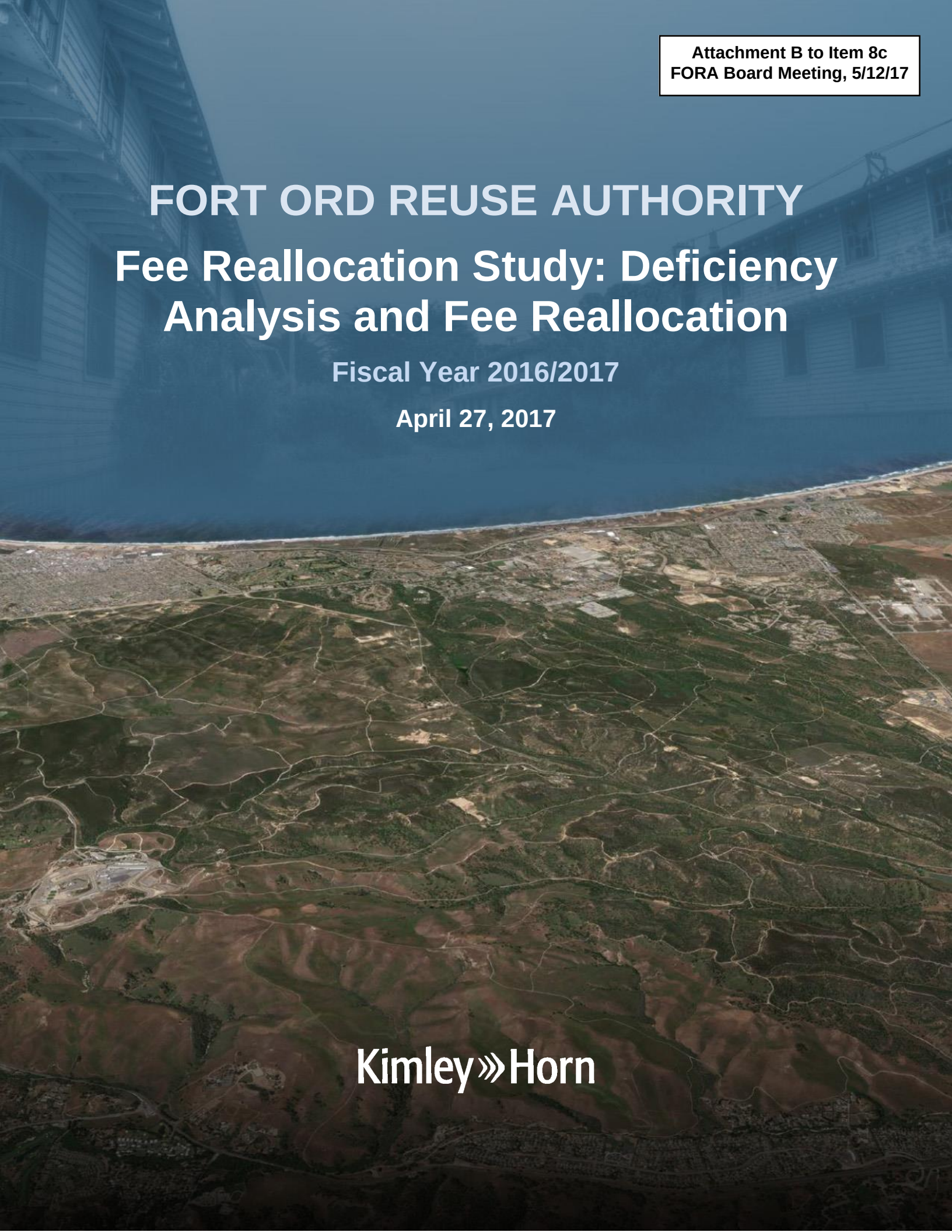
Attachment B to Item 8c
FORA Board Meeting, 5/12/17

FORT ORD REUSE AUTHORITY

Fee Reallocation Study: Deficiency Analysis and Fee Reallocation

Fiscal Year 2016/2017

April 27, 2017



Kimley»Horn

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EXECUTIVE SUMMARY

Purpose

The purpose of this report is to present the results of the Fort Ord Reuse Authority (FORA) Fee Reallocation Study including the deficiency analysis and fee reallocation, and to describe the final project steps.

The analysis looked at a Build 2015 Capital Improvement Program (CIP), a Build Alternative, and No Build scenario and the resulting future traffic congestion under each. The results of the No Build scenario shows that, by 2035, if FORA does not build the FORA CIP transportation projects, seven of the existing roadways in the current FORA project list will operate at deficient levels (Levels of Service E or F). If FORA completes the CIP transportation projects (Build 2015 or Build Alternative scenario), the study roadways would operate at acceptable levels of service (Levels of Service D or better). The **Build 2015 CIP** and **Build Alternative CIP** analysis shows two roadways (Reservation Road between Davis and Watkins Gate Roads, and Eastside Parkway) would operate at a LOS D/E by 2035 (however, these two LOS D/E roadways are within the margin of error to the acceptable LOS D). This analysis shows that the FORA CIP projects provide sufficient improvement to the roadway network to address future growth-related transportation deficiencies.

Due to costs and other constraints of widening Highway 1 between Fremont Boulevard and Del Monte Boulevard, the **Build Alternative CIP** was considered that provides enhanced transit service, interchange, and other roadway operational improvements. Conceptual transit improvements analyzed included Bus-On-Shoulder operations along Highway 1 and enhanced transit service along corridors. Kimley-Horn's major findings were that 1) approximately 70% of the future traffic growth that would have otherwise been accommodated by a Highway 1 widening is anticipated to be accommodated by Del Monte Boulevard, Fremont Boulevard, and General Jim Moore, and that 2) transit ridership in the Association of Monterey Bay Area Government's Regional Travel Demand Model is projected to increase in the future.

Using the resultant analysis included within this document, a revised cost allocation of the remaining FORA obligations was prepared. It is important to note that although the FORA fee was previously calculated in a manner similar to a typical impact fee, it is in fact a Mello-Roos tax, and, as such, this allows for flexibility in determining specific methods for cost reallocation such that they best support the Fort Ord Reuse Authority and local jurisdiction goals and policies. As such, two options are presented for the reallocation methodology: Nexus Approach and Fund Local Projects First Approach.

Accordingly, for the purpose of maintaining consistency with prior work, the cost obligation maintained 2005 as the basis for determining existing deficiency. This avoids substantial changes in FORA funding prioritizations that might otherwise occur as the result of new improvements or

other circumstances resulting in changes to existing deficiencies. Futhermore, recognizing that the FORA obligation can not be increased beyond the limit originally established in the 2005 study (as inflated by the Construction Cost Index), the results of the fair share analysis were recalculated using a weighting methodology so that the total obligation for the projects in aggregate remained within the funding limit. Similarly to what was undertaken in the 2005 study, it is anticipated that the resultant reallocation will be further refined to reflect the priorities of FORA and local jurisdictions.

Recommendations

Based on these findings, Kimley-Horn recommends that FORA confirm the **Build Alternative CIP** transportation network as the same as the **Build 2015 CIP** transportation network with the following changes:

- Broaden the description of "regional" project R3a widening Highway 1 between Fremont Boulevard and Del Monte Boulevard to be renamed as Highway 1 Corridor improvements and include new enhanced transit improvements and service (Bus on Shoulder or Monterey Branch Line Bus Rapid Transit, and Local Monterey-Salinas Transit Service), and improvements to the Highway 1 – Fremont Boulevard Interchange in Seaside; and
- At the request of the City of Marina, include the 2nd Avenue Extension in the FORA CIP, redistributing funds from the other road projects in the City of Marina.

It is further recommended that the cost reallocation included within this document as **Table 20** be used as the starting point for updating the FORA CIP Obligations, recognizing that it is likely that further adjustments will be necessary based on Fort Ord Reuse Authority and local jurisdiction direction. In particular, the FORA Administrative Committee has recommended using Option B from **Table 21** as the basis for the reallocation.

INTRODUCTION

Project Background

The 1997 Base Reuse Plan (BRP) states that FORA shall fund its "Fair Share" of "on-site," "off-site," and "regional" roadway and transit capital improvements based on a nexus analysis from the Transportation Agency for Monterey County (TAMC). The BRP also requires that FORA work with TAMC to monitor projected traffic levels within the transportation network. To meet these requirements, TAMC prepared the *Fort Ord Transportation Study Final Report* on July 8, 1997 and the *FORA Fee Reallocation Study* on April 15, 2005. To continue to meet these requirements, in 2015, FORA entered into a reimbursement agreement with TAMC to fund a new FORA Fee Reallocation Study.

Key Terms

Deficiency analysis is a methodology used to determine weaknesses found in a system. In terms of a transportation network study, a deficiency analysis uses Level of Service (LOS).

Level of Service (LOS) is a measure for qualitatively assessing roadway quality. TAMC and FORA have established acceptable service levels as LOS D or better.

Regional Travel Demand Model is a forecasting tool used to estimate the number of vehicles that will use a specific transportation facility in the future.

Traffic Analysis Zone (TAZ) is the unit of geography used in the Regional Travel Demand Model. It includes input data for households and employment that the Regional Travel Demand Model requires.

Average Daily Traffic (ADT) is the average weekday traffic counted in a location over several days during a period of the year of considered typical.

Peak Hour is the "rush hour" or highest hourly traffic volume in either the AM or the PM.

Capital Improvement Plan (CIP) is a short-range plan that identifies capital projects including financing options.

Key Findings

Kimley-Horn prepared analysis which included completing model runs using with the Association of Monterey Bay Area Governments (AMBAG) Regional Travel Demand Model for the following conditions (tables summarizing the evaluation results are noted in parenthesis):

1. **Existing Conditions**: which includes existing land use on the existing roadway network (**Table 9**). Although, existing count data is actually used as the basis for analyzing LOS, this run is necessary for post-processing and other analysis purposes.
2. **No-Build**: which considers 2035 land use conditions on the existing roadway network (**Table 10**).
3. **Future Deficiency Analysis**: which considers 2035 land use conditions with the 2014 Regional Transportation Plan roadway improvements only (no FORA CIP) (**Table 11**).

4. **Build 2015 CIP**: which is 2035 land use conditions with FORA CIP and the 2014 Regional Transportation Plan roadway improvements (**Table 12**).
5. **Build Alternative CIP**: which includes 2035 land use conditions with the FORA CIP, including alternative Highway 1 Corridor Improvements, 2nd Avenue Extension in City of Marina, and the 2014 Regional Transportation Plan roadway improvements (**Table 13).**

In addition to BRP requirements, FORA has engaged with TAMC to complete the 2017 FORA Fee Reallocation Study for the following reasons:

1. FORA's transportation cost estimates were developed through the *2005 FORA Fee Reallocation Study* and have not been updated since that time. Updating transportation costs using most recent estimates will provide greater certainty regarding FORA's funding obligations.
2. AMBAG and TAMC updated the Regional Transportation Plan (RTP) in 2014/15. FORA's transportation obligations need to be consistent with current RTP projects.
3. Former Fort Ord land use jurisdictions have new land use plans since 2005, which may result in changes to the "on-site" BRP transportation network. Such changes could affect the capacity of the "on-site" roadway network. TAMC and FORA need to analyze the net effect of these modifications to assure that the required capacity of the "on-site" network can support planned BRP development.
4. FORA can use updated information regarding its transportation obligations from the 2017 FORA Fee Reallocation Study to assist in preparing the FORA transition plan, which must be completed prior to 2019.

Scope

The study's workplan was to produce the 2017 FORA Fee Reallocation Study, which includes the following tasks:

1. Review/modify land use assumptions on former Fort Ord primarily based on the 2016/17 FORA CIP;
2. Review the 2014 AMBAG Regional Travel Demand Model for use in this study;
3. Review/modify future network assumptions – includes creating three transportation networks for travel forecast analysis: **No-Build**, **Build 2015 CIP**, and **Build Alternative CIP**;
4. Complete deficiency analysis – conduct model runs on three transportation networks, identify deficiencies/weaknesses attributed to growth, and summarize results;
5. Complete fee reallocation – run select link analysis to determine the fair share proportions for the fee allocation;
6. Complete project funding analysis

FEE REALLOCATION STUDY

The purpose of the 2017 FORA Fee Reallocation Study is to assess the current conditions of the transportation network (**Existing Conditions**) and how the proposed developments within the former Fort Ord boundaries will impact the future transportation network (**Future Defeciency Analysis**) and the effectiveness of the FORA Capital Improvement Program (CIP) at mitigating those impacts (**Build 2015 CIP** and **Build Alternative CIP**).

Methods:
The 2014 AMBAG Regional Travel Demand Model was used to determine the deficiencies for the roadway network, focusing on the FORA CIP road network. AMBAG completed an update of the model for the Metropolitan Transportation Plan / Sustainable Communities (2035 MTP/SCS and RTP) for Monterey, San Benito, and Santa Cruz Counties. The model includes detailed transportation and transit networks, as well as a geographically based TAZ layer containing socioeconomic data for the base year 2010 and forecast years 2020 and 2035. The AMBAG Regional Travel Demand Model is estimated and calibrated to 2010 conditions using data from the 2011-12 California Household Travel Survey, US Census, employment, and traffic data from that same year.

