LINSCOTT LAW & GREENSPAN engineers

VEHICLE MILES TRAVELED ANALYSIS

2020 SEAWORLD MASTER PLAN

San Diego, California
June 10, 2022
PTS #646353

LLG Ref. 3-19-3077

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EXECUTIVE SUMMARY

Linscott, Law & Greenspan, Engineers (LLG) has prepared this Vehicle Miles Traveled Analysis for the 2020 SeaWorld Master Plan (hereby referred to as the "Project" or "2020 Master Plan"). The 2020 Master Plan contemplates that SeaWorld will remain a marine mammal theme park and does not include any new uses different from those already proposed in the approved 2002 Master Plan. In addition, the proposed Project would update the 2002 Master Plan since many of the projects previously listed as "future projects" have now been completed, downsized, or are no longer anticipated. A detailed description of the Project is included in the Project description section of this report.

This report has been prepared to evaluate the transportation VMT impacts of the Project using Vehicle Miles Traveled (VMT), as proposed by the California Governor's Office of Planning and Research (OPR) to implement California State Law Senate Bill (SB) 743. The analysis methodology contained in this report utilizes an approach from the City of San Diego's *Transportation Study Manual (TSM)*, September 2020, which generally follows the OPR *Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018.

Per City VMT guidelines, the Project land uses were analyzed in two components: Regional Recreation (SeaWorld Theme Park and Marina Project components) and Commercial Employment (Hotel Project component).

Data science analytics from StreetLight Data was used to calculate average trip length (ATL) of all trips to and from SeaWorld on an average weekday which was used with SeaWorld's trip generation estimates to estimate the total increase in Regional VMT due to the project. StreetLight Data was also used to estimate baseline total regional trips (ADT), ATL, and VMT. The data was obtained from GPS devices such as cell phones and connected vehicles to quantify travel patterns and behaviors. The data were collected for a one-year period during 2019. This data combined with the calculated trip generation associated with the Regional Recreation Project components to calculate the increase in total regional VMT due to the project. As calculated, these Project components would be expected to add 62,605 VMT to the region, increasing regional VMT by 0.04%, before accounting for VMT-reducing required Project Design Features required through the City's Climate Action Plan (CAP) Consistency Checklist and the Project's proposed mitigation measures. Project Design Features are proposed to reduce the total regional VMT by 30,172. Therefore, the Project causes a net increase to regional VMT after implementation of the required VMT reduction measures and proposed mitigation and ***thus results in a significant VMT transportation impact*** for these Project components.

For the Project Hotel component, LLG used the SANDAG Series 14 Base Year 2016 online screening map (*Figure 5–1*) to obtain the Project's Employee VMT per Employee at the Census Tract level, which was then compared to the regional average Employee VMT per Employee, also taken from the SANDAG Series 14 Base Year 2016 data. Based on the screening map, the Project VMT per Employee would be 27.9, or 102.6% of the regional average of 27.2. After including

required Project Design Features the Project Employee VMT per Employee would be 22.9, or 84.2% of the regional average. The threshold of significance for commercial employment projects is 85% of the regional average Employee VMT per Employee, or 23.1. The Project Hotel component is therefore below the threshold of significance and is calculated to result in ***no significant transportation VMT impact*** with the required design features in place.

The following pedestrian, bicycle, transit, and TDM improvements and programs are proposed to reduce Project VMT. The items labelled PI, BI, TI, CTR are Project Design Features required through the CAP consistency checklist, and the items labelled OS (off-site) are additional mitigation measures to provide mitigation to the extent feasible. Implementation of these measures is discussed in detail in *Section 11* of this report.

Pedestrian Network Improvements

- **PI-1:** Provide a minimum 10-foot wide public accessway (vertical access) from Perez Cove Way to shoreline somewhere between the existing Skyride station and the driveway/aisle at the southern end of the north employee parking lot (approximately 550 feet), with the final location to be determined when the final plans for the hotel are submitted for review.

- **PI-2:** Enhance the existing pedestrian paths along the Perez Cove shoreline by providing a minimum 10-foot-wide landscaped public walkway (lateral shoreline access) incorporated into the marina expansion design.

- **PI-3:** Enhance the shoreline access by providing a minimum 10-foot-wide landscaped public shoreline walkway (lateral shoreline access) along the waterfront that shall be incorporated into the hotel plans.

- **PI-4:** Continue to provide ongoing maintenance of the existing pedestrian/bicycle pathways within the project site.

Bicycle and Micromobility Improvements

- **BI-1:** Maintain the bicycle racks provided on-site (currently 27 spaces) at the main entrance. Monitor demand for bicycle parking and provide additional spaces as demand increases. This is a CAP Consistency Checklist item.

- **BI-2:** Maintain the employee bicycle racks at both the west security (currently 18 spaces) and east security (currently 10 spaces) employee entrances. Monitor demand for employee bicycle parking and provide additional spaces as demand increases. This is a CAP Consistency Checklist item.

- **BI-3:** Enhance the shoreline access with future expansion of the marina and hotel development by providing a minimum 10-foot-wide landscaped public shoreline walkway (lateral shoreline access) along the waterfront.

- **BI-4:** Provide plug-in stations at the bicycle storage area for electric bikes or other micro mobility vehicles, as demand warrants it.

- **BI-5:** Reserve space for parking alternative and micromobility vehicles such as shared use bikes, scooters, and similar services. The space will be publicly accessible, provide electricity, and be provided for free to one or more micromobility service providers. If space set aside for micromobility devices is not utilized by micromobility devices/services, this space will be used to provide additional bicycle racks as demand increases.

- **BI-6:** Continue to provide ongoing maintenance of the existing pedestrian/bicycle pathways within the project site.

Transit System Improvements

- **TI-1:** Improve the amenities at the existing SeaWorld bus stop (Stop ID: 13059) to meet all standard MTS design criteria for 201-500 passenger boardings, which will include the following amenities not currently provided:
    - Passenger Shelter
    - Route Map

- **TI-2:** Coordinate with MTS regarding Route 9 service to the SeaWorld bus stop to extend the existing span of service, currently 9:06 AM to 4:08 PM, to match SeaWorld's hours of operation.

- **TI-3:** Coordinate with SANDAG, City of San Diego, and MTS to accommodate a Transit Station within the Area 2 parking lot per the terms of the SeaWorld Lease, when the opportunity arises. Design of the future parking structure, if necessary, would accommodate a transit station.

Commute Trip Reduction Measures

- **CTR-1:** CAPCOA TRT-3: Provide Ride-Sharing Program – The Project will promote ride-sharing programs through a multi-faceted approach to include: designating up to five percent of employee parking spaces for ride-sharing vehicles depending on demand, designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles, and providing a web site or message board for coordinating rides. This is a CAP Consistency Checklist item.

- **CTR-2:** CAPCOA TRT-7: Implement Commute Trip Reduction Marketing – The Project shall promote the use of the bike share/micro mobility fleet and educate employees on the non-SOV transportation options in the area through participation in SANDAG's iCommute program. To realize the VMT reduction associated with CTR-2/TRT-7, the TDM Plan identified in this report must be marketed to new and existing employees through a website maintained by the employer, monthly email newsletter blasts, promotional materials made publicly visible in common areas, and through an information packet that will accompany new hire documentation, including all part-time employees. This is a CAP Consistency Checklist requirement item.

- **CTR-3:** As part of the TDM Plan, the Project will dedicate an employee within the park to the role of "Transportation Coordinator (TC)." The TC would be responsible for

developing, marketing, implementing, and evaluating the commute VMT reduction measures offered through the TDM Plan.

- **CTR-4**: As part of the TDM Plan, the Project will implement an updated employee transit pass program, which will include a 25 % employee transit pass subsidy for all full-time, part-time, and temporary/seasonal employees working on the property. The subsidy value will be limited to the equivalent value of 25% of the cost of an MTS "Regional Adult Monthly/30-Day Pass" (currently $72 for a subsidy value of $18 per month). The program will also include a ticket discount of $5 to guests who show their bus pass.

Off-Site Active Transportation Measures

- **OS-1:** Complete sidewalk along the north side of Sea World Drive from E. Mission Bay Drive-Pacific Highway to the I-5 freeway southbound ramps. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

- **OS-2:** Complete sidewalk along the north side of SeaWorld Drive from Friars Road to E. Mission Bay Drive-Pacific Highway. Construct ADA compliant curb ramps on the northeast and southeast corners at Sea World Drive/E. Mission Bay Drive-Pacific Highway. Install current City of San Diego standard crosswalks and pedestrian countdown signal heads on all legs of this intersection. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

- **OS-3:** Complete sidewalk along the north side of SeaWorld Drive from South Shores Parkway to Friars Road. Construct ADA compliant curb ramps on the northwest and northeast corners of SeaWorld Drive / South Shores Parkway. Install current City of San Diego standard crosswalks and pedestrian countdown signal heads on all legs of this intersection.

- **OS-4:** Restripe existing Class II bicycle lanes SeaWorld Drive from E. Mission Bay Drive to Friars Road to include a minimum three (3) foot buffer between the travel lane and the bicycle lane. Provide bicycle detection and painted bicycle detection location indicators at the signalized intersections of Sea World Drive and E. Mission Bay Drive/Pacific Highway and Sea World Drive and Friars Road if bicycle detection is not currently present. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

- **OS-5:** Restripe existing Class II bicycle lanes on SeaWorld Drive from Friars Road to South Shores Parkway (Class I Bicycle Path entrance) to include a minimum three (3) foot buffer between the travel lane and the bicycle lane. Provide bicycle detection and painted bicycle detection location indicators at the signalized intersection of Sea World Drive/South Shores Parkway if bicycle detection is not currently present. This improvement is consistent with the Fiesta Island / MBPMP Amendment and will require an Encroachment Permit from Caltrans.

- **OS-6:** Provide loop detection for vehicles and bikes in both directions of travel on SeaWorld Drive at the I-5 interchange. This improvement is being provided as a

countermeasure for study area intersections that meet the Systemic Safety hotspot criteria per the City's *Transportation Study Manual* and Local Mobility Analysis requirements.

- **OS-7:** Provide loop detection for vehicles and bikes in both directions of travel on Ingraham Street at Riviera Drive (Systemic Safety). This improvement is being provided as a countermeasure for study area intersections that meet the Systemic Safety hotspot criteria per the City's *Transportation Study Manual* and Local Mobility Analysis requirements.

Figure 6–2 depicts these off-site active transportation improvements. ***Figure 6–3*** provides a conceptual design of the bike lane enhancements on SeaWorld Drive (OS-4, OS-5) to demonstrate feasibility.

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1.0 INTRODUCTION

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The report is organized as follows:

Section 1.0 Introduction
Section 2.0 Project Description
Section 3.0 Report Approach
Section 4.0 VMT Significance Criteria & Methodology
Section 5.0 VMT Analysis Approach & Screening
Section 6.0 VMT Reduction Measures
Section 7.0 Effectiveness of VMT Reduction Measures for Regional Recreation Land Uses
Section 8.0 Effectiveness of VMT Reduction Measures for Employment Land Uses
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Section 11.0 Complete Communities: Mobility Choices Program
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2.0 PROJECT DESCRIPTION

2.1 Project Location

SeaWorld San Diego (SeaWorld) is located along the south perimeter of Mission Bay Park in a commercial-oriented recreation area, as set forth in the City's Mission Bay Park Master Plan (MBPMP). The south and west boundaries are defined by SeaWorld Drive, Perez Cove Way, and Ingraham Street. To the south beyond SeaWorld Drive is the West Mission Bay Drive/Sunset Cliffs Boulevard/SeaWorld Drive interchange system and the San Diego River. To the east of West Mission Bay Drive is the Quivira Basin commercial recreation area. The eastern boundary of the SeaWorld site extends to South Shores Park Road, which provides access to a boat launch. The northern boundary of the SeaWorld leasehold generally conforms to the Mission Bay shoreline, except on the west side of the park where 17 acres of open water area for the SeaWorld Marina, Waterfront Stadium, and Bayside Skyride are included in the leasehold. To the north lies Fiesta Island, which forms the northern boundary of the South Pacific Passage, and the open waters of Mission Bay Park.

SeaWorld is located within a 2035 Transit Priority Area (TPA). TPAs are defined in California Senate Bill 743 as areas located within one-half mile from a major transit stop that is either existing or planned, if the planned "major transit stop" is scheduled to be completed within the planning horizon included in the SANDAG Regional Transportation Improvement Program. A "major transit stop" is defined in the California Public Resources Code 21064.3 as "a site containing an existing rail station, ferry terminal served by either bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods." SeaWorld is currently served by MTS Route 9, which operates Monday-Saturday from approximately 6 AM-9 PM at approximately 15-minute frequency from 9:00 AM-7:00 PM and 30-minute frequency in the early morning and late evening hours. Route 9 operates Sundays from approximately 8 AM to 8 PM at approximately 15-minute frequency from 10:00 AM-6:00 PM and 30-minute frequency in the early morning and late evening hours. Route 9 connects to the Old Town Transit Center thus providing regional access via the trolley system. Trips designated as Route 9A do not enter SeaWorld directly but stop at Ingraham Street / Perez Cove Way.

Figure 2–1 shows the Project Vicinity Map. ***Figure 2–2*** shows a more proximate location of the Project illustrated in the Project Area Map. ***Figure 2–3*** shows the existing SeaWorld facilities and site map.

2.2 Project Description

2.2.1 *Background*

The purpose of the proposed 2020 Master Plan is to set forth the long-range conceptual development program, development parameters, and Project review procedures for the future renovation of the entire leasehold area for SeaWorld for the next 20 to 25 years. The proposed 2020 Master Plan serves as the "Development Plan" described in the lease between SeaWorld and the City of San Diego. The proposed 2020 Master Plan is also part of the City's Local Coastal Program for Mission

Bay Park. An important goal of the proposed 2020 Master Plan is to transition from a "site-specific" development paradigm to an "area-specific" development paradigm that more closely matches SeaWorld's future renovation needs. In meeting this goal, the objectives are (1) to maintain the same level of environmental and coastal resource protection provided under the 2002 Master Plan, (2) to ensure that the concerns identified in the community outreach process continue to be addressed, and (3) to address any new environmental concerns identified in the environmental document for the proposed 2020 Master Plan. These objectives are based on experience gained under the 2002 Master Plan, which has served to minimize visual and other environmental impacts. Site-specific projects completed under the previous 2002 Master Plan include the Journey to Atlantis splashdown ride, an educational facility, and a front gate renovation. All other projects have been approved under the 2002 Master Plan's general development criteria.

The SeaWorld Master Plan is an addendum to, and incorporated into, the MBPMP (adopted 2002). The MBPMP is managed by the Mission Bay Park Committee, who advise the Park and Recreation Board on the development, utilization, and policies regarding Mission Bay Park. The MBPMP is the City's Community Plan for Mission Bay Park and the City and Coastal Commission certified Local Coastal Program (LCP) Land Use Plan (LUP) for Mission Bay Park pursuant to the Coastal Act. The Fiesta Island Amendment to the MBPMP to modify land uses in the southwestern portion of the island focusing on the off-leash dog area was adopted by City Council on June 17, 2019. The De Anza Cove Amendment to the MBPMP proposes to reimagine, repurpose, and revitalize the northeast corner of Mission Bay Park. The City of San Diego released an updated proposal for the redevelopment of De Anza Cove in January 2022 and is currently soliciting initial public input. While the outcome of the De Anza Cove Amendment is to be determined, it would not be expected to substantially affect any of the analysis presented in this report. The City Council approvals required as part of the 2020 Master Plan process are a Community Plan Amendment, a LCP/LUP Amendment, and a new Development Plan for the lease. For any SeaWorld Master Plan approved by City Council to be effective, the Coastal Commission must certify it is consistent with the applicable Coastal Act Chapter 3 Coastal Resources Planning and Management Policies.

2.2.2 *2020 Master Plan Projects*

The proposed 2020 Master Plan is intended to guide development, redevelopment, and expansion throughout the SeaWorld leasehold area. Accordingly, the proposed 2020 Master Plan contains land use and development criteria for the entire leasehold and retains the five (5) planning areas that were established in the previous 2002 Master Plan. Planning area boundaries are shown in ***Figure 2–4, Planning Area Boundaries.*** The planning areas are identified below:

Area 1: SeaWorld Theme Park

The SeaWorld Theme Park area is developed with a variety of marine-related attractions and support facilities. Future allowed uses in Area 1 may include the following:

- Aquariums
- Special- effects theaters
- Land-based adventure rides
- Pelagic fish exhibits (large fish)
- Water play attractions
- Themed track or water rides

- Special format projection attractions
- Playgrounds
- Performance venues
- Boat rides
- Historic reenactment presentations
- Research facilities
- Animal habitat
- Rescue conservation/ wildlife rehabilitation facilities
- Special event centers and facilities
- Educational facilities
- Culinary facilities
- Gift shops
- Restrooms
- Support facilities
- Multi-media facilities
- Surface parking and access ways
- Other uses consistent with the intent and purpose of this 2020 Master Plan as determined by the City and the CCC during review of any project Coastal Development Permit application

Area 2: Guest Parking

Future allowed uses in Area 2 may include surface parking, temporary events and associated structures, outdoor educational activities, and operations yards. Reconfiguration and restriping of surface parking shall be allowed in response to operational needs. SeaWorld is committed to working with San Diego Metropolitan Transit System (MTS) to accommodate a new transit station by providing reasonable right-of-way within the Area 2 parking lot and a limited financial contribution for siting, design, installation, and construction per the terms of the SeaWorld Lease (Article XXXII [I]), when the opportunity arises.

Area 3: Administration and Support

Future allowed uses in Area 3 may include offices, water treatment, storage, maintenance, parking, and similar types of theme park support facilities.

Area 4: SeaWorld Marina

Future allowed uses in Area 4 may include marina operations, boat mooring, boat storage, dry storage facilities, boat loading, restrooms, lounge facilities, bayside café, and parking. As provided in the previous 2002 Master Plan, the proposed 2020 Master Plan proposes a future expansion of the existing marina by extending the three existing docks and adding a fourth dock to the west. The marina expansion would add 115 water berths for a total of 315 berths. This entitlement has been carried forward in the proposed 2020 Master Plan as a future conceptual development.

A*rea 5: Perez Cove Shoreline*

Future allowed uses in Area 5 may include parking, a hotel, including associated ancillary commercial uses, research and meeting facilities, and parkland. As provided in the 2002 Master Plan, the 2020 Master Plan includes a future 300-room hotel. The conceptual proposal includes a ballroom, meeting rooms, surface parking, and a parking structure. A small landing dock for hotel guests will be built in the Perez Cove Shoreline directly behind the hotel. Additional access from the shoreline to the marina docks will be provided on the north side of the site.

2.3 Project Trip Generation

2.3.1 *Existing 2019 SeaWorld Trip Generation*

To calculate the existing SeaWorld trip generation, ADT tube counts were collected near the tollbooth entrance and exit ways in August 2019. To capture all entrance trips, road tubes were placed on Perez Cove Way in two (2) locations. For visitor trips, tubes were placed north of the tollbooth visitor entrance and south of the employee entrance. For employee/marina trips, tubes were placed south of the Hubbs access driveway and north of the employee/marina access. By placing tubes in each location, the employee/marina trips were separated from the total counts, allowing for a distinction in trip generation between visitors and employee/marina trips. The exit tube counts were collected on the north leg (exit) of the SeaWorld Way/SeaWorld Drive intersection, as well as the northbound volumes on Perez Cove Way (where an exit lane is provided near the main entrance). The Perez Cove Way northbound trips were used to separate visitor from employee/marina trips. The inset figure below illustrates these count locations.

Existing Trip Generation Count Locations

Counts were collected over a two-week period in August 2019, when attendance is at its highest during the year. Six (6) days of data were collected on Tuesday, Wednesday, Thursday – August 6,

7, 8; and Tuesday, Wednesday, Thursday – August 13, 14, 15. From the existing counts, daily, AM peak hour (ins and outs), and PM peak hour (ins and outs), traffic volumes were developed.

Daily counts were averaged over the six (6) days to derive the 2019 existing SeaWorld ADT. For peak hour volumes, the 7-9AM peak period was broken in two (2) hour long periods: 7-8AM and 8-9AM. Similarly, the 4-6PM peak period was divided into 4-5PM and 5-6PM. For six (6) days of data, the method provided 12 hourly volumes for each of the AM and PM peak periods. Of the 12 volumes for each peak period, the highest six (6) volumes during the AM and PM peak periods, regardless of day, were averaged to arrive at the AM and PM existing trip generation. As shown in the detailed trip generation count data in ***Appendix A***, both hours of a given peak period can be included in the average if they are among the top six hours over the six days of counts. Generally, though not in all cases, the 8-9AM hour was higher during the AM peak period, while there was more variability during the PM peak period.

As shown in ***Table 2–1***, the Year 2019 baseline trip generation is 12,205 ADT with 308 AM peak hour trips (195 in/ 113 out) and 1,073 PM peak hour trips (316 in/ 757 out).

2.3.2 *Proposed 2020 SeaWorld Master Plan Trip Generation*

For the proposed 2020 SeaWorld Master Plan, the Project trip generation was calculated by using the average annual compound growth factor of one percent based on an expected one percent annual increase in attendance. This value was calculated using SeaWorld's 2020 Financial Goal presentation to investors on August 6, 2018, obtained from SeaWorld, and the AECOM and Themed Entertainment Association (TEA) *Theme and Museum Index: The Global Attraction Attendance Report*.

Buildout of the Master Plan is assumed for Horizon Year (Year 2040) conditions. For Horizon Year (Year 2040) conditions, the one percent growth factor was applied to the existing SeaWorld trip generation, as counted at the SeaWorld entrances, for a period of 21 years. In addition, by Year 2040, the hotel and marina expansion were assumed to be completed. The trip generation rates for hotel and marina taken from the *City of San Diego Trip Generation Manual, May 2003*, were used in the calculations.

The net Project trip generation was calculated by subtracting the existing 2019 SeaWorld trip generation from the expected growth by the near-term and horizon year scenarios.

Table 2–1 tabulates the net horizon year (Year 2040) Project traffic generation. By the Year 2040, growth from the 2020 Master Plan and the development of the hotel and marina is calculated to generate approximately 6,295 ADT with 266 AM peak hour trips (158 inbound/108 outbound) and 521 PM peak hour trips (236 inbound/285 outbound).

Table 2–1 also includes the net near-term (Year 2025) Project traffic generation. The near-term growth from the 2020 Master Plan is calculated to generate approximately 755 ADT with 19 AM peak hour trips (12 inbound/7 outbound) and 66 PM peak hour trips (19 inbound/47 outbound). All VMT analysis contained in the report is based on existing/near-term (i.e., "Opening Day")

conditions. However, the full Horizon Year (Year 2040) trip generation is assumed as the worst case for VMT analysis.

TABLE 2–1
PROPOSED 2020 SEAWORLD MASTER PLAN TRIP GENERATION

SeaWorld	Size	Daily Trip Ends (ADTs) [a]		AM Peak Hour [b]					PM Peak Hour [b]				
		Rate	Volume	% of ADT	In:Out Split	Volume In	Volume Out	Volume Total	% of ADT	In:Out Split	Volume In	Volume Out	Volume Total
NEAR-TERM (YEAR 2025)													
SeaWorld (Near-Term Year 2025)	97.2 acres	—	12,960	2.52%	63:37	207	120	327	8.79%	29:71	335	804	1,139
SeaWorld (Baseline Year 2019)	97.2 acres	—	12,205	2.52%	63:37	195	113	308	8.79%	29:71	316	757	1,073
Total Near-Term Growth (Project Trips) [c]	**97.2 acres**	**—**	**755**	**—**	**—**	**12**	**7**	**19**	**—**	**—**	**19**	**47**	**66**
HORIZON YEAR (YEAR 2040)													
SeaWorld (Horizon Year 2040)	97.2 acres	—	15,040	2.52%	63:37	241	139	380	8.79%	29:71	389	933	1,322
SeaWorld (Baseline Year 2019)	97.2 acres	—	12,205	2.52%	63:37	195	113	308	8.79%	29:71	316	757	1,073
Total Horizon Year Growth (Project Trips) [c]	**97.2 acres**	**—**	**2,835**	**—**	**—**	**46**	**26**	**72**	**—**	**—**	**73**	**176**	**249**
Resort [d]	300 rooms	10 /room	3,000	6%	60:40	108	72	180	8%	60:40	144	96	240
Marina [e]	115 berths	4 /berth	460	3%	30:70	4	10	14	7%	60:40	19	13	32
Total Horizon Year Net Increase in Project Trips	**—**	**—**	**6,295**	**—**	**—**	**158**	**108**	**266**	**—**	**—**	**236**	**285**	**521**

Footnotes:

a. Consistent with the SeaWorld MMRP requirements, existing traffic generation is based on two non-holiday summer weeks in July or August. Existing ADT tube counts collected Tuesday – Thursday, August 6-8, and August 13-15, 2019. Typically, MMRP counts have been conducted during August. The average of the six (6) days was used to develop the existing 2019 daily trip generation. Volumes include combination of visitors, employees, and marina trips.

b. Total AM and PM ins/outs derived from the August 2019 counts. The average of the maximum volumes from each of the six (6) days were used to develop the AM and PM trips. The % of ADT and In:Out Splits were calculated from the raw data.

c. SeaWorld forecast volume for near-term Year 2025 and horizon Year 2040 interpolated from the Themed Entertainment Association (TEA) report documenting annual growth in theme park attendance for the ten-year period between 2007-2017. An average annual growth factor of approximately 1% per year applied to baseline Year 2019 volumes. Overall increase in projected traffic volumes proportional includes an increase in employee trips.

d. Trip rate sourced to City of San Diego Trip Generation Manual, May 2003. The "Hotel (with convention facilities/restaurant)" rate was applied.

e. Trip rate sourced to City of San Diego Trip Generation Manual, May 2003. The "Marina" rate was applied.

