Mobility Report

Midway-Pacific Highway and Old Town Communities

Draft Report

January 13, 2016

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City of San Diego

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1.0 Introduction

1.1 Study Background and Purpose

This Mobility Report summarizes the physical and operational conditions of the Midway-Pacific Highway and Old Town communities' mobility systems as part of the City of San Diego's community plan update process. The evaluation culminates with an analysis of all travel modes under the horizon year 2035 Preferred Plan conditions. The report also describes key terms and methodologies utilized for conducting the analyses presented.

This Mobility Report is an update to the Midway-Pacific Highway Corridor Community Plan and Local Coastal Program Land Use Plan which was adopted by City Council in 1991, and the Old Town San Diego Community Plan, adopted in 1987.

The Preferred Plan is a strategy to address existing and forecast deficiencies related to mobility systems within the Midway-Pacific Highway and Old Town communities. The mobility networks are comprised of roadway and freeway systems, public transit, and bicycle and pedestrian infrastructure. Each of these transportation modes is discussed in the following chapters.

1.2 Study Location

The Midway-Pacific Highway and Old Town communities are located north of Downtown San Diego. The communities are both bound by Interstate 8 along the northern edge. Interstate 5 divides the communities, forming a north-south running boundary for each community. The Midway-Pacific Highway is bound by the Peninsula community and Barnett Avenue to west; and the Marine Corps Recruit Depot San Diego, the San Diego International Airport, and Laurel Street to the south. The Old Town Community is bound by Uptown to the east.

Figure 1-1 displays the Midway-Pacific Highway and Old Town communities within the region.

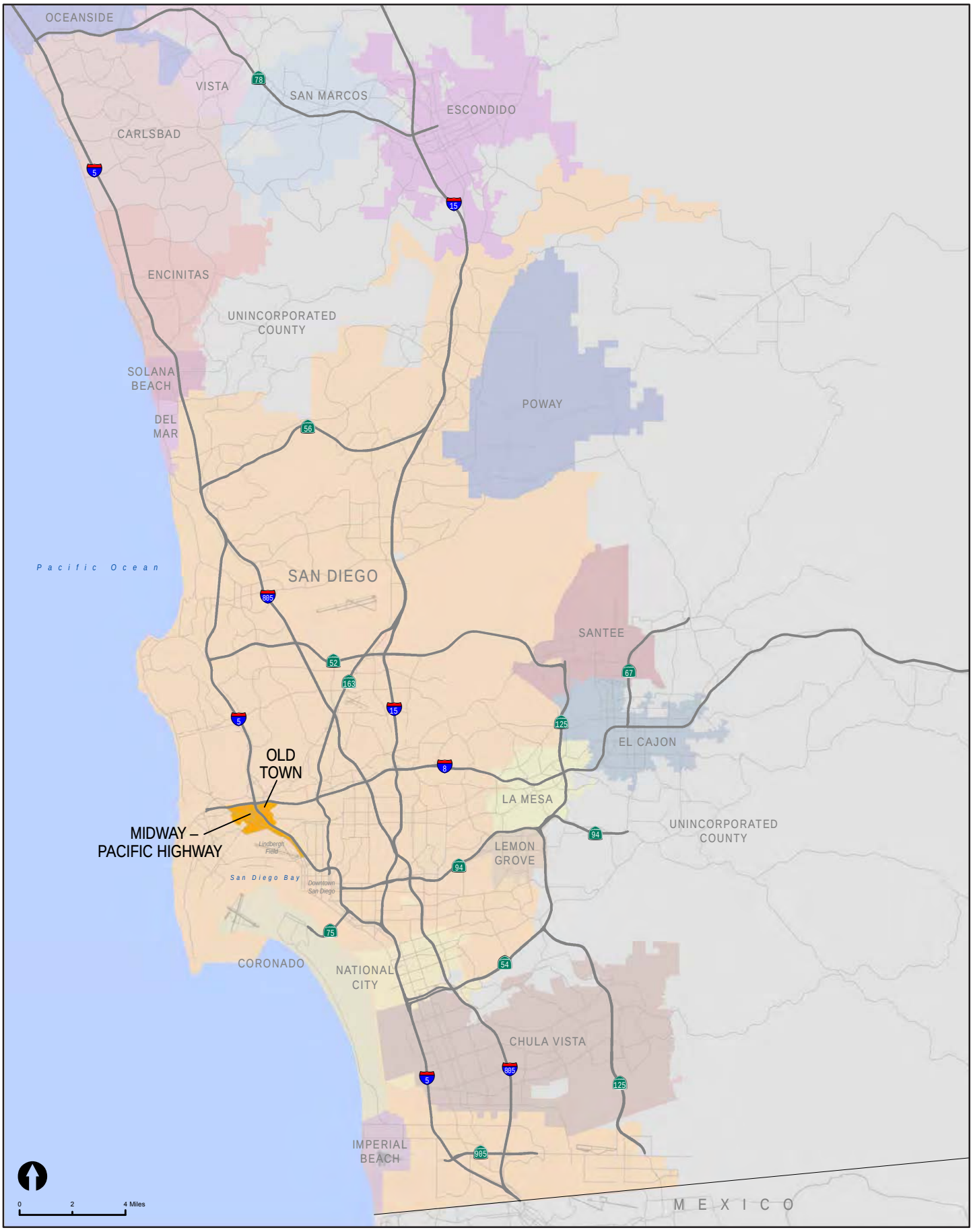

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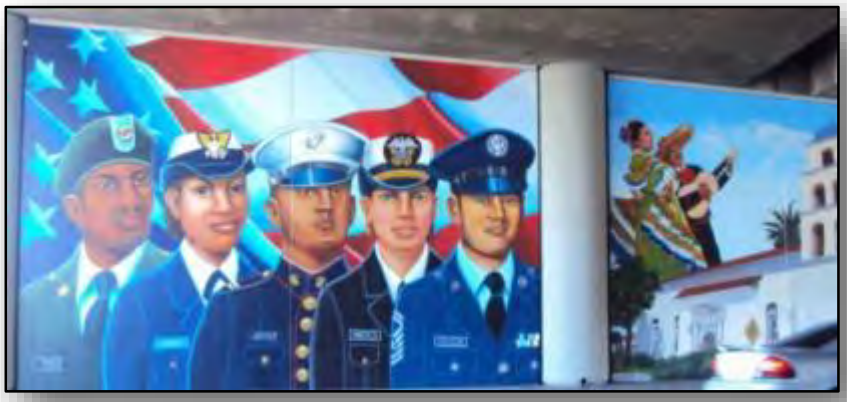
Figure 1-1
Midway-Pacific Highway and Old Town within the Region

Midway/Pacific Highway Corridor

The Midway/Pacific Highway Corridor Community is situated north of Downtown San Diego and between the Old Town and Point Loma communities. The community encompasses approximately 800 acres of mostly flatland and is comprised of two basic elements: the central Midway area and the narrow, linear-shaped Pacific Highway Corridor.

Central Midway has an urbanized commercial core containing numerous shopping centers and institutional facilities which cater to the commercial needs of nearby residential and visitor populations. The area is characterized by wide streets, flat topography, and a varied mixture of flat-roofed large and small commercial buildings. The Pacific Highway Corridor, between Interstate 5 and Lindbergh Field, contains some of the City's oldest industrial areas. The corridor is defined by large scale buildings and unscreened commercial parking lots in the southern portion, and a group of smaller scale, low lying industrial buildings located between Witherby Street and Washington Street in the northern portion.

There are a few multifamily residential complexes located in the western portion of the community, adjacent to the Point Loma area. The planning area is generally characterized by a variety of commercial retail activities, and wide, multi-directional traffic intersections.



Since the 1960s, the Midway area has experienced an irregular development pattern, resulting in a lack of clear visual form both in terms of orientation and community legibility. The resulting diversity in development patterns, architectural styles, setbacks, and other development criteria has contributed to a disjointed and sporadic community image, where few buildings have compatibility or any functional relationship to each other and the surrounding neighborhood. Due to the area's low land valuations, high traffic utilization and inadequate zoning and development regulation, many auto-oriented commercial uses have located throughout the industrially zoned portions of the community. Much of the commercial development, including retail oriented auto sales and services, adult entertainment, and drive-thru restaurants, now exhibit a general lack of adequate parking, landscaping, and other commercial development amenities.

Old Town

The Old Town community covers 230 acres and is bound on the north by Interstate 8 and Mission Valley, on the west by Interstate 5 and Midway, and on the south and east by the Uptown/ Mission Hills hillsides.

Old Town San Diego, considered the "birthplace" of California, is the site of the first permanent Spanish Mission and settlement in California. The first Spanish Mission and Presidio were built on a hillside overlooking what is currently known as Old Town San Diego. At the base of the hill in the 1820's, a small Mexican community of adobe buildings was formed and by 1835 had attained the status of El Pueblo de San Diego.

In 1968, the State of California Department of Parks and Recreation established Old Town State Historic Park to preserve the rich heritage that characterized San Diego during the 1821 to 1872 period. The park includes a main plaza, exhibits, museums and living history demonstrations. Due to the historical nature and attractions within the community, Old Town San Diego is currently one of the region's largest tourist attractions. Within the community's central core (San Diego Avenue & Congress Street, between Twiggs Street and Ampudia Street) there are currently more than 150 shops, several restaurants, 17 museums, and historical sites.

There is a small number of residential neighborhoods located along the eastern, western and southern boundaries of the community.

1.3 Organization of the Report

The remainder of this Mobility Report is organized into the following chapters:

- *Chapter 2* describes the methodologies used to determine the study area and assess the pedestrian, transit, bicycle and vehicular systems.
- *Chapter 3* presents the Preferred Plan for the Midway-Pacific Highway Community, including the development process, identification of existing community needs, and recommended improvements.
- *Chapter 4* introduces the Preferred Plan for the Old Town Community, including the development process, identification of existing community needs, and recommended improvements.
- *Chapter 5* provides an overview of the Transportation Demand Model Forecasting process utilized to project future travel patters under buildout of the Preferred Plan.
- *Chapter 6* concludes this document with the Preferred Plan analysis results for each mode. Additionally, Intelligent Transportation Systems (ITS), Transportation Demand Management (TDM) Systems, and Parking Management are described in this chapter.

2.0 Analysis Methodology

This chapter describes the methodologies used to determine the study area and assess the pedestrian, transit, bicycle and vehicular systems within the Midway-Pacific Highway and Old Town communities.

2.1 Selection of the Study Area

This section describes the process used to identify roadway segments, urban street segments, and intersections for analysis.

2.1.1 Roadway Segments

Roadway segments were evaluated if one or more of the following circumstance applied:

- The roadway segment is an existing or planned circulation element roadway as identified in the Midway-Pacific Highway Corridor Community Plan and Local Coastal Program Land Use Plan (1991), or the Old Town San Diego Community Plan (1987).
- The roadway segment provides freeway access to/from the Midway-Pacific Highway or Old Town communities.
- The roadway segment is located outside of either study community, however, it may influence or impact the flow of transportation within either of the communities

2.1.2 Urban Street Segments

Certain roadway segments within the project study area were identified as Urban Streets and were therefore subject to multimodal level of service analyses for vehicular, bicycle, pedestrian, and transit. Urban Street segments were selected based on several factors including:

- Circulation element roadways providing access across the communities.
- Presence of existing transit facilities.
- Roadways with intersections predominantly controlled by traffic signals.

The following roadway segments were selected as Urban Streets:

- Barnett Avenue
- Camino Del Rio West
- Hancock Street
- Kemper Street
- Kettner Boulevard
- Kurtz Street
- Laurel Street
- Lytton Street
- Midway Drive
- Pacific Highway
- Sports Arena Boulevard
- Congress Street
- San Diego Avenue
- Juan Street
- Taylor Street
- Twiggs Street
- Harney Street
- Old Town Avenue
- Morena Boulevard

2.1.3 Intersections

Intersections were evaluated if one or more of the following circumstances applied:

- The intersection is comprised of a circulation element roadway intersecting with another circulation element roadway. This includes existing and future/planned circulation element roadways as identified in the Midway-Pacific Highway Corridor Community Plan and Local Coastal Program Land Use Plan (1991), or the Old Town San Diego Community Plan (1987).
- The intersection is at a freeway ramp interchange located within the Midway-Pacific Highway or Old Town communities or is a major gateway to either community.
- The intersection is a major intersection located outside of either community, however, it may influence or impact the flow of transportation within the communities.

A total of 59 intersections were identified based on the criteria listed above. Figure 2-1 displays the location of the 59 study intersections. As shown, this includes 11 intersections located outside of the study communities. These intersections were added to the study area because of their proximity to the communities and the likelihood that changes within the communities could directly affect traffic in/out of the communities. The 11 study intersections located outside of the study communities include the following:

- Hugo Street/N Harbor Drive and Rosecrans Street
- Lowell Street/Nimitz Boulevard and Rosecrans Street
- Kettner Boulevard and W Hawthorn Street
- Kettner Boulevard and W Grape Street
- Laning Road and Rosecrans Street
- Pacific Highway and Sea World Drive
- Pacific Highway and W Hawthorn Street
- Pacific Highway and W Grape Street
- Friars Road and Sea World Drive
- I-5 SB Ramps and Sea World Drive
- I-5 NB Ramps and Sea World Drive

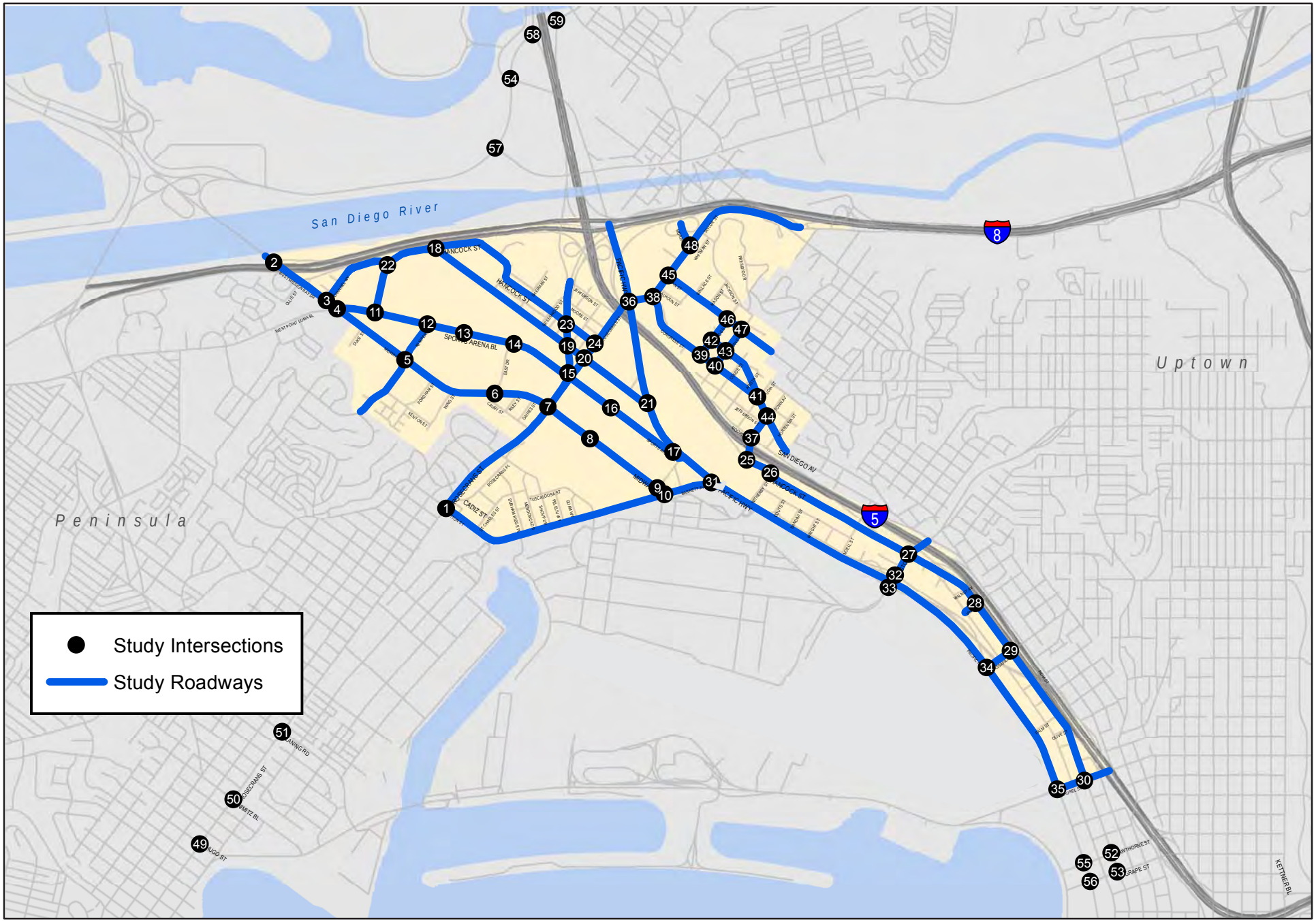


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Figure 2-1
Project Study Area

2.2 Multimodal Analysis

This section describes the pedestrian, transit, and bicycle analysis methodologies used in this report.

2.2.1 Pedestrian Assessment

Three analyses were utilized to assess pedestrian mobility: 1) network connectivity; 2) facility quality; and 3) combined network connectivity and quality.

Pedestrian Connectivity Ratio

A pedestrian travelshed analysis was used to assess the level of connectivity provided from each study intersection. A 0.5 mile pedestrian network buffer was drawn around each intersection. That area was then compared to the area of a 0.5 mile as-the-crow-flies buffer (502.7 acres) to develop a Pedestrian Connectivity Ratio for the intersection. The higher the Pedestrian Connectivity Ratio, the better the overall walking connectivity from the intersection.

Pedestrian Environment Quality Evaluation (PEQE)

The quality of all roadway segments, intersections, and mid-block crossings within the Midway-Pacific Highway and Old Town communities were evaluated under Preferred Plan conditions using the PEQE tool. Table 2.1 outlines the evaluation system used to develop the PEQE scoring metric.

Table 2.1 Pedestrian Environment Quality Ranking System

Facility Type	Measure	Description/Feature	Scoring
Segment *(between two intersections)*	Horizontal Buffer	Between the edge of auto travel way and the edge of clear pedestrian zone	0 point: < 6 feet 1 point: 6 – 14 feet 2 points: > 14 feet
	Lighting	--	0 point: below standard/requirement 1 point: meet standard/requirement 2 points: exceed standard/requirement
	Clear Pedestrian Zone	5' minimum	0 point: has obstructions 2 points: no obstructions
	Posted Speed Limit	--	0 point: > 40 mph 1 point: 30 – 40 mph 2 points: < 30 mph
		Maximum Points	8 points
Intersection	Physical Feature	• Enhanced/High Visibility Crosswalk • Raised Crosswalk/Speed Table • Advanced Stop Bar • Bulb out/Curb Extension	0 point: < 1 feature per ped crossing 1 point: 1 – 2 features per ped crossing 2 points: > 2 features per ped crossing
	Operational Feature	• Pedestrian Countdown Signal • Pedestrian Lead Interval • No-Turn On Red Sign/Signal • Additional Pedestrian Signage	0 point: < 1 feature per ped crossing 1 point: 1 – 2 features per ped crossing 2 points: > 2 features per ped crossing
Intersection (Continued)	ADA Curb Ramp	--	0 point: below standard/requirement 2 points: meet standard/requirement
	Traffic Control	--	0 point: No control 1 point: Stop sign controlled 2 points: Signal/Roundabout/Traffic Circle
		Maximum Points	8 points
Mid-block Crossing	Visibility	--	0 point: w/o high visibility crosswalk 2 points: with high visibility crosswalk
	Crossing Distance	--	0 point: no treatment 2 points: with bulb out or pedestrian refuge
	ADA Curb Ramp	--	0 point: below standard/requirement 2 points: meet standard/requirement
	Traffic Control	--	0 point: No control 1 point: Flashing Beacon 2 points: Signal/Pedestrian Hybrid Beacon
		Maximum Points	8 points
Final PEQE Scoring:			
Poor: < 4 points Fair: 4-6 points Good: > 7 points			

Combined Pedestrian Network Connectivity and Quality Assessment

This evaluation involves two steps, 1) defining a Pedestrian Study Area using demand and safety, then 2) assessing the connectivity and quality of the walking environment within the defined Pedestrian Study Area.

1) *Defining the Pedestrian Study Area*: The Pedestrian Study Area is intended to reflect high need pedestrian areas and high pedestrian collision areas. These areas were established using the Pedestrian Priority Model (PPM), historic collision data and transit ridership data. The Pedestrian Study Area incorporates all pedestrian facilities meeting the following criteria:

    a. Areas with PPM scores one standard deviation or greater than the Midway-Pacific Highway and Old Town community mean PPM score.

    b. Areas with two or more pedestrian collisions over the previous 5-year period.

    c. Areas within a half mile of major transit stops, defined as stations serving rail transit, ferry terminals served by either bus or rail transit service, or the intersection of two or more major bus routes with service frequencies of 15-minutes or less during the morning and afternoon peak commute periods.

2) *Assess Pedestrian Network Connectivity and Quality*: Pedestrian network connectivity and quality is assessed using a combination of the pedestrian travelshed and quality assessment previously described. The following steps outline the evaluation process used:

    a. *Total Walking Distance* – a 0.5 mile pedestrian network buffer is drawn around each study intersection, regardless of PEQE score.

    b. *Quality Walking Distance* – a 0.5 pedestrian network buffer is drawn around each study intersection, using only pedestrian facilities with a PEQE ranking of fair or good (including roadway links and intersections, and not including mid-block crossings). PEQE scores on each side of the roadway segment are added together and assigned a quality rating using the following scale (Poor: 0-7, Fair: 8-12, Good: 13+), to get a single quality measure for the roadway segment. Segments with a "Good" rating are considered quality segments.

    c. *Quality Walk Ratio* – The ratio of high (or good) quality connectivity to overall connectivity along all pedestrian facilities is determined using the following equation:

$$\text{Quality Walk Ratio} = \frac{\textit{Quality Walking Distance}}{\textit{Total Walking Distance (Existing Conditions)}}$$

2.2.2 Transit Assessment

Two performance measures were used to analyze transit, including station quality and arterial speed.

Station Quality – Presence of Amenities

Each transit station/stop was reviewed for the presence of the following amenities:

- Shelters
- Benches
- Trash Receptacles
- Station Signs
- Maps/Wayfinding
- Lighting
- ADA Compliancy

Table 2.2 displays the standard amenities that should be provided at transit stops/stations based on daily passenger boardings (across all routes).

Arterial Speed

On-time bus performance can be directly impacted by vehicular traffic congestion along roadways servicing bus routes. An HCM roadway arterial speed analysis was used to identify locations in which on-time performance is currently or may be impacted under future conditions by vehicular traffic congestion. Additionally, vehicular level of service is also reported along roadways servicing bus routes using the methodology described in Section 2.3.

Table 2.2 Transit Amenity Standards by Ridership Levels

Amenity	Daily Passenger Boardings by Stop/Station				
	< 50	50 – 100	101 – 200	201 – 500	> 500
Sign and Pole	X	X	X	X	
Built-in Sign					X
Expanded Sidewalk			X	X	X
Bench		X	X	X	X
Shelter			X	X	X
Route Designations	X	X	X	X	X
Time Table				X	X
Route Map			X	X	X
System Map					X
Trash Receptacle				X	X
Lighting			X	X	X
ADA Compliant	X	X	X	X	X

Source: MTS Design for Transit (1993)

2.2.3 Bicycle Assessment

Three analyses were utilized to assess bicycle mobility: 1) network connectivity; 2) facility quality; and 3) combined network connectivity and quality.

Bicycle Connectivity Ratio – Travelshed Analysis

A bicycle travelshed analysis was used to assess the level of connectivity provided from each study intersection. A 1.0 mile bicycle network buffer (using all bikeable roadways plus multi-use paths) is drawn around each intersection. That area is then compared to the area of a 1.0 mile as-the-crow-flies buffer (2,010.6 acres) to develop a Bicycle Connectivity Ratio for the intersection. The higher the Connectivity Ratio, the better the overall connectivity from the intersection.

Bicycle Facility Quality

The bicycle environment is assessed using the Bicycle Level of Traffic Stress (LTS) methodology, as developed by Mekuria, et al. (2012) of the Mineta Transportation Institute and reported in *Low-Stress Bicycle and Network Connectivity*. LTS classifies the street network into categories according to the level of stress it causes cyclists, taking into consideration a cyclist's physical separation from vehicular traffic, vehicular traffic speeds along the roadway segment, number of travel lanes, and factors related to intersection approaches with right-turn lanes and unsignalized crossings. LTS scores range from 1 (lowest stress) to 4 (highest stress).

Table 2.3 displays the four LTS categories with descriptions of traffic stress experienced by the cyclist and the cycling conditions associated with each category.

Combined Bicycle Network Connectivity and Quality Assessment

This assessment quantifies the connectivity of low stress bicycle facilities (LTS score 1 or 2) between Traffic Analysis Zones (TAZs) within the study communities. This measure results in each TAZ being assigned a percentage reflecting the number of total TAZ reachable via low stress bicycle facilities within the study area.

Table 2.3 Level of Traffic Stress Classifications and Descriptions

LTS Category	LTS Description	Cycling Conditions Fitting LTS Category
LTS 1	Presenting little traffic stress and demanding little attention from cyclists; suitable for almost all cyclists, including children trained to safely cross intersections	• Facility that is physically separated from traffic or an exclusive cycling zone next to a slow traffic stream with no more than one lane per direction • A shared roadway where cyclists only interact with the occasional motor vehicle with a low speed differential • Ample space for cyclist when alongside a parking lane • Intersections are easy to approach and cross
LTS 2	Presenting little traffic stress but demanding more attention than might be expected from children	• Facility that is physically separated from traffic or an exclusive cycling zone next to a well-connected traffic stream with adequate clearance from parking lanes • A shared roadway where cyclists only interact with the occasional motor vehicle (as opposed to a stream of traffic) with a low speed differential • Unambiguous priority to the cyclist where cars must cross bike lanes (e.g. at dedicated right-turn lanes); design speed for right-turn lanes comparable to bicycling speeds • Crossings not difficult for most adults
LTS 3	Presenting enough traffic stress to deter riders not comfortable with sharing the roadway with traffic	• An exclusive cycling zone (lane) next to moderate-speed vehicular traffic • A shared roadway that is not multilane and has moderately low automobile travel speeds • Crossings may be longer or across higher-speed roadways than allowed by LTS 2, but area still considered acceptably safe to most adult pedestrians
LTS 4	Presenting enough traffic stress to deter all but the Strong & Fearless cycling demographic (estimated at <1% of the population)	• An exclusive cycling zone (lane) next to high-speed and multi-lane vehicular traffic • A shared roadway with multiple lanes per direction with high traffic speeds • Cyclist must maneuver through dedicated right-turn lanes containing no dedicated bicycling space and designed for turning speeds faster than bicycling speeds

Source: Mekuria, et al. (2012)

2.3 Vehicular Analysis

Analysis of the vehicular systems – roadways, intersections, and freeways – were prepared for this report in accordance with the City of San Diego and SANTEC/ITE Guidelines. Vehicular level of service (LOS) is a quantitative measure that represents the quality of service – or how well a transportation facility operates – as experienced by vehicular drivers. These conditions are generally described in terms of factors such as speed, travel time, freedom to maneuver, comfort, convenience, and safety. LOS A represents the best operating conditions from a driver's perspective, while LOS F represents the worst. Table 2.4 describes generalized definitions of vehicular LOS A through F as identified by the Highway Capacity Manual (2000).

Table 2.4 Vehicular Level of Service Definitions

LOS	Definition
A	Primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Controlled delay at the boundary intersections is minimal. The travel speed exceeds 85% of the base free-flow speed.
B	Reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67% and 85% of the base free-flow speed.
C	Stable operation. The ability to maneuver and change lanes at mid-segment locations may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed.
D	Less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersections. The travel speed is between 40% and 50% of the base free-flow speed.
E	Unstable operation and significant delay. Such operations may be due to some combination of adverse signal progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30% and 40% of the base free-flow speed.
F	Flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30% or less of the base free-flow speed. Also, LOS F is assigned to the subject direction of travel if the through movement at one or more boundary intersections have a volume-to-capacity ratio greater than 1.0.

Source: Highway Capacity Manual (2000)

2.3.1 Roadway Segment

Roadway segment level of service standards and thresholds provided the basis for analysis of arterial roadway segment performance. The analysis of roadway segment level of service is based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecast Average Daily Traffic (ADT) volumes.

Table 2.5 presents the roadway segment capacity and LOS standards utilized to analyze roadways evaluated in this report. These standards are generally used as long-range planning guidelines to determine the functional classification of roadways. The actual capacity of a roadway varies according to its physical and operational attributes. LOS D is considered acceptable for Mobility Element roadway segments in the City of San Diego. Often, a roadway segment that is operating at LOS E or F based on theoretical capacity is found to operate acceptably in practice. In such cases, HCM arterial analysis may be conducted and utilized (or intersection analysis, if arterial analysis is not applicable) to provide a more accurate indication of LOS.

Table 2.5 City of San Diego Roadway Segment Daily Capacity and Level of Service Standards

Roadway Functional Classification	Level of Service				
	A	B	C	D	E
Expressway (6-lane)	< 30,000	< 42,000	< 60,000	**< 70,000**	< 80,000
Prime Arterial (6-lane)	< 25,000	< 35,000	< 50,000	**< 55,000**	< 60,000
Major Arterial (6-lane, divided)	< 20,000	< 28,000	< 40,000	**< 45,000**	< 50,000
Major Arterial (4-lane, divided)	< 15,000	< 21,000	< 30,000	**< 35,000**	< 40,000
Collector (4-lane w/ center left-turn lane)	< 10,000	< 14,000	< 20,000	**< 25,000**	< 30,000
Collector (3-lane w/ center left-turn lane)	< 7,500	< 10,500	< 15,000	**< 19,000**	< 22,500
Collector (4-lane w/o center lane)	< 5,000	< 7,000	< 10,000	**< 13,000**	< 15,000
Collector (2-lane w/ center left-turn lane)					
Collector (2-lane no fronting property)	< 4,000	< 5,500	< 7,500	**< 9,000**	< 10,000
Collector (2-lane w/ commercial fronting)	< 2,500	< 3,500	< 5,000	**< 6,500**	< 8,000
Collector (2-lane multi-family fronting)					
Sub-Collector (2-lane single-family)	-	-	< 2,200	**-**	-

Source: City of San Diego Traffic Impact Study Manual (1998)

Notes:
Bold numbers indicate the ADT thresholds for acceptable LOS.

2.3.2 Peak Hour Intersection

This section presents the methodologies used to perform peak hour intersection capacity analysis, for both signalized and unsignalized intersections. The following assumptions were utilized in conducting all intersection level of service analyses:

- Pedestrian Calls per Hour: Based on existing pedestrian counts.
- Heavy Vehicle Factor: A 2% heavy vehicle factor was assumed for all intersections within the study area.
- Peak Hour Factor: Based on existing peak hour counts.
- Signal Timing: Based on existing signal timing plans (as of November 2012).

Signalized Intersection Analysis

The signalized intersection analysis utilized in this study conforms to the operational analysis methodology outlined in 2000 Highway Capacity Manual (HCM), Transportation Research Board Special Report 209. This method defines LOS in terms of delay, or more specifically, average control delay per vehicle (sec/veh).

The 2000 HCM methodology sets 1,900 passenger-cars per hour per lane (pcphpl) as the ideal saturation flow rate at signalized intersections based upon the minimum headway that can be sustained between departing vehicles at a signalized intersection. The service saturation flow rate, which reflects the saturation flow rate specific to the study facility, is determined by adjusting the ideal saturation flow rate for lane width, on-street parking, bus stops, pedestrian volume, traffic composition (or percentage of heavy vehicles), and shared lane movements (e.g. through and right-turn movements sharing the same lane). The level of service criteria used for this technique

are described in Table 2.6. The computerized analysis of intersection operations was performed utilizing the Synchro 8.0 (2000 HCM methodology) traffic analysis software (by Trafficware, 2011).

Table 2.6 Signalized intersection LOS – HCM Operational Analysis Method

Average Control Delay Per Vehicle (seconds)	Level of Service (LOS) Characteristics
≤10.0	*LOS A* occurs when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.
10.1 – 20.0	*LOS B* occurs when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.
20.1 – 35.0	*LOS C* occurs when progression is favorable or the cycle length is moderate. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.
35.1 – 55.0	*LOS D* occurs when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.
55.1 – 80.0	*LOS E* occurs when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
>80.0	*LOS F* occurs when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: Highway Capacity Manual, Transportation Research Board Special Report 209 (2000)

Unsignalized Intersection Analysis

Unsignalized intersections, including two-way and all-way stop controlled intersections were analyzed using the *2000 HCM* unsignalized intersection analysis methodology. The Synchro 8.0 software supports this methodology and was utilized to produce LOS results. The LOS for a two-way stop controlled (TWSC) intersection is determined by the computed or measured control delay and is defined for each minor movement. The LOS for an all-way stop controlled (AWSC) intersection is determined by the computed or measured average control delay of all movements.

Table 2.7 summarizes the level of service criteria for unsignalized intersections.

