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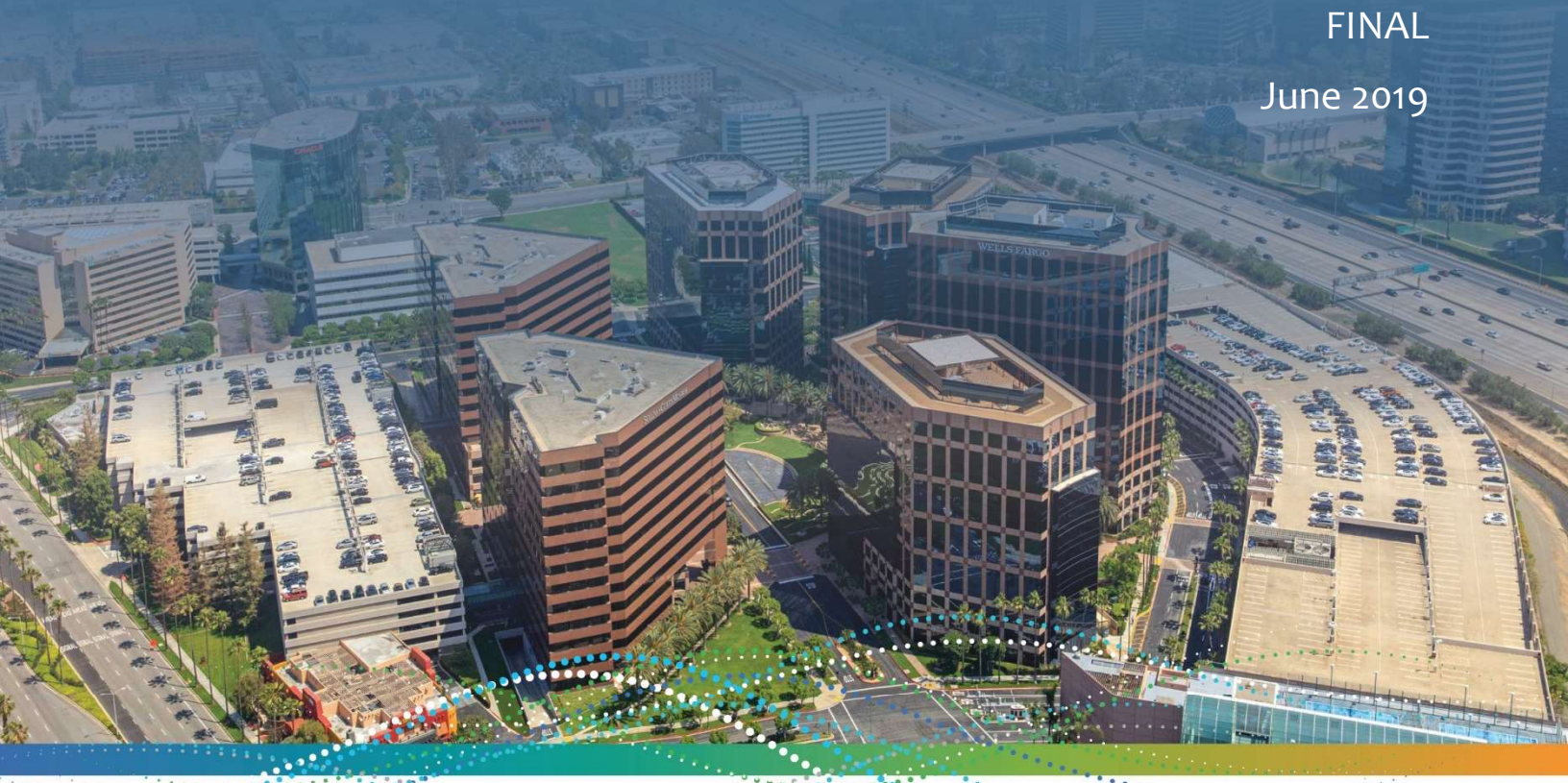
IBC VISION PLAN 2018 TRAFFIC STUDY UPDATE

FINAL

June 2019



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ES EXECUTIVE SUMMARY

ES.1.1 Introduction

This 2018 IBC Vision Plan Two-Year Traffic Study Update (2018 Update) fulfills the requirements of the City of Irvine Zoning Ordinance, which was updated as part of the 2010 IBC Vision Plan approval, to re-evaluate traffic conditions (and traffic impact locations) by way of a five-year traffic study update. The Ordinance was amended in October 2015 to require a two-year traffic study update. This two-year update evaluates potential traffic impact locations and documents how development actually occurred over the past two years. The update takes a "snapshot" of the development activity today and considers ambient regional growth to compare with the 2010 and 2015 assumptions. If as a result of actual development, the original traffic impacts are altered or changed, the City has the ability to revise the list of traffic mitigations and IBC fees accordingly within the umbrella of the adopted Vision Plan.

This 2018 Update analyzes the potential impacts on the circulation system based on updated conditions to the 2010 amendment to the City of Irvine General Plan that placed a 15,000 dwelling unit limit (plus a maximum of 2,038 density bonus units pursuant to state law) on the residential development in the IBC area. Based on approvals since 2010, the total number of density bonus units assumed for this update is reduced to 1,820 from 2,038. This reduction represents 2,038 assumed theoretical density bonus units in 2010 less 218 theoretical units removed due to reduction in units not associated with any planned project.

The analysis presents areas of deficiency in the existing circulation system and future circulation systems and offers recommended mitigations to allow for a return to acceptable levels of service (LOS) or to the pre-Vision Plan condition within the study area. The analysis focuses on the identification of updated potential traffic impacts on the current circulation system as it is transformed into a mixed-use community from its previous offerings of office, commercial, and industrial uses within the IBC area. This traffic study provides an assessment of the existing conditions in 2018, existing conditions with the updated Vision Plan assumptions, as well as future Interim Year and Buildout Year land use scenarios with and without the updated Vision Plan assumptions. As well as land use, anticipated future changes in the Interim Yean and Buildout Year roadway network are also incorporated into the analysis. A comparison of the impacted locations versus the impacted locations identified in the 2010 and 2015 IBC Vision Plan Traffic Study is also performed.

To assess the impact of the land use and network changes since the implementation of the 2010 Vision Plan, six scenarios were analyzed:

- Existing Conditions (using current traffic counts)
- Existing Conditions with updated assumptions of Vision Plan Buildout
- Interim Year Cumulative Baseline (existing land uses on the ground within IBC area; cumulative growth outside the IBC area up to the Interim year)
- Interim Year Cumulative Baseline With Update (reflects updated Vision Plan assumptions anticipated to be constructed by the Interim Year)
- Buildout Cumulative Baseline (existing land uses on the ground within IBC area; cumulative growth outside the IBC area up to the Buildout year)
- Buildout Cumulative Baseline With Update (reflects updated Vision Plan assumptions anticipated to be constructed by Buildout)

Table ES.1.1 shows the land use assumptions for each scenario.