Review & Update of Land Use Assumptions

The 2005 FORA Fee Reallocation Study presented land use data that reflected the total development levels included in the Base Reuse Plan and reflected the planning efforts at the time of the study.

Kimley-Horn, in consultation with FORA staff, completed additional updates to the model to refine the model's transportation network, reflect the Base Reuse Plan land use assumptions, as well as include more recent development data for the former Fort Ord area. Since the Base Reuse Plan allows a limited amount of development to occur within former Fort Ord, this analysis assumes the resource constrained Base Reuse Plan buildout described in FORA's Development and Resource Management Plan (DRMP) (BRP section 3.11.5) for scenarios that include 2035 land use.

Table 1 and **Table 2** summarize the updated Fort Ord land use data for full buildout of projects that contribute to the 2017 FORA Fee Reallocation Study. Land use development data includes any relevant land use, employment, and household information available from development plans and regulatory documents. Data collected from the development plans and regulatory documents were categorized in accordance to the demographic and land use attributes in the 2014 AMBAG Regional Travel Demand Model (RTDM). This maintains consistency between the housing and employment totals from the collected data with the model's land use inputs. Note that **Table 1** and **Table 2** reflect readily available current project information obtained during the course of this project (detailed employment information is only presented for FORA land use projects). **Figure 1** shows the TAZ structure in which the land use information for this model is contained.

Table 1: Development Forecasts FORA 2016/17 CIP: Residential (1)

Land Use Location & Description	TAZ	Future Units
NEW RESIDENTIAL		
Marina		
Marina Heights	839, 855, 870, 848	1,050
The Promontory	826	0
Dunes	788, 790, 791, 815, 821	970
TAMC	788	200
Marina Subtotal		**2,220**
Seaside		
Seaside Highlands (1)	765	0
Seaside Resort	762	125
Seaside	771, 801	995
Seaside Subtotal		**1,120**
Other		
UC	801	240
Del Rey Oaks	1782	691
East Garrison	1035, 1039, 1042, 1052, 1065, 1068, 1070	1,151
Other Subtotal		**2,082**
TOTAL NEW RESIDENTIAL		**5,422**
Existing/Replacement Residential		
Preston Park (Entitled)	853	0
Seahaven (Planned)	813	400
Abrams B (Entitled)	853	0
MOCO Housing Authority (Entitled)	815	0
Shelter Outreach Plus (Entitled)	815	0
VTC (Entitled)	815	0
Interim Inc (Entitled)	815	0
Sunbay (Entitled)	769	0
Bayview (Entitled)	769	0
Seaside Highlands (Entiteled)	761	0
TOTAL EXISTING/REPLACE		**400**
CSUMB (Planned)		**492**
	TOTAL RESIDENTIAL UNITS	**6,314**

(1) Land use information based on FORA 2016/17 CIP with updates based on agency input.

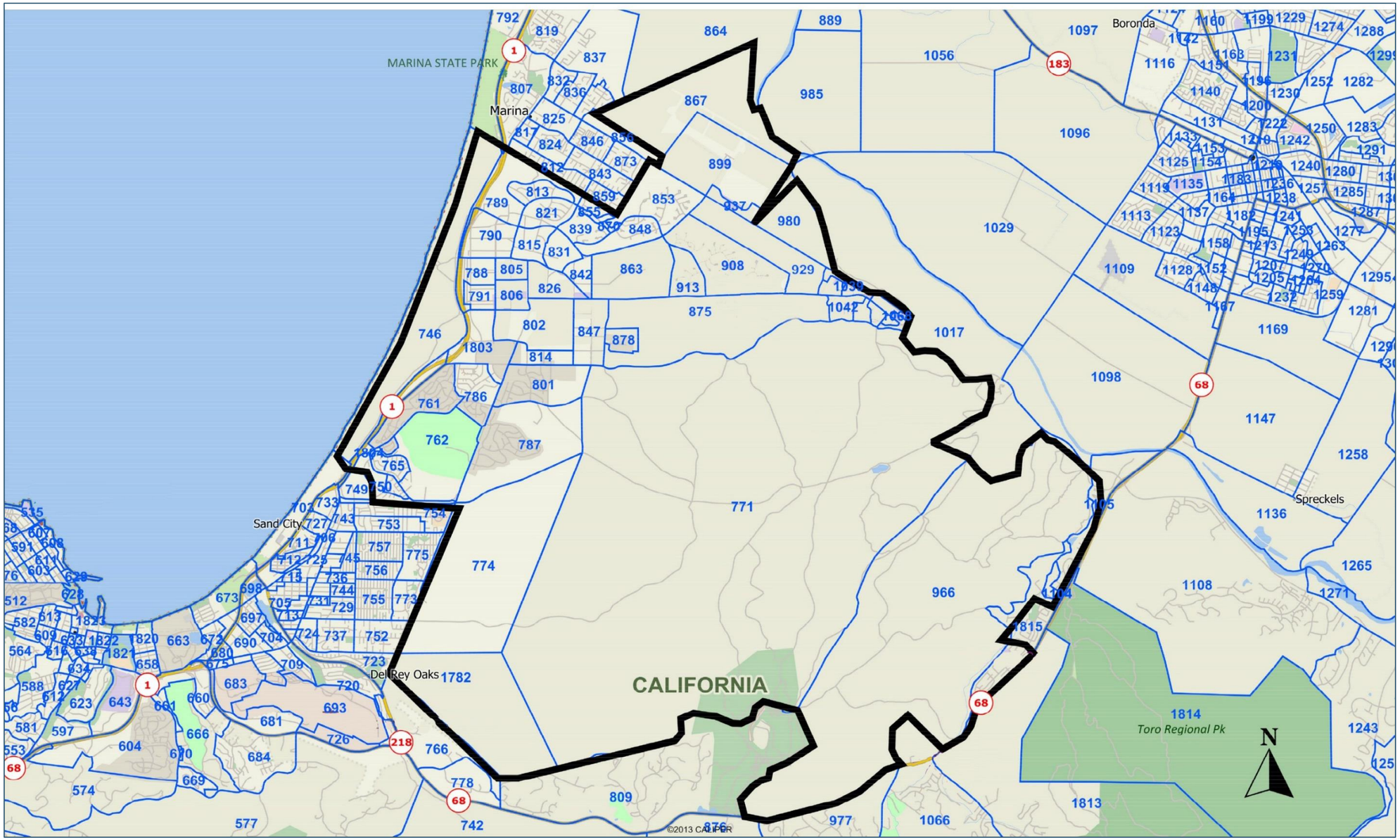
Table 2: Development Forecasts FORA 2016/17 CIP: Non-Residential (1)

Land Use Location & Description	TAZ	Future Square Footage	Future Employees
NON-RESIDENTIAL			
Office			
Del Rey Oaks	1782	400,000	1,143
Monetery	1782	721,524	2,061
East Garrison	1052	34,000	97
Imjin Office Park	789		0
Dunes	788, 790, 791, 815, 821	349,000	997
Seahaven	813	16,000	46
Interim Inc.	815	0	0
Marina CY	899	177,000	506
TAMC	791	40,000	114
Seaside	1803	202,000	577
UC	980	680,000	1,943
Industrial			
Monterey	1782, 875	1,466,275	1,466
Marina CY	899	0	0
Dunes	788, 790, 791, 815, 821	0	0
Seahaven	813	6,000	6
Marina Airport	899	0	0
TAMC	791	35,000	35
Seaside	1803	125,320	125
UC	980	100,000	100
Retail			
Del Rey Oaks	1782	5,000	9
East Garrison	1052	40,000	73
Seahaven	813	0	0
Dunes	788, 790, 791, 815, 821	175,600	319
TAMC	791	75,000	136
Seaside Resort	762	16,300	30
Seaside	1803	1,666,500	3,030
UC	980	310,000	564
		6,640,519	**13,378**

Land Use Location & Description	TAZ	Future Hotel Rooms
HOTEL ROOMS		
Hotel Rooms		
Del Rey Oaks	1782	550
Dunes	790	0
Dunes	789	310
Seaside Resort	762	330
Seaside Resort TS	762	170
Seaside	1803	660
UC	980	0
		2,020

(1) Land use information based on FORA 2016/17 CIP with updates based on agency input.

Figure 1: FORA Traffic Analysis Zones



Model Validation

The development of the travel demand model used for the 2017 FORA Fee Reallocation Study was based on the validated 2014 AMBAG Regional Travel Demand Model. In addition to the updates to the land use data, the FORA model includes refinements to the free flow speeds coded into the model's roadway network to improve the model's traffic assignment for FORA area roadways. A series of static validation tests were then conducted to compare the FORA model's base year traffic volume estimates to traffic counts using standard statistical measures recommended in the Caltrans Travel Forecasting Guidelines (1992). As part of the model validation process, two-way, Average Annual Daily Traffic (AADT) counts from the 2014 AMBAG Regional Travel Demand Model was obtained for 407 roadway segments within Monterey County.

At the 407 roadway segments, the daily (24-hour) traffic assignment for the FORA model was validated for a 2010 base year using the AADT counts. The validation process was carried out at the aggregate level (the entire model) and using screenlines to cordon off discrete areas of Monterey County near FORA. The validation results by roadway classification is also reported.

The principle validation criteria used to validate the overall FORA model reference those prescribed by Caltrans guidelines that identify the correlation coefficient for the entire model and the percentage of screen lines and roadway links that should be within an allowable percent error.

- The Correlation Coefficient (R) estimates the correlation between the model volume and the actual count. The model-wide correlation coefficient should be greater than 0.88.
- The Percent Error is the difference between the model volume and the actual count divided by the actual count. The higher the percent error, the greater the difference is between the model volume and the actual count. A minimum of 75% of the screenlines should be within their maximum desirable deviation and a minimum of 75% of the roadway links should be within their maximum desirable deviation.

Model-wide Validation Summary

Both the AMBAG Regional Travel Demand Model and the FORA model met model-wide validation criteria for the correlation coefficient and number of links within their maximum desirable deviation for percent error according to Caltrans and Federal Highway Administration guidelines. The FORA model had more links overall and more freeway and principal arterial links that were within their maximum desirable deviation.

The FORA model's ability to meet or exceed the mode-wide validation criteria in **Table 3** establishes a reasonable level of confidence that the model can be used as a forecasting tool for the analysis of future conditions.

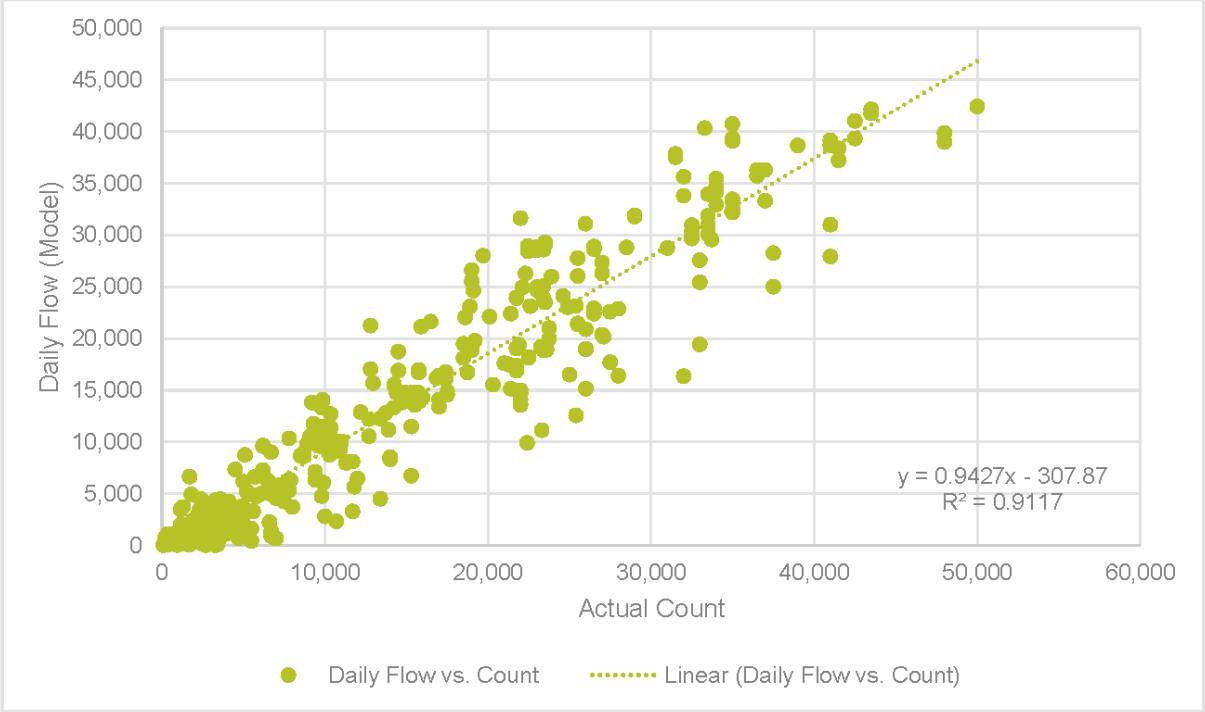
Table 3: Model-wide Validation Summary

Model Validation Criteria	2014 AMBAG RTDM	FORA TIF Model
The model-wide correlation coefficient should be greater than 0.88	0.95	0.95
A minimum of 75% of the screen lines should be within their maximum desirable deviation	100%	100%
A minimum of 75% of the roadway links should be within their maximum desirable deviation (all links)	75%	76%
A minimum of 75% of the roadway links should be within their maximum desirable deviation (freeway and principal arterial links)	85%	86%

Correlation Coefficient

The scatter plot in **Figure 2** graphs the FORA model's volume for each roadway link and the corresponding traffic count using a linear regression to show the relationship between the two. The model volumes and the actual counts have a positive correlation as shown by the slope of the trend line. The correlation coefficient for the overall model is 0.95, which indicates a strong relationship between the two variables and exceeds the targeted criteria of 0.88. The R2 for the overall model is 0.91, which indicates that the model volumes and the actual counts are good predictors of each other.