Table 2.7 Level of Service Criteria for Stop Controlled Unsignalized Intersections

Average Control Delay (sec/veh)	Level of Service
≤10.0	A
10.1 – 15.0	B
15.1 – 25.0	C
25.1 – 35.0	D
35.1 – 50.0	E
>50.0	F

Source: Highway Capacity Manual (2000)

The City of San Diego considers LOS D or better during the AM and PM peak hours to be an acceptable intersection level of service.

2.3.3 Freeway

The freeway level of service analysis followed procedures developed by Caltrans District 11. The procedure involves estimating a peak hour volume to capacity ratio (V/C). Peak hour volumes are estimated from the application of design hour ("K"), directional ("D"), and truck ("T") factors to average daily traffic (ADT) volumes). The base capacities were assumed to be 2,350 passenger-cars per hour per main lane (pc/h/ln) and 1,410 pc/h/ln for auxiliary lane. A 0.95 peak hour factor (PHF) was utilized for this analysis.

The resulting V/C ratio was then compared to acceptable ranges of V/C values corresponding to the various levels of service for each facility classification, as shown in Table 2.8.

Table 2.8 Caltrans District 11 Freeway Segment Level of Service Definitions

LOS	V/C	Congestion/Delay	Traffic Description
Used for freeways, expressways and conventional highways			
"A"	<0.41	None	Free flow.
"B"	0.42-0.62	None	Free to stable flow, light to moderate volumes.
"C"	0.63-0.79	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	0.80-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
Used for conventional highways			
"F"	>1.00	Considerable	Forced or breakdown flow. Delay measured in average travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle.
Used for freeways and expressways			
"F0"	1.01–1.25	Considerable (0-1 hour delay)	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
"F1"	1.26-1.35	Severe (1-2 hour delay)	Very heavy congestion, very long queues.
"F2"	1.36-1.45	Very severe (2-3 hour delay)	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
"F3"	>1.46	Extremely severe (3+ hours of delay)	Gridlock.

Source: SANTEC/ITE Guidelines for TIS in the San Diego Region

The corresponding level of service represents an approximation of anticipated future freeway operating conditions in the peak direction of travel during the peak hour.

LOS D or better was used in this study as the threshold for acceptable freeway operations based upon Caltrans and the SANDAG Regional Growth Management Strategy (RGMS) requirements.

2.3.4 Ramp Metering Analysis

Ramp metering is a means of controlling the volume of traffic entering the freeway with the goal of improving freeway main lane traffic operations and flow. Freeway ramp meter analyses estimate peak hour queues and delays at freeway ramps by comparing existing volumes to the meter rate at the given location.

Meter rates used in the analysis were obtained from Caltrans. Ramp metering analyses to calculate delays at study area freeway ramps were conducted following the procedures outlined in the *City of San Diego Traffic Impact Study Manual (1998)*.

3.0 Midway-Pacific Highway Preferred Plan

This section documents the mobility related issues and needs of the Midway-Pacific Highway community and the process used to identify those issues. This section also outlines the mobility improvements recommended under buildout of Preferred Plan conditions and the process used to develop these improvements.

3.1 Development of the Preferred Plan

3.1.1 Identification of Issues and Needs

Existing mobility related issues and needs within the Midway-Pacific Highway community were identified in the *Community of Midway/Pacific Highway Corridor and Old Town Mobility Existing Conditions Report; September 2012 (Existing Conditions Report)*. The issues and needs identified in the Existing Conditions Report were used, in conjunction with the other planning efforts and the overall community vision, to develop the recommended mobility improvements incorporated into the Preferred Plan.

3.1.2 Development of Preferred Plan Improvements

Preferred Plan Improvements were developed by first cross checking the mobility issues and needs, identified in the Existing Conditions Report, against the mobility issues and needs identified in several other on-going or recent planning efforts, including:

- North Bay Urban Greening Plan (On-Going)
- I-8 Corridor Study (On-Going)
- San Diego Forward, The Regional Plan (October 2015)
- City of San Diego Bicycle Master Plan (December 2013)
- City of San Diego Pedestrian Master Plan – Phase 4 (December 2013)
- Rosecrans Corridor Mobility Study (February 2010)
- Destination Lindbergh Technical Report: San Diego International Airport (November 2008)
- San Diego International Airport Master Plan (November 2008)

Where possible, the Preferred Plan carried forward or maintained the relevant improvements from on-going or previous planning efforts which have been adopted or vetted by the community. New improvement strategies were then developed for the issues and needs, identified in the Existing Conditions Report, which were not addressed in other planning efforts. Additional mobility improvements were also developed to accommodate the anticipated future growth within the community. The following sections outline the mobility issues and needs identified in the Existing Conditions Report and the associated improvements recommended under the Preferred Plan to alleviate them.

3.2 Pedestrian Environment

3.2.1 Identified Pedestrian Needs

The Existing Conditions Report identified the following pedestrian issues/needs in the Midway-Pacific Highway community:

Midway Drive / Sports Arena Boulevard / West Point Loma Drive / West Mission Bay Drive Intersection – This is a major vehicular junction point within the community in which two major roadways (Sports Arena Boulevard and Midway Drive) intersect with two major regional access points (West Point Loma Boulevard connecting to both the Peninsula and Ocean Beach communities to the west, and West Mission Bay Drive and I-8 ramps). To accommodate the high intersecting traffic volumes there is currently a yield control northbound right-turn movement, a stop controlled southbound right-turn movement and a free westbound right-turn movement. The high traffic volumes and uncontrolled right-turn movements create an intimidating environment for pedestrians to cross.

East/West Connectivity – Due to the large block sizes within the community, there are currently few pedestrian corridors directly connecting the east and west sides of the community. Rosecrans Street is the only east/west corridor that currently spans the entire community from east to west.

Walkability Issues along Rosecrans Street and Camino Del Rio West – As mentioned above, Rosecrans Street is the only east/west pedestrian corridor that spans the entire length of the community and is the only corridor that connects to the Old Town Transit Center, located to the east. The retail and institutional uses along both Rosecrans Street and Camino Del Rio West are also major pedestrian attractions within the corridors. Currently both corridors have 5 - 7 foot sidewalks with no parkways or on-street parking to buffer pedestrians from vehicular traffic. The narrow sidewalks with a lack of buffer create an unfriendly pedestrian environment.

Rosecrans Street / I-5 Underpass – This is the only connection point for pedestrians between the Old Town Transit Center and the Midway/Pacific Highway community. The 200-foot wide underpass is poorly lit and has narrow sidewalks, with no parkways or on-street parking to buffer pedestrians from vehicular traffic, creating an unfriendly pedestrian environment.

Missing Sidewalk Facilities – There are currently no sidewalks provided along Sports Arena Drive, south of Rosecrans Street, with the exception of a small portion on its south side near the intersection of Rosecrans Street. This area currently predominantly serves industrial uses and attracts little pedestrian traffic; however, it is one of the few major north/south corridors that span the entire community.

Barnett Avenue / Pacific Highway – There is currently no pedestrian access to Pacific Highway from Barnett Avenue from the eastside. Pedestrians heading east on Barnett Avenue hit a dead end and are forced to head north along Pacific Highway.

At-Grade Rail Crossings – Pedestrians accessing both the Washington Street and Middletown Trolley stations from Pacific Highway currently have to cross the rail right-of-way to access both stations. During gate down times, pedestrians may be delayed from accessing the station by on-coming trolleys or trains.

Figure 3-1 displays the pedestrian issues and needs identified in the Existing Conditions Report.

3.2.2 Pedestrian Improvements

Intersections

All crossing points at intersections should be upgraded to include the following:

- ADA compliant pedestrian ramps
- High visible continental cross-walks
- Advanced stop bar placement

Trails

The North Bay Urban Greening Plan includes the implementation of the following multi-use urban trails throughout the Midway-Pacific Highway Community:

La Playa Trail – The La Playa Trail will run along the south side of Rosecrans Street between Lytton Street and Taylor Street. The trail will be approximately 12 feet wide and replace the sidewalks on the southern side of the roadway. To accommodate the additional right-of-way required to develop the tail, as well as other multimodal improvements along Rosecrans Street, the vehicular travel lanes will be narrowed to 10-11 feet and the on-street parking along Rosecrans Street will be removed. It is assumed that pedestrian scale lighting will be installed along the entire length of the trail.

Bay-to-Bay Trail (North) – The Bay-to-Bay Trail (North) will run along the southwest side of Sports Arena Boulevard between West Mission Bay Drive and Rosecrans Street. The trail will be 12 feet wide and replace the sidewalks on the southwestern side of the roadway. To accommodate the additional right-of-way required to develop the tail, as well as other multimodal improvements along Sports Area Boulevard, the City will need to acquire an additional 17 feet of right-of-way. It is assumed that pedestrian scale lighting will be installed along the entire length of the trail.

Bay-to-Bay Trail (South) – The Bay-to-Bay Trail (South) will run along the southwest side of Barnett Avenue between Rosecrans Street and Pacific Highway. The trail will be approximately 8 feet wide and replace the sidewalks on the southwestern side of the roadway. To accommodate the additional right-of-way required to develop the tail, as well as other multimodal improvements along Barnett Avenue, the City will need to acquire an additional 13 feet of right-of-way. It is assumed that pedestrian scale lighting will be installed along the entire length of the trail.

Midway Trail – The Midway Trail will run along the southwest side of Midway Drive between Sports Arena Boulevard and Barnett Avenue. The trail will vary in width between 8-12 feet and will replace the existing southwest sidewalk. It is assumed that pedestrian scale lighting will be installed along the entire length of the trail.

Figure 3-1
Identified Pedestrian Issues and Needs
Midway-Pacific Highway Community

Historic Highway 101 Coastal Rail Trail – The Historic Highway 101 Coastal Rail will run along the east side of Pacific Highway between Taylor Street and Laurel Street. The joint use trail (intended for both pedestrian and cyclists) will be 12 feet wide and will replace the existing sidewalk on the east side of the roadway. To accommodate the additional right-of-way required to develop the tail, as well as other multimodal improvements along Pacific Highway, the vehicular travel lanes will be narrowed to 10-11 feet. It is assumed that pedestrian scale lighting will be installed along the entire length of the trail.

Street Trees

As part of the *North Bay Urban Greening Plan*, street trees will be implemented within the parkways of on both sides of the following roadways:

- Barnett Avenue, between Rosecrans Street and Pacific Highway
- Midway Drive, between Sports Arena Boulevard and Barnett Avenue
- Sports Arena Boulevard, between West Mission Bay Drive and Rosecrans Street
- Pacific Highway, between Taylor Street and Laurel Street
- Rosecrans Street, between Midway Drive and Taylor Street

Street trees enhance the pedestrian environment by providing shade cover along sidewalks and trails and providing a vertical buffer between the pedestrians and vehicular traffic in the roadway. Cross-sections and concept plans from the *North Bay Urban Greening Plan* are provided in Appendix A.

New Sidewalks

Sidewalk facilities will be implemented along the following roadways:

- Midway Drive, between Bogley Drive and Barnett Avenue
- Kemper Street, Kenyon Street to Midway Drive (south side)
- Sports Arena Boulevard, between Rosecrans Street and Pacific Highway
- Kurtz Street, between Rosecrans Street and Pacific Highway
- Pacific Highway, between Cout Street and Sassafras Street
- Witherby Street, between Hancock Street and Pacific Highway

Other Planned Pedestrian Improvements

City of San Diego Pedestrian Master Plan (PMP) – This plan proposed pedestrian improvement concepts at specific locations where pedestrian and automobile conflicts are anticipated to be the highest.

Midway-Pacific Highway Community - PMP-Phase 4

Phase 4 of the PMP provides a series of pedestrian related improvement recommendations within the Midway-Pacific Highway Community. Table 3.1 lists each of the identified improvement locations within the Midway-Pacific Highway Community and the corresponding pedestrian improvement concepts. It should be noted that some improvements in the North

Bay Urban Greening plan have superseded some of the improvements recommended in Phase 4 of the Pedestrian Master Plan.

Table 3.1 Pedestrian Improvements Recommended in Pedestrian Master Plan (Phase 4) – Midway-Pacific Highway Community

Improvement Area	Recommendations
M-1 Camino Del Rio and Rosecrans Street Connectivity Study	Improve pedestrian connectivity, especially at key intersections. Improve walking environment along Kurtz Street, Moore Street, and Jefferson Street.
M-2 Kurtz Street Access Improvements (Rosecrans to Pacific Hwy)	Implement improvements to increase walkability along this corridor.
M-3 Enterprise Triangle Connectivity Improvements	Implement improvements to improve connectivity and walkability along Barnett Avenue and at the Enterprise/Midway intersection.
M-4 Pacific Highway at Witherby Street Intersection Improvements	Improve connectivity from Barnett Avenue to the Pacific Highway corridor.
M-5 Lytton Street-Barnett Avenue Corridor Improvements (Rosecrans to Durham Ridge Place)	Improve pedestrian connectivity on north side of street.
M-6 Midway Drive and Sports Arena Boulevard Intersection Improvements	Evaluate the feasibility of reconfiguring the intersection to reduce crossing distance and improve pedestrian visibility.
M-7 Sports Arena Boulevard /Hancock Street Intersection Improvements	Implement improvements to existing pedestrian facilities to improve walkability. Evaluate the feasibility of an additional marked cros walk between the Valley View Event Center and nearby retail centers.
M-8 Midway Drive Corridor Improvements (Sports Arena Boulevard to Rosecrans)	Implement sidewalk improvements to remove obstructions. Evaluate the feasibility of installing additional marked and/or controlled crosswalks.
M-9 W. Palm Street Connectivity Improvements	Narrow Kettner Boulevard crossing distance by adding curb extensions and improve visibility of pedestrians near pedestrian bridge.
M-10 Implement Rosecrans Mobility Study Recommendations	Address pedestrian and multimodal access through modifications to road cross-sections and intersection configurations.

Source: City of San Diego Pedestrian Master Plan – Phase 4 (2013)

Public Facilities Financing Plans – The adopted Public Facilities Financing Plan for the Midway-Pacific Highway Community currently contains planned pedestrian improvements that have not yet been completed, as follows:

- Install / upgrade 169 curb ramps to meet ADA standards (T25) – These improvements are currently not scheduled or funded.

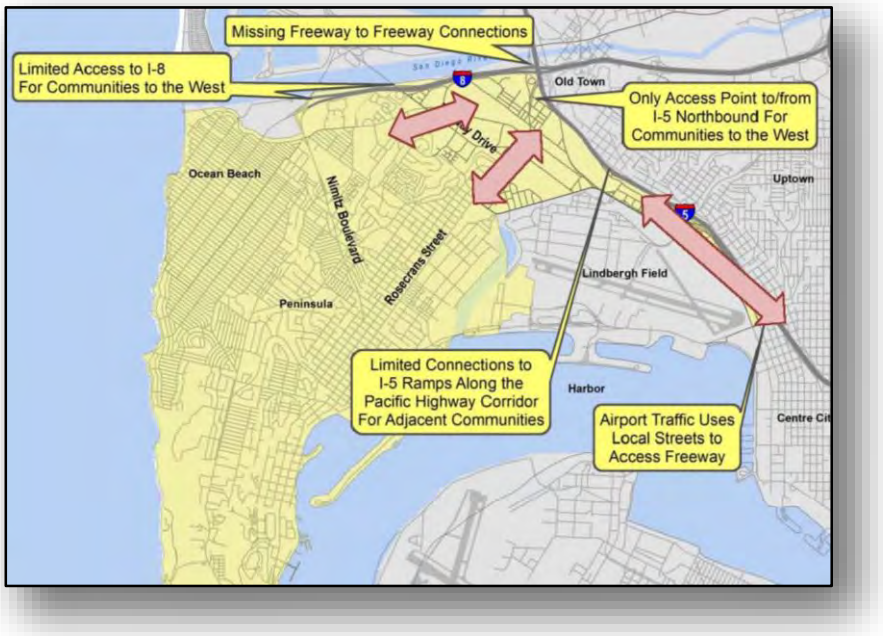
Several pedestrian facility projects have been identified by the City of San Diego and are included on their Unfunded Transportation Needs List (8/5/2014). A list of the pedestrian improvements located in the Midway-Pacific Highway Community is included in Appendix B. It should be noted that this list is updated on a regular basis and Appendix B only reflects a snapshot of the needs and planned improvements throughout the community at the time when this report was prepared.

3.3 Street and Freeway System

3.3.1 Identified Street and Freeway Needs

There is constrained regional access to/from the Midway-Pacific Highway Community and to adjacent communities. A significant amount of regional traffic traverses the local roadway system within the community since there are limited regional access points, missing freeway-to-freeway connectors between I-8 and I-5, as well as major employment centers and trip generators within and adjacent to the community. Figure 3-2 displays regional access issues in the Midway-Pacific Highway Community.

Figure 3-2 Regional Access – Midway-Pacific Highway Community



Constrained regional access, large trip generators, and limited circulation created by large blocks within and adjacent to the community, result in highly concentrated traffic volumes along study

roadways providing freeway access. This concentration of traffic volumes creates congestion, low traffic speeds and delays on both the Rosecrans Street and Camino Del Rio West. Figure 3-3 displays the location of identified issues/needs within the Midway-Pacific Highway Community.

3.3.2 Street and Freeway Improvements

Roadways

Lytton Street/Barnett Avenue, between Rosecrans Street and Midway Drive – Implement a raised median along these portions of Lytton Street / Barnett Avenue.

Sports Arena Boulevard, between Mission Bay Drive and Rosecrans Street – Complete the raised median along this portion of Sports Arena Boulevard.

Kurtz Street, between Rosecrans Street and Pacific Highway – Restripe this section of Kurtz Street from a two-lane collector to a two-lane collector with a continuous left-turn lane.

Hancock Street, between Old Town Avenue and Witherby Street – Widen this section of Hancock Street from a two-lane collector to a four-lane collector.

Pacific Highway, between Taylor Street and Laurel Street – This section of Pacific Highway will be improved to a six-lane major configuration. This improvement will include reconstructing the Barnett Avenue, Witherby Street and Washington Street intersections at-grade. The existing frontage road will be maintained and the Historic Highway 101 Coastal Rail Trail joint-use trail described above will be constructed between Pacific Highway and the frontage road. These improvements are intended to enhance mobility for all modes along Rosecrans as well as transform this roadway into a community gateway.

Rosecrans Street, between Lytton Street and Sports Arena Boulevard – Improve this section of Rosecrans Street from a six-lane major to a six-lane prime arterial.

Rosecrans Street, between Sports Arena Boulevard and Taylor Street – Construct a landscaped median along this section of Rosecrans Street.

Witherby Street, between Pacific Highway and Hancock Street – Widen Witherby Street from a two-lane collector to a four-lane collector.

New Roadways

The Preferred Plan proposes the following new roadways segments within the community. It should be noted that implementation of these new roadway segments would necessitate additional right-of-way and most likely require the redevelopment of adjacent properties. All roadways will be designed in accordance with the *City of San Diego Street Design Manual* and their corresponding classification.

Hancock Street Extension – Hancock Street will be extended between Midway Drive and Sports Arena Boulevard. The Hancock Street extension will be constructed as a two-lane collector with a continuous left-turn lane.

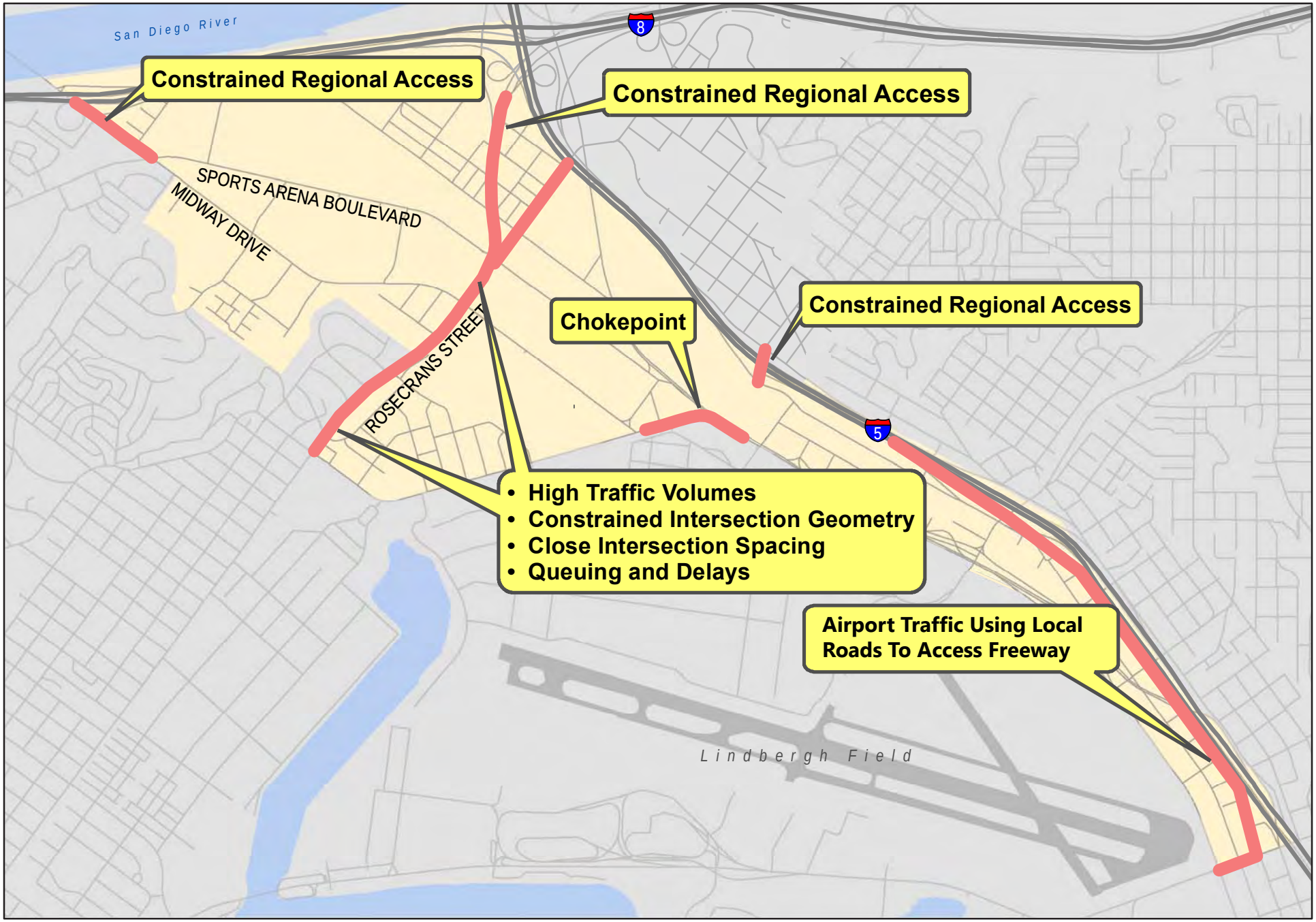


Figure 3-3
Auto Network Issues and Needs
Midway-Pacific Highway Community

Kemper Street Extension – Kemper Street will be extended between Sports Arena Boulevard and Kurtz Street, connecting as the southwest leg of the Kurtz Street / Hancock Street intersection. The Kemper Street extension will be constructed as a four-lane collector.

Frontier Street – Frontier Street will be a new roadway connecting between Sports Arena Boulevard and Kurtz Street. Frontier Street will be located between the new Kemper Street Extension and the Greenwood Street extension. Frontier Street will be constructed as a two-lane collector.

Greenwood Street Extension – Greenwood Street will be extended between Hancock Street and Midway Drive. Greenwood Street between Sports Arena Boulevard and Midway Drive will follow the alignment of the existing East Drive private street. Greenwood Street will be constructed as a two-lane collector.

Charles Lindbergh Parkway – Charles Lindbergh Parkway will be a new street connecting between Kurtz Street and Midway Drive. Charles Lindbergh Parkway will be located midway between Rosecrans Street and the new Dutch Flats Parkway. Charles Lindbergh Parkway will be constructed as a two-lane collector with a continuous left-turn lane.

Dutch Flats Parkway – Dutch Flats Parkway will be a new roadway connecting between Sports Arena Boulevard and Barnett Avenue. Dutch Flats Parkway will be located between the new Charles Lindbergh Parkway and Enterprise Street. Dutch Flats Parkway will be constructed as a two-lane collector with a continuous left-turn lane.

Intersections

Rosecrans Street / Sports Arena Boulevard / Camino Del Rio West:

- Align the southern and northern legs of Sports Arena Boulevard
- Allow through and left-turn movements at the northbound approach of Sports Arena Boulevard
- Restrict north-to-eastbound left-turns from Rosecrans Street onto Sports Arena Boulevard
- Provide a second south-to-westbound left-turn lane from Rosecrans Street to Sports Arena Boulevard
- Remove the southbound free right-turn movement from Camino Del Rio West onto Sports Arena Boulevard and replace it with an exclusive right-turn lane with an overlap phase

A concept drawing of the proposed intersection improvements are displayed in **Figure 3-4.**

Sports Arena Boulevard / Pacific Highway:

- Move intersection approximately 500 feet to the north
- Re-align Sports Arena Boulevard to create a right-angle with Pacific Highway
- Signalize the intersection
- Provide an exclusive eastbound left-turn lane from Sports Arena Boulevard onto Pacific Highway
- Provide an exclusive northbound left-turn lane from Pacific Highway onto Sports Arena Boulevard

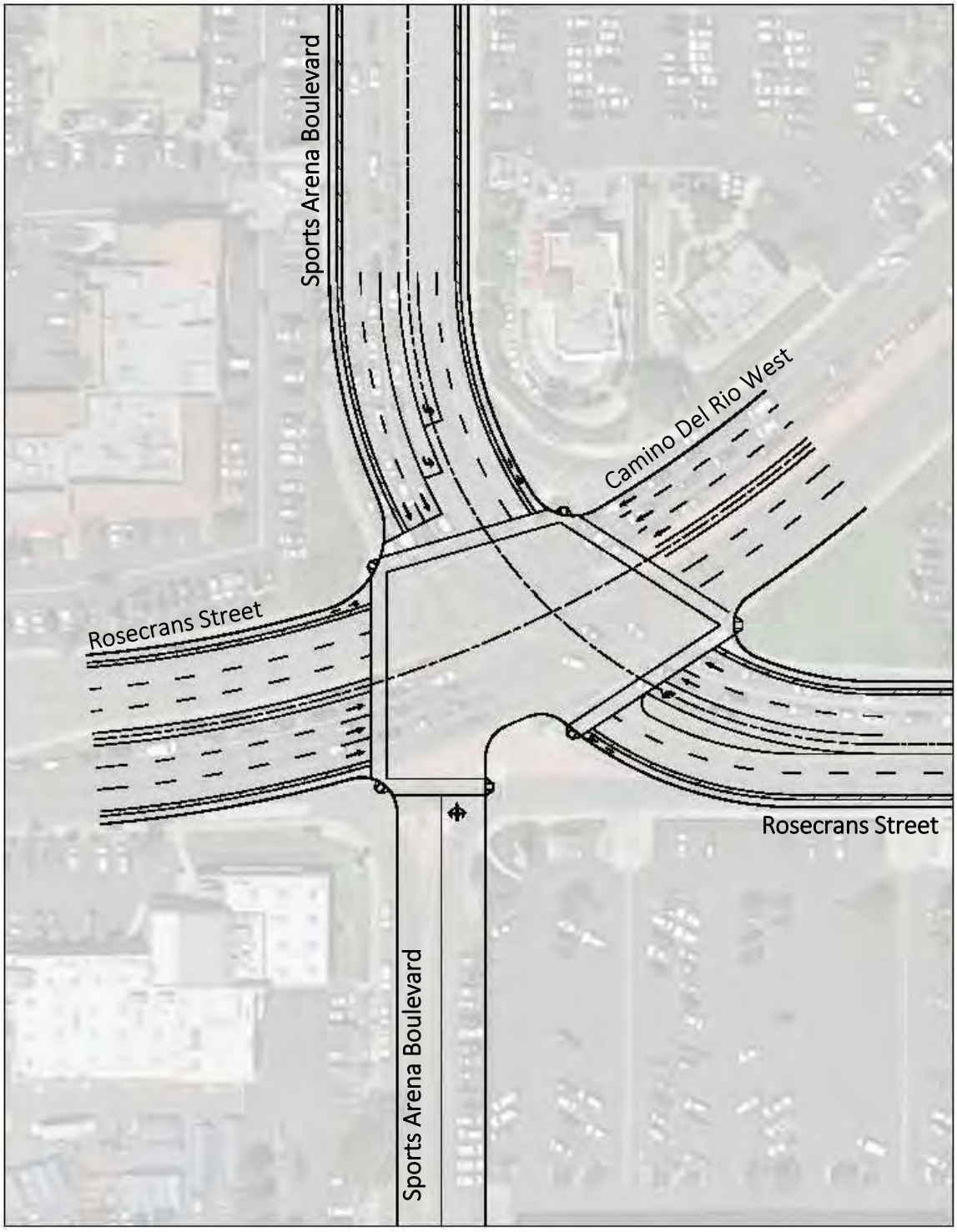


Figure 3-4 Rosecrans Street / Sports Arena Drive and Camino Del Rio West Intersection Concept Plan

Barnett Avenue / Pacific Highway:

- Reconstruct intersection at-grade
- Re-align Barnett Avenue to create a right-angle with Pacific Highway
- Signalize the intersection
- Provide an exclusive eastbound left-turn lane from Barnett Avenue onto Pacific Highway
- Provide an exclusive eastbound right-turn lane (with overlap phase)
- Provide dual northbound left-turn lanes from Pacific Highway onto Sports Arena Boulevard

Witherby Street / Pacific Highway:

- Reconstruct the intersection at-grade
- Signalize the intersection

Washington Street / Pacific Highway:

- Reconstruct the intersection at-grade
- Provide dual left-turn lanes in the northbound and southbound directions
- Provide exclusive left-turn lanes and right-turn lanes in the eastbound and westbound direction

Traffic signal warrants were conducted at above intersections where signalization is recommended. Figure 4C-103 (CA) of the California Manual on Uniform Traffic Control Devices (MUTCD) 2012 Edition was utilized and all nine intersections would meet the warrants. Signal warrants worksheets are included in Appendix C.

Freeway Improvements

There are no freeway improvements included in the Revenue Constrained alternative of *SANDAG's San Diego Forward, The Regional Plan (Adopted October 2015)* to be completed before this plan's horizon year (Year 2035).

Missing I-8/I-5 Ramps – It should be noted that the missing I-8 East to I-5 North, and I-5 South to I-8 West ramps are included in the Unconstrained alternative of the San Diego Forward; however, since there is currently no funding mechanism for these ramps they are not included in the Preferred Plan assessment. These ramps are needed to enhance the regional access for the community. A policy should be included in the Mobility Element recommending that the City of San Diego work with SANDAG and Caltrans to implement these ramps.

Other Improvements

Midway/Pacific Highway Corridor Public Facilities Financing Plan, 2004 – this document contains several roadway improvements that have not yet been completed. It should be noted that all of these improvements are unfunded and currently not scheduled for implementation.

Signal Modifications:

- Barnett Avenue / Midway Drive (Project T7)
- Pacific Highway / West Washington Street (Project T29) – *Improvement no longer recommended under the Preferred Plan.*

Extensions/New Streets:

- Extension of Barnett Avenue from Pacific Highway to Old Town Avenue (Project T8) – *Improvement no longer recommended under the Preferred Plan.*
- Extension of Kemper Street as a four-lane collector from Sports Arena Boulevard to Hancock Street (Project T14)
- New four-lane collector street connecting Sports Arena Boulevard and Midway Drive (Project T13) – *Improvement changed under the Preferred Plan.*

Street Widening:

- Improve Kurtz Street to a four-lane Major between Rosecrans Street and Pacific Highway (Project T15) – *Improvement changed under the preferred Plan.*
- Improve Sports Arena Boulevard to a four-lane collector between Rosecrans Street and Pacific Highway (Project T16) – *Improvement changed under the Preferred Plan.*

Intersection Improvements

- Midway Drive / Sports Arena Boulevard (Project T17) – *Improvement no longer recommended under the Preferred Plan.*

Several roadway facility projects have been identified by the City of San Diego and are included on their Unfunded Transportation Needs List (8/5/2014). A list of the roadway related improvements located in the Midway-Pacific Highway Community is included in Appendix B. It should be noted that this list is updated on a regular basis and Appendix B only reflects a snapshot of the needs and planned improvements throughout the community at the time when this report was prepared.