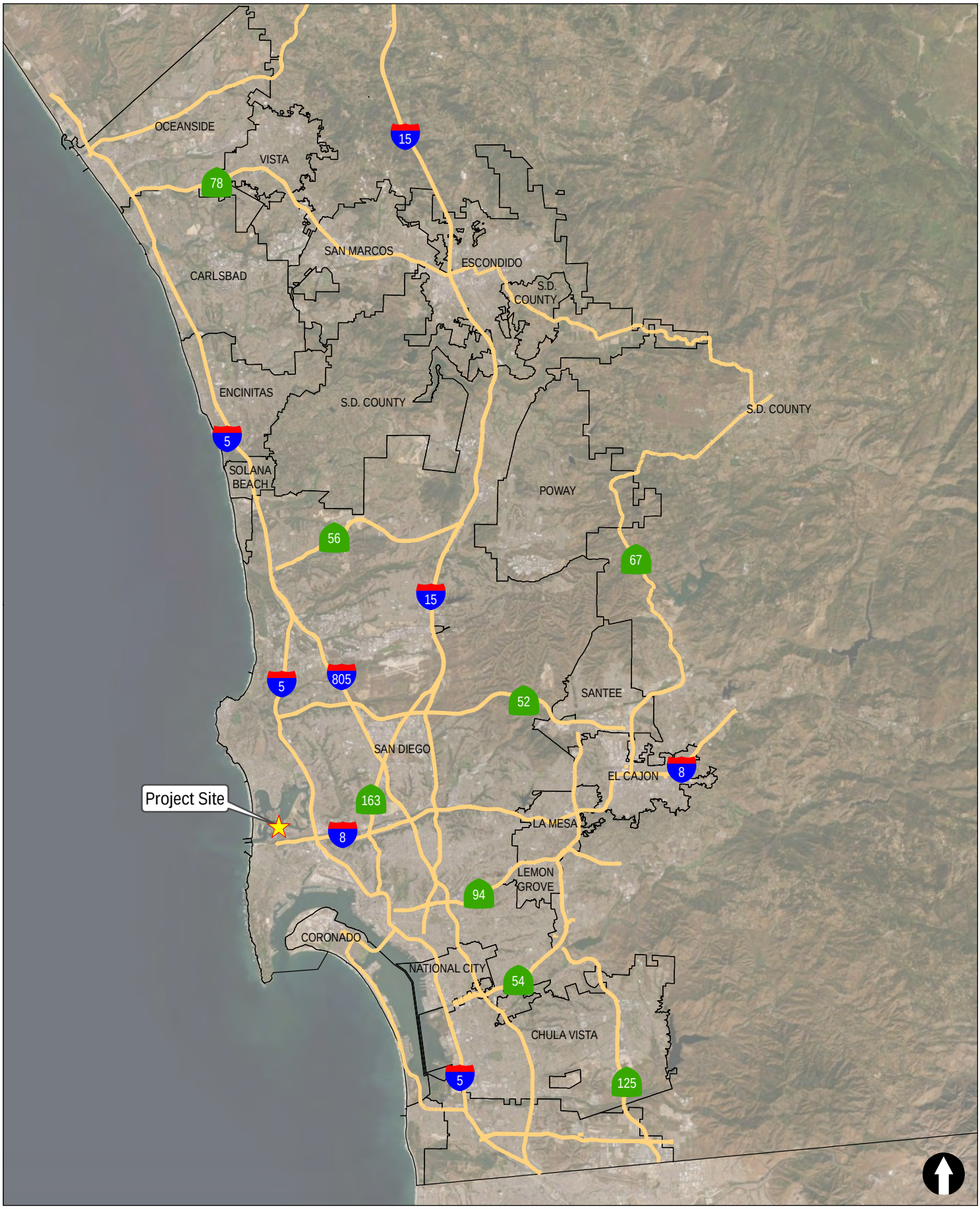

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Figure 2-1

Vicinity Map

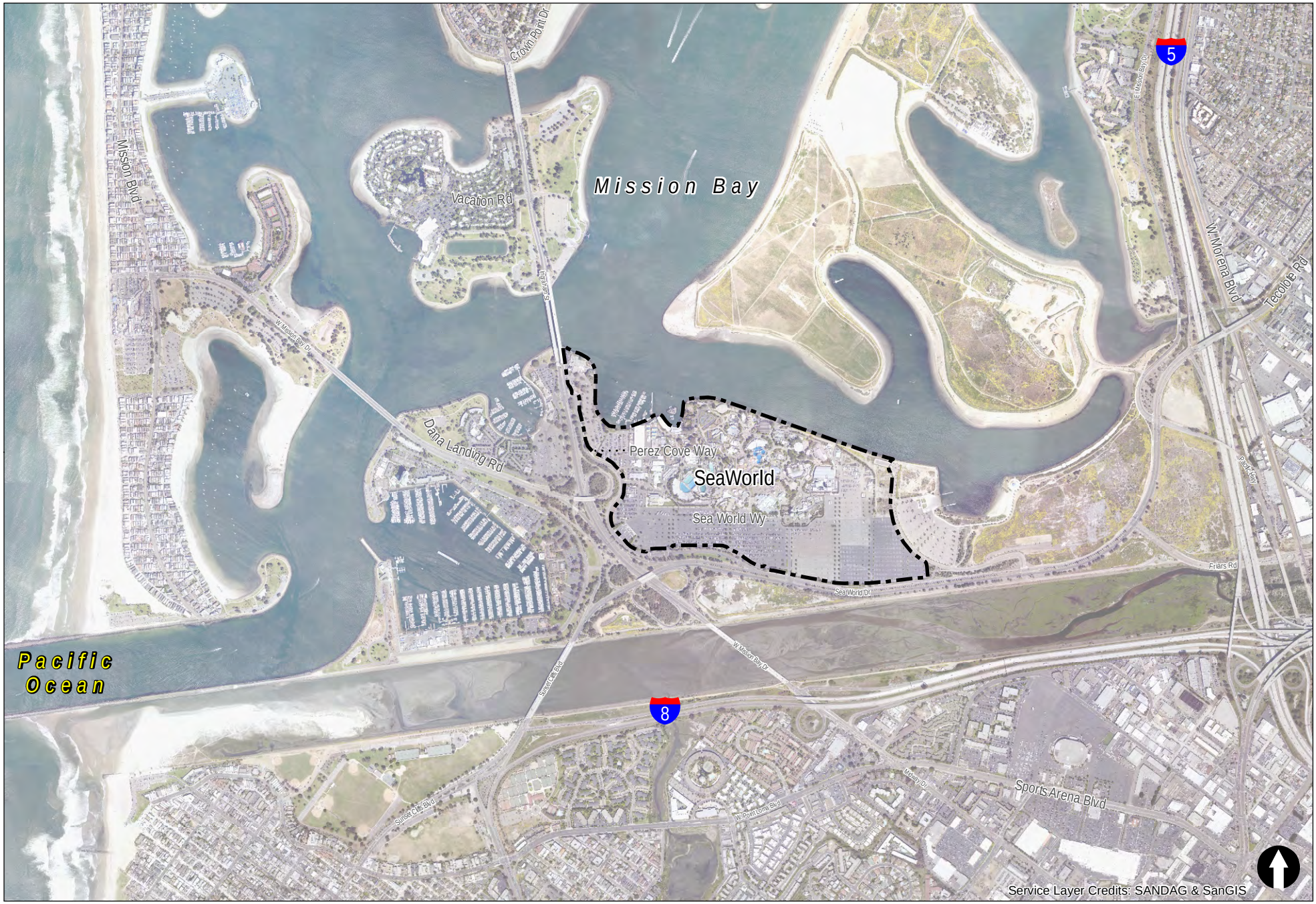

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Figure 2-2

Project Area Map

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Figure 2-3

Existing SeaWorld Facilities and Site Map

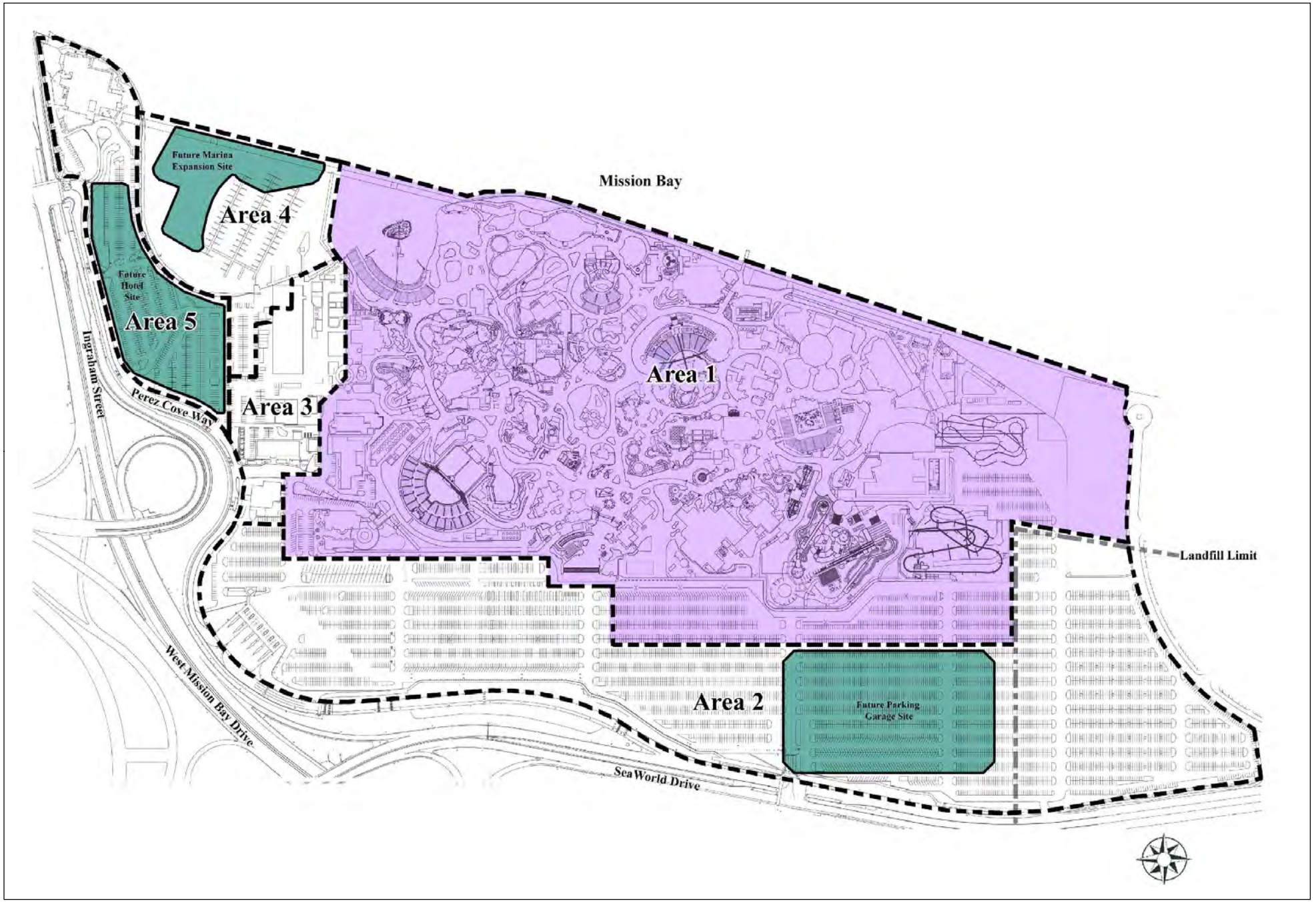

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Figure 2-4

Planning Area Boundaries

3.0 REPORT APPROACH

3.1 VMT Background

Vehicle Miles Traveled (VMT) is defined as the "amount and distance of automobile travel attributable to a project" per CEQA Guidelines Section 15064.3. VMT is a measure of the use and efficiency of the transportation network by land uses in a region. VMT is calculated based on individual vehicle trips generated and their associated trip lengths. VMT accounts for two-way (roundtrip) travel and is estimated for a typical weekday for the purposes of measuring transportation impacts.

3.2 Transportation Analyses

The potential transportation impacts of the proposed Project are based on VMT to satisfy the CEQA guidelines through SB 743. Public Resources Code section 20199, enacted pursuant to SB 743, identifies VMT as an appropriate metric for measuring transportation impacts along with the elimination of auto delay/Level of service (LOS) for CEQA purposes statewide. The justification for this paradigm shift is that auto delay/LOS impacts may lead to improvements that increase roadway capacity and therefore sometimes induce more traffic and greenhouse gas emissions. In contrast, constructing projects in VMT-efficient locations assists California in meeting greenhouse gas emissions targets. Therefore, consistent with SB 743 and CEQA Guidelines 15064.3, and the City's *Transportation Study Manual*, the CEQA significance determination for the Project is based only on VMT and not on LOS.

As a part of this report, in addition to the VMT analysis, the multi-modal network in the influence area of the Project was also reviewed. This includes Pedestrian, Bicycle and Transit facilities. Transportation Demand Management (TDM) measures were also reviewed and proposed.

3.3 City of San Diego Complete Communities: Mobility Choices

The City of San Diego adopted the Complete Communities: Mobility Choices Ordinance as part of its implementation of SB 743 and transition from LOS to VMT as the CEQA metric of significance for transportation impacts.

Mobility Choices is a programmatic approach to ensure Citywide VMT reductions for both discretionary and ministerial projects. The regulations are intended to strategically invest resources and direct active transportation infrastructure to areas where there is the greatest potential to reduce VMT.

See *Section 11.0* for further information and details of project-specific compliance with the Mobility Choices requirements.

4.0 VMT SIGNIFICANCE CRITERIA & METHODOLOGY

4.1 Local / Regional Agency Transition to SB743

A *Transportation Study Manual (TSM)*, dated September 29, 2020, has been approved by the City Council of San Diego on November 9, 2020 as part of the Complete Communities: Mobility Choices program. Project VMT was evaluated in accordance with the approved *TSM*.

4.2 VMT Significance Threshold

According to the City of San Diego's *TSM,* the transportation VMT thresholds of significance are shown in ***Table 4–1***. For this project, the applicable land use types and associated thresholds are highlighted in boldface.

TABLE 4–1
VMT SIGNIFICANCE THRESHOLDS

Land Use Type[1]	Thresholds for Determination of a Significant Transportation VMT Impact[2]
Residential	15% below regional average[3] resident VMT/Capita
Commercial Employment	15% below regional average[3] employee VMT/Employee
Industrial Employment	Regional average[3] employee VMT/Employee
Regional Retail	Zero net increase in total regional VMT[3]
Hotel	**See Commercial Employment**
Regional Recreational	**See Regional Retail**
Regional Public Facilities	See Regional Retail
Mixed-Use	Analyze each land use individually per above categories
Redevelopment	Apply the relevant threshold based on proposed land use (ignore the existing land use)
Transportation Projects	Zero net increase in total regional VMT[3]

Footnotes:

Source: City TSM Table 3 (September 2020)

1. See Appendix B of the TSM for specific land use designations.
2. Projects that exceed these thresholds would have a significant impact.
3. The regional average and total regional VMT are determined using the Travel Demand Model.

4.3 Technical Methodology – Significance Criteria

The technical approach for the Project is broken into the following two components.

- Screening Criteria
- Analysis Methodology

4.3.1 *Screening Criteria*

According to the *TSM*, a project that meets at least one of the following screening criteria would be presumed to have a less than significant VMT impact due to project characteristics and/or location.

1. **Residential or Commercial Project Located in a VMT Efficient Area:** The project is a residential or commercial employment project located in a VMT efficient area (15% or more below the base year average household VMT/capita or VMT/employee) based on the applicable location-based screening map produced by SANDAG.
2. **Industrial or Agricultural Project Located in a VMT Efficient Area:** The project is an industrial employment project located in VMT efficient area (in an area with average or below average base year VMT/employee) based on the applicable location-based screening map produced by SANDAG.
3. **Small Project:** The project is a small project defined as generating less than 300 daily unadjusted driveway trips using the City of San Diego trip generation rates/procedures.
4. **Locally Serving Retail/Recreational Project:** The project is a locally serving retail/recreational project defined as having 100,000 square feet gross floor area or less **and** demonstrates through a market area study that the market capture area for the project is approximately three miles (or less) and serves a population of roughly 25,000 people or less. Locally serving retail is consistent with the definitions of Neighborhood Shopping Center in the San Diego Municipal Code Land Development Code Trip Generation Manual. Locally serving recreation is consistent with the land uses listed in Appendix B of the *TSM*, given that it meets the square footage and market capture area above. Adding retail/recreation square footage (even if it is 100,000 square feet gross floor area or less) to an existing regional retail shopping area is **not** screened out.
5. **Locally Serving Public Facility:** The project is a locally serving public facility defined as a public facility that serves the surrounding community or a public facility that is a passive use. The following are considered locally serving public facilities: transit centers, public schools, libraries, post offices, park-and-ride lots, police and fire facilities, and government offices. Passive public uses include communication and utility buildings, water sanitation, and waste management.
6. **Affordable Housing:** The project has access to transit* and is wholly or has a portion that meets one of the following criteria: is affordable to persons with a household income equal to or less than 50% of the area median income (as defined by California Health and Safety Code Section 50093), housing for senior citizens [as defined in

Section 143.0720(e)], housing for transitional foster youth, disabled veterans, or homeless persons [as defined in 143.0720(f)]. The units shall remain deed restricted for a period of at least 55 years. The project shall provide no more than the minimum amount of parking per unit, per San Diego Municipal Code Section 143.0744. Only the portion of the project that meets the above criteria is screened out. For example, if the project is 100 units with ten deed-restricted affordable housing units, transportation VMT analysis would not be necessary for the ten affordable units but would be necessary for the remaining 90 units (unless they meet one of the other screening criteria). For purposes of applying the small project screening criteria, the applicant would only include the trip generation for the non-affordable housing portion of the project (since the affordable housing portion is screened out).

*Access to transit is defined as transit being located within a reasonable walking distance (1/2 mile) from the project driveway.

7. **Mixed-Use Project Screening Considerations:** The project's individual land uses should be compared to the screening criteria above. It is possible for some of the mixed-use project's land uses to be screened out and some to require further analysis. For purposes of applying the small project screening criteria, the applicant would only include the trip generation for portions of the project that are not screened out based on other screening criteria. For example, if a project includes residential and retail, and the retail component was screened out because it is locally serving; only the trip generation of the residential portion would be used to determine if the project meets the definition of a small project.
8. **Redevelopment Project Screening Considerations:** The project is a redevelopment project that demonstrates that the proposed project's total project VMT is less than the existing land use's total VMT. Exception: If a project replaces affordable housing (either deed restricted or other types of affordable housing) with a smaller number of moderate-income or high-income residential units, the project is not screened out and must analyze VMT impacts per *Table 4-1*.

4.3.2 *Analysis Methodology*

If a project is not presumed to have a less than significant VMT impact due to project characteristics and/or location, a detailed transportation VMT analysis is required per the *TSM.*

Table 4–2 further details the methodology based on the land use per the *TSM*.

TABLE 4–2
TRANSPORTATION VMT ANALYSIS METHODOLOGY BY LAND USE

Land Use Type	Methodology for Determination of a Significant Transportation VMT Impact
Residential	**For projects that generate less than 2,400 daily unadjusted driveway trips: I**dentify the location of the project on the SANDAG Resident VMT/Capita map. The project's Resident VMT/Capita will be considered the same as the Resident VMT/Capita of the census tract it is located in. Compare the project's Resident VMT/Capita to the threshold to determine if the impact is significant OR input the project into travel demand model to determine the project's Resident VMT/Capita. **For projects that generate greater than 2,400 daily unadjusted driveway trips:** Input the project into travel demand model to provide the project's Resident VMT/Capita.
Commercial Employment	**For projects that generate less than 2,400 daily unadjusted driveway trips:** Identify the location of the project on the SANDAG Employee VMT/Employee map. The project's Employee VMT/Employee will be considered the same as the Employee VMT/Employee of the census tract it is located in. Compare the project's Employee VMT/Employee to the threshold to determine if the impact is significant OR input the project into travel demand model to determine the project's Employee VMT/Employee. **For projects that generate greater than 2,400 daily unadjusted driveway trips:** Input the project into travel demand model to provide the project's Employee VMT/Employee.
Industrial Employment	**For projects that generate less than 2,400 daily unadjusted driveway trips:** Identify the location of the project on the SANDAG Employee VMT/Employee map. The project's Employee VMT/Employee will be considered the same as the Employee VMT/Employee of the census tract it is located in. Compare the project's Employee VMT/Employee to the threshold to determine if the impact is significant OR input the project into travel demand model to determine the project's Employee VMT/Employee. **For projects that generate greater than 2,400 daily unadjusted driveway trips:** Input the project into travel demand model to determine the project's Employee VMT/Employee.

(Continued on Next Page)

TABLE 4–2
TRANSPORTATION VMT ANALYSIS METHODOLOGY BY LAND USE

Land Use Type	Methodology for Determination of a Significant Transportation VMT Impact
(Continued from Previous Page)	
Regional Retail	Calculate the change to regional VMT. To calculate the change in regional VMT, the regional retail component of the project should be inputted into the travel demand model (year that is used to determine the VMT thresholds). The "with project regional retail" regional VMT produced by the model run is compared to the "no project" regional VMT.
Hotel	**See Commercial Employment**
Regional Recreational	**See Regional Retail**
Regional Public Facilities	See Regional Retail
Mixed-Use	Analyze each land use individually per above categories
Redevelopment	Analyze each land use individually per above categories Exception: If a project replaces affordable housing (either deed restricted or other affordable housing) with a smaller number of moderate-income or high-income residential units, the VMT assessment should incorporate an estimate of the aggregate VMT increase experienced by the displaced residents. The additional VMT due to displaced residents should be incorporated into the Resident VMT/Capita for the project.
Transportation Projects	Calculate the change to regional VMT. To calculate the change in regional VMT, the roadway network in the model should be adjusted to include the proposed transportation project. The "with transportation project" regional VMT produced by the model run is compared to the "no transportation project" regional VMT to determine if there is an increase in regional VMT.

Source: City TSM Table 4 (September 2020)

5.0 PROJECT VMT ANALYSIS APPROACH & SCREENING

As discussed previously, the Project was evaluated based on the significance determination thresholds and methodology described in *Section 4*.

5.1 Project Land Use Classification

The City of San Diego's *TSM* provides guidance for the City's CEQA significance thresholds, screening criteria, and methodology for conducting the transportation VMT analysis for a variety of land uses, including residential, commercial employment, regional retail, and others, as outlined in *Table 4–1*.

As tabulated in the Project trip generation, *Table 2–1*, the Project's trip generating land uses can be categorized as follows:

- SeaWorld Theme Park Growth
- SeaWorld Marina Expansion
- Perez Cove Resort Hotel

Based on the *TSM*, the analysis approach for these three land uses is based on different metrics. Therefore, the proposed uses are analyzed individually. A discussion of the land use classification (as summarized in *Table 4–1*) for each of the proposed Project components is summarized below.

5.1.1 *SeaWorld Theme Park*

The SeaWorld Theme Park area is developed with a variety of marine-related attractions and support facilities. The 2020 Master Plan provides for a variety of future attractions, facilities, and venues as detailed in *Section 2.2.2*.

SeaWorld is considered a "Regional Recreational" use per *Appendix B* of the *TSM*.

5.1.2 *SeaWorld Marina Expansion*

As provided in the previous 2002 Master Plan, the proposed 2020 Master Plan includes a future expansion of the existing marina by extending the three existing docks and adding a fourth dock to the west. The marina expansion would add 115 water berths. This entitlement has been carried forward in the proposed 2020 Master Plan as a future conceptual development.

Per *TSM: Appendix B*, the Marina is considered a "Regional Recreational" use. Therefore, it is grouped with the SeaWorld Theme Park for the purposes of VMT evaluation.

5.1.3 *Perez Cove Resort Hotel*

As provided in the 2002 Master Plan, the proposed 2020 Master Plan includes a future 300-room hotel. The conceptual proposal includes a ballroom, meeting rooms, surface parking, and a parking structure. A small landing dock for hotel guests will be built in the Perez Cove Shoreline directly

behind the hotel. Additional access from the shoreline to the marina docks will be provided on the north side of the site.

Per *TSM: Appendix B*, Hotel/Resort Hotel is considered a "Commercial Employment" use.

5.2 Project Screening

Per the *TSM*, the Project's individual land uses should be compared to the screening criteria from *TSM* described in *Section 4.3.1*. It is possible for some of a mixed-use project's land uses to be screened out and others to require further analysis.

5.2.1 *SeaWorld Theme Park & Marina VMT Screening*

As noted above, The SeaWorld Theme Park area is developed with a variety of marine-related attractions and support facilities. The 2020 Master Plan provides for a variety of future attractions, facilities, and venues as detailed in *Section 2.2.2*. The marina expansion would add 115 water berths. Together, these land uses are calculated to generate 3,295 ADT at Project buildout, as shown in *Table 2–1* of this report.

The SeaWorld Theme Park and Marina land uses are established by the TSM as regionally serving, and the ADT exceeds the small project threshold of 300 ADT. None of the other screening criteria described in *Section 4.3.1* are applicable to this component of the Project. Since the Project is not presumed to have a less than significant VMT impact due to project characteristics or location, VMT reduction measures are identified and quantified in the following sections, and a VMT analysis evaluating the net change in total regional VMT was conducted per the *TSM*.

5.2.2 *Perez Cove Resort Hotel VMT Screening*

As noted above, the future hotel in the proposed 2020 Master Plan includes 300 rooms. The conceptual proposal includes a ballroom, meeting rooms, surface parking, and a parking structure. The hotel is calculated to generate 3,000 ADT as shown in *Table 2–1*.

The Project is in Census Tract 76, which encompasses all of Mission Bay Park. Per the SANDAG SB 743 VMT Maps, Series 14 Base Year 2016 data, the Employee VMT/Employee for this Census Tract is 27.9 and the regional average Employee VMT/Employee is 27.2. Thus, the Project site is approximately 102.6% of the regional average and does not screen out as a VMT Efficient Area, which would require at least 15% below the regional average. The Hotel ADT also exceeds the small project threshold of 300 ADT.

None of the other screening criteria described in *Section 4.3.1* are applicable to this component of the Project. Since the Project is not presumed to have a less than significant VMT impact due to project characteristics or location, VMT reduction measures are identified and quantified in the following sections, and a VMT analysis comparing the Project hotel component's Employee VMT/Employee to the regional average was conducted per the *TSM*.

Figure 5–1 depicts Census Tract 76 and the Census Tract-level Employee VMT per Employee per the SANDAG screening map.

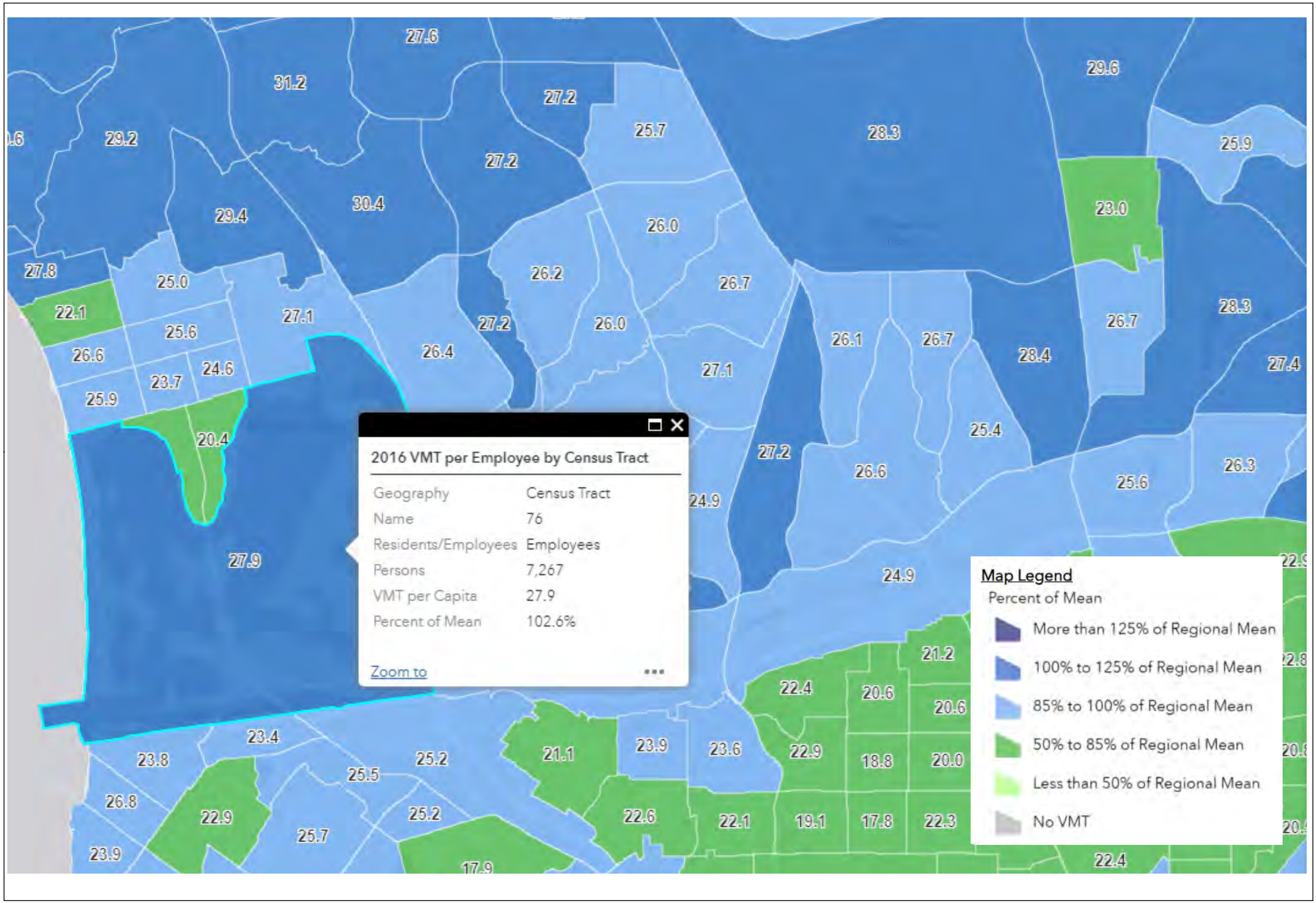

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Figure 5-1

Census Tract VMT Map

(SANDAG: 2016 VMT per Employee by Census Tract)

2020 SEAWORLD MASTER PLAN

6.0 VMT REDUCTION MEASURES

This section provides a brief overview of SeaWorld's existing TDM program and details the additional VMT reduction measures that will be implemented to demonstrate expected Project VMT below a level of significance. Existing measures are described for background and context only; not included nor quantified as part of future Project VMT reduction measures.

Potential reductions for VMT to employment-based projects would aim to achieve one or both of the following results:

- Reducing the number of automobile trips generated by the project.
- Reducing the average distance of remaining automobile trips generated by the project.

Measures that reduce single occupant vehicle trips or reduce travel distances are called transportation demand management (TDM) strategies. Several TDM strategies applied in combination is referred to as a TDM plan or program.

VMT reduction measures are sourced both to the *Quantifying Green House Gas Mitigation Measures* document published by CAPCOA (2010) and the City's *TSM Appendix E – TDM Strategies and Effectiveness Calculations.* These two (2) documents present several quantifiable TDM strategies that can be used to reduce a project's VMT.

The TDM measures identified in the *TSM* and CAPCOA documents that are used to quantify reductions in VMT are grouped into the following categories:

CAPCOA	**TSM**
Land Use/ Location ("LUT" series measures)	—
Neighborhood/ Site Enhancement ("SDT" series measures)	Neighborhood/ Site Enhancement
Parking Policy/ Pricing ("PDT" series measures)	Parking Policy/Pricing
Commute Trip Reduction Programs ("TRT" series measures)	Commute Trip Reduction Programs
Transit System Improvements ("TST" series measures)	Transit System Improvements

The following section discusses the current and proposed Project VMT reduction measures in detail.

6.1 Existing SeaWorld TDM Program

The following TDM and sustainability measures are currently sponsored or supported by SeaWorld (and are reflected in the 2019 existing count data):

- Hotel Shuttles – SeaWorld currently partners with nearby hotel operators shuttling approximately 2,000 guests per year.
- Private Buses – SeaWorld currently partners with private bus companies to bus approximately 27,000 guests per year.

- MTS Bus – MTS services SeaWorld by providing direct access to SeaWorld during high demand hours via Route 9 with direct service to SeaWorld (pre-Covid-19) Monday-Saturday from 9AM-4PM and Sunday from 8AM-8PM, with additional trips stopping at Ingraham Street / Perez Cove Way during the full range of hours discussed previously in this report. Connections include Pacific Beach and the Old Town Transit Center, which is a hub to eight bus routes, the Green Line trolley, the Coaster and Amtrak.
- Education Field Trip Buses – In 2019 and previous years, approximately 60,000 students, teachers, and chaperones arrived by bus each year.
- Electric Vehicle Charging Stations – SeaWorld currently provides two double-sided charging stations accessible to park guests (accommodates four vehicles).
- Bicycle Facilities – SeaWorld is currently served by a Class I bike route that connects to nearby hotels in Mission Bay Park. Three bicycle racks for guests (27 slots) are provided at the main park entrance. SeaWorld also provides bicycle racks for its employees at both the west and east security employee entrances.
- Promotion of Alternative Transportation – Through its website and marketing materials SeaWorld actively promotes the availability of alternative and sustainable transportation including walking, biking, hotel shuttles, private buses, MTS buses and connecting rail lines, and the use of multiple occupancy vehicles such as taxis, Uber and Lyft, as well as private vehicles.

It should also be noted that prior to summer 2019 SeaWorld provided discounted monthly MTS bus passes available for sale on-site to employees. As of summer 2019, fewer than 10 out of 3,900 employees took advantage of this program. SeaWorld is planning to reimplement a modified, easier to use program, described as part of the project design features below.

Since 1985, SeaWorld has constructed several pedestrian improvements. The 1985 Master Plan required SeaWorld to construct the original pedestrian/bike path around the leasehold. The 2002 Master Plan required SeaWorld to expand and improve the pedestrian/bike path around the leasehold. In addition, SeaWorld was required to construct the South Shore Promenade. ***Figure 6–1*** illustrates these pedestrian and bicycle improvements completed to date.

SeaWorld has also contributed substantially to construction of the West Mission Bay Drive Bridge Replacement project which provides two new parallel bridge structures with a Class I bike path on both bridges. SeaWorld contributed a fair share amount of $5,498,753 (47% of the City's 20% or 9.4% of the total cost) to this improvement. SeaWorld also contributed an amount of $2,760,784 to the City's CIP to widen SeaWorld Drive to six lanes between West Mission Bay Drive and Friars Road and improve the interchange of SeaWorld Drive at I-5. Per a 2017 agreement with the City, SeaWorld consented to the City's request to transfer SeaWorld traffic mitigation funds from the SeaWorld Drive CIP to the West Mission Bay Drive bridge CIP, bringing the total amount of SeaWorld funding for this major project to $8,259,537.