Table ES.1.1 – Land Use Assumptions

SCENARIO	MULTI-FAMILY RESIDENTIAL (DU)	RETAIL MIX (TSF)	HOTEL (ROOM)	OFFICE MIX (TSF)	INDUSTRIAL MIX (TSF)	MINI-WAREHOUSE (TSF)	EXTENDED STAY HOTEL (ROOM)
Existing	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Existing With Update	16,820*	1,785	3,078	33,795	12,536	1,228	1,422
Interim Year Cumulative Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Interim Year Cumulative With Update	16,820*	1,562	2,521	27,964	13,434	1,412	1,422
Buildout Year Cumulative Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Buildout Year Cumulative Baseline With Update	16,820*	1,785	3,078	33,795	12,536	1,228	1,422
2010 Vision Plan(buildout)	17,038**	1,731	2,880	33,716	13,180	164	598
2015 Update (buildout)	16,795***	1,690	2,653	34,286	12,339	549	1,049

*reflects 1,820 density bonus units allowed pursuant to state law.
**reflects 2,038 density bonus units allowed pursuant to state law.
***reflects 1,795 density bonus units allowed pursuant to state law.

ES.1.2 Traffic Impacts & Responsibilities

A number of agreements were signed between the City of Irvine and adjacent jurisdictions during the 2010 IBC Vision Plan effort, which required the City of Irvine to provide specific dollar amounts of infrastructure funding to each adjacent jurisdiction. These agreements were premised on the understanding that the Vision Plan had no additional responsibilities toward any additional future improvements identified, provided the residential unit cap within the IBC is not exceeded. These agreements are included in **Appendix A**.

The residential unit intensity cap has not increased since the 2010 study. This traffic study update is intended only to analyze the change in traffic conditions since the 2010 approval. Except as otherwise specified in those existing agreements with adjacent jurisdictions, the Vision Plan is not responsible for mitigating the improvements identified in this study update within the cities of Tustin, Newport Beach, Santa Ana, or for improvements on Caltrans facilities.

For the sole purpose of providing a reference point for comparison with the 2010 study, a fair-share methodology was used to evaluate what the financial participation of mitigating IBC Vision impacts would be in the absence of the above-mentioned agreements. The following methodology is applied:

- For plan update impacts within the City of Irvine, the IBC Vision Plan is fully responsible.
- For plan update impacts outside the City of Irvine, the IBC Vision Plan would participate on a fair-share basis.

All impacts referenced in this study update represent impacts as defined in the City of Irvine's Traffic Impact Analysis (TIA) Guidelines, adopted August 2004, or for locations outside Irvine, per the performance criteria for each affected agency.

The cost of improvements is presented in Chapter 6 of this report. Under future forecast conditions, there are a number of deficient intersections. **Table ES.1.2** demonstrates the deficiencies, impacts, and responsibilities under the Interim and Buildout future scenarios.

Table ES.1.2 – Intersection Impacts/Cumulative Deficiencies

ID	INTERSECTION	JURISD.	IBC VISION WITH UPDATE INTERIM YEAR		IBC VISION WITH UPDATE BUILDOUT		RESPONSIBILITY		
			CUMULATIVE DEFICIENCY	IMPACT	CUMULATIVE DEFICIENCY	IMPACT	INTERIM WITH UPDATE	BUILDOUT WITH UPDATE	EXPECTED SHARE (VISION PLAN)
12	SR-55 Frontage Rd SB at Baker St	CM				X	-	5.0%	5.0%
98	Von Karman Ave at Alton Pkwy	Irv				X	-	Full	Full
144	Jamboree Rd at I-405 SB Ramps	Irv				X	-	Full	No Share*
145	Jamboree Rd at Michelson	Irv				X	-	Full	Full
63	Campus Dr at Bristol St SB	NB				X	-	14.7%	No Share*
192	California Ave at University Dr	Irv			X		-	Full	Full
188	Harvard Ave at Michelson Dr	Irv				X	-	Full	Full
232	Culver Dr at I-405 NB Ramps	Irv				X	-	Full	Full
84	MacArthur Blvd at Campus Dr	Irv/NB				X	-	4.4%	No Share*
44	Red Hill Ave at Alton Pkwy	Irv/SA				X	-	50%	No Share*
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	Irv/Tus		X		X		Full	Full
136	Jamboree Rd at Barranca Pkwy	Irv/Tus	X			X	Full	Full	Full
543	Bristol St at Segerstrom Ave	SA				X	-	18.9%	No Share*
544	Bristol St at MacArthur Blvd	SA				X	-	13.1%	No Share*
719	Flower St at Segerstrom Ave	SA			X		-	11.2%	No Share*
723	Main St at Segerstrom	SA	X			X	13.9%	14.7%	No Share*
727	Halladay at Dyer Rd	SA				X	-	9.8%	No Share*
728	Halladay East at Alton Pkwy	SA				X	-	4.4%	No Share*
3	Newport Ave at Edinger Ave	Tus				X	-	2.7%	No Share*
38	Red Hill Ave at Walnut Ave	Tus				X	-	7.0%	No Share*
40	Red Hill Ave at Edinger Ave	Tus				X	-	8.7%	No Share*
453	Red Hill Ave at Valencia Ave	Tus				X	-	5.0%	No Share*
749	Park Ave at A St	Tus			X		-	1.1%	No Share*

*Cumulative deficiency or responsibility as identified in an agreement with adjacent jurisdiction.

ES.1.3 Improvement Strategies

The IBC Vision Plan Traffic Study Update proposes improvements for all intersections (and one impacted arterial segment) within the study area that are identified as impacts and have an improvement strategy as required by the above-mentioned agreements. Improvement strategies have utilized other studies in adjacent jurisdictions and have been vetted through site analyses to propose improvements that are feasible. **Table ES.1.3** displays the mitigation strategies for each impacted intersection and arterial within the IBC study area that requires mitigation.