3.4 Public Transit Service and Facilities

3.4.1 Identified Transit Needs

Underserved Areas – As shown in Figure 3-5, the following areas within the Midway-Pacific Highway Community are located beyond a quarter mile of a bus stop or transit station, indicating potentially poor levels of transit access:

- Barnett Avenue, between Lytton Street and Midway Drive
- The northeast portion of the community (east of Kurtz Street and north of Sherman Street)
- Pacific Highway, between Wright Street and Noell Street
- Pacific Highway, between Vine Street and Sassafras Street

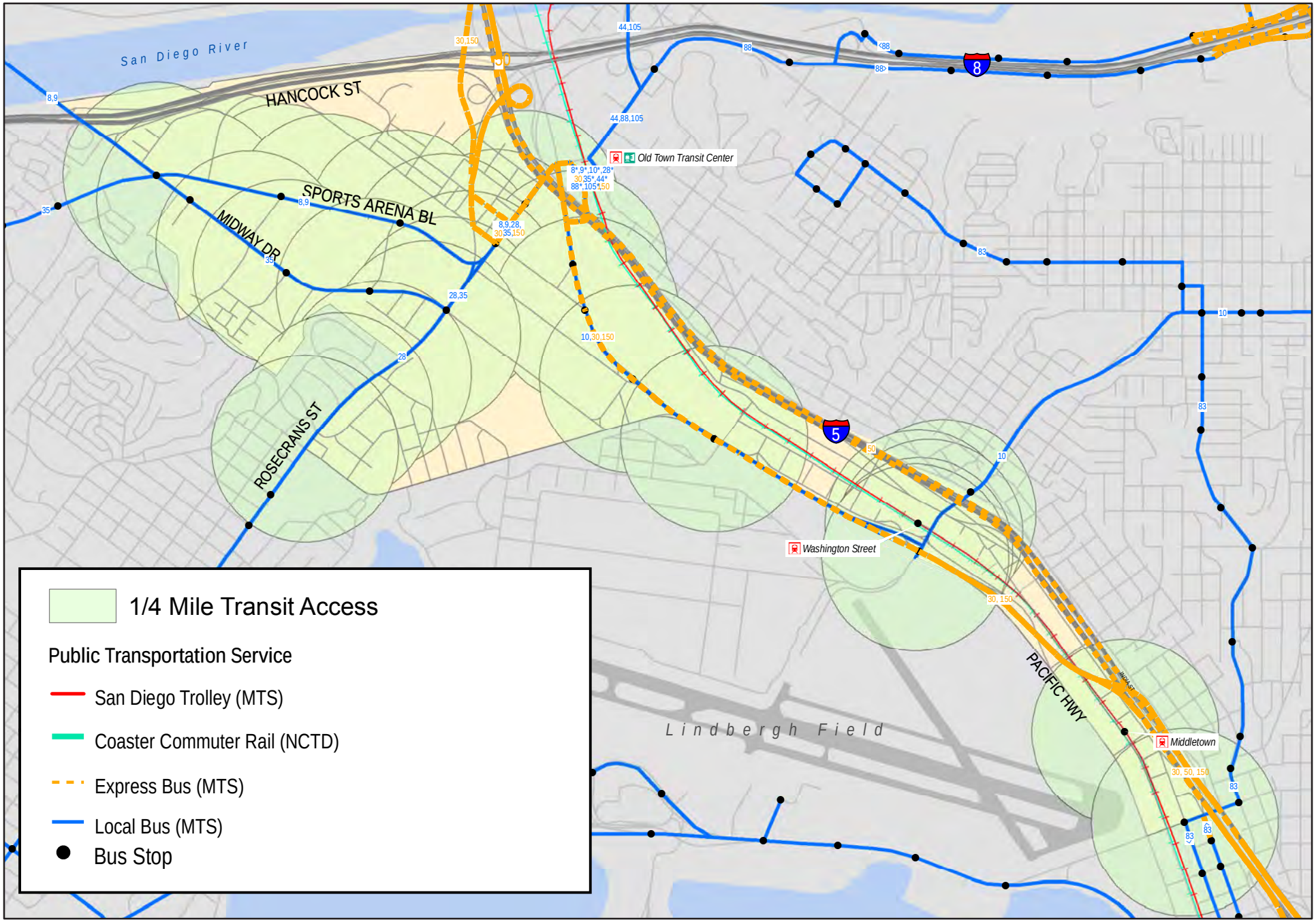


Figure 3-5
Transit Coverage
Midway-Pacific Highway Community

3.4.2 Transit Improvements

SANDAG's San Diego Forward, The Regional Plan (Adopted October 2015) indicates that a number of transit improvements are planned for the Midway-Pacific Highway Community, prior to this plan's Year 2035 horizon year, including:

Local Bus Service – Increase local bus service in key corridors to 10 minute headways programmed and scheduled for Year 2035.

San Diego International Airport Intermodal Transit Center (ITC) – The ITC will act as an important hub connecting all modes of transportation accessing and departing from Lindbergh Field. The ITC will be located on the north end of the airport, just south of Interstate 5 between Washington Street and Sassafras Street. The ITC is being planned as a major transit hub connecting all three existing trolley lines (Blue, Green and Orange), the COASTER, Amtrak, new express bus routes directly serving the airport, several local bus routes and the planned California High Speed Rail system. In addition to the transit connections, the ITC will also provide the following:

- 360 new parking spaces
- 126,000 SF of new retail uses
- Direct access to I-5 / via the Pacific Highway on/off-ramps
- Grade separation of the Washington Street and Sassafras at-grade rail crossings
- New grade separated crossing at Vine Street
- Raised bicycle lanes and cycle tracks on the street surrounding the ITC
- Wider sidewalks around both the ITC and new retail uses
- Curb extensions and planting/parking strips as well as provide new opportunities to employ green street strategies on impacted/new roadways.

The ITC is anticipated to be constructed and operational by the Year 2035.

<u>Transit Priority Improvements</u>

Pacific Highway serves several express bus routes that link multiple communities. Converting Pacific Highway from an expressway to a six-lane major will lower travel speeds along the corridor and could potentially impact the efficiency and on-time performance of these regional routes. Therefore, it is recommended that, as Pacific Highway gets redeveloped from an expressway facility to a six-lane major, transit priority measures such as queue jumper lanes and transit priority signals be implemented at all signalized intersections along Pacific Highway between Taylor Street and Laurel Street.

3.5 Cycling Environment

3.5.1 Identified Bicycle Needs

The Midway-Pacific Highway Community are located at a junction point for several regional bicycle facilities including both the Coastal Rail Trail (along Pacific Highway) and the Ocean Beach Bike

Path (along the San Diego River). Local bicycle connections to the surrounding neighborhoods are also provided, such as Class II Bike Lanes between Midway-Pacific Highway and the Peninsula communities along Rosecrans Street. A Class III Bike Route is provided along West Mission Bay Drive and terminates at Sports Arena Boulevard and Midway Drive. These regional and local connections, along with strong transit service and high intensity commercial and institutional land uses, create high cycling demands within this community.

However, as shown in Figure 3-6 there are currently no bicycle facilities along the major corridors traversing the Midway-Pacific Highway Community (Midway Drive, Sports Arena Boulevard and Rosecrans Street) to accommodate the high bicycle demand. These corridors also have high vehicular traffic volumes and speeds as well as numerous conflict points (intersections, driveways, and alleyways) between motorists and cyclists, creating an uncomfortable environment for cyclists. Figure 3-5 displays the locations of issues/need, mainly defined as high cycling demand corridors that lack bicycle facilities and have high vehicular traffic volumes and speed.

3.5.2 Bicycle Improvements

The Preferred Plan proposes to implement the following bicycle facilities within the Midway-Pacific Highway Community:

- Class II Bike Lanes in both directions along Barnett Avenue between Rosecrans Street and Pacific Highway.
- Class IV One-Way Cycle Tracks in both directions along Pacific Highway between Taylor Street and Laurel Street.
- Class I Multi-Use Path along the eastside of Pacific Highway between Taylor Street and Laurel Street.
- Enhanced Class II Buffered Bike Lanes in both directions along Rosecrans Street between Barnett Avenue and Pacific Highway.
- Enhanced Class II Buffered Bike Lanes in both directions along Sports Arena Boulevard between Point Loma Boulevard and Pacific Highway.

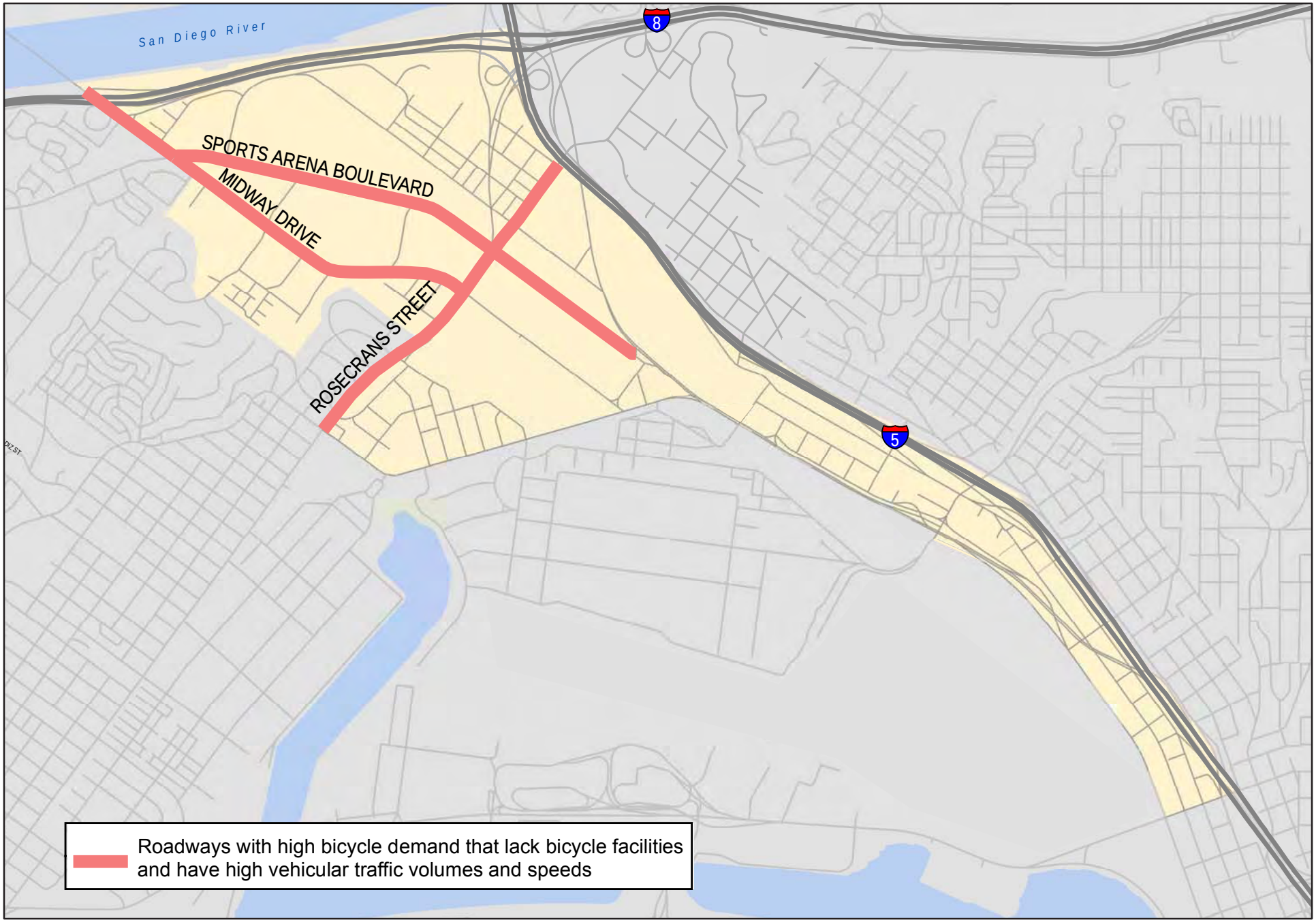


Figure 3-6
Bicycle Network Issues and Needs
Midway-Pacific Highway Community

4.0 Old Town Community Preferred Plan

4.1 Development of the Preferred Plan

4.1.1 Identification of Issues and Needs

Existing mobility related issues and needs within the Old Town Community were identified in the *Community of Midway/Pacific Highway Corridor and Old Town Mobility Existing Conditions Report; September 2012 (Existing Conditions Report)*. The issues and needs identified in the Existing Conditions Report were used, in conjunction with the other planning efforts and the overall community vision, to develop the recommended mobility improvements presented in the Preferred Plan.

4.1.2 Development of Preferred Plan Improvements

Preferred Plan improvements were developed by first cross checking the mobility issues and needs identified in the Existing Conditions Report against the mobility issues and needs identified in several other on-going or recent planning efforts, including:

- I-8 Corridor Study (on-going)
- San Diego Forward, The Regional Plan (October 2015)
- City of San Diego Bicycle Master Plan (December 2013)
- Phase II Visitor Oriented Parking Facilities Study of the Old Town Community (May 2002)

Where possible, the Preferred Plan carried forward or maintained the relevant improvements from on-going or previous planning efforts which have been adopted or vetted by the community. New improvement strategies were then developed to address the existing issues and needs, as identified in the Existing Conditions Report, which have not been addressed in other planning efforts. Additional mobility improvements were also developed to accommodate the anticipated future growth within the community. The following sections outline the mobility issues and needs identified in the Existing Conditions Report and the associated improvements recommended under the Preferred Plan to alleviate them.

4.2 Pedestrian Environment

4.2.1 Identified Pedestrian Issues and Needs

The following pedestrian related issues and needs were identified in the Existing Conditions Report:

Taylor Street At-Grade Rail Crossing – Pedestrians accessing the Old Town Community or the Old Town Transit Center from Pacific Highway or Rosecrans Street currently have to cross the shared BNSF and MTS Trolley rail right-of-way. The Taylor Street at-grade rail crossing is over 100 feet wide, gate to gate, and pedestrians have to cross over four sets of rail tracks. During peak hours there are approximately 13 train crossing events lasting between 30 seconds and 3 minutes.

During these times pedestrians are forced to wait until the train clears the crossing, causing excessive delays.

Old Town Transit Center Wayfinding – There is currently limited signage at the Old Town Transit Center directing pedestrians who are unfamiliar with the area, such as tourists, to the many restaurant, shops, historical monuments and structures, and parks in the community. Currently there is only a single map (identical to the map depicted in the picture below, which is located on San Diego Avenue) directing patrons to these various community features.

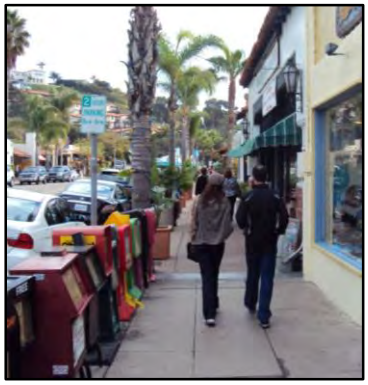
The Old Town San Diego Chamber of Commerce is implementing a wayfinding signage program that will install various signage types throughout the community to better inform patrons about how to access the various community features and help brand the community as a whole.

Missing Sidewalks – There are currently no sidewalks on Taylor Street, east of Presidio Drive and on the east side of San Diego Avenue, just north of Ampudia Street.

Connectivity between Community Features and Parks – There is currently no direct, convenient or identifiable path connecting the Old Town Transit Center, Old Town State Park and Presidio Park. Both parks are major community features attracting tourists and out of town guests who may not be familiar with the community or its amenities. The development of a clear, concise and well signed path connecting these three community assets would significantly improve pedestrian circulation within the community.

Sidewalk Capacity Issues – The retail and restaurant establishments along San Diego Avenue attract significant pedestrian traffic particularly during evenings and weekends. The sidewalks along San Diego Avenue are currently 7 to 8 feet wide with a limited parkway featuring street trees and planters. Retail shops and other merchants also take up part of the sidewalk with displays, racks and other attractions, as displayed in the photos below.

During peak times, typical weekend evenings, pedestrian traffic along San Diego Avenue exceeds sidewalk capacity creating a congested pedestrian environment.



San Diego Avenue / Congress Street / Ampudia Street Intersection – This is currently a five legged intersection in which three of the approaches are stop-controlled (SB San Diego Avenue and EB & WB Ampudia Street) and the other two (NB San Diego Avenue and SB Congress Street) are free movements. There is also high vehicular traffic volumes crossing through the intersection along San Diego Avenue and Congress Street, which have no crosswalk facilities. This intersection is confusing and intimidating for pedestrians to cross due to the lack of traffic controls, high traffic volumes and missing crosswalk facilities.

The pedestrian related issues/needs within the Old Town Community, identified above, are displayed in Figure 4-1.

4.2.2 Pedestrian Improvements

Intersections

All crossing points at intersections should be upgraded to include the following:

- ADA compliant pedestrian ramps
- High visibility continental crosswalks
- Advanced stop bar placement

Sidewalks

- Complete the sidewalks on the east side of San Diego Avenue, just north of Ampudia Street

Other Improvements

City of San Diego Pedestrian Master Plan (PMP) – This plan proposed pedestrian improvement concepts at specific locations where pedestrian and automobile conflicts are anticipated to be the highest.

Old Town Community - PMP-Phase 4

Phase 4 of the PMP provides a series of pedestrian related improvement recommendations within the Old Town Community. Table 4.1 lists each of the identified improvement locations within the Old Town Community and the corresponding pedestrian improvement concepts.

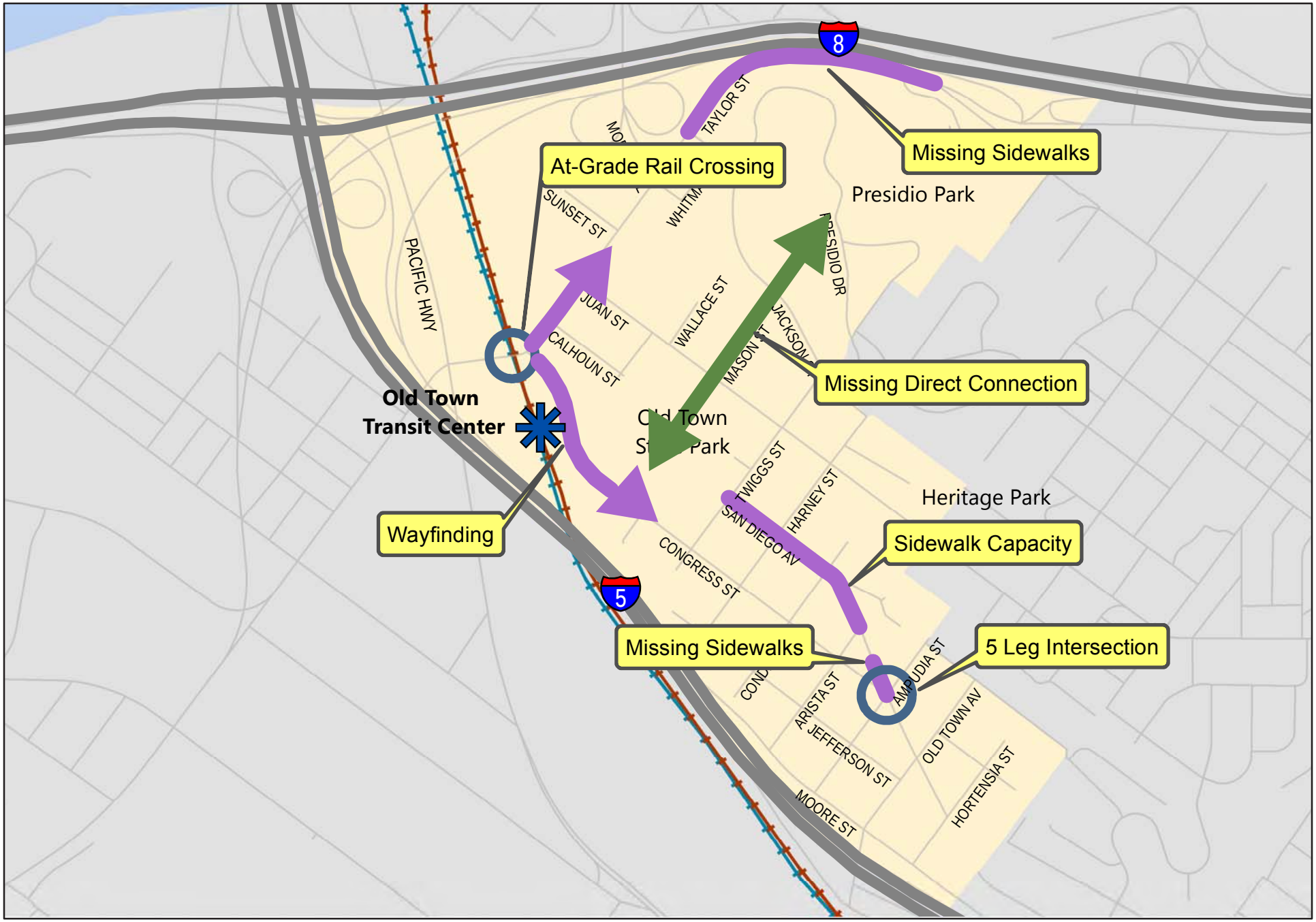


Figure 4-1
Identified Pedestrian Issues and Needs
Old Town Community

Table 4.1 Pedestrian Improvements Recommended in Pedestrian Master Plan (Phase 4) – Old Town Community

Improvement Area	Recommendations
OT-1 Presidio Park Connectivity Improvements	Improve pedestrian walkability from Taylor Street and to the Presidio Park.
OT-2 Taylor Street Safety Improvements	Improve safety on Taylor Street at locations where multi-modal interactions occur to reduce conflicts.
OT-3 Congress Street / San Diego Avenue Merge Intersection	Evaluate feasibility of modifying geometry and traffic control to reduce pedestrian crossing distances.
OT-4 Congress Street Access Improvements	Implement missing sidewalks and evaluate feasibility of adding marked crosswalks to channelized pedestrian crossing.
OT-5 Twiggs Street Intersection Improvements	Modify intersection to provide increased visibility and priority to pedestrians.
OT-6 Juan Street Sidewalk Improvement	Implement recommended improvements included in the Juan Street Rehabilitation Project. In addition, the sidewalks should be widened whenever possible and new marked crossings should be implemented. [Note: Widened sidewalks were not implemented by the Juan Street Rehabilitation Project due to community concerns about loss of visitor parking.]
OT-7 San Diego Avenue Access Improvements	Conduct feasibility study to reconfigure intersection to reduce crossing distance and increase sidewalk capacity near San Diego Avenue/Conde Street.
OT-8 Mason Street Sidewalk Improvement	Implement sidewalk on east side of Mason Street.
OT-9 Jackson Street Sidewalk Improvements (Mason Street to Presidio Drive)	Implement connectivity improvements to link Presidio Drive and Old Town parks.

Source: City of San Diego Pedestrian Master Plan – Phase 4 (2013)

Public Facilities Financing Plans – The adopted Public Facilities Financing Plan for the Old Town Community currently contains planned pedestrian improvements that have not yet been completed.

- Install / upgrade 20 curb ramps to meet ADA standards (Project T12) – These improvements are currently not scheduled or funded.

Wayfinding Signage Program – The Old Town Chamber of Commerce is currently developing a wayfinding signage program in the Old Town Community. The wayfinding signage program will standardize and brand the various wayfinding signs currently within the community and highlight paths and links for pedestrians to access the various parks and attractions within the community.

Other Improvements

Several pedestrian facility projects have been identified by the City of San Diego and are included on their Unfunded Transportation Needs List (8/5/2014). A list of the pedestrian improvements located in the Old Town Community are included in Appendix B. It should be noted that this list is updated on a regular basis and Appendix B only reflects a snapshot of the needs and planned improvements throughout the community at the time when this report was prepared.

4.3 Street and Freeway System

4.3.1 Identified Street and Freeway Issues and Needs

Taylor Street – Taylor Street provides connections to three major regional roadway facilities. To the east, Taylor Street provides a connection to I-8 and the regional freeway system. To the west, Taylor Street connects with both Rosecrans Street (which connects to communities to the west), and to Pacific Highway (which connects to communities to the north and the south). Taylor Street accommodates a high volume of both regional and local traffic. There are currently two identified roadway related issues along Taylor Street, as described below:

- *At-Grade Rail Crossing* – Currently the BNSF and MTS trolley right-of-way crosses Taylor Street at-grade between Pacific Highway and Congress Street. Gate down times at this crossing typically last between 30 seconds to 3 minutes, depending on the number of vehicles and train cars. During these gate down times, all other modes of transportation must stop, causing impacts to traffic operations at the adjacent intersections. Train crossings at this location typically cause additional intersection delay, queuing and congestion.

- *Taylor Street between Presidio Drive and I-8 Ramps* – Taylor Street east of Presidio Drive reduces from four-lanes to two, with narrow lane widths (10 feet). Traffic volumes along this segment are high (13,140 ADT) since it leads to an I-8 interchange, and far exceeds the roadway LOS D maximum capacity of 9,000 ADT. The narrow lane widths and high traffic volumes result in congestion along this segment in the eastbound direction accessing the freeway ramps during the PM peak hour.

San Diego Avenue between Ampudia Street and Old Town Avenue – This segment of San Diego Avenue connects the commercial uses along both Congress Street and San Diego Avenue to the I-5 interchange located at Old Town Avenue. This segment of San Diego Avenue is currently a two-lane roadway with an average daily traffic volume of 10,160, which far exceeds the roadway LOS D maximum capacity of 6,500 ADT. This results in reduced speeds and congestion in the northbound direction during both the AM and PM peak hours.

*Old Town Avenue between Moore Street and San Diego Aven*ue – Old Town Avenue provides a regional connection point between the community and I-5. This segment of Old Town Avenue is currently two-lanes with an ADT of 11,750, which far exceeds the roadway LOS D maximum capacity of 6,500 ADT. This results in reduced speeds and congestion in the northbound direction during the PM peak hour.

The identified roadway issues and needs within the Old Town Community are displayed in Figure 4-2.

4.3.2 Street and Freeway Improvements

Roadway/Intersection

Due to the historic nature of the community, no new auto improvements are proposed.

Freeway

There are no freeway improvements included in the Revenue Constrained alternative of *SANDAG's San Diego Forward, The Regional Plan (Adopted October 2015)* to be completed before this plan's Horizon Year (Year 2035). However, SANDAG is currently developing a corridor improvement plan for the I-8 corridor between Ocean Beach and Mission Valley. The current Draft version of this plan does contain improvements to the I-8 / Morena Boulevard interchange. Since the plan has not yet been adopted and the improvements are not anticipated to be implemented until Year 2050, no improvements were assumed under preferred plan conditions.

Other

Old Town Public Facilities Financing Plan, 2004 – This plan identifies the widening of Presidio Drive to allow for a right-turn lane on Taylor Street (Project T10). This improvement is unfunded and is not currently scheduled for implementation.

4.4 Public Transit Service and Facilities

4.4.1 Identified Transit Issues and Needs

The Old Town Community is served by 10 bus routes, two trolley lines, and a commuter rail service, which all serve the Old Town Transit Center. Figure 4-3 displays the community's streets served by bus routes as well as the existing Trolley Lines. This figure also shows the area within 1/2 mile of the Old Town Transit Center, which is considered a reasonable walking distance to a major transit center (as compared to a ¼ mile for bus stops). As depicted in this figure, nearly all of the commercial and recreational uses are within 1/2 mile of transit service.

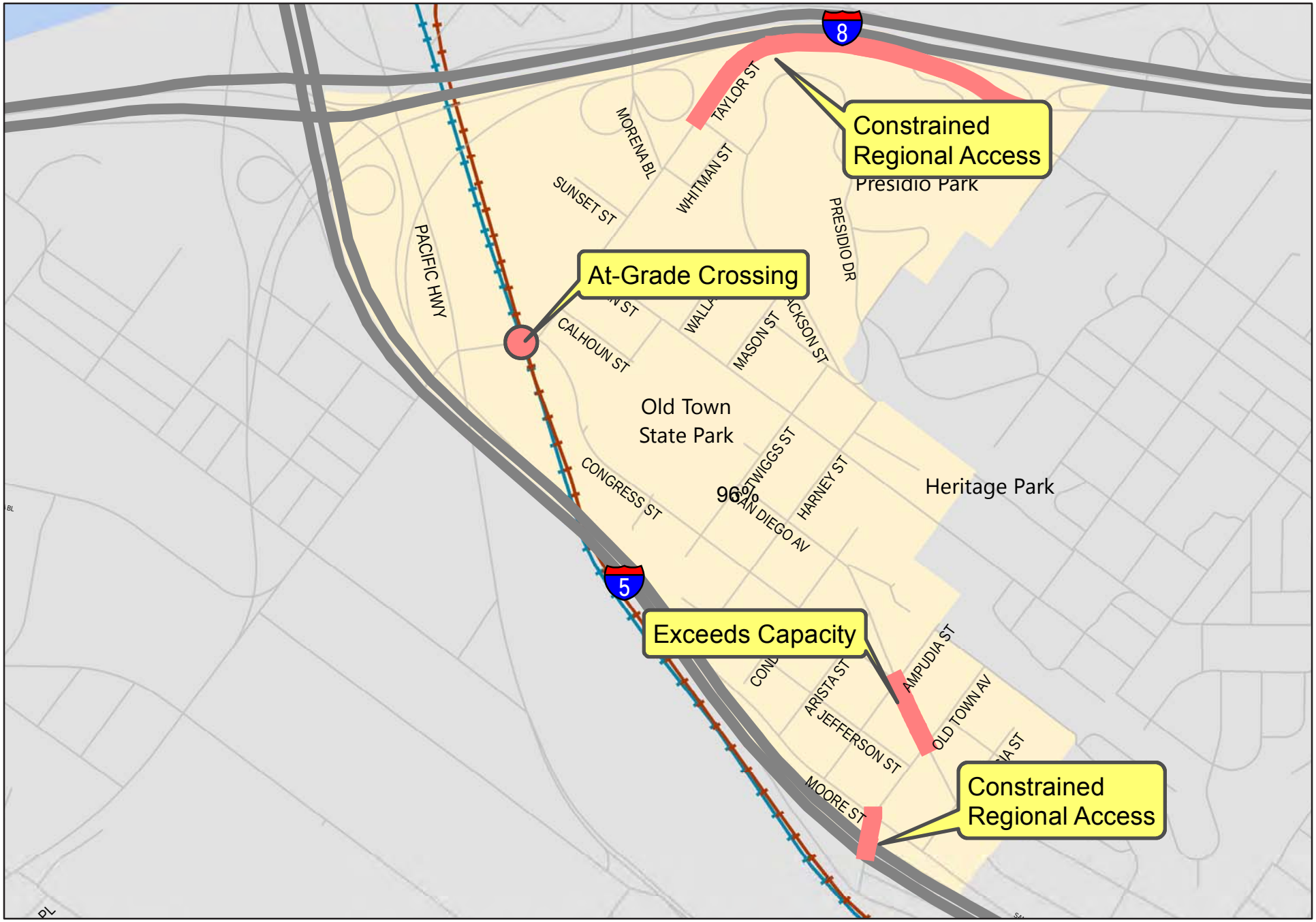


Figure 4-2
Identified Street and Freeway Related Issues and Needs
Old Town Community

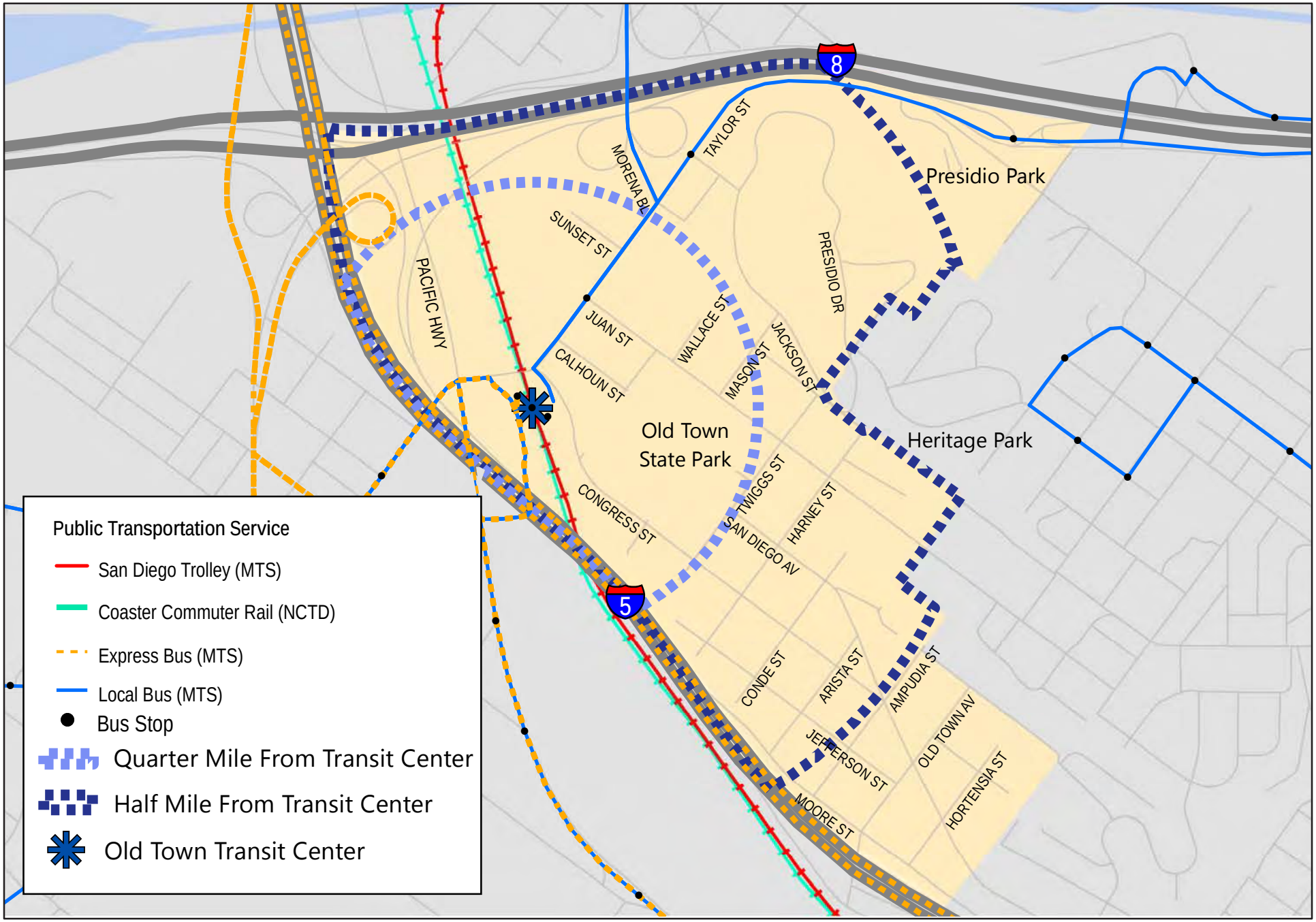


Figure 4-3
Transit Coverage
Old Town Community

4.4.2 Transit Improvements

SANDAG's *San Diego Forward, The Regional Plan* (Adopted October 2015), indicates that a number of transit improvements are planned for the Old Town Community, prior to this plan's Year 2035 Horizon Year, as described below.