Figure 2: FORA Model Correlation Coefficient



Functional Roadway Classification

Link level validation of the FORA TIF Model was reported by functional roadway classification. The following are suggested percent error targets by functional roadway classification identified in the Caltrans guidelines:

- Freeways < 7%
- Principal Arterials < 10%
- Minor Arterials < 15%
- Collectors and Frontage Roads < 25%

The validation by functional roadway classification for the FORA model saw similar results with the AMBAG Regonal Travel Demand Model where the total traffic volume assigned by the model was lower compared to the aggregate count total – but within the 10% target for overall percent error. Both models met the percent error targets for freeways and principal arterials; however, the models were outside of the targets for lower capacity roadways such as Minor Arterials, Major Collectors, Minor Collectors and Local roads that had lower levels of traffic assigned compared to the count. The link speed refinements made for the FORA model had the effect of shifting traffic off the higher capacity freeways and principal arterials to the lower capacity roadways. As a result, the FORA model had a lower total traffic assigned, which increased the overall percent error to -7.8%; however, the base year saw an improvement with a smaller percent error for the Minor Arterials and Major Collectors. **Table 4** summarizes the

results of the validation by functional roadway classification for the AMBAG Regional Travel Demand Model, and Figure 4 summarizes the results of the validation by functional roadway classification for the FORA model.

Table 4: Validation by Functional Roadway Classification (AMBAG Regional Model)

Functional Roadway Classification	# of links	Traffic Count (AADT)	Model Output (Daily)	Difference	Percent Error	Target
Freeways or Expressways	53	1,607,100	1,568,349	-38,751	-2.4%	+/- 7%
Principal Arterial	172	3,509,399	3,452,431	-56,968	-1.6%	+/- 10%
Minor Arterial	76	516,804	430,020	-86,784	-16.8%	+/- 15%
Major Collector	40	206,860	118,029	-88,831	-42.9%	+/- 25%
Minor Collector	17	58,370	33,695	-24,675	-42.3%	+/- 25%
Local	49	116,771	74,926	-41,845	-35.8%	+/- 25%
	407	6,015,304	5,677,450	-337,854	-5.6%	+/- 10%

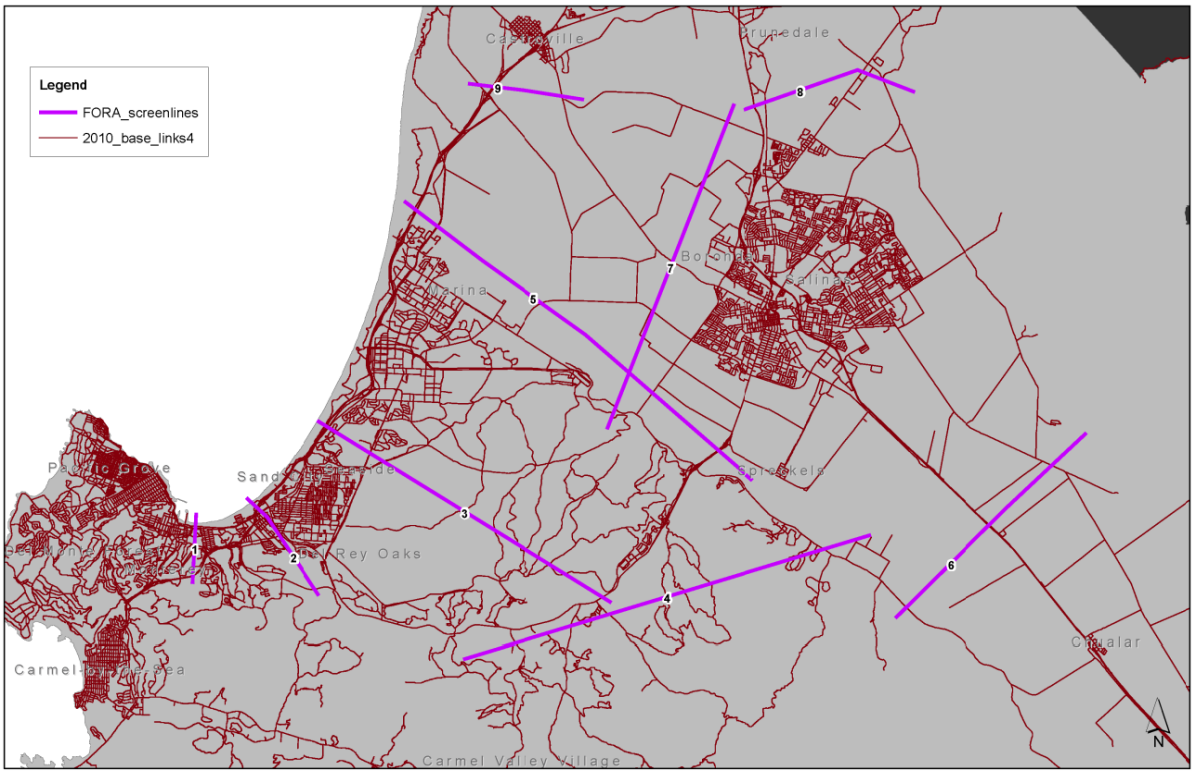
Table 5: Validation by Functional Roadway Classification (FORA model)

Functional Roadway Classification	# of links	Traffic Count (AADT)	Model Output (Daily)	Difference	Percent Error	Target
Freeways or Expressways	53	1,607,100	1,499,368	-107,732	-6.7%	+/- 7%
Principal Arterial	172	3,509,399	3,387,120	-122,279	-3.5%	+/- 10%
Minor Arterial	76	516,804	432,590	-84,214	-16.3%	+/- 15%
Major Collector	40	206,860	116,947	-89,913	-43.5%	+/- 25%
Minor Collector	17	58,370	34,481	-23,889	-40.9%	+/- 25%
Local	49	116,771	74,891	-41,880	-35.9%	+/- 25%
	407	6,015,304	5,545,397	-469,907	-7.8%	+/- 10%

Screenline Validation

The daily traffic assignment was validated at nine screen line locations in Monterey County as shown in **Figure 3**. A screenline represents a group of individual links that are bisected by an imaginary line. Analysis of the traffic assignment using screenlines allows for evaluating traffic flows in subareas of the model area in a directional basis. The model volumes and the actual counts on the links that constitute the screenline are evaluated by comparing the percent error to the allowable limits.

Figure 3: Model Screenline Locations



The validation by screenlines shown in **Table 6** and **Table 7** demonstrate that the FORA model has 100% of the screenlines meeting the thresholds for maximum percent deviation.

Table 6: Validation by Screenlines (AMBAG Regional Travel Demand Model)

Screenline ID	Screenline Location	Traffic Count (AADT)	Model Output (Daily)	Percent Error	NCHRP 255 Tolerance
1	East of Monterey (Between Camino El Estero and Camino Aguajito)	127,552	113,475	-11.0%	±22.7%
2	West of Canyon Del Rey	153,615	132,024	-14.1%	±21.2%
3	FORA	124,221	122,989	-1.0%	±22.9%
4	South of Salinas Hwy	29,900	22,113	-26.0%	±37.6%
5	North of Reservation Rd	111,612	127,798	14.5%	±23.7%
6	Southeast of Salinas	63,400	48,233	-23.9%	±28.9%
7	Northwest of Salinas	54,500	57,426	5.4%	±30.5%
8	North of Salinas	78,300	76,965	-1.7%	±26.9%
9	North of Reservation Rd	71,600	82,628	15.4%	±27.7%
TOTAL		814,700	783,652	-3.8%	±11.9%

Table 7: Validation by Screenlines (FORA model)

Screenline ID	Screenline Location	Traffic Count (AADT)	Model Output (Daily)	Percent Error	NCHRP 255 Tolerance
1	East of Monterey (Between Camino El Estero and Camino Aguajito)	127,552	111,620	-12.5%	±22.7%
2	West of Canyon Del Rey	153,615	126,057	-17.9%	±21.2%
3	FORA	124,221	118,693	-4.5%	±22.9%
4	South of Salinas Hwy	29,900	20,890	-30.1%	±37.6%
5	North of Reservation Rd	111,612	123,816	10.9%	±23.7%
6	Southeast of Salinas	63,400	46,907	-26.0%	±28.9%
7	Northwest of Salinas	54,500	55,891	2.6%	±30.5%
8	North of Salinas	78,300	77,044	-1.6%	±26.9%
9	North of Reservation Rd	71,600	79,496	11.0%	±27.7%
TOTAL		814,700	760,415	-6.7%	±11.9%

Individual Link Validation

The daily traffic assignment for individual roadway links was analyzed for the 407 count locations. The model volumes and the actual counts on the links are evaluated by comparing the percent error to the allowable limits.

Table 8 compares the validation results for the AMBAG Regional Travel Demand Model and the FORTA model; overall, the FORA model had a greater number of links (all and freeways and principal arterials) that were within recommended limits. Seventy-six percent of all links and 86% of the freeway and principal arterial links were within the recommended limits for percent error; the validation criteria according to Caltrans guidelines is 75% of all links.

Table 8: Validation by Individual Link Summary

		AMBAG RTDM		FORA TIF Model	
All Links	Pass	304	75%	309	76%
	Fail	103	25%	98	24%
	Total Links	407	100%	407	100%
Freeways and Principal Arterials	Pass	192	85%	194	86%
	Fail	33	15%	31	14%
	Total Links	225	100%	225	100%

FORA Capital Improvement Program Roadway Projects

To support the proposed developments within the FORA area and provide mitigation for impacts to the transportation network, the 2016 FORA CIP includes the following transportation improvement projects, which receive funding from the Community Facilities District Special Tax and are shown in **Figure 4**. Note that the projects have been identified as being Regional, Off-Site, or On-Site based on their context and relative location. Additional detail regarding improvements is provided in the exhibits detailing LOS for the various analysis scenarios later section in this study.

Regional

- SR 156 between US 101 and SR 1
- Highway 1 widening between Sand City and Seaside
- A new Monterey Road Interchange on Highway 1 in the City of Seaside

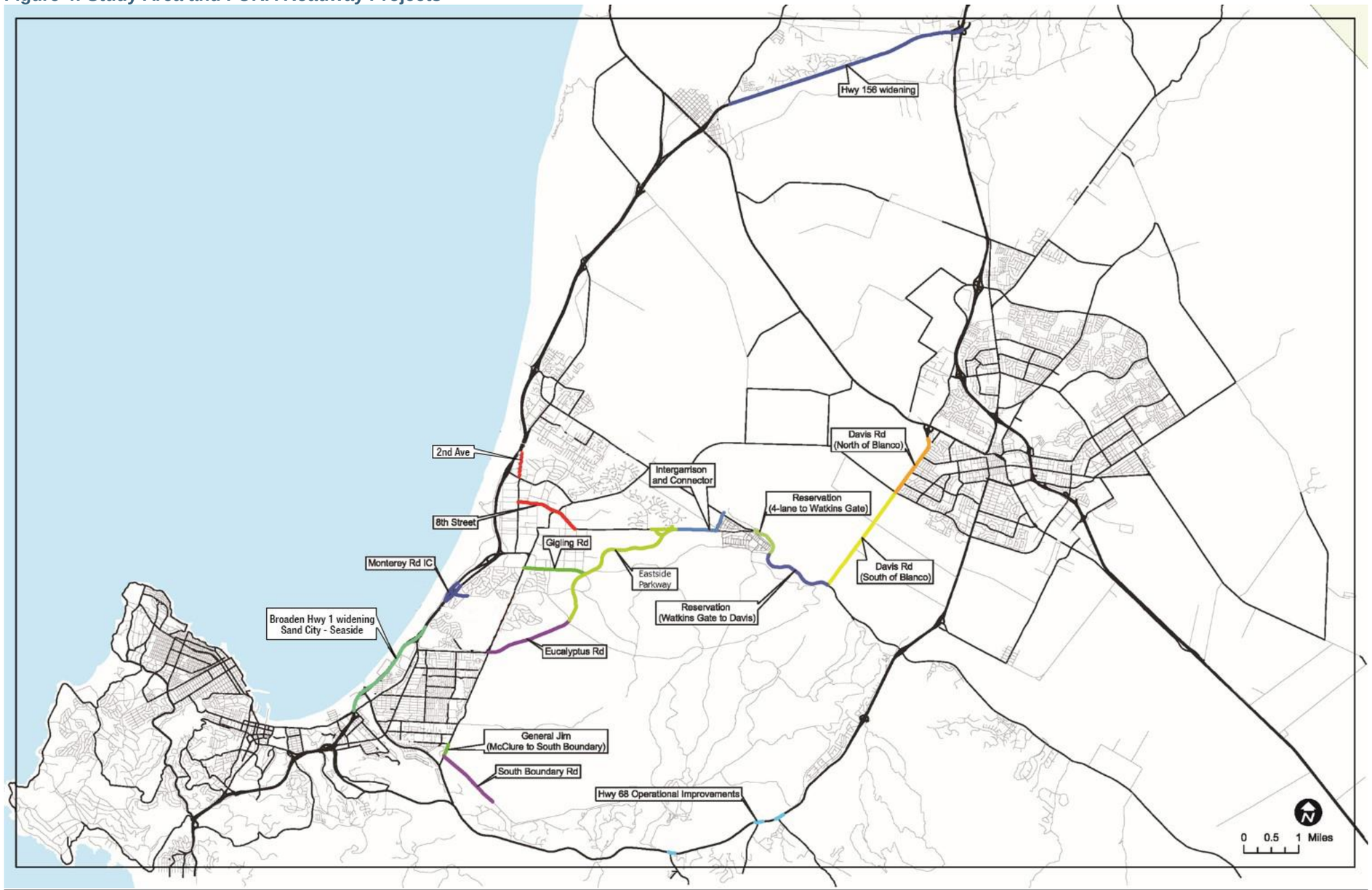
Off-Site

- Davis Road between Blanco Road and SR 183
- Davis Road between Blanco Road and Reservation Road
- Reservation Road between Davis Road and Watkins Gate Road
- Reservation Road between Watkins Gate Road and East Garrison Road
- Crescent Avenue in the City of Marina
- Abrams Road in the City of Marina
- Salinas Road in the City of Marina
- 8th Street in Marina between Inter-Garrison Road and Second Avenue