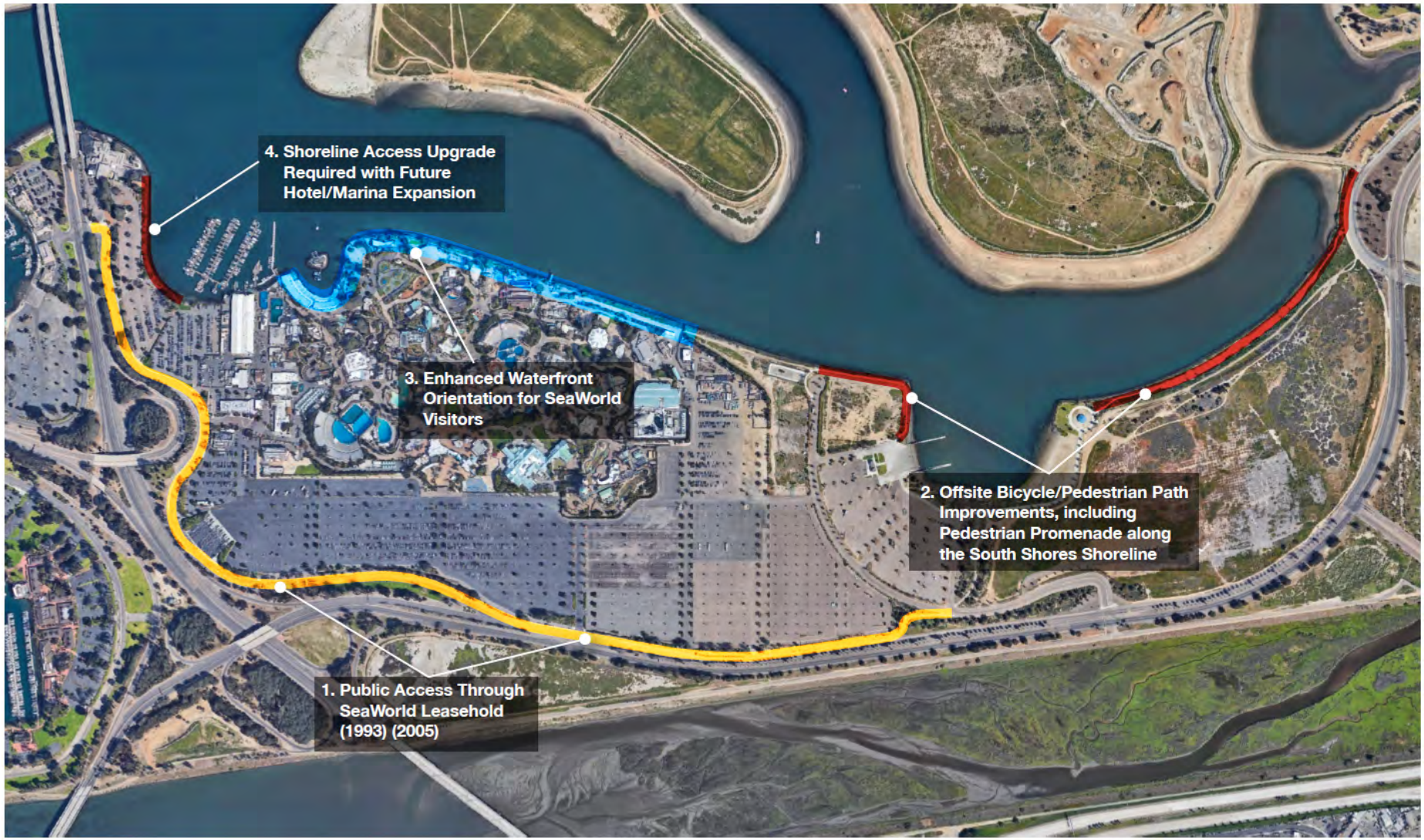

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Figure 6-1

Shoreline Acess Improvement

6.2 On-Site VMT Reduction Measures

The Project will implement and provide the following additional trip-reducing features, programs, and improvements within the SeaWorld leasehold area.

6.2.1 *Land Use/Location Measures*

The following CAPCOA Land Use/Location Measure, LUT-1: Increase Jobs Density, is applicable to the Project and inherent to its proposed land use, operations, and context.

- **LUT-1:** The Project will provide for increased density in terms of jobs per acre. This strategy also provides a foundation for implementation of many other strategies which would benefit from increased densities. For example, transit ridership increases with density, which justifies enhanced transit service.

  Existing SeaWorld operations currently employ up 4,100 people based on recent years, a jobs density of 42.2 jobs/acre (4,100 jobs ÷ 97.2 acres = 42.2 jobs/acre). At buildout of the Master Plan, the number of jobs on-site is expected to increase by up to 15%, or 48.5 jobs/acre. This increased density incentivizes and supports additional opportunities for ride-sharing, transit, biking, and other non-single occupant vehicle (SOV) modes of travel. Documentation of SeaWorld's anticipated increase in employees is provided in ***Appendix B***.

6.2.2 *Neighborhood/Site Enhancement Features*

The Project will complete the following four (4) pedestrian improvements as part of the TSM's Pedestrian Network Improvements (Primary; CAPCOA SDT-1) strategy:

- **PI-1:** Provide a minimum 10-foot wide public accessway (vertical access) from Perez Cove Way to shoreline somewhere between the existing Skyride station and the driveway/aisle at the southern end of the north employee parking lot (approximately 550 feet), with the final location to be determined when the final plans for the hotel are submitted for review.

- **PI-2:** Enhance the existing pedestrian paths along the Perez Cove shoreline by providing a minimum 10-foot-wide landscaped public walkway (lateral shoreline access) incorporated into the marina expansion design.

- **PI-3:** Enhance the shoreline access by providing a minimum 10-foot-wide landscaped public shoreline walkway (lateral shoreline access) along the waterfront that shall be incorporated into the hotel plans.

- **PI-4:** Continue to provide ongoing maintenance of the existing pedestrian/bicycle pathways within the project site.

Figure 6–1 also depicts these future shoreline access improvements. See callout #4 on this figure. This does not depict the final alignment of all future walkways.

The Project will also complete the following six (6) bicycle and micro mobility improvements as part of the *TSM's Bicycle Infrastructure Improvements* (Primary) and *Bicycle Parking* (Supportive) strategies:

- **BI-1:** Maintain the bicycle racks provided on-site (currently 27 spaces) at the main entrance. Monitor demand for bicycle parking and provide additional spaces as demand increases. This is a CAP Consistency Checklist item.

- **BI-2:** Maintain the employee bicycle racks at both the west security (currently 18 spaces) and east security (currently 10 spaces) employee entrances. Monitor demand for employee bicycle parking and provide additional spaces as demand increases. This is a CAP Consistency Checklist item.

- **BI-3:** Enhance the shoreline access with future expansion of the marina and hotel development by providing a minimum 10-foot-wide landscaped public shoreline walkway (lateral shoreline access) along the waterfront.

- **BI-4:** Provide plug-in stations at the bicycle storage area for electric bikes or other micro mobility vehicles, as demand warrants it.

- **BI-5:** Reserve space for parking alternative and micromobility vehicles such as shared use bikes, scooters, and similar services. The space will be publicly accessible, provide electricity, and be provided to one or more micromobility service providers. If space set aside for micromobility devices is not utilized by micromobility devices/services, this space will be used to provide additional bicycle racks as demand increases.

- **BI-6:** Continue to provide ongoing maintenance of the existing pedestrian/bicycle pathways within the project site.

6.2.3 *Transit System Improvements*

The Project will also complete the following four (4) transit improvements as part of the TSM's *Transit Network Expansion* (Primary, CAPCOA TST-3) and *Enhance Transit Amenities* (Supportive; CAPCOA TST-2) Strategies:

- **TI-1:** Improve the amenities at the existing SeaWorld bus stop (Stop ID: 13059) to meet all standard MTS design criteria for 201-500 passenger boardings, which will include the following amenities not currently provided:

    - Passenger Shelter
    - Route Map

- **TI-2:** Coordinate with MTS regarding Route 9 service to the SeaWorld bus stop to extend the existing span of service, currently 9:06 AM to 4:08 PM, to match SeaWorld's hours of operation.

- **TI-3:** Coordinate with SANDAG, City of San Diego, and MTS to accommodate a Transit Station within the Area 2 parking lot per the terms of the SeaWorld Lease, when the opportunity arises. Design of the future parking structure, if necessary, would accommodate a transit station.

6.2.4 *Commute Trip Reduction*

The Project will also implement the following four (4) commute trip reduction programs as project features.

- **CTR-1:** CAPCOA TRT-3: Provide Ride-Sharing Program – The Project will promote ride-sharing programs through a multi-faceted approach to include: designating up to five percent of employee parking spaces for ride-sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles, and providing a web site or message board for coordinating rides. This is a CAP Consistency Checklist item.

- **CTR-2:** CAPCOA TRT-7: Implement Commute Trip Reduction Marketing – The Project shall promote the use of the bike share/micro mobility fleet and educate employees on the non-SOV transportation options in the area through participation in SANDAG's iCommute TDM program. To realize the VMT reduction associated with CTR-2/TRT-7, the TDM Plan identified in this report must be marketed to new and existing employees through a website maintained by the employer, monthly email newsletter blasts, promotional materials made publicly visible in common areas, and through an information packet that will accompany new hire documentation, including all part-time and seasonal employees. This is a CAP consistency checklist requirement item.

- **CTR-3:** As part of the TDM Plan, the Project will dedicate an employee within the park to the role of "Transportation Coordinator (TC)." The TC would be responsible for developing, marketing, implementing, and evaluating the commute VMT reduction measures offered through the TDM Plan.

- **CTR-4:** As part of the TDM Plan, the Project will implement an updated employee transit pass program, which will provide a transit pass subsidy to all full-time, part-time, temporary/seasonal employees working on the property. The subsidy value will be limited to the equivalent value of 25% of the cost of an MTS "Regional Adult Monthly/30-Day Pass" (currently $72 for a subsidy value of $18 per month). The program will also offer a ticket discount of $5 to guests who show their bus pass.

It should be noted that, as a standalone measure, Transit Fare Subsidies can provide up to a 20% work VMT reduction associated with CAPCOA TRT-4. However, because the transit pass program included as CTR-4 is proposed as a replacement for a program discontinued in 2019, for the purposes of quantifying VMT reduction CTR-4 is **not quantified**. CTR-4 is **only** being considered as supportive measure for CTR-2/TRT-7.

6.2.5 *Other TDM Measures*

In addition to the measures listed above, the Project will also implement the following TDM measures:

- **TDM-1:** Maintain private tour and education shuttle bus programs and expand these programs as demand increases.

- **TDM-2:** Provide opportunities of water travel to the park. When vacant slips are available in the marina, SeaWorld will extend these for day use by park guests arriving by water. Park visitors will be able to check for and reserve vacant slips via website. The number of vacancies during the peak summer months is typically very limited.

These miscellaneous TDM measures will be implemented but are not relied upon for any quantifiable VMT reductions in the subsequent VMT analysis.

6.3 Off-Site VMT Reduction Measures

To provide further VMT reductions, the Project will provide the following seven (7) off-site VMT reducing active transportation improvements.

Figure 6–2 depicts these off-site active transportation improvements.

6.3.1 *Pedestrian Improvements*

The Project shall provide the following pedestrian-related facilities and enhancements, generally along SeaWorld Drive.

- **OS-1:** Complete sidewalk along the north side of Sea World Drive from E. Mission Bay Drive-Pacific Highway to the I-5 freeway southbound ramps. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

- **OS-2:** Complete sidewalk along the north side of SeaWorld Drive from Friars Road to E. Mission Bay Drive-Pacific Highway. Construct ADA compliant curb ramps on the northeast and southeast corners at Sea World Drive/E. Mission Bay Drive-Pacific Highway. Install current City of San Diego standard crosswalks and pedestrian countdown signal heads on all legs of this intersection. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

- **OS-3:** Complete sidewalk along the north side of SeaWorld Drive from South Shores Parkway to Friars Road. Construct ADA compliant curb ramps on the northwest and northeast corners of SeaWorld Drive / South Shores Parkway. Install current City of San Diego standard crosswalks and pedestrian countdown signal heads on all legs of this intersection.

Collectively, these improvements will complete the gap in the pedestrian network between the SeaWorld Drive / I-5 interchange and the existing public access multi-use path through the SeaWorld leasehold.

6.3.2 *Bicycle Improvements*

The Project shall provide the following bicycle-related facilities and enhancements, generally along SeaWorld Drive.

- **OS-4:** Restripe existing Class II bicycle lanes SeaWorld Drive from E. Mission Bay Drive to Friars Road to include a minimum three (3) foot buffer between the travel lane and the bicycle lane within the existing roadway width. Provide bicycle detection and painted bicycle detection location indicators at the signalized intersections of Sea World Drive and E. Mission Bay Drive/Pacific Highway and Sea World Drive and Friars Road if bicycle detection is not currently present. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

- **OS-5:** Restripe existing Class II bicycle lanes on SeaWorld Drive from Friars Road to South Shores Parkway (Class I Bicycle Path entrance) to include a minimum three (3) foot buffer between the travel lane and the bicycle lane within the existing roadway width. Provide bicycle detection and painted bicycle detection location indicators at the signalized intersection of Sea World Drive/South Shores Parkway if bicycle detection is not currently present. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

- **OS-6:** Provide loop detection for vehicles and bikes in both directions of travel on SeaWorld Drive at the I-5 interchange. This improvement is being provided as a countermeasure for study area intersections that meet the Systemic Safety hotspot criteria per the City's *Transportation Study Manual* and Local Mobility Analysis requirements.

- **OS-7:** Provide loop detection for vehicles and bikes in both directions of travel on Ingraham Street at Riviera Drive (Systemic Safety). This improvement is being provided as a countermeasure for study area intersections that meet the Systemic Safety hotspot criteria per the City's *Transportation Study Manual* and Local Mobility Analysis requirements.

Collectively, these improvements OS-4 through OS-6 will enhance the existing bicycle network between the SeaWorld Drive / I-5 interchange and the existing public access multi-use path through the SeaWorld leasehold. OS-7 provides a spot enhancement to the existing bicycle corridor on Ingraham Street.

Figure 6–3 provides a conceptual design of the bike lane enhancements on SeaWorld Drive (OS-4, OS-5) to demonstrate feasibility.

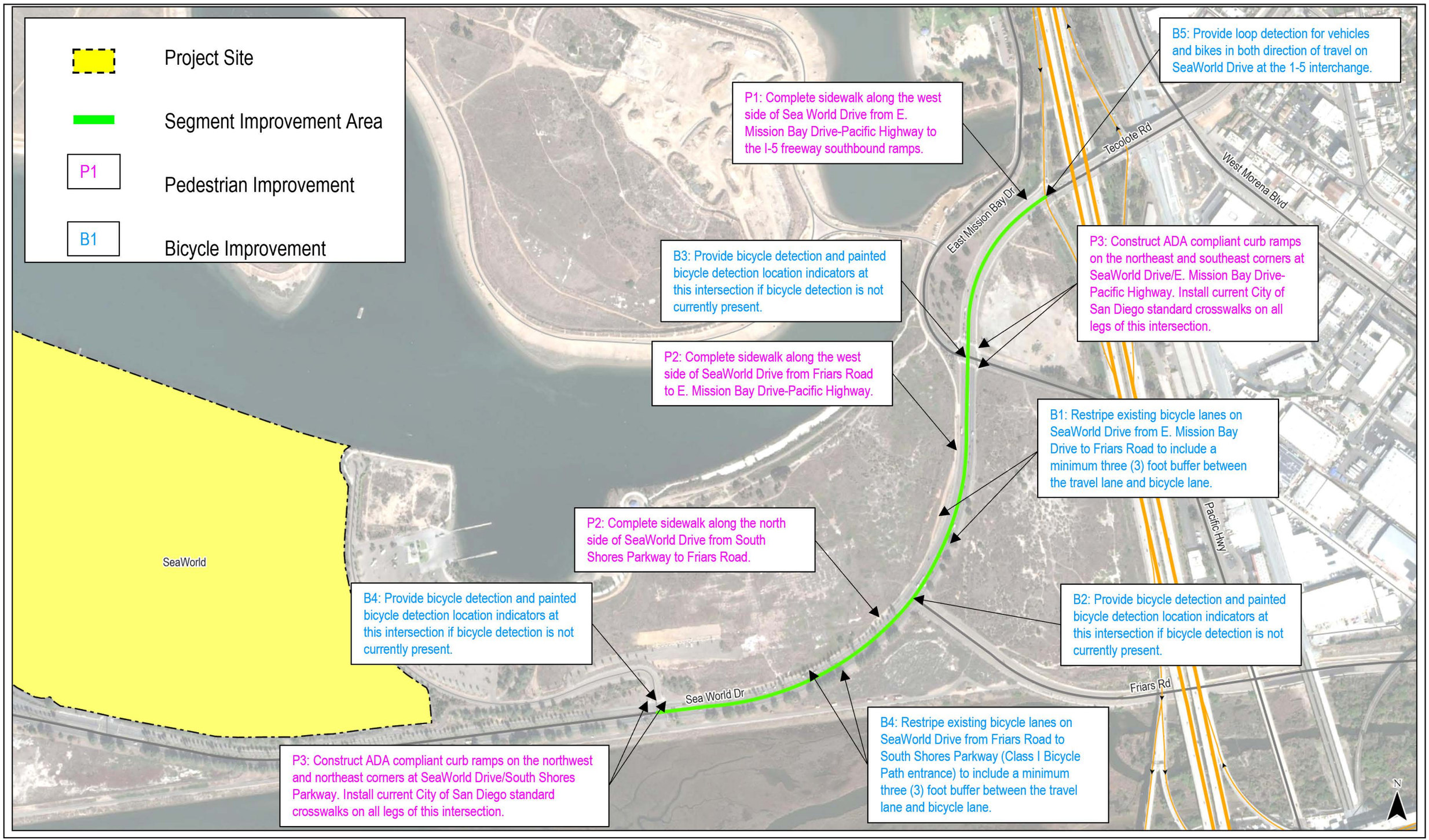

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Figure 6-2
Off-Site Active Transportation Improvements

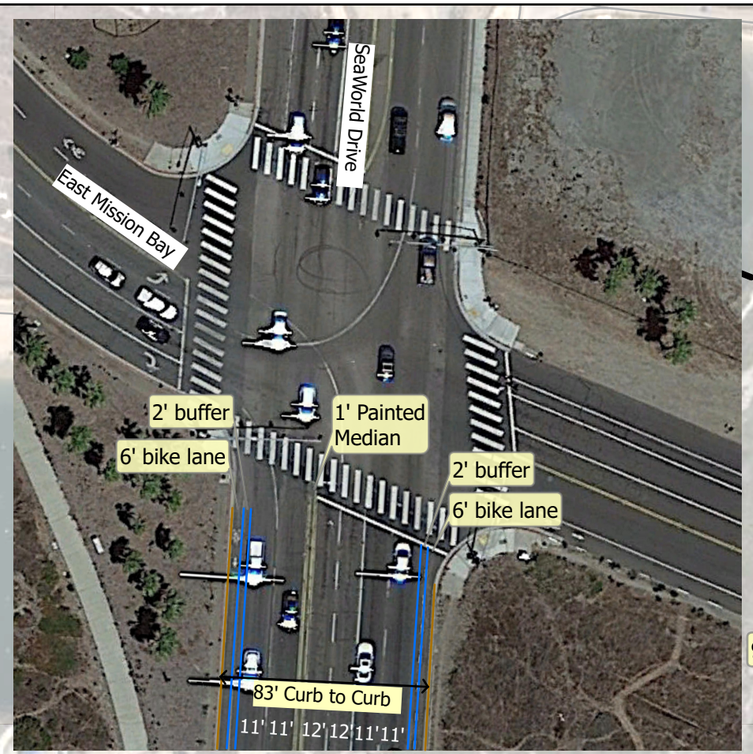
Project Site

Location of Bicycle Improvements

Existing Curb & Gutter

Existing Asphalt Berm

Note: Vehicular lane widths are conceptual only to demonstrate buffered bike lane implementation (with 6’ bike lane and 2-3’ buffer) is feasible within the existing traveled way.



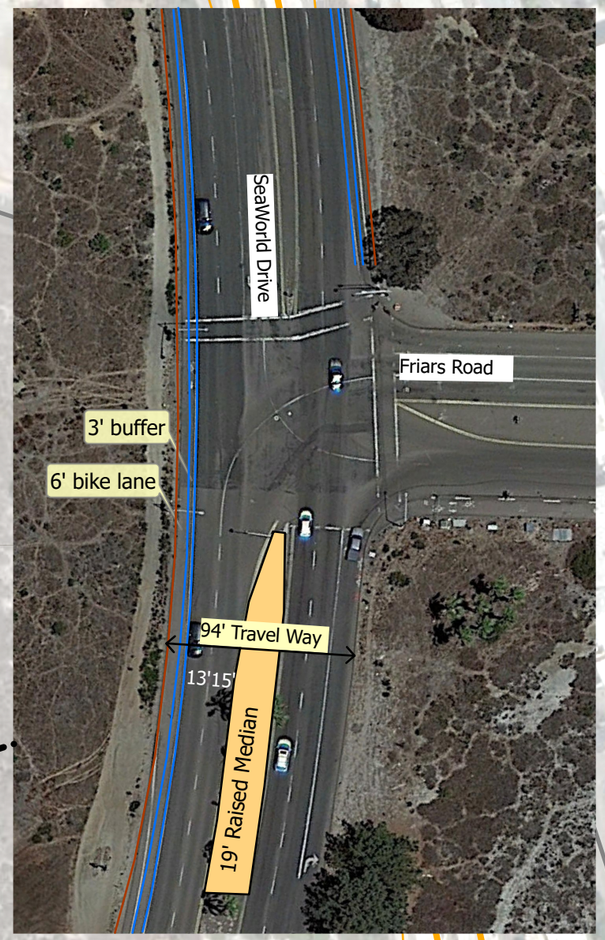


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Figure 6-3
SeaWorld Drive Concept Bike Improvements

7.0 EFFECTIVENESS OF VMT REDUCTION MEASURES FOR REGIONAL RECREATION LAND USES

This section calculates the expected effectiveness of the VMT reduction measures described in *Section 6.2* for Project regional recreation land uses, according to guidance from CAPCOA and the *TSM*. The 2010 CAPCOA report, the latest approved version at the time of project study initiation, is used.

This section is solely focused on quantifying the applicable VMT reduction measures. Implementation is discussed in *Section 12*.

Based on a review of criteria from the 2010 CAPCOA report, the location setting of the Project site is best considered *Suburban Center*. LLG reviewed the location setting criteria from CAPCOA as they pertain to the Project site and surrounding area including location relative to central business district (CBD), jobs/housing ratio, typical building height, typical street pattern, typical setback, parking supply, parking prices, and transit availability. A table is provided in ***Appendix C*** documenting the CAPCOA location criteria and their applicability to the Project area. As shown in ***Appendix Table C-1***, six of eight criteria correspond a setting of Suburban Center.

The global maximum VMT reduction for any combination of land use, neighborhood enhancements, parking, transit, and commute trip reduction strategies in a Suburban Center setting is 20%

The effectiveness of Commute Trip Reduction measures (i.e., TRT series measure) that will be implemented to reduce the Project's work-related VMT were discounted when evaluating total VMT as required for the regional recreation (SeaWorld Theme Park and Marina) components.

Per guidance from CAPCOA, employees' work-related VMT can be assumed to be 60% of overall project VMT but can be adjusted for project-specific land use mixes. Accordingly, the following assumptions were made in discounting work-related VMT reduction measures to account for work-related versus overall VMT:

- SeaWorld Theme Park and Marina: 20% work-related/ 80% non-work-related

This is based on the following data and assumptions:

- Park employees comprise 10% of park population on typical day. (*SeaWorld estimation*)
- However, employees are overrepresented as a share of vehicle traffic due to the high levels of vehicle occupancy in guest vehicles.
- Guest vehicle occupancy ratio (VOR) assumed to be twice that of employees based on engineering judgment and high-level discussion with SeaWorld. **Therefore, employees would represent 20% of the vehicle traffic (ADT) to/from SeaWorld.**
- There are no available data sources that distinguish between guest and employee trip length which would allow for further refinement of the work-related VMT estimate.

Appendix C also contains excerpts from all relevant CAPCOA measures and ***Appendix D*** provides the City of San Diego *TSM – Appendix E*.

7.1 Effectiveness of Individual On-Site VMT Reduction Measures

This section will calculate the effectiveness of all measures, including physical improvements, programs, and inherent characteristics of the Project provided within the SeaWorld leasehold area.

7.1.1 *CAPCOA LUT-1: Increase Density*

This measure reflects the Project's inherent land use, operations, and context. The Project will increase jobs density on the site, thereby incentivizing and supporting additional opportunities for ride-sharing, transit, biking, and other non-single occupant vehicle (SOV) modes of travel. As of 2019, peak season employment was up to 4,100 employees. At buildout of the Master Plan this is expected to increase by 15% to approximately 4,700 employees (rounded to nearest hundred). Relative to the trip generation forecast, this is a conservative assumption as the Project Horizon Year trip generation calculations assume work-related ADT will increase at the same rate as overall park attendance. As discussed in *Section 2.3*, Horizon Year trip generation assumes a 1% compound annual growth rate between 2019 and 2040, or about 23.2% total growth over existing.

The reported range of effectiveness for CAPCOA LUT-1: Increase Density is 0.8-30%. Using the formulas in CAPCOA, the increased jobs density corresponds to a 2.21% overall VMT reduction based on the net change between baseline and With Project conditions.

Baseline (Jobs Per Acre)

- Number of Jobs Per Acre = 42.2 (4,100 jobs ÷ 97.2 acres)
- A =Percent Increase in Jobs per Acre (compared to typical ITE development) = 111%
- B = Elasticity of VMT with respect to density = 0.07
- VMT Reduction = A x B = 7.77%

With Project Implementation (Jobs Per Acre)

- Number of Jobs Per Acre = 48.5 (4,715 jobs ÷ 97.2 acres)
- A =Percent Increase in Jobs per Acre (compared to typical ITE development) = 143%
- B = Elasticity of VMT with respect to density = 0.07
- VMT Reduction = A x B = 9.98%

Net Change

- With Project – Baseline = 9.98% - 7.77% = 2.21%

7.1.2 *CAPCOA SDT-1: Provide Pedestrian Network Improvements*

The inclusion of enhanced pedestrian connections proposed as PI-1 through PI-4 would achieve a 1.0% inherent overall Project VMT reduction associated with CAPCOA **SDT-1: Provide Pedestrian Network Improvements** (consistent with the City *TSM*). The reported range of effectiveness for SDT-1 is 0-2%. The 1.0% overall VMT reduction is the net effect of the proposed pedestrian network enhancements. As described in previous sections, SeaWorld currently provides and maintains several multi-use paths on-site.

Baseline (Extent of Pedestrian Accommodations)

- Within Project (Urban or Suburban) = 1.0%

With Project Implementation (Extent of Pedestrian Accommodations)

- Within Project & Connecting Off-Site (Urban or Suburban) = 2.0%

Net Change

- With Project – Baseline = 2.0% - 1.0% = 1.0%

This measure reflects the Project's enhancement of a pedestrian access network to link areas of the Project site and improved external connectivity. The Project will provide a pedestrian access network that connects from Perez Cove Way to the shoreline, as well as expanded and enhancing pedestrian facilities along the shoreline.

7.1.3 *TSM Bicycle Infrastructure Improvements & Bicycle Parking*

The inclusion of enhanced bicycle connections proposed as BI-3 and BI-4 would achieve a 1.25% inherent overall Project VMT reduction consistent with the *TSM* Primary TDM Strategy of Bicycle Infrastructure Improvements. The reported range of effectiveness for this measure from the *TSM* is 0.6-2.5%.

The Center for Clean Air Policy (CCAP) *Transportation Emission Guidebook* (2005) attributes a 1-5% VMT reduction range for comprehensive bicycle programs. Based on the CCAP Guidebook, the combined reduction for all bicycle-related measures is 2.5% for and one-quarter of 2.5% (i.e., 0.625%) for each individual measure.

The bicycle parking proposed as BI-1 and BI-2 is a Supportive strategy per the *TSM* which would enhance the effectiveness of the Primary strategy but is not separately quantified. On-site bicycle parking is currently under-utilized, but the Project will monitor bicycle parking demand as part of its TDM program and provide additional bicycle parking as needed.

The bicycle infrastructure improvements and bicycle parking, described in six (6) project measures, equal two (2) measures (one primary, one supportive) for calculating VMT reduction. Therefore, the calculated VMT reduction is 1.25% (0.625% + 0.625%).

For the purposes of total VMT as the metric for the Project regional recreation land uses, it is assumed that these bicycle measures will also contribute to reducing VMT not just on-site but within the walkshed/bikeshed influence area (approximately 1.5-mile radius) surrounding the site.

7.1.4 *CAPCOA TRT-3: Provide Ride-Sharing Program*

This measure will increase employee vehicle occupancy by ride sharing, with the result of fewer cars driving to the Project site, and thus a decrease in VMT. The Project will include a permanent ride-sharing program promoted through a range of features such as: designating up to 5% of employee parking spaces for ride-sharing vehicles based on demand, designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles, and providing a web site or message

board for coordinating rides. CAPCOA's reported range of commute VMT reduction is 1-15%. Using the formulas in CAPCOA with Project-specific inputs of suburban center and 100% of employees eligible for the program, the ride-sharing program measure results in a 10.0% work-related VMT reduction associated with CAPCOA TRT-3, corresponding to a 3.0% overall VMT reduction.

- A = % Reduction in Work VMT = 10.0%
- B = % Employees Eligible = 100.0%
- Work VMT Reduction = A x B = 10.0%

The work-related VMT reduction is adjusted to an overall regional recreation VMT reduction as follows:

- % Reduction in Work VMT = 10.0%
- Work VMT % of overall regional recreation VMT = 20%
- % Overall regional recreation VMT reduction = 2.0%

7.1.5 *CAPCOA TRT-7: Implement Commute Trip Reduction Marketing*

To realize the maximum benefits of the VMT reduction measures, the Project shall provide employee information on trip reduction and alternative mode options. This measure will also educate employees on the non-SOV transportation options in the area through participation in SANDAG's iCommute TDM program. This can effectively be done through implementation of **CAPCOA TRT-7: Implement Commute Trip Reduction Marketing** (consistent with the City TSM). This measure can be used without implementing any actual transit subsidy offerings. However, this measure would be supported by an improved transit subsidy program (included as project feature CTR-4), offering a 25% discount on monthly transit passes to all full-time, part-time, and temporary/seasonal employees. The transit subsidy program replaces a prior program that was discontinued in 2019. Marketing the utilization of SANDAG's TDM Program "iCommute" would support the spreading of information on transportation choices in the area.

