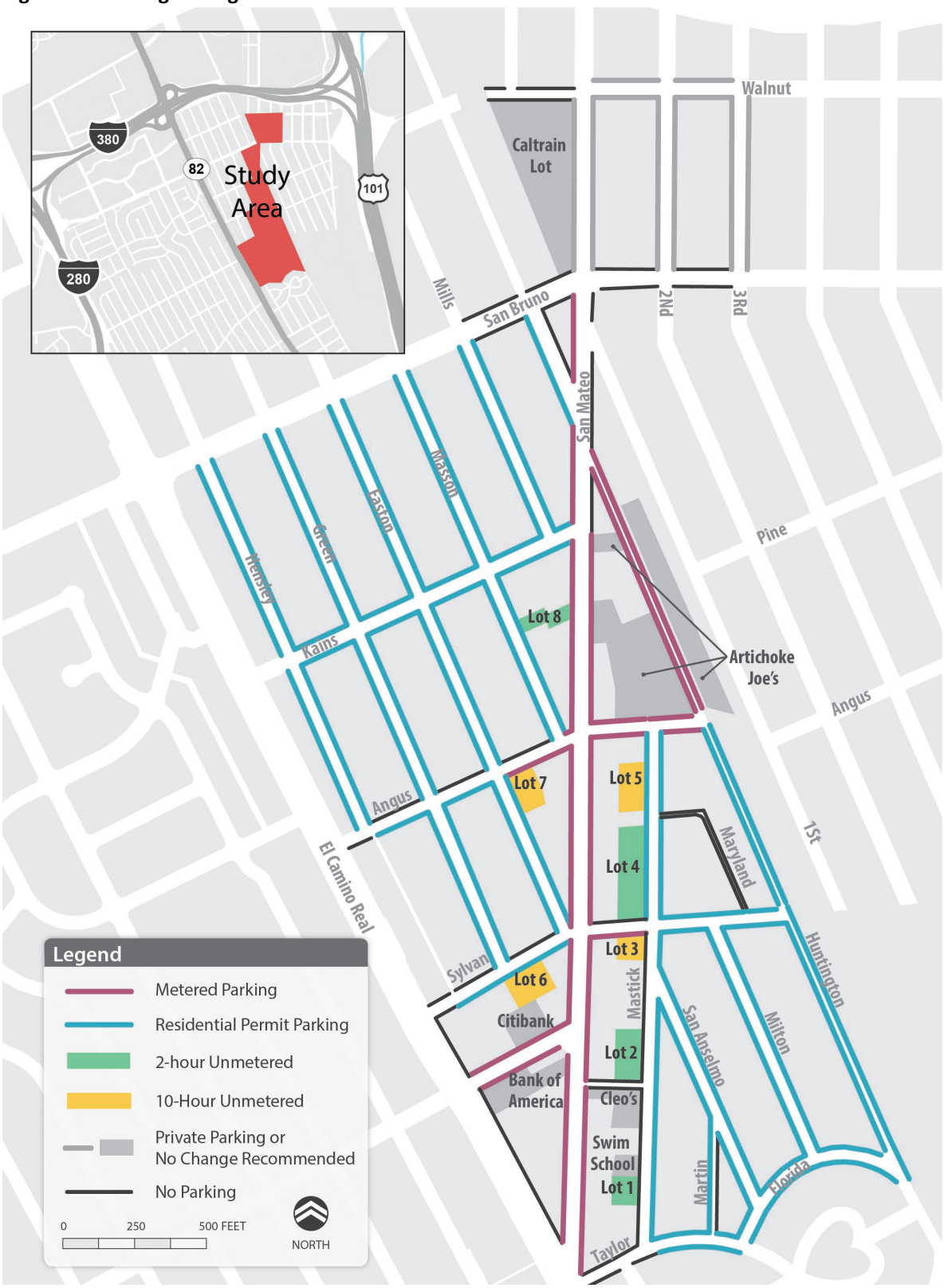
exceeds the supply of on-street parking on residential blocks, so even with an RPP program residents may continue to have difficulty finding parking near their residence, but RPP may help by reducing spillover from commercial uses. The hours of enforcement affect the success of this program, as the data indicates that residential parking is most impacted in the evenings, after parking enforcement generally ends.