On-Site

- Eastside Parkway between Schoonover Road and Eucalyptus Road
- Inter-Garrison Road between Schoonover Road and East Garrison
- South Boundary Road between York Road and General Jim Moore Boulevard
- Gap closure of Eucalyptus Road to where Eastside Parkway starts
- Gigling Road between Eastside Parkway and General Jim Moore Boulevard
- General Jim Moore Boulevard from the four-lane section to South Boundary Road.

Figure 4: Study Area and FORA Roadway Projects



Deficiency Analysis

The following exhibits present the deficiency analysis and establishes the nexus for the FORA roadway projects to demonstrate that the proposed transportation improvements in the FORA CIP will provide adequate mitigation for future roadway deficiencies.

For the purposes of this analysis, a roadway has an acceptable service level at LOS D or better (BRP page 285). A roadway is considered deficient if the service level falls below LOS D. Data is provided for both existing and 2035 conditions.

Table 9 shows the **Existing Conditions** analysis results. As shown, Highway 1 and Davis Road between SR 183 and Blanco Road are currently deficient. Note that the findings of this analysis are based on traffic counts and not model run analysis.

Table 10 shows the **No-Build** analysis results. As shown, seven of the roadway projects would operate at deficient LOS in 2035 conditions with planned land use development as contained in the AMBAG Regional Travel Demand Model.

Table 11 shows the **Future Deficiency Analysis** results. As shown, the effect of the completion of the 2014 Regional Transportation Plan projects on the FORA CIP is that the **No-Build** impacts are reduced from seven roadway project locations that are deficient to five roadway project locations.

Table 12 shows the **Build 2015 CIP** analysis results. As shown, with implementation of both the FORA CIP projects along with the 2014 Regional Transportation Plan roadway projects, many of the deficient roadway segments will be eliminated and only two roadways would operate at a LOS D/E by 2035 (however, these two LOS D/E roadways are within the margin of error to the acceptable LOS D; therefore, they have been coded as 'orange' on **Table 13**). Those two roadway segments are:

- Reservation Road would be operating at LOS D/E between Davis Road and Watkins Gate Road in the eastbound direction in the PM peak and in the westbound direction in the AM peak.
- Eastside Parkway would be operating at LOS D/E between Eucalyptus Road and Schoonover Drive in the westbound direction in the AM peak.

Table 13 shows the **Build Alternative CIP** analysis results. As shown, the only major difference between the **Build 2015 CIP** and the **Build Alternative CIP** is that Highway 1 is identified as being deficient. The reason for this deficiency appearing in the modeling is due to the fact that the proposed enhanced transit improvements for Highway 1 in the **Build Alternative CIP** are not modelable, and thus the results shown are strictly related to vehicle traffic and do not account for the potential reduction in traffic congestion from increased transit service. The following section on the "Highway 1 Widening Analysis" provides more discussion on this issue.

Table 14 shows the results of LOS for Select Non-FORA Roadways that have been identified as being of particular importance within the study area. Specifically, this exhibit shows the results of analysis for Imjin Parkway, Del Monte Boulevard, and Fremont Boulevard for **Existing Conditions**, **No-Build**, **Build 2015 CIP**, and **Build Alterantive CIP**. As shown, only Imjin Parkway under the **No-Build** and the **Build 2015 CIP** has an identified deficiency.

Key Findings

Table 15 and **Table 16** provide a comparison of the **No-Build** and **Build Alterative CIP**; and the **Future Deficiency Analysis** and the **Build Alternative CIP**, respectively. As shown, the number of deficient roadway project locations decrease from seven under the **No-Build** and from five under the **Future Deficiency Analysis** to three periods of LOS D/E, which are within the acceptable margin of error, with implementation of the **Build Alternative CIP** (two under the **Build 2015 CIP**). This demonstrates that FORA CIP projects provide measurable improvement to the roadway network to address future development-related transportation deficiencies.

Table 9: Level of Service for Existing Conditions

Roadway	FORA Project Descriptions	Existing Conditions					
		Direction	AM	PM	Direction	AM	PM
Highway 1	4→6 Lanes (Fremont to Del Monte)	**SB**	C	D	**NB**	D	E
Monterey Rd Interchange	New Interchange @ Monterey Rd/Hwy 1	**SB Off**	N/A	N/A	**NB Off**	N/A	N/A
		SB On	N/A	N/A	**NB On**	N/A	N/A
Highway 156	4 Lane Freeway	**EB**	B	C	**WB**	B	B
Highway 68	Operational Improvements	**EB**	A	C	**WB**	B	B
Davis Road	4 Lanes SR-183→Blanco Rd	**SB**	C	C	**NB**	C	E
Davis Road	4 Lanes Blanco Rd→Reservation Rd	**NB**	A	A	**SB**	A	A
Reservation Road	4 Lanes East Garrison Gate→Watkins Gate	**EB**	A	A	**WB**	A	A
Reservation Road	4 Lanes Watkins Gate→Davis Rd	**EB**	A	A	**WB**	A	A
8th Street (1)	2 Lanes 2nd Ave→Intergarrison Rd	**EB**	A	A	**WB**	B	A
2nd Avenue	2 Lanes Imjin Parkway→Del Monte Blvd	**EB**	N/A	N/A	**WB**	N/A	N/A
Inter-Garrison (1)	4 Lanes Eastside Pkwy→Reservation Rd	**WB/SB**	B	B	**EB/NB**	B	B
Gigling Road (1)	4 Lanes General Jim Moore Blvd→Eastside Rd	**EB**	A	A	**WB**	A	A
General Jim Moore Blvd	2→4 Lanes Normandy Rd→McClure Way ✓	**SB**	A	A	**NB**	A	A
General Jim Moore Blvd	2→4 Lanes McClure Way→Coe Ave ✓	**SB**	A	A	**NB**	A	A
General Jim Moore Blvd	2→4 Lanes Coe Ave→S Boundary Rd ✓	**SB**	B	A	**NB**	A	B
Salinas Avenue	2 Lanes Reservation Rd→Abrams Dr	**SB**	N/A	N/A	**NB**	N/A	N/A
Eucalyptus Road (1)	2 Lanes General Jim Moore Blvd→Parker Flats ✓	**WB**	A	A	**EB**	A	A
Eastside Parkway	2 Lanes Eucalyptus Rd→Schoonover Dr	**WB**	N/A	N/A	**EB**	N/A	N/A
South Boundary (2)	2 Lanes General Jim Moore Blvd→York Blvd	**EB**	C	D	**WB**	C	D
Imjin Parkway (1)	4 Lane Minor Arterial	**WB**	D	B	**EB**	B	D
Del Monte Blvd (1)	4 Lane Principal Arterial	**NB**	A	A	**SB**	A	A
Fremont Blvd (1)	4 Lane Minor Arterial	**NB**	A	A	**SB**	A	A
(1) LOS based on base year model volumes due to the lack of traffic counts							
(2) LOS based on traffic volumes from the 2005 study due to the lack of traffic counts							
Check mark indicates that the project has been constructed.							

Table 10: Level of Service for No-Build– (at horizon year 2035)

Roadway	FORA Project Descriptions	No-Build					
		Direction	AM	PM	Direction	AM	PM
Highway 1	4→6 Lanes (Fremont to Del Monte)	**SB**	C	E	**NB**	E	F
Monterey Rd Interchange	New Interchange @ Monterey Rd/Hwy 1	**SB Off**	N/A	N/A	**NB Off**	N/A	N/A
		SB On	N/A	N/A	**NB On**	N/A	N/A
Highway 156	4 Lane Freeway	**EB**	C	E	**WB**	E	C
Highway 68	Operational Improvements	**EB**	B	D	**WB**	C	C
Davis Road	4 Lanes SR-183→Blanco Rd	**SB**	E	D	**NB**	C	F
Davis Road	4 Lanes Blanco Rd→Reservation Rd	**NB**	B	C	**SB**	B	B
Reservation Road	4 Lanes East Garrison Gate→Watkins Gate	**EB**	A	C	**WB**	B	B
Reservation Road	4 Lanes Watkins Gate→Davis Rd	**EB**	B	E	**WB**	E	C
8th Street	2 Lanes 2nd Ave→Intergarrison Rd	**EB**	B	C	**WB**	C	B
2nd Avenue	2 Lanes Imjin Parkway→Del Monte Blvd	**EB**	N/A	N/A	**WB**	N/A	N/A
Inter-Garrison	4 Lanes Eastside Pkwy→Reservation Rd	**WB/SB**	E	C	**EB/NB**	B	E
Gigling Road	4 Lanes General Jim Moore Blvd→Eastside Rd	**EB**	C	E	**WB**	E	C
General Jim Moore Blvd	2→4 Lanes Normandy Rd→McClure Way ✓	**SB**	A	B	**NB**	B	A
General Jim Moore Blvd	2→4 Lanes McClure Way→Coe Ave ✓	**SB**	A	B	**NB**	A	A
General Jim Moore Blvd	2→4 Lanes Coe Ave→S Boundary Rd ✓	**SB**	B	B	**NB**	A	B
Eucalyptus Road	2 Lanes General Jim Moore Blvd→Parker Flats ✓	**WB**	A	A	**EB**	A	A
Eastside Parkway	2 Lanes Eucalyptus Rd→Schoonover Dr	**WB**	N/A	N/A	**EB**	N/A	N/A
South Boundary	2 Lanes General Jim Moore Blvd→York Blvd	**EB**	B	E	**WB**	C	E
Imjin Parkway	4 Lane Minor Arterial	**WB**	F	D	**EB**	C	F
Del Monte Blvd	4 Lane Principal Arterial	**NB**	A	A	**SB**	A	A
Fremont Blvd	4 Lane Minor Arterial	**NB**	A	A	**SB**	A	A
Check mark indicates that the project has been constructed.							

Table 11: Level of Service for Future Defeciency Analysis – (at horizon year 2035)

Roadway	FORA Project Descriptions	Future Deficiency Analysis					
		Direction	AM	PM	Direction	AM	PM
Highway 1	4→6 Lanes (Fremont to Del Monte)	**SB**	C	E	**NB**	E	F
Monterey Rd Interchange	New Interchange @ Monterey Rd/Hwy 1	**SB Off**	N/A	N/A	**NB Off**	N/A	N/A
		SB On	N/A	N/A	**NB On**	N/A	N/A
Highway 156	4 Lane Freeway	**EB**	E	C	**WB**	C	E
Highway 68	Operational Improvements	**EB**	A	D	**WB**	C	B
Davis Road	4 Lanes SR-183→Blanco Rd	**SB**	D	D	**NB**	C	E
Davis Road	4 Lanes Blanco Rd→Reservation Rd	**NB**	B	C	**SB**	B	B
Reservation Road	4 Lanes East Garrison Gate→Watkins Gate	**EB**	A	C	**WB**	B	B
Reservation Road	4 Lanes Watkins Gate→Davis Rd	**EB**	B	E	**WB**	E	C
8th Street	2 Lanes 2nd Ave→Intergarrison Rd	**EB**	B	B	**WB**	B	B
2nd Avenue	2 Lanes Imjin Parkway→Del Monte Blvd	**EB**	N/A	N/A	**WB**	N/A	N/A
Inter-Garrison	4 Lanes Eastside Pkwy→Reservation Rd	**WB/SB**	D	B	**EB/NB**	B	D
Gigling Road	4 Lanes General Jim Moore Blvd→Eastside Rd	**EB**	C	E	**WB**	E	C
General Jim Moore Blvd	2→4 Lanes Normandy Rd→McClure Way ✓	**SB**	A	C	**NB**	B	A
General Jim Moore Blvd	2→4 Lanes McClure Way→Coe Ave ✓	**SB**	A	B	**NB**	B	A
General Jim Moore Blvd	2→4 Lanes Coe Ave→S Boundary Rd ✓	**SB**	B	B	**NB**	A	B
Eucalyptus Road	2 Lanes General Jim Moore Blvd→Parker Flats ✓	**WB**	A	A	**EB**	A	A
Eastside Parkway	2 Lanes Eucalyptus Rd→Schoonover Dr	**WB**	N/A	N/A	**EB**	N/A	N/A
South Boundary	2 Lanes General Jim Moore Blvd→York Blvd	**EB**	B	E	**WB**	C	E
Check mark indicates that the project has been constructed.							