Information sharing and marketing are important components to successful commute trip reduction strategies. Implementing commute trip reduction strategies with a complementary marketing plan will result in higher VMT reductions. For the Project, this will be provided by SeaWorld and the Project's required TDM Plan.

The TDM Plan will be marketed to all new and existing employees, including seasonal and part-time employees, through a website maintained by SeaWorld, monthly email newsletter blasts, promotional materials made publicly visible in common areas, and through an information packet that would accompany new hire documentation. A designated Transportation Coordinator will be responsible for implementing the TDM Plan.

CAPCOA's reported range of total VMT reduction for this commute reduction mitigation measure is 0.8 – 4%. Using the formulas in CAPCOA with Project-specific inputs and a 100% employee

eligibility factor, the TDM Plan marketing program results in a 4.0% work-related VMT reduction associated with CAPCOA TRT-7, corresponding to a 0.8% overall VMT reduction.

- A = % Reduction in Work Vehicle Trips = 4.0%
- B = % Employees Eligible = 100.0%
- C = Adjustment from Work Vehicle Trips to Work VMT = 1.0
- Work VMT Reduction = A x B x C = 4.0%

The work-related VMT reduction is adjusted to an overall regional recreation VMT reduction as follows:

- % Reduction in Work VMT = 4.0%
- Work VMT % of overall regional recreation VMT = 20%
- % Overall regional recreation VMT reduction = 0.8%

7.2 Combined Effectiveness of On-Site Trip Reduction Measures

The City *TSM* and CAPCOA Report acknowledge that individual strategy reductions are not additive, but rather multiplicative and weighted to address the fact that the impact of additional strategies becomes less as they provide incremental benefits to the overall reduction. *Appendix E* of the City's *TSM* and Chapter 6 of the CAPCOA Report discuss the rules for combining strategies or measures for application to VMT reductions. A multiplicative formula is used to scale the overall reduction as follows:

- Overall % VMT Reduction = 1-[(1-A)*(1-B)*(1-C)*(1-D)*…]
- Where A, B, C, D, … = individual mitigation strategy reduction percentages for the strategies to be combined in each category

First, each category must be weighted prior to combining and weighting the total VMT reduction percentage. For the proposed Project, reductions within each category were weighted first , subject to category maximums. The resulting percent reductions were then weighted to arrive at the total Project VMT reduction. The following is a summary of the VMT reductions attributed to each of the individual strategies (organized in their respective TDM strategy categories as required in the applied methodology):

7.2.1 *Land Use (CAPCOA LUT) Measures*

The weighted reduction of the Project LUT measure described above is 2.21% to overall VMT as there is only one quantifiable measure within this category. The categorical maximum for land use measures in a suburban center location is 10%.

7.2.2 *Neighborhood/Site Enhancement (CAPCOA SDT) Measures*

For the sum of the Project SDT measures described above, the weighted reduction is calculated at 2.24% overall VMT using the applied methodology. A maximum of 5.0% overall is permitted for the SDT series. The calculations are shown below:

SDT-1 = 1.0%
TSM Bike Infrastructure = 1.25%
Total Overall SDT Reduction = 1 - (1-1.0%)*(1-1.25%) = 2.24%

7.2.3 *Transit System Improvement (CAPCOA TST) Measures*

The weighted reduction of the Project TST measures described above is 2.4% for overall VMT as there is only one quantifiable measure within this category. A maximum of 10% overall is permitted for the TST series.

7.2.4 *Commute Trip Reduction (CAPCOA TRT) Measures*

For the sum of the Project TRT measures described above, the weighted reduction is calculated at 4.16% to overall VMT, using the applied methodology. The categorical maximum reduction for the TRT series is 25% for work VMT, 15% overall. The calculations are shown below:

TRT-3 = 10.0%
TRT-7 = 4.0%
Total Work-Related TRT Reduction = 1 - (1-10.0%)*(1-4.0%) = 13.6%

Total Overall TRT Reduction = 13.6% * 20% = 2.78%

7.2.5 *Combined On-Site VMT Reduction*

The combined reduction for overall VMT for the SeaWorld Theme Park and Marina components is 9.29%, as calculated below.

Combined Reduction: 1 - (1-2.21%)*(1-2.24%)*(1-2.4%)*(1-4.16%) = 9.29%

The global maximum reduction of all VMT reduction measures combined is 20% in a suburban center setting.

When calculating the effect on total regional VMT, the measure of effectiveness for the Regional Recreation land uses, the 9.29% reduction is applied to total VMT within the SeaWorld leasehold. This is discussed further and applied in *Section 9.0*.

7.3 Effectiveness of Individual Off-Site VMT Reduction Measures

This section quantifies the effectiveness of the off-site VMT reduction measures proposed as OS-1 through OS-6 and described in *Section 6.3*. It should be noted that OS-7, pertaining to the provision of bicycle detection at the intersection of Ingraham Street and Riviera Drive, was not directly quantified as it is not part of a continuous corridor of improvements. This improvement would, however, enhance bicycle conditions along the existing bicycle facilities on Ingraham Street.

7.3.1 *CAPCOA SDT-1: Provide Pedestrian Network Improvements*

The provision of missing sidewalk connections, missing or substandard curb ramps, and missing or substandard crosswalks proposed as OS-1 through OS-3 would achieve a 2.0% inherent overall Project VMT reduction associated with CAPCOA **SDT-1: Provide Pedestrian Network Improvements** (consistent with the City *TSM*). The reported range of effectiveness for SDT-1 is 0-2%. The 2.0% overall VMT reduction is the net effect of the proposed pedestrian network enhancements.

Baseline (Extent of Pedestrian Accommodations)

- Within Project (Urban or Suburban) = 0.0%

With Project Implementation (Extent of Pedestrian Accommodations)

- Within Project & Connecting Off-Site (Urban or Suburban) = 2.0%

Net Change

- With Project – Baseline = 2.0% - 0.0% = 2.0%

The net effect of this measure reflects the fact that these new facilities complete a missing link in the pedestrian network, providing a connection between the existing publicly accessible paths in and around the SeaWorld leasehold to the west, SeaWorld Drive/Tecolote Road to the north/east, and Fiesta Island to the north/west.

7.3.2 *TSM Bicycle Infrastructure Improvements & Bicycle Parking*

The inclusion of enhanced bicycle connections proposed as OS-4 through OS-6 would achieve a 0.625% inherent overall Project VMT reduction consistent with the *TSM* Primary TDM Strategy of Bicycle Infrastructure Improvements. The reported range of effectiveness for this measure from the *TSM* is 0.6-2.5%.

It is again noted that as an isolated improvement, OS-7 was not directly quantified.

The Center for Clean Air Policy (CCAP) *Transportation Emission Guidebook* (2005) attributes a 1-5% VMT reduction range for comprehensive bicycle programs. Based on the CCAP Guidebook, the combined reduction for all bicycle-related measures is 2.5% for and one-quarter of 2.5% (i.e., 0.625%) for each individual measure.

The bicycle infrastructure improvements consisting of enhanced bicycle facilities and detection, described in three individual (3) project measures, equal one (1) measure for calculating VMT reduction. Therefore, the calculated VMT reduction is 0.625%.

For the purposes of total VMT as the metric for the Project regional recreation land uses, it is assumed that these bicycle measures will also contribute to reducing VMT not just on-site but within the walkshed/bikeshed influence area (approximately 1.5-mile radius) surrounding the site.

7.4 Combined Effectiveness of Off-Site Trip Reduction Measures

This section calculates the combined effectiveness of off-site trip reduction measures utilizing the same multiplicative formula described in *Section 7.2*.

7.4.1 *Neighborhood/Site Enhancement (CAPCOA SDT) Measures*

For the sum of the Project SDT measures described above, the weighted reduction is calculated at 2.61% overall VMT using the applied methodology. A maximum of 5.0% overall is permitted for the SDT series. The calculations are shown below:

SDT-1 = 2.0%
TSM Bike Infrastructure = 0.625%
Total Overall SDT Reduction = 1 - (1-2.0%)*(1-0.625%) = 2.61%

7.4.2 *Combined Off-Site VMT Reduction*

The reduction from off-site measures come from a single category, therefore the combined reduction for 2.61%, as calculated above.

The global maximum reduction of all VMT reduction measures combined is 20% in a suburban center setting.

When calculating the effect on total regional VMT, the measure of effectiveness for the Regional Recreation land uses, the 2.61% reduction is applied to total VMT within the ½-mile walkshed/bikeshed influence area surrounding the SeaWorld Drive corridor along which these improvements are provided.

Approximately 21% of the SeaWorld leasehold area falls within this ½-mile influence area. Therefore, while these measures are expected to influence trips beginning or ending at SeaWorld, to avoid double-counting, 21% of the total VMT within the SeaWorld leasehold area was deducted from the walkshed/bikeshed influence area when calculating the total VMT reduction.

This is discussed further, depicted graphically, and applied to the analysis in *Section 9.0*.

8.0 EFFECTIVENESS OF VMT REDUCTION MEASURES FOR EMPLOYMENT LAND USES

This section calculates the expected effectiveness of the VMT reduction measures described in *Section 6.2* as applied to the hotel component of the Project, according to guidance from CAPCOA and the *TSM*. The 2010 CAPCOA report, the latest approved version at the time of project study initiation, is used.

This section is solely focused on quantifying the applicable VMT reduction measures. Implementation is discussed in *Section 12*. Because the measure of effectiveness for this Project component is Project VMT/employee (as opposed total regional VMT), only the on-site VMT reduction measures that most directly affect this metric are quantified for this Project land use.

Based on a review of criteria from the CAPCOA report, the location setting of the Project site is best considered *Suburban Center*. The global maximum VMT reduction for any combination of land use, neighborhood enhancements, parking, transit, and commute trip reduction strategies in a Suburban Center setting is 20%

Appendix C contains excerpts from all relevant CAPCOA measures and a table outlining the location setting criteria. *Appendix D* provides the City of San Diego *TSM – Appendix E*.

8.1 Effectiveness of Individual Measures

8.1.1 *CAPCOA LUT-1: Increase Density*

This measure reflects the Project's inherent land use, operations, and context. The Project will increase jobs density on the site, thereby incentivizing and supporting additional opportunities for ride-sharing, transit, biking, and other non-single occupant vehicle (SOV) modes of travel. The effectiveness of LUT-1 for Project employment land uses is based on Area 5, where the proposed hotel will be located. Area 5 consists of 11.4 acres. The northern portion of the area contains the Hubbs-SeaWorld Research Institute, which employs up to 15 people. While future employment at the hotel is unknown, it is estimated at 300 employees.

The reported range of effectiveness for CAPCOA LUT-1: Increase Density is 0.8-30%. Using the formulas in CAPCOA, the increased jobs density corresponds to a 1.12% work-related VMT reduction based on the net change between baseline and With Project conditions.

Baseline (Jobs Per Acre)

- Number of Jobs Per Acre = 1.3 (15 employees / 11.4 acres)
- A =Percent Increase in Jobs per Acre (compared to typical ITE development) = 0%
- B = Elasticity of VMT with respect to density = 0.07
- VMT Reduction = A x B = 0%

With Project Implementation (Jobs Per Acre)

- Number of Jobs Per Acre = 27.6 (315 employees / 11.4 acres)
- A =Percent Increase in Jobs per Acre (compared to typical ITE development) = 38%

- B = Elasticity of VMT with respect to density = 0.07
- VMT Reduction = A x B = 2.66%

Net Change

- With Project – Baseline = 2.66% - 0% = 2.66%

8.1.2 *CAPCOA SDT-1: Provide Pedestrian Network Improvements*

The inclusion of enhanced pedestrian connections proposed as PI-1 through PI-4 would achieve a 1.0% work-related VMT reduction associated with CAPCOA **SDT-1: Provide Pedestrian Network Improvements** (consistent with the City *TSM*). The reported range of effectiveness for SDT-1 is 0-2%. The 1.0% overall VMT reduction is the net effect of the proposed pedestrian network enhancements. As described in previous sections, SeaWorld currently provides and maintains several multi-use paths on-site.

Baseline (Extent of Pedestrian Accommodations)

- Within Project (Urban or Suburban) = 1.0%

With Project Implementation (Extent of Pedestrian Accommodations)

- Within Project & Connecting Off-Site (Urban or Suburban) = 2.0%

Net Change

- With Project – Baseline = 2.0% - 1.0% = 1.0%

This measure reflects the Project's enhancement of a pedestrian access network to link areas of the Project site and improved external connectivity. The Project will provide a pedestrian access network that connects from Perez Cove Way to the shoreline, as well as expanded and enhancing pedestrian facilities along the shoreline.

8.1.3 *TSM Bicycle Infrastructure Improvements & Bicycle Parking*

The inclusion of enhanced bicycle connections proposed as BI-3 and BI-4 would achieve a 1.25% work-related VMT reduction consistent with the *TSM* Primary TDM Strategy of Bicycle Infrastructure Improvements. The reported range of effectiveness for this measure from the *TSM* is 0.6-2.5%.

The Center for Clean Air Policy (CCAP) *Transportation Emission Guidebook* (2005) attributes a 1-5% VMT reduction range for comprehensive bicycle programs. Based on the CCAP Guidebook, the combined reduction for all bicycle-related measures is 2.5% for and one-quarter of 2.5% (i.e., 0.625%) for each individual measure.

The bicycle parking proposed as BI-1 and BI-2 is a Supportive strategy per the *TSM* which would enhance the effectiveness of the Primary strategy but is not separately quantified. On-site bicycle parking is currently under-utilized, but the Project will monitor bicycle parking demand as part of its TDM program and provide additional bicycle parking as needed.

The bicycle infrastructure improvements and bicycle parking, described in six (6) project measures, equal two (2) measures (one primary, one supportive) for calculating VMT reduction. Therefore, the calculated VMT reduction is 1.25% (0.625% + 0.625%).

8.1.4 *CAPCOA TRT-3: Provide Ride-Sharing Program*

This measure will increase employee vehicle occupancy by ride sharing, with the result of fewer cars driving to the Project site, and thus a decrease in VMT. The Project will include a permanent ride-sharing program promoted through a range of features such as: designating up to 5% of employee parking spaces for ride-sharing vehicles based on demand, designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles, and providing a web site or message board for coordinating rides.

CAPCOA's reported range of commute VMT reduction is 1-15%. Using the formulas in CAPCOA with Project-specific inputs of suburban center and 100% of employees eligible for the program, the ride-sharing program measure corresponds to a 10.0% work-related VMT reduction associated with CAPCOA TRT-3.

- A = % Reduction in Work VMT = 10.0%
- B = % Employees Eligible = 100.0%
- Work VMT Reduction = A x B = 10.0%

8.1.5 *CAPCOA TRT-7: Implement Commute Trip Reduction Marketing*

To realize the maximum benefits of the VMT reduction measures, the Project shall provide employee information on trip reduction and alternative mode options. This measure will also educate employees on the non-SOV transportation options in the area through participation in SANDAG's iCommute TDM program. This can effectively be done through implementation of **CAPCOA TRT-7: Implement Commute Trip Reduction Marketing** (consistent with the City TSM). This measure can be used without implementing any actual transit subsidy offerings. Marketing the utilization of SANDAG's TDM Program "iCommute" would support the spreading of information on transportation choices in the area.

Information sharing and marketing are important components to successful commute trip reduction strategies. Implementing commute trip reduction strategies with a complementary marketing plan will result in higher VMT reductions. For the Project, this will be provided by SeaWorld and the Project's required TDM Plan.

The TDM Plan will be marketed to all new and existing employees, including seasonal and part-time employees, through a website maintained by SeaWorld, monthly email newsletter blasts, promotional materials made publicly visible in common areas, and through an information packet that would accompany new hire documentation. CAPCOA's reported range of total VMT reduction for this commute reduction mitigation measure is 0.8 – 4%. Using the formulas in CAPCOA with Project-specific inputs and a 100% employee eligibility factor, the TDM Plan marketing program corresponds to a 4.0% work-related VMT reduction associated with CAPCOA TRT-7.

- A = % Reduction in Work Vehicle Trips = 4.0%
- B = % Employees Eligible = 100.0%
- C = Adjustment from Work Vehicle Trips to Work VMT = 1.0
- Work VMT Reduction = A x B x C = 4.0%

8.2 Combined Effectiveness of Trip Reduction Measures

The City *TSM* and CAPCOA Report acknowledge that individual strategy reductions are not additive, but rather multiplicative and weighted to address the fact that the impact of additional strategies becomes less as they provide incremental benefits to the overall reduction. *Appendix E* of the City's *TSM* and Chapter 6 of the CAPCOA Report discuss the rules for combining strategies or measures for application to VMT reductions. A multiplicative formula is used to scale the overall reduction as follows:

- Combined % VMT Reduction = 1-[(1-A)*(1-B)*(1-C)*(1-D)*…]
- Where A, B, C, D, … = individual mitigation strategy reduction percentages for the strategies to be combined in each category

First, each category must be weighted prior to combining and weighting the total VMT reduction percentage. For the proposed Project, reductions within each category were weighted first , subject to category maximums. The resulting percent reductions were then weighted to arrive at the total Project VMT reduction. The following is a summary of the VMT reductions attributed to each of the individual strategies (organized in their respective TDM strategy categories as required in the applied methodology):

8.2.1 *Land Use (CAPCOA LUT) Measures*

The weighted reduction of the Project LUT measure described above is 2.66% to work-related VMT, as there is only one quantifiable measure within this category. The categorical maximum for land use measures in a suburban center location is 10%.

8.2.2 *Neighborhood/Site Enhancement (CAPCOA SDT) Measures*

For the sum of the Project SDT measures described above, the weighted reduction is calculated at 2.24% work-related VMT, using the applied methodology. A maximum of 5.0% overall is permitted for the SDT series. The calculations are shown below:

SDT-1 = 1.0%
TSM Bike Infrastructure = 1.25%
Total Work-Related SDT Reduction = 1 - (1-1.0%)*(1-1.25%) = 2.24%

8.2.3 *Commute Trip Reduction (CAPCOA TRT) Measures*

For the sum of the Project TRT measures described above, the weighted reduction is calculated at 13.6%, using the applied methodology. The categorical maximum reduction for the TRT series is 25% for work VMT. The calculations are shown below:

TRT-3 = 10.0%
TRT-7 = 4.0%
Total Work-Related TRT Reduction = 1 - (1-10.0%)*(1-4.0%) = 13.6%

8.2.4 *Combined VMT Reduction*

The combined reduction for work-related VMT for the Hotel component is 19.75%, as calculated below.

Combined Reduction: 1 - (1-2.66%)*(1-2.24%)*(1-13.60%) = 17.78%

The global maximum reduction of all VMT reduction measures combined is 20% in a suburban center setting.

9.0 PROJECT VMT ANALYSIS – SEAWORLD & MARINA COMPONENTS

As noted above, The SeaWorld Theme Park area is developed with a variety of marine-related attractions and support facilities. The 2020 Master Plan provides for a variety of future attractions, facilities, and venues as detailed in *Section 2.2.2*. The marina expansion would add 115 water berths as analyzed in the 2002 Master Plan EIR.

9.1 VMT Analysis

VMT analysis for the Theme Park and Marina components of the Project, classified as regional recreational land uses, requires evaluating the net change in total regional VMT. Together, these two regional recreation land uses are calculated to generate an additional 3,295 ADT at Project buildout as shown in *Table 2–1*. VMT analysis of the theme park and marina components conservatively assumes the full amount of this 3,295 ADT added to Near-Term (Opening Day) conditions. As described in *Section 2.2*, the marina expansion is a conceptual plan that would not be operational at Opening Day. The theme park component of the project is calculated to generate 755 ADT in Opening Day conditions (see *Table 2–1*).

9.1.1 *VMT Data Source*

To analyze the Theme Park and Marina Project components, data metrics obtained from the StreetLight Data platform were used to calculate average trip length for trips that start or end within the SeaWorld leasehold, as well as to estimate existing regional ADT and average trip length. StreetLight employs multiple machine-learning models to estimate the actual traffic volumes on any road at any given time, using data from the following sources:

- Location-Based Services (LBS) trips;
- Navigation GPS trips – personal and commercial;
- Demographics derived from the U.S. Census;
- OpenStreetMap data reflecting road classification, density of commercial activity, and more;
- Weather data;
- Traffic data: volume counts derived from permanent traffic recorders (PTRs). StreetLight uses more than 6,000 unique permanent counting stations across the U.S. and Canada.

The platform can also be used to estimate volumes within a specific area and conduct origin-destination analyses. These analyses build on the estimates of traffic volumes that pass through the zone area(s) and can provide the necessary data outputs for VMT analysis.

9.1.2 *Regional Year 2019 Baseline Total VMT*

Total regional VMT was estimated using ADT estimates and average trip length estimates provided by StreetLight Data. Trip length and ADT data were collected for a one-year period covering all of 2019 and filtered to provide the weekday-only averages.

Regional VMT is needed because the significance threshold for VMT analysis is the net change in VMT due to the Project. The regionwide VMT data are not used to calculate the Project-related increase in VMT.

Table 9–1 shows the regional weekday average trip length (ATL) and total regional VMT during Year 2019 from StreetLight Data. As shown in *Table 9–1*, the ATL for all trips in the San Diego region is 9.0 miles. The estimated total regional VMT from StreetLight Data is approximately 160.2 million weekday VMT.

Appendix E contains the StreetLight Data regional VMT data output. See appendix *Table E-1*.

9.1.3 *SeaWorld Year 2019 Baseline Total VMT*

LLG also used StreetLight Data to calculate SeaWorld's Baseline Year 2019 VMT data based on vehicle trips beginning or ending within the SeaWorld leasehold area (see leasehold area depicted on *Figure 2–2*). The average trip length obtained from StreetLight Data was multiplied by the existing SeaWorld ADT obtained from traffic counts (see *Table 2–1*) to calculate total VMT. *Appendix E* also contains the StreetLight Data average trip length and ADT data output for the SeaWorld leasehold area. See appendix *Table E-2*.

It should be noted that the Year 2019 SeaWorld ADT as provided by StreetLight Data was 11,322 ADT (Table E-2 of *Appendix E*). This is within approximately 7% of the 12,205 ADT (*Table 2–1*) calculated via traffic counts collected during peak summer months. This provides a key data point validating the accuracy of the StreetLight ADT results.

The estimated Baseline Year 2019 ATL for all trips that originate or terminate within the SeaWorld leasehold is 19.0 miles based on StreetLight Data. SeaWorld (including existing theme park and marina) total Baseline Year 2019 VMT was calculated by multiplying its Baseline Year 2019 ADT of 12,205 ADT, as shown in trip generation *Table 2–1*, by the average trip length of 19.0 miles. As shown in *Table 9–1*, SeaWorld's Baseline Year 2019 VMT is calculated to be 231,895.

9.1.4 *Regional Year 2019 With Project (Theme Park & Marina) Total VMT*

With the addition of the SeaWorld Theme Park growth anticipated by buildout of the Master Plan, as well as the marina expansion, the park is calculated to generate a total of 15,500 ADT, an increase of 3,295 ADT over Year 2019 baseline conditions.

This Project total VMT analysis assumes the following:

- Full buildout of the Project Theme Park and Marina components of 3,295 ADT is added to the Year 2019 Baseline ADT.
- SeaWorld's baseline ATL, as determined by StreetLight Data analysis, is held constant for the Theme Park and Marina project components.
    - SeaWorld is a long-established attraction and annual monitoring of traffic volumes at SeaWorld following adoption of the 2002 Master Plan show relatively consistent

SeaWorld trip generation from 2002 to 2019. Expansion of the existing theme park and marina facilities should not fundamentally affect the characteristics of trips that are generated or attracted.

- To the extent that trip length may change over time due to exogenous factors related to regional land use and transportation, use of the existing ATL is conservative. It takes no credit for future infill development or transit, pedestrian, or bicycle infrastructure.
- VMT analysis is conducted for near-term conditions which supports the notion that there would not be a measurable change in ATL over this short period.
- All the above suggests that trip-making characteristics are stable and do not indicate that a measurable change in ATL should be expected due to the Project.

- All new trips at SeaWorld are new trips within the region. In other words, new trips attracted to SeaWorld are not substitutes for recreation anywhere else within the region. As referenced in the City's *TSM* (Appendix C), the OPR *Technical Advisory* provides that "new retail development typically redistributes shopping trips rather than creating new trips". Recreational uses use the same VMT analysis approach, per *TSM* Appendix B. Therefore, this is a very conservative assumption.

As shown in *Table 9–1*, using the additional 3,295 ADT to be generated by the Theme Park and Marina components multiplied by a constant 19.0-mile ATL, buildout of the SeaWorld Theme Park and Marina components results in an increase of 62,605 total VMT. This increase in VMT is calculated before accounting for any of the proposed Project VMT reduction measures, which are discussed in the following section. As mentioned previously, this conservatively assumes all growth over the course of the Master Plan added to Opening Day conditions. The actual Opening Day trip generation is estimated at 755 ADT which would result in an increase of 14,345 VMT (755 * 19.0 = 14,345). Project VMT reduction measures are considered against the full 62,605 VMT.

The 62,605 VMT is added directly to the regional total, resulting in total regional VMT with SeaWorld Theme Park and Marina components of 160,212,097 VMT. This is an increase in total regional VMT of 0.04% as compared to pre-Project conditions.

TABLE 9–1
REGIONAL TOTAL VMT WITH SEAWORLD & MARINA COMPONENTS

Year 2019 Baseline			Year 2019 Baseline + SeaWorld & Marina (Opening Day 2025)			Δ [c]		
ADT[a]	**ATL[b]**	**Total VMT**	**ADT**	**ATL**	**Total VMT**	**ADT**	**VMT**	**VMT %**
San Diego Regional Total								
17,794,388	9.0	160,149,492	17,797,683	9.0	160,212,097	3,295	62,605	0.04%
SeaWorld Theme Park & Marina Only (Subset of Overall Region)								
12,205	19.0	231,895	15,500	19.0	294,500	3,295	62,605	27.0%

Footnotes:

a. ADT = Average Daily Trips. San Diego regional baseline ADT obtained from StreetLight Data. SeaWorld-only baseline and future Project ADT calculated as described in *Section 2.3*.
b. ATL = Average Trip Length obtained from StreetLight Data.
c. Δ = Change in Total VMT due to the SeaWorld Theme Park and Marina components of the Project. Change in ADT equal to SeaWorld Theme Park and Marina project components (see *Table 2–1*).

9.2 Project VMT Reduction Measures

As part of the Project, the Project will implement and provide the several trip-reducing features, programs, and improvements as described in *Section 6.0*. ***Table 9–2*** summarizes the Project VMT reduction measures and the associated categorical VMT reduction.

9.2.1 *Geographic Applicability – On-Site Measure*

As described in *Section 7.0*, all measures, including physical improvements, programs, and inherent characteristics of the Project provided within the SeaWorld leasehold area are labeled on-site measures and the reduction in terms of total VMT is determined by applying the calculated combined VMT reduction percentage to all VMT within the SeaWorld leasehold area.

As shown in *Table 9–1* above, total VMT within this area (Opening Day + Project conditions) is calculated to be 294,500. Applying the calculated 7.06% reduction (see *Section 7.2*), the total VMT reduction associated with these measures is 20,791.

9.2.2 *Geographic Applicability – Off-Site Measures*

Conversely, the off-site active transportation improvement proposed on SeaWorld Drive have a different area of effect, which is estimated to be a ½-mile walkshed/bike influence area surrounding the proposed improvements. This area is illustrated in ***Figure 9–1***. These improvements and the new and enhanced connection they provide are calculated to reduce total VMT within this area.

This area overlaps with approximately 21% of the area within the SeaWorld leasehold. To avoid double counting, 21% of total VMT associated with trips beginning or ending within the SeaWorld leasehold was deducted from the area of effect.

As with the total regional VMT and SeaWorld total VMT, LLG calculated the existing baseline Year 2019 VMT of the SeaWorld Drive improvements walkshed/bikeshed area using StreetLight data. The pedestrian and bicycle measures proposed affect the total (i.e., both SeaWorld and non-SeaWorld) VMT within this area. The total VMT of the SeaWorld area walkshed/bikeshed is as follows:

A. **Year 2019 Baseline Walkshed/Bikeshed Area Total VMT:** 408,138

B. **Year 2019 Baseline SeaWorld Total VMT:** 231,895

C. **21% of Year 2019 Baseline SeaWorld Total VMT:** 48,698

D. **Net Walkshed/Bikeshed Area Total VMT:** 359,440 (Line A – Line C)

Appendix E also contains the StreetLight Data ADT and ATL output for the SeaWorld Drive improvements walkshed/bikeshed influence area. See appendix *Table E-3*.

It should be noted that the total VMT for the SeaWorld Drive improvements walkshed/bikeshed area represents Year 2019 baseline conditions. Due to the unique geography, it is difficult to forecast this value for future Opening Year 2025 with SeaWorld & Marina conditions. Therefore, when applied the calculated percentage reduction to this area VMT, the corresponding total VMT reduction may be somewhat understated due to this phenomenon.

Applying the calculated 2.61% reduction (see *Section 7.4*), the total VMT reduction associated with these measures is 9,381.

Table 9–2 also shows the geographic area that each of the Project VMT reduction measures is applicable to, along with the total VMT associated with that area.

9.2.3 *Total VMT with VMT Reduction Measures*

As shown in *Table 9–2*, the total reduction in VMT when each of the Project VMT reduction measures is applied to its applicable area is 30,172 VMT. This is less than the Project-related increase of 62,605 VMT prior to accounting for Project VMT reduction measures and therefore the Project will increase total regional VMT. Therefore, based on the significance threshold for regional recreation, the Project Theme Park and Marina components are calculated to result in a significant transportation impact.