The City currently has an RPP program in which residents of areas impacted by spillover parking from BART or Caltrain facilities may request RPP for their blocks. These requests are reviewed by the traffic safety and parking committee and approved by the city council. Parking permits are available to residents of RPP areas for a low fee, not to exceed the costs to administer the program, up to two permits per dwelling unit. In an RPP area, vehicles without permits are generally limited to a 2-hour stay between the hours of 7 AM and 6 PM, Monday through Friday. The city is currently considering a program to expand the RPP program beyond BART and Caltrain station areas.

Residential Parking in Public Lots

The collected parking data indicates that residents may be using public parking facilities to store their vehicles overnight, due to lack of available street parking. To make these resources more available for residents and generate revenue for lot maintenance in the short-term, the existing public lots could be officially opened up to residents in the evenings through a permit program. Residents with an off-street permit could be allowed to park in public lots in the evenings and overnight but would be asked to vacate the spaces during the daytime, for example from 9 AM to 5 PM. This would increase the supply of parking in the evenings for residents but reserve the lots for customers and visitors to the commercial area during the daytime. Weekends may be more difficult to manage, as there is high demand for residential and commercial parking during the day. Enforcement of this program would be periodic due to the additional enforcement resources required.

Figure 11: Parking Management Recommendations



Mid-Term to Long-Term Parking Supply Improvements – New Parking Structure

As new developments are completed over the implementation period of this parking plan, parking demand will increase beyond the capacity provided. The above parking management solutions will help to ease the strain on the existing parking resources and mitigate additional parking demand as the first new development in the area occurs, but with the large amount of growth planned, the existing parking will not be sufficient for the future demand. This plan recommends that San Bruno construct one or more parking structures to address the growth in the parking demand identified in the demand analysis. As shown in the demand analysis, increases in development will create demand for 75 new parking spaces by 2030, around 110 additional new parking spaces in 2040, and up to 250 additional new parking spaces in 2050. These increases in parking demand will occur gradually as new construction is completed. To meet this gradual increase in demand over time, it is recommended that the City plan for several small structures or shared parking facilities to be built over time along with new development.

Although the time it takes to design and construct a new garage means this will necessarily be a mid- to long-term solution, there is a need to construct a garage as soon as possible, as the existing parking supply is already deficient because of overflow from residential areas. To expedite the construction of the first garage, the City should begin in the immediate term by identifying potential sites and funding sources and beginning the design process. It is also recommended that the demand projections be revisited after the above parking management strategies are in place to confirm future parking need match current projections.

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Chapter 4

Parking Garage Site Analysis

In order to meet the projected future demand for parking, the City should consider additional public parking supply within the downtown. New parking provided in multi-story garages with first-floor retail would best fit with the transit corridor plan, the downtown shopping environment, and expected growth. This could be integrated with planned developments in the area to gradually add parking supply, or could be constructed on one site.

The following assumptions may be used in future analysis for calculating the maximum number of parking spaces and number of floors to meet forecast parking demand:

- The transit corridors plan limits building heights in the Central Business District to 55' or 4 stories. The first story must be 15' to accommodate retail. Each additional story requires 10', allowing for up to 5 ½ floors of parking to meet the 55' building height (as the ramps allow for a final half-floor to be fit within the building height), but the 4-story maximum limits the size of the garage further.
- The first floor of the garage will entirely be taken up by retail and the garage entrance(s) and first floor ramp. This is a conservative assumption, as these sites may be large enough to have room for first floor parking, but this is dependent on the garage design
- If a potential site has an irregular shape, more floor area per parking space will be required compared to a regular rectangular shape. The estimations should assume 375 square feet of floor space per parking space for a more regular lot shape, and 400 square feet of floor space per parking space for a site with an irregular shape, inclusive of aisles, ramps, and walking paths.

An alternative to providing all of the additional parking in one structure would be to split the public parking between these two sites in a partnership with private development. This could also allow the parking supply to be increased in phases, consistent with the projected gradual increase in development, the phased forecast in Chapter 2 and the phased recommendations in Chapter 3. The city should continue to monitor and reassess parking needs in the future, as conditions may change with new development, possible construction of a parking garage, and evolving travel preferences and technology such as connected and autonomous vehicles (which many transportation specialists believe will reduce the need for parking).

Pricing parking within downtown is also likely to have an effect on parking demand. In addition to monitoring changing conditions, if the city elects to have parking pricing, the on-street parking price per hour should always to higher than the price of parking in the off-street structures and lots.

Chapter 5
Financial Analysis

This chapter provides ballpark cost and revenue estimates for the parking management plan and a potential garage. The estimates in this chapter provide a professional opinion of likely costs based on experience with previous parking programs and information from parking equipment and service providers, to be used for planning purposes. Detailed cost estimates should be procured from potential contractors during an RFP process.