Table ES.1.3 – Improvement Strategies

INTERSECTION ID #	INTERSECTION NAME	JURISDICTION	IMPROVEMENT STRATEGY
BUILDOUT IMPACTS AND CUMULATIVE DEFICIENCIES			
12	SR-55 Frontage Road SB at Baker Street	Costa Mesa	Change SB to (2, 0.5, 1.5)
98	Von Karman Avenue at Alton Parkway	Irvine	Add 3rd NBT
144	Jamboree Road at I-405 SB Ramps	Irvine	Improve EB to (2.5, 0, 2.5)*
145	Jamboree Road at Michelson Drive	Irvine	Pedestrian Bridge (in current CIP)

INTERSECTION ID #	INTERSECTION NAME	JURISDICTION	IMPROVEMENT STRATEGY
188	Harvard Avenue at Michelson Drive	Irvine	Improve SB to (2, 2, 1)
232	Culver Drive at I-405 NB Ramps	Irvine	Restripe WB to (1.5, 0, 1.5)
97	Von Karman Avenue/Tustin Ranch Road at Barranca Parkway	Irvine/Tustin	Add 3rd NBT and convert de facto to standard NBR and convert WBR to free-right (or add 2nd WBR)
136	Jamboree Road at Barranca Parkway	Irvine/Tustin	Add 5th NBT; convert NBR to standard right; restripe EB to (3, 2, 1) (improvement associated with CIP)
192	California Avenue at University Drive	Irvine	Convert EBR to a free right-turn lane

*Improvement strategy for planning and informational purposes only

ES.1.4 Comparison of Impacts to 2010 and 2015 Traffic Studies

Table ES.1.4 shows the same overall number of impacts compared to the 2010 Vision Plan Study and a net overall increase compared to the 2015 Update. When comparing the 2015 Update to the 2018 Update, the number of Interim year forecast impacts decreases from ten to seven. The number of Buildout year forecast impacts increases from 22 to 39. However, due to the agreements signed with the Cities of Santa Ana, Tustin and Newport Beach not all of these impacts required mitigation by the 2018 Update. Additional details are provided in **Chapter 8**.

Table ES.1.4 - Comparison of Number of Impacted Locations between 2010, 2015, and 2018 IBC Traffic Study Update

	INTERIM YEAR			BUILDOUT YEAR		
FACILITY TYPE	2010 STUDY	2015 UPDATE	2018 UPDATE	2010 STUDY	2015 UPDATE	2018 UPDATE
Arterial Segments	0	1	0	1	1	0
Intersections	4	1	1	15	10	20
Freeway Mainline	4	6	3	14	5	11
Freeway Ramps	5	2	3	11	6	8
Total	**13**	**10**	**7**	**41**	**22**	**39**

ES.1.5 Arterial System Deficiencies

Individual arterial segments that operate at a deficient LOS under daily conditions within the City of Irvine are candidates for peak hour analysis to determine performance during the AM and PM peak hour. The peak hour analysis conducted for each of the forecast future scenarios revealed no arterial segments operating at a deficient level in either peak hour within the City of Irvine. For arterial segments within the Cities of Newport Beach, Costa Mesa, Tustin and Santa Ana, daily arterial segment LOS analysis is valuable for long-range planning purposes, however, these cities do not assess segment deficiencies under daily conditions. Intersection deficiencies for the 2018 Update have been assessed and conclusions discussed in the next section. Deficiencies are assessed at intersections at either end of the arterial segment. In the City of Santa Ana, daily arterial volume-to-capacity ratio (V/C) analysis is used to assess deficiencies in the arterial network. Hence, there are no deficiencies or impacts expected in future forecast scenarios for arterial segments within Newport Beach, Costa Mesa, Tustin, and Santa Ana.

ES.1.6 Intersection Deficiencies and Impacts

Analysis of the intersections was conducted for all intersections within the defined IBC Vision study area. For

each jurisdiction, the established and published criteria for evaluating impacts have been employed in this study. Plan update impacts are identified for the study area using the methodology for each respective jurisdiction.

Table ES.1.5 compares the impacted intersections in both 2015 Update and 2018 Update for the Interim year. In both the 2015 Update and 2018 Update, one intersection is impacted.

Table ES.1.5 – Intersection Impacts - Interim Year (2015 Update vs. 2018 Update)

ID	LOCATION	JURISDICTION	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
36	Red Hill Ave at El Camino Real	Tustin	PM	x		
97	Von Karman Avenue/Tustin Ranch Road at Barranca Parkway	Irvine/Tustin	PM			X
			Sum	**1**	**0**	**1**
			Total Impacts (2015 Update)	**1**	**Total Impacts (2018 Update)**	**1**

Table ES.1.6 compares the impacted intersection in both 2015 Update and 2018 Update for the Buildout. **Table ES 1.6** shows that while 10 intersections were impacted and two locations had cumulative deficiencies in Buildout in the 2015 Update, 20 are impacted and one has a cumulative deficiency in the 2018 Update Buildout condition. The following seven locations are impacted in both studies:

- #98: Von Karman Avenue at Alton Parkway (Irvine)
- #144: Jamboree Road at I-405 SB Ramps (Irvine)
- #145: Jamboree Road at Michelson Drive (Irvine)
- #188: Harvard Avenue at Michelson Drive (Irvine)
- #97: Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (Irvine/Tustin)
- #723: Main Street at Segerstrom Avenue (Santa Ana)
- #728: Halladay East at Alton Parkway (Santa Ana)

Table ES.1.6 – Intersection Impacts - Buildout Year (2015 Update vs. 2018 Update)

INT ID	LOCATION	JURISDICTION	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
12	SR-55 Frontage Road SB at Baker Street	Costa Mesa	AM			X
98	Von Karman Avenue at Alton Parkway	Irvine	PM		X	
144	Jamboree Road at I-405 SB Ramps	Irvine	AM		X	
145	Jamboree Road at Michelson Drive	Irvine	PM		X	
135	Jamboree NB Ramps/Warner	Irvine	PM	c		
197	California Avenue at University Drive	Irvine	AM			c
229	Culver Drive at Alton Parkway	Irvine	PM	X		
232	Culver Drive at I-405 NB Ramps	Irvine	PM			X
188	Harvard Avenue at Michelson Drive	Irvine	PM		X	
84	MacArthur Boulevard at Campus Drive	Irvine/Newport Beach	PM			X
44	Red Hill Avenue at Alton Parkway	Irvine/Santa Ana	PM			X
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	Irvine/Tustin	PM		X	
134	Loop Road/Park Ave at Warner Avenue	Irvine/Tustin	PM	c		
136	Jamboree Road at Barranca Parkway	Irvine/Tustin	PM			X
85	MacArthur Boulevard at Birch Street	Newport Beach	PM	X		
63	Campus Drive at Bristol Street SB	Newport Beach	AM			X
3	Newport Avenue at Edinger	Tustin	AM			X
453	Red Hill Avenue at Valencia Avenue	Tustin	AM			X

INT ID	LOCATION	JURISDICTION	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
38	Red Hill Avenue at Walnut Drive	Tustin	PM			X
40	Red Hill Avenue at Edinger Avenue	Tustin	PM			X
445	Tustin Ranch Road at Warner Avenue N	Tustin	PM	X		
543	Bristol Street at Segerstrom Avenue	Santa Ana	AM&PM			X
544	Bristol Street at MacArthur Boulevard	Santa Ana	PM			X
723	Main Street at Segerstrom Avenue	Santa Ana	AM&PM*		X	
727	Halladay at Dyer Road	Santa Ana	PM			X
728	Halladay East at Alton Parkway	Santa Ana	AM/PM**		X	
			Sum	**3**	**7**	**13**
			Total Impacts (2015 Update)	**10**	**Total Impacts (2018 Update)**	**20**

c Irvine cumulative deficiency
* PM only in 2015
** AM only in 2018

ES.1.7 Freeway Mainline and Ramps

Table ES.1.7 compares the Interim Year impacted freeway mainline segments in both 2015 Update and 2018 Update. In the 2015 Update, six segments were impacted, whereas in the 2018 Update three locations are impacted. All three locations in the 2018 Update were also deficient in the 2015 Update.