TABLE 9–2
PROJECT VMT REDUCTION STRATEGIES RESULTS FOR THEME PARK/MARINA – TOTAL REGIONAL VMT

Category (Measures)	VMT Reduction %	Applicable Area		Total VMT Reduction
		Description	Area Total VMT [b]	
On-Site Measures				
Land Use/Location Measures				
LUT-1: Increase Jobs Density	2.21%	Project Site	294,500	—
Active Transportation Measures				
SDT-1: Pedestrian Network Improvements TSM Bike Infrastructure	2.24%	Project Site	294,500	—
Commute Trip Reduction Measures				
TRT-3: Ride-Share Program TRT-7: Commute Trip Reduction Marketing	2.78% [a]	Project Site	294,500	—
Subtotal On-Site Measures	7.06%	Project Site	294,500 (231,895 baseline + 62,605 project)	20,791
Off-Site Measures				
Active Transportation Measures				
SDT-1: Pedestrian Network Improvements TSM Bike Infrastructure	2.61%	Walkshed/Bikeshed Influence Area	359,440 (408,138 baseline - 48,698 site area)	10,652
Results				
Total VMT Reduction due to VMT-Reducing Measures				30,172
Total Regional VMT with Project (pre-VMT Reduction Measures)				160,212,097
Total Regional VMT with Applicable Reductions [160,212,097 – 30,172]				160,181,925
Threshold of Significance (pre-Project Total Regional VMT)				160,149,492
Above Level of Significance?				**Yes**

Footnotes:

a. Commute Trip Reduction measures apply to work-related VMT only. The categorical work-related VMT reduction from CAPCOA of 13.6% was reduced for application to total VMT on the assumption that SeaWorld work-related VMT is 20% of total site VMT.

b. Source: StreetLight Data VMT analytics. See *Appendix E*. Area total VMT reflects Baseline + Project VMT. For Area Walkshed/Bikeshed, Baseline total VMT obtained directly from StreetLight data. For Project site, Baseline VMT = Existing ATL (StreetLight) * Existing ADT (see *Table 2–1*). Project VMT calculated as described in Section 9.1.4.

General Notes:

- Total VMT for SeaWorld, Area Walkshed/Bikeshed, and overall San Diego region.
- Reduction results based on methodology from *Quantifying Green House Gas Mitigation Measures* (CAPCOA – 2010) consistent with City of San Diego *TSM – Appendix E*.

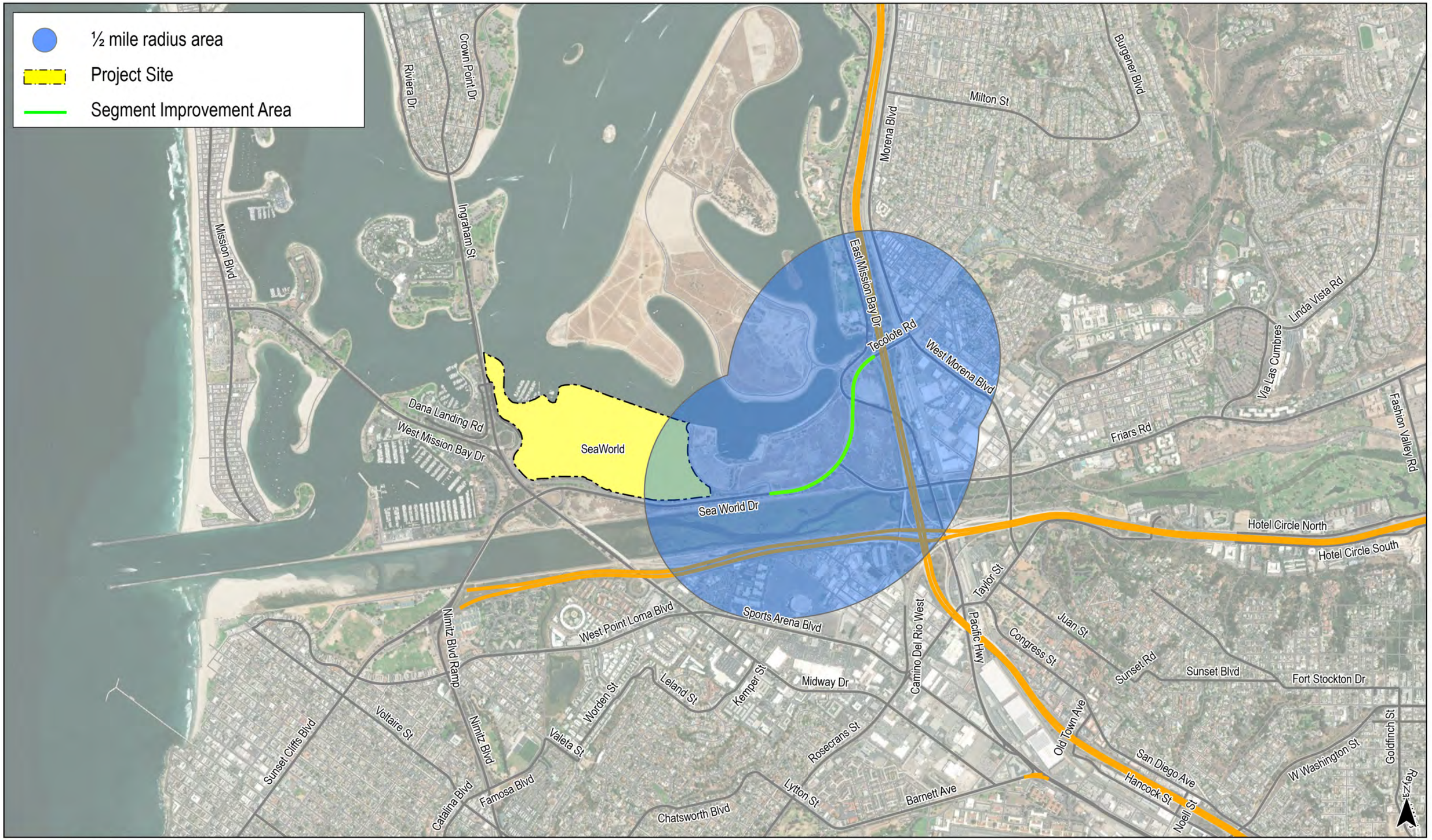

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Figure 9-1
SeaWorld Drive Improvements Walkshed/Bikeshed Influence Area

10.0 PROJECT VMT ANALYSIS – HOTEL COMPONENT

As noted above, the 2020 Master Plan includes a future 300-room hotel. The conceptual proposal includes a ballroom, meeting rooms, surface parking, and a parking structure.

VMT analysis for the Project Hotel component compares the Hotel Employee VMT/Employee to the regional average Employee VMT/Employee.

As noted in *Section 5.2.2*, the Project is in Census Tract 76, which encompasses all of Mission Bay Park. Per the SANDAG SB 743 VMT Map, Series 14 Base Year 2016 data, the Employee VMT/Employee for this Census Tract is 27.9 and the regional average Employee VMT/Employee is 27.2. Thus, the Project site is approximately 102.6% of the regional average which exceeds the significance threshold of 85% of the regional average.

10.1 VMT Reduction Measures

The Project includes proposed VMT reduction measures to reduce the Project Employee VMT/Employee to below a level of significance, which are discussed in greater detail in *Section 6.0*.

Consistent with the methodology presented earlier in this report, the Project's Census Tract-level Employee VMT/Employee from the SANDAG Series 14 base year 2016 was adjusted to account for these VMT reduction measures. The resulting Project Employee VMT/Employee was compared to the regional average Employee VMT/Employee, also from the SANDAG Series 14 Base Year 2016. ***Table 10–1*** shows the results of the VMT analysis comparison.

Based on the findings shown in *Table 10–1*, the Project Employee VMT/Employee is calculated to be approximately 22.9 or 84.2% of the regional average, less than 85% of the regional Employee VMT/Employee. Therefore, based on the significance threshold for commercial employment, the Project Hotel component is not calculated to result in a significant transportation impact.

TABLE 10–1
PROJECT VMT REDUCTION STRATEGIES RESULTS FOR HOTEL – EMPLOYEE VMT

Reduction Measure	Range of Effectiveness	VMT Reduction	Categorical VMT Reduction	Combined VMT Reduction
VMT Reduction Measures (On-Site)				
Land Use/Location Measures				17.78%
LUT-1: Increase Density	1.5-30.0%	1.12%	2.66%	
Active Transportation Measures				
SDT-1: Provide Pedestrian Network Improvements	0.5-2.0%	1.0%	2.24%	
TSM Bicycle Infrastructure Improvements	0.6-2.5%	1.25%		
Commute Trip Reduction Measures				
TRT-3: Ride Share Programs	1.0-15.0%	10.0%	13.6%	
TRT-7: Commute Trip Reduction Marketing	0.8-4.0%	4.0%		
Results				
Regional Average VMT per Employee				27.2
Threshold of Significance (85% of Regional VMT per Employee)				23.1
Project Employee VMT per Employee (pre-VMT reduction measures)				27.9
Project Employee VMT per Employee (post-VMT reduction measures) (27.9 x [1-17.78%])				22.9
Above Level of Significance?				**No**

General Notes:

- Regional VMT per Employee obtained from the SANDAG SB 743 Screening Map Series 14 Year 2016 VMT per Employee.
- Project VMT per Employee obtained from the SANDAG SB 743 Screening Map Series 14 Year 2016 VMT per Employee for Census Tract 76.
- Reduction results based on methodology from *Quantifying Green House Gas Mitigation Measures* (CAPCOA – 2010) consistent with City of San Diego *TSM – Appendix E*.
- The Project's total VMT Reduction is 18.60%. Each VMT reduction measure's percent reduction is combined multiplicatively to get the Project's total VMT Reduction. As discussed in Chapter 6 of the CAPCOA report and *Appendix E* of the City *TSM*, the equation is as follows:
  Combined Total Reduction = 1- [(1-A) x (1-B) x (1-C) x …]; A,B,C, = each measure's percent reduction
  Combined Reduction: 1 - (1-2.66%)*(1-2.24%)*(1-13.60%) = 17.78%

11.0 COMPLETE COMMUNITIES: MOBILITY CHOICES PROGRAM

11.1 Introduction

The City of San Diego adopted the Complete Communities: Mobility Choices ordinance as part of its implementation of Senate Bill 743 (SB 743) and transition from Level of Service to Vehicle Miles Traveled as the CEQA metric of significance for transportation impacts.

Mobility Choices is a programmatic approach to ensure Citywide VMT reductions for both discretionary and ministerial projects. The regulations are intended to strategically invest resources and direct active transportation infrastructure to areas where there is the greatest potential to reduce VMT.

11.2 Requirements

The Complete Communities: Mobility Choices regulations in SDMC section 143.1103(a) divide the City into four (4) Mobility Zones. SeaWorld is in Mobility Zone 2 which corresponds to any premises located either partially or entirely in a Transit Priority Area outside of the Downtown Community Planning Area.

To satisfy the requirements set forth in SDMC section 143.1103(b), the Mobility Choices implementation guidelines includes a list of VMT Reducing Measures and corresponding point values. Development in Mobility Zone 2 shall include VMT Reduction Measures totaling at least 5 points.

11.3 Project

Certain VMT Reduction Measures presented in *Sections 6.2* and *6.3* of this report correspond to the VMT Reduction Measures included in Section A of the Mobility Choices Regulations: Implementation Guidelines.

Table 11–1 below summarizes the applicable Mobility Choices VMT Reduction Measures and corresponding project measure from this report. As shown in *Table 11–1*, the Project measures proposed on-site would result in a total of nine (9) points within the Mobility Choices framework, while off-site measure would result in an additional seven (7) points.

The total sixteen (16) points exceeds the minimum of five (5) required in Mobility Zone 2 and the project satisfies the requirements of the Mobility Choices Regulations by implementing the measures identified in *Table 11–1*.

TABLE 11–1
MOBILITY CHOICES VMT REDUCTION MEASURES

#	VMT Reduction Measure	SeaWorld Measure	Points/Unit	Total Points
On-Site Measures				
#16	Providing short-term bicycle parking spaces that are available to the public, at least 10% beyond minimum requirements.	BI-1	1.5	1.5
#17	Providing long-term bicycle parking spaces, at least 10% beyond minimum requirements.	BI-2	2	2
#19	Provide high-cost amenities/ upgraded features to an existing transit stop.	TI-1	2.5/feature	2.5
#23	Providing on-site designated micro-mobility parking area that is available to the public.	BI-5	1.5 (yes/no)	1.5
#26	Providing carpool parking spaces 10% beyond the minimum number of carpool spaces required.	CTR-1	1.5	1.5
			Subtotal On-Site Measures	**9**
Off-Site Measures				
#3	Installing high-visibility crosswalk striping at adjacent intersection (if not otherwise required).	OS-2, OS-3	1.5/intersection	3
#9	Widening sidewalk within the existing public right-of-way to Street Design Manual standards. Requires replacement of existing sidewalk	OS-1, OS-2, OS-3	3/mile	1.5
#14	Upgrading bicycle infrastructure adjacent to the development (along roadway above required minimum standards).	OS-4, OS-5	2.5/feature	2.5
			Subtotal Off-Site Measures	**7**
			Grand Total	***16***

12.0 VMT IMPACT SUMMARY AND IMPLEMENTATION

12.1 VMT Impact Summary

The SeaWorld 2020 Master Plan Project was determined to have a significant VMT impact using the methodology described in this report and VMT reduction measures were identified to mitigate this impact to the extent feasible.

Project land uses were analyzed in two main groups based on their classification in the City's *TSM*. VMT reduction measures were categorized as Project Design Features and Mitigation Measures according to the process for their implementation, which is described below in *Section 11.3*.

Pursuant to the *Complete Communities: Housing Solutions and Mobility Choices* Program Environmental Impact Report (PEIR) any new development that occurs in an area that generates resident VMT per capita or employee VMT per employee greater than 85 percent of the base year regional average would result in significant VMT-related impacts.

The Mobility Choices regulations are intended to ensure an overall reduction in Citywide VMT and compliance with these regulations can serve as mitigation for future development projects. Nonetheless, the PEIR determined that potentially significant VMT impacts could remain significant given that the timing of specific improvements cannot be determined with certainty nor guaranteed to reduce impacts to a less than significant level.

12.1.1 *Regional Recreation Uses – SeaWorld Theme Park and Marina*

Growth at the SeaWorld Theme Park and expansion of the marina are classified as regional recreational uses and assessed on their impact to total regional VMT. Based on SeaWorld's average trip length and the increase in ADT associated with these land uses, these regional Project components were calculated to add 62,605 VMT to region before accounting for Project Design Features and Mitigation Measures. These VMT reduction measures were shown to reduce the total regional VMT by 30,172.

Therefore, the regional recreational Project components net contribution to regional VMT will exceed the threshold of significance and ***thus result in a significant VMT transportation impact*** for regional recreational Project land uses**.**

12.1.2 *Commercial Employment Uses – Hotel*

The Project Employee VMT/Employee was determined to be 27.9 based on the Project's Census Tract and 22.9 after accounting for reductions associated with Project Design Features and Mitigation Measures. The Project will therefore be at 84.2% of the regional average, below the significance threshold of 85% of the regional average Employee VMT/Employee, or 23.1 Employee VMT/Employee.

Using the methodology outlined in the City's *TSM – Appendix E* and 2010 CAPCOA Report, a total reduction of 17.78% is calculated, reducing the Project VMT below the threshold of significance and

thus the Project results in no significant VMT transportation impact for Project commercial/employment land uses**.**

12.2 Summary of Project Design Features & Mitigation Measures

Based on the City's *TSM – Appendix E* and 2010 CAPCOA Report, one (1) TSM measure and four (4) CAPCOA measures were quantified to reduce and/or offset the Project VMT. Several other measures were not quantified but are supportive measures enhancing the effectiveness of the primary, directly quantifiable measures. These will be incorporated as individual Project Design Features and Mitigation Measures as described in the following section.

12.3 Implementation

The VMT reduction measures identified in this report will be implemented through the mechanisms described in this section and are identified as Project Design Features or Mitigation Measures accordingly.

12.3.1 *Project Design Features – 2020 Master Plan*

The following measures are Project Design Features incorporated as development and design criteria in the 2020 Master Plan. The implementation of these features will be assured through the project review process for individual development projects proposed under the 2020 Master Plan. All proposed SeaWorld Master Plan development projects will be reviewed by the City of San Diego and the California Coastal Commission.

- **PI-1:** Provide a minimum 10-foot wide public accessway (vertical access) from Perez Cove Way to shoreline somewhere between the existing Skyride station and the driveway/aisle at the southern end of the north employee parking lot (approximately 550 feet), with the final location to be determined when the final plans for the hotel are submitted for review and approval of a Coastal Development Permit.

- **PI-2:** Enhance the existing pedestrian paths along the Perez Cove by providing a minimum 10-foot-wide landscaped public shoreline walkway (lateral shoreline access) incorporated into the marina expansion design when the project is submitted for review and approval of a Coastal Development Permit.

- **PI-3/BI-3:** Enhance the shoreline access with future expansion of the marina and hotel development by providing a minimum 10-foot-wide landscaped public shoreline walkway (lateral shoreline access) along the waterfront when either the marina or hotel projects are submitted for review and approval of a Coastal Development Permit.

- **PI-4/BI-6:** Continue to provide ongoing maintenance of the existing pedestrian/bicycle pathways within the project site.

- **TI-3:** Coordinate with SANDAG, City of San Diego, and MTS to accommodate a Transit Station within the Area 2 parking lot per the terms of the SeaWorld Lease, when the opportunity arises. Design of the future parking structure, if necessary, would accommodate a transit station.

12.3.2 *Project Design Features – Climate Action Plan*

The following measures are Project Design Features incorporated as required by the City's Climate Action Plan (CAP) Consistency Checklist. Prior to the issuance of the first development permit for a SeaWorld development project under the 2020 Master Plan, SeaWorld shall prepare and maintain a Transportation Demand Management Plan for the project to include these CAP Consistency Checklist items.

- **BI-1:** Maintain the bicycle racks provided on-site (currently 27 spaces) at the main entrance. Monitor demand for bicycle parking and provide additional spaces as demand increases.

- **BI-2:** Maintain the employee bicycle racks at both the west security (currently 18 spaces) and east security (currently 10 spaces) employee entrances. Monitor demand for employee bicycle parking and provide additional spaces as demand increases.

- **CTR-1:** The Project will promote ride-sharing programs through a multi-faceted approach to include: designating up to five percent of employee parking spaces for ride-sharing vehicles depending on demand, designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles, and providing a web site or message board for coordinating rides.

- **CTR-2:** The Project shall promote the use of the bike share/micro mobility fleet and educate employees on the non-SOV transportation options in the area through participation in SANDAG's iCommute program. To realize the VMT reduction associated with CTR-2, the TDM Plan identified in this report must be marketed to new and existing employees through a website maintained by the employer, monthly email newsletter blasts, promotional materials made publicly visible in common areas, and through an information packet that will accompany new hire documentation, including all part-time employees.

12.3.3 *Local Mobility Analysis Requirements*

The following measures are provided per the City's *Transportation Study Manual* and Local Mobility Analysis criteria for identifying off-site improvements. The SeaWorld Master Plan Update Local Mobility Analysis report is provided under separate cover.

Prior to the issuance of the first development permit for a SeaWorld development project under the 2020 Master Plan, SeaWorld shall assure the provision of the following improvements:

- **TI-1:** Improve the amenities at the existing SeaWorld bus stop (Stop ID: 13059) to meet all standard MTS design criteria for 201-500 passenger boardings, which will include the following amenities not currently provided, satisfactory to MTS:
    - Passenger Shelter
    - Route Map

SeaWorld shall assure the following improvements by permit and bond satisfactory to the City Engineer and Caltrans prior to issuance of the first development permit for a SeaWorld development project under the 2020 Master Plan. The improvements shall be constructed prior to the issuance of the first certificate of occupancy:

- **OS-6:** Provide loop detection for vehicles and bikes in both directions of travel on SeaWorld Drive at the I-5 interchange. This improvement is being provided as a countermeasure for study area intersections that meet the Systemic Safety hotspot criteria.

- **OS-7:** Provide loop detection for vehicles and bikes in both directions of travel on Ingraham Street at Riviera Drive (Systemic Safety). This improvement is being provided as a countermeasure for study area intersections that meet the Systemic Safety hotspot criteria.

12.3.4 *Mitigation Measures*

The following measures will be provided as VMT mitigation measures. Prior to the issuance of the first development permit for a SeaWorld development project under the 2020 Master Plan, SeaWorld shall assure the provision of the following improvements:

- **BI-4:** Provide plug-in stations at the bicycle storage area for electric bikes or other micro mobility vehicles, as demand warrants it.

- **BI-5:** Reserve space for parking alternative and micromobility vehicles such as shared use bikes, scooters, and similar services. The space will be publicly accessible, provide electricity, and be provided for free to one or more micromobility service providers. If space set aside for micromobility devices is not utilized by micromobility devices/services, this space will be used to provide additional bicycle racks as demand increases.

- **TI-2:** Coordinate with MTS regarding Route 9 service to the SeaWorld bus stop to extend the existing span of service, currently 9:06 AM to 4:08 PM, to match SeaWorld's hours of operation.

SeaWorld shall assure the following improvements by permit and bond satisfactory to the City Engineer and Caltrans prior to issuance of the first development permit for a SeaWorld development project under the 2020 Master Plan. The improvements shall be constructed prior to the issuance of the first certificate of occupancy:

- **OS-1:** Complete sidewalk along the west side of Sea World Drive from E. Mission Bay Drive-Pacific Highway to the I-5 freeway southbound ramps. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

- **OS-2:** Complete sidewalk along the west side of SeaWorld Drive from Friars Road to E. Mission Bay Drive-Pacific Highway. Construct ADA compliant curb ramps on the northeast and southeast corners at Sea World Drive/E. Mission Bay Drive-Pacific Highway. Install current City of San Diego standard crosswalks on all legs of this intersection. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

- **OS-3:** Complete sidewalk along the north side of SeaWorld Drive from South Shores Parkway to Friars Road. Construct ADA compliant curb ramps on the northwest and northeast corners of SeaWorld Drive / South Shores Parkway. Install current City of San Diego standard crosswalks on all legs of this intersection.

- **OS-4:** Restripe existing bicycle lanes SeaWorld Drive from E. Mission Bay Drive to Friars Road to include a minimum three (3) foot buffer between the travel lane and the bicycle lane. Provide bicycle detection and painted bicycle detection location indicators at the signalized intersections of Sea World Drive and E. Mission Bay Drive/Pacific Highway and Sea World Drive and Friars Road if bicycle detection is not currently present. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

- **OS-5:** Restripe existing bicycle lanes on SeaWorld Drive from Friars Road to South Shores Parkway (Class I Bicycle Path entrance) to include a minimum three (3) foot buffer between the travel lane and the bicycle lane. Provide bicycle detection and painted bicycle detection location indicators at the signalized intersection of Sea World Drive/South Shores Parkway if bicycle detection is not currently present. This improvement is consistent with the Fiesta Island / MBPMP Amendment.

End of Report

LINSCOTT LAW & GREENSPAN
engineers

TECHNICAL APPENDICES –
VEHICLE MILES TRAVELED ANALYSIS

2020 SEAWORLD MASTER PLAN

San Diego, California
June 10, 2022

LLG Ref. 3-19-3077

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APPENDICES

APPENDIX	
A.	Existing SeaWorld Trip Generation Information
B.	SeaWorld Expected Employment Growth
C.	CAPCOA *Quantifying Greenhouse Gas Mitigation Measures* VMT Reduction Measures Excerpts
D.	City of San Diego *Transportation Study Manual – Appendix E*
E.	Street Light Data VMT Data

APPENDIX A

EXISTING SEAWORLD TRIP GENERATION INFORMATION

2019 TRIP GENERATION DATA
SeaWorld ADT

Reference	Direction		Aug-19
1	IN	SeaWorld Drive s/o Main Lot - Cars	2,092
2	IN	Perez s/o Ingraham	3,519
		Total Inbound	**5,611**
3	OUT	Sea World Way	3,747
4	OUT	Perez s/o Ingraham	2,847
		Total Outbound	**6,594**
		Total In & Out	**12,205**

SeaWorld AM highest hour between 7AM–9AM

			Aug-19
1	IN	SeaWorld Drive s/o Main Lot	16
2	IN	Perez s/o Ingraham	179
		Total Inbound	**195**
3	OUT	Sea World Way	9
4	OUT	Perez s/o Ingraham	104
		Total Outbound	**113**

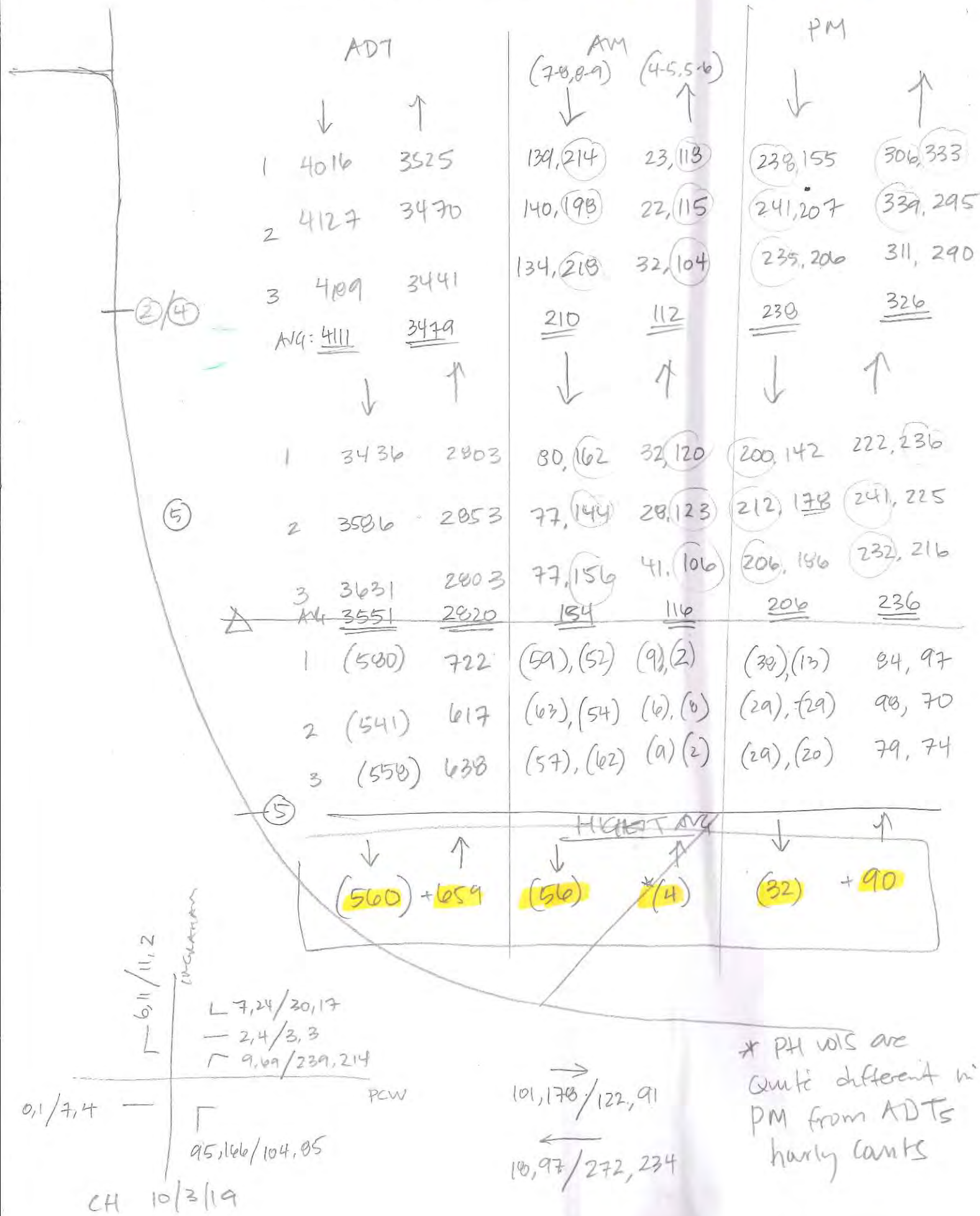
SeaWorld PM highest hour between 4PM–6PM

			Aug-19
1	IN	SeaWorld Drive s/o Main Lot	102
2	IN	Perez s/o Ingraham	214
		Total Inbound	**316**
3	OUT	Sea World Way	445
4	OUT	Perez s/o Ingraham	312
		Total Outbound	**757**

Source: 2019 Tube Counts.

N:\3077\Trip Generation\MMRP 2019 Volumes\Trip Gen
10/2/2019 2:26 PM

HIGHEST OF 3 DAYS EMPLOYEE TRIP GEN



* PH vols are Quite different in PM from ADTs hourly counts

(1)

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Average Daily Traffic

Location: **Perez Cove Way, South of Main Entrance** INBOUND

Date: **Tuesday, August 6, 2019** Total Daily Volume: **2195** Description: **Westbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
2	0	0	0	0	10	7	6	8	181	572	352	231	179	118	117	94	101	86	59	35	16	19	2
2	0	0	0	0	3	3	0	3	10	111	97	78	51	29	26	23	21	24	20	8	5	7	0
0	0	0	0	0	2	2	2	0	19	146	91	57	50	33	22	22	31	19	13	12	3	5	0
0	0	0	0	0	2	2	1	3	48	153	89	49	49	26	28	27	23	26	15	7	2	4	2
0	0	0	0	0	3	0	3	2	104	162	75	47	29	30	41	22	26	17	11	8	6	3	0

AVERAGE

WK 1-2: 2195, 2396, 2340, 1870, 1823, 1925 → 2092

WK 2-3: 1870, 1823, 1925, 1333, 1347, 1511 → 1634

WK 1-2

AM	PM
6,8	94,101
6,9	100,101
11,18	104,101
4,17	70,62
7,18	69,83
11,13	68,76
16	102

WK 2-3

AM	PM
4,17	78,62
7,18	69,83
11,13	68,76
10,14	49,49
6,17	61,54
12,8	54,65
15	73

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Average Daily Traffic

Location: **Perez Cove Way, South of Main Entrance**

Date: **Wednesday, August 7, 2019** Total Daily Volume: **2396** Description: **Westbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1	0	3	0	1	8	13	6	19	132	602	431	264	193	133	101	108	101	84	80	47	24	36	9
1	0	0	0	0	1	3	0	6	9	105	148	68	62	39	30	42	32	17	31	10	7	12	3
0	0	0	0	0	1	5	0	8	16	164	110	68	52	30	25	16	25	28	13	18	8	14	2
0	0	2	0	1	3	4	4	2	32	156	108	62	53	33	24	23	25	22	19	14	6	6	0
0	0	1	0	0	3	1	2	3	75	177	65	66	26	31	22	27	19	17	17	5	3	4	4

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Average Daily Traffic

Location: **Perez Cove Way, South of Main Entrance**

Date: **Thursday, August 8, 2019** Total Daily Volume: **2340** Description: **Westbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
3	1	0	2	0	12	9	11	18	159	581	394	266	181	124	102	104	101	108	56	50	21	30	7
0	0	0	0	0	2	1	2	2	10	127	124	74	57	41	33	34	27	24	11	17	9	13	2
3	0	0	1	0	1	5	2	5	22	133	111	67	51	29	27	27	19	30	13	11	6	8	2
0	0	0	0	0	5	3	4	1	46	170	90	70	37	26	18	23	31	29	13	12	3	3	1
0	1	0	1	0	4	0	3	10	81	151	69	55	36	28	24	20	24	25	19	10	3	6	2

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Average Daily Traffic

Location: **Perez Cove Way, South of Main Entrance**

Date: **Tuesday, August 13, 2019** Total Daily Volume: **1870** Description: **Westbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
2	0	0	0	3	5	11	4	17	119	512	348	243	147	102	71	78	62	87	43	11	3	2	0
0	0	0	0	0	1	2	2	1	6	101	124	60	31	29	21	18	18	15	16	3	2	0	0
1	0	0	0	0	0	5	0	8	14	141	83	63	39	21	19	19	9	25	16	3	0	1	0
1	0	0	0	0	2	2	2	4	38	146	70	68	38	26	14	20	15	27	4	3	1	0	0
0	0	0	0	3	2	2	0	4	61	124	71	52	39	26	17	21	20	20	7	2	0	1	0

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Average Daily Traffic

Location: **Perez Cove Way, South of Main Entrance**

Date: **Wednesday, August 14, 2019** Total Daily Volume: **1823** Description: **Westbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	0	0	1	2	9	9	7	18	133	451	355	193	160	129	77	69	83	51	49	17	4	4	2
0	0	0	0	0	4	3	1	4	4	83	110	55	39	40	22	10	20	14	12	8	2	0	0
0	0	0	0	0	0	1	0	5	16	121	92	57	44	33	15	29	32	15	15	4	2	0	0
0	0	0	0	0	2	3	3	4	49	133	79	50	41	27	17	17	21	8	18	3	0	0	1
0	0	0	1	2	3	2	3	5	64	114	74	31	36	29	23	13	10	14	4	2	0	4	1

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Average Daily Traffic

Location: **Perez Cove Way, South of Main Entrance**

Date: **Thursday, August 15, 2019** Total Daily Volume: **1925** Description: **Westbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1	0	1	0	4	10	12	11	13	115	489	384	249	163	118	81	68	76	69	43	9	4	1	4
1	0	1	0	1	1	8	1	5	12	100	127	60	46	33	28	19	21	16	15	5	2	0	0
0	0	0	0	3	2	3	3	3	8	125	95	69	50	28	14	19	22	23	10	3	2	0	2
0	0	0	0	0	3	1	6	3	38	138	75	70	33	32	27	17	13	16	11	1	0	1	0
0	0	0	0	0	4	0	1	2	57	126	87	50	34	25	12	13	20	14	7	0	0	0	2

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Average Daily Traffic

Location: **Perez Cove Way, South of Main Entrance**

Date: **Tuesday, August 20, 2019** Total Daily Volume: **1333** Description: **Westbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	0	0	0	2	9	19	10	14	98	352	273	162	110	56	53	49	49	53	14	2	4	2	2
0	0	0	0	0	1	9	1	2	4	77	84	54	37	18	18	10	11	14	3	1	1	0	2
0	0	0	0	1	4	5	1	1	12	99	72	54	23	15	16	12	13	17	5	0	0	1	0
0	0	0	0	0	1	3	4	6	23	96	63	36	23	13	12	8	15	13	4	1	2	0	0
0	0	0	0	1	3	2	4	5	59	80	54	18	27	10	7	19	10	9	2	0	1	1	0

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Average Daily Traffic

Location: **Perez Cove Way, South of Main Entrance**

Date: **Wednesday, August 21, 2019** Total Daily Volume: **1347** Description: **Westbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	1	0	1	2	12	10	6	17	103	402	254	125	112	70	51	61	54	45	12	5	2	1	1
0	1	0	0	1	3	4	1	5	5	85	72	35	36	24	13	13	16	16	3	1	0	0	0
0	0	0	0	0	1	2	0	4	12	102	67	31	31	18	14	18	14	13	4	1	1	0	0
0	0	0	0	1	2	3	3	3	25	111	57	33	29	12	11	14	12	3	3	1	0	0	1
0	0	0	1	0	6	1	2	5	61	104	58	26	16	16	13	16	12	13	2	2	1	1	0

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Average Daily Traffic

Location: **Perez Cove Way, South of Main Entrance**

Date: **Thursday, August 22, 2019** Total Daily Volume: **1511** Description: **Westbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	1	0	0	2	19	12	12	8	96	406	297	211	121	88	53	54	65	40	11	5	5	1	4
0	0	0	0	0	2	3	3	1	10	85	91	57	34	27	10	9	18	14	4	0	2	0	1
0	0	0	0	0	4	4	2	3	18	97	80	49	33	20	14	14	13	15	3	1	0	0	2
0	1	0	0	0	6	5	7	1	19	108	74	62	30	25	19	20	18	6	2	4	2	1	0
0	0	0	0	2	7	0	0	3	49	116	52	43	24	16	10	11	16	5	2	0	1	0	1

(3)

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Don't use Week 3

Average Daily Traffic

Location: **Sea World Way, North of Sea World Drive** OUTBOUND

Date: **Tuesday, August 6, 2019** Total Daily Volume: **4069** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
4	1	0	1	0	2	0	12	4	6	28	23	125	196	261	365	341	403	491	413	458	319	603	13
0	0	0	1	0	0	0	0	3	0	5	6	28	33	49	64	83	79	109	108	92	104	255	5
0	0	0	0	0	0	0	3	1	0	4	0	24	56	48	89	86	103	127	110	103	62	217	2
0	0	0	0	0	2	0	6	0	1	8	8	33	54	61	113	93	96	147	93	125	96	99	4
4	1	0	0	0	0	0	3	0	5	11	9	40	53	103	99	79	125	108	102	138	57	32	2

WK 1-2 ADT
4069
4351
4407
3179
3100
3377
3747

WK 2-3 ADT
3179
3100
3377
3008
2022
3187
3112

WK 1-2

AM	PM
12, 4	341, 403
9, 8	375, 455
3, 6	438, 441
3, 4	400, 426
7, 10	385, 428
5, 3	395, 482
9	445

WK 2-3

AM	PM
3, 14	400, 426
7, 6	385, 428
5, 3	395, 482
6, 9	434, 633
6, 5	370, 502
10, 2	457, 642
~~8~~	~~530~~

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Average Daily Traffic

Location: **Sea World Way, North of Sea World Drive**

Date: **Wednesday, August 7, 2019** Total Daily Volume: **4351** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	1	0	0	0	0	5	9	8	13	21	29	88	178	342	356	375	455	496	461	440	363	695	16
0	0	0	0	0	0	1	1	3	3	8	6	22	30	73	106	87	100	133	110	107	115	250	14
0	0	0	0	0	0	2	3	4	0	6	11	18	41	69	99	104	88	111	152	106	88	282	2
0	1	0	0	0	0	0	2	0	3	3	7	26	44	95	83	97	129	131	94	122	75	120	0
0	0	0	0	0	0	2	3	1	7	4	5	22	63	105	68	87	138	121	105	105	85	43	0

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Average Daily Traffic

Location: **Sea World Way, North of Sea World Drive**

Date: **Thursday, August 8, 2019** Total Daily Volume: **4407** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1	6	1	0	2	1	1	3	6	20	20	62	97	179	274	317	438	441	487	507	495	320	693	36
0	0	1	0	0	0	0	0	2	12	2	24	18	45	52	77	96	92	106	135	123	100	275	19
0	0	0	0	1	0	0	0	4	0	6	16	22	31	52	70	110	89	127	139	102	62	244	6
1	0	0	0	1	0	0	2	0	2	4	12	28	56	71	97	122	117	131	134	136	75	120	9
0	6	0	0	0	1	1	1	0	6	8	10	29	47	99	73	110	143	123	99	134	83	54	2

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Average Daily Traffic

Location: **Sea World Way, North of Sea World Drive**

Date: **Tuesday, August 13, 2019** Total Daily Volume: **3179** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	2	0	0	0	4	2	3	14	9	25	23	57	144	218	338	400	426	490	942	81	1	0	0
0	0	0	0	0	3	0	0	4	3	4	9	5	32	52	91	79	105	129	262	50	0	0	0
0	2	0	0	0	1	1	1	3	2	3	3	14	29	70	86	95	115	105	335	15	1	0	0
0	0	0	0	0	0	0	2	2	3	5	3	20	48	46	81	115	82	148	245	7	0	0	0
0	0	0	0	0	0	1	0	5	1	13	8	18	35	50	80	111	124	108	100	9	0	0	0

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Average Daily Traffic

Location: **Sea World Way, North of Sea World Drive**

Date: **Wednesday, August 14, 2019** Total Daily Volume: **3100** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	2	0	1	1	2	3	7	6	10	7	18	91	121	201	325	385	428	467	932	91	1	0	1
0	0	0	0	0	2	1	0	2	0	3	8	16	31	37	83	95	97	108	213	51	0	0	0
0	0	0	0	0	0	1	1	2	0	2	2	24	19	62	91	86	72	107	337	22	1	0	0
0	0	0	0	0	0	0	6	1	7	2	0	21	38	44	82	102	115	112	251	16	0	0	1
0	2	0	1	1	0	1	0	1	3	0	8	30	33	58	69	102	144	140	131	2	0	0	0

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Average Daily Traffic

Location: **Sea World Way, North of Sea World Drive**

Date: **Thursday, August 15, 2019** Total Daily Volume: **3377** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1	2	4	0	4	1	0	5	3	17	37	23	90	125	194	377	395	482	564	964	82	5	2	0
1	0	3	0	1	0	0	0	0	1	9	6	18	23	39	105	96	118	141	214	56	1	1	0
0	0	0	0	1	1	0	2	2	2	6	4	16	37	49	104	101	110	151	356	17	1	0	0
0	2	0	0	2	0	0	2	0	4	6	5	28	36	47	78	111	134	141	255	9	0	1	0
0	0	1	0	0	0	0	1	1	10	16	8	28	29	59	90	87	120	131	139	0	3	0	0

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Average Daily Traffic

Location: **Sea World Way, North of Sea World Drive**

Date: **Tuesday, August 20, 2019** Total Daily Volume: **3008** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	0	4	0	6	2	6	6	9	6	32	31	70	185	188	394	434	633	908	83	7	3	1	0
0	0	1	0	0	0	0	3	3	0	7	5	13	47	60	101	92	143	230	51	5	0	0	0
0	0	0	0	0	0	1	2	0	0	4	13	15	39	37	112	96	125	318	24	0	3	0	0
0	0	1	0	2	0	5	0	0	4	15	5	25	46	46	88	128	192	247	6	2	0	1	0
0	0	2	0	4	2	0	1	6	2	6	8	17	53	45	93	118	173	113	2	0	0	0	0

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Sea World Way, North of Sea World Drive**

Date: **Wednesday, August 21, 2019** Total Daily Volume: **2822** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	2	2	1	2	3	2	6	5	14	24	50	80	162	192	377	370	582	856	86	5	1	0	0
0	0	0	0	2	0	0	0	1	8	2	13	12	41	46	94	81	98	253	43	5	0	0	0
0	0	0	0	0	1	0	5	3	2	1	10	19	33	40	86	87	138	315	27	0	1	0	0
0	0	2	1	0	1	0	1	0	2	8	15	21	41	68	92	104	165	194	11	0	0	0	0
0	2	0	0	0	1	2	0	1	2	13	12	28	47	38	105	98	181	94	5	0	0	0	0

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Sea World Way, North of Sea World Drive**

Date: **Thursday, August 22, 2019** Total Daily Volume: **3187** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	6	0	0	0	1	9	10	2	19	33	54	92	215	240	391	457	642	898	107	8	2	1	0
0	0	0	0	0	0	4	2	1	4	5	13	18	44	62	97	113	167	249	75	1	0	0	0
0	5	0	0	0	0	1	2	0	0	5	11	22	51	68	92	85	115	267	19	0	0	0	0
0	0	0	0	0	0	4	3	0	3	10	11	30	68	62	91	119	165	229	9	6	1	1	0
0	1	0	0	0	1	0	3	1	12	13	19	22	52	48	111	140	195	153	4	1	1	0	0

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Average Daily Traffic

Location: **Perez Cove Way, South of Ingraham Street**

Date: **Tuesday, August 6, 2019** Total Daily Volume: **7541** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
45	2	7	7	28	111	116	162	332	449	853	629	418	383	505	620	544	488	420	382	262	230	393	155
23	1	2	0	1	13	12	39	68	74	218	175	111	80	107	190	129	123	107	110	79	62	114	53
15	0	2	1	6	17	47	46	139	96	214	188	127	83	106	132	147	116	100	100	58	57	130	39
5	1	2	3	6	28	24	41	69	101	215	145	100	115	155	163	158	130	125	86	64	56	87	33
2	0	1	3	15	53	33	36	56	178	206	121	80	105	137	135	110	119	88	86	61	55	62	30

(4) OUTBOUND

Date: **Tuesday, August 6, 2019** Total Daily Volume: **3525** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
36	0	3	0	7	17	20	23	118	112	188	167	130	143	248	365	306	333	253	252	182	170	319	133
21	0	2	0	0	5	0	7	14	20	53	39	29	28	63	119	71	80	65	69	55	49	93	44
10	0	0	0	3	0	10	6	51	26	45	66	38	26	50	72	78	79	62	64	42	41	105	36
4	0	1	0	1	4	6	3	36	23	42	36	41	46	80	93	87	89	75	68	43	44	72	28
1	0	0	0	3	8	4	7	17	43	48	26	22	43	55	81	70	85	51	51	42	36	49	25

(2) INBOUND

Date: **Tuesday, August 6, 2019** Total Daily Volume: **4016** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
9	2	4	7	21	94	96	139	214	337	665	462	288	240	257	255	238	155	167	130	80	60	74	22
2	1	0	0	1	8	12	32	54	54	165	136	82	52	44	71	58	43	42	41	24	13	21	9
5	0	2	1	3	17	37	40	88	70	169	122	89	57	56	60	69	37	38	36	16	16	25	3
1	1	1	3	5	24	18	38	33	78	173	109	59	69	75	70	71	41	50	18	21	12	15	5
1	0	1	3	12	45	29	29	39	135	158	95	58	62	82	54	40	34	37	35	19	19	13	5

(2) WK 1-2

ADT: 4016, 4127, 4139, 2048, 2825, 3108

AM: 139, 214; 140, 196; 134, 218; 65, 152; 59, 139; 69, 150

PM: 239, 155; 241, 207; 255, 206; 134, 123; 126, 103; 141, 121

AVG ADT = 3519

AVG AM = 179

AVG PM = 214

AVG ADT = 2847

AVG AM = 164

AVG PM = 312

(4) WK 1-2

ADT: 3525, 3470, 3441, 2191, 2154, 2303

AM: 23, 118; 22, 115; 34, 102; 20, 95; 20, 100; 20, 96

PM: 306, 323; 329, 295; 311, 290; 161, 205; 175, 169; 161, 200

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Perez Cove Way, South of Ingraham Street**

Date: **Wednesday, August 7, 2019** Total Daily Volume: **7597** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
44	7	5	10	21	98	121	162	313	437	853	630	467	394	532	548	580	502	444	347	256	214	447	165
21	4	4	2	2	10	30	30	67	71	220	182	133	107	110	155	150	149	110	93	61	38	138	67
13	1	0	1	5	18	35	48	121	78	255	171	115	90	114	110	149	116	119	83	63	49	156	48
9	0	1	3	5	24	25	35	63	115	215	146	118	101	156	153	156	122	135	89	60	59	93	28
1	2	0	4	9	46	31	49	62	173	163	131	101	96	152	130	125	115	80	82	72	68	60	22

Date: **Wednesday, August 7, 2019** Total Daily Volume: **3470** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
39	3	3	2	2	8	19	22	115	95	204	183	124	158	244	299	339	295	274	219	182	142	373	126
18	3	3	1	0	0	1	3	11	19	62	46	29	41	47	96	94	86	70	65	44	26	120	52
12	0	0	0	1	0	10	4	51	12	42	58	34	26	63	54	87	74	73	49	44	33	125	37
9	0	0	0	0	2	7	6	33	31	53	45	30	51	71	87	94	72	90	53	41	41	82	24
0	0	0	1	1	6	1	9	20	33	47	34	31	40	63	62	64	63	41	52	53	42	46	13

Date: **Wednesday, August 7, 2019** Total Daily Volume: **4127** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
5	4	2	8	19	90	102	140	198	342	649	447	343	236	288	249	241	207	170	128	74	72	74	39
3	1	1	1	2	10	29	27	56	52	158	136	104	66	63	59	56	63	40	28	17	12	18	15
1	1	0	1	4	18	25	44	70	66	213	113	81	64	51	56	62	42	46	34	19	16	31	11
0	0	1	3	5	22	18	29	30	84	162	101	88	50	85	66	62	50	45	36	19	18	11	4
1	2	0	3	8	40	30	40	42	140	116	97	70	56	89	68	61	52	39	30	19	26	14	9

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Average Daily Traffic

Location: **Perez Cove Way, South of Ingraham Street**

Date: **Thursday, August 8, 2019** Total Daily Volume: **7630** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
51	9	14	15	24	105	107	166	322	430	853	634	446	409	490	593	546	496	462	351	261	226	431	189
25	3	1	4	4	6	26	29	59	68	199	177	120	92	93	180	154	137	116	93	79	66	135	72
13	3	7	2	4	28	26	47	126	93	217	165	107	101	106	133	113	121	131	86	53	45	118	53
11	1	1	3	5	27	26	38	83	104	247	168	109	105	148	164	162	116	128	104	70	50	111	42
2	2	5	6	11	44	29	52	54	165	190	124	110	111	143	116	117	122	87	68	59	65	67	22

Date: **Thursday, August 8, 2019** Total Daily Volume: **3441** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
41	5	10	6	2	14	17	32	104	107	186	176	131	148	190	313	311	290	283	224	180	169	350	152
21	2	0	2	2	1	3	5	7	22	39	39	34	31	36	112	82	79	66	57	50	53	111	61
12	2	5	2	0	3	5	7	50	22	37	52	29	34	43	62	66	70	87	52	40	32	97	41
7	0	1	0	0	5	6	5	32	24	65	48	31	38	67	84	95	76	71	67	52	38	90	33
1	1	4	2	0	5	3	15	15	39	45	37	37	45	44	55	68	65	59	48	38	46	52	17

Date: **Thursday, August 8, 2019** Total Daily Volume: **4189** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
10	4	4	9	22	91	90	134	218	323	667	458	315	261	300	280	235	206	179	127	81	57	81	37
4	1	1	2	2	5	23	24	52	46	160	138	86	61	57	68	72	58	50	36	29	13	24	11
1	1	2	0	4	25	21	40	76	71	180	113	78	67	63	71	47	51	44	34	13	13	21	12
4	1	0	3	5	22	20	33	51	80	182	120	78	67	81	80	67	40	57	37	18	12	21	9
1	1	1	4	11	39	26	37	39	126	145	87	73	66	99	61	49	57	28	20	21	19	15	5

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Average Daily Traffic

Location: **Perez Cove Way, South of Ingraham Street**

Date: **Tuesday, August 13, 2019** Total Daily Volume: **5039** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
8	14	5	17	29	55	79	91	247	302	692	488	361	317	368	418	295	328	318	444	106	31	17	9
1	0	1	2	7	10	9	13	51	56	154	154	102	76	97	139	65	98	80	129	37	12	10	2
1	2	0	1	6	22	20	25	97	46	204	122	94	84	80	125	78	69	71	143	29	7	4	4
5	9	3	6	6	11	26	20	52	82	169	107	82	66	89	81	82	94	91	113	22	6	1	1
1	3	1	8	10	12	24	33	47	118	165	105	83	91	102	73	70	67	76	59	18	6	2	2

Date: **Tuesday, August 13, 2019** Total Daily Volume: **2191** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
4	4	3	7	7	4	20	26	95	92	161	123	107	141	143	256	161	205	206	323	71	18	10	4
0	0	0	1	1	2	0	5	11	20	38	39	28	30	48	90	38	65	49	81	28	8	7	1
1	2	0	1	3	0	6	10	45	18	39	30	27	38	34	83	39	43	46	112	17	5	3	3
3	1	2	3	2	1	7	3	24	28	39	27	21	26	30	45	46	59	58	93	13	3	0	0
0	1	1	2	1	1	7	8	15	26	45	27	31	47	31	38	38	38	53	37	13	2	0	0

Date: **Tuesday, August 13, 2019** Total Daily Volume: **2848** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
4	10	2	10	22	51	59	65	152	210	531	365	254	176	225	162	134	123	112	121	35	13	7	5
1	0	1	1	6	8	9	8	40	36	116	115	74	46	49	49	27	33	31	48	9	4	3	1
0	0	0	0	3	22	14	15	52	28	165	92	67	46	46	42	39	26	25	31	12	2	1	1
2	8	1	3	4	10	19	17	28	54	130	80	61	40	59	36	36	35	33	20	9	3	1	1
1	2	0	6	9	11	17	25	32	92	120	78	52	44	71	35	32	29	23	22	5	4	2	2

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Average Daily Traffic

Location: **Perez Cove Way, South of Ingraham Street**

Date: **Wednesday, August 14, 2019** Total Daily Volume: **4979** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
9	3	2	9	28	56	64	79	239	320	670	499	377	317	393	389	304	271	282	461	124	53	18	12
2	0	2	1	4	10	17	13	37	51	151	137	121	70	80	131	73	77	64	126	48	24	9	4
3	0	0	2	7	17	14	11	104	58	162	131	84	84	100	96	79	77	75	147	40	14	5	4
4	1	0	0	6	15	19	28	53	83	203	101	82	74	97	82	88	57	63	112	19	10	1	2
0	2	0	6	11	14	14	27	45	128	154	130	90	89	116	80	64	60	80	76	17	5	3	2

Date: **Wednesday, August 14, 2019** Total Daily Volume: **2154** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
7	2	0	3	6	4	11	20	100	88	147	126	118	128	175	229	178	168	170	339	85	32	12	6
1	0	0	1	0	0	3	3	6	17	30	34	45	21	35	85	42	46	37	86	36	16	8	2
3	0	0	1	1	1	2	1	48	14	37	38	19	37	50	57	47	51	49	118	23	7	2	3
3	0	0	0	1	1	5	6	26	23	46	21	20	30	43	48	50	34	40	82	15	6	1	1
0	2	0	1	4	2	1	10	20	34	34	33	34	40	47	39	39	37	44	53	11	3	1	0

Date: **Wednesday, August 14, 2019** Total Daily Volume: **2825** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
2	1	2	6	22	52	53	59	139	232	523	373	259	189	218	160	126	103	112	122	39	21	6	6
1	0	2	0	4	10	14	10	31	34	121	103	76	49	45	46	31	31	27	40	12	8	1	2
0	0	0	1	6	16	12	10	56	44	125	93	65	47	50	39	32	26	26	29	17	7	3	1
1	1	0	0	5	14	14	22	27	60	157	80	62	44	54	34	38	23	23	30	4	4	0	1
0	0	0	5	7	12	13	17	25	94	120	97	56	49	69	41	25	23	36	23	6	2	2	2

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Average Daily Traffic

Location: **Perez Cove Way, South of Ingraham Street**

Date: **Thursday, August 15, 2019** Total Daily Volume: **5411** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
10	4	3	11	38	58	75	98	246	351	814	593	375	356	370	404	302	321	356	419	129	39	21	18
0	2	1	0	2	7	20	22	45	59	175	196	115	79	91	146	77	88	81	115	57	13	9	3
9	1	1	3	12	26	14	28	97	54	219	154	76	92	78	92	74	80	76	160	31	8	3	7
0	0	0	2	12	9	23	22	68	95	238	123	111	92	90	98	84	77	102	94	31	14	5	1
1	1	1	6	12	16	18	26	36	143	182	120	73	93	111	68	67	76	97	50	10	4	4	7

Date: **Thursday, August 15, 2019** Total Daily Volume: **2303** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
8	0	1	3	14	9	23	29	96	109	192	152	121	141	161	230	161	200	215	308	85	18	14	13
0	0	1	0	0	1	6	6	4	19	44	48	37	29	48	111	33	55	51	82	39	6	7	1
7	0	0	2	3	1	5	10	39	14	49	41	18	33	39	43	43	41	42	116	20	3	1	6
0	0	0	1	6	2	7	4	39	34	52	28	36	41	38	46	52	57	66	75	20	8	4	1
1	0	0	0	5	5	5	9	14	42	47	35	30	38	36	30	33	47	56	35	6	1	2	5

Date: **Thursday, August 15, 2019** Total Daily Volume: **3108** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
2	4	2	8	24	49	52	69	150	242	622	441	254	215	209	174	141	121	141	111	44	21	7	5
0	2	0	0	2	6	14	16	41	40	131	148	78	50	43	35	44	33	30	33	18	7	2	2
2	1	1	1	9	25	9	18	58	40	170	113	58	59	39	49	31	39	34	44	11	5	2	1
0	0	0	1	6	7	16	18	29	61	186	95	75	51	52	52	32	20	36	19	11	6	1	0
0	1	1	6	7	11	13	17	22	101	135	85	43	55	75	38	34	29	41	15	4	3	2	2

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Average Daily Traffic

Location: **Perez Cove Way, South of Ingraham Street**

Date: **Tuesday, August 20, 2019** Total Daily Volume: **4381** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
4	4	6	19	19	74	89	134	146	311	764	482	324	294	261	245	273	311	405	129	27	28	22	10
0	0	0	4	5	8	31	26	35	45	137	145	96	71	78	41	71	60	104	43	13	10	5	2
2	0	4	3	4	23	23	26	45	54	251	137	78	61	47	66	70	55	109	35	5	6	5	1
2	0	0	6	2	14	21	32	34	79	210	114	87	82	77	69	73	88	113	35	4	7	4	1
0	4	2	6	8	29	14	50	32	133	166	86	63	80	59	69	59	108	79	16	5	5	8	6

Date: **Tuesday, August 20, 2019** Total Daily Volume: **1944** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
4	4	4	12	5	17	26	50	52	115	218	143	118	117	126	126	175	210	284	87	17	15	14	5
0	0	0	3	2	1	9	10	11	19	29	34	36	22	36	21	44	38	70	33	8	6	4	2
2	0	3	3	2	3	7	9	16	24	76	43	26	28	22	31	38	42	81	22	3	1	4	0
2	0	0	3	0	5	6	13	18	28	66	37	33	29	44	39	51	54	79	22	2	5	3	1
0	4	1	3	1	8	4	18	7	44	47	29	23	38	24	35	42	76	54	10	4	3	3	2

Date: **Tuesday, August 20, 2019** Total Daily Volume: **2437** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	0	2	7	14	57	63	84	94	196	546	339	206	177	135	119	98	101	121	42	10	13	8	5
0	0	0	1	3	7	22	16	24	26	108	111	60	49	42	20	27	22	34	10	5	4	1	0
0	0	1	0	2	20	16	17	29	30	175	94	52	33	25	35	32	13	28	13	2	5	1	1
0	0	0	3	2	9	15	19	16	51	144	77	54	53	33	30	22	34	34	13	2	2	1	0
0	0	1	3	7	21	10	32	25	89	119	57	40	42	35	34	17	32	25	6	1	2	5	4

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Average Daily Traffic

Location: **Perez Cove Way, South of Ingraham Street**

Date: **Wednesday, August 21, 2019** Total Daily Volume: **4221** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
12	5	12	20	15	66	67	94	143	344	698	468	324	284	257	271	242	320	360	119	39	27	19	15
1	2	1	1	5	8	16	20	18	64	144	127	89	72	66	58	63	75	67	40	19	7	3	9
1	3	4	5	2	25	8	25	31	67	217	122	86	65	61	58	61	78	116	37	7	4	7	1
6	0	6	5	2	6	24	26	41	94	204	119	76	69	81	79	57	87	121	30	11	4	6	1
4	0	1	9	6	27	19	23	53	119	133	100	73	78	49	76	61	80	56	12	2	12	3	4

Date: **Wednesday, August 21, 2019** Total Daily Volume: **1917** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
9	3	10	11	2	16	16	32	52	124	227	148	109	114	132	156	145	221	257	77	23	16	11	6
0	2	1	1	1	2	5	7	4	29	50	39	27	23	36	38	32	52	51	27	15	5	2	3
1	1	3	3	0	5	2	9	10	27	71	37	29	23	32	31	46	55	81	21	5	2	4	0
5	0	5	4	1	1	4	9	18	35	65	41	27	31	41	47	37	59	87	21	1	2	3	1
3	0	1	3	0	8	5	7	20	33	41	31	26	37	23	40	30	55	38	8	2	7	2	2

Date: **Wednesday, August 21, 2019** Total Daily Volume: **2304** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
3	2	2	9	13	50	51	62	91	220	471	320	215	170	125	115	97	99	103	42	16	11	8	9
1	0	0	0	4	6	11	13	14	35	94	88	62	49	30	20	31	23	16	13	4	2	1	6
0	2	1	2	2	20	6	16	21	40	146	85	57	42	29	27	15	23	35	16	2	2	3	1
1	0	1	1	1	5	20	17	23	59	139	78	49	38	40	32	20	28	34	9	10	2	3	0
1	0	0	6	6	19	14	16	33	86	92	69	47	41	26	36	31	25	18	4	0	5	1	2

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Average Daily Traffic

Location: **Perez Cove Way, South of Ingraham Street**

Date: **Thursday, August 22, 2019** Total Daily Volume: **4890** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
8	6	9	17	26	70	64	85	146	337	855	586	377	366	302	304	302	387	436	100	43	37	17	10
0	1	1	3	5	12	31	20	33	45	184	170	112	75	78	67	87	76	116	39	19	7	4	4
4	0	5	6	4	25	7	18	41	65	229	160	96	111	66	79	71	75	137	36	6	4	5	1
2	1	2	1	6	10	15	22	35	96	255	141	85	90	79	71	66	112	131	14	11	13	2	4
2	4	1	7	11	23	11	25	37	131	187	115	84	90	79	87	78	124	52	11	7	13	6	1

Date: **Thursday, August 22, 2019** Total Daily Volume: **2255** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
7	4	8	10	8	11	19	26	53	127	286	198	132	144	161	165	183	258	317	66	28	25	13	6
0	1	1	1	1	1	9	5	11	13	62	55	44	30	41	35	54	46	77	23	13	4	4	3
4	0	5	5	1	5	2	6	14	29	70	49	33	42	37	46	43	51	104	27	4	3	3	1
2	1	2	1	2	0	4	8	11	34	91	54	25	38	40	36	40	77	100	9	6	9	2	2
1	2	0	3	4	5	4	7	17	51	63	40	30	34	43	48	46	84	36	7	5	9	4	0

Date: **Thursday, August 22, 2019** Total Daily Volume: **2635** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1	2	1	7	18	59	45	59	93	210	569	388	245	222	141	139	119	129	119	34	15	12	4	4
0	0	0	2	4	11	22	15	22	32	122	115	68	45	37	32	33	30	39	16	6	3	0	1
0	0	0	1	3	20	5	12	27	36	159	111	63	69	29	33	28	24	33	9	2	1	2	0
0	0	0	0	4	10	11	14	24	62	164	87	60	52	39	35	26	35	31	5	5	4	0	2
1	2	1	4	7	18	7	18	20	80	124	75	54	56	36	39	32	40	16	4	2	4	2	1

APPENDIX B

SEAWORLD EXPECTED EMPLOYMENT GROWTH

From: Walter, Darlene
To: Walter B. Musial; Asha Bleier
Cc: Roman Lopez
Subject: RE: SeaWorld Employee Numbers
Date: Tuesday, December 15, 2020 2:51:58 PM

I believe we have reported employee numbers in the last 3 MMRP, so you have the historical. Our current and future business model is less full time employees and more part time employees so I would anticipate a 10% - 15% increase in total employee numbers / trips. However, in the next 2 – 3 years+ we will likely not be open 7 days per week. Therefore, I would estimate flat to historical. Hope that makes sense.