Table 12: Level of Service for Build 2015 CIP – (at horizon year 2035)

Roadway	FORA Project Descriptions	Build 2015 CIP					
		Direction	AM	PM	Direction	AM	PM
Highway 1	4→6 Lanes (Fremont to Del Monte)	**SB**	C	D	**NB**	D	D
Monterey Rd Interchange	New Interchange @ Monterey Rd/Hwy 1	**SB Off**	A	A	**NB Off**	A	A
		SB On	A	A	**NB On**	A	A
Highway 156	4 Lane Freeway	**EB**	B	C	**WB**	C	B
Highway 68	Operational Improvements	**EB**	A	C	**WB**	B	B
Davis Road	4 Lanes SR-183→Blanco Rd	**SB**	D	C	**NB**	B	D
Davis Road	4 Lanes Blanco Rd→Reservation Rd	**NB**	B	D	**SB**	D	B
Reservation Road	4 Lanes East Garrison Gate→Watkins Gate	**EB**	B	D	**WB**	D	B
Reservation Road	4 Lanes Watkins Gate→Davis Rd	**EB**	B	E	**WB**	E	C
8th Street	2 Lanes 2nd Ave→Intergarrison Rd	**EB**	A	A	**WB**	B	A
2nd Avenue	2 Lanes Imjin Parkway→Del Monte Blvd	**EB**	A	A	**WB**	A	A
Inter-Garrison	4 Lanes Eastside Pkwy→Reservation Rd	**WB/SB**	D	C	**EB/NB**	C	D
Gigling Road	4 Lanes General Jim Moore Blvd→Eastside Rd	**EB**	C	C	**WB**	C	C
General Jim Moore Blvd	2→4 Lanes Normandy Rd→McClure Way ✓	**SB**	A	B	**NB**	B	A
General Jim Moore Blvd	2→4 Lanes McClure Way→Coe Ave ✓	**SB**	A	B	**NB**	A	A
General Jim Moore Blvd	2→4 Lanes Coe Ave→S Boundary Rd ✓	**SB**	B	C	**NB**	C	B
Eucalyptus Road	2 Lanes General Jim Moore Blvd→Parker Flats ✓	**WB**	B	B	**EB**	B	B
Eastside Parkway	2 Lanes Eucalyptus Rd→Schoonover Dr	**WB**	E	C	**EB**	C	D
South Boundary	2 Lanes General Jim Moore Blvd→York Blvd	**EB**	B	B	**WB**	B	B
Imjin Parkway	4 Lane Minor Arterial	**WB**	E	C	**EB**	C	D
Del Monte Blvd	4 Lane Principal Arterial	**NB**	A	A	**SB**	A	A
Fremont Blvd	4 Lane Minor Arterial	**NB**	A	A	**SB**	A	A

Check mark indicates that the project has been constructed.

Table 13: Level of Service for Build Aternative CIP – (at horizon year 2035)

Roadway	FORA Project Descriptions	Build Alternative CIP					
		Direction	AM	PM	Direction	AM	PM
Highway 1	4→6 Lanes (Fremont to Del Monte)	**SB**	C	E	**NB**	E	F
Monterey Rd Interchange	New Interchange @ Monterey Rd/Hwy 1	**SB Off**	A	A	**NB Off**	A	A
		SB On	A	A	**NB On**	A	A
Highway 156	4 Lane Freeway	**EB**	B	C	**WB**	C	B
Highway 68	Operational Improvements	**EB**	A	C	**WB**	B	B
Davis Road	4 Lanes SR-183→Blanco Rd	**SB**	D	C	**NB**	C	D
Davis Road	4 Lanes Blanco Rd→Reservation Rd	**NB**	B	C	**SB**	C	B
Reservation Road	4 Lanes East Garrison Gate→Watkins Gate	**EB**	B	C	**WB**	C	B
Reservation Road	4 Lanes Watkins Gate→Davis Rd	**EB**	B	E	**WB**	E	C
8th Street	2 Lanes 2nd Ave→Intergarrison Rd	**EB**	A	A	**WB**	A	A
2nd Avenue	2 Lanes Imjin Parkway→Del Monte Blvd	**EB**	C	A	**WB**	A	A
Inter-Garrison	4 Lanes Eastside Pkwy→Reservation Rd	**WB/SB**	D	B	**EB/NB**	B	D
Gigling Road	4 Lanes General Jim Moore Blvd→Eastside Rd	**EB**	B	B	**WB**	B	B
General Jim Moore Blvd	2→4 Lanes Normandy Rd→McClure Way ✓	**SB**	B	B	**NB**	B	B
General Jim Moore Blvd	2→4 Lanes McClure Way→Coe Ave ✓	**SB**	A	B	**NB**	A	B
General Jim Moore Blvd	2→4 Lanes Coe Ave→S Boundary Rd ✓	**SB**	C	C	**NB**	B	C
Eucalyptus Road	2 Lanes General Jim Moore Blvd→Parker Flats ✓	**WB**	B	B	**EB**	B	B
Eastside Parkway	2 Lanes Eucalyptus Rd→Schoonover Dr	**WB**	E	C	**EB**	C	D
South Boundary	2 Lanes General Jim Moore Blvd→York Blvd	**EB**	C	B	**WB**	B	C

Check mark indicates that the project has been constructed.

Table 14: Level of Service for Select Non-FORA Roadways

Roadway	Existing Conditions						No-Build					
	Dir	AM	PM	Dir	AM	PM	Dir	AM	PM	Dir	AM	PM
Imjin Parkway [1]	WB	D	B	EB	B	D	WB	F	D	EB	C	F
Del Monte Blvd [1]	NB	A	A	SB	A	A	NB	A	A	SB	A	A
Fremont Blvd [1]	NB	A	A	SB	A	A	NB	A	A	SB	A	A

Roadway	Future Deficiency Analysis						Build Alternative CIP					
	Dir	AM	PM	Dir	AM	PM	Dir	AM	PM	Dir	AM	PM
Imjin Parkway [1]	WB	E	C	EB	C	E	WB	D	C	EB	C	D
Del Monte Blvd [1]	NB	A	A	SB	A	A	NB	A	A	SB	A	A
Fremont Blvd [1]	NB	A	A	SB	A	A	NB	A	A	SB	A	A

(1) LOS based on base year model volumes due to the lack of traffic counts

Table 15: Comparison: No-Build vs Build Alternative CIP

Roadway	FORA Project Descriptions	Direction	No-Build		Build Alternative CIP		Direction	No-Build		Build Alternative CIP	
			AM	PM	AM	PM		AM	PM	AM	PM
Highway 1	4→6 Lanes (Fremont to Del Monte)	**SB**	C	E	C	E	**NB**	E	F	E	F
Monterey Rd Interchange	New Interchange @ Monterey Rd/Hwy 1	**SB Off**	N/A	N/A	A	A	**NB Off**	N/A	N/A	A	A
		SB On	N/A	N/A	A	A	**NB On**	N/A	N/A	A	A
Highway 156	4 Lane Freeway	**EB**	C	E	B	C	**WB**	E	C	C	B
Highway 68	Operational Improvements	**EB**	B	D	A	C	**WB**	C	C	B	B
Davis Road	4 Lanes SR-183→Blanco Rd	**SB**	E	D	D	C	**NB**	C	F	C	D
Davis Road	4 Lanes Blanco Rd→Reservation Rd	**NB**	B	C	B	C	**SB**	B	B	C	B
Reservation Road	4 Lanes East Garrison Gate→Watkins Gate	**EB**	A	C	B	C	**WB**	B	B	C	B
Reservation Road	4 Lanes Watkins Gate→Davis Rd	**EB**	B	E	B	E	**WB**	E	C	E	C
8th Street	2 Lanes 2nd Ave→Intergarrison Rd	**EB**	B	C	A	A	**WB**	C	B	A	A
2nd Avenue	2 Lanes Imjin Parkway→Del Monte Blvd	**EB**	N/A	N/A	C	A	**WB**	N/A	N/A	A	A
Inter-Garrison	4 Lanes Eastside Pkwy→Reservation Rd	**WB/SB**	E	C	D	B	**EB/NB**	B	E	B	D
Gigling Road	4 Lanes General Jim Moore Blvd→Eastside Rd	**EB**	C	E	B	B	**WB**	E	C	B	B
General Jim Moore Blvd	2→4 Lanes Normandy Rd→McClure Way ✓	**SB**	A	B	B	B	**NB**	B	A	B	B
General Jim Moore Blvd	2→4 Lanes McClure Way→Coe Ave ✓	**SB**	A	B	A	B	**NB**	A	A	A	B
General Jim Moore Blvd	2→4 Lanes Coe Ave→S Boundary Rd ✓	**SB**	B	B	C	C	**NB**	A	B	B	C
Eucalyptus Road	2 Lanes General Jim Moore Blvd→Parker Flats ✓	**WB**	A	A	B	B	**EB**	A	A	B	B
Eastside Parkway	2 Lanes Eucalyptus Rd→Schoonover Dr	**WB**	N/A	N/A	E	C	**EB**	N/A	N/A	C	D
South Boundary	2 Lanes General Jim Moore Blvd→York Blvd	**EB**	B	E	C	B	**WB**	C	E	B	C
Check mark indicates that the project has been constructed.											

Table 16: Comparison: Future Deficiency Analysis vs Build Alternative CIP

Roadway	FORA Project Descriptions	Direction	Future Deficiency Analysis		Build Alternative CIP		Direction	Future Deficiency Analysis		Build Alternative CIP	
			AM	PM	AM	PM		AM	PM	AM	PM
Highway 1	4→6 Lanes (Fremont to Del Monte)	**SB**	C	E	C	E	**NB**	E	F	E	F
Monterey Rd Interchange	New Interchange @ Monterey Rd/Hwy 1	**SB Off**	N/A	N/A	A	A	**NB Off**	N/A	N/A	A	A
		SB On	N/A	N/A	A	A	**NB On**	N/A	N/A	A	A
Highway 156	4 Lane Freeway	**EB**	E	C	B	C	**WB**	C	E	C	B
Highway 68	Operational Improvements	**EB**	A	D	A	C	**WB**	C	B	B	B
Davis Road	4 Lanes SR-183→Blanco Rd	**SB**	D	D	D	C	**NB**	C	E	C	D
Davis Road	4 Lanes Blanco Rd→Reservation Rd	**NB**	B	C	B	C	**SB**	B	B	C	B
Reservation Road	4 Lanes East Garrison Gate→Watkins Gate	**EB**	A	C	B	C	**WB**	B	B	C	B
Reservation Road	4 Lanes Watkins Gate→Davis Rd	**EB**	B	E	B	E	**WB**	E	C	E	C
8th Street	2 Lanes 2nd Ave→Intergarrison Rd	**EB**	B	B	A	A	**WB**	B	B	A	A
2nd Avenue	2 Lanes Imjin Parkway→Del Monte Blvd	**EB**	N/A	N/A	C	A	**WB**	N/A	N/A	A	A
Inter-Garrison	4 Lanes Eastside Pkwy→Reservation Rd	**WB/SB**	D	B	D	B	**EB/NB**	B	D	B	D
Gigling Road	4 Lanes General Jim Moore Blvd→Eastside Rd	**EB**	C	E	B	B	**WB**	E	C	B	B
General Jim Moore Blvd	2→4 Lanes Normandy Rd→McClure Way ✓	**SB**	A	C	B	B	**NB**	B	A	B	B
General Jim Moore Blvd	2→4 Lanes McClure Way→Coe Ave ✓	**SB**	A	B	A	B	**NB**	B	A	A	B
General Jim Moore Blvd	2→4 Lanes Coe Ave→S Boundary Rd ✓	**SB**	B	B	C	C	**NB**	A	B	B	C
Eucalyptus Road	2 Lanes General Jim Moore Blvd→Parker Flats ✓	**WB**	A	A	B	B	**EB**	A	A	B	B
Eastside Parkway	2 Lanes Eucalyptus Rd→Schoonover Dr	**WB**	N/A	N/A	E	C	**EB**	N/A	N/A	C	D
South Boundary	2 Lanes General Jim Moore Blvd→York Blvd	**EB**	B	E	C	B	**WB**	C	E	B	C

Check mark indicates that the project has been constructed.