Table ES.1.7 – Freeway Mainline Impacts - Interim Year (2015 Update vs. 2018 Update)

FREEWAY	SEGMENT	DIRECTION	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
I-405	Jamboree Road to MacArthur Boulevard	NB	AM	X		
I-5	North of SR-55	NB	AM	X		
SR-55	Dyer Road to Edinger Avenue	NB	AM	X		
I-405	MacArthur Boulevard to SR-55	NB	AM		X	
I-405	MacArthur Boulevard to SR-55	SB	PM		X	
SR-73	Campus Drive to SR-55	NB	AM		X	
			Sum	**3**	**3**	**0**
			Total Impacts (2015 Update)	**6**	**Total Impacts (2018 Update)**	**3**

Table ES.1.8 compares the Buildout year impacted freeway mainline segments in both 2015 Update and 2018 Update. In the 2015 Update, five segments were impacted, whereas in the 2018 Update, 11 locations are impacted. All five locations impacted in the 2015 Update are also impacted in the 2018 Update.

Table ES.1.8 – Freeway Mainline Impacts - Buildout Year (2015 Update vs. 2018 Update)

FREEWAY	SEGMENT	DIRECTION	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
I-405	Jamboree Road to MacArthur Boulevard	NB	AM&PM*		X	
SR-55	Dyer Road to Edinger Avenue	NB	PM		X	
I-405	MacArthur Boulevard to SR-55	NB	AM&PM**		X	
I-405	MacArthur Boulevard to SR-55	SB	AM&PM***		X	
SR-55	McFadden Street/Sycamore Avenue to I-5	NB	PM		X	
I-405	Bristol Street to SR-55	SB	AM			X
SR-55	Edinger Avenue to Dyer Road	SB	AM			X
SR-55	McFadden Street/Sycamore Avenue to Edinger Avenue	SB	AM			X
I-5	Culver Drive to Jamboree Road	NB	PM			X

FREEWAY	SEGMENT	DIRECTION	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
SR-55	MacArthur Boulevard to Dyer Road	NB	PM			X
SR-55	Edinger Avenue to McFadden Street/Sycamore Avenue	NB	PM			X
			Sum	**0**	**5**	**6**
			Total Impacts (2015 Update)	**5**	**Total Impacts (2018 Update)**	**11**

* AM in 2015 Update; PM in 2018 Update
** AM only in 2015 Update, both in 2018 Update
*** PM only in 2015 Update, both in 2018 Update

Table ES.1.9 compares the Interim year impacted freeway ramps in both 2015 Update and 2018 Update. In the 2015 Update, two ramps were impacted, whereas in the 2018 Update, three locations are impacted. One deficient location is shared between both study updates.

Table ES.1.9 – Freeway Ramp Impacts - Interim Year (2015 Update vs. 2018 Update)

FREEWAY	LOCATION	RAMP	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
I-405	Bristol Street	SB Loop On	PM	X		
I-405	Jamboree Road	SB Off	AM/PM*		X	
I-405	MacArthur Boulevard	SB Off	AM			X
SR-73	Campus Drive	NB On	PM			X
			Sum	**1**	**1**	**2**
			Total Impacts (2015 Update)	**2**	**Total Impacts (2018 Update)**	**3**

*AM in 2018 Update only

Table ES.1.10 compares the Buildout year impacted freeway ramps in both 2015 Update and 2018 Update. In the 2015 Update, six ramps were impacted, whereas in the 2018 Update, seven ramps are impacted. Two of the ramps impacted in the 2018 Update ramps were also impacts in the 2015 Update.

Table ES.1.10 – Freeway Ramp Impacts - Buildout Year (2015 Update vs. 2018 Update)

FREEWAY	LOCATION	RAMP	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
I-405	Bristol Street	SB Loop On	PM	X		
SR-55	Dyer Road	NB On Direct	PM	X		
SR-55	Dyer Road	NB Off	AM	X		
SR-73	Campus Drive	SB Off	AM		X	
I-405	MacArthur Boulevard	NB Off	AM		X	
I-405	Jamboree Road	NB Off	AM		X	
I-405	MacArthur Boulevard	SB Off	AM			X
SR-55	Dyer Road	NB Off	AM			X
SR-55	Paularino Avenue	SB Off	AM			X
I-405	Jamboree Road	SB Off	PM			X
SR-73	Campus Drive	NB On	PM			X
			Sum	**3**	**3**	**5**
			Total Impacts (2015 Update)	**6**	**Total Impacts (2018 Update)**	**8**

ES.1.8 Cost Estimates for Mitigation Improvements

Planning level cost estimates were developed for each of the required mitigation locations. This involved the development of concept plans for each of the improvements overlaid on recent aerial imagery provided by the City. Unit costs were updated based on recent Caltrans cost estimates and on bid data provided to the City. These unit costs were then applied to the construction requirements identified in the concept plans.

Utility identification, including sewer and overhead electrical lines, were determined to the extent possible from the aerial imagery. Length of turn pocket lane was determined from traffic data where appropriate. Consistent with the 2010 Vision Plan Traffic Fee Nexus Study and the 2015 Update, cost estimates include provisions for the following:

- Preliminary project development
- Right-of-way
- Design Engineering and Administration Cost
- Construction Engineering Cost and Administration
- Construction Cost
- Construction Contingency

Table ES.1.11 shows the cost estimates for the improvements identified for the Buildout. Concept plans and detailed cost estimates broken down into component categories are provided in **Appendix L.** For the purposes of cost development intersections #97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway and #98 Von Karman Avenue at Alton Parkway were combined and treated as one contiguous corridor on Von Karman Avenue between Alton Parkway and Barranca Parkway due to the close proximity of the two improvements. There are two Options at #97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway. As shown on Table ES.1.11, there are three arterial improvements to be implemented. The City has one remaining general plan improvement to be constructed; widening of Red Hill Avenue between Main Street and MacArthur Boulevard from four lanes to six lanes. Based on existing agreement with the City of Santa Ana, the City is fully responsible to widen Dyer Road (Red Hill Avenue to SR-55 NB Ramps) from a six-lane divided arterial to an eight-lane divided arterial. The City is also responsible to fund 50% of the cost of Alton/SR-55 Overcrossing.