COASTER – By the Year 2020, the frequency of the COASTER will be increased to every 20 minutes during peak periods and every 120 minutes during off-peak periods. The COASTER provides a commuter rail connection between the Old Town Transit Center and North County communities including Solana Beach, Encinitas and Oceanside.

COASTER – by the Year 2020, the COASTER line will be extended to the south and include stations at both Petco Park and the Convention Center.

Mid-Coast Trolley Line – The Mid-Coast Trolley will extend service from Santa Fe Depot in Downtown San Diego to the University City community, serving major activity centers such as Old Town, the University of California, San Diego (UCSD), and Westfield UTC. Construction of the Mid-Coast Trolley line is anticipated to be completed by the Year 2021.

Rapid Bus Route 28 – By the Year 2035, a new rapid bus route will be implemented providing service between Point Loma and Kearny Mesa via the Old Town Transit Center.

Rapid Bus Route 30 – By the Year 2035, a new rapid bus route will be implemented providing service between the Old Town Transit Center and Sorrento Mesa via Pacific Beach, La Jolla and UTC.

Rapid Bus Routes 640A – By the Year 2035, a new rapid bus route will be implemented providing service along I-5 between San Ysidro and the Old Town Transit Center, via City College downtown.

4.5 Cycling Environment

4.5.1 Identified Bicycle Issues and Needs

The following cycling related issues and needs were identified in the Existing Conditions Report:

Taylor Street – As mentioned previously, the Taylor Street corridor provides a significant regional east/west connection for vehicles as well as for cyclists. Taylor Street is currently classified as a Class III Bike Route within the Old Town Community; however, east of Presidio Drive, Taylor Street narrows to a two-lane roadway with narrow lane widths (10 feet) and no shoulders. Taylor Street is also a regional vehicular access point for the Old Town Community connecting the I-8 / Taylor Street interchange and Pacific Highway. The narrow lane widths, high vehicular traffic volumes and speeds along Taylor Street, east of Presidio Drive, create an uncomfortable environment for cyclists.

Congress Street / San Diego Avenue – Congress Street and San Diego Avenue (south of Ampudia Street) provide one of the few north/south connections for cyclists within the Old Town Community. Congress Street and San Diego Avenue (south of Ampudia Street) is currently classified as a Class III Bike Route designated by sharrow markings. Congress Street's proximity to the Old Town Transit Center and retail and restaurant uses make it a highly attractive route for cyclists. Both corridors currently have high traffic volumes, and on-street parking on both sides of the roadway which create an uncomfortable environment for cyclists.

The bicycle related issues/needs within the Old Town Community, identified above, are displayed in Figure 4-4.

Other Improvements

Old Town Public Facilities Financing Plan, 2004 – Identifies the widening of Presidio Drive to allow for a right-turn lane on Taylor Street (Project T10). This improvement is unfunded and is not currently scheduled for implementation.

Several roadway facility projects have been identified by the City of San Diego and are included on their Unfunded Transportation Needs List (8/5/2014). A list of the roadway related improvements located in the Old Town Community are included in Appendix B. It should be noted that this list is updated on a regular basis and Appendix B only reflects a snapshot of the needs and planned improvements throughout the community at the time when this report was prepared.

4.5.2 Bicycle Improvements

The Preferred Plan proposes implementing the following bicycle facilities within the Old Town Community:

- Complete the Class II Bike Lanes in both directions along Taylor Street between Rosecrans Street and the community boundary.

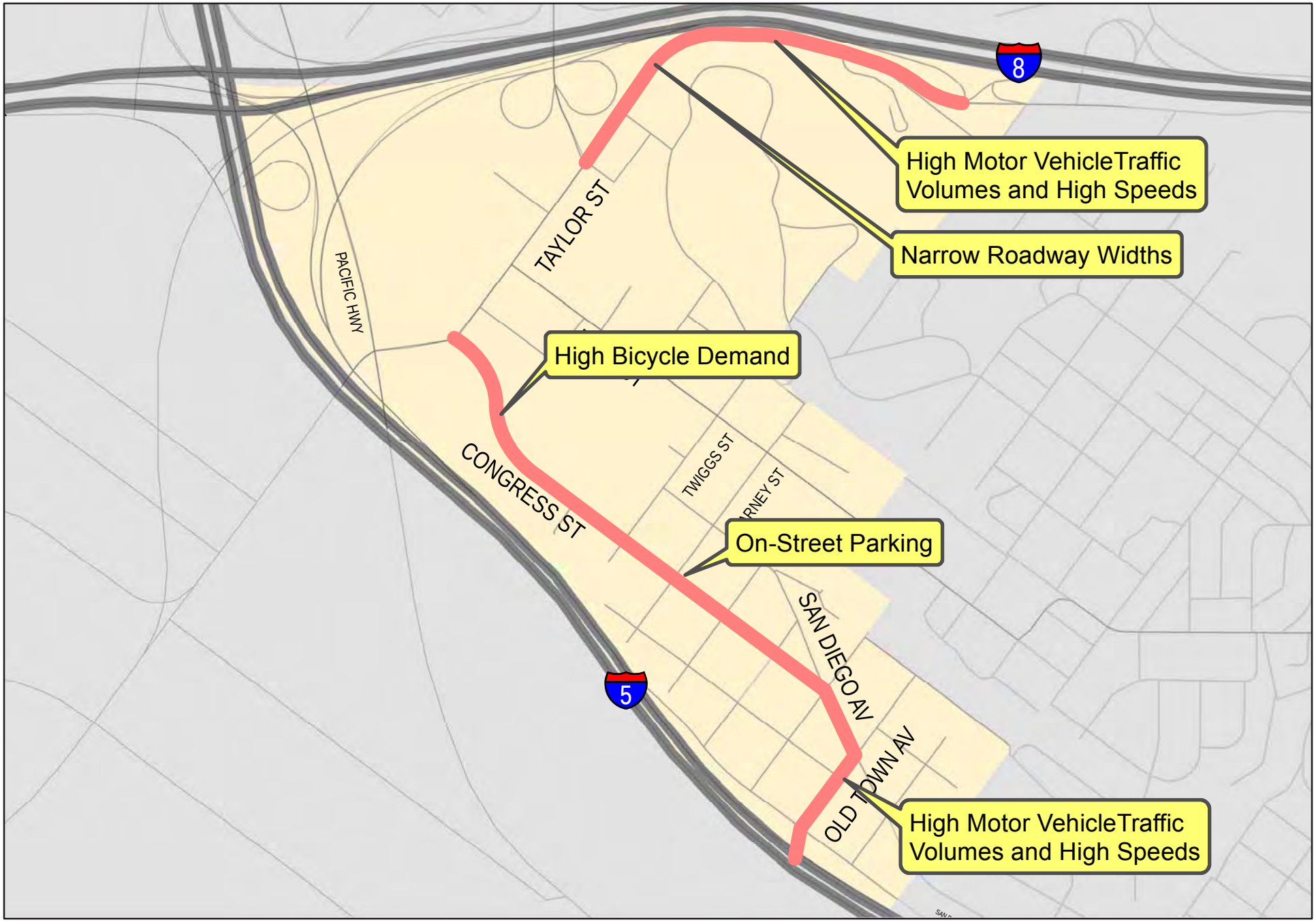


Figure 4-4
Bicycle Network Issues and Needs
Old Town Community

5.0 Modeling and Forecasting

This chapter summarizes the future year travel demand model forecasting process utilized to project the future travel patterns within the Midway-Pacific Highway and Old Town communities, under buildout conditions. Future year traffic volumes were derived from a SANDAG Series 12 Transportation Forecast model run, which was verified per the City of San Diego's Small Study Area Traffic Modeling Process (April 2012) and calibrated for the Midway-Pacific Highway and Old Town communities.

5.1 Base Year Model Calibration

The base year model calibration process included verification and validation of base year model inputs (land uses and roadway network), as well as additional adjustments to the base year model (roadway speeds, centroid loadings, etc.) to calibrate the model to better represent existing travel patterns within the Midway-Pacific Highway and Old Town communities. Detailed descriptions of each validation step are provided in the following sections.

5.1.1 Base Year Land Use Verification/Validation

Existing land use data, as listed below, was collected for the Midway-Pacific Highway and Old Town communities and verified/adjusted in the Base Year model to correctly match actual conditions:

- Descriptions (land use type and code)
- Proper measurement unit types (square feet, units, acres)
- Quantity
- Vehicular trip generation rates

Land use types, descriptions and quantities were crosschecked with ground conditions using Google Earth imagery, as well as field verification, as necessary. Trip generation rates for individual land uses were coded based on the driveway rates provided in the *City of San Diego Land Development Code – Trip Generation Manual* (May, 2003). Base year land use inputs for the project study area are provided in Appendix D.

5.1.2 Base Year Roadway Network Verification/Validation

The SANDAG Series 12 Base Year roadway network was compared to actual conditions to ensure an accurate model network. The following variables were compared and adjusted to match actual conditions:

- TAZ loading points
- Number of lanes for roadways
- Traffic controls
- Signalized intersection geometrics
- Street classification
- Roadway speed limits

5.1.3 Base Year Ground Count Validation & Adjustment

Historical ADT volumes over the past 11 years were compiled from the City of San Diego's Traffic Count Database and other recent studies for major roadway segments throughout the Midway-Pacific Highway and Old Town communities. The most recent historic counts along with counts from the past five (5) years were selected to establish a Base Year ground count database. This database included multiple counts from the same location on numerous segments, as well as the counts already included in the model. The final count was selected based upon nearby trip generators and traffic patterns along each roadway segment. Abnormally high or low traffic volumes were assumed to be outliers, and thus were not selected as model inputs.

5.1.4 Model Sensitivity Adjustment

Model calibration was performed by running a Base Year model estimate and comparing the results to the selected ground counts discussed above. Roadway segments that did not meet the model calibration targets established by the City of San Diego were identified for additional adjustments. These adjustments included the relocation of TAZ connectors and centroids, TAZ splitting, adjustments of roadway speed (to represent congestion), and in rare cases, ground count adjustments using historic counts older than three years.

5.2 Future Year Traffic Forecast Volume

The Future Year model was developed by inputting the future year land uses and roadway network into the calibrated Base Year model, described in the previous sections, with the following adjustments/assumptions:

- Buildout of the Preferred Plan land uses within the project study area (land use assumptions are provided in Appendix D).
- Existing roadway network within the study are with the following improvement projects:
  - Kemper Street extension between Sports Arena Drive and Kurtz Street
  - Implementation of Charles Lindbergh Parkway between Sports Arena Boulevard and Midway Drive
- Year 2035 land uses outside of the study area
- Year 2035 roadway/transit network outside of the study area
- Year 2035 transit network both inside and outside of the study area

The model inputs described above were reviewed and approved by City staff prior to running the model forecasts.

Table 5-1 provides a comparison of the preferred land uses for both the Base Year and Preferred Plan scenarios.

Table 5.1 Existing Conditions and Preferred Plan Land Use Comparison

Land Use	Base Year	Preferred Plan	Δ
Active Park		3.2 acre	
Auto Tire Store		4.5 ksf	
Bar (Night And Day)		8.4 ksf	
Church No Day Care		21.5 ksf	
Clinic / Medical Office		339.1 ksf	
Communication Or Utility		3.3 acre	
Community Shop Center		934.4 ksf	
Drug Store		14.4 ksf	
Elementary School		289 other	
Fast Food No Drive thru		20.7 ksf	
Financial Institution		12.6 ksf	
Fire Or Police Station		8.0 ksf	
Golf Course		8.7 acre	
Gov't Office (High Density)		244.6 ksf	
Hotel (Low-Rise) (Motel)		1497 rooms	
Inactive Use		46.6 acre	
Industrial Park		53.5 ksf	
Junior College		300 other	
Light Industry-General		100.1 ksf	
Medical Office		44.5 ksf	
Multi-Family (High Density)		3703 du	
Multi-Family (Low Density)		468 du	
Nursing Home		296 other	
Office		841.6 ksf	
Parking		1.5 acre	
Public Storage		413 ksf	
Restaurant Hi Turnover		9.1 ksf	
Restaurant Quality		9.5 ksf	
Service Station Food Mart		24 other	
Single Family		46 du	
Stadium Or Arena		33.2 acre	
Street front Commercial		1174.5 ksf	
Tourist Attraction		0 unique	
Tourist Commercial		79.0 ksf	
Warehousing		63.4 ksf	

For comparison purposes, as well as to verify land use growth assumptions within the Midway-Pacific Highway and Old Town communities, manual trip generation calculations by TAZ were conducted for both the Base Year land uses and the Preferred Plan buildout land uses. The vehicular trip generation growth within the Midway-Pacific Highway and Old Town communities are displayed in Figure 5-1. Additionally, a TAZ comparison of the vehicular trip generation for Base Year vs Preferred Plan conditions is provided in Appendix D.

Figure 5-1 Projected Trip Generation Growth by TAZ

As shown in Figure 5-1 and Appendix D, the majority of the TAZs within the Midway-Pacific Highway and Old Town communities XXX

Final SANDAG Series 12 Future Year Forecast Model results are provided in Appendix D. Figure 5-2 shows the final projected average daily traffic volumes that were used to develop and analyze the Preferred Plan mobility network, as described in the next chapter.

5.2.1 Vehicle Miles Traveled

The vehicle miles traveled (VMT) generated within the community was estimated using the SANDAG Series 12 Preferred Plan Future Year 2035 and Base Year models. VMT is the total number of miles driven by all vehicle trips within the Midway-Pacific Highway and Old Town communities, including trips to, from, and within the community. Table 5-2 displays the total VMT generated within the communities and the average trip length under both the Preferred Plan and Base Year conditions. VMT calculations are provided in Appendix D.

Table 5.2 Vehicle Miles Traveled (VMT) Comparison

Measure	Community Planning Area				San Diego Region			
	Base Year	Buildout	Δ in Value	Δ in %	Base Year	Year 2035	Δ in Value	Δ in %
Total VMT (miles)		XXX			85,331,631	108,419,301	23,087,670	27.1%
Total # of Auto Trips		236,790			16,458,692	20,183,171	3,724,479	22.6%
Average Trip Length[1] (miles)					5.18	5.37	0.19	3.6%
Population					3,130,717	4,035,834	905,117	28.9%
Daily VMT by Population (miles)					27.30	26.90	-0.40	-1.5%

Note:
1. Average trip length is estimated by dividing the total VMT by the total # of auto trips.

As shown, xx

5.2.2 Community Mode Choice

The Mode Choice Model used in the SANDAG Series 12 Transportation Forecast is not sensitive to changes in bicycle and pedestrian facilities. In other words, the model does not accurately adjust travel behaviors in response to implementation of multimodal facilities such as bicycle lanes or separated multi-use paths. Due to these constraints, the SANDAG Series 12 Model was not utilized to project the demands of future year non-motorized travel.

SANDAG is currently in the process of developing an Activity Based Model (ABM) which will more accurately account for shifts in transportation modes based on the implementation of pedestrian and bicycle facilities. However, SANDAG modeling staff has indicated that this model is currently under development and will not be ready for public release until 2015.

6.0 Preferred Plan Analysis

6.1 Pedestrian Assessment and Results

This section presents an assessment of the pedestrian network under buildout of the Preferred Plan, which assumes the implementation of the pedestrian related improvements outlined in Sections 3.2.2 and 4.2.2. The assumed Pedestrian Route Typologies within both communities is displayed in Figure 6-1.

The proposed pedestrian network under Preferred Plan conditions was assessed using the methodologies described in Section 2.2.1. The pedestrian network connectivity, quality and overall adequacy (combining both quality and connectivity) are discussed below.

6.1.1 Pedestrian Network Connectivity

Figure 6-2 displays the pedestrian network connectivity to/from pedestrian attracting land uses (commercial, office and institutional uses) throughout both communities. This analysis calculates the percent of area accessible to pedestrians within a half mile walking distance from the respective land uses (connectivity ratio). A connectivity ratio of 50% or better is considered to be ideal.

Midway-Pacific Highway Community

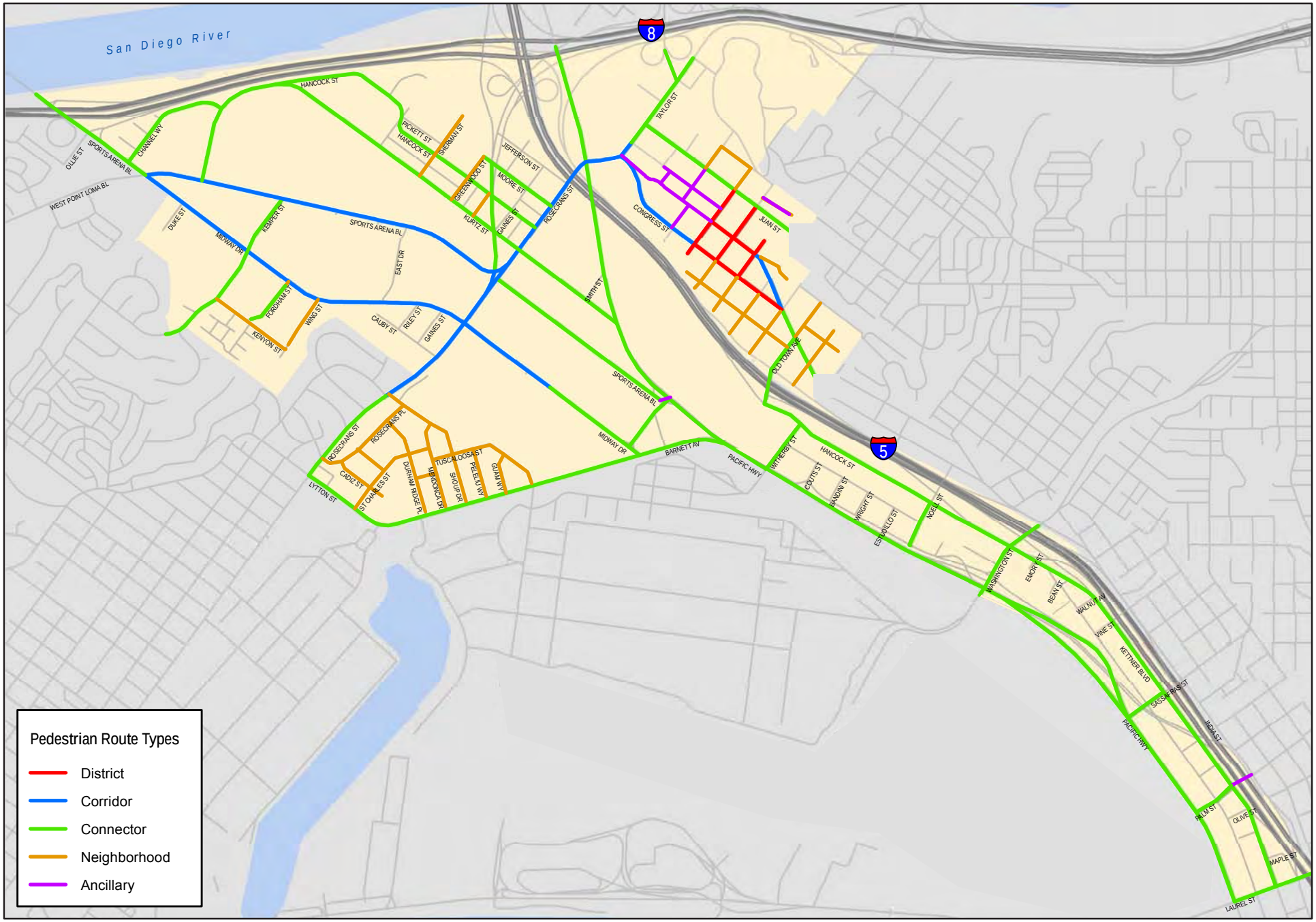
As shown in the figure, pedestrian connectivity is at ideal levels (50%+ connectivity ratio) within the center of the community (north of Rosecrans Street between Camino Del Rio West and Kurtz Street. This is primarily due to the dense grid network present in this area.

Old Town Community

As shown in the figure, the Old Town Community generally has a good connectivity ratio between 40-50%, which is highest in the tourist areas around the Historic State Park and Transit Center Area, and gets lower toward the outskirts of the community. The lower connectivity ratio on the outskirts of the community is primarily due to the barriers crated by the I-5 and I-8 freeways where pedestrian crossings are constrained.

6.1.2 Pedestrian Network Quality

Figure 6-3 and Tables 6.1A and 6.1B display the PEQE analysis results for roadways segments and intersections, along the major pedestrian corridors within the community. PEQE calculation worksheets are provided in Appendix E.



Midway-Pacific Highway and
Old Town Community Plan Update
CHEN RYAN

Figure 6-1
Pedestrian Route Typologies
Preferred Plan Conditions

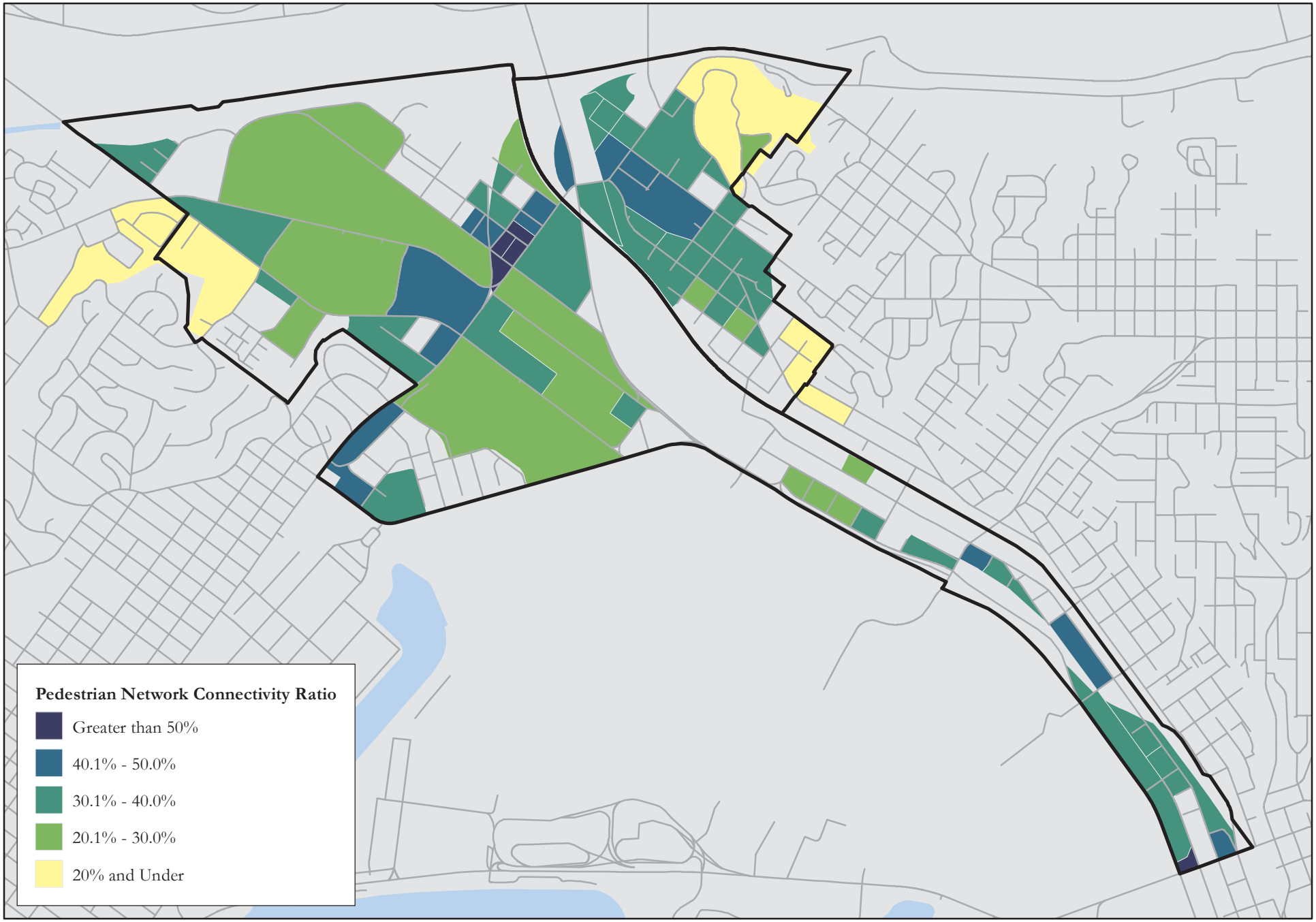
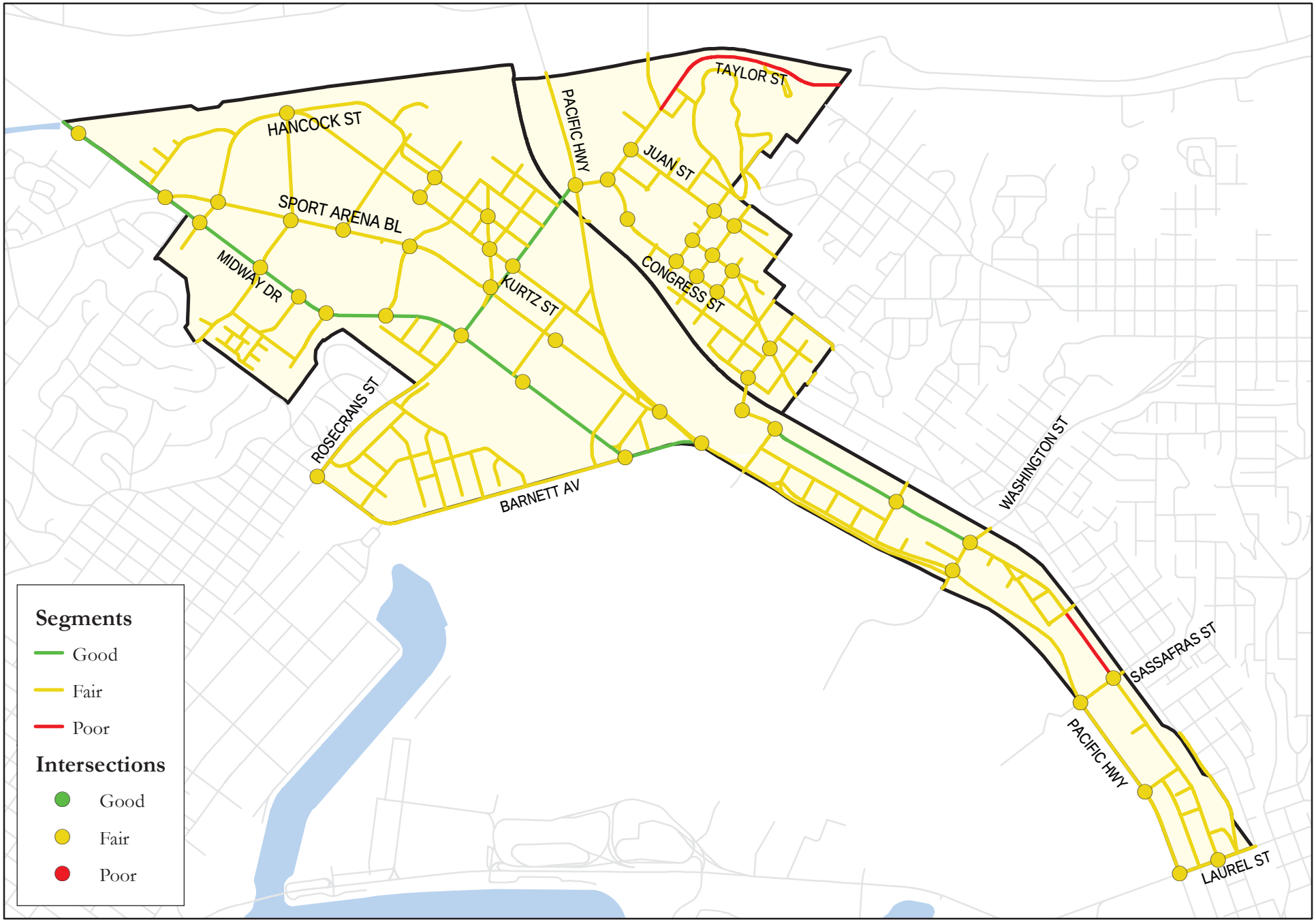


Figure 6-2
Pedestrian Network Connectivity
Preferred Plan Conditions



Midway-Pacific Highway and
Old Town Community Plan Update
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Figure 6-3
PEQE Scoring
Preferred Plan Conditions

Table 6.1A PEQE Results: Roadway Segments

Roadway	To	From	Northside/ Eastside		Southside/ Westside		Total	
			Score	Grade	Score	Grade	Score	Grade
North-South								
Midway/Pacific Highway Corridor								
Lytton Street/ Barnett Avenue	Rosecrans St	Midway Dr	4	Fair	4	Fair	8	Fair
	Midway Dr	Pacific Hwy	7	Good	7	Good	14	Good
W. Mission Bay Dr	I-8 WB Ramps	I-8 EB Ramps	4	Fair	4	Fair	8	Fair
Midway Dr	W. Point Loma Blvd/Sports Arena Blvd	Kemper St	7	Good	7	Good	14	Good
	Kemper St	East Dr	7	Good	7	Good	14	Good
	East Dr	Rosecrans St	7	Good	7	Good	14	Good
	Rosecrans St	Barnett Ave	7	Good	7	Good	14	Good
Sports Arena Blvd	I-8 EB Ramps	W. Point Loma Blvd/Sports Arena Blvd	6	Fair	7	Good	13	Good
	W. Point Loma Blvd/Midway Dr	Kemper St	5	Fair	5	Fair	10	Fair
	Kemper St	East Dr	5	Fair	5	Fair	10	Fair
	East Dr	Rosecrans St	5	Fair	5	Fair	10	Fair
	Rosecrans St	Pacific Hwy	6	Fair	5	Fair	11	Fair
Kurtz St	Hancock St	Rosecrans St	6	Fair	6	Fair	12	Fair
	Rosecrans St	Pacific Hwy	4	Fair	4	Fair	8	Fair
Hancock St	Sports Arena Blvd	Kurtz St	**3**	**Poor**	6	Fair	9	Fair
	Kurtz St	Camino Del Rio West	4	Fair	6	Fair	10	Fair
	Camino Del Rio West	Rosecrans St	5	Fair	5	Fair	10	Fair
	Old Town Ave	Witherby St	4	Fair	4	Fair	8	Fair
	Witherby St	Washington St	6	Fair	7	Good	13	Good
Kettner Blvd	Washington St	Vine St	**3**	**Poor**	5	Fair	8	Fair
	Vine St	Sassafras St	4	Fair	2	Poor	**6**	**Poor**
	Sassafras St	Laurel St	5	Fair	5	Fair	10	Fair
Pacific Hwy	Sea World Dr	Taylor St	5	Fair	5	Fair	10	Fair
	Taylor St	Kurtz St	6	Fair	6	Fair	12	Fair
	Kurtz St	Sports Arena Blvd	6	Fair	6	Fair	12	Fair
	Sports Arena Blvd	Barnett Ave	6	Fair	6	Fair	12	Fair
	Barnett Ave	Harney Washington St	6	Fair	6	Fair	12	Fair
	Washington St	Sassafras St	6	Fair	6	Fair	12	Fair
	Sassafras St	Laurel St	6	Fair	6	Fair	12	Fair
Old Town								
Congress St	Taylor St	Twiggs St	6	Fair	6	Fair	12	Fair
	Twiggs St	Harney St	6	Fair	6	Fair	12	Fair
	Harney St	San Diego Ave/Ampudia St	6	Fair	6	Fair	12	Fair
San Diego Ave	Twiggs St	Harney St	6	Fair	6	Fair	12	Fair
	Harney St	Ampudia St	6	Fair	6	Fair	12	Fair

Table 6.1A PEQE Results: Roadway Segments

Roadway	To	From	Northside/ Eastside		Southside/ Westside		Total	
			Score	Grade	Score	Grade	Score	Grade
	Ampudia St	Old Town Ave	6	Fair	6	Fair	12	Fair
	Old Town Ave	Hortensia St	6	Fair	6	Fair	12	Fair
Juan St	Taylor St	Twiggs St	6	Fair	6	Fair	12	Fair
	Twiggs St	Harney St	6	Fair	6	Fair	12	Fair
	Harney St	San Juan Rd	6	Fair	6	Fair	12	Fair
East-West								
Midway/Pacific Highway Corridor								
Channel Wy	W. Mission Bay Dr	Hancock St	6	Fair	6	Fair	12	Fair
Kemper St	Kenyon St	Midway Dr	6	Fair	5	Fair	11	Fair
	Midway Dr	Sports Arena Blvd	6	Fair	6	Fair	12	Fair
Camino Del Rio West	Rosecrans St	I-5/I-8 Ramps	4	Fair	4	Fair	8	Fair
Rosecrans St	Lytton St	Midway Dr	6	Fair	6	Fair	12	Fair
	Midway Dr	Sports Arena Blvd	7	Good	7	Good	14	Good
	Sports Arena Blvd	Pacific Hwy/Taylor St	7	Good	7	Good	14	Good
Washington St	Frontage Rd	Pacific St	5	Fair	5	Fair	10	Fair
	Pacific St	Hancock St	6	Fair	5	Fair	11	Fair
Vine St	California St	Kettner Blvd	7	Good	5	Fair	12	Fair
Sassafras St	Pacific Hwy	Kettner Blvd	5	Fair	5	Fair	10	Fair
Laurel St	Pacific Hwy	Kettner Blvd	5	Fair	5	Fair	10	Fair
Old Town								
Taylor St	Pacific Hwy/ Rosecrans St	Congress St	4	Fair	4	Fair	8	Fair
	Congress St	Juan St	4	Fair	4	Fair	8	Fair
	Juan St	Morena Blvd	4	Fair	4	Fair	8	Fair
	Morena Blvd	I-8 EB Ramps	**1**	**Poor**	**1**	**Poor**	**2**	**Poor**
Twiggs St	Congress St	San Diego Ave	5	Fair	5	Fair	10	Fair
	San Diego Ave	Juan St	6	Fair	6	Fair	12	Fair
Harney St	Congress St	San Diego Ave	6	Fair	6	Fair	12	Fair
	San Diego Ave	Juan St	6	Fair	5	Fair	11	Fair
Old Town Ave	Hancock St	Moore St	5	Fair	5	Fair	10	Fair
	Moore St	San Diego Ave	5	Fair	5	Fair	10	Fair

Source: Chen Ryan Associates (January 2016)

As shown, the pedestrian facilities along all major roadways within both communities have a Fair or Good grade under buildout of the Preferred Plan with the exception of the following:

Midway-Pacific Highway Community

Kettner Boulevard between Vine Street and Sassafras Street – This segment has a poor score due to the lack of pedestrian facilities on the westside of the roadway (where there are no fronting

land uses) and high posted speed limit (40 mph). It should be noted that the eastside of the roadway, where the fronting land uses are located, has a fair grade.