Additional Model Outputs

The graphics below (**Figure 5** to **Figure 8**) present the resultant volume change for the **Build 2015 CIP** and **Build Alternative CIP**, respectively, as compared to the **Future Deficiency Analysis**. Note that in some instances, volume changes could not easily be displayed given that the coding of some improvements resulted in changes to the unique identifiers that were the basis for calculation. The importance of **Figures 5** through **8** is that they demonstrate the impact that the FORA CIP projects have on the roadway network in the context of the existing Regional Transportation Plan. In these exhibits, roadways marked in blue show an increase of at least 500 vehicle trips per day, while roadways marked in orange show a decrease of at least 500 vehicle trips per day. What this demonstrates is how traffic shifts around the study area with the completion of the FORA CIP projects, particularly with vehicle trips moving away from the center of the study area and onto improved roadways, such as Eastside Parkway.

Figure 5: ADT Volume Shifts Resultant from Build 2015 CIP – Seaside and Monterey

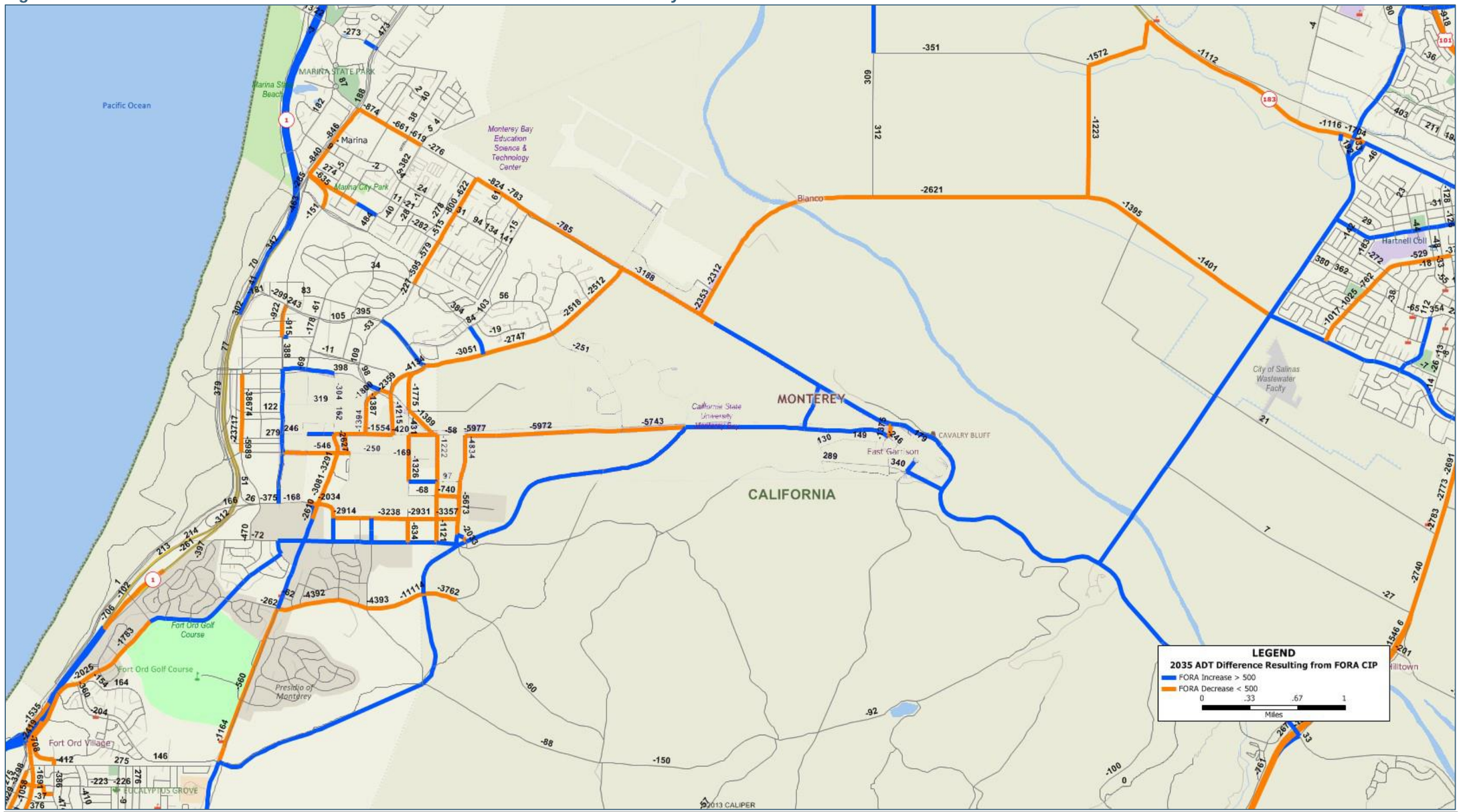


Figure 6: ADT Volume Shifts Resultant from Build 2015 CIP – Marina and Salinas

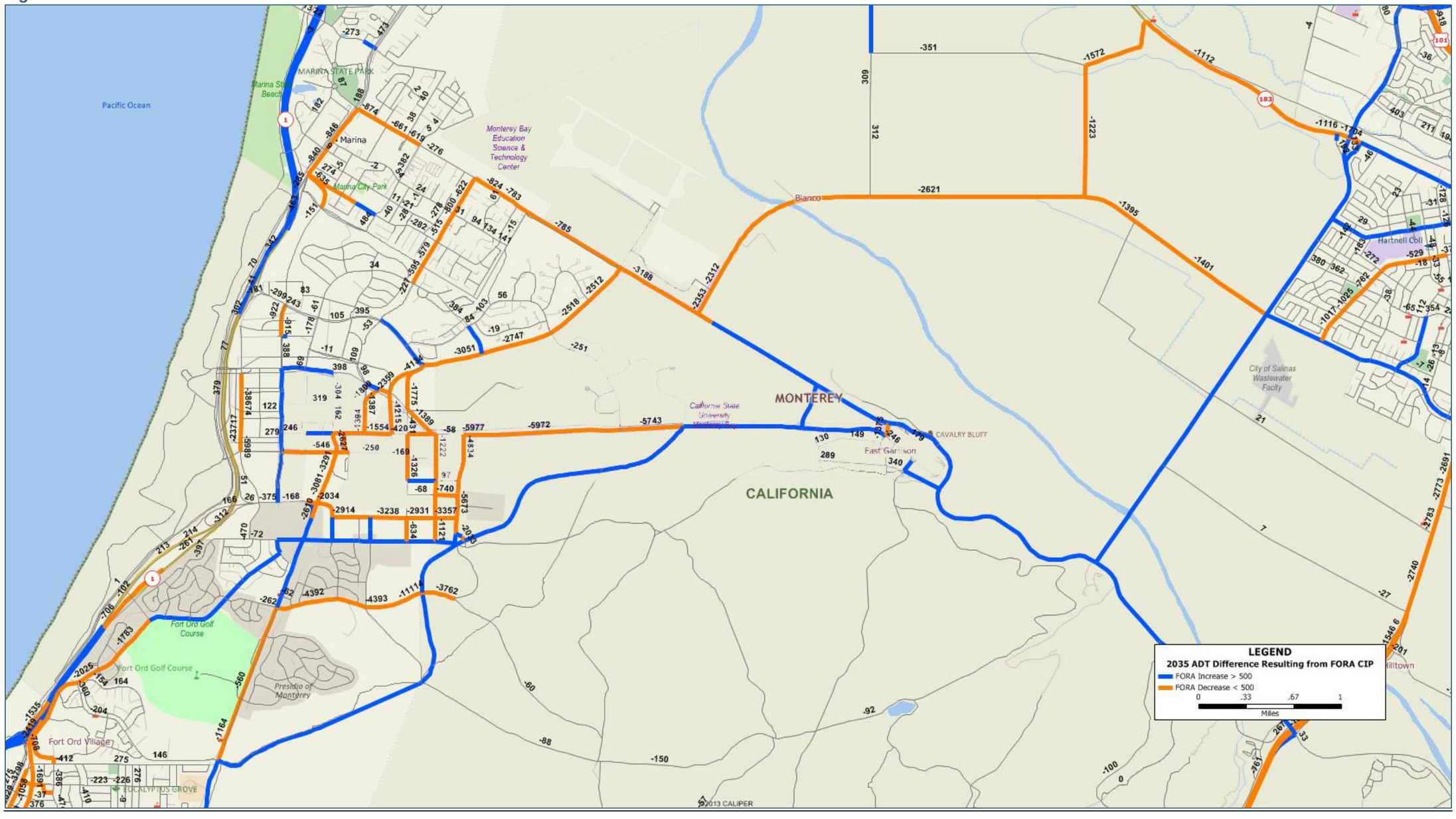


Figure 7: ADT Volume Shifts Resultant from Build Alternative CIP – Seaside and Monterey

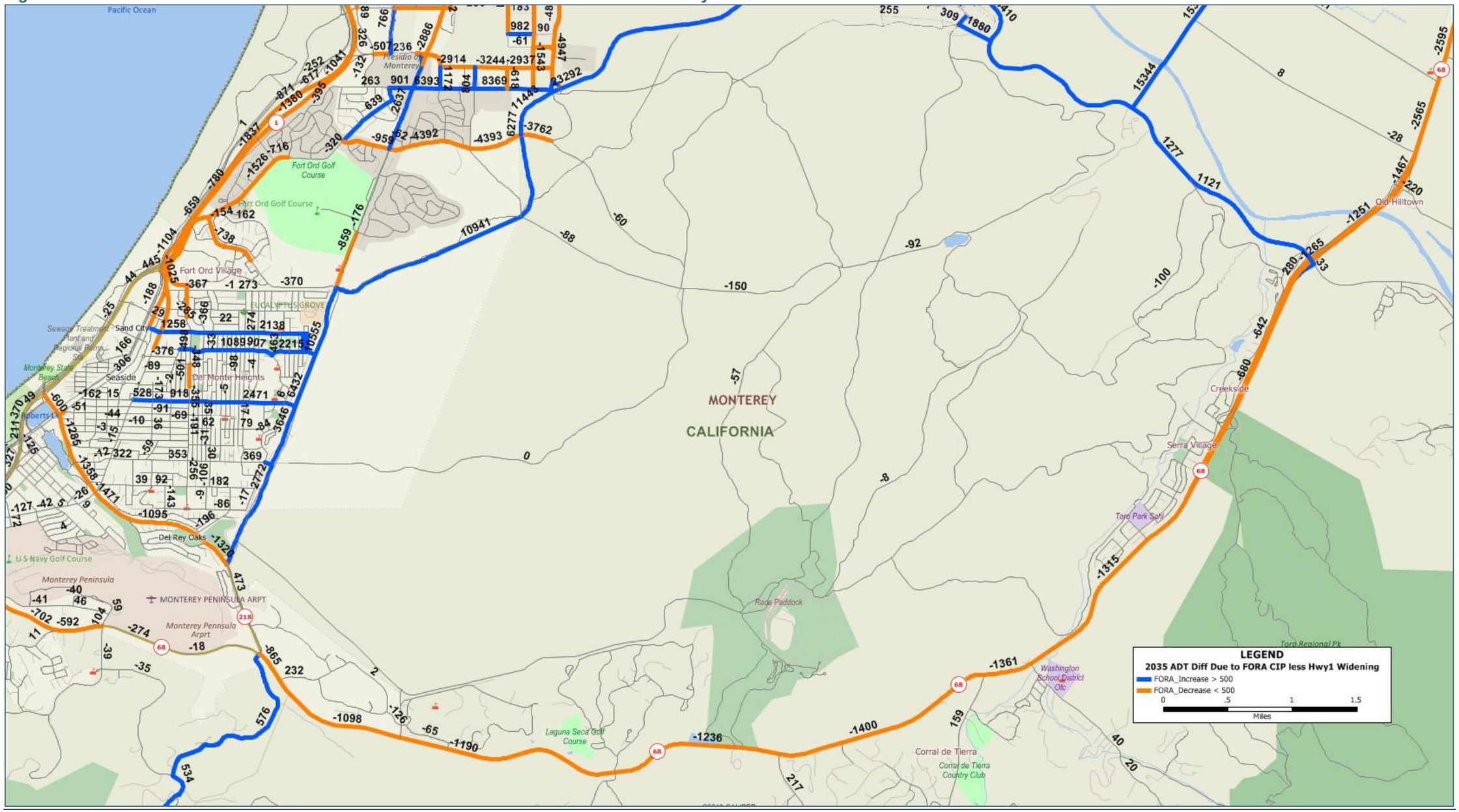
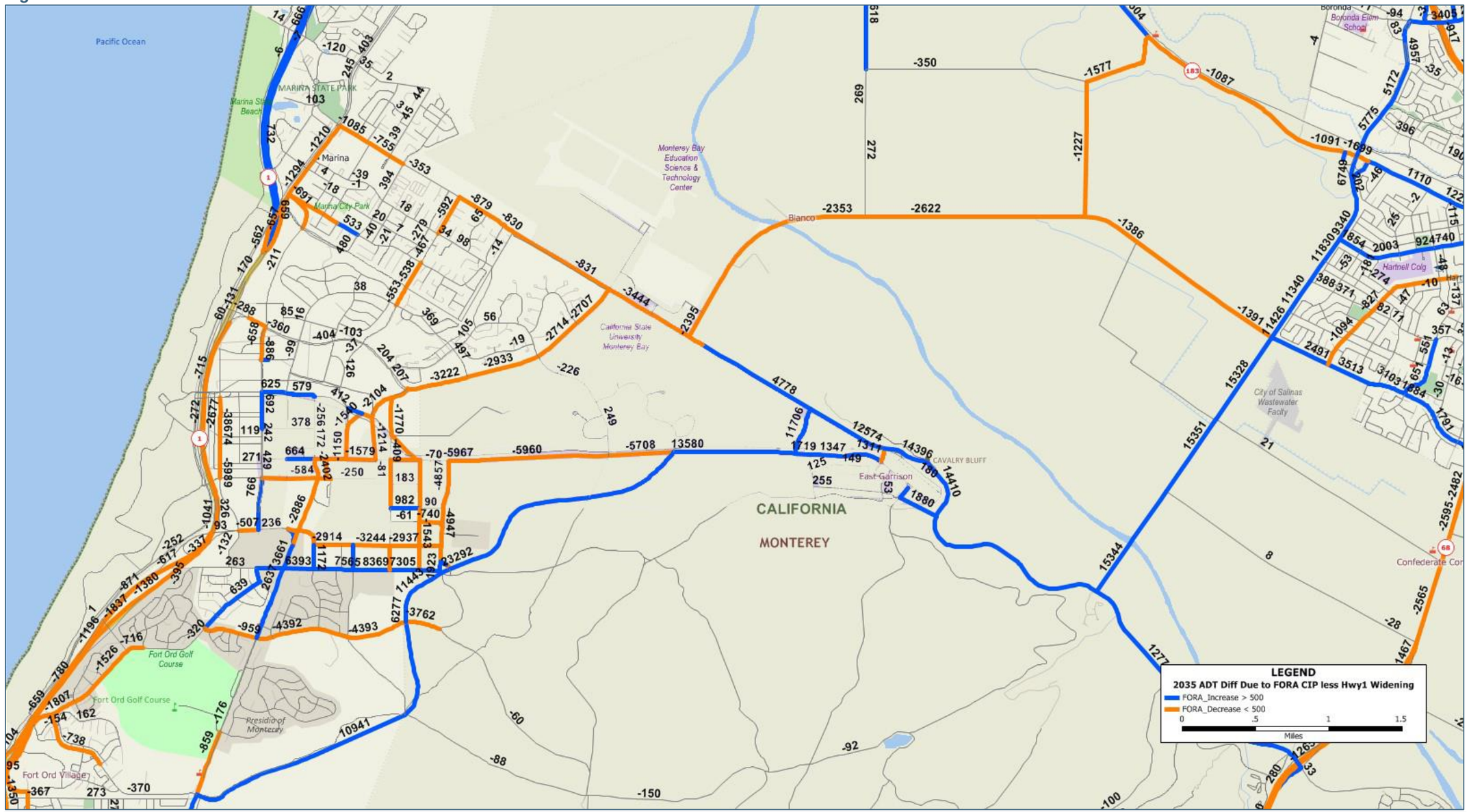