Table ES.1.11 – Intersection and Arterial Costs and Fair-Share

Intersections

ID	Jurisdiction	Intersection	Improvement	Cost ($000's)	Responsibility	Estimated Cost Share ($ 000's)
12	Costa Mesa	SR-55 Frontage Road SB at Baker Street	Change SB config to (2, 0.5, 1.5)	$1,017	5.0%	$51
97/98	*Irvine/ Tustin*	*#97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway/ #98 Von Karman Avenue at Alton Parkway*	*Option A: Add 3rd NBT at both intersections and convert de facto to standard NBR and add 2nd WBR at Von Karman/Barranca*	$10,001	Full	$10,001

ID	Jurisdiction	Intersection	Improvement	Cost ($000's)	Responsibility	Estimated Cost Share ($ 000's)
97/98	*Irvine/ Tustin*	*#97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway/ #98 Von Karman Avenue at Alton Parkway*	*Option B: Add 3rd NBT at both intersections and convert de facto to standard NBR and convert WBR to a free right at Von Karman/Barranca*	$11,082	Full	$11,082
145	Irvine	Jamboree Road at Michelson Drive **	Pedestrian Bridge	$8,237	Full	$8,237
188	Irvine	Harvard Avenue at Michelson Drive	Improve SB to (2,2,1)	$3,438	Full	$3,438
232	Irvine	Culver Drive at I-405 NB Ramps	Restripe WB to (1.5, 0, 1.5)	$269	Full	$269
136	Irvine/ Tustin	Jamboree Road at Barranca Parkway **	Add 5th NBT convert NBR to standard NBR and restripe EB to (3,2,1) (improvement associated with CIP)	$6,570	Full	$6,570
192	Irvine	California at University	Add EB free-right turn-lane and widen SB California to three lanes	$2,770	Full	$2,770
			All Intersections - Option A	**$32,302**		**$31,336**
			All Intersections - Option B	**$33,383**		**$32,417**

Arterials

ID	Jurisdiction	Segment	Improvement	Cost ($000's)	Responsibility	Estimated Cost Share ($ 000's)
A	Irvine	Red Hill Avenue between Main Street and MacArthur Blvd	Widen from 4 to 6 lanes	$24,054	Full	$24,054
B	Irvine/ Santa Ana	Alton/SR-55 Overcrossing***	Includes #44 Red Hill Ave at Alton Parkway (add 1 NBR, 1 SBR, 2nd EBL, and 2nd WBL) associated w/ Alton Overcrossing, signalization of Daimler at Alton and Halliday Street at Alton	$61,185	50%	$30,593
C	Santa Ana	Dyer Road between Red Hill Avenue and SR-55 NB Ramps***	Widen from 6 to 8 lanes	$18,047	Full	$18,047
			All Arterials	**$103,286**		**$72,694**

All Improvements

Option	Improvement	Total Cost ($000's)	Estimated Cost Share ($ 000's)
A	All Intersection Improvements with Option A for Intersections *#97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway/ #98 Von Karman Avenue at Alton Parkway (Add 3rd NBT at both intersections and convert de facto to standard NBR and add 2nd WBR at Von Karman/Barranca)* + All Arterial Improvements	**$135,588**	**$104,029**
B	All Intersection Improvements with Option B for Intersections *#97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway/ #98 Von Karman Avenue at Alton Parkway (Add 3rd NBT at both intersections and convert de facto to standard NBR and convert WBR to a free right at Von Karman/Barranca)* + All Arterial Improvements	**$136,669**	**$105,110**

Notes

*The City's obligation is addressed in the agreement with Caltrans.
** CIP allocation for funding of Jamboree/Barranca and partial funding for the Jamboree/Michelson pedestrian bridge.
*** Responsibility as identified in Irvine/Santa Ana Agreement

ES.1.9 MPAH and General Plan Amendment

The results of this Two-Year Update study indicate that no additional proposed changes are required to the City of Irvine General Plan or Countywide Master Plan of Arterial Highways (MPAH). Since the adoption of the 2010 Vision Plan, the City of Irvine General Plan has been amended with the following downgrades, per the 2010 Vision Plan:

- Barranca Pkwy between Red Hill Avenue and Jamboree Road (downgraded from 8-lane divided roadway to 7-lane divided roadway)
- Jamboree Road between Barranca Pkwy and McGaw Avenue (downgraded from a 10-lane divided roadway to a 8-lane divided roadway)
- Main Street between Red Hill and Harvard Avenue (downgraded from 6-lane divided arterial with 2 auxiliary lanes to 6-lane divided roadway)
- MacArthur Boulevard between Fitch and Main Street (downgraded from 8-lane divided roadway to 7-lane divided roadway)
- Red Hill Avenue between Barranca Pkwy and Main Street (downgraded from an 8-lane divided roadway to a 6-lane roadway)
- Alton Avenue between Red Hill Avenue and Jamboree Road (downgraded from a 6-lane divided roadway to 4-lane divided roadway)*
- Von Karman Avenue between Barranca Parkway and Michelson Drive (downgraded from 6-lane roadway to 4-lane roadway)*

The arterial segments of Alton Pkwy between Red Hill Avenue and Jamboree Road and Von Karman Avenue between Barranca Pkwy and Michelson Drive as identified with an asterisk in the list above, were also programmed into the County's Master Plan of Arterial Highways (MPAH) since the 2010 Vision Plan approval.

Although the 2010 Vision Plan Traffic Study stated that it was the City's intention to remove the Von Karman Avenue at the I-405 freeway HOV drop ramps, it was determined that the improvement was of regional significance and therefore remains part of the Post-2035 build-out baseline assumptions.

Consistent with the 2010 Vision Plan, the widening of Red Hill Avenue from four lanes to six lanes between MacArthur Boulevard and Main Street is assumed in the Post-2035 Build-out Baseline since it is the one missing roadway widening in IBC that is needed to fulfill the County's Master Plan of Arterial Highways (MPAH).

1 INTRODUCTION

The Irvine Business Complex (IBC) Vision Plan Traffic Study was prepared in 2010 to address potential impacts from an increase to the existing number of residential units in the IBC, and to identify infrastructure improvement projects to address the forecast traffic impacts. The 2010 IBC Vision Plan that was adopted by the City Council in 2011 made certain assumptions as to where future development, especially with respect to residential units, was to occur. As projects are proposed by developers and approved by the City within the General Plan and Zoning Ordinance parameters and allowances, they may be different in size and location from the adopted Vision Plan assumptions and therefore, may affect the list of traffic impacts identified in 2010.

As part of the 2010 Vision Plan approval, the Zoning Ordinance was updated to require the City to re-evaluate traffic conditions (and traffic impact locations) by way of a five-year traffic study update. This five-year update was performed in 2015 and identified updates to the future traffic conditions and traffic improvement projects based on updated traffic forecasts. Following City Council approval of the 2015 traffic study, the council updated the Zoning Ordinance 9-36-14 Section K requirements to require an updated Traffic Study every two years rather than every five years, resulting in the need for the current study:

> *K. IBC Traffic Study Update. Every two years following the certification of the Final EIR for the 2010 Vision Plan project, the City shall undertake an updated comprehensive traffic study for the IBC, to evaluate the implementation of the original traffic study and update mitigations as needed. The study shall review both interim and buildout year scenarios.*

This 2018 update takes a "snapshot" of the development activity today and considers ambient regional growth to see what has changed from the 2015 and 2010 assumptions. If, as a result of actual development, the original traffic impacts are altered or changed, the City has the ability to revise the list of traffic improvements and IBC fees accordingly within the umbrella of the adopted Vision Plan.

Chapter 2 outlines the proposed approach for accomplishing this objective. It follows the methodology used for the 2010 and 2015 Traffic Study to fulfill the Zoning Ordinance Section 9-36-14.k requirements.

This traffic study update provides an assessment of existing conditions with and without the update and four future land use scenarios, interim-year with and without the update and build-out year Post-2035 with and without the update. The traffic analysis focuses on identifying the appropriate infrastructure to serve the IBC as it transforms into a vibrant mixed-use community. Based on the shift in land uses within the IBC, an assessment of circulation system deficiencies throughout the study area was performed. A list of recommended improvements have been identified which when implemented will provide acceptable operating conditions throughout the study area with implementation of the IBC Vision Plan. **Table 1.1** displays the land use quantities for the IBC Vision area for the various horizon years and scenarios studied.

Table 1.1 – IBC Vision Plan Land Uses

SCENARIO	MULTI-FAMILY RESIDENTIAL (DU)	RETAIL MIX (TSF)	HOTEL (ROOM)	OFFICE MIX (TSF)	INDUSTRIAL MIX (TSF)	MINI-WAREHOUSE (TSF)	EXTENDED STAY HOTEL (ROOM)
2018 Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
2018 With Update	16,820**	1,785	3,078	33,795	12,536	1,228	1,422
Interim Year Cumulative Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Interim Year Cumulative With Update	16,820**	1,562	2,521	27,964	13,434	1,412	1,422
Buildout Year Cumulative Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Buildout Year Cumulative Baseline With Update	16,820**	1,785	3,078	33,795	12,536	1,228	1,422
2010 Vision Plan	17,038	1,731	2,880	33,716	13,180	164	598

Source: City of Irvine
* Note: Multi-family residential unit totals include density bonus units.
**Reflects 218 unit reduction in theoretical density bonus units due to additional development approved since 2010. See Section 2.2.5.

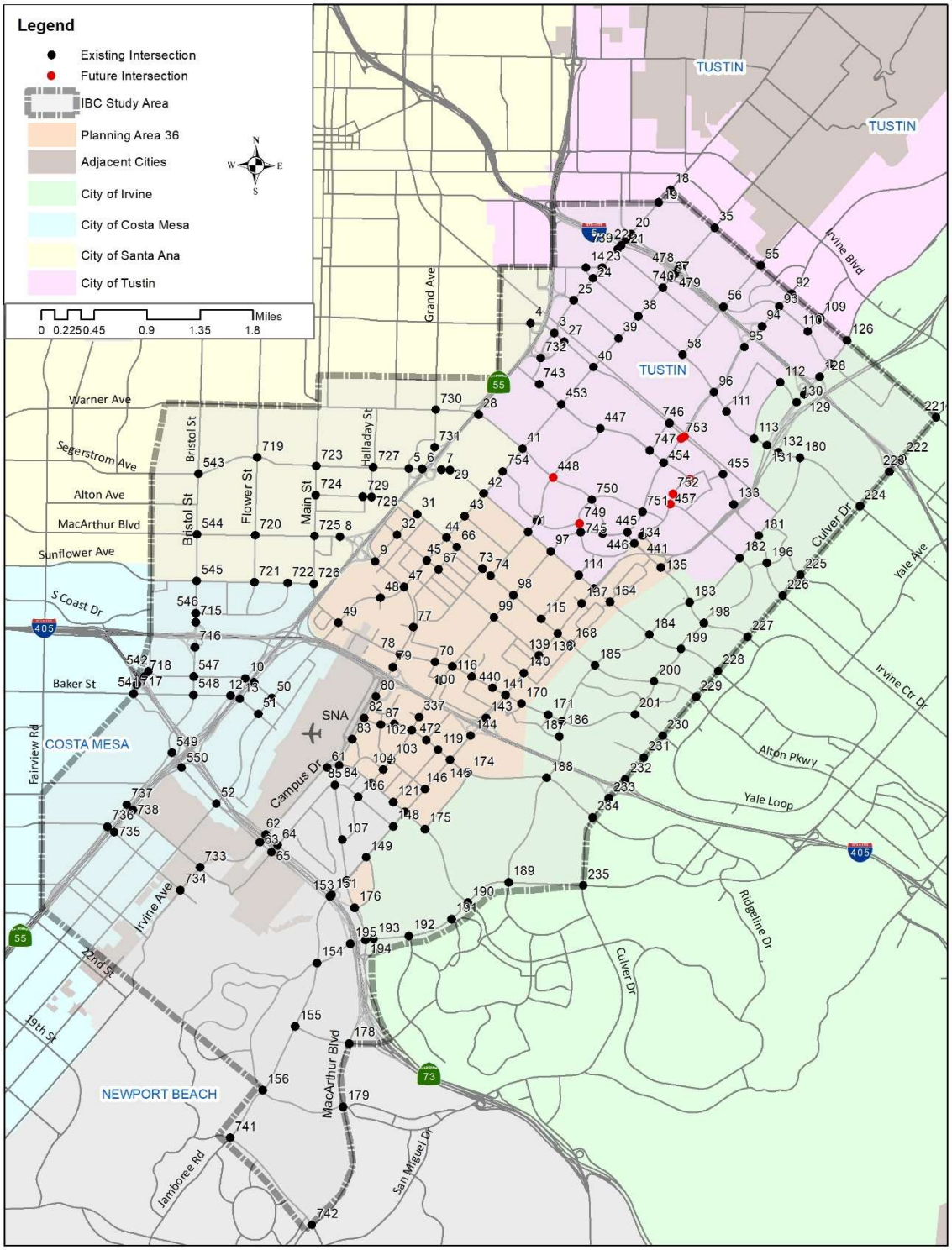
1.1 Study Area

The Irvine Business Complex, also referred to within the City of Irvine as Planning Area 36, is a developing mixed-use area encompassing approximately 2,600 acres located within the City of Irvine. The IBC Vision study area is consistent with the study area analyzed in 2015 and 2010, and consists of the current boundaries of the IBC and its surroundings in the City of Irvine, as well as the Cities of Newport Beach, Tustin, Santa Ana, Costa Mesa, and unincorporated Orange County. Additionally, the entirety of the "Airport area" of Newport Beach is incorporated into the study area. **Figure 1.1** displays the study area with studied intersections highlighted. The study area is served by five freeways, SR-73, SR-55, I-405, I-5, and SR-261.

1.2 Update Description

The IBC Vision Plan Two-Year Traffic Study Update analyzes the potential impacts on the circulation system based on updated conditions to the 2010 amendment to the City of Irvine General Plan that placed a 15,000 dwelling unit limit (plus a maximum of 2,038 density bonus units pursuant to state law) on the residential development in the IBC area. Based on approvals since 2010, the total number of density bonus units assumed for this update is reduced to 1,820 from 2,038. This reduction represents 2,038 existing, approved, or in process density bonus units, less 218 theoretical units removed due to reduction in units not associated with any planned project. The analysis presents areas of deficiency in the existing circulation system and future circulation systems and offers recommended improvements to allow for a return to acceptable levels of service (LOS) or to the without update condition within the study area.

Figure 1.1 – IBC Study Area



1.3 Transfer of Development Rights

Since 1992, the IBC Planning Area has had provisions in place to allow for Transfers of Development Rights (TDRs) through the creation of a Development Intensity Value (DIV) budget system in which an allocation of AM, PM and ADT DIVs were assigned to each property in the IBC. These DIVs could be transferred in blocks (AM, PM and ADT) to other properties through a conditional use permit process and accompanying traffic study. In this manner, the overall IBC trip cap would be maintained, but would still allow developers the flexibility to build the types of projects they desire. The current IBC DIV budget database will not change as a result of the IBC Vision Plan update; however, as new land uses are proposed, the database will be updated accordingly and coordinated with the City's traffic model, which assumes buildout of the land use assumptions of the Vision Plan. Pending TDRs are assumed to have occurred at project (receiving) sites, but intensity reductions at TDR sending sites are assumed only once the TDR Agreements are executed; thereby providing for a conservative analysis.

1.4 No Land Use Changes

Consistent with the provisions of the Vision Plan, no additional General Plan Amendment or Zoning Code changes are proposed by the City of Irvine for the IBC area for this traffic study update. The IBC land use assumptions are converted to DIV's within each geographical traffic analysis zone (TAZ). TAZs within the Study area are shown in **Appendix B**.

1.5 Transportation Setting

1.5.1 Rail

The City of Irvine and IBC study area are currently served by rail transit at the Irvine Transportation Center (Irvine Train Station) off Barranca Parkway and the Tustin Metrolink Station, located on Edinger Avenue. There are several Metrolink trains per day serving both stations. The Irvine station is also serviced by Amtrak.

- **Metrolink** – During weekdays both stations are served by 15 northbound and 14 southbound trains on the Orange County line (operating between Oceanside and LA Union Station) and 8 northbound and 8 southbound trains on the Inland Empire-Orange County line (operating between Oceanside and San Bernardino). At weekends, both stations are served by four northbound and four southbound trains on the Orange County line and two northbound and two southbound trains on the Inland Empire-Orange County line.
- **Amtrak** – Irvine train station is served by the Pacific Surfliner service, which operates between San Diego and San Luis Obispo. There are 12 northbound and 12 southbound trains daily. Tustin Metrolink Station is not served by Amtrak.

Tustin Metrolink station is currently served by four OCTA bus routes (Route 70, Route 90, Route 472 and Route 473) and three iShuttle routes (Route 400A, Route 401B and Route 404E) while Irvine station is currently served by four OCTA bus routes (Route 86, Route 206, Route 211 and Route 480) and three iShuttle routes (Route 402C, Route 403D and Route 404E). The iShuttle is discussed in detail in **Section 1.5.5**.

1.5.2 Local Bus

The IBC is currently served by a number of local and regional bus routes operated by Orange County Transportation Authority (OCTA). The major routes and locations that serve the IBC are presented in **Figure 1.2**.

1.5.3 Bicycle and Riding and Hiking Trails

There is an extensive network of bicycle and riding and hiking trails that connect to destinations within the IBC area. Businesses within the IBC are required to provide bicycle racks or the provision of racks at their offices. Within the City of Irvine, there are currently 64.8 miles of off-street bikeways and 307 miles of on-street bikeways. The City of Irvine's Zoning ordinance requires at least five bicycle parking spaces for retail or office developments over 100,000 square feet. Additionally, community facilities, banks/savings and loans, restaurants, shopping centers over 50,000 square feet, hospitals, medical/dental offices, and churches also require bicycle parking. The Orange County Bicycle Master Plan, the City of Irvine Bicycle Transportation Plan, and the City of Irvine Circulation Element all address bicycle networks in the study area. The City of Irvine's bicycle system is shown in the **Figure 1.3**.

1.5.4 Pedestrian

With the addition of residential units among the existing predominant office uses at the IBC, there is a growing need for pedestrian transportation amenities such as sidewalks, crosswalks, and other important connections throughout the study area. Development fees are expected to contribute to the enhancement of pedestrian facilities in the IBC area as the residential uses increase.

1.5.5 iShuttle

The iShuttle is a clean fuel, rubber tire shuttle bus operated by OCTA that operates adjacent to and within the study area, primarily transporting commuters and residents throughout the IBC area and offering connections to the Tustin Metrolink Station and John Wayne Airport. The service began operation on June 9, 2008. The shuttle meets the morning and afternoon Metrolink trains and provides 15-40 minute headway frequent service from 5:30 AM to 9:30 AM and 2:30 PM and 8:00 PM on weekdays only. The shuttle network in the IBC area consists of two routes; 400A and 401B. Route 400A (Route A) connects the Tustin Metrolink Station to John Wayne Airport via Von Karman Avenue. Route 401B (Route B) connects the Tustin Metrolink Station to the IBC via Jamboree Road and Michelson Drive. Route F, connecting Tustin Metrolink Station to the IBC via Tustin Ranch Road to Armstrong and Gillette began operating in early 2019. Metrolink and OCTA Pass holders ride the shuttle free. Other commuters are charged one dollar fares in the peak commute hours. There is no weekend service for either of these routes. **Figure 1.4** displays the iShuttle routes.

Figure 1.2 – OCTA Bus Routes

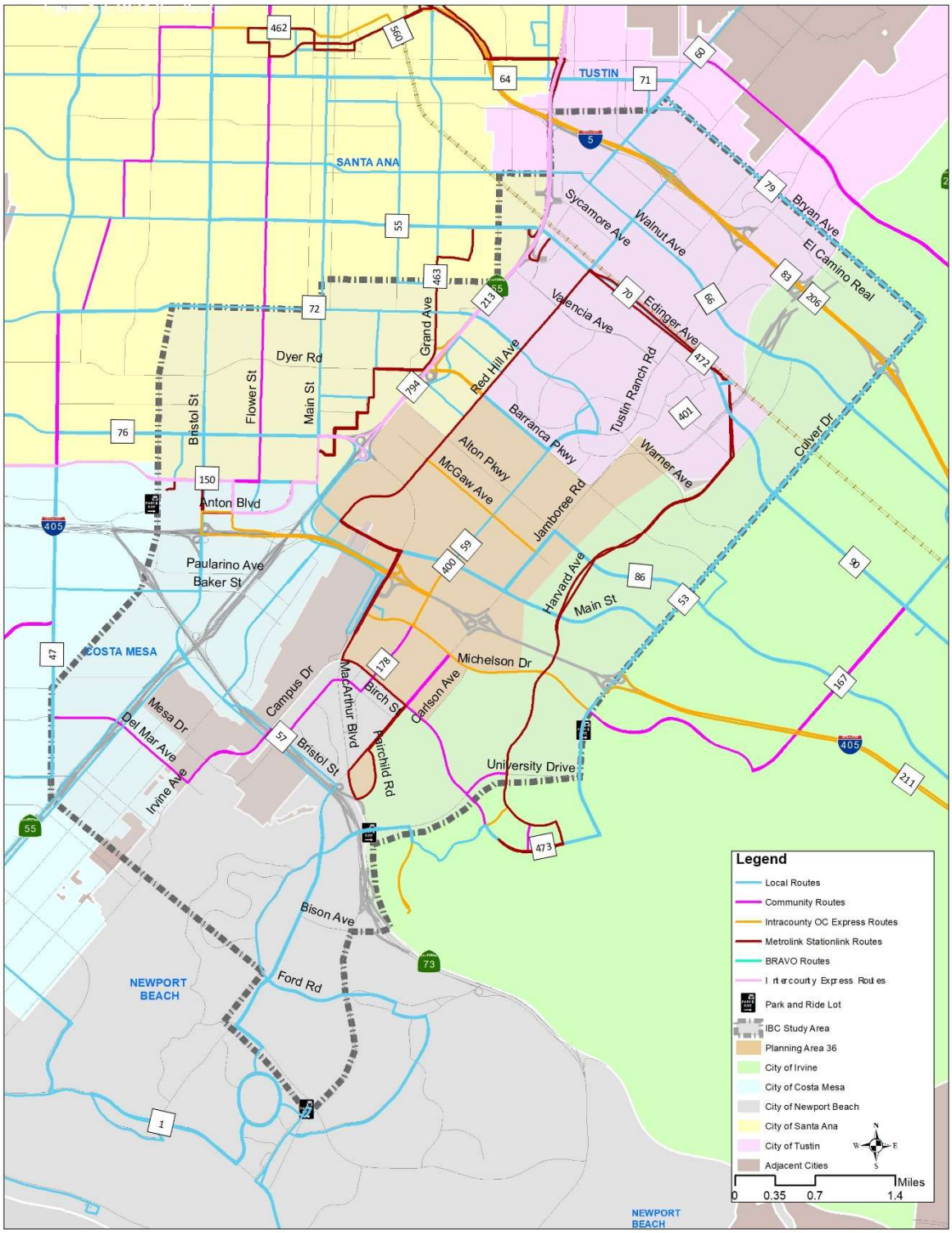


Figure 1.3 – City of Irvine Bicycle System

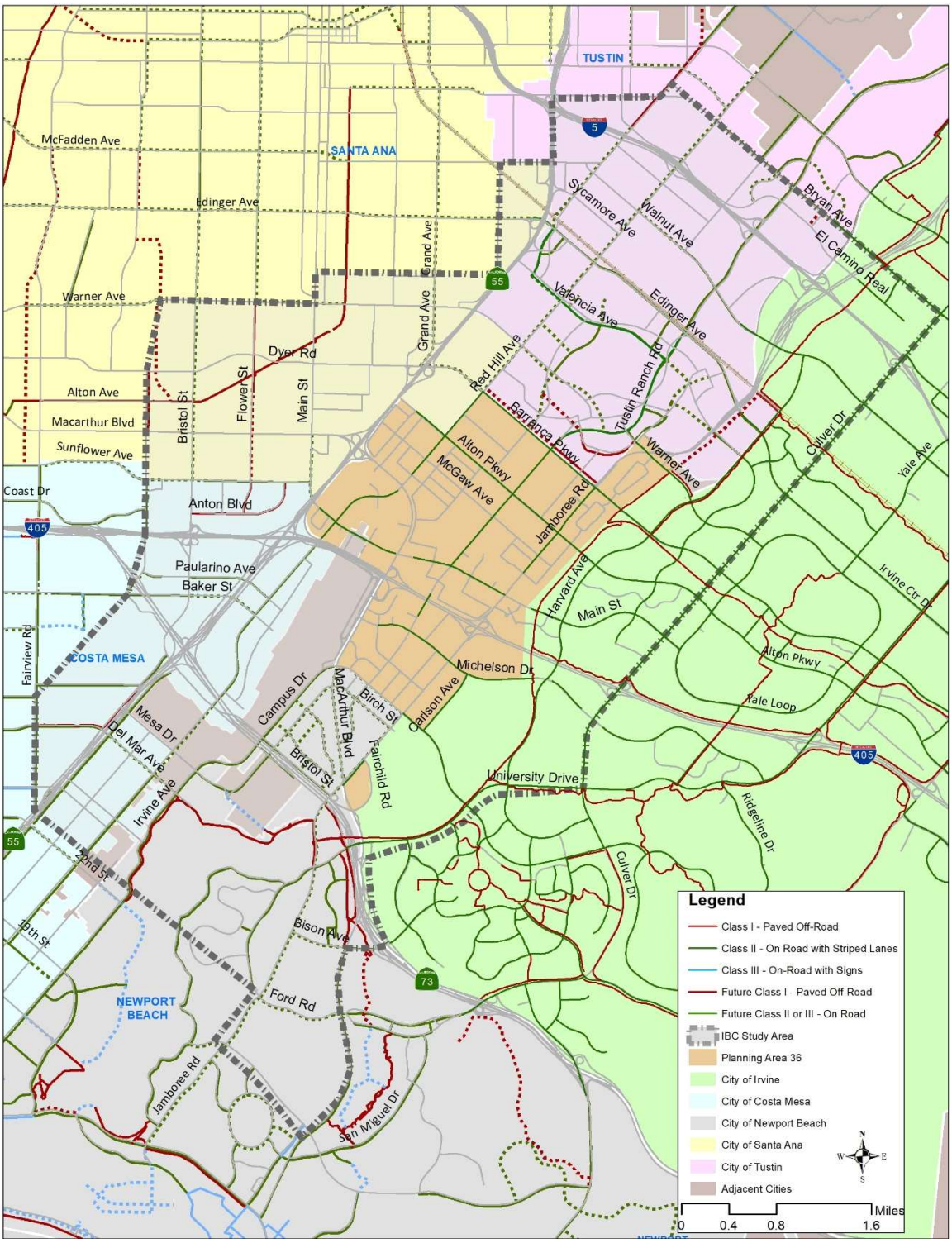