Old Town

Taylor Street between Morena Boulevard and I-8 Ramps – This segment has a poor grade due to the lack of pedestrian facilities. However, it should be noted that there are no fronting land uses on either side of this segment, nor does this segment connect to any activity centers to the east of the community.

Table 6.1B PEQE Results: Intersections – Preferred Plan Conditions

#	Intersection	Score	Grade
Midway-Pacific Highway			
1	Lytton St and Rosecrans St	6	Fair
2	W Mission Bay Dr and I-8 WB Off-Ramp	6	Fair
3	W Mission Bay Dr and Channel Way	5	Fair
4	Midway Dr and Sports Arena/W Point Loma Blvd	6	Fair
5	Midway Dr and Kemper St	6	Fair
6	Midway Dr and East Dr	6	Fair
7	Midway Dr and Rosecrans St	6	Fair
8	Midway Dr and Charles Lindbergh Pkwy	6	Fair
9	Midway Dr and Enterprise St	5	Fair
10	Midway Dr and Barnett Ave	6	Fair
11	Sports Arena Blvd and Hancock St	6	Fair
12	Sports Arena Blvd and Kemper St	6	Fair
13	Sports Arena Blvd and Sports Arena Driveway	6	Fair
14	Sports Arena Blvd and East Dr	6	Fair
15	Sports Arena Blvd and Rosecrans St	6	Fair
16	Sports Arena Blvd and Charles Lindbergh Pkwy	6	Fair
17	Sports Arena Blvd and Pacific Hwy	6	Fair
18	Kurtz St and Hancock St	5	Fair
19	Kurtz St and Camino Del Rio West	6	Fair
20	Kurtz St and Rosecrans St	6	Fair
21	Kurtz St and Pacific Hwy	6	Fair
22	Hancock St and Channel Wy	5	Fair
23	Hancock St and Camino Del Rio West	6	Fair
24	Hancock St and Rosecrans St	5	Fair
25	Hancock St and Old Town Ave	5	Fair
26	Hancock St and Witherby St	5	Fair
27	Hancock St and Washington St	6	Fair
28	Kettner Blvd and Vine St	5	Fair
29	Kettner Blvd and Sassafras St	6	Fair
30	Kettner Blvd and West Laurel St	6	Fair
31	Pacific Hwy and Barnett Ave	6	Fair

Table 6.1B PEQE Results: Intersections – Preferred Plan Conditions

#	Intersection	Score	Grade
32	Pacific Hwy and Washington St @ Frontage Rd	6	Fair
33	Pacific Hwy and Washington St @ Pacific St	6	Fair
34	Pacific Hwy and Sassafras St	6	Fair
35	Pacific Hwy and West Laurel St	6	Fair
Old Town			
36	Pacific Hwy and Taylor St	6	Fair
37	Moore St and Old Town Ave	6	Fair
38	Congress St and Taylor St	6	Fair
39	Congress St and Twiggs St	5	Fair
40	Congress St and Harney St	5	Fair
41	Congress St and San Diego Ave/Ampudia St	5	Fair
42	San Diego Ave and Twiggs St	5	Fair
43	San Diego Ave and Harney St	5	Fair
44	San Diego Ave and Old Town Ave	6	Fair
45	Juan St and Taylor St	4	Poor
46	Juan St and Twiggs St	5	Fair
47	Juan St and Harney St	5	Fair
48	Morena Blvd and Taylor St	6	Fair
New Intersections			
61	Kurtz St & Frontier St	5	Fair
63	Kurtz St & Charles Lindbergh Pkwy	6	Fair
64	Barnett Ave & Dutch Flats Pkwy	6	Fair
65	Midway Dr & Dutch Flats Pkwy	6	Fair
66	Dutch Flats Pkwy & Sports Arena Bl	6	Fair

Source: Chen Ryan Associates (January 2016)

As shown, all study intersections within both communities are projected to have a Fair grade under buildout of the Preferred Plan.

6.1.3 Pedestrian Quality Network Coverage

Figure 6-4 displays the Pedestrian Quality Network Coverage at all study intersections across both communities. This analysis calculates the ratio of the length of quality pedestrian network facilities (PEQE score Fair or Good) within a half-mile walk from an intersection, compared to the total network available (based on existing conditions).

As shown in the figure, under buildout of the Preferred Plan, the Pedestrian Quality Network Coverage increases to over 75% at all study intersections within both communities. The significant increase in coverage is primarily due to the new roadway links proposed under Preferred Plan conditions, as well as the trail improvements proposed in the North Bay Urban Greening Plan.

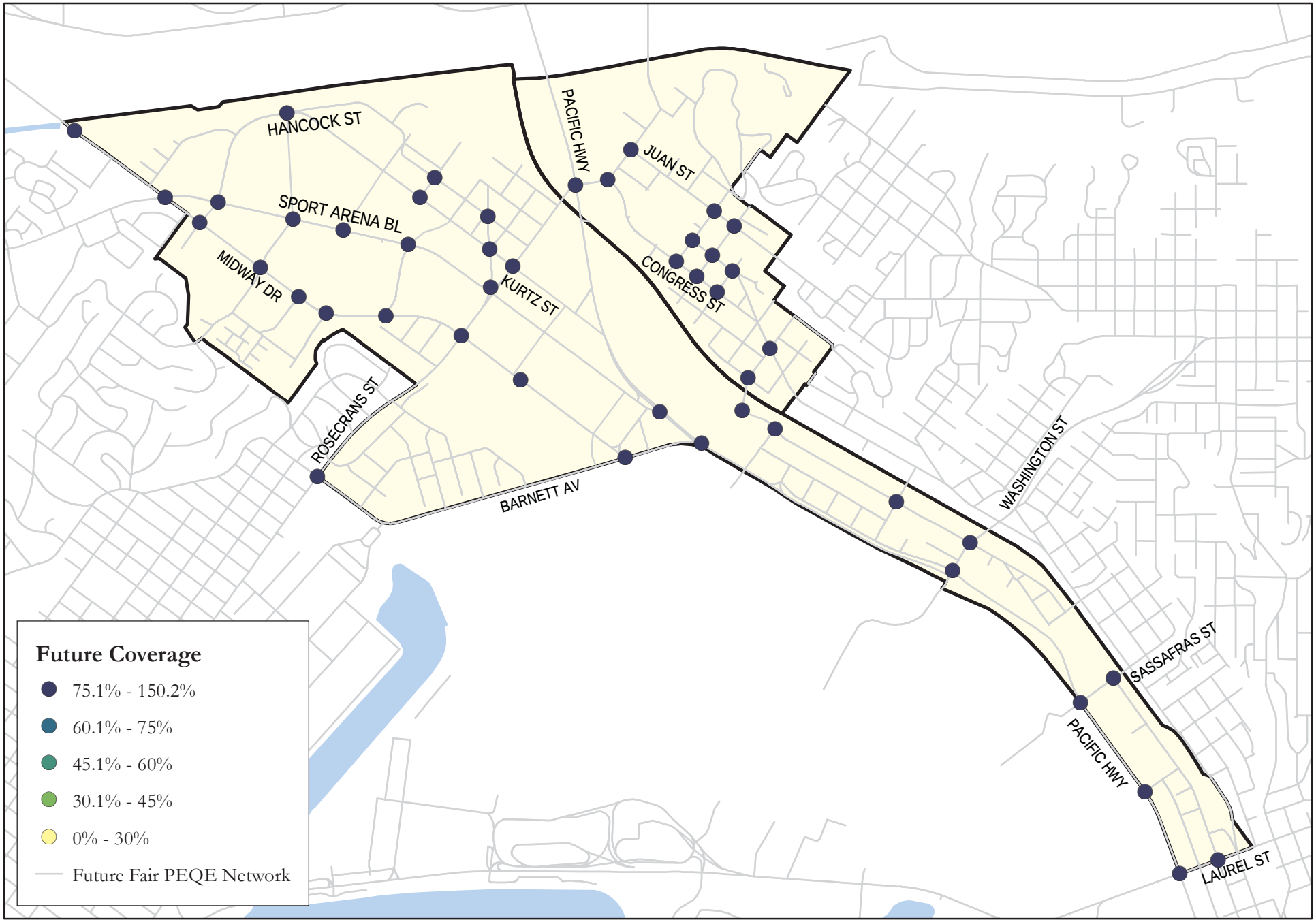


Figure 6-4
Pedestrian Quality Network Coverage
Preferred Plan Conditions

6.2 Street and Freeway System Assessment and Results

The following section provides a summary of vehicular analysis results along key study roadways, including the projected daily roadway LOS, and the peak hour intersection LOS analysis under buildout of the Preferred Plan.

6.2.1 Roadway Segment Analysis

This analysis assumes implementation of the roadway segment-related improvements outlined in Sections 3.3.2 and 4.3.2 under buildout of the Preferred Plan. The associated roadway classifications under buildout of the Preferred Plan, within both communities, is displayed in Figure 6-5.

Table 6.2 and Figure 6-6 display the projected ADT volume and associated roadway LOS under buildout of the Preferred Plan alternative. Section 5.2 describes the process used to develop projected ADT volume estimations.

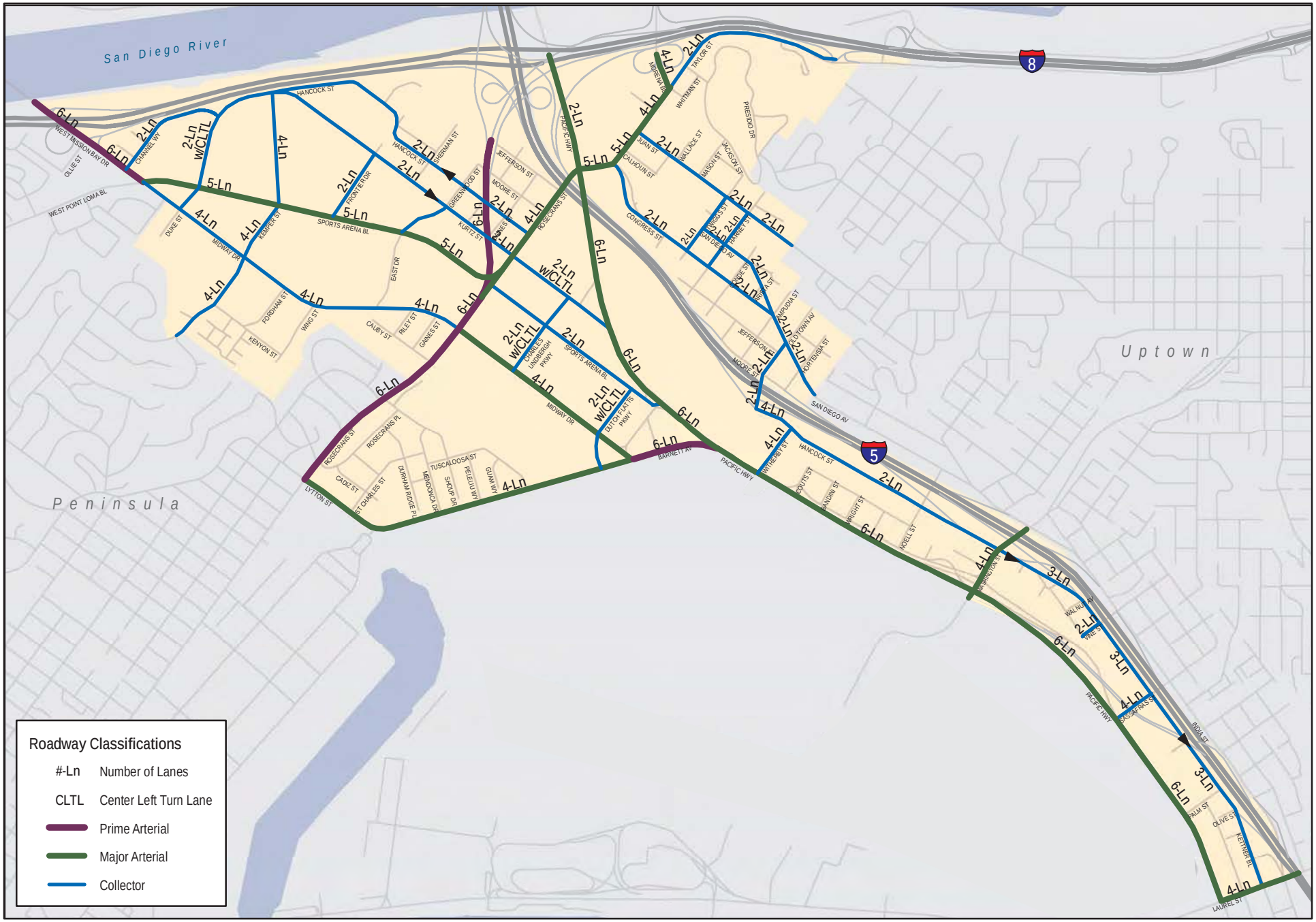
As shown, all Mobility Element roadways are projected to operate at LOS D or better under Preferred Plan conditions, with the exception of the following:

Midway-Pacific Highway Community

- Midway Drive, between West Point Loma Boulevard/Sports Arena Boulevard and Kemper Street (LOS E)
- Midway Drive, between East Drive and Rosecrans Street (LOS F)
- Midway Drive, between Rosecrans Street and Barnett Avenue (LOS F)
- Sports Arena Boulevard, between Rosecrans Street and Pacific Highway (LOS F)
- Kettner Boulevard, between Washington Street and Vine Street (LOS F)
- Kettner Boulevard, between Vine Street and Sassafras Street (LOS F)
- Kettner Boulevard, between Sassafras Street and Laurel Street (LOS F)
- Pacific Highway, between Barnett Avenue and Washington Street (LOS F)
- Camino Del Rio West, between Rosecrans Street and the I5/I-8 Ramps (LOS E)
- Rosecrans Street, between Midway Drive and Sports Arena Boulevard (LOS F)
- Barnett Avenue, between Midway Drive and Pacific Highway (LOS F)
- Sassafras Street, between Pacific Highway and Kettner Boulevard (LOS F)

Old Town Community

- San Diego Avenue, between Ampudia St and Old Town Avenue
- Taylor Street, between Morena Boulevard and I-8 Ramps
- Old Town Avenue, between Hancock Street and Moore Street
- Old Town Avenue, between Moore Street and San Diego Avenue
- Pacific Highway, between Sea World Drive and Taylor Street (LOS F)



Midway-Pacific Highway and
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Figure 6-5
Roadway Classification
Preferred Plan Conditions

Midway-Pacific Highway and
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Figure 6-6
Daily Roadway Segment Traffic Volumes and LOS
Preferred Plan Conditions

Table 6.2 Daily Roadway Segment Analysis - Preferred Plan Conditions

Roadway	From	To	Classification	Maximum Capacity at LOS E	ADT	V/C	LOS
North-South							
Midway Pacific Highway							
Lytton Street/ Barnett Avenue	Rosecrans St	Midway Dr	4- Lane Major Arterial	40,000	26,900	0.67	C
W. Mission Bay Dr	I-8 WB Ramps	I-8 EB Ramps	6-Lane Prime Arterial	60,000	46,400	0.77	C
Midway Dr	W. Point Loma Blvd/Sports Arena Blvd	Kemper St	4-Lane Secondary Arterial/Collector	30,000	25,300	0.84	**E**
	Kemper St	East Dr	4-Lane Secondary Arterial/Collector	30,000	21,900	0.73	D
	East Dr	Rosecrans St	4-Lane Secondary Arterial/Collector	30,000	30,000	1.00	**F**
	Rosecrans St	Barnett Ave	4-Lane Secondary Arterial/Collector	30,000	32,700	1.09	**F**
Sports Arena Blvd	I-8 EB Ramps	W. Point Loma Blvd	6-Lane Prime Arterial	60,000	39,700	0.66	C
	W. Poln t Loma Blvd/Midway Dr	Kemper St	5-Lane Major Arterial	45,000	18,600	0.41	B
	Kemper St	East Dr	5-Lane Major Arterial	45,000	26,200	0.58	C
	East Dr	Rosecrans St	5-Lane Major Arterial	45,000	27,200	0.60	C
	Rosecrans St	Pacific Hwy	2-Lane Collector	8,000	13,400	1.68	**F**
Kurtz St	Hancock St	Rosecrans St	2-Lane Major (One-Way')	15,000	6,800	0.45	B
	Rosecrans St	Pacific Hwy	2-Lane Collector (CLTL)	15,000	9,300	0.62	C
Hancock St	Midway Dr	Sports Arena Blvd	2-Lane Collector (CLTL)	15,000	6,600	0.44	B
	Sports Arena Blvd	Kurtz St	2-Lane Collector (CLTL)	15,000	4,200	0.28	A
	Kurtz St	Camino Del Rio West	2-Lane Major (One-Way')	15,000	7,400	0.49	C
	Camino Del Rio West	Rosecrans St	2-Lane Major	15,000	6,700	0.45	B

Table 6.2 Daily Roadway Segment Analysis - Preferred Plan Conditions

Roadway	From	To	Classification	Maximum Capacity at LOS E	ADT	V/C	LOS
			(One-Way')				
	Old Town Ave	Witherby St	4-Lane Collector	15,000	11,800	0.79	D
	Witherby St	Washington St	2-Lane Collector	8,000	4,300	0.54	C
Kettner Blvd	Washington St	Vine St	3-Lane Major (One-Way')	30,000	32,700	1.09	**F**
	Vine St	Sassafras St	3-Lane Major (One-Way')	30,000	32,400	1.08	**F**
	Sassafras St	Laurel St	3-Lane Major (One-Way')	30,000	32,700	1.09	**F**
Pacific Hwy	Sea World Dr	Taylor St	2-Lane Collector (no fronting property)	10,000	11,600	1.16	F
	Taylor St	Kurtz St	6-Lane Major Arterial	50,000	21,500	0.43	B
	Kurtz St	Sports Arena Blvd	6-Lane Major Arterial	50,000	29,700	0.59	C
	Sports Arena Blvd	Barnett Ave	6-Lane Major Arterial	50,000	19,100	0.38	A
	Barnett Ave	Washington St	6-Lane Major Arterial	50,000	67,100	1.34	F
	Washington St	Sassafras St	6-Lane Major Arterial	50,000	23,000	0.46	B
	Sassafras St	Laurel St	6-Lane Major Arterial	50,000	30,800	0.62	C
Old Town							
Congress St	Taylor St	Twiggs St	2-Lane Collector	8,000	6,400	0.80	D
	Twiggs St	Harney St	2-Lane Collector	8,000	5,600	0.70	D
	Harney St	San Diego Ave/ Ampudia St	2-Lane Collector	8,000	5,700	0.71	D
San Diego Ave	Twiggs St	Harney St	2-Lane Collector	8,000	4,400	0.55	C
	Conde St	Arista Ave	2-Lane Collector	8,000	4,400	0.55	C
	Ampudia St	Old Town Ave	2-Lane Collector	8,000	11,600	1.45	**F**

Table 6.2 Daily Roadway Segment Analysis - Preferred Plan Conditions

Roadway	From	To	Classification	Maximum Capacity at LOS E	ADT	V/C	LOS
	Old Town Ave	Hortensia St	2-Lane Collector	8,000	6,100	0.76	D
Juan St	Taylor St	Twiggs St	2-Lane Collector	8,000	6,400	0.80	D
	Twiggs St	Harney St	2-Lane Collector	8,000	6,000	0.75	D
	Harney St	San Juan Rd	2-Lane Collector	8,000	3,700	0.46	C
East-West							
Midway Pacific Highway							
Channel Wy	W. Mission Bay Dr	Hancock St	2-Lane Collector	8,000	5,700	0.71	D
Kemper St	Kenyon St	Midway Dr	4-Lane Collector	15,000	9,700	0.65	C
	Midway Dr	Sports Arena Blvd	4-Lane Collector	15,000	8,100	0.54	C
	Sports Arena Blvd	Kurtz Street	4-Lane Collector	15,000	4,500	0.30	A
Frontier St	Sports Arena Blvd	Kurtz Street	2-Lane Collector	8,000	2,600	0.01	A
Camino Del Rio West	Rosecrans St	I-5/I-8 Ramps	6-Lane Prime Arterial	60,000	59,600	0.99	**E**
Rosecrans St	Lytton St	Midway Dr	6-Lane Prime Arterial	60,000	53,300	0.89	D
	Midway Dr	Sports Arena Blvd	6-Lane Prime Arterial	60,000	66,000	1.10	**F**
	Sports Arena Blvd	Pacific Hwy/Taylor St	4- Lane Major Arterial	40,000	21,400	0.54	C
Charles Lindbergh Pkwy	Midway Dr	Sports Arena Blvd	2-Lane Collector (CLTL)	15,000	12,300	0.82	D
	Sports Arena Blvd	Kurtz Street	2-Lane Collector (CLTL)	15,000	7,900	0.53	C
Dutch Flats Pkwy	Barnett Avenue	Midway Dr	2-Lane Collector (CLTL)	15,000	6,300	0.42	B
	Midway Dr	Sports Arena Blvd	2-Lane Collector (CLTL)	15,000	11,600	0.77	D
Barnett Ave	Midway Dr	Pacific Hwy	6-Lane Major Arterial	50,000	52,100	1.04	**F**
Washington St	Frontage Rd	Pacific St	4- Lane Major Arterial	40,000	17,400	0.44	B
	Pacific St	Hancock St	4- Lane Major Arterial	40,000	22,000	0.55	C
Vine St	California St	Kettner Blvd	2-Lane Collector	8,000	1300	0.16	A

Table 6.2 Daily Roadway Segment Analysis - Preferred Plan Conditions

Roadway	From	To	Classification	Maximum Capacity at LOS E	ADT	V/C	LOS
Sassafras St	Pacific Hwy	Kettner Blvd	3-Lane Collector	11,500	20,600	1.79	**F**
Laurel St	Pacific Hwy	Kettner Blvd	4- Lane Major Arterial	40,000	29,400	0.74	C
Old Town							
Taylor St	Pacific Hwy/ Rosecrans St	Congress St	5-Lane Major Arterial	45,000	30,200	0.67	C
	Congress St	Juan St	5-Lane Major Arterial	45,000	21,800	0.48	B
	Juan St	Morena Blvd	4- Lane Major Arterial	40,000	26,900	0.67	C
	Morena Blvd	I-8 EB Ramps	2-Lane Collector	8,000	15,600	1.95	**F**
Twiggs St	Congress St	San Diego Ave	2-Lane Collector	8,000	2,500	0.31	B
	San Diego Ave	Juan St	2-Lane Collector	8,000	3,500	0.44	C
Harney St	Congress St	San Diego Ave	2-Lane Collector	8,000	1,800	0.23	A
	San Diego Ave	Juan St	2-Lane Collector	8,000	3,100	0.39	B
Old Town Ave	Hancock St	Moore St	2-Lane Collector	8,000	12,200	1.53	**F**
	Moore St	San Diego Ave	2-Lane Collector	8,000	6,700	0.84	**E**

Source: Chen Ryan Associates (January 2016)

Note:
Bold letter indicates LOS E or F

6.2.2 Intersection Geometry and LOS Analysis

AM and PM peak hour intersection LOS analyses were conducted for Preferred Plan conditions. It was assumed under buildout of the Preferred Plan that the proposed intersection improvements outlined in Sections 3.3.2 and 4.3.2 would be in place. Figure 6-7 and Figure 6-8 display the proposed intersection geometrics and forecast AM and PM peak hour turning movements under buildout of the Preferred Plan, respectively.

Table 6.3 and Figure 6-9 display the LOS results for the key study intersections located within both communities under Preferred Plan conditions. LOS analyses were conducted using the methodologies described in Chapter 2.0. Intersection LOS calculation worksheets are provided in Appendix F. Signal timing were assumed to be optimized under buildout Preferred Plan conditions, therefore some signal operations may be projected to operate better than under Existing conditions.

As shown, all key study intersections are projected to operate at LOS D or better under Preferred Plan conditions, with the exception of the following:

- *Lytton Street and Rosecrans Street* (LOS E: AM Peak Hour) – The westbound through movement and southbound left-turn movement at this intersection are both projected to be over capacity during the AM peak hour under buildout of the Preferred Plan. Providing a second southbound left-turn lane will allow more green time to the westbound though movement and will improve intersection operations to LOS D. This improvement could be implemented via restriping the southbound approach, therefore is feasible but may require additional engineering study.
- *Midway Drive at Rosecrans Street* (LOS F: AM and PM Peak Hours) – Rosecrans Street is projected to be over capacity during both the AM and PM peak hours. To improve intersection operations to LOS D during both peak hours the following improvements would be required:
  - Widen Rosecrans Street to eight lanes (four lanes in each directions)
  - Provide and exclusive westbound right-turn lane
  - Implement an overlap phase for the northbound right-turn movement

  There is currently not enough right-of-way to widen Rosecrans Street to eight lanes through the Midway Drive / Rosecrans Street intersection. Therefore, the proposed improvements may not be feasible.
- *Hancock Street and Witherby Street* (LOS E: PM Peak Hour) – The volumes during the PM peak hour are projected to exceed the capacity of an all-way stop control intersection. Signalization of the intersection would improve operations to LOS A during the AM peak hour and LOS C during the PM peak hour. Signalization of the intersection will improve operations to desirable levels. Implementation of a signal at the intersection does not require additional right-of-way; therefore, this improvement would be feasible.

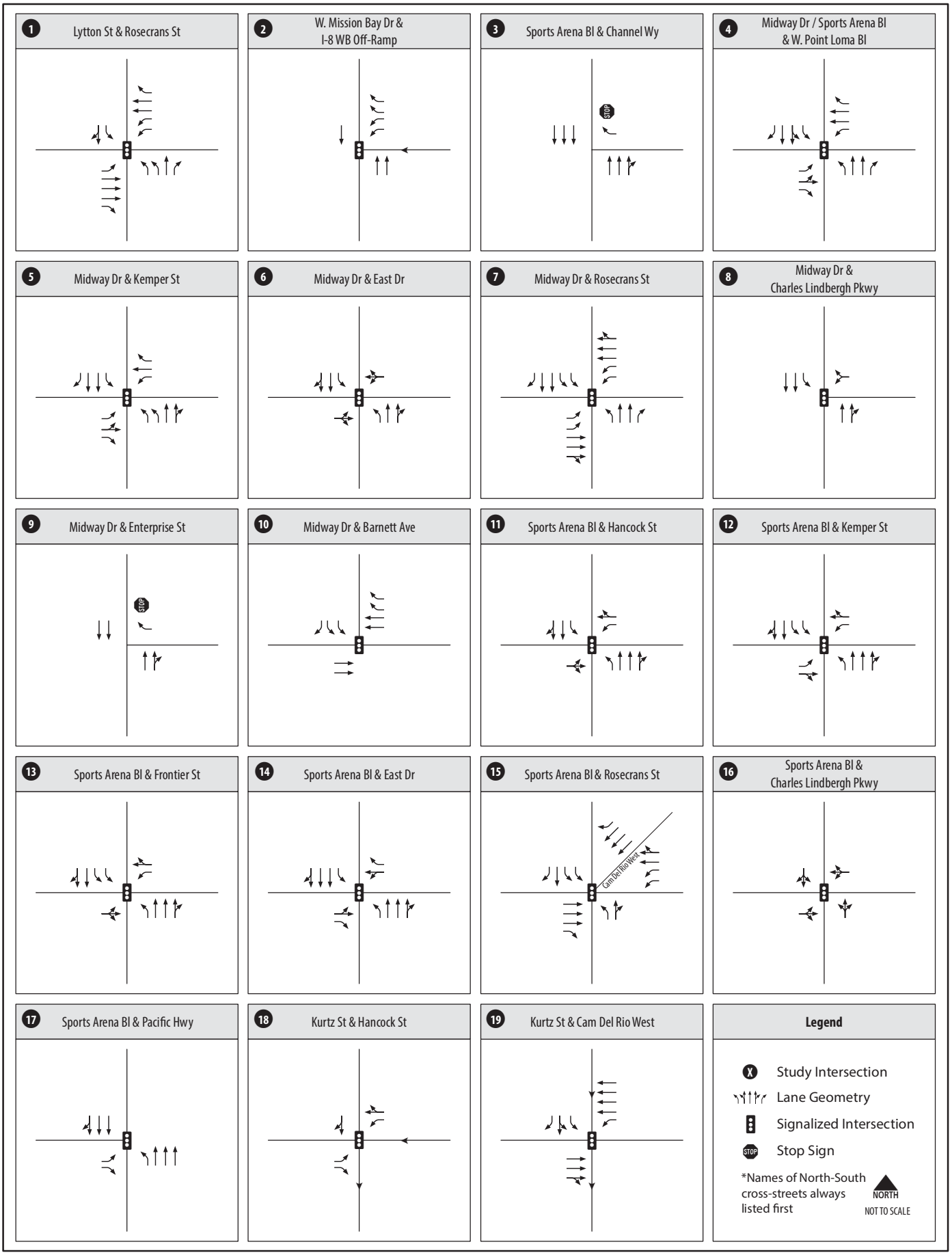

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Figure 6-7
Intersection Geometrics - Preferred Plan (Intersection 1 - 19)