Management Program Costs

The costs of the management program as described in Chapter 3 Recommendations would include the cost of parking payment technology, permit management software, enforcement equipment and software/databases, and labor for enforcement and administration. The following tables detail the potential costs for the non-labor elements of the program.

The cost of installing meters depends on the type of meter technology chosen. A multi-space meter is more expensive than a single-space smart meter but can be more cost effective if it can be used for many parking spaces. The distribution of spaces in San Bruno, however, likely means that multi-space meters would not be cost-efficient when compared with single space smart meters. There are 186 on-street, short-term spaces in downtown San Bruno that would be appropriate for metering. Mobile payment providers have widely varying costs. Some require an initial setup fee, while others charge a per-transaction fee, often to the user at no cost to the City. License plate recognition (LPR) vehicles, equipment, and software is also recommended in order for enforcement to seamlessly interface with smart meters, permits, and a mobile payment system. Any changes to parking management and regulations will require updating or installing signs. The costs for these capital investments are summarized in **Table 19**.

Table 19: Example Capital Costs

Capital investment	Cost per unit	Number	Total
Smart meters	$1,000.00	186	$186,000
Mobile Payment Setup Cost (dependent on provider)	$1,500.00	1	$1,500
LPR enforcement equipment & vehicle	$36,000.00	1	$36,000
Enforcement PDA	$1,500.00	1	$1,500
Signage	$120.00	27	$3,240
Total Estimated Cost			$228,240

Table 20 shows example costs of third party software and services, which would allow permit holders to buy and manage permits online and enable enforcement to be integrated with smart meters and permit databases efficiently. These costs will vary greatly based on the particular configuration of services provided.

Table 20: Example Software and Services Costs

Service	Cost	Unit
Enforcement software & integration	$99.00	per month
Permit management	$0.30	per transaction

Another large component of the cost to manage a parking program is labor. This is primarily comprised of labor costs for enforcement personnel, but would also include collections and maintenance of meters, as well as administration from planning and finance staff. Usually managed out of the police department, the salary, benefits, and overhead for a parking enforcement technician can total as much as $180,000 annually, based on recent experience in other Bay Area cities. The downtown parking program would likely need one enforcement officer at a minimum, though having a second officer available would ensure coverage over days off, and allow enforcement in the evenings or on weekends if enforcement is extended. One option is to have two officers working part-time on enforcement and part-time on other tasks, with approximately 1.5 FTE between the two of them paid out of the parking program. Meter maintenance and collections, which is usually done through a contract rather than with city staff, will cost up to $150,000 annually for Smart Meters, though this could potentially be lower if most transactions are done online or with a credit card. Depending on the complexity of the program and amount of monitoring, as well as the salaries of staff involved, administration costs may add up to around 1/3 of the enforcement cost. Conservatively, with the above assumptions, the annual labor costs of the program could be between $500,000 and $550,000.

Potential Program Revenue

This section estimates the revenue expected to be collected from parking meters proposed for downtown San Bruno. Chapter 3 recommends that meters be installed at existing 2-hour parking spaces on San Mateo Avenue and on a few cross streets. This would result in 186 parking spaces priced at $2 per hour, with a potential price increase after 2 hours. For a conservative estimate, this analysis assumes that all parkers will stay for 2 hours or less, and thus pay $2 per hour. The current hours of enforcement, 8 AM to 6 PM, would result in 10 hours of revenue collection 5 days per week, and would be enforced for an average of 249 days per year excluding weekends and holidays.

In addition to the static parking characteristics described above, revenue will also depend on the occupancy of metered spaces. The existing conditions data showed that between 12 PM and 6 PM, 2-hour parking spaces had an average occupancy of 88 percent. Data was not collected for the first four hours of enforcement. Based on anecdotal information, the occupancy is somewhat lower than at other times during the day, so an average occupancy of 70 percent was assumed during these hours. An additional 15 percent decrease was added to account for a potential drop in demand in these spaces due to the implementation of pricing. Under these assumptions, an average daily occupancy of 69 percent was assumed.

Based on the above parking characteristics and assumptions, the expected daily revenue per space is $13.80, and the expected annual revenue for all 186 metered spaces is $640,000. Based on the revenue analysis above, this would exceed the labor costs of the program, though the additional revenue would be needed to pay off capital expenses for a few years. Permit revenue would also increase the overall program revenue, but would likely be a small proportion of total revenue. Citation revenue is also likely to increase with increased management and enforcement, but the court costs associated with citations is expected to cancel out this revenue.