Figure 8: ADT Volume Shifts Resultant from Build Alternative CIP – Marina and Salinas



Highway 1 Widening Analysis

Due to costs and other constraints of widening Highway 1 between Fremont Boulevard and Del Monte Del Monte, the **Build Alternative CIP** was considered that provides enhanced transit service, as well as interchange and roadway operational improvements. Although a detailed plan was not developed as part of this analysis, conceptual transit improvements were identified for which preliminary analysis was completed. The identified conceptual transit improvements included Bus-On-Shoulder operations along Highway 1 and enhanced transit service along corridors that carry traffic that would otherwise be accommodated by Highway 1 widening. Enhanced transit service could include improvements to the Monterey Branch Line, Bus Rapid Transit, and local Monterey-Salinas Transit service through the provision of new service, increased headways, and/or improved connectivity through realignment or the introduction of new routes. In order to reasonably characterize the potential benefits of transit to Highway 1 traffic and the FORA project the following activities were undertaken:

- Analysis was completed to determine changes in transit boarding under the condition without the proposed Highway 1 widening project. Note that this analysis did not consider the implications of enhanced transit service being provided (based on current model coding).
- Volume difference plots to compare traffic volumes with and without the proposed Highway 1 widening were completed.
- Select link analysis with and without the proposed Highway 1 widening were completed.
- Future and base model output was analyzed to determine the overall and localized changes related to transit service. This analysis was used to determine the overall percentage growth in transit boarding in Monterey County.
- A literature review related to bus on shoulder impacts was completed in order to assess potential growth based on real world experience.
- A determination of impacts to other potential FORA projects based on analysis of a future condition where all other projects were constructed and the Highway 1 widening was not was completed.

The major findings from this analysis included:

- Approximately 70% of the traffic that would have otherwise been accommodated by a Highway 1 Widening could be accommodated by Del Monte Boulevard, Fremont Boulevard, and General Jim Moore Boulevard.

- **Table 17** shows the relative distribution of traffic that uses Highway 1 in the area of the potential widening. As shown, there is strong connectivity between destinations along Highway extending from Carmel-by-the-Sea to the south all the way to Santa Cruz to the north. This section of Highway 1 also has numerous origins/destinations to the east, extending out past Prunedale along SR 156. This information is useful for understanding the extent of trips that potential transit improvements would need to consider.

Table 17: Resultant Traffic Shift if Highway 1 is not Widened (Build 2015 CIP vs Build Alternative CIP)

	Not Widening Hwy 1 vs Widening		
Facility	**AM Diff**	**PM Diff**	**Day Diff**
Hwy 1	-950	-975	-8,725
Del Monte Blvd	550	575	4,875
Fremont Blvd	50	50	225
Gen Jim Moore	75	75	775

- As shown in **Table 18**, transit ridership is forecasted to continue to increase between 2010 and 2035. This increase suggests that additional opportunities to capture transit ridership exist into the future as a result of already planned improvements and anticipated growth. Corridor specific analysis would be required to more accurately forecast potential ridership related to transit improvements along Highway 1 and elsewhere.

Table 18: AMBAG Regional Travel Demand Model Forecasted Transit Ridership in Monterey County (2010-2035)

Year	Peak	Off-Peak
2010	6,600	7,900
2035	8,300	9,700
Change	126%	123%

NEXUS ANALYSIS

Although the FORA Community Facilities District Special Tax is technically a Mello-Roos Special Tax, the original cost allocation in 1997 was done as a development impact fee nexus analysis. The consultants have taken the same approach as a starting point here. For those projects where there are existing deficiencies (LOS E or F in the Base Year), the nexus calculation needs to separate the cost share for existing development from that of new development. For the purpose of maintaining consistency with prior work, the cost obligation maintained 2005 as the basis for determining existing deficiency. This avoids substantial changes in FORA funding prioritizations that might otherwise occur as the result of new improvements or other circumstances that could change the results of the existing deficiency analysis. Four projects were previously determined to have existing deficiencies in the 2005 Base Year: Highway 68, Highway 156, Davis n/o Blanco, and Highway 1 at Monterey Road where a new interchange is planned.

The fee calculations for these projects first deduct the amount of project cost attributable to existing traffic. For all the other projects, new development is assigned 100 percent of the cost, since no LOS deficiencies exists in the Base Year. The FORA allocation, therefore, reflects the share of trips generated by new development at the former Fort Ord compared to new development elsewhere.

Based on the travel demand modeling previously completed as part of this study and the 2005 existing conditions deficiency analysis, the fair share determinations shown in **Table 19** were determined. **Table 20, Table 21**, and **Table 22** present a comparative analysis of the adopted 2005 Study Option B: Fund Local Projects First with the 2016 analysis reflecting a Nexus only analysis (Option A). As shown, the 2016 analysis considers the impact of a revised project cost estimate using the Engineering News Record Construction Cost Index between January 2005 and January 2016. Recognizing that the total FORA obligation can not be increased beyond that originally established in the 2005 study (allowing for annual Construction Cost Index increases), the results of the fair share analysis were used as the basis for establishing a weighting methodology such that the total financial obligation for the projects in aggregate remained the same. Note that this weighting scheme excludes General Jim Boulevard given its nearly complete status and 2nd Avenue given that it was added as a reallocation of funds from the Crescent Avenue project. It is anticipated that this intial starting point will be further refined based on direction from the FORA Boad and local jurisdictions.

Table 19: FORA 2016 Reallocation Based on Build Alternative CIP

Project #	Road Name	Project Limits	2005 Study Existing Deficiency	Project Growth in I-I Trips	Project Growth in I/X Trips	Non-Project Growth in X-X Trips	Project Total Traffic Growth	2035 Raw Model	2010 Raw Model	2035-2010 Raw Model	2017 Study Existing Traffic Nexus Share (2005 Existing Deficiency)	2017 Study Non-FORA Nexus Share	2017 Study FORA Nexus Share
Regional Improvements													
R3	Highway 1 Corridor	Corridor improvements and enhanced transit service along corridors which will carry traffic that would otherwise be accommodated by Highway 1 widening		0	17,178	0	17,178	80,271	68,231	12,040	0.0%	0.0%	100.0%
R10	Highway 1/Monterey Rd	Construct new interchange at Monterey Road	Yes	0	799	2,115	2,915	2,915	0	2,915	0.0%	72.6%	27.4%
R11	Highway 156	Widen existing highway to 4 lanes and upgrade highway to freeway status with appropriate interchanges. Interchange modification as needed at US 156 and 101.	Yes	0	7,391	20,857	28,248	41,758	13,510	28,248	32.4%	49.9%	17.7%
R12	Highway 68	Operational improvements at San Benancio, Laureles Grade and at Corral De Tierra including left turn lanes and improved signal timing.	Yes	0	1,524	245	1,769	31,049	29,279	1,769	94.3%	0.8%	4.9%
Off-Site Improvements													
1	Davis Road	Widen to 4 lanes from SR 183 bridge to Blanco Rd	Yes	0	10,699	3,120	13,819	34,520	20,700	13,819	60.0%	9.0%	31.0%
2B	Davis Road	Widen to 4 lanes from Blanco to Reservation; Build 4 lane bridge over Salinas River		0	15,351	6,053	21,404	31,500	10,096	21,404	0.0%	28.3%	71.7%
4D	Reservation Road	Widen to 4 lanes from existing 4 lane section East Garrison Gate to Watkins Gate.		0	15,316	2,204	17,520	28,797	11,278	17,520	0.0%	12.6%	87.4%
4E	Reservation Road	Widen to 4 lanes from Watkins Gate to Davis Rd		0	17,925	5,359	23,284	34,562	11,278	23,284	0.0%	23.0%	77.0%
8	Crescent Court	Extend existing Crescent Court Southerly to join proposed Abram Dr (FO2)		0	50	325	375	375	0	375	0.0%	86.6%	13.4%
On-Site Improvements													
FO2	Abrams Road	Construct a new 2-lane arterial from intersection with 2nd Ave easterly to intersection with Crescent Court Extension *		0	200	27	226	226	0	226	0.0%	11.8%	88.2%
FO5	8th Street	Upgrade/construct new 2-lane arterial from 2nd Ave to Intergarrison Rd		1,265	1,695	0	2,960	4,327	3,632	695	0.0%	0.0%	100.0%
FO6	Inter-Garrison	Upgrade to a 4-lane arterial from Eastside Rd to Reservation		1,454	11,392	3,331	16,177	22,643	6,466	16,177	0.0%	20.6%	79.4%
FO7	Gigling Road	Upgrade/construct new 4-lane arterial from General Jim Moore Blvd easterly to Eastside Rd		2,859	10,848	582	14,288	15,532	1,244	14,288	0.0%	4.1%	95.9%
FO9B (Ph-II)	General Jim Moore Blvd	Widen from 2 to 4 lanes from Normandy to McClure		2,384	9,908	0	12,292	15,175	3,996	11,179	0.0%	0.0%	100.0%
FO9B (Ph-III)	General Jim Moore Blvd	Widen from 2 to 4 lanes from McClure to Coe Ave		1,206	8,786	0	9,992	13,460	5,360	8,100	0.0%	0.0%	100.0%
FO9C	General Jim Moore Blvd	Widen from 2 to 4 lanes from s/o Coe to South Boundary Rd		1,891	12,132	4,458	18,482	22,378	3,897	18,482	0.0%	24.1%	75.9%
FO11	Salinas Avenue	Construct new 2 lane arterial from Reservation Rd southerly to Abrams Dr		0	30	0	30	177	205	-27	0.0%	0.0%	100.0%
FO12	Eucalyptus Road	Upgrade to 2 lane collector from General Jim Moore Blvd to Eastside Rd to Parker Flats cut-off		686	3,453	5,102	9,241	9,241	0	9,241	0.0%	55.2%	44.8%
FO13B	Eastside Parkway	Construct new 2 lane arterial from Eucalyptus Rd to Parker Flats cut-off to Schoonover Dr		1,358	10,363	6,864	18,586	18,586	0	18,586	0.0%	36.9%	63.1%
FO14	South Boundary	Upgrade to a 2 lane arterial, along existing alignment from General Jim Moore Blvd to York Blvd		1,891	13,602	3	15,496	15,496	0	15,496	0.0%	0.0%	100.0%
FO15	2nd Avenue	Construct new 2 lane arterial from Del Monte Blvd southerly to Imjin Pkwy		0	3,422	640	4,061	4,061	0	4,061	0.0%	15.8%	84.2%

Table 20: Option A – CAP Adjusted Nexus

Option A - Nexus, Adjusted to Implementation Agreement Cap

Total Transportation Obligation (Fixed by Implementation Agreement, Indexed to 2016 Dollars)							TOTAL	$ 114,195,961
Proj	Description	BRP Designation	% New Trips	2016 Indexed Construction Estimate	Nexus	% of Total	Cap Adjusted Nexus	
-	-		A	B	D= [A x B]	D/E	114,195,961	
In-Progress Obligations / Fixed Amount								
2B	Davis Rd s/o Blanco	Off-Site	100.0%	$ 12,733,317	$ 12,733,316.71	6.2%	$ 7,129,343	
FO9C	GJM Blvd-to 218	On-Site	100.0%	$ 1,083,775	$ 1,083,774.94	0.5%	$ 606,802	
FO12	Eucalyptus Rd	On-Site	100.0%	$ 532,830	$ 532,830.00	0.3%	$ 298,330	
Local Improvements								
8	Crescent Ave extend to Abrams	Off-Site	13.0%	$ 1,346,475.00	$ 175,042	0.1%	$ 98,005	*Completed*
FO2	Abrams	On-Site	88.0%	$ 1,127,673.00	$ 992,352	0.5%	$ 555,615	
FO5	8th Street	On-Site	100.0%	$ 6,443,262.00	$ 6,443,262	3.2%	$ 3,607,562	
FO6	Intergarrison	On-Site	79.0%	$ 6,324,492.00	$ 4,996,349	2.4%	$ 2,797,440	
FO7	Gigling	On-Site	96.0%	$ 8,495,961.00	$ 8,156,123	4.0%	$ 4,566,587	
FO11	Salinas Ave	On-Site	100.0%	$ 4,510,693.00	$ 4,510,693	2.2%	$ 2,525,523	
FO13B	Eastside Pkwy (New alignment)	On-Site	63.0%	$ 18,611,779.00	$ 11,725,421	5.7%	$ 6,565,026	
FO14	S Boundary Road Upgrade	On-Site	100.0%	$ 3,733,921.00	$ 3,733,921	1.8%	$ 2,090,610	
10	2nd Ave Extention	Off-Site	84.0%	$ -	$ 847,000	0.4%	$ 474,233	
Regional Improvements								
R3	Hwy 1-Seaside Sand City	Regional	100.0%	$ 66,808,021.00	$ 66,808,021	32.8%	$ 37,405,598	
R10	Hwy 1-Monterey Rd. Interchange	Regional	27.5%	$ 28,356,293.00	$ 7,793,166	3.8%	$ 4,363,369	
R11	Hwy 156-Freeway Upgrade	Regional	18.0%	$ 292,470,673.00	$ 52,644,721	25.8%	$ 29,475,611	
R12	Hwy 68 Operational Improvements	Regional	5.0%	$ -	$ -	-	-	*Completed*
1	Davis Rd n/o Blanco	Off-Site	31.0%	$ 4,678,046.00	$ 1,450,194	0.7%	$ 811,959	
4D	Widen Reservation-4 lanes to WG	Off-Site	87.0%	$ 14,994,689.00	$ 13,045,379	6.4%	$ 7,304,066	
4E	Widen Reservation, WG to Davis	Off-Site	77.0%	$ 8,165,424.00	$ 6,287,376	3.1%	$ 3,520,282	
				E = Nexus Sub-Total	$ 203,958,942			
							OPTION A TOTAL	**$ (114,195,961)**

Table 21: Option B – Local First

Option B - Local First (New, Local Improvements receive 100% funding)									
Total Transportation Obligation (Fixed by Implementation Agreement, Indexed to 2016 Dollars)							TOTAL	$ 114,195,961	
Proj	Description	BRP Designation	% New Trips	Attributal cost (to new traffic)	16 Indexed Construction Estima	Fee Basis	% Obligation	2017 $ Obligation	
-	-		A	B	C	D= [A x B x C]	E	[D xE]	
In-Progress Obligations / Fixed Amount									
2B	Davis Rd s/o Blanco	Off-Site	100%	-	$ 12,733,317	$ 12,733,317	100%	$ 12,733,317	
FO9C	GJM Blvd-to 218	On-Site	100%	-	$ 1,083,775	$ 1,083,775	100%	$ 1,083,775	
FO12	Eucalyptus Rd	On-Site	100%	-	$ 532,830	$ 532,830	100%	$ 532,830	
Local Improvements									
8	Crescent Ave extend to Abrams	Off-Site	100%	100%	$ 1,346,475.00	$ 1,346,475	100%	$ 399,475	*Completed*
FO2	Abrams	On-Site	100%	100%	$ 1,127,673.00	$ 1,127,673	100%	$ 1,127,673	
FO5	8th Street	On-Site	100%	100%	$ 6,443,262.00	$ 6,443,262	100%	$ 6,443,262	
FO6	Intergarrison	On-Site	100%	100%	$ 6,324,492.00	$ 6,324,492	100%	$ 6,324,492	
FO7	Gigling	On-Site	100%	100%	$ 8,495,961.00	$ 8,495,961	100%	$ 8,495,961	
FO11	Salinas Ave	On-Site	100%	100%	$ 4,510,693.00	$ 4,510,693	100%	$ 4,510,693	
FO13B	Eastside Pkwy (New alignment)	On-Site	100%	100%	$ 18,611,779.00	$ 18,611,779	100%	$ 18,611,779	
FO14	S Boundary Road Upgrade	On-Site	100%	100%	$ 3,733,921.00	$ 3,733,921	100%	$ 3,733,921	
10	2nd Ave Extention	Off-Site	100%	100%	$ -	$ 947,000	100%	$ 947,000	
						Sub-Total of Local Improvements and In-Progress Obligations		**Sub-Total**	**$ (64,944,178)**
						Total Transportation Obligation - (Less Local Improvements + In-Progress Obligations)		*Remainder*	*$ 49,251,783*
Regional Improvements									
Proj	Description		% New Trips A	Attributal cost B	2016 Indexed Construction Estimate C	Fee Basis D = [A x B x C]	% of Remaining Obligation F = D / E	2017 $ Obligation F x Remainder [F x $49,251,783]	
R3	Hwy 1-Seaside Sand City	Regional	100.0%	18.9%	$ 66,808,021.00	$ 12,607,122	27.5%	$ 13,565,097	
R10	Hwy 1-Monterey Rd. Interchange	Regional	27.5%	43.0%	$ 28,356,293.00	$ 3,349,716	7.3%	$ 3,604,250	
R11	Hwy 156-Freeway Upgrade	Regional	18.0%	30.0%	$ 292,470,673.00	$ 15,793,416	34.5%	$ 16,993,507	
R12	Hwy 68 Operational Improvements	Regional	5.0%	5.0%	$ -	$ -		$ -	*Completed*
1	Davis Rd n/o Blanco	Off-Site	31.0%	46.2%	$ 4,678,046.00	$ 669,346	1.5%	$ 720,208	
4D	Widen Reservation-4 lanes to WG	Off-Site	87.0%	66.9%	$ 14,994,689.00	$ 8,727,134	19.1%	$ 9,390,281	
4E	Widen Reservation, WG to Davis	Off-Site	77.0%	73.6%	$ 8,165,424.00	$ 4,626,860	10.1%	$ 4,978,440	
						$ 45,773,595 E= Fee Basis Sub-Total			
							Sub-Total of Regional Improvements	**Sub-Total**	**$ (49,251,783)**
								OPTION B TOTAL	**$ (114,195,961)**

Table 22: Option Comparison

Option Comparrison Total Transportation Obligation (Fixed by Implementation Agreement, Indexed to 2016 Dollars) - **$114,195,961.00**					
Project No.	**Description**	BRP Designation	**2016-2017 FORA CIP**	**Option A: Cap Adjusted Nexus**	**Option B: Local First Distribution**
	Option Totals		**$ 106,904,495.00**	**114,195,961**	**114,195,961**
In-Progress Obligations / Fixed Amount			**$ 14,028,367**	**$ 8,034,475**	**$ 14,349,922**
2B	Davis Rd s/o Blanco	Off-Site	$ 12,447,987.00	$ 7,129,343	$ 12,733,317
FO9C	GJM Blvd-to 218	On-Site	$ 1,059,490.00	$ 606,802	$ 1,083,775
FO12	Eucalyptus Rd	On-Site	$ 520,890.00	$ 298,330	$ 532,830
Local Improvements			**$ 46,423,123**	**$ 23,280,600**	**$ 50,594,256**
8	Crescent Ave extend to Abrams	Off-Site	$ 1,359,239.00	$ 98,005	$ 399,475
FO2	Abrams	On-Site	$ 1,138,362.00	$ 555,615	$ 1,127,673
FO5	8th Street	On-Site	$ 5,392,321.00	$ 3,607,562	$ 6,443,262
FO6	Intergarrison	On-Site	$ 4,380,385.00	$ 2,797,440	$ 6,324,492
FO7	Gigling	On-Site	$ 8,097,846.00	$ 4,566,587	$ 8,495,961
FO11	Salinas Ave	On-Site	$ 4,553,449.00	$ 2,525,523	$ 4,510,693
FO13B	Eastside Pkwy (New alignment)	On-Site	$ 18,198,908.00	$ 6,565,026	$ 18,611,779
FO14	S Boundary Road Upgrade	On-Site	$ 3,302,613.00	$ 2,090,610	$ 3,733,921
FO20	2nd Ave Extention	Off-Site	$ -	$ 474,233	$ 947,000
Regional Improvements			**$ 46,453,004**	**$ 82,880,886**	**$ 49,251,783**
R3	Hwy 1-Seaside Sand City	Regional	$ 22,903,427.00	$ 37,405,598	$ 13,565,097
R10	Hwy 1-Monterey Rd. Interchange	Regional	$ 3,741,714.00	$ 4,363,369	$ 3,604,250
R11	Hwy 156-Freeway Upgrade	Regional	$ 10,629,001.00	$ 29,475,611	$ 16,993,507
R12	Hwy 68 Operational Improvements	Regional	$ -	-	$ -
1	Davis Rd n/o Blanco	Off-Site	$ 759,776.00	$ 811,959	$ 720,208
4D	Widen Reservation-4 lanes to WG	Off-Site	$ 5,097,496.00	$ 7,304,066	$ 9,390,281
4E	Widen Reservation, WG to Davis	Off-Site	$ 3,321,590.00	$ 3,520,282	$ 4,978,440

CONCLUSION

Baseline conditions and future land use and transportation network assumptions have changed since TAMC completed the *2005 FORA Fee Reallocation Study*. The BRP also requires FORA and TAMC to monitor projected traffic levels within the FORA transportation network. For these reasons, FORA engaged with TAMC in completing the 2017 FORA Fee Reallocation Study. As part of their scope of work, Kimley-Horn completed the following tasks:

a) Review/modify land use assumptions on former Fort Ord;
b) Review/modify AMBAG Regional Travel Demand Model future network assumptions – including creating five scenarios for travel forecast analysis: **Existing Conditions**, **No-Build**, **Future Deficiency Analysis**, **Build 2015 CIP**, and **Build Alternative CIP**.

This study presented initial Deficiency Analysis results after running the roadway network scenarios with the AMBAG Regional Travel Demand Model. A key finding was that the **No-Build** scenario results in fifteen periods of deficiency (LOS E or F), whereas the **Build Alternative CIP** scenario results in five periods of LOS D/E (results within a margin of error of acceptable LOS D). These results demonstrated that the FORA CIP projects provide measurable improvement to the roadway network to address future development-related transportation deficiencies.

This study also analyzed transit improvements as potential alternatives to Highway 1 widening between Fremont Boulevard and Del Monte Boulevard and enhanced transit service along or parallel to Highway 1. This analysis found that approximately 70% of the traffic that would have otherwise been accommodated by a Highway 1 widening is anticipated to be accommodated by Del Monte Boulevard, Fremont Boulevard, and General Jim Moore Boulevard, with increased transit ridership projected in the future.

Recommendations

Based on these findings, Kimley-Horn recommends that FORA confirm the **Build Alternative CIP** transportation network as the same as the **Build 2015 CIP** transportation network with the following changes:

- Broaden the description of "regional" project R3a widening Highway 1 between Fremont Boulevard and Del Monte Boulevard to include adding new enhanced transit improvements and service (Bus on Shoulder or Monterey Branch Line Bus Rapid Transit, and Local Monterey-Salinas Transit Service), and improvements to the Highway 1 – Fremont Boulevard Interchange in Seaside; and
- Replace existing Marina FORA Fee projects with a new "off-site" project, 2nd Avenue, from Imjin Parkway to Del Monte Boulevard in Marina

It is further recommended that the cost reallocation included within this document as **Table 20** be used as the starting point for updating the FORA CIP Obligations, recognizing that it is likely that further adjustments will be necessary based on Fort Ord Reuse Authority and local

jurisdiction direction. In particular, the FORA Administrative Committee has recommended using Option B from **Table 21** as the basis for the reallocation.