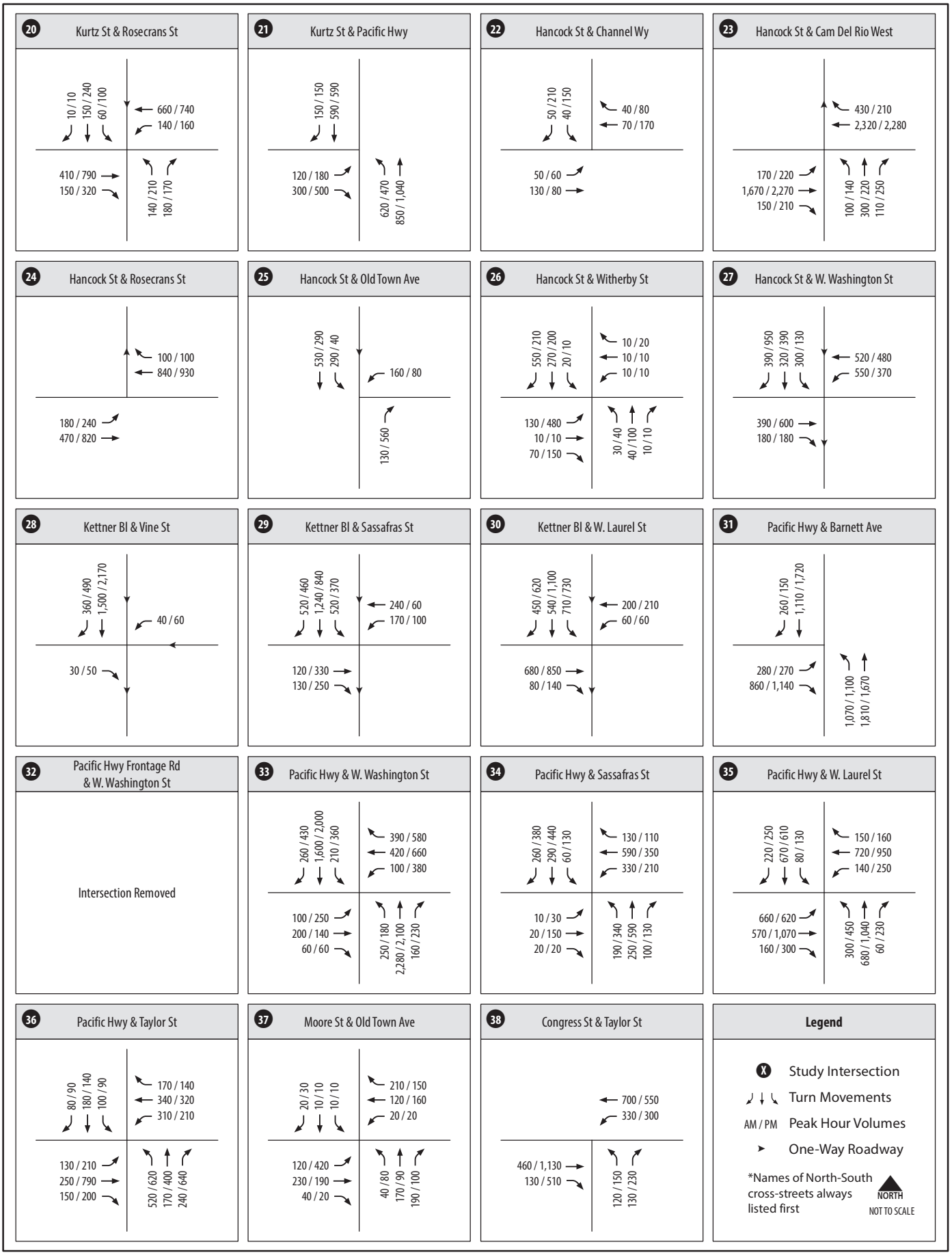

Figure 6-8
Intersection Peak Hour Volumes - Preferred Plan (Intersection 20 - 38)

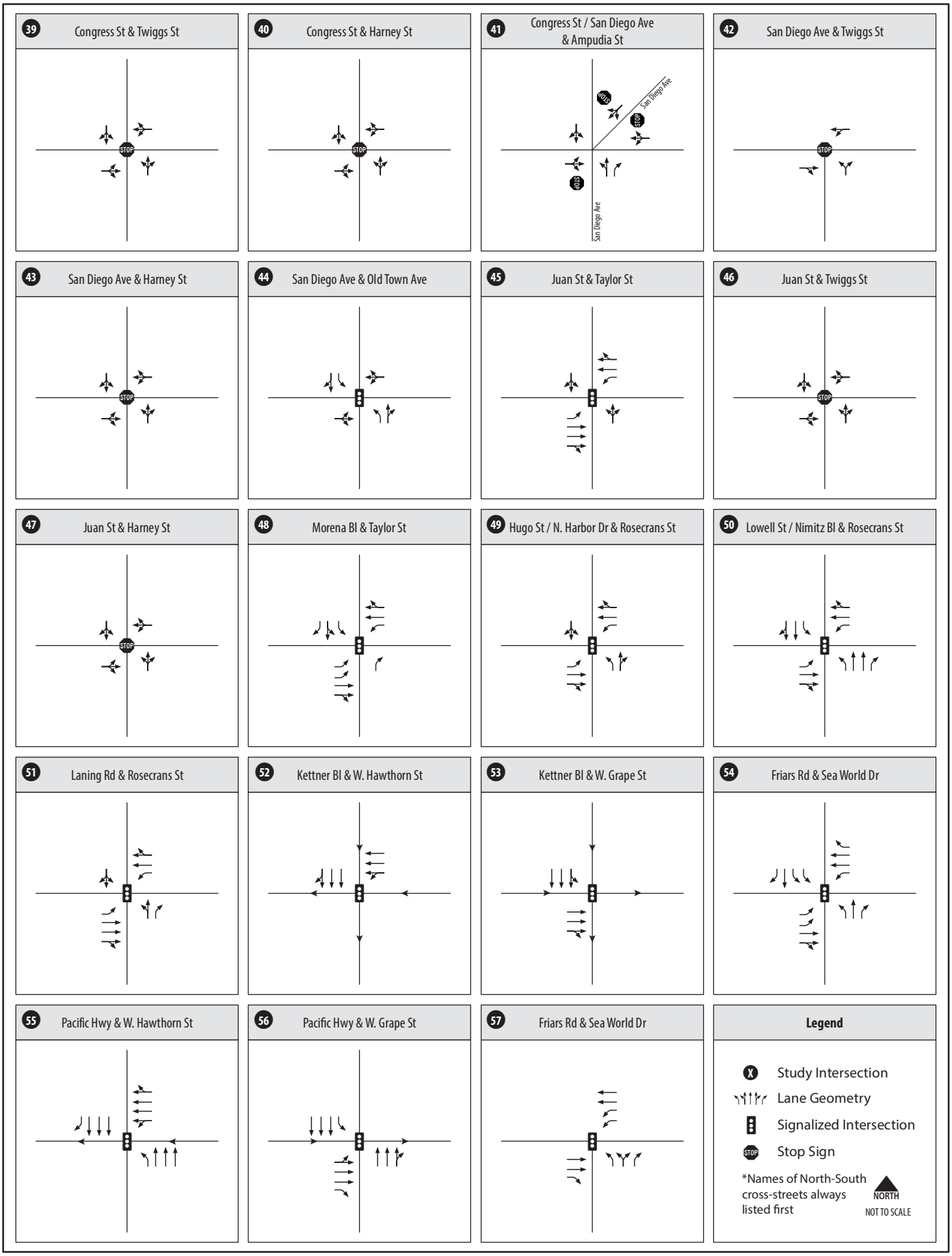

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Figure 6-7
Intersection Geometrics - Preferred Plan
(Intersection 39 - 57)

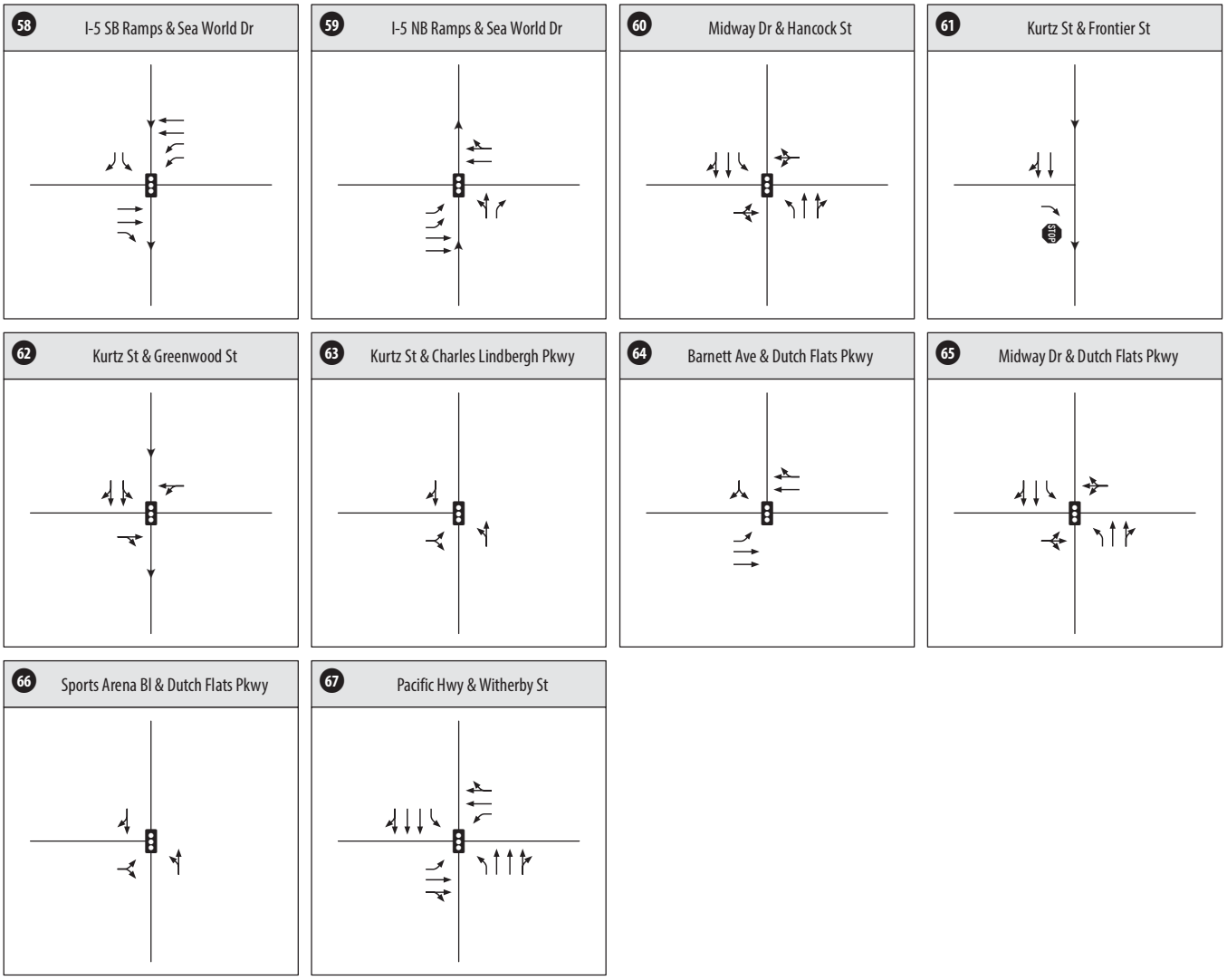

Figure 6-7
Intersection Geometrics - Preferred Plan (Intersection 58 - 67)

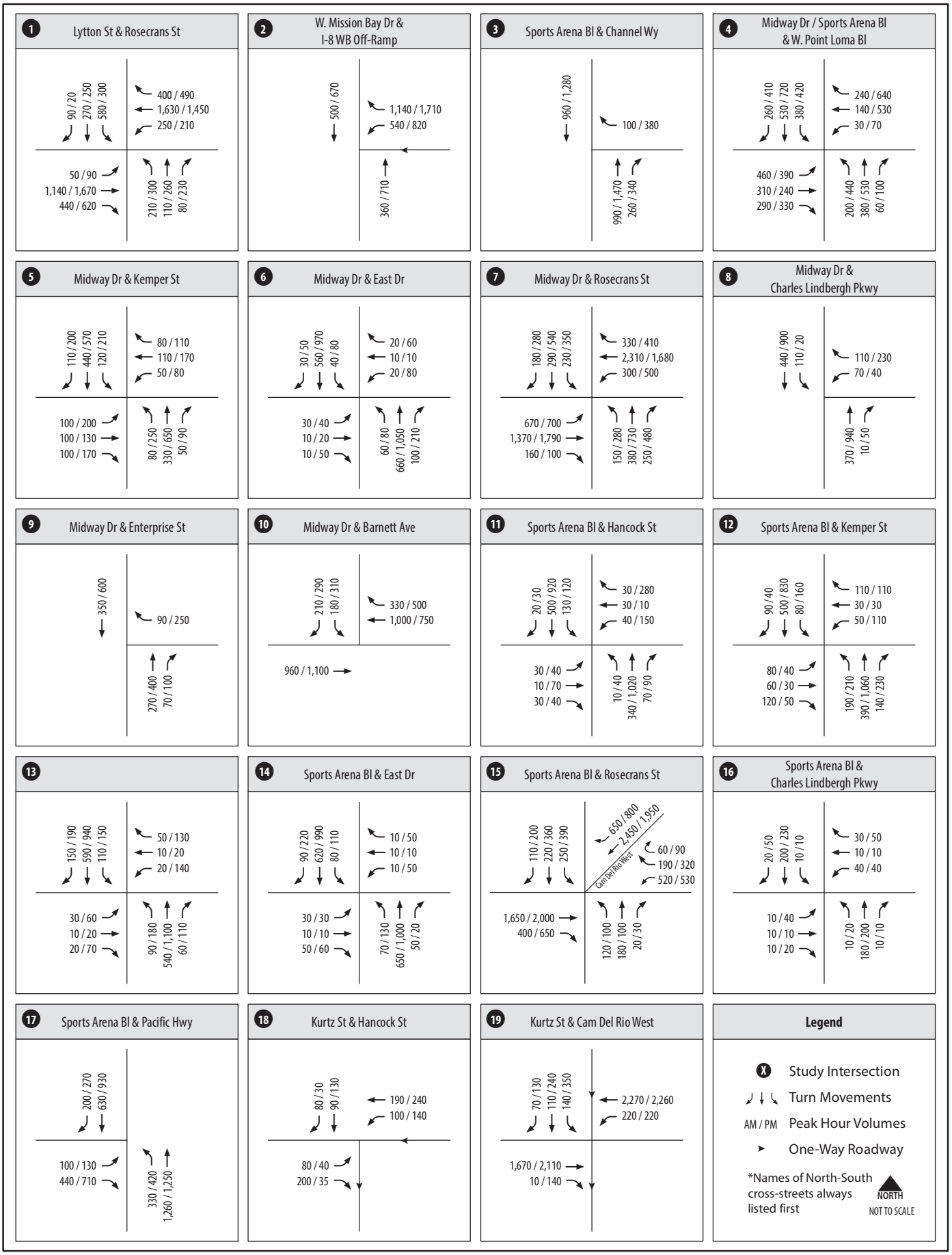

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Figure 6-8
Intersection Peak Hour Volumes - Preferred Plan (Intersection 1 - 19)

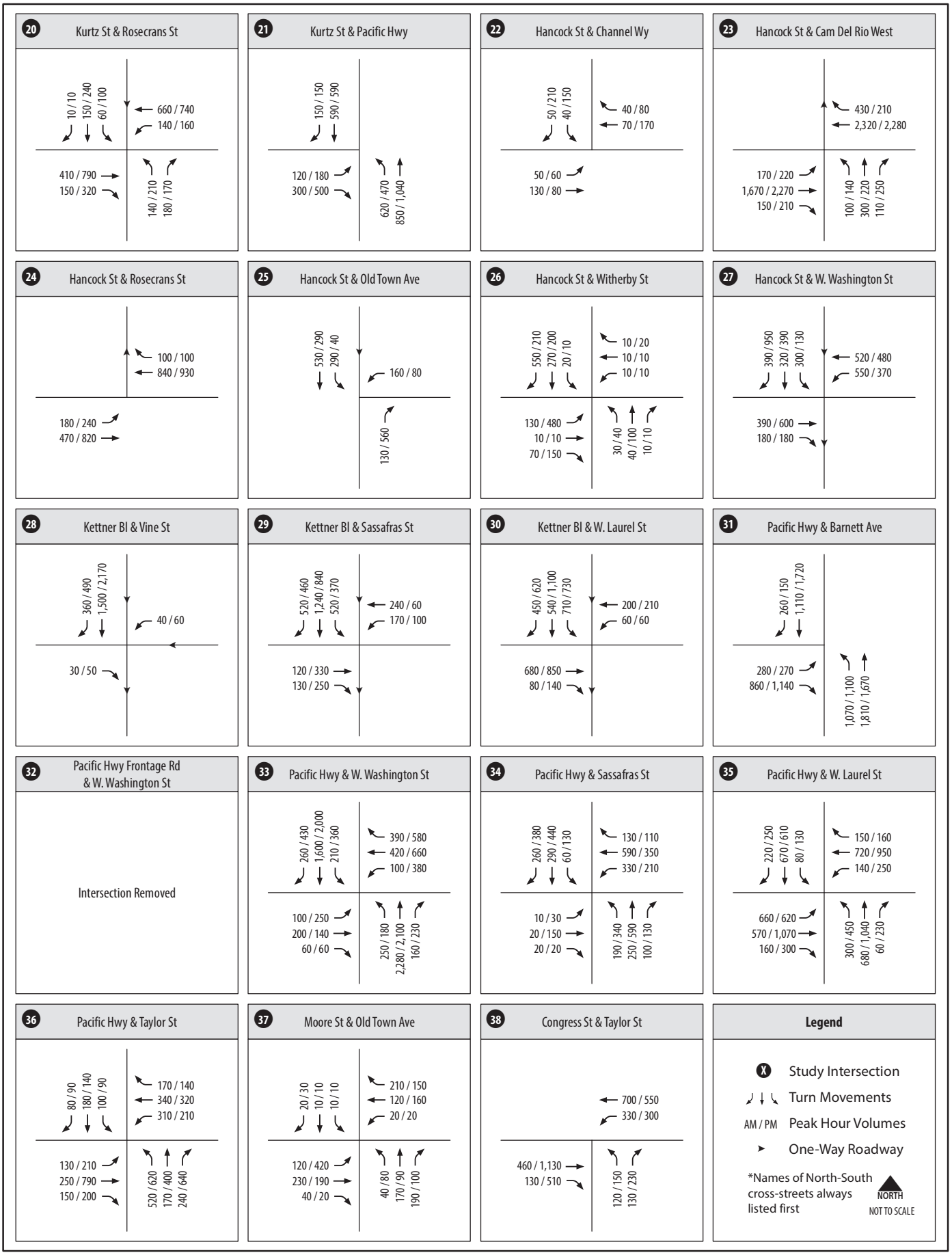

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Figure 6-8
Intersection Peak Hour Volumes - Preferred Plan (Intersection 20 - 38)

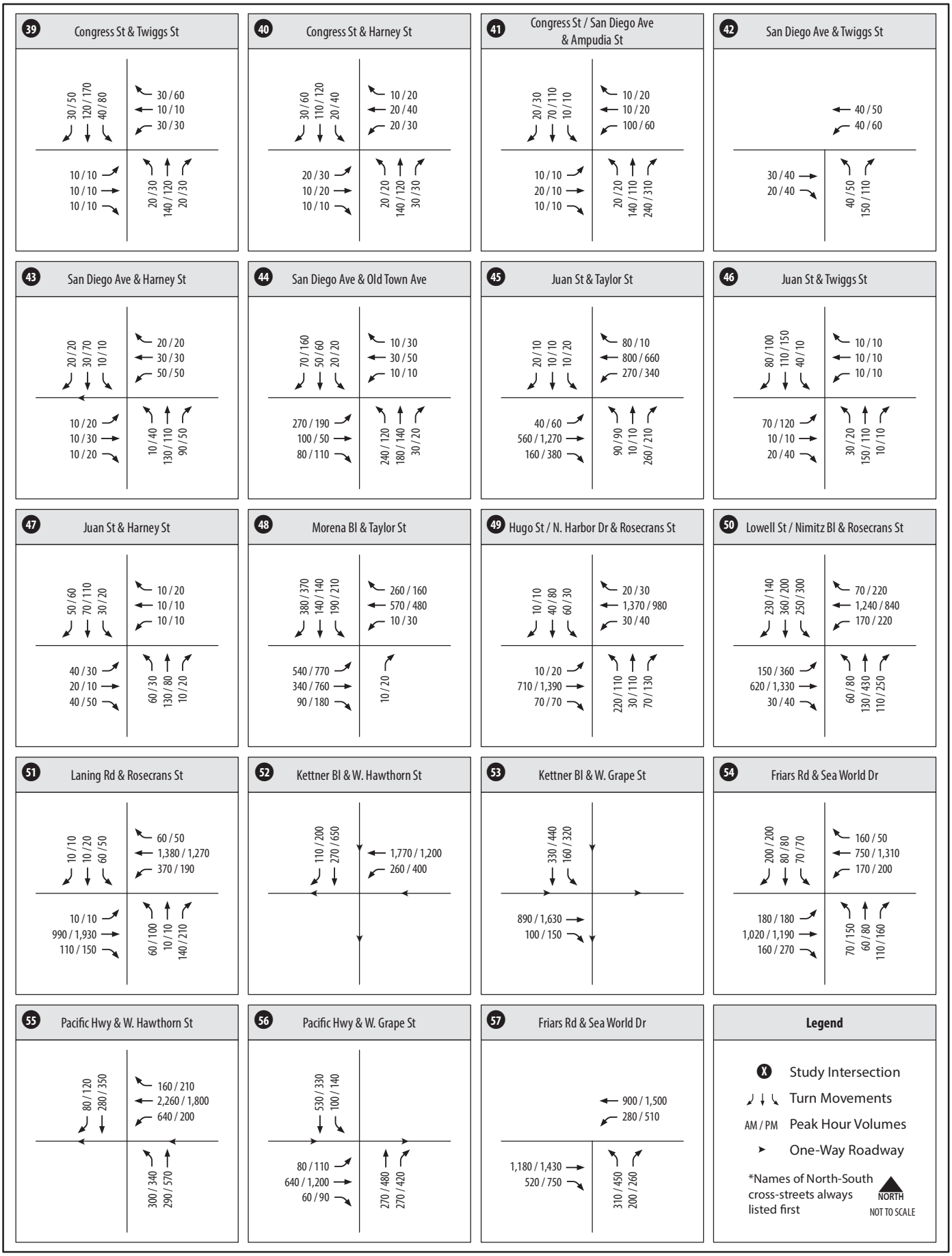

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Figure 6-8
Intersection Peak Hour Volumes - Preferred Plan (Intersection 39 - 57)

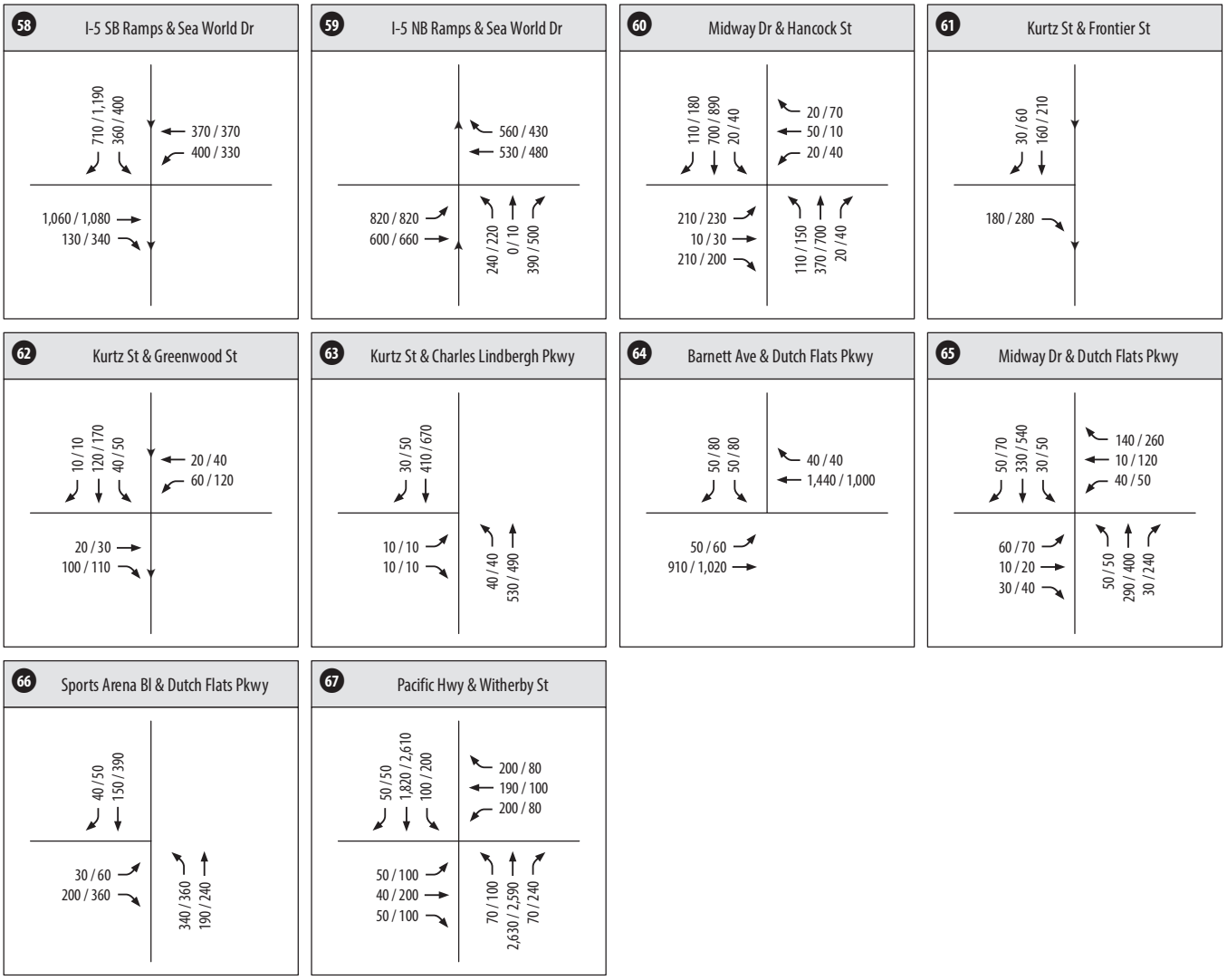

Figure 6-8
Intersection Peak Hour Volumes - Preferred Plan (Intersection 58 - 67)

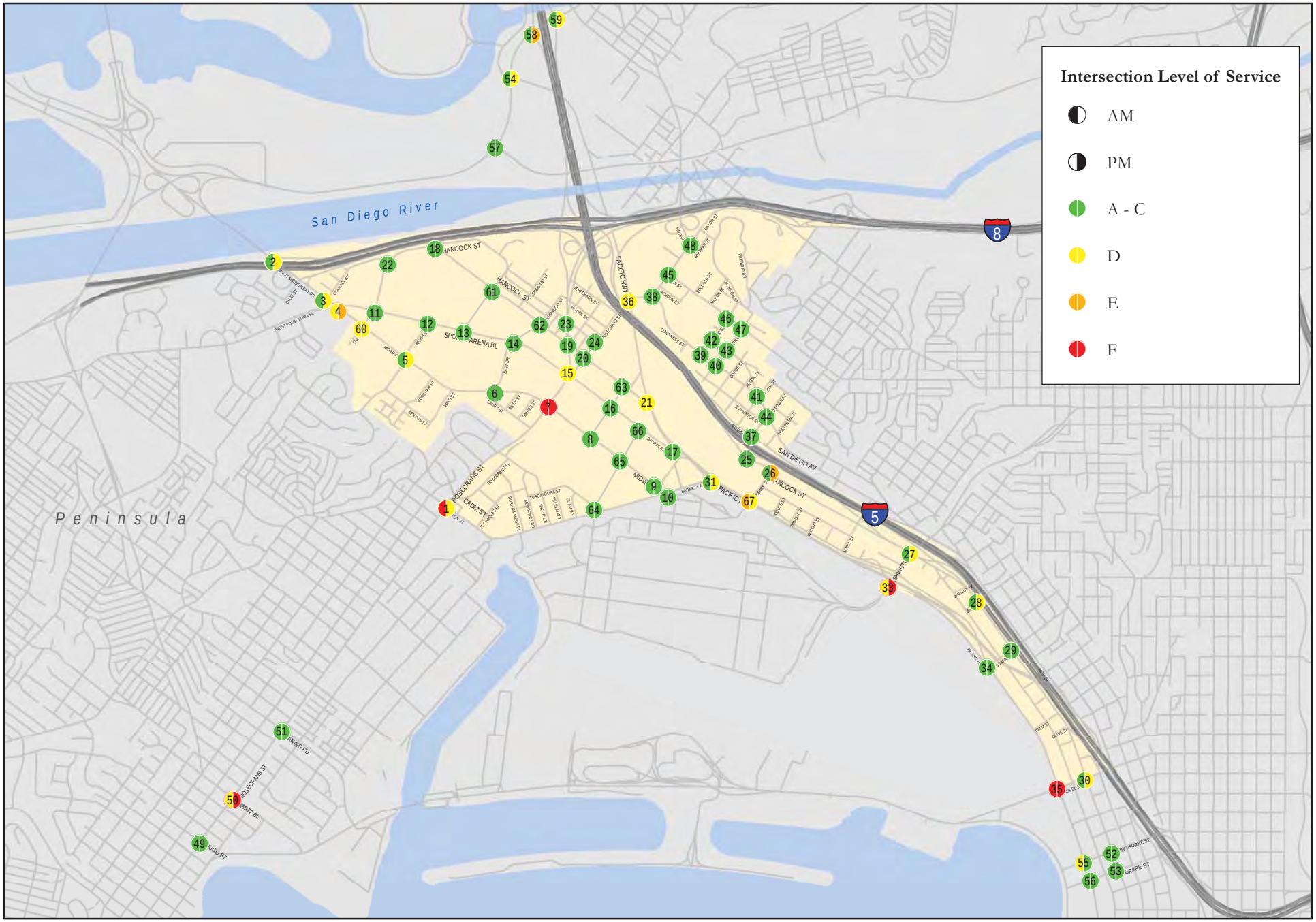

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Figure 6-9
Peak Hour Intersection LOS
Preferred Plan Conditions

Table 6.3 Peak Hour Intersection LOS and Delay Results – Preferred Plan Conditions

No.	Intersection		AM			PM		
			Delay (Sec)	LOS	Existing LOS	Delay (Sec)	LOS	Existing LOS
Midway-Pacific Highway								
1	Lytton St and Rosecrans St	Signal	93.8	**F**	**E**	52.4	D	D
2	W Mission Bay Dr and I-8 WB Off-Ramp	Signal	14.0	B	B	44.3	D	**E**
3	Sports Arena Blvd and Channel Way	SSSC	11.6	B	B	27.6	D	B
4	Midway Dr and Sports Arena/W Point Loma Blvd	Signal	43.2	D	D	67.1	**E**	D
5	Midway Dr and Kemper St	Signal	31.2	C	C	43.0	D	D
6	Midway Dr and East Dr	Signal	7.0	A	A	14.0	B	B
7	Midway Dr and Rosecrans St	Signal	114.1	**F**	C	105.1	**F**	D
8	Midway Dr and Charles Lindbergh Pkwy	Signal	10.6	B	(1)	9.6	A	(1)
9	Midway Dr and Enterprise St	SSSC	10.0	B	B	13	B	C
10	Midway Dr and Barnett Ave	Signal	12.0	B	B	12.1	B	B
11	Sports Arena Blvd and Hancock St	Signal	22.5	C	A	27.5	C	B
12	Sports Arena Blvd and Kemper St	Signal	31.5	C	B	25.3	C	B
13	Sports Arena Blvd and Sports Arena Driveway	Signal	23.1	C	B	33.2	C	C
14	Sports Arena Blvd and East Dr	Signal	13.6	B	C	15.5	B	B
15	Sports Arena Blvd and Rosecrans St	Signal	49.3	D	D	47.7	D	D
16	Sports Arena Blvd and Charles Lindbergh Pkwy	Signal	5.8	A	(1)	6.4	A	(1)
17	Sports Arena Blvd and Pacific Hwy	Signal	20.0	B	B	33.8	C	B
18	Kurtz St and Hancock St	Signal	31.0	C	(2)	18.4	B	(2)
19	Kurtz St and Camino Del Rio West	Signal	11.2	B	A	16.3	B	C
20	Kurtz St and Rosecrans St	Signal	23.6	C	B	34.0	C	C
21	Kurtz St and Pacific Hwy	Signal	41.1	D	B	51.2	D	B
22	Hancock St and Channel Wy	SSSC	10.3	B	A	17.6	C	B
23	Hancock St and Camino Del Rio West	Signal	27.7	C	C	28.8	C	C
24	Hancock St and Rosecrans St	SSSC	3.0	*A*	*(2)*	2.8	A	*(2)*
25	Hancock St and Old Town Ave	AWSC	19.7	C	C	14.1	B	B
26	Hancock St and Witherby St	AWSC	17.1	C	C	35.9	**E**	C
27	Hancock St and Washington St	Signal	22.9	C	C	54.0	D	C
28	Kettner Blvd and Vine St	SSSC	16.2	C	B	32.5	D	C
29	Kettner Blvd and Sassafras St	Signal	15.1	B	B	12.7	B	B
30	Kettner Blvd and West Laurel St	Signal	20.4	C	B	35.2	D	C
31	Pacific Hwy and Barnett Ave	Signal	22.0	*C*	*(2)*	49.1	D	*(2)*
32	Pacific Hwy and Washington St @ Frontage Rd	N/A	Removed		B	Removed		D
33	Pacific Hwy and Washington St	Signal	51.4	D	B	167.4	**F**	C
34	Pacific Hwy and Sassafras St	Signal	31.2	C	B	29.0	C	C
35	Pacific Hwy and West Laurel St	Signal	102.0	**F**	D	145.3	**F**	D
Old Town								
36	Pacific Hwy and Taylor St	Signal	41.1	D	**E**	49.7	D	C

Table 6.3 Peak Hour Intersection LOS and Delay Results – Preferred Plan Conditions

No.	Intersection		AM			PM		
			Delay (Sec)	LOS	Existing LOS	Delay (Sec)	LOS	Existing LOS
37	Moore St and Old Town Ave	Signal	16.8	B	B	22.7	C	B
38	Congress St and Taylor St	Signal	26.1	C	B	22.1	C	C
39	Congress St and Twiggs St	AWSC	8.7	A	A	9.7	A	A
40	Congress St and Harney St	AWSC	8.5	A	A	9.0	A	A
41	Congress St and San Diego Ave/Ampudia St	SSSC	12.9	B	B	12.2	B	B
42	San Diego Ave and Twiggs St	AWSC	7.9	A	A	8.0	A	A
43	San Diego Ave and Harney St	AWSC	8.5	A	A	8.6	A	A
44	San Diego Ave and Old Town Ave	Signal	16.7	B	B	12.0	B	B
45	Juan St and Taylor St	Signal	13.0	B	B	23.0	C	B
46	Juan St and Twiggs St	AWSC	9.1	A	A	9.6	A	A
47	Juan St and Harney St	AWSC	8.7	A	A	8.4	A	A
48	Morena Blvd and Taylor St	Signal	24.3	C	C	24.6	C	B
Intersections Outside of Study Communities								
49	Hugo St/N. Harbor Dr and Rosecrans St	Signal	27.4	C	B	26.0	C	C
50	Lowell St/Nimitz Blvd and Rosecrans St	Signal	51.7	D	D	87.1	**F**	**E**
51	Laning Rd and Rosecrans St	Signal	25.0	C	B	24.0	C	B
52	Kettner Blvd and West Hawthorn St	Signal	11.6	B	B	15.2	B	B
53	Kettner Blvd and West Grape St	Signal	10.4	B	A	8.2	A	A
54	Pacific Hwy and Sea World Dr	Signal	26.9	C	B	38.3	D	C
55	Pacific Hwy and West Hawthorn St	Signal	35.3	D	D	32.4	C	C
56	Pacific Hwy and West Grape St	Signal	18.0	B	B	26.0	C	C
57	Friars Rd and Sea World Dr	Signal	15.4	B	B	26.6	C	B
58	I-5 SB Ramps and Sea World Dr	Signal	22.6	C	B	74.3	**E**	**E**
59	I-5 NB Ramps and Sea World Dr	Signal	26.9	C	C	51.3	D	C
New Intersections (Midway-Pacific Highway Community)								
60	Midway Dr & Duke Street / Hancock St	Signal	43.3	D	(1)	51.7	D	(1)
61	Kurtz St & Frontier St	SSSC	9.9	A	(1)	11.3	B	(1)
62	Kurtz St & Greenwood St	Signal	8.7	A	(1)	9.2	A	(1)
63	Kurtz St & Charles Lindbergh Pkwy	Signal	2.5	A	(1)	2.8	A	(1)
64	Barnett Ave & Dutch Flats Pkwy	Signal	26.4	C	(1)	10.7	B	(1)
65	Midway Dr & Dutch Flats Pkwy	Signal	17.3	B	(1)	29.6	C	(1)
66	Dutch Flats Pkwy & Sports Arena Bl	Signal	11.0	B	(1)	20.6	C	(1)
67	Witherby St & Pacific Hwy	Signal	55.5	**E**	(2)	52.5	D	(2)

Source: Chen Ryan Associates (January 2016)

Notes:
(1) Intersection does not currently exist.
(2) Intersection experienced no control delay under Existing conditions.
Bold letters indicate LOS E or F.