Parking Structure Construction Costs

The cost of supplying parking in an above ground structure will vary across a wide range of factors. While this analysis does not provide a detailed cost estimate for construction or operations, as a site and design have not yet been selected, understanding how the components and characteristics of a parking facility contribute to its total price tag will help develop a ballpark estimation of total costs. **Table 21** describes the full range of costs associated with providing parking in a structure and details some of the different factors that contribute to each.

Table 21: Components of Parking Structure Costs

Cost Component	Notes
Land Acquisition Costs	Land costs for a parking facility include the cost of acquisition as well as the costs of securing any easements or additional property necessary to build the parking facility
Construction	Construction Costs will include demolition and site preparation, basic construction costs, and substantial additional costs for improved architectural finishes and landscaping. Construction costs will also increase through contingency costs, contractor's overhead, and cost escalation during the course of construction. Actual construction costs will vary enormously depending on the facility's location, size, whether it is below or above grade, and how many levels it is. A more detailed discussion of potential construction costs is presented following this table.
Planning and Design	Planning and design "soft costs" can include initial demand and planning studies as well as surveying and soils engineering and architectural and structural engineering fees.
Financing Costs	Financing costs will vary depending on the mechanism used to finance construction but can include legal fees, the cost of securing and repaying bonds, and interest on construction loans. Between financing costs and planning and design expenses, Todd Litman of the Victoria Transportation Planning Institute estimates that "soft costs" can increase the cost of a parking facility by as much as 30-40% for a standalone project.[1]
Equipment and Furnishings	The level of equipment and furnishings provided within the structure including barrier gates, elevators, and payment stations can range in to the hundreds of thousands of dollars and can affect both the initial cost of a parking facility as well as upkeep and maintenance costs. While the cost for this equipment is highly dependent on the garage management method and payment technologies, typical costs can run between $150 per space per year for a simple pay-and-display system to $400 per space per year for attended parking.[2]
Maintenance and Operations	Maintenance and operations costs include cleaning, lighting, maintenance, repairs, security, landscaping, fee collection, enforcement, insurance, labor, and administration. Typical costs per space can run between $500 per space per year for basic maintenance of a small structure to $800 per space per year for a facility with attendants and additional security and lighting needs.[2] Rising costs of living in the bay area may result in even higher labor costs.

[1] Litman, Todd, "Transportation Cost and Benefit Analysis: Techniques, Estimates and Implications: Parking Costs." Victoria Transport Policy Institute. www.vtpi.org/tca/tca0504.pdf. 2005. Accessed August 22, 2018.

[2] Victoria Transport Policy Institute. Parking Cost, Pricing and Revenue Calculator. Victoria Transport Policy Institute. www.vtpi.org/parking.xls. Accessed August 22, 2018.

Key Variables Affecting Construction Costs: Efficiency and Cost per Square Foot

As the above discussion suggests, the cost of providing parking is determined by a wide range of considerations. Construction costs do play a major role in determining the cost of developing a new parking facility, however, and while many factors are involved in determining this cost, most can be conceptually grouped into two key variables. The cost of a new parking space is fundamentally determined by the square foot cost of construction and by the efficiency of the parking facility's design.

Cost per Square Foot

The cost per square foot of construction is a complicated determination that is affected by geographic location, materials cost, architectural elements, and soil conditions. Putting precise values on many of these variables lies beyond the scope of this analysis, but it is possible to develop a ballpark range of costs that a garage is likely to cost.

One contributor to the cost per square foot of a parking facility is the number of levels in the facility. High land costs may make it economically desirable to increase the number of levels in a parking facility either above or below grade, but adding levels also increases the square foot cost of construction. Building many levels above ground can also increase construction costs, but this in unlikely to be a significant consideration for downtown San Bruno. The cost may also be increased if the façade and finishing are held to a high aesthetic standard.

Design Efficiency

In addition to square foot costs, the design efficiency of any parking facility built by the city will be the major variable in determining the cost of each additional parking space provided. Design efficiency describes the amount of built space within a facility dedicated to parking versus the total built square footage of the facility (including space used for aisles, ramps, structure, and landscaping). Efficiency is typically expressed as the ratio of parking spaces to total facility square footage or the number of square feet per stall. Thus, the amount of built space required to support one stall can range anywhere between 280 and 500 square feet, but a typical range for an efficient facility layout would likely result in 310 to 390 square feet per stall.