Darlene

From: Walter B. Musial <musial@llgengineers.com>
Sent: Tuesday, December 15, 2020 2:24 PM
To: Walter, Darlene <darlene.walter@SeaWorld.Com>; Asha Bleier <ableier@dudek.com>
Cc: Roman Lopez <lopez@llgengineers.com>
Subject: [EXTERNAL] SeaWorld Employee Numbers

Darlene,

Can you confirm the current and projected MP employee numbers. We need this to test the measure of effectiveness of the VMT reductions.

Thanks, W.

Walter B. Musial, P.E., RSP
Principal
musial@llgengineers.com

LINSCOTT LAW & GREENSPAN engineers

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APPENDIX C

CAPCOA *QUANTIFYING GREENHOUSE GAS MITIGATION MEASURES* VMT REDUCTION MEASURES EXCERPTS

Chart 6-2: Transportation Strategies Organization

Transportation Measures (Five Subcategories) Global Maximum Reduction (all VMT): urban = 75%; compact infill = 40%; suburban center or suburban with NEV = 20%; suburban = 15%

Global Cap for Road Pricing needs further study

Transportation Measures (Four Categories) Cross-Category Max Reduction (all VMT): urban = 70%; compact infill = 35%; suburban center or suburban with NEV = 15%; suburban = 10%

Max Reduction = 15% overall; work VMT = 25%; school VMT = 65%;

Max Reduction = 25% (all VMT)

Land Use / Location	Neighborhood / Site Enhancement	Parking Policy / Pricing	Transit System Improvements	Commute Trip Reduction (assumes mixed use)	Road Pricing Management	Vehicles
Max Reduction: urban = 65%; compact infill = 30%; suburban center = 10%; suburban = 5%	Max Reduction: without NEV = 5%; with NEV = 15%	Max Reduction = 20%	Max Reduction = 10%	Max Reduction = 25% (work VMT)	Max Reduction = 25%	
Density (30%)	Pedestrian Network (2%)	Parking Supply Limits (12.5%)	Network Expansion (8.2%)	CTR Program Required = 21% work VMT Voluntary = 6.2% work VMT	Cordon Pricing (22%)	Electrify Loading Docks
Design (21.3%)	Traffic Calming (1%)	Unbundled Parking Costs (13%)	Service Frequency / Speed (2.5%)	Transit Fare Subsidy (20% work VMT)	Traffic Flow Improvements (45% CO_2)	Utilize Alternative Fueled Vehicles
Location Efficiency (65%)	NEV Network (14.4) <NEV Parking>	On-Street Market Pricing (5.5%)	Bus Rapid Transit (3.2%)	Employee Parking Cash-out (7.7% work VMT)	Required Contributions by Project	Utilize Electric or Hybrid Vehicles
Diversity (30%)	Car Share Program (0.7%)	Residential Area Parking Permits	Access Improvements	Workplace Parking Pricing (19.7% work VMT)		
Destination Accessibility (20%)	Bicycle Network <Lanes> <Parking> <Land Dedication for Trails>		Station Bike Parking	Alternative Work Schedules & Telecommute (5.5% work VMT)		
Transit Accessibility (25%)	Urban Non-Motorized Zones		Local Shuttles	CTR Marketing (5.5% work VMT)		
BMR Housing (1.2%)			Park & Ride Lots*	Employer-Sponsored Vanpool/Shuttle (13.4% work VMT)		
Orientation Toward Non-Auto Corridor				Ride Share Program (15% work VMT)		
Proximity to Bike Path				Bike Share Program		
				End of Trip Facilities		
				Preferential Parking Permit		
				School Pool (15.8% school VMT)		
				School Bus (6.3% school VMT)		

Note: Strategies in bold text are primary strategies with reported VMT reductions; non-bolded strategies are support or grouped strategies.

As used in this Report, location settings are defined as follows:

Urban: A project located within the central city and may be characterized by multi-family housing, located near office and retail. Downtown Oakland and the Nob Hill neighborhood in San Francisco are examples of the typical urban area represented in this category. The urban maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average (assumed analogous to an ITE baseline) for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Central Berkeley	-48%
San Francisco	-49%
Pacific Heights (SF)	-79%
North Beach (SF)	-82%
Mission District (SF)	-75%
Nob Hill (SF)	-63%
Downtown Oakland	-61%

The average reflects a range of 48% less VMT/capita (Central Berkeley) to 82% less VMT/capita (North Beach, San Francisco) compared to the statewide average. The urban locations listed above have the following characteristics:

- Location relative to the regional core: these locations are within the CBD or less than five miles from the CBD (downtown Oakland and downtown San Francisco).
- Ratio or relationship between jobs and housing: jobs-rich (jobs/housing ratio greater than 1.5)
- Density character
  - typical building heights in stories: six stories or (much) higher
  - typical street pattern: grid
  - typical setbacks: minimal
  - parking supply: constrained on and off street
  - parking prices: high to the highest in the region
- Transit availability: high quality rail service and/or comprehensive bus service at 10 minute headways or less in peak hours

Compact infill: A project located on an existing site within the central city or inner-ring suburb with high-frequency transit service. Examples may be community redevelopment areas, reusing abandoned sites, intensification of land use at established transit stations, or converting underutilized or older industrial buildings. Albany and the Fairfax area of Los Angeles are examples of typical compact infill area as used here. The compact infill maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Franklin Park, Hollywood	-22%
Albany	-25%
Fairfax Area, Los Angeles	-29%
Hayward	-42%

The average reflects a range of 22% less VMT/capita (Franklin Park, Hollywood) to 42% less VMT/capita (Hayward) compared to the statewide average. The compact infill locations listed above have the following characteristics:

- Location relative to the regional core: these locations are typically 5 to 15 miles outside a regional CBD
- Ratio or relationship between jobs and housing: balanced (jobs/housing ratio ranging from 0.9 to 1.2)
- Density character
  - typical building heights in stories: two to four stories
  - typical street pattern: grid
  - typical setbacks: 0 to 20 feet
  - parking supply: constrained
  - parking prices: low to moderate
- Transit availability: rail service within two miles, or bus service at 15 minute peak headways or less

As used in this Report, additional location settings are defined as follows:

Suburban Center: A project typically involving a cluster of multi-use development within dispersed, low-density, automobile dependent land use patterns (a suburb). The center may be an historic downtown of a smaller community that has become surrounded by its region's suburban growth pattern in the latter half of the 20th Century. The suburban center serves the population of the suburb with office, retail and housing which is denser than the surrounding suburb. The suburban center maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Sebastopol	0%
San Rafael (Downtown)	-10%
San Mateo	-17%

The average reflects a range of 0% less VMT/capita (Sebastopol) to 17% less VMT/capita (San Mateo) compared to the statewide average. The suburban center locations listed above have the following characteristics:

- Location relative to the regional core: these locations are typically 20 miles or more from a regional CBD
- Ratio or relationship between jobs and housing: balanced
- Density character
  - typical building heights in stories: two stories
  - typical street pattern: grid
  - typical setbacks: 0 to 20 feet
  - parking supply: somewhat constrained on street; typically ample off-street
  - parking prices: low (if priced at all)
- Transit availability: bus service at 20-30 minute headways and/or a commuter rail station

While all three locations in this category reflect a suburban "downtown," San Mateo is served by regional rail (Caltrain) and the other locations are served by bus transit only. Sebastopol is located more than 50 miles from downtown San Francisco, the nearest urban center. San Rafael and San Mateo are located 20 miles from downtown San Francisco.

Suburban: A project characterized by dispersed, low-density, single-use, automobile dependent land use patterns, usually outside of the central city (a suburb). Suburbs typically have the following characteristics:

- Location relative to the regional core: these locations are typically 20 miles or more from a regional CBD
- Ratio or relationship between jobs and housing: jobs poor
- Density character
  - typical building heights in stories: one to two stories
  - typical street pattern: curvilinear (cul-de-sac based)
  - typical setbacks: parking is generally placed between the street and office or retail buildings; large-lot residential is common
  - parking supply: ample, largely surface lot-based
  - parking prices: none
- Transit availability: limited bus service, with peak headways 30 minutes or more

The maximum reduction provided for this category assumes that regardless of the measures implemented, the project's distance from transit, density, design, and lack of mixed use destinations will keep the effect of any strategies to a minimum.

Global Maximum- A global maximum is provided for any combination of land use, neighborhood enhancements, parking, transit, and commute trip reduction strategies (the first five columns in the organization chart). This excludes reductions from road-pricing measurements which are discussed separately below. The total project VMT reduction across these categories, which can be combined through multiplication, should be capped

APPENDIX TABLE C-1
PROJECT LOCATION SETTING

Location Setting	Location relative to CBD	Jobs/Housing Ratio	Typical Building Height	Typical Street Pattern	Typical Setback	Parking Supply	Parking Prices	Transit Availability	# of Criteria Met for Project Area
Urban	Within the CBD or less than five miles from the CBD	Jobs-rich (ratio > 1.5)	Six stories or (much) higher	Grid	Minimal	Constrained on and off street	High to the highest in the region	High quality rail service and/or comprehensive bus service at 10-minute headways or less in peak hours	3/8
Compact Infill	Typically, 5 to 15 miles outside a regional CBD	Balanced (ratio 0.9 to 1.2)	Two to four stories	Grid	0 to 20 feet	Constrained	Low to moderate	Rail service within two miles, or bus service at 15-minute peak headways or less	3/8
Suburban Center	Typically, 20 miles or more from a regional CBD	Balanced (ratio 0.9 to 1.2)	Two stories	Grid	0 to 20 feet	Somewhat constrained on-street; typically ample off-street	Low (if priced at all)	Bus service at 20–30-minute headways and/or a commuter rail station	3/8
Suburban	Typically, 20 miles or more from a regional CBD	Jobs poor (ratio < 0.9)	One to two stories	Curvilinear (cul-de-sac based)	Parking is generally placed between the street and office or retail building, large-lot residential is common	Ample; largely surface lot-based	none	Limited bus service, with peak headways 30 minutes or more	2/8
Project Site	6-7 miles	1.97 (Census Tract)	One to two stories	Grid	0 to 20 feet	Large surface parking lot	$25 - $35	Bus service at 20-30 min headways	—

General Notes:

- Source: *Quantifying Green House Gas Mitigation Measures* (CAPCOA – 2010)

3.0 Transportation

3.1 Land Use/Location

3.1.1 Increase Density

Range of Effectiveness: 0.8 – 30.0% vehicle miles traveled (VMT) reduction and therefore a 0.8 – 30.0% reduction in GHG emissions.

Measure Description:

Designing the Project with increased densities, where allowed by the General Plan and/or Zoning Ordinance reduces GHG emissions associated with traffic in several ways. Density is usually measured in terms of persons, jobs, or dwellings per unit area. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. This strategy also provides a foundation for implementation of many other strategies which would benefit from increased densities. For example, transit ridership increases with density, which justifies enhanced transit service.

The reductions in GHG emissions are quantified based on reductions to VMT. The relationship between density and VMT is described by its elasticity. According to a recent study published by Brownstone, et al. in 2009, the elasticity between density and VMT is 0.12. Default densities are based on the typical suburban densities in North America which reflects the characteristics of the ITE Trip Generation Manual data used in the baseline estimates.

Measure Applicability:

- Urban and suburban context
    - Negligible impact in a rural context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO_2 emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{running}$$

Where:

VMT = vehicle miles traveled

$EF_{running}$ = emission factor for running emissions

Inputs:

The following information needs to be provided by the Project Applicant:

- Number of housing units per acre or jobs per job acre

Mitigation Method:

% VMT Reduction = A * B [not to exceed 30%]

Where:

A = Percentage increase in housing units per acre or jobs per job acre[33] = (number of housing units per acre or jobs per job acre – number of housing units per acre or jobs per job acre for typical ITE development) / (number of housing units per acre or jobs per job acre for typical ITE development) For small and medium sites (less than ½ mile in radius) the calculation of housing and jobs per acre should be performed for the development site as a whole, so that the analysis does not erroneously attribute trip reduction benefits to measures that simply shift jobs and housing within the site with no overall increase in site density. For larger sites, the analysis should address the development as several ½-mile-radius sites, so that shifts from one area to another would increase the density of the receiving area but reduce the density of the donating area, resulting in trip generation rate decreases and increases, respectively, which cancel one another.

B = Elasticity of VMT with respect to density (from literature)

Detail:

- A: [not to exceed 500% increase]
  - If housing: (Number of housing units per acre – 7.6) / 7.6 (See Appendix C for detail)
  - If jobs: (Number of jobs per acre – 20) / 20 (See Appendix C for detail)
- B: 0.07 (Boarnet and Handy 2010)

Assumptions:

Data based upon the following references:

- Boarnet, Marlon and Handy, Susan. 2010. "DRAFT Policy Brief on the Impacts of Residential Density Based on a Review of the Empirical Literature." http://arb.ca.gov/cc/sb375/policies/policies.htm; Table 1.

[33] This value should be checked first to see if it exceeds 500% in which case A = 500%.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions[34]
CO_2e	1.5-30% of running
PM	1.5-30% of running
CO	1.5-30% of running
NOx	1.5-30% of running
SO_2	1.5-30% of running
ROG	0.9-18% of total

Discussion:

The VMT reductions for this strategy are based on changes in density versus the typical suburban residential and employment densities in North America (referred to as "ITE densities"). These densities are used as a baseline to mirror those densities reflected in the ITE Trip Generation Manual, which is the baseline method for determining VMT.

There are two separate maxima noted in the fact sheet: a cap of 500% on the allowable percentage increase of housing units or jobs per acre (variable A) and a cap of 30% on % VMT reduction. The rationale for the 500% cap is that there are diminishing returns to any change in environment. For example, it is reasonably doubtful that increasing residential density by a factor of six instead of five would produce any additional change in travel behavior. The purpose for the 30% cap is to limit the influence of any single environmental factor (such as density). This emphasizes that community designs that implement multiple land use strategies (such as density, design, diversity, etc.) will show more of a reduction than relying on improvements from a single land use factor.

Example:

Sample calculations are provided below for housing:

Low Range % VMT Reduction (8.5 housing units per acre)

= (8.5 – 7.6) / 7.6 *0.07 = 0.8%

High Range % VMT Reduction (60 housing units per acre)

$$= \frac{60 - 7.6}{7.6} = 6.9 \text{ or } 690\%$$ Since greater than 500%, set to 500%

= 500% x 0.07 = 0.35 or 35% Since greater than 30%, set to 30%

[34] The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Sample calculations are provided below for jobs:

Low Range % VMT Reduction (25 jobs per acre)
= (25 – 20) / 20 *0.12 = 3%

High Range % VMT Reduction (100 jobs per acre)

$$= \frac{100 - 20}{20} = 4 \text{ or } 400\%$$

=400% x 0.12 = 0.48 or 48% Since greater than 30%, set to 30%

Preferred Literature:

- -0.07 = elasticity of VMT with respect to density

Boarnet and Handy's detailed review of existing literature highlighted three individual studies that used the best available methods for analyzing data for individual households. These studies provided the following elasticities: -0.12 - Brownstone (2009), -0.07 – Bento (2005), and -0.08 – Fang (2008). To maintain a conservative estimate of the impacts of this strategy, the lower elasticity of -0.07 is used in the calculations.

Alternative Literature:

- -0.05 to -0.25 = elasticity of VMT with respect to density

The *TRB Special Report 298* literature suggests that doubling neighborhood density across a metropolitan area might lower household VMT by about 5 to 12 percent, and perhaps by as much as 25 percent, if coupled with higher employment concentrations, significant public transit improvements, mixed uses, and other supportive demand management measures.

Alternative Literature References:

TRB, 2009. *Driving and the Built Environment*, Transportation Research Board Special Report 298. http://onlinepubs.trb.org/Onlinepubs/sr/sr298.pdf . Accessed March 2010. (p. 4)

Other Literature Reviewed:

None

3.2 Neighborhood/Site Enhancements

3.2.1 Provide Pedestrian Network Improvements

Range of Effectiveness: 0 - 2% vehicle miles traveled (VMT) reduction and therefore 0 - 2% reduction in GHG emissions.

Measure Description:

Providing a pedestrian access network to link areas of the Project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. The project will provide a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site. The project will minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation will be eliminated.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects
- Reduction benefit only occurs if the project has both pedestrian network improvements on site and connections to the larger off-site network.

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO_2 emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{running}$$

Where:

VMT = vehicle miles traveled

$EF_{running}$ = emission factor for running emissions

Inputs:

The project applicant must provide information regarding pedestrian access and connectivity within the project and to/from off-site destinations.

Mitigation Method:

Estimated VMT Reduction	Extent of Pedestrian Accommodations	Context
2%	Within Project Site and Connecting Off-Site	Urban/Suburban
1%	Within Project Site	Urban/Suburban
< 1%	Within Project Site and Connecting Off-Site	Rural

Assumptions:

Data based upon the following references:

- Center for Clean Air Policy (CCAP) Transportation Emission Guidebook. http://www.ccap.org/safe/guidebook/guide_complete.html (accessed March 2010)
- 1000 Friends of Oregon (1997) "Making the Connections: A Summary of the LUTRAQ Project" (p. 16): http://www.onethousandfriendsoforegon.org/resources/lut_vol7.html

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions[45]
CO_2e	0 - 2% of running
PM	0 - 2% of running
CO	0 - 2% of running
NOx	0 - 2% of running
SO_2	0 - 2% of running
ROG	0 – 1.2% of total

Discussion:

As detailed in the preferred literature section below, the lower range of 1 – 2% VMT reduction was pulled from the literature to provide a conservative estimate of reduction potential. The literature does not speak directly to a rural context, but an assumption was made that the benefits will likely be lower than a suburban/urban context.

Example:

N/A – calculations are not needed.

Preferred Literature:

[45] The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

- 1 - 2% reduction in VMT

The Center for Clean Air Policy (CCAP) attributes a 1% reduction in VMT from pedestrian-oriented design assuming this creates a 5% decrease in automobile mode share (e.g. auto split shifts from 95% to 90%). This mode split is based on the Portland Regional Land Use Transportation and Air Quality (LUTRAQ) project. The LUTRAQ analysis also provides the high end of 10% reduction in VMT. This 10% assumes the following features:

– Compact, mixed-use communities
– Interconnected street network
– Narrower roadways and shorter block lengths
– Sidewalks
– Accessibility to transit and transit shelters
– Traffic calming measures and street trees
– Parks and public spaces

Other strategies (development density, diversity, design, transit accessibility, traffic calming) are intended to account for the effects of many of the measures in the above list. Therefore, the assumed effectiveness of the Pedestrian Network measure should utilize the lower end of the 1 - 10% reduction range. If the pedestrian improvements are being combined with a significant number of the companion strategies, trip reductions for those strategies should be applied as well, based on the values given specifically for those strategies in other sections of this report. Based upon these findings, and drawing upon recommendations presented in the alternate literature below, the recommended VMT reduction attributable to pedestrian network improvements, above and beyond the benefits of other measures in the above bullet list, should be 1% for comprehensive pedestrian accommodations within the development plan or project itself, or 2% for comprehensive internal accommodations and external accommodations connecting to off-site destinations.

Alternative Literature:

Alternate:

- Walking is three times more common with enhanced pedestrian infrastructure
- 58% increase in non-auto mode share for work trips

The Nelson\Nygaard [1] report for the City of Santa Monica Land Use and Circulation Element EIR summarized studies looking at pedestrian environments. These studies have found a direct connection between non-auto forms of travel and a high quality pedestrian environment. Walking is three times more common with communities that have pedestrian friendly streets compared to less pedestrian friendly communities. Non-auto mode share for work trips is 49% in a pedestrian friendly community, compared to 31% in an auto-oriented community. Non-auto mode share for non-work trips is 15%, compared to 4% in an auto-oriented community. However, these effects also depend upon other aspects of the pedestrian friendliness being present, which are accounted for separately in this report through land use strategy mitigation measures such as density and urban design.

Alternate:

- 0.5% - 2.0% reduction in VMT

The Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions [2] attributes 1% reduction for a project connecting to *existing* external streets and pedestrian facilities. A 0.5% reduction is attributed to connecting to *planned* external streets and pedestrian facilities (which must be included in a pedestrian master plan or equivalent). Minimizing pedestrian barriers attribute an additional 1% reduction in VMT. These recommendations are generally in line with the recommended discounts derived from the preferred literature above.

Preferred and Alternative Literature Notes:

[1] Nelson\Nygaard, 2010. City of Santa Monica Land Use and Circulation Element EIR Report, Appendix – Santa Monica Luce Trip Reduction Impacts Analysis (p.401). http://www.shapethefuture2025.net/

Nelson\Nygaard looked at the following studies: Anne Vernez Moudon, Paul Hess, Mary Catherine Snyder and Kiril Stanilov (2003), Effects of Site Design on Pedestrian Travel in Mixed Use, Medium-Density Environments, http://www.wsdot.wa.gov/research/reports/fullreports/432.1.pdf; Robert Cervero and Carolyn Radisch (1995), Travel Choices in Pedestrian Versus Automobile Oriented Neighborhoods, http://www.uctc.net/papers/281.pdf;

[2] Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions. (p. 11) http://www.airquality.org/ceqa/GuidanceLUEmissionReductions.pdf

Other Literature Reviewed:

None

3.5.2 Implement Transit Access Improvements

Range of Effectiveness: Grouped strategy. [See TST-3 and TST-4]

Measure Description:

This project will improve access to transit facilities through sidewalk/ crosswalk safety enhancements and bus shelter improvements. The benefits of Transit Access Improvements alone have not been quantified and should be grouped with Transit Network Expansion (TST-3) and Transit Service Frequency and Speed (TST-4).

Measure Applicability:

- Urban, suburban context
- Appropriate for residential, retail, office, mixed use, and industrial projects

Alternative Literature:

No literature was identified that specifically looks at the quantitative impact of improving transit facilities as a standalone strategy.

Alternative Literature References:

None

Other Literature Reviewed:

None

3.5.3 Expand Transit Network

Range of Effectiveness: 0.1 – 8.2% vehicle miles travelled (VMT) reduction and therefore 0.1 – 8.2% reduction in GHG emissions[71]

Should be 7.4%

Measure Description:

The project will expand the local transit network by adding or modifying existing transit service to enhance the service near the project site. This will encourage the use of transit and therefore reduce VMT.

Measure Applicability:

- Urban and suburban context
- May be applicable in a rural context but no literature documentation available (effectiveness will be case specific and should be based on specific assessment of levels of services and origins/destinations served)
- Appropriate for specific or general plans

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO_2 emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{running}$$

Where:

VMT = vehicle miles traveled

$EF_{running}$ = emission factor for running emissions

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage increase transit network coverage
- Existing transit mode share
- Project location: urban center, urban, or suburban

[71] Transit vehicles may also result in increases in emissions that are associated with electricity production or fuel use. The Project Applicant should consider these potential additional emissions when estimating mitigation for these measures.

The following are optional inputs. Average (default) values are included in the calculations but can be updated to project specificity if desired. Please see Appendix C for calculation detail:

- Average vehicle occupancy

Mitigation Method:

% VMT Reduction = Coverage * B * Mode * D

Where

Coverage = % increase in transit network coverage

B = elasticity of transit ridership with respect to service coverage (see Table below)

Mode = existing transit mode share

D = adjustments from transit ridership increase to VMT (0.67, from Appendix C)

B:

Project setting	Elasticity
Suburban	1.01
Urban	0.72
Urban Center	0.65
Source: TCRP 95, Chapter 10	

Mode: Provide existing transit mode share for project or utilize the following averages

Project setting	Transit mode share
Suburban	1.3%
Urban	4%
Urban Center	17%
Source: NHTS, 2001http://www.dot.ca.gov/hq/tsip/tab/documents/travelsurveys/Final2001_StwTravelSurveyWkdayRpt.pdf (Urban – MTC, SACOG. Suburban – SCAG, SANDAG, Fresno County.) Urban Center from San Francisco County Transportation Authority Countywide Transportation Plan, 2000.	

Assumptions:

Data based upon the following references:

[1] Transit Cooperative Research Program. TCRP Report 95 Traveler Response to System Changes – Chapter 10: Bus Routing and Coverage. 2004. (p. 10-8 to 10-10)

Emission Reduction Ranges and Variables:

Pollut0ant	Category Emissions Reductions[72]
CO_2e	0.1 – 8.2% of running
PM	0.1 – 8.2% of running
CO	0.1 – 8.2% of running
NOx	0.1 – 8.2% of running
SO_2	0.1 – 8.2% of running
ROG	0.06 – 4.9% of total

Discussion:

In general, transit operational strategies alone are not enough for a large modal shift [2], as evidenced by the low range in VMT reductions. Through case study analysis, the TCRP report [2] observed that strategies that focused solely on improving level of service or quality of transit were unsuccessful at achieving a significant shift. Strategies that reduce the attractiveness of vehicle travel should be implemented in combination to attract a larger shift in transit ridership. The three following factors directly impact the attractiveness of vehicle travel: urban expressway capacity, urban core density, and downtown parking availability.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (10% expansion, suburban) = 10% * 1.01 * 1.3% * .67 = 0.1%
- High Range % VMT Reduction (100% expansion, urban) = 100% * 0.72 * 17% * .67 = 8.2%

The low and high ranges are estimates and may vary based on the characteristics of the project.

Should be 7.4%

Urban Center = 100% x 0.65 x 17% x 0.67 = 7.4%

[72] The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Preferred Literature:

- 0.65 = elasticity of transit ridership with respect to service coverage/expansion (in radial routes to central business districts)
- 0.72 = elasticity of transit ridership with respect to service coverage/expansion (in central city routes)
- 1.01 = elasticity of transit ridership with respect to service coverage/expansion (in suburban routes)

TCRP 95 Chapter 10 [1] documents the results of system-wide service expansions in San Diego. The least sensitivity to service expansion came from central business districts while the largest impacts came from suburban routes. Suburban locations, with traditionally low transit service, tend to have greater ridership increases compared to urban locations which already have established transit systems. In general, there is greater opportunity in suburban locations.

Alternative Literature:

- -0.06 = elasticity of VMT with respect to transit revenue miles

Growing Cooler [3] modeled the impact of various urban variables (including transit revenue miles and transit passenger miles) on VMT, using data from 84 urban areas around the U.S.

Alternative Literature References:

[2] Transit Cooperative Research Program. TCRP 27 – Building Transit Ridership: An Exploration of Transit's Market Share and the Public Policies That Influence It (p.47-48). 1997. [cited in discussion section above]

[3] Ewing, et al, 2008. Growing Cooler – The Evidence on Urban Development and Climate Change. Urban Land Institute.

3.4.3 Provide Ride-Sharing Programs

Range of Effectiveness: 1 – 15% commute vehicle miles traveled (VMT) reduction and therefore 1 - 15% reduction in commute trip GHG emissions.

Measure Description:

Increasing the vehicle occupancy by ride sharing will result in fewer cars driving the same trip, and thus a decrease in VMT. The project will include a ride-sharing program as well as a permanent transportation management association membership and funding requirement. Funding may be provided by Community Facilities, District, or County Service Area, or other non-revocable funding mechanism. The project will promote ride-sharing programs through a multi-faceted approach such as:

- Designating a certain percentage of parking spaces for ride sharing vehicles
- Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles
- Providing a web site or message board for coordinating rides

Measure Applicability:

- Urban and suburban context
- Negligible impact in many rural contexts, but can be effective when a large employer in a rural area draws from a workforce in an urban or suburban area, such as when a major employer moves from an urban location to a rural location.
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO_2 emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{running}$$

Where:

VMT = vehicle miles traveled

$EF_{running}$ = emission factor for running emissions

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of employees eligible

- Location of project site: low density suburb, suburban center, or urban location

Mitigation Method:

% VMT Reduction = Commute * Employee

Where

Commute = % reduction in commute VMT (from [1])
Employee = % employees eligible

Detail:

- Commute: 5% (low density suburb), 10% (suburban center), 15% (urban) annual reduction in commute VMT (from [1])

Assumptions:

Data based upon the following references:

[1] VTPI. *TDM Encyclopedia*. http://www.vtpi.org/tdm/tdm34.htm; Accessed 3/5/2010.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions[58]
CO_2e	1 – 15% of running
PM	1 – 15% of running
CO	1 – 15% of running
NOx	1 – 15% of running
SO_2	1 – 15% of running
ROG	0.6 – 9% of total

Discussion:

This strategy is often part of Commute Trip Reduction (CTR) Program, another strategy documented separately (see TRT-1 and TRT-2). The Project Applicant should take care not to double count the impacts.

Example:

Sample calculations are provided below:

[58] The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

- Low Range % VMT Reduction (low density suburb and 20% eligible) = 5% * 20% = 1%
- High Range % VMT Reduction (urban and 100% eligible) = 15% * 1 = 15%

Preferred Literature:

- 5 – 15% reduction of commute VMT

The *Transportation Demand Management (TDM) Encyclopedia* notes that because rideshare passengers tend to have relatively long commutes, mileage reductions can be relatively large with rideshare. If ridesharing reduces 5% of commute trips it may reduce 10% of vehicle miles because the trips that are reduced are twice as long as average. Rideshare programs can reduce up to 8.3% of commute VMT, up to 3.6% of total regional VMT, and up to 1.8% of regional vehicle trips (Apogee, 1994; TDM Resource Center, 1996). Another study notes that ridesharing programs typically attract 5-15% of commute trips if they offer only information and encouragement, and 10-30% if they also offer financial incentives such as parking cash out or vanpool subsidies (York and Fabricatore, 2001).

Alternative Literature:

- Up to 1% reduction in VMT (if combined with two other strategies)

Per the Nelson\Nygaard report [2], ride-sharing would fall under the category of a minor TDM program strategy. The report allows a 1% reduction in VMT for projects with at least three minor strategies.

Alternative Literature References:

[2] Nelson\Nygaard, 2005. *Crediting Low-Traffic Developments* (p.12). http://www.montgomeryplanning.org/transportation/documents/TripGenerationAnalysisUsingURBEMIS.pdf

Criteron Planner/Engineers and Fehr & Peers Associates (2001). Index 4D Method. *A Quick-Response Method of Estimating Travel Impacts from Land-Use Changes*. Technical Memorandum prepared for US EPA, October 2001.

Other Literature Reviewed:

None

3.4.7 Implement Commute Trip Reduction Marketing

Range of Effectiveness: 0.8 – 4.0% commute vehicle miles traveled (VMT) reduction and therefore 0.8 – 4.0% reduction in commute trip GHG emissions.

Measure Description:

The project will implement marketing strategies to reduce commute trips. Information sharing and marketing are important components to successful commute trip reduction strategies. Implementing commute trip reduction strategies without a complementary marketing strategy will result in lower VMT reductions. Marketing strategies may include:

- New employee orientation of trip reduction and alternative mode options
- Event promotions
- Publications

CTR marketing is often part of a CTR program, voluntary or mandatory. CTR marketing is discussed separately here to emphasis the importance of not only providing employees with the options and monetary incentives to use alternative forms of transportation, but to clearly and deliberately promote and educate employees of the various options. This will greatly improve the impact of the implemented trip reduction strategies.

Measure Applicability:

- Urban and suburban context
- Negligible in a rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO_2 emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{running}$$

Where:

VMT = vehicle miles traveled
$EF_{running}$ = emission factor for running emissions

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of project employees eligible (i.e. percentage of employers choosing to participate)

Mitigation Method:

$$\% \text{ Commute VMT Reduction} = A * B * C$$

Where

A = % reduction in commute vehicle trips (from [1])

B = % employees eligible

C = Adjustment from commute VT to commute VMT

Detail:

- A: 4% (per [1])
- C: 1.0 (see Appendix C for detail)

Assumptions:

Data based upon the following references:

[1] Pratt, Dick. Personal communication regarding the *Draft of TCRP 95 Traveler Response to Transportation System Changes – Chapter 19 Employer and Institutional TDM Strategies.* Transit Cooperative Research Program.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions[61]
CO_2e	0.8 – 4.0% of running
PM	0.8 – 4.0% of running
CO	0.8 – 4.0% of running
NOx	0.8 – 4.0% of running
SO_2	0.8 – 4.0% of running
ROG	0.5 – 2.4% of total

[61] The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Discussion:

The effectiveness of commute trip reduction marketing in reducing VMT depends on which commute reduction strategies are being promoted. The effectiveness levels provided below should only be applied if other programs are offered concurrently, and represent the total effectiveness of the full suite of measures.

This strategy is often part of a CTR Program, another strategy documented separately (see strategy T# E1). Take care not to double count the impacts.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (20% eligible) = 4% * 20% = 0.8%
- High Range % VMT Reduction (100% eligible) = 4% * 100% = 4.0%

Preferred Literature:

- 4-5% commute vehicle trips reduced with full-scale employer support

TCRP 95 Draft Chapter 19 notes the average empirically-based estimate of reductions in vehicle trips for full-scale, site-specific employer support programs alone is 4-5%. This effectiveness assumes there are alternative commute modes available which have on-going employer support. For a program to receive credit for such outreach and marketing efforts, it should contain guarantees that the program will be maintained permanently, with promotional events delivered regularly and with routine performance monitoring.

Alternative Literature:

- 5-15% reduction in commute vehicle trips
- 3% increase in effectiveness of marketed transportation demand management (TDM) strategies

VTPI [2] notes that providing information on alternative travel modes by employers was one of the most important factors contributing to mode shifting. One study (Shadoff,1993) estimates that marketing increases the effectiveness of other TDM strategies by up to 3%. Given adequate resources, marketing programs may reduce vehicle trips by 5-15%. The 5 – 15% range comes from a variety of case studies across the world. U.S. specific case studies include: 9% reduction in vehicle trips with TravelSmart in Portland (12% reduction in VMT), 4-8% reduction in vehicle trips from four cities with individualized marketing pilot projects from the Federal Transit Administration (FTA). Averaged across the four pilot projects, there was a 6.75% reduction in VMT.

Alternative Literature References:

[2] VTPI, TDM Encyclopedia – TDM Marketing; http://www.vtpi.org/tdm/tdm23.htm; accessed 3/5/2010. Table 7 (citing FTA, 2006)

Other Literature Reviewed:

None

3.4.15 Implement Employee Parking "Cash-Out"

Range of Effectiveness: 0.6 – 7.7% commute vehicle miles traveled (VMT) reduction and therefore 0.6 – 7.7% reduction in commute trip GHG emissions

Measure Description:

The project will require employers to offer employee parking "cash-out." The term "cash-out" is used to describe the employer providing employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to the cost of the parking space to the employer.

Measure Applicability:

- Urban and suburban context
- Not applicable in a rural context
- Appropriate for retail, office, industrial, and mixed-use projects
- Reductions applied only if complementary strategies are in place:
    - Residential parking permits and market rate public on-street parking -to prevent spill-over parking
    - Unbundled parking - is not required but provides a market signal to employers to forgo paying for parking spaces and "cash-out" the employee instead. In addition, unbundling parking provides a price with which employers can utilize as a means of establishing "cash-out" prices.

Baseline Method:

See introduction section.

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of employees eligible
- Location of project site: low density suburb, suburban center, or urban location

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B$$

Where

A = % reduction in commute VMT (from the literature)
B = % of employees eligible

Detail:

- A: Change in Commute VMT: 3.0% (low density suburb), 4.5% (suburban center), 7.7% (urban) change in commute VMT (source: Moving Cooler)

Assumptions:

Data based upon the following references:

- Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions.* Technical Appendices. Prepared for the Urban Land Institute. (Table 5.13, Table D.3) http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions[69]
CO_2e	0.6 – 7.7% of running
PM	0.6 – 7.7% of running
CO	0.6 – 7.7% of running
NOx	0.6 – 7.7% of running
SO_2	0.6 – 7.7% of running
ROG	0.36 – 4.62% of running

Discussion:

Please note that these estimates are independent of results for workplace parking pricing strategy (see strategy number T# E5 for more information).

If work site parking is not unbundled, employers cannot utilize this unbundled price as a means of establishing "cash-out" prices. The table below shows typical costs for parking facilities in large urban and suburban areas in the US. This can be utilized as a reference point for establishing reasonable "cash-out" prices. Note that the table does not include external costs to parking such as added congestion, lost opportunity cost of land devoted to parking, and greenhouse gas (GHG) emissions.

	Structured (urban)	Surface (suburban)
Land (Annualized)	$1,089	$215
Construction (Annualized)	$2,171	$326

[69] The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

O & M Costs	$575	$345
Annual Total	$3,835	$885
Monthly Costs	$320	$74
Source: VTPI, *Transportation Costs and Benefit Analysis II – Parking Costs*, April 2010 (p.5.4-10)		

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (low density suburb and 20% eligible) = 3% * 0.2 = 0.6%
- High Range % VMT Reduction (urban and 100% eligible) = 7.7% * 1 = 7.7%

Preferred Literature:

- 0.44% - 2.07% reduction in GHG emissions
- 3.0% - 7.7% reduction in commute VMT

Moving Cooler Technical Appendices indicate that reimbursing "cash-out" participants $1/day can reduce GHG between 0.44% and 2.07% and reduce commuting VMT between 3.0% and 7.7%. The reduction in GHG varies based on how extensive the implementation of the program is. The reduction in commuting VMT differs for type of urban area is shown in the table below.

		Percent Change in Commuting VMT					
Strategy	Description	Large Metropolitan (higher transit use)	Large Metropolitan (lower transit use)	Medium Metro (higher)	Medium Metro (lower)	Small Metro (higher)	Small Metro (lower)
Parking Cash-Out	Subsidy of $1/day	7.7%	3.7%	4.5%	3.0%	4.0%	3.0%

Alternative Literature:

Alternate:

- 2-6% reduction in vehicle trips

VTPI used synthesis data to determine parking cash out could reduce commute vehicle trips by 10-30%. VTPI estimates that the portion of vehicle travel affected by parking cash-out would be about 20% and therefore there would be only about a 2-6% total reduction in vehicle trips attributed to parking cash-out.

Alternate:

- 12% reduction in VMT per year per employee
- 64% increase in carpooling
- 50% increase in transit mode share
- 39% increase in pedestrian/bike share

Shoup looked at eight California firms that complied with California's 1992 parking cash-out law, applicable to employers of 50 or more persons in regions that do not meet the state's clean air standards. To comply, a firm must offer commuters the option to choose a cash payment equal to any parking subsidy offered. Six of companies went beyond compliance and subsidized one or more alternatives to parking (more than the parking subsidy price). The eight companies ranged in size between 120 and 300 employees, and were located in downtown Los Angeles, Century City, Santa Monica, and West Hollywood. Shoup states that an average of 12% fewer VMT per year per employee is equivalent to removing one of every eight cars driven to work off the road.

Alternative Literature Notes:

Litman, T., 2009. "Win-Win Emission Reduction Strategies." Victoria Transport Policy Institute. Website: http://www.vtpi.org/wwclimate.pdf. Accessed March 2010. (p. 5)

Donald Shoup, "Evaluating the Effects of Cashing Out Employer-Paid Parking: Eight Case Studies." *Transport Policy*, Vol. 4, No. 4, October 1997, pp. 201-216. (Table 1, p. 204)

Other Literature Reviewed:

None

APPENDIX D

CITY OF SAN DIEGO *TRANSPORTATION STUDY MANUAL*, APPENDIX E

TDM Strategies and Effectiveness Calculations

If a Project is found to have a significant transportation VMT impact, the impact must be mitigated by reducing the project's Resident VMT/capita or Employee VMT/employee. Typically, VMT is reduced by implementing strategies that achieve one of the following:

- Reducing the number of automobile trips generated by the project or by the residents or employees of the project.
- Reducing the distance that people drive.

Strategies that reduce single occupant automobile trips or reduce travel distances are called Transportation Demand Management (TDM) strategies.

The City of San Diego requires TDM, transportation amenities, and VMT reduction amenities for certain project types pursuant to the San Diego Municipal Code Section 142.0528 (Parking Standards Transit Priority Area Regulations), San Diego Municipal Code Sections 143.1101, 143.1102 and 142.1103 (Complete Communities: Mobility Choices), and the Climate Action Plan Consistency Checklist. Applicants should refer to the San Diego Municipal Code and the Climate Action Plan Consistency Checklist to determine if the project must comply with either policy.

There are several resources for estimating the reduction in VMT due to TDM measures such as the California Air Pollution Control Officers Association (CAPCOA), *Quantifying Greenhouse Gas Mitigation Measures* (2010) (Quantification Report) and the SANDAG Mobility Management Guidebook/VMT Reduction Calculator Tool (see Mitigation Section below). The applicant should coordinate with the Development Services Department's Transportation Development Section staff to determine the appropriate method for calculating TDM measure effectiveness. The methods described below are based on the CAPCOA Quantification Report.

Possible TDM measures that can be considered by the applicant to mitigate significant CEQA VMT transportation impacts are listed and organized by land use type. Additionally, measures that overlap with the VMT reduction amenities in the San Diego Municipal Code and the TDM in the Climate Action Plan Consistency Checklist are identified. A mitigation measure can be used to satisfy the San Diego Municipal Code and the Climate Action Plan Consistency Checklist if it is an overlapping measure.

Strategies are categorized as primary or supportive. A primary strategy has a VMT reduction effectiveness that can be directly calculated using the CAPCOA Quantification Report. Typically, the effectiveness calculation requires assumptions regarding participation or eligibility rates. While VMT reductions should not be applied for supportive strategies, they boost participation or eligibility rates and make the primary strategy more effective.

All assumptions regarding participation, eligibility, and other variables should be clearly documented for each applied TDM strategy. Also, as described in the CAPCOA Quantification Report, strategies are not directly additive, and when determining the overall VMT reduction, the VMT reduction

separately calculated for each of the individual strategies (within their overall TDM strategy category) should be dampened, or diminished, according to a multiplicative formula to account for the fact that some of the strategies may be redundant or applicable to the same populations. The multiplicative equation to accomplish this adjustment is as follows:

Overall % VMT Reduction = 1-(1-A)*(1-B)*(1-C)*(1-D)*…

Where A, B, C, D … = individual mitigation strategy reduction percentages

For example, if two strategies were proposed with corresponding VMT reductions of 20% and 10%, the equation would be [1-(1-20%)*(1-10%)] or [1-(80%*90%)], which equates to a 28% reduction rather than the 30% reduction that would otherwise be seen with a direct sum.

The following steps should be followed to calculate TDM program effectiveness:

Step 1: Calculate individual measures effectiveness.

Step 2: Use the multiplicative equation for each TDM Category (represented by different colors in the table below): Neighborhood/Site Enhancement, Parking Policy/Pricing, Transit System Improvements, and Commute Trip Reduction Programs. Check the Category Max Reduction and choose the smaller value of the two.

Step 3: Use the multiplicative equation to determine the combined effectiveness of the Neighborhood/Site Enhancement, Parking Policy/Pricing, and Transit System Improvements categories. Check the Cross-Category Max Reduction and choose the smaller value of the two.

Step 4: Use the multiplicative equation to determine the combined effectiveness of the Neighborhood/Site Enhancement, Parking Policy/Pricing, Transit System Improvements, and Commute Trip Reduction Programs. Check the Global Max Reduction and choose the smaller value of the two.

TABLE APPENDIX D-1

TDM STRATEGIES AND APPROXIMATE EFFECTIVENESS

TDM STRATEGY	PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
Global Max Reduction For (Four Categories) Neighborhood/Site Enhancement, Parking Policy/Pricing, Transit System Improvements, and Commute Trip Reduction Programs: Urban: 60% Compact Infill: 30% Suburban Center: 15% Suburban: 10%						
Cross-Category Max Reduction For (Three Categories) Neighborhood/Site Enhancement, Parking Policy/Pricing, and Transit System Improvements: Urban: 45% Compact Infill: 20% Suburban Center/Suburban: 10%						
Neighborhood/Site Enhancement: **Category Max Reduction – Without NEV: 5% With NEV: 15%**						
Bicycle TDM						
Bicycle Infrastructure Improvements: Add additional bicycle facilities (Class I, II, or IV) or upgrade existing facilities to Class I, II, or IV.	**P**	RES, EMP, RET			X	0.6%-2.5%
Bike Share/Micromobility Fleet: A bike share/micromobility fleet provides shared bicycles and can help eliminate trips made by car during the day.	**P**	RES, EMP	X	X	X	0.2%-0.5%
Bicycle Riders Guide: A guide with bicycle routes, lanes, and paths to the site and bicycle parking facilities on the site make it easier for people to bike and walk to work. Development of individualized bicycle plans.	S	RES, EMP, RET				NA

TDM STRATEGY	PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
Electric Bicycle/Micromobility Charging Station: Charging stations for electric bicycles/micromobility located throughout the project which can be used for longer trips than standard bicycles.	S	RES, EMP, RET		X	X	NA
Subsidized Bicycle Expenses: Provide monthly subsidy to bicyclists to encourage use.	S	RES, EMP	X			NA
Bicycle Parking: Provide dedicated secure parking (enclosed lockers or bicycle cages) and bicycle racks.	S	RES, EMP, RET	X		X	NA
Bicycle Supportive Programs: Participation and promotion of bicycle programs encourage employees/residents to bike and may include participation in Bike-to-Work Day, creating biking groups, developing a bicycle buddies program, gamifying bicycling (i.e. prizes/incentives for number of days biked).	S	RES, EMP				NA
DIY Bicycle Repair Stands: Do-it-yourself bicycle repair stands offer an air pump and basic tools for bicycle maintenance and repair. Typically, they have Phillip's/flat-head screwdrivers, combination wrenches, and Allen wrenches.	S	RES, EMP, RET		X	X	NA
On-Site Showers and Lockers: Shower and changing rooms help promote bicycling (and walking).	S	RES, EMP	X		X	NA
Pedestrian/Walking TDM						
Pedestrian Network Improvements: Designing a site for pedestrian connectivity with attractive and safe connections between buildings and to the surrounding streets can encourage people to walk more.	**P**	RES, EMP, RET			X	0-2%

TDM STRATEGY	PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
Walking Supportive Programs: Walking programs encourage employees/residents to walk and may include mapping walking routes, creating walking groups or buddies, providing incentives, gamifying walking (i.e. prizes/incentives for number of days walked).	S	RES, EMP				NA
Subsidized Walking Expenses: Provide monthly subsidy to pedestrians to encourage use.	S	RES, EMP				NA
Other						
Traffic Calming: Implement traffic calming features on-site and on nearby roadways to reduce vehicle speeds and provide an enhanced environment for biking and walking.	**P**	RES, EMP			X	0.25-1%
Neighborhood Electric Vehicle Dedicated Network: Create a path/roadway system that accommodates NEVs and limits conflicts with standard automobiles. Can be used to estimate effectiveness of a network dedicated for an electric powered micromobility fleet, provided that a separate roadway network is available to the micromobility bikes/scooters.	**P**	RES, EMP				0.5-12.7%
Car Share: SEE COMMUTE TRIP REDUCTION PROGRAMS.	**P**	RES, EMP	X	X	X	0.4-0.7%
Passenger Loading Zones: Provide a dedicated passenger loading zone space convenient to main entries to encourage use of carpools, vanpools, and transportation network companies (TNCs) such as Uber and Lyft.	S	RES, EMP, RET			X	NA

TDM STRATEGY	PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
Mobility Hub: Build a multi-modal transportation hub that includes access to transit, car share, bike/scooter share, on-site shuttle, package delivery facility, and other features to facilitate modal transfer and reduce vehicle trips.	S	RES, EMP, RET				NA

TDM STRATEGY	PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
Parking Policy/Pricing **Category Max Reduction: 20%**						
Limit Parking Supply: Provide less parking supply as compared to typical parking supply at similar nearby developments. Limiting supply encourages use of other modes by not offering an abundance of convenient parking. To be effective, on-street parking must be priced and/or managed (through parking meters, residential parking permit districts, etc.). Additionally, the analyst must consider if the reduction in parking supply will result in single occupant TNC (Uber and Lyft) use, which does not reduce VMT.	**P**	RES, EMP, RET			X	5-12.5%
Unbundled Parking: Parking spaces in residential buildings are not associated with a specific unit and are offered at an additional cost or rented separately on a monthly or annual basis. To be effective, on-street parking must be priced and/or managed (through residential parking permit districts, etc.).	**P**	RES	X			2.6-13%
Priced Public Parking: Charge (or increase price by more than 25%) for parking on all public streets adjacent to and nearby the project.	**P**	RES, EMP				2.8-5.5%
Parking Cash-Out Program: Employees or residents receive the cash equivalent of the cost of a parking space if they forgo parking. This provides a financial incentive for either not owning a car or using it for commuting purposes. To be effective, on-street parking must be priced and/or managed (through residential parking permit districts, etc.).	**P**	RES, EMP	X			0.6-7.7%

TDM STRATEGY	PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
Residential Area Parking Permit Program: Implement permit program for use of on-street parking. This supports the limit on-site parking supply and unbundled parking strategies by discouraging regular and long-term parking on City streets. Permit programs reduce parking spillover from developments that have reduced parking supply or unbundled parking.	S	RES				NA
Time Limited Street Parking: Time limiting on-street parking spaces reduces the potential for vehicles to be stored for extended periods of time, which reduces overall vehicle ownership and encourages use of other modes.	S	RES, EMP				NA
Real-Time Parking Information: Information provided via a mobile app or sign that provides information on number of spaces available and where available spaces are located.	S	RES, EMP, RET				NA
Transit System Improvements Category Max Reduction: 10%						
Transit Network Expansion: Expand transit network through coordination with SANDAG or by providing private transit/shuttle service that connects to available public transit.	**P**	RES, EMP, RET				0.1-8.2%
Increase Transit Service Frequency/Speed: Coordinate with SANDAG or implement supplemental shuttle service to increase transit service headways. Increase transit vehicle speed and reliability by providing transit related improvements such as transit service priority at traffic signals, dedicated bus lanes, etc.	**P**	RES, EMP				0.02-2.5%

TDM STRATEGY		PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
Transit Pass Subsidy: SEE COMMUTE TRIP REDUCTION PROGRAMS.		**P**	RES, EMP				0.3-20%
Enhance Transit Amenities: Coordinate with transit agencies to improve facilities at existing bus stops such as benches, shelters, lighting, bicycle parking, etc. in order to make transit a more attractive option.		S	RES, EMP, RET		X	X	NA
Transit Encouragement Programs: Transit programs encourage employees/residents to take transit may include transit route planning assistance/transit riders guide, free trial transit rides, transit field trips, creating transit groups or buddies, providing incentives, gamifying transit use (i.e. prizes/incentives for number of transit trips taken).		S	RES, EMP				NA
Transit App: Downloadable smart phone application providing schedule and stop information for private shuttles and public transit make transit use more convenient.		S	RES, EMP				NA
Onsite Transit Pass Outlet: Providing transit passes for sale onsite as a convenience to encourage use.		S	RES, EMP				NA
Commute Trip Reduction Programs **Category Max Reduction: 15% Overall VMT (25% Work VMT)**							
Voluntary Commute Trip Reduction Program. A voluntary, multi-strategy program for reducing commute trips. The program must include all	**Carpooling Program and Encouragement:** Establish a formal ride-sharing program that matches individuals and encourages carpooling.	**P**	RES, EMP	X			1-15% Commute VMT

TDM STRATEGY		PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
strategies listed to the right of this description. Any commute trip reduction strategy that is not listed can be added to the program (i.e. transit subsides), and its individual strategy effectiveness can be added using the dampening equation. The effectiveness is based on the combined individual strategies (with dampening) up to the max reduction listed below. **Max Reduction: 6.2% Commute VMT** (regardless of individual strategy effectiveness)	**Alternative Work Schedules:** Employees can set/modify their arrival/departure time to provide flexibility for carpooling (or use of other non-private auto modes). Alternative work schedules could be staggered starting times, flexible schedules, or compressed work weeks.	**P**	EMP	X			0.07-3.75% Commute VMT
	Vanpool Program: Vanpool programs help vanpools to form by matching drivers and passengers and by providing or subsidizing vans. This could be implemented through the SANDAG iCommute Program.	**P**	EMP	X			0.3-13.5% Commute VMT

TDM STRATEGY		PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
	Transportation Coordinator: A voluntary commute trip reduction program should have dedicated staff time to implement the program (at least part-time for a voluntary program). Transportation coordinators are responsible for developing, marketing, implementing, and evaluating TDM programs. Having dedicated personnel on staff helps to make the TDM program more robust, consistent and reliable.	S	RES, EMP				
	Preferential Carpool Parking: Designated parking spaces for carpools and vanpools near building entrances to encourage carpooling.	S	EMP	X		X	NA
	Bicycle End Trip Facilities: Provide on-site showers, lockers, and bicycle parking).	S	EMP	X		X	NA

TDM STRATEGY		PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
Mandatory Commute Trip Reduction Program (Ordinance): A mandatory, multi-strategy program for reducing commute trips. The program must include all strategies listed to the right of this description. The effectiveness is based on the combined individual strategies (with dampening) up to the max reduction listed below. **Max Reduction: 21.0% Commute VMT** (regardless of individual strategy effectiveness)	**Carpooling Program and Encouragement:** Establish a formal ride-sharing program that matches individuals and encourages carpooling.	**P**	RES, EMP	X			1-15% Commute VMT
	Transit Pass Subsidy: Provide subsidized transit passes through programs such as Commuter Check or by purchasing passes to provide a financial incentive for employees or tenants to use transit.	**P**	RES, EMP	X	X		0.3-20% Commute VMT
	Alternative Work Schedules: Employees can set/modify their arrival/departure time to provide flexibility for carpooling (or use of other non-private auto modes). Alternative work schedules could be staggered starting times, flexible schedules, or compressed work weeks.	**P**	EMP	X			0.07-3.75% Commute VMT

TDM STRATEGY		PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
	Vanpool Program: Vanpool programs help vanpools to form by matching drivers and passengers and by providing or subsidizing vans. This could be implemented through the SANDAG iCommute Program.	**P**	EMP	X			0.3-13.5% Commute VMT
	Commute Trip Reduction Marketing: The commute trip reduction program will be marketed through use of kiosks, flyers, posters, and emails. New employees/tenants are provided information on their travel options and program incentives.	**P**	RES, EMP	X	X	X	0.8-4.0% Commute VMT
	Car Share: Provide on-site car share (with dedicated car share parking spaces) to provide an option for use of a car to residents or employees that choose to not own a car.	**P**	RES, EMP	X	X	X	0.4-0.7% Commute VMT

TDM STRATEGY		PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
	Transportation Coordinator: A commute trip reduction program should have dedicated staff time to implement the program. Transportation coordinators are responsible for developing, marketing, implementing, and monitoring/ evaluating TDM programs.	S	RES, EMP				
	Preferential Carpool Parking: Designated parking spaces for carpools and vanpools near building entrances to encourage carpooling.	S	EMP	X		X	NA
	Bicycle End Trip Facilities: Provide on-site showers, lockers, and bicycle parking).	S	EMP	X		X	NA
Commute Trip Reduction Additional Strategies (that are not part of the voluntary or mandatory programs listed above).							
Transit Pass Subsidy: Provide subsidized transit passes through programs such as Commuter Check or by purchasing passes to provide a financial incentive for employees or tenants to use transit.		**P**	RES, EMP	X	X		0.3-20%
Price Workplace Parking: Price workplace parking to encourage use of alternate commute modes.		**P**	EMP	X			0.1-19.7% Commute VMT

TDM STRATEGY	PRIMARY (P) OR SUPPORTIVE (S)	APPLICABLE LAND USES: RESIDENTIAL (RES) EMPLOYMENT (EMP), RETAIL (RET)	CAP CONSISTENCY CHECKLIST	TRANSPORTATION AMENITY	VMT REDUCTION AMENITY	VMT REDUCTION RANGE
Telecommuting: Telecommuting allows employees to work from home and reduces trips made to the employer site.	**P**	EMP	X			0.2-5.5% Commute VMT
Commute Trip Reduction Marketing: The commute trip reduction program will be marketed through use of kiosks, flyers, posters, and emails. New employees/tenants are provided information on their travel options and program incentives.	**P**	RES, EMP	X	X	X	0.8-4.0% Commute VMT
Guaranteed Ride Home Program: Employees who use transit, carpools, or vanpools are guaranteed a ride home in case of emergency or if they need to work late which helps to reduce concerns about using alternative modes.	S	RES, EMP		X		
Last Mile Connections: Provide means for connecting the project to the closes transit stop (subsidized TNC rides, shuttle service, etc.).	S	RES, EMP				

APPENDIX E

STREET LIGHT DATA VMT DATA

Appendix Table E-1
StreetLight Data VMT Analysis - San Diego Region

WEEKDAYS (M-F)									
Year	Average Trip Length (mi)			Estimated Trips			Vehicle Miles Traveled (VMT)		
	Trip Start	Trip End	Avg	Trip Start	Trip End	TOTAL	Trip Start	Trip End	TOTAL
2019	9.0	9.0	9.0	8,916,712	8,877,676	17,794,388	80,250,408	79,899,084	**160,149,492**

Table Notes:

Regional VMT data in Table E-1 is provided for baseline significance threshold.

Appendix Table E-2
StreetLight Data VMT Analysis - SeaWorld Leasehold

WEEKDAYS (M-F)									
Year	Average Trip Length (mi)			Estimated Trips			Vehicle Miles Traveled (VMT)		
	Trip Start	Trip End	Avg	Trip Start	Trip End	TOTAL	Trip Start	Trip End	TOTAL
2019	17.4	20.5	19.0	5,577	5,745	11,322	97,040	117,773	**214,813**

Table Notes:

SeaWorld Leasehold VMT data in Table E-2 is used to determine existing site average trip length (ATL).
StreetLight Data ATL multiplied by ADT from other sources (see report) to determine baseline and project VMT for SeaWorld Leasehold. StreetLight total VMT not directly utilized for SeaWorld Leasehold.

Appendix Table E-3
StreetLight Data VMT Analysis - Walkshed/Bikeshed Influence Area (0.5 Mile Buffer of SeaWorld Dr Improvements)

WEEKDAYS (M-F)									
Year	Average Trip Length (mi)			Estimated Trips			Vehicle Miles Traveled (VMT)		
	Trip Start	Trip End	Avg	Trip Start	Trip End	TOTAL	Trip Start	Trip End	TOTAL
2019	11.4	10.9	11.2	18,198	18,411	36,609	207,458	200,680	**408,138**

Table Notes:

SeaWorld Drive 0.5 mile buffer VMT data in Table E-3 is used to assist in quantifying the effectiveness of off-site active transportation improvements. See also *Figure 9-1* .

General Notes:

Trip Start = trips that begin within the selected geography (e.g., outbound trips from SeaWorld)
Trip End = trips that terminate within the selected geography (e.g., inbound trips to SeaWorld)

END OF APPENDICES