- *Pacific Highway and Washington Street* (LOS F: PM Peak Hour) – The traffic volumes along Pacific Highway (in both northbound and southbound direction) exceed the capacity of the roadway. The following improvements are required to improve intersection operations to LOS D under buildout of the Preferred Plan:
  - Widen Pacific Highway to eight-lanes (four in each direction) through the intersection.
  - Provide dual left-turn lanes in the eastbound and westbound directions
  - Implement an overlap phase for the westbound right-turn movement

  Since this intersection is currently grade-separated and the Preferred Plan proposes to reconstruct it at-grade, it is not known if the proposed improvements are feasible. Additional engineering study and design would be required to determine whether this improvement is feasible.

- *Pacific Highway and West Laurel Street* (LOS F: AM and PM Peak Hour) – The southbound left-turn movement is projected to be overcapacity during the AM and PM peak hours. Providing a second southbound left-turn pocket will improve intersection operations to LOS D during the PM peak hour. There is sufficient right-of-way on the northern leg of the intersection to accommodate this improvement; however, additional engineering study and design would be required.

- *Lowell Street/Nimitz Boulevard and Rosecrans Street* (LOS F: PM Peak Hour) – All left-turn movements, with the exception of the northbound left-turn, are projected to be overcapacity during the PM peak hour. Implementing dual left-turns in the southbound, eastbound and westbound directions will improve the intersection operations to LOS D during the PM peak hour. There is currently not enough right-of-way at the intersection to implement the additional left-turn lanes, therefore the proposed improvements may not be feasible.

- *I-5 SB Ramps and Sea World Drive* (LOS E: PM Peak Hour) – The southbound right-turn movement is projected to be overcapacity during the PM peak hour. Implementation of a second southbound right-turn lane will improve intersection operations to LOS C during the PM peak hour. There is currently not enough right-of-way on the southbound ramp to implement the second right-turn lane, therefore the proposed improvements may not be feasible.

<u>Old Town Community</u>

- *None*

6.2.3 Intersection Queuing Analysis

A queuing analysis was conducted under Preferred Plan conditions, at each of the study intersections to assess potential overflowing issues at exclusive turn-lanes and closely spaced intersections. Closely spaced intersections include all ramp intersections and intersections within close proximity (less than 500 feet) to one another. The limitations in turn-lane storage capacity

could result in turning vehicles overflow into adjacent lanes, while excessive queuing (queue length exceeds distance to upstream intersection) at closely spaced intersection could negatively affect the operations of the upstream intersection. When either situation occurs, traffic operations could deteriorate, resulting in additional levels of congestion.

Table 6.4 displays the average (50th percentile) and maximum (95th percentile) queue lengths at closely spaced intersections (500 feet apart), for relevant movements. Synchro intersection queuing reports are provided in Appendix F following the intersection LOS worksheets.

Table 6.4 Queue Lengths at Closely Spaced Intersections – Preferred Plan Conditions

#	Impacted Intersection	Peak Hour	Upstream Intersection	Spacing (Feet)	Move	95th% Queue Length (Feet)	50th% Queue Length (Feet)
7	Midway Dr and Rosecrans St	PM	Sports Arena Blvd and Rosecrans St	665	EBT	850	834
15	Sports Arena Blvd and Rosecrans St	AM	Kurtz St and Camino Del Rio West	380	NET	409	165
		PM	Kurtz St and Rosecrans St	310	EBT	483	332
19	Kurtz St and Camino Del Rio West	AM	Hancock St and Camino Del Rio West	315	NET	282	100
		PM				185	178
20	Kurtz St and Rosecrans St	AM	Sports Arena Blvd and Rosecrans St	310	WBT	1054	969
		PM				883	792
N/A	I-5 SB Off-Ramp and Camino Del Rio West	AM	Hancock St and Camino Del Rio West	490	SWT	964	876
		PM				1006	879

Source: Chen Ryan Associates (January 2016)

Midway-Pacific Highway Community

As shown, the maximum (95th percentile) and average (50th percentile) queue lengths at all closely spaced intersections are anticipated to exceed the spacing between intersections under buildout of Preferred Plan conditions with the exception of the following:

- Kurtz Street and Camino Del Rio West – Neither the average or maximum queue lengths exceed the intersections spacing.
- Kurtz Street and Rosecrans Street intersection – Average queue length does not exceed intersection spacing.

Queuing spillovers could degrade traffic operations at the upstream intersections.

Old Town

There are no signalized intersections within 500 feet of each other within the Old Town Community.

Tables 6.5 displays the average (50th percentile) and maximum (95th percentile) queue lengths for intersection movements where the maximum peak hour queue length is projected to exceed the

current storage length under Preferred Plan conditions. Synchro intersection queuing reports are provided in Appendix F following the intersection LOS worksheets.

Table 6.5 Intersection Queue Lengths Exceeding Storage Lengths – Preferred Plan Conditions

No.	Intersection	Move	Peak	95th % Queue Length (Feet)	50th % Queue Length (Feet)	Existing Pocket Length (Feet)	Excess 95th % Queue (Feet)	Excess 50th % Queue (feet)
Midway-Pacific Highway Community								
1	Lytton St and Rosecrans St	EBL	AM	137	48	105	32	0
			PM	223	98	105	118	0
		NBL	PM	311	218	230	81	0
		SBL	AM	1012	777	185	827	592
			PM	551	350	185	366	165
4	Midway Dr and Sports Arena/W Point Loma Blvd	EBL	AM	715	331	380	335	0
			PM	489	286	380	109	0
		NBL	AM	285	167	230	55	0
			PM	620	399	230	390	169
5	Midway Dr and Kemper St	EBL	AM	116	85	100	16	0
			PM	196	147	100	96	47
7	Midway Dr and Rosecrans St	EBL	AM	503	445	300	203	145
			PM	589	489	300	289	189
		WBL	PM	346	327	340	6	0
		SBL	AM	229	139	90	139	49
			PM	310	170	90	220	80
		NBL	AM	337	189	190	147	0
			PM	574	377	190	384	187
		NBR	PM	583	336	190	393	146
11	Sports Arena Blvd and Hancock St	SBL	AM	192	126	150	42	0
12	Sports Arena Blvd and Kemper Street	EBL	AM	117	74	50	67	24
		NBL	AM	261	185	160	101	25
			PM	274	194	160	114	34
13	Sports Arena Blvd and Frontier Drive	NBL	PM	316	140	105	211	35
14	Sports Arena Blvd and East Drive	SBL	AM	140	83	105	35	0
			PM	135	92	105	30	0
		NBL	PM	174	111	130	44	0
15	Sports Arena Blvd and Rosecrans St	NWBL	AM	294	194	130	164	64
			PM	234	176	130	104	46
19	Kurtz St and Camino Del Rio West	SBL	PM	373	282	210	163	72
		WBL	AM	191	223	110	81	113
			PM	266	247	110	156	137

Table 6.5 Intersection Queue Lengths Exceeding Storage Lengths – Preferred Plan Conditions

No.	Intersection	Move	Peak	95th % Queue Length (Feet)	50th % Queue Length (Feet)	Existing Pocket Length (Feet)	Excess 95th % Queue (Feet)	Excess 50th % Queue (feet)
20	Kurtz St and Rosecrans St	NBL	AM	189	124	60	129	64
			PM	267	125	60	207	65
		WBL	PM	162	54	85	77	0
23	Hancock St and Camino Del Rio West	WBR	AM	217	118	140	77	0
		EBL	AM	320	158	110	210	48
			PM	311	228	110	201	118
27	Hancock St and Washington St	WBL	AM	236	142	140	96	2
			PM	253	160	140	113	20
		SBR	PM	1093	834	270	823	564
29	Kettner Blvd and Sassafras Street	SBL	AM	237	137	80	157	57
			PM	155	86	80	75	6
34	Pacific Highway and Sassafras Street	NBL	AM	289	118	240	49	0
			PM	367	170	240	127	0
35	Pacific Hwy and West Laurel St	EBL	AM	1165	916	375	790	541
			PM	1194	948	375	819	573
		WBL	AM	220	146	70	150	76
			PM	561	372	70	491	302
		NBL	AM	611	410	90	521	320
			PM	906	681	90	816	591
		SBL	PM	272	139	250	22	0
Old Town Community								
36	Pacific Hwy and Taylor St	EBL	AM	265	120	150	115	0
			PM	430	251	150	280	101
		WBL	AM	270	148	160	110	0
			PM	176	109	160	16	0
		NBL	AM	401	286	100	301	186
			PM	589	406	100	489	306
		NBR	PM	594	398	200	394	198
38	Congress St and Taylor St	WBL	AM	371	131	100	271	31
			PM	330	145	100	230	45
44	San Diego Avenue and Old Town Street	NBL	AM	132	56	75	57	0
45	Juan Street and Taylor Street	WBL	AM	111	37	95	16	0
			PM	307	130	95	212	35
48	Morena Blvd and Taylor St	EBL	AM	263	118	180	83	0
			PM	360	193	180	180	13
Intersections Outside of Study Communities								
49	Hugo St and Rosecrans St	NBL	AM	256	176	115	141	61

Table 6.5 Intersection Queue Lengths Exceeding Storage Lengths – Preferred Plan Conditions

No.	Intersection	Move	Peak	95th % Queue Length (Feet)	50th % Queue Length (Feet)	Existing Pocket Length (Feet)	Excess 95th % Queue (Feet)	Excess 50th % Queue (feet)
			PM	169	108	115	54	0
50	Nimitz Blvd and Rosecrans St	EBL	PM	625	421	300	325	121
		WBL	PM	440	246	300	140	0
		NBL	PM	139	81	75	64	6
		SBL	AM	400	228	285	115	0
			PM	550	352	285	265	67
51	Laning Rd and Rosecrans St	WBL	AM	378	294	335	43	0
			PM	270	191	335	0	0
54	Pacific Highway and Sea World Drive	WBL	AM	233	81	170	63	0
			PM	354	161	170	184	0
		NBL	PM	289	122	150	139	0
56	Pacific Highway and Grape St	SBL	PM	155	92	130	25	0
57	Friars Road and Sea World Dr	EBR	PM	325	208	180	145	28
		WBL	PM	303	167	205	98	0
		NBL	PM	180	132	150	30	0
58	I-5 SB Ramps and Sea World Drive	WBL	AM	156	87	120	36	0
			PM	152	94	120	32	0
59	I-5 NB Ramps and Sea World Drive	EBL	AM	285	185	170	115	15
			PM	234	224	170	64	54

Source: Chen Ryan Associates (January 2016)

Midway-Pacific Highway Community

As shown, under buildout of the Preferred Plan, 32 different movements within the Midway-Pacific Highway Community are projected to have queue lengths exceeding their storage capacity at the most congested point of the peak hour (95th Percentile). The spillovers could degrade traffic operations within the intersection or adjacent closely spaced, upstream intersections for approximately one to two cycles during the peak hour. However, only 21 movements are anticipated to have queues that exceed their storage capacity on an average during either peak hour (50th Percentile).

Old Town

As shown, under buildout of the Preferred Plan, 8 different movements within the Old Town Community are projected to have queue lengths exceeding their storage capacity at the most congested point of the peak hour (95th Percentile). The spillovers could degrade traffic operations within the intersection or adjacent closely spaced, upstream intersections for approximately one to two cycles during the peak hour. However, only 6 movements are anticipated to have queues that exceed their storage capacity on an average during either peak hour (50th Percentile).

Other Communities

As shown, under buildout of the Preferred Plan, 14 different movements within other communities are projected to have queue lengths that exceed their storage capacity at the most congested point of the peak hour (95th Percentile). The spillovers could degrade traffic operations within the intersection or adjacent closely spaced, upstream intersections for approximately one to two cycles during the peak hour. However, only 6 movements are anticipated to have queues that exceed their storage capacity on an average during either peak hour (50th Percentile).

6.2.4 Freeway Segments and LOS Analysis

The Preferred Plan network includes freeway improvements that would directly impact the community as described in the Revenue Constrained Alternative of SANDAG's *San Diego Forward Plan* (October 2015). Planned freeway improvements assumed under Preferred Plan conditions, are outlined in Sections 3.3.2 and 4.3.2.

Table 6.6 displays the freeway segment LOS in the vicinity of the Midway-Pacific Highway and Old Town communities. Forecast freeway volumes were obtained from the modeling process described in Section 5.0.

Table 6.6 Freeway Segment LOS Results – Preferred Plan Conditions

								AM					PM				
Freeway	To	From	Dir	Daily Volume	HVF	Lanes	Aux	K	D	Peak Volume	V/C	LOS	K	D	Peak Volume	V/C	LOS
I-8	Beginning of Freeway	Sports Arena Boulevard	EB	60,000	1.2%	2	0	6.3%	61%	2,600	0.55	B	8.5%	72%	3,100	0.66	C
			WB			2	0		39%	1,600	0.34	A		28%	2,700	0.57	B
	Sports Arena Boulevard	I-5	EB	119,600	2.8%	3	1	6.4%	61%	5,300	0.63	C	7.8%	63%	5,500	0.65	C
			WB			3	1		39%	3,400	0.40	A		37%	5,100	0.60	B
	I-5	Morena Boulevard	EB	180,700	2.8%	4	1	6.4%	42%	5,400	0.50	B	7.2%	52%	6,800	0.63	C
			WB			5	0		58%	7,600	0.65	C		48%	7,900	0.67	C
	Morena Boulevard	Hotel Circle	EB	214,200	2.8%	4	1	6.5%	47%	7,300	0.68	C	8.2%	55%	10,900	1.01	**F**
			WB			5	0		53%	8,300	0.71	C		45%	8,900	0.76	C
I-5	Clairemont Drive	Sea World Drive	NB	240,100	4.5%	5	0	6.4%	61%	10,900	0.93	**E**	8.3%	51%	11,700	1.00	**E**
			SB			5	0		39%	6,900	0.59	B		49%	11,200	0.95	**E**
	Sea World Drive	I-8	NB	228,700	4.5%	4	1	6.3%	62%	10,300	0.95	**E**	8.4%	52%	11,500	1.06	**F**
			SB			4	2		38%	6,400	0.52	B		48%	10,600	0.87	D
	I-8	Old Town Avenue	NB	236,500	4.1%	4	1	6.9%	49%	9,100	0.84	D	8.2%	39%	8,700	0.81	D
			SB			5	0		51%	9,500	0.81	D		61%	13,500	1.15	**F**
	Old Town Avenue	Washington Avenue	NB	220,700	4.1%	4	0	6.9%	49%	8,600	0.91	D	8.0%	51%	10,300	1.10	**F**
			SB			5	0		51%	9,000	0.77	C		49%	9,900	0.84	D
	Washington Avenue	Pacific Highway	NB	168,500	4.1%	4	0	6.9%	53%	7,000	0.74	C	8.1%	36%	5,600	0.60	B
			SB			4	0		47%	6,300	0.67	C		64%	10,000	1.06	**F**
	Pacific Highway	Laurel Street	NB	220,600	4.1%	4	1	6.7%	58%	9,800	0.91	D	7.0%	50%	8,400	0.78	C
			SB			4	1		42%	7,100	0.66	C		50%	9,300	0.86	D
	Laurel Street	Hawthorne Avenue	NB	225,100	4.1%	4	1	6.7%	58%	9,900	0.92	D	7.2%	47%	8,100	0.75	C
			SB			4	1		42%	7,300	0.68	C		53%	10,400	0.96	**E**

Source: Chen Ryan Associates (January 2016)

Note:
Bold letter indicates LOS E or F

As shown, all mainline freeway segments are projected to operate at LOS D or better under Preferred Plan conditions, with the exception of the following:

- I-8 EB, between Morena Boulevard and Hotel Circle Drive (LOS F: AM Peak Hour)
- I-5 NB, between Clairemont Drive and Sea World Drive (LOS E: AM & PM Peak Hours)
- I-5 SB, between Clairemont Drive and Sea World Drive (LOS E: PM Peak Hour)
- I-5 NB, between Sea World Drive and I-8 (LOS E: AM Peak Hour, LOS F PM Peak Hour)
- I-5 SB, between I-8 and Old Town Avenue (LOS F: PM Peak Hour)
- I-5 NB, between Old Town Avenue and Washington Avenue (LOS F: PM Peak Hour)
- I-5 SB, between Washington Avenue and Pacific Highway (LOS F: PM Peak Hour)
- I-5 SB, between Laurel Street and Hawthorne Avenue (LOS E: PM Peak Hour)

6.2.5 Meter Analysis

Table 6.7 summarizes the freeway ramp metering analysis results under buildout of the Preferred Plan for all ramp meter locations within both study communities. The volumes were derived using the outputs for the modeling described in Section 5.0. Existing ramp meter flow rates were assumed under Preferred Plan conditions.

Table 6.7 Freeway Ramp Metering Analysis – Preferred Plan Conditions

Ramp	Peak	Lanes		Flow Rate	Volume	Excess Demand	Delay (Minutes)	Queue (Feet)
		SOV	HOV					
I-8 EB / Sports Arena Boulevard	PM	2	1	641	650	9	0.8	261
I-5 SB / Sea World Drive	AM	1	1	444	530	86	11.6	2,494
	PM	1	1	444	670	226	30.5	6,554
I-5 NB / Sea World Drive	AM	2	0	1,555	1,530	0	0.0	0
	PM	2	0	1,656	1,250	0	0.0	0
I-5 SB / Old Town Avenue	PM	1	0	461	410	0	0.0	0
I-5 NB / Old Town Avenue	AM	2	0	905	370	0	0.0	0
	PM	2	0	888	690	0	0.0	0

Source: Chen Ryan Associates (January 2016)

Notes:
SOV = Single Occupancy Vehicle; HOV = High Occupancy Vehicle.
[1] Demand is the peak hour demand expected to use the on-ramp.
[2] Meter Rate is the peak hour capacity expected to be processed through the ramp meter. This value was obtained from Caltrans.
[3] Excess Demand = (Demand) – (Meter Rate) or zero, whichever is greater.
[4] Delay = (Excess Demand / Meter Rate) X 60 min/hr.
[5] Queue = (Excess Demand) X 29 ft/veh.

As shown in the table, the anticipated peak hour demand is not anticipated to exceed the anticipated meter rate at any of the study ramp meter locations creating a delay of 15 minutes[1], with the exception of the following:

- I-5 SB / Sea World Drive during the PM peak hour (30.5 minutes)

6.3 Intelligent Transportation Systems (ITS)

The implementation of Intelligent Transportation Systems (ITS) can provide many benefits to the local roadway network, including improving roadway traffic operations, improving transit operations, relaying valuable traffic-related information and providing guidance to drivers (e.g. locations of available parking, traffic congestion points, and the location of accidents). Coordinated traffic signals and transit signal priority treatments are examples of ITS programs that can help improve both transit and roadway operations.

The City of San Diego should investigate the feasibility of the following ITS improvements within the Midway-Pacific Highway and Old Town communities:

- Expand signal coordination along major roadway corridors including Rosecrans Street, Taylor Street, Midway Drive, Sports Arena Boulevard, Pacific Highway, Kettner Street and San Diego Avenue.
- Regularly update the timing of traffic signals to reflect shifting travel patterns
- Use traffic responsive or adaptive traffic control in areas with variable traffic patterns
- Implement transit signal priority treatments at signalized intersections serving rapid bus routes
- Use variable message signs to direct motorists to available parking and to alert them of street closures.

6.4 Transportation Demand Management (TDM) Strategies

The goal of the City's Transportation Demand Management (TDM) program is to improve mobility, reduce congestion and air pollution, and provide options for employees and residents to commute to/ from work. Typical TDM strategies include promoting the following:

- Teleworking
- Alternative Work Schedules
- Walking
- Bicycling
- Carpooling
- Vanpooling
- Transit
- Car-sharing
- Mixed-Use Development
- Other Transportation Options

[1] The City of San Diego Traffic Impact Study Manual (July 1998) defines ramp meters with more than 15 minutes of delay as having a significant impact.

TDM measures improve the efficiency of the transportation system by helping to reduce vehicle trips during peak periods of demand. The San Diego Association of Governments (SANDAG) has an established program (iCommute) that serves as the administrator for TDM programs throughout the region. iCommute provides the following services:

- *RideMatcher* – resources for finding carpool partners or available vanpool seats
- *SchoolPool* – a program that enrolls schools to encourage parents to carpool
- *Transit Information* – provides a linkage to transit service provider web pages
- *Bicycle Information* – provides a link to SANDAG's Regional Bikeway Master Plan, which has been updated to show bicycle paths, lanes and routes in the region
- *Guaranteed Ride Home* – a program that allows vanpool riders affordable rides home to deal with emergency meetings or illness

In addition to the iCommute program, Caltrans owns and/or maintains several park-and-ride lots in the region that are used to promote carpool activity.

The City of San Diego's Land Development Code (LDC) requires new development to provide sufficient bicycle parking stalls, carpool parking and motorcycle facilities to encourage the use of alternative modes of transportation. The City is early in the process of developing recommendations to amend the LDC requirements for pedestrian, bicycle, carpool, and commuter information facilities. The City is also coordinating with SANDAG on the implementation of a car-sharing demonstration program. Pricing strategies are also used to reduce demand on the transportation system.

6.5 Public Transit Services and Facilities Assessment and Results

This section assess the proposed transit network under buildout of the Preferred Plan conditions, which assumes implementation of the transit-related improvements outlined in Sections 3.4.2 and 4.4.2.

The proposed Transit network under Preferred Plan conditions was assessed using the methodologies contained in Section 2.2.1. Transit stop/station ridership and amenities are assessed below as well as the roadway arterial speed along roadways continuing transit routes.

6.5.1 Transit Stop/Station Amenities and Average Daily Boardings and Alightings

While projecting increases in multimodal trips requires some level of judgment and is dependent on numerous factors, quantitative methods are available to assist in this process. A community-wide transit ridership growth factor was derived based on future growth estimates in SADNAG Series 12 Transportation Forecast Model, as documented in Section 5.0. Based on the SANDAG model results, a 1.75 growth factor was applied to existing transit ridership volumes, which is consistent with the projection of regional growth.

Table 6.8 displays the projected transit boarding and alightings by route and by stop within both communities under Preferred Plan conditions.

Table 6.8 Average Daily Transit Boardings and Alightings by Route and Station – Preferred Plan Conditions

Route # and Location	Boardings	Alightings	Total Trips
Bus Route 8 Clockwise			
Sports Arena Blvd and Midway Dr	30	30	60
Sports Arena Blvd and Midway Dr	150	50	200
Sports Arena Blvd Between Hancock and Kemper	60	20	70
Sports Arena Blvd Between Kemper and Sports Arena Driveway	70	50	160
Sports Arena Blvd and East Dr	120	50	170
Rosecrans St and Pacific Highway	40	40	70
Old Town Transit Center	20	1,100	1,120
Bus Route 9 Counter Clockwise			
Old Town Transit Center	1,120	20	1,130
Rosecrans St and Moore St	30	20	40
Rosecrans St and Kurtz St	20	40	50
Sports Arena Blvd and Camino Del Rio West	20	60	80
Sports Arena Blvd and East Dr	20	90	110
Sports Arena Blvd and Sports Arena Driveway	50	130	170
Sports Arena Blvd and Hancock St	60	180	240
Bus Route 10 East			
Old Town Transit Center	1,780	30	1,810
Pacific Highway and Sports Arena Blvd	50	30	70
Pacific Highway and Witherby St	100	170	270
Washington St and Pacific Highway	90	80	160
Washington St and Hancock St	40	10	50
Washington St and India St	90	30	120
Bus Route 10 West			
Washington St and India St	20	90	100
Washington St and Hancock St	10	20	30
Washington St and The Trolley Tracks	30	150	180
Pacific Highway and Washington St	30	30	60
Pacific Highway and Witherby St	90	110	200
Pacific Highway and Enterprise St	20	60	80
Pacific Highway and Kurtz St	10	10	10
Old Town Transit Center	30	1,460	1,480
Bus Route 28 East			
Rosecrans St and Lytton St	30	20	40
Rosecrans St and North Evergreen St	30	30	60
Rosecrans St and Loma Square	80	60	140
Rosecrans St and Sports Arena Blvd	60	60	120

Table 6.8 Average Daily Transit Boardings and Alightings by Route and Station – Preferred Plan Conditions

Route # and Location	Boardings	Alightings	Total Trips
Rosecrans St and Pacific Highway	30	10	30
Old Town Transit Center	N/A	1,100	1,100
Bus Route 28 West			
Old Town Transit Center	930	N/A	930
Rosecrans St and Moore St	20	N/A	20
Rosecrans St and Kurtz St	20	20	30
Rosecrans St and Midway Drive	50	50	90
Rosecrans St and Midway Drive	80	90	160
Rosecrans St and North Evergreen St	30	40	60
Rosecrans St and Lytton St	10	20	30
Bus Route 30 North			
Pacific Highway and Witherby St	90	80	170
Pacific Highway and Enterprise St	20	40	50
Pacific Highway and Kurtz St	10	10	10
Old Town Transit Center	1,110	610	1,720
Bus Route 30 South			
Old Town Transit Center	600	1,100	1,690
Pacific Highway and Sports Arena Blvd	20	600	60
Bus Route 35 East			
Midway Drive and Duke St	110	60	160
Midway Drive and Kemper St	70	40	110
Midway Drive and Fordham St	110	40	150
Midway Drive and East Drive	80	70	140
Rosecrans St and Sports Arena Blvd	100	30	130
Rosecrans St and Pacific Highway	20	20	30
Old Town Transit Center	N/A	1,000	1,000
Bus Route 35 West			
Old Town Transit Center	1,020	N/A	1,020
Rosecrans St and Moore St	40	10	50
Rosecrans St and Kurtz St	20	30	40
Rosecrans St and Midway Drive	50	70	120
Midway Drive and East Drive	80	60	140
Midway Drive and Fordham St	40	110	140
Midway Drive and Kemper St	50	110	150
Midway Drive and Duke St	40	130	160
Bus Route 44 North			
Old Town Transit Center	1,840	10	1,850

Table 6.8 Average Daily Transit Boardings and Alightings by Route and Station – Preferred Plan Conditions

Route # and Location	Boardings	Alightings	Total Trips
Taylor St and Juan St	20	10	20
Bus Route 44 South			
Taylor St and Sunset St	10	10	20
Old Town Transit Center	50	1,590	1,630
Bus Route 88 East			
Old Town Transit Center	250	20	260
Taylor St and Juan St	10	10	10
Taylor St and Presidio Drive	10	10	10
Taylor St and I-8 East	10	10	10
Bus Route 88 West			
Taylor St and I-8 East	10	10	10
Taylor St and Presidio Drive	10	10	10
Taylor St and Sunset St	10	10	10
Old Town Transit Center	10	140	150
Bus Route 105 North			
Old Town Transit Center	780	10	780
Taylor St and Juan St	10	10	10
Bus Route 105 South			
Taylor St and Juan St	10	10	10
Old Town Transit Center	10	570	580
Bus Route 150 North			
Pacific Highway and Witherby St	50	20	70
Pacific Highway and Enterprise St	10	20	20
Pacific Highway and Kurtz St	10	10	10
Old Town Transit Center	470	140	610
Bus Route 150 South			
Old Town Transit Center	120	670	80
Pacific Highway and Sports Arena Blvd	20	10	20
Green Line Trolley East			
Old Town Transit Center	8,350	390	8,740
Washington Street Station	280	660	940
Middletown Station	10	11,200	11,200
Green Line Trolley West			
Old Town Transit Center	10,690	7,740	18,420
Washington Street Station	700	220	910
Middletown Station	330	190	510

Source: Chen Ryan Associates (January 2016)

Table 6.9 displays the projected transit boardings and alightings at each transit stop/station within both communities under buildout of the Preferred Plan. The table also shows the required stop/station amenities, as shown in Table 2.2, based on the future ridership projects.

Table 6.9 Transit Station/Stop Locations, Amenities and Average Daily Boardings and Alightings – Preferred Plan Conditions

Station	Boardings	Alightings	Total	Amenities at the Stops			
				Signs	Shelter	Bench	Trash Can
Sports Arena Blvd and Midway Dr (Clockwise)	180	80	260	✓	✓	✓	✓
Sports Arena Blvd Between Hancock and Kemper (Clockwise)	60	20	70	✓		○	
Sports Arena Blvd Between Kemper and Sports Arena Driveway (Clockwise)	70	50	160	✓		✓	
Sports Arena Blvd and East Dr (Clockwise)	120	50	170	✓	○	✓	
Rosecrans St and Pacific Highway (Clockwise)	40	40	70	✓	✓	✓	✓
Old Town Transit Center (Clockwise)	20	1,100	1,120	✓	✓	✓	✓
Old Town Transit Center (Counter Clockwise)	1,120	20	1,130	✓	✓	✓	✓
Rosecrans St and Moore St (Counter Clockwise)	30	20	40	✓		✓	✓
Rosecrans St and Kurtz St (Counter Clockwise)	20	40	50	✓		✓	
Sports Arena Blvd and Camino Del Rio West (Counter Clockwise)	20	60	80	✓		✓	
Sports Arena Blvd and East Dr (Counter Clockwise)	20	90	110	✓		✓	✓
Sports Arena Blvd and Sports Arena Driveway (Counter Clockwise)	50	130	170	✓		✓	
Sports Arena Blvd and Hancock St (Counter Clockwise)	60	180	240	✓		✓	
Old Town Transit Center (Eastbound)	2,030	2,150	4,170	✓	✓	✓	✓
Pacific Highway and Sports Arena Blvd (Eastbound)	50	30	70	✓			
Pacific Highway and Witherby St (Eastbound)	100	170	270	✓		✓	✓
Washington St and Pacific Highway (Eastbound)	90	80	160	✓		✓	
Washington St and Hancock St (Eastbound)	40	10	50	✓		✓	✓
Washington St and India St (Eastbound)	90	30	120	✓		✓	✓
Washington St and India St (Westbound)	20	90	100	✓			✓
Washington St and Hancock St (Westbound)	10	20	30	✓		✓	✓
Washington St and The Trolley Tracks (Westbound)	30	150	180	✓			

Table 6.9 Transit Station/Stop Locations, Amenities and Average Daily Boardings and Alightings – Preferred Plan Conditions

Station	Boardings	Alightings	Total	Amenities at the Stops			
				Signs	Shelter	Bench	Trash Can
Pacific Highway and Washington St (Westbound)	30	30	60	✓		✓	
Pacific Highway and Witherby St (Westbound)	90	110	200	✓	✓	✓	✓
Pacific Highway and Enterprise St (Westbound)	20	60	80	✓			
Pacific Highway and Kurtz St (Westbound)	10	10	10	✓			
Old Town Transit Center (Westbound)	1,990	1,600	3,580	✓	✓	✓	✓
Rosecrans St and Lytton St (Eastbound)	30	20	40	✓	✓	✓	✓
Rosecrans St and North Evergreen St (Eastbound)	30	30	60	✓		✓	✓
Rosecrans St and Loma Square (Eastbound)	80	60	140	✓	✓	✓	✓
Rosecrans St and Sports Arena Blvd (Eastbound)	160	90	250	✓	✓	✓	✓
Rosecrans St and Pacific Highway (Eastbound)	50	30	60	✓	✓	✓	✓
Rosecrans St and Moore St (Westbound)	60	10	70	✓		✓	✓
Rosecrans St and Kurtz St (Westbound)	40	50	70	✓		✓	
Rosecrans St and Midway Drive (Westbound)	180	210	370	✓	○	✓	✓
Rosecrans St and North Evergreen St (Westbound)	30	40	60	✓			
Rosecrans St and Lytton St (Westbound)	10	20	30	✓			
Pacific Highway and Witherby St (Northbound)	140	100	240	✓	✓	✓	✓
Pacific Highway and Enterprise St (Northbound)	30	60	70	✓			
Pacific Highway and Kurtz St (Northbound)	20	20	20	✓			
Old Town Transit Center (Northbound)	4,200	770	4,960	✓	✓	✓	✓
Old Town Transit Center (Southbound)	780	3,930	3,980	✓	✓	✓	✓
Pacific Highway and Sports Arena Blvd (Southbound)	40	610	80	✓			
Midway Drive and Duke St (Eastbound)	110	60	160	✓	✓	✓	✓
Midway Drive and Fordham St (Eastbound)	110	40	150	✓	✓	✓	✓
Midway Drive and East Drive (Eastbound)	80	70	140	✓	✓	✓	✓
Midway Drive and East Drive (Westbound)	80	60	140	✓		✓	
Midway Drive and Fordham St (Westbound)	40	110	140	✓		✓	
Midway Drive and Kemper St (Westbound)	50	110	150	✓		✓	
Midway Drive and Duke St (Westbound)	40	130	160	✓		✓	

Table 6.9 Transit Station/Stop Locations, Amenities and Average Daily Boardings and Alightings – Preferred Plan Conditions

Station	Boardings	Alightings	Total	Amenities at the Stops			
				Signs	Shelter	Bench	Trash Can
Taylor St and Juan St (Northbound)	30	20	30	✓		✓	
Taylor St and Sunset St (Southbound)	10	10	20	✓		✓	
Taylor St and Juan St (Eastbound)	10	10	10	✓		✓	
Taylor St and Presidio Drive (Eastbound)	10	10	10	✓		✓	
Taylor St and I-8 East (Eastbound)	10	10	10	✓			
Taylor St and I-8 East (Westbound)	10	10	10	✓		✓	
Taylor St and Presidio Drive (Westbound)	10	10	10	✓		✓	
Taylor St and Sunset St (Westbound)	10	10	10	✓		✓	
Taylor St and Juan St (Southbound)	10	10	10	✓		✓	
Old Town Transit Center	19,040	8,130	27,160	✓	✓	✓	✓
Washington Street Station	980	880	1,850	✓	✓	✓	✓
Middletown Station	340	11,390	11,710	✓	✓	✓	✓

Source: Chen Ryan Associates (January 2016)

Notes:
✓: Existing Amenity
O: Needed Amenity

As shown, the majority of the existing stops/stations already provide adequate amenities to accommodate the projected future ridership. However, additional amenities will be needed at the following stations as ridership increased:

<u>Midway-Pacific Highway Community</u>

- Sports Arena Boulevard, between Hancock Street and Kemper Street (Clockwise) – Bench
- Sports Arena Boulevard and East Drive (Clockwise) – Shelter
- Rosecrans Street and Midway Drive (Westbound) – Shelter

<u>Old Town</u>

- None

6.5.2 Arterial Speed Analysis Along Roadways Serving Transit Routes

An HCM peak hour arterial speed analysis was conducted along all roadway corridors where transit routes are projected to operate in order to identify future roadway congestion that could potentially impact transit route travel times and on-time performance. Transit priority measures such as queue jumper lanes and transit priority signal timing should be implemented in locations where future roadway congestion is anticipated.

Table 6.10 displays peak hour arterial speed analyses for all roadway facilities where a transit route operates under buildout of the Preferred Plan. Peak hour arterial analysis worksheets are provided in Appendix G.

Table 6.10 Peak Hour Arterial Speed Analysis along Transit Corridors – Preferred Plan Conditions

Roadway	Segment	Posted Speed (MPH)	AM				PM			
			EB/NB		WB/SB		EB/NB		WB/SB	
			Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS
Midway-Pacific Highway Community										
Rosecrans Street	Barnett Avenue to Midway Drive	35	24.7	C	8.7	**F**	19.9	D	21.2	D
	Midway Drive to Sports Arena Blvd	35	19.8	D	2.7	**F**	20.3	D	3.5	**F**
	Sports Arena Blvd to Kurtz Street	35	11.3	**E**	3.7	**F**	6.5	**F**	4.3	**F**
	Kurtz Street to Pacific Highway	35	13.2	**F**	21.4	C	10.9	**F**	20.2	D
Midway Drive	Sports Arena Blvd to Hancock Street	35	5.8	**F**	7.2	**F**	7.1	**F**	6.4	**F**
	Hancock Street to Kemper Street	35	14.8	D	15.2	D	11.8	**E**	11.9	**E**
	Kemper Street to East Drive	35	18.6	C	24.9	B	14.5	D	24.1	B
	East Drive to Rosecrans Street	35	22.5	C	10.1	**E**	22.7	C	7.4	**F**
Sports Arena Boulevard	I-8 WB Off-Ramp to W Point Loma Blvd	35	21.3	C	10.7	**E**	10.8	**E**	5.8	**F**
	W Point Loma Blvd to Hancock Street	35	26.4	B	14.1	D	22.1	C	11.8	**E**
	Hancock Street to Kemper Street	35	23.1	C	17.1	D	16.7	D	16.7	D
	Kemper Street to Frontier Street	35	14.7	D	13.0	**E**	16.5	D	9.9	**F**
	Frontier Street to Greenwood Street	35	17.5	D	25.4	B	16.2	D	18.2	C
	Greenwood Street to Rosecrans Street	35	24.3	B	8.1	**F**	21.6	C	6.9	**F**
Pacific Highway	Taylor Street to Kurtz Street	45	20.8	D	15.9	**E**	20.5	D	14.2	**E**
	Kurtz Street to Sports Arena Blvd	45	22.1	C	26.0	C	15.3	**E**	13.1	**E**
	Sports Arena Blvd to Barnett Avenue	45	31.8	B	9.3	**F**	24.9	C	6.6	**F**
	Barnett Avenue to Witherby Street	45	24.4	C	13.3	**E**	23.5	C	16.8	**E**
	Witherby Street to Washington Street	45	18.4	D	26.7	C	18.1	D	10.0	**F**
	Washington Street to Sassafras Street	45	17.2	**D**	26.0	C	6.8	**F**	26.6	C
	Sassafras Street to W Laurel Street	45	27.6	C	17.4	D	28.6	B	19.0	D
Old Town Community										
Taylor Street	Pacific Highway to Congress Street	35	12.4	D	5.5	**F**	8.8	**E**	4.8	**F**
	Congress Street to Juan Street	35	9.3	D	13.4	C	7.0	**F**	14.5	C
	Juan Street to Whitman Street	35	17.7	C	15.9	C	15.5	C	16.5	C

Source: Chen Ryan Associates (January 2016)

Note:
Bold letter indicates LOS E or F

As shown, several segments within both communities are projected to operate at LOS E or F during both the AM and PM Peak hours:

Midway-Pacific Highway

- Rosecrans Street, between Barnett Avenue and Midway Drive
  - LOS F: AM peak hour, westbound direction
- Rosecrans Street, between Midway Drive and Sports Arena Boulevard
  - LOS F: AM & PM peak hours, westbound direction
- Rosecrans Street, between Sports Arena Boulevard and Kurtz Street
  - LOS F: AM & PM peak hours, westbound & eastbound directions
- Rosecrans Street, between Kurtz Street and Pacific Highway
  - LOS E: AM peak hour, eastbound direction
  - LOS F: PM peak hour, eastbound direction
- Midway Drive, between Sports Arena Boulevard and Hancock Street
  - LOS F: AM & PM peak hours, northbound & southbound directions
- Midway Driveway, between Hancock Street and Kemper Street
  - LOS E: PM peak hour, northbound & southbound directions
- Midway Drive, between East Drive and Rosecrans Street
  - LOS E: AM peak hour southbound direction
  - LOS F: PM peak hour southbound direction
- Sports Arena Boulevard, between I-8 Westbound Ramps and West Point Loma Boulevard
  - LOS E: AM peak hour, southbound direction
  - LOS E: PM peak hour, northbound direction
  - LOS F: PM peak hour, southbound direction
- Sports Arena Boulevard, between West Point Loma Boulevard and Hancock Street
  - LOS E: PM peak hour, southbound direction
- Sports Arena Boulevard, between Kemper Street and Frontier Street
  - LOS E: AM peak hour, southbound direction
  - LOS F: PM peak hour, southbound direction
- Sports Arena Boulevard, between Greenwood Street and Rosecrans Street
  - LOS F: AM & PM peak hours, southbound direction
- Pacific Highway, between Taylor Street to Kurtz Street
  - LOS E: AM & PM peak hours, southbound direction
- Pacific Highway, between Kurtz Street and Sports Arena Boulevard
  - LOS E: PM peak hour, northbound & southbound directions
- Pacific Highway, between Sports Arena Boulevard and Barnett Avenue
  - LOS F: AM & PM peak hours, southbound direction
- Pacific Highway, between Barnett Avenue and Witherby Street
  - LOS E: AM & PM peak hours, southbound direction
- Pacific Highway, between Witherby Street and Washington Avenue
  - LOS F: PM peak hour, southbound direction
- Pacific Highway, between Washington Avenue and Sassafras Street
  - LOS E: AM peak hour, northbound direction
  - LOS F: PM peak hour, northbound direction

Pacific Highway serves several regional bus routes that connect multiple communities. The projected low travel speeds along several segments of Pacific Highway could impact the efficiency and on-time performance of these regional routes. Therefore, it is recommended that, as Pacific Highway gets redeveloped from an expressway facility to a six-lane major, transit priority measures such as queue jumper lanes and transit priority signals are implemented at all signalized intersections along Pacific Highway between Taylor Street and Laurel Street.

Rosecrans Street, Midway Drive and Sports Arena Boulevard also serve local transit routes in the Midway-Pacific Highway, Peninsula and Mission Bay communities. The projected low speeds along segments of these roadways could potentially affect the efficiency and on-time performance of these local routes. However, due to the low ridership, local nature of these routes, and lack of available right-of-way along these roadways, no additional transit measures are recommended along these roadways.

Old Town

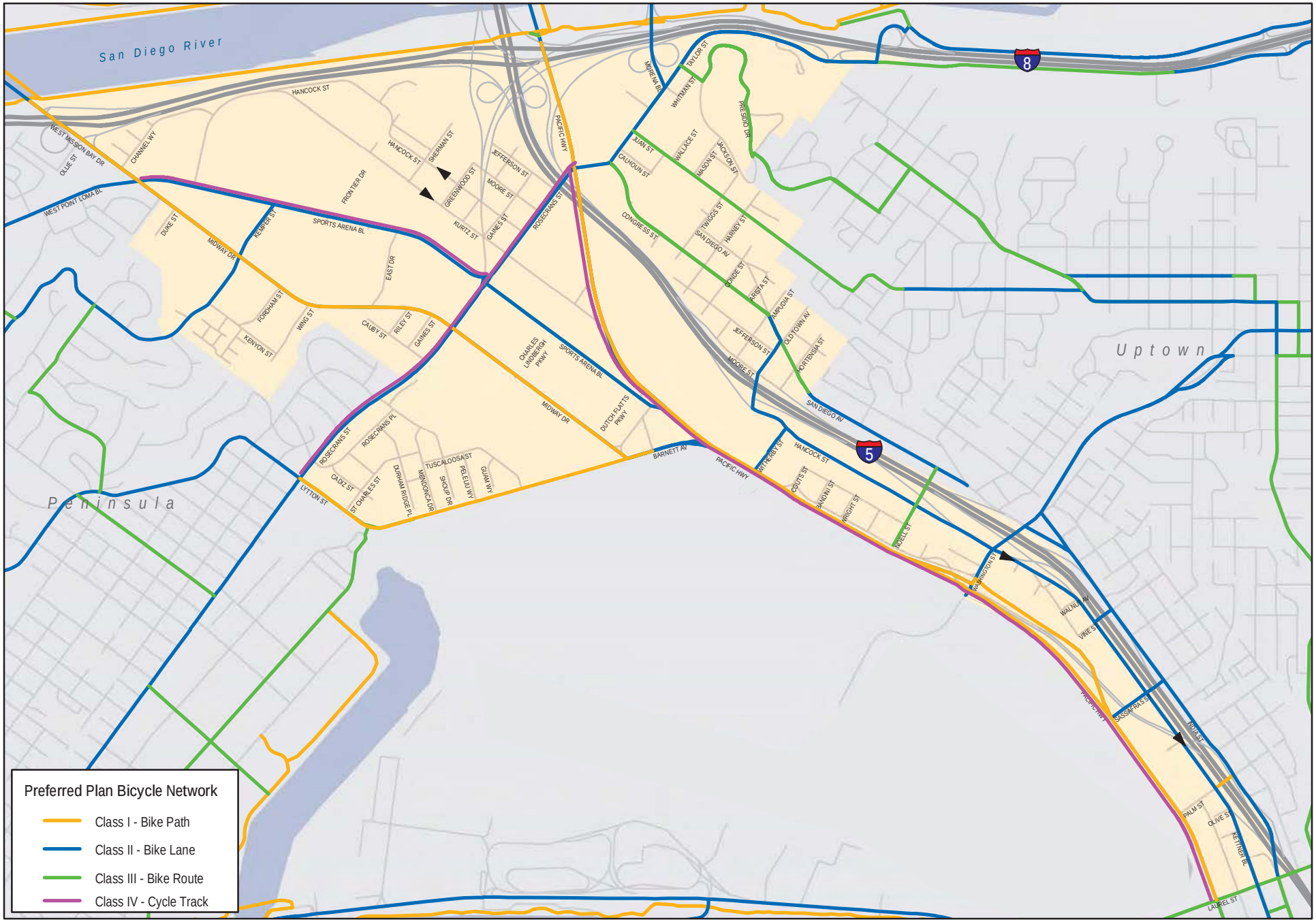
- Taylor Street, between Pacific Highway and Congress Street
  - LOS F: AM & PM peak hours, southbound direction
  - LOS E: PM peak hour, northbound direction
- Taylor Street, between Congress Street and Juan Street
  - LOS F: PM peak hour, northbound direction

Taylor Street serves several regional bus routes connecting multiple communities. The projected low travel speeds along Taylor Street could impact the efficiency and on-time performance of these regional routes. Therefore it is recommended that transit priority treatments be implemented along Taylor Street to help increase transit performance. It should be noted that there is currently not enough right-of-way along street to implement measures such as queue jumper lanes at the Juan Street and Morena Boulevard signals. Therefore, no improvements can be assumed as part of the Preferred Plan. However, the Mobility Element should include a policy that if additional right-of-way ever comes available at these intersections, then the City should implement queue jumper lanes and transit priority signals in either direction at both the Taylor Street / Juan Street and Taylor Street / Morena Boulevard intersections.

6.6 Cycling Environment Assessment and Results

This section presents an assessment of the cycling environment under buildout of the Preferred Plan conditions, which assumes implementation of the cycling-related improvements outlined in Sections 3.2.2 and 4.2.2. Figure 6-10 displays the proposed bicycle network in both communities under buildout of the Preferred Plan.

The cycling environment under Preferred Plan conditions was assessed using the methodologies presented in Section 2.2.3. Cycling network connectivity, quality and overall adequacy (combining both quality and connectivity) are assessed below.



Midway-Pacific Highway and
Old Town Community Plan Update

CHEN RYAN

Figure 6-10
Bicycle Network
Preferred Plan Conditions

6.6.1 Bicycle Network Connectivity

Figure 6-11 displays bicycle network connectivity to/from the study intersections across both communities. This analysis calculates the percent of area that a cyclist can access within a one mile ride from the respective intersection (connectivity ratio). A connectivity ratio of 50% or better is considered to be ideal.

Midway-Pacific Highway Community

As shown in the figure, the bicycle connectivity is at good levels (40%+ connectivity ratio) in the center of the community around the block bound by Rosecrans Street, Midway Drive, Sports Arena Boulevard and East Drive.

Old Town Community

As shown in the figure, the Old Town community generally has a good connectivity ratio of 35+%, with the highest connectivity along Taylor Street, where regional connections are available from Taylor Street (Coastal Rail Trail and Ocean Beach Bike Path).

6.6.2 Bicycle Network Quality

Figure 6-12 display the LTS analysis results for roadways segments and intersections along all Mobility Element roadways within the community.

Midway-Pacific Highway Community

As shown in the figure, the new multi-use trails proposed as part of the North Bay Urban Greening Plan (La Playa Trail, Bay-to-Bay Trail the Historic Highway 101 Trail and the Midway Trail) provide a slower low stress environment for cyclists (all trails have a score of LTS 1). Additionally, the proposed Class IV One-Way Cycle Tracks proposed along Pacific Highway provide a safe cycling environment for higher speed cyclists entering the community from either the north or south. This facility has an LTS 1 score. Finally, the Enhanced Class II Buffered Bikes Lanes proposed along Sport Area Boulevard and Rosecrans Street provide more confident and higher speed cyclists a safe in-road alternative along these routes. Both facilities have a score of LTS 1.

Old Town Community

As shown in the figure all roadways, with the exception of Taylor Street and Morena Boulevard, are projected to be low stress cycling environments (LTS 1 or 2). This is due to the low speed nature of the roadways within the Old Town Community. However, even with Class II Bike Lanes proposed along Taylor Street, the roadway is still projected to have an LTS score of 3. This is due to the high vehicular travel speed along Taylor Street and lack of a horizontal or vertical buffer between cyclists and motorists.

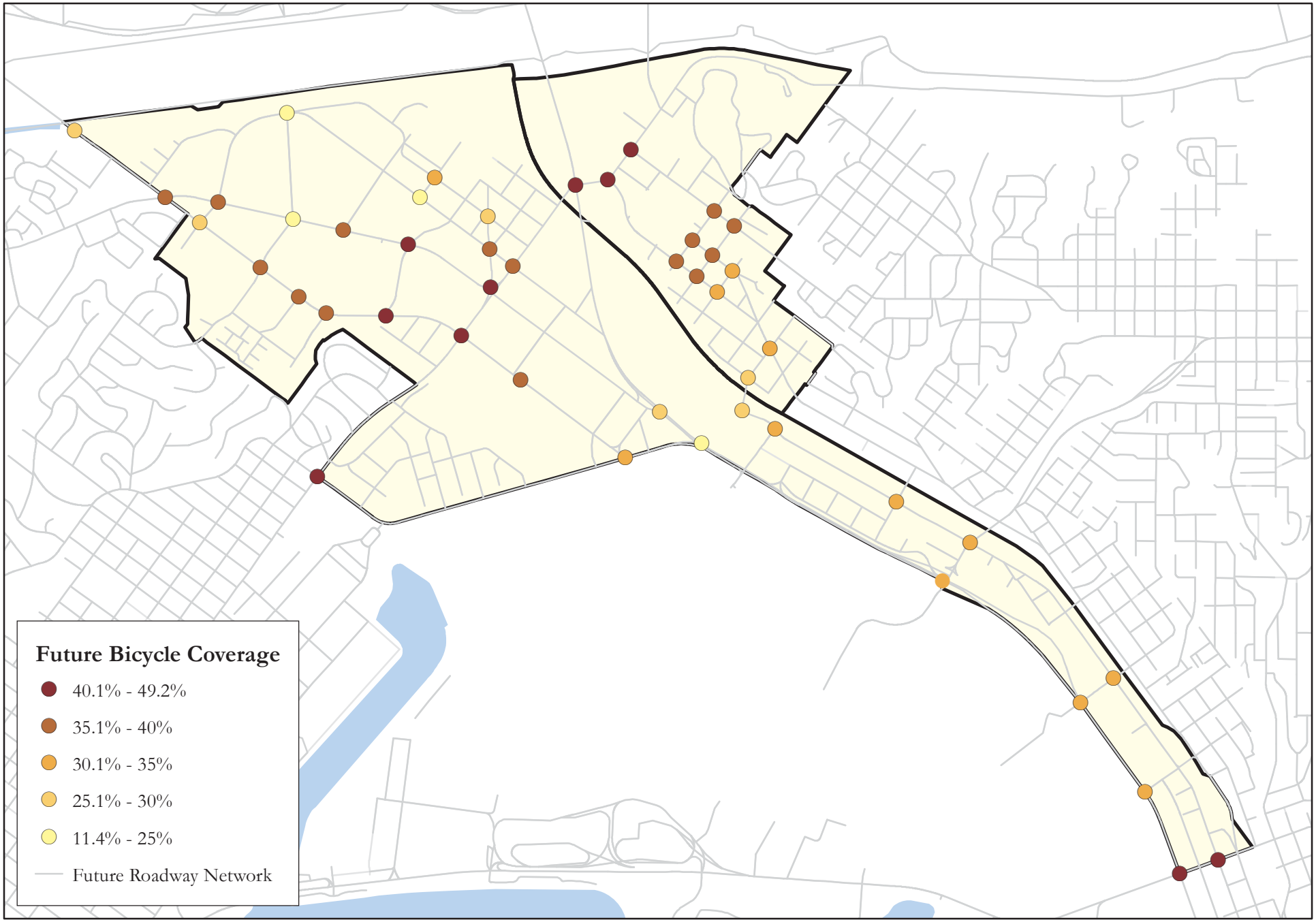


Figure 6-11
Bicycle Network Connectivity
Preferred Plan Conditions

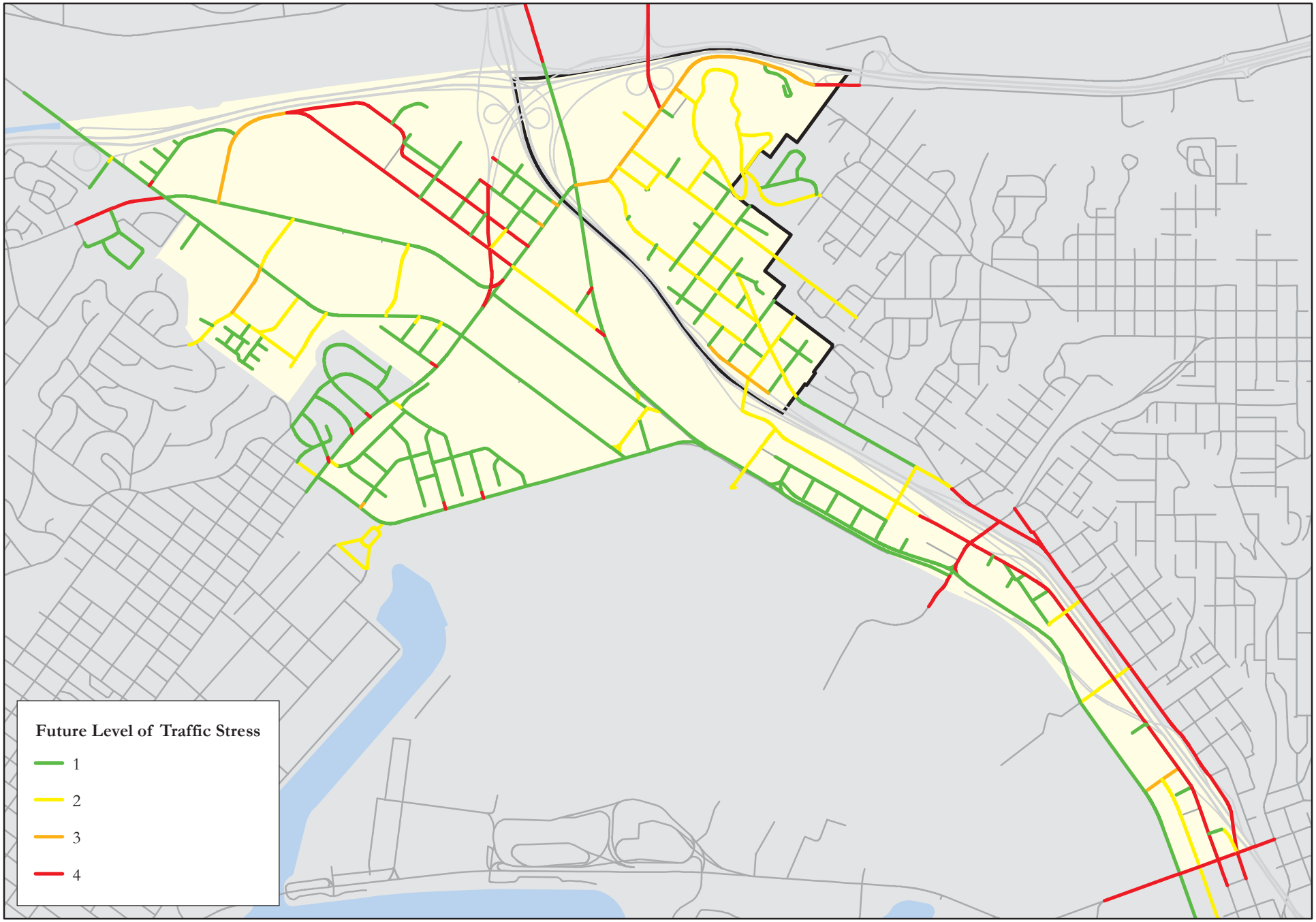


Figure 6-12
Bicycle LTS Score - Preferred Plan Conditions

6.6.3 Combined Bicycle Network Connectivity and Quality Assessment

Figure 6-13 displays the combined Bicycle Network Connectivity and Quality Assessment for all bicycle accessible land uses (residential, commercial, office, recreational and instructional land uses) throughout both communities. This analysis calculates the percent of TAZs with bicycle accessible land uses that a cyclist can reach using only LTS 1 and 2 facilities.

Midway-Pacific Highway Community

As shown in the figure, the proposed bicycle improvements enhance the level of connectivity to/from the residential land uses located on the western side of the community. In this area, cyclists can connect to 40+% of the bicycle accessible land uses within the community using only LTS 1 or 2 facilities. The proposed commercial areas within the community (north of Rosecrans Street) can typically connect to 30-40% of the bicycle accessible land uses within the community using only LTS 1 or 2 facilities. The only areas that have low connectivity (0-10%) are the more industrial areas located in the north and northeast portions of the community. However, these areas have very few bicycle accessible land uses.

Old Town Community

As shown in the figure, the community as a whole has generally moderate connectivity levels between 20% and 40%. The main barrier limiting the overall quality connectivity within the community is Taylor Street, which has an LTS score of 3. If the LTS score along Taylor Street can be improved to an LTS 1 or 2, the overall quality connectivity within the Old Town Community will increase significantly. However based on the roadway's current configuration, enhanced bicycle facilities such as Buffered Class II Bike Lanes or a Class IV Cycle Track is not currently feasible along Taylor Street. Therefore, a policy should be included in the Mobility Element that if Taylor Street is ever widened beyond its current right-of-way, enhanced bicycle facilities such as Class II Buffered Bike Lanes or a Class IV Cycle Track should be implemented as well.

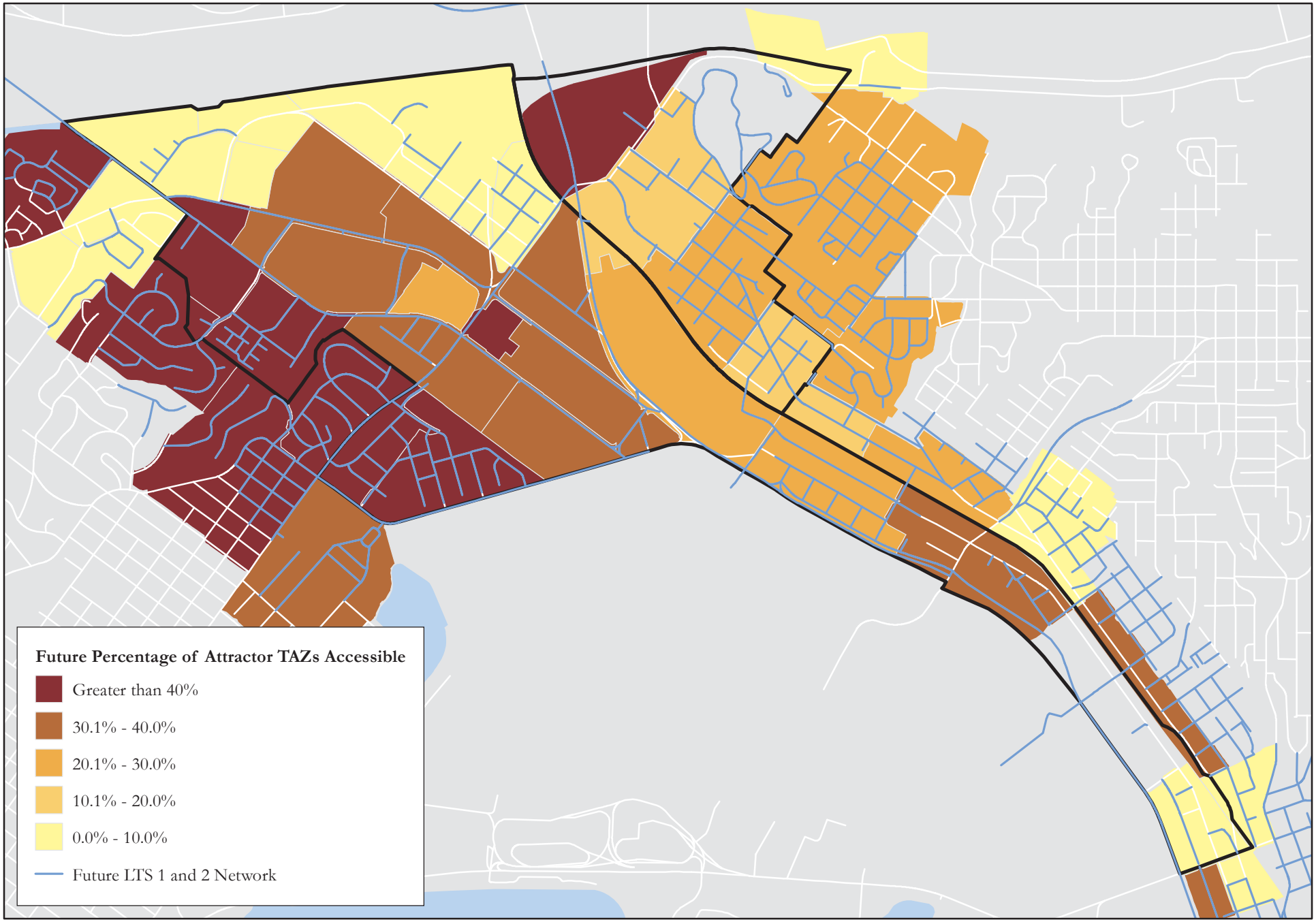


Figure 6-13
Combined Bicycle Network Connectivity and Quality Assessment
Preferred Plan Conditions

6.7 Parking Management

It is anticipated that any additional parking demand associated with future developments will be accommodated on-site. It is assumed that all on-street public parking spaces will be maintained under community buildout conditions, with the exception of the following:

Midway-Pacific Highway

Rosecrans Street, between Sports Arena Boulevard / Camino Del Rio West and Pacific Highway – To implement the trail improvements proposed in the North Bay Urban Greening Plan, parking along both sides of Rosecrans Street will need to be removed. Approximately 65 on-street parking spaces will be removed along this segment. Since there is abundant off-street parking within the community and these spaces are not heavily utilized, the removal of these spaces should not negatively impact the community.

Sports Arena Boulevard, between Mission Bay Drive and West Point Loma Boulevard – To implement the trail improvements proposed in the North Bay Urban Greening Plan, parking along the southwest side of Sports Arena Boulevard will need to be removed. Approximately 24 on-street parking spaces will be removed along this segment. Since there is abundant off-street parking within the community and these spaces are not heavily utilized, removal of these spaces should not negatively impact the community.

Old Town

None