While the efficiency of the parking structure may not directly affect total construction costs (since the facility itself could conceivably be of the same size and materials) it will have a tremendous impact on the unit cost of each individual parking space.

Efficiency of design is a particularly important issue when considering the inclusion of retail or developing public parking as part of a mixed-use option. Although the square foot construction cost of the parking in this kind of an arrangement may be the same as that seen in a dedicated structure, the layout's efficiency will likely be much lower. Fewer spaces placed above or below ground will require additional ramps and aisles for access and will thus raise the cost of each new space provided.

Construction Cost Estimates

According to a 2017 analysis by Carl Walker (now the Parking Division of WGI), the median construction cost per parking space in San Francisco was $25,328.[5] Also in 2017, BART estimated that a new garage at the Dublin/Pleasanton Station would cost $44,000 to $52,000 per space, though it was determined that this was uncharacteristically high due to site conditions, compared to recently constructed garages at Richmond, Berryessa, and Milpitas stations that have cost $38,500 to $45,500.

A calculator developed by Watry Design Incorporated provides a cost estimate for a parking structure based on the location of the garage and the characteristics of the structure. The calculator uses cost estimates from similar structures and adjusts the costs to the location. The closest city available was San Mateo. The options on the calculator include basic characteristics such as number of spaces and number of floors, as well as construction options for the type of structure, foundation, and façade. Two cost estimates were developed, both using the average characteristics of the two site alternatives and varying the construction options to estimate a low-end cost and a high-end cost. The calculator also offered contingency, escalation, and other cost customizations, but these were kept at their default values. At the low end, the cost per space was estimated to the $24,000 per space, and at the high end the estimate was $41,000 per space.

Based on the factors described in the previous section, costs for a parking structure in San Mateo are likely to be in the middle to the high end of average construction costs, because of the number of floors, the inclusion of ground-floor retail, and conditions at potential sites which would reduce efficiency. The Watry calculator suggests that expected construction costs for a structure may not be as high as the expensive BART garages, but the estimates from BART should not be ignored completely as they may be indications of escalating land, labor, and construction costs throughout the Bay Area. Thus, it is likely that a garage would cost in the range of $35,000 to $45,000 per space.

New Parking Supply Financing

Constructing a new garage is a large capital investment that the City will need to finance through one or more of the mechanisms described below. In the past, federal and state grants were often available to fund parking structure as part of downtown revitalization programs, but these no longer exist. There can be funds for parking projects that serve a special purpose such as including a bicycle station, but these would likely only fund a small portion of the project. Instead, the City must use a funding mechanism that utilizes revenue from taxes or fees on developers, property owners, business owners, or parking users within downtown San Bruno. The type of financing mechanism will affect the additional costs of repaying bonds or loans along with legal and administrative fees.

Meter revenue: Meter revenue net of costs can be used to leverage bonding to build a parking structure. As projected above, only a small amount of surplus revenue is expected each year, so

[5] Cudney, Gary, P.E., *Parking Structure Cost Outlook for 2017.* Carl Walker, a Division of WGI, October 2017. https://wginc.com/parking-structure-cost-outlook-october-2017. Accessed August 21, 2018.

meter revenue alone would not be enough to cover the annual debt service and costs of the structure.

Parking district or business improvement district: In a parking benefit district, property owners agree to increase their property taxes to fund a parking structure. A majority of the property owners within the district, based on assessed valuation, would have to agree to form the district. A business improvement district functions similarly, except business owners would agree to tax themselves to fund the parking structure.

In-lieu parking fees: In-lieu fees are paid by developers as mitigation for not providing the required zoning code parking on site, and can be used to fund shared parking or other improvements within the area. Relying on these funds may not be sufficient, however, as the lowered parking requirements and high public pressure around parking issues mean developers are likely to provide the amount of parking required in the zoning code. Additionally, any development that does not provide the minimum required parking will increase the amount of parking that the City will have to provide, and thus increase the total number of new spaces needed, which in-turn increases the total cost of adding the new parking.

Public-private partnership: Additional public parking could also be provided within a private development. The City of Emeryville and the City of Davis used this approach to add public parking spaces to private parking facilities. The city would agree to pay the developer to provide the public spaces in their facility. Developers could also be required to build parking to replace any public spaces displaced by their project.

At $40,000 per space, a 450-space garage would cost $18 million. Assuming a 6 percent interest rate over 20 years, the annual payment for financing this garage would be approximately $1.6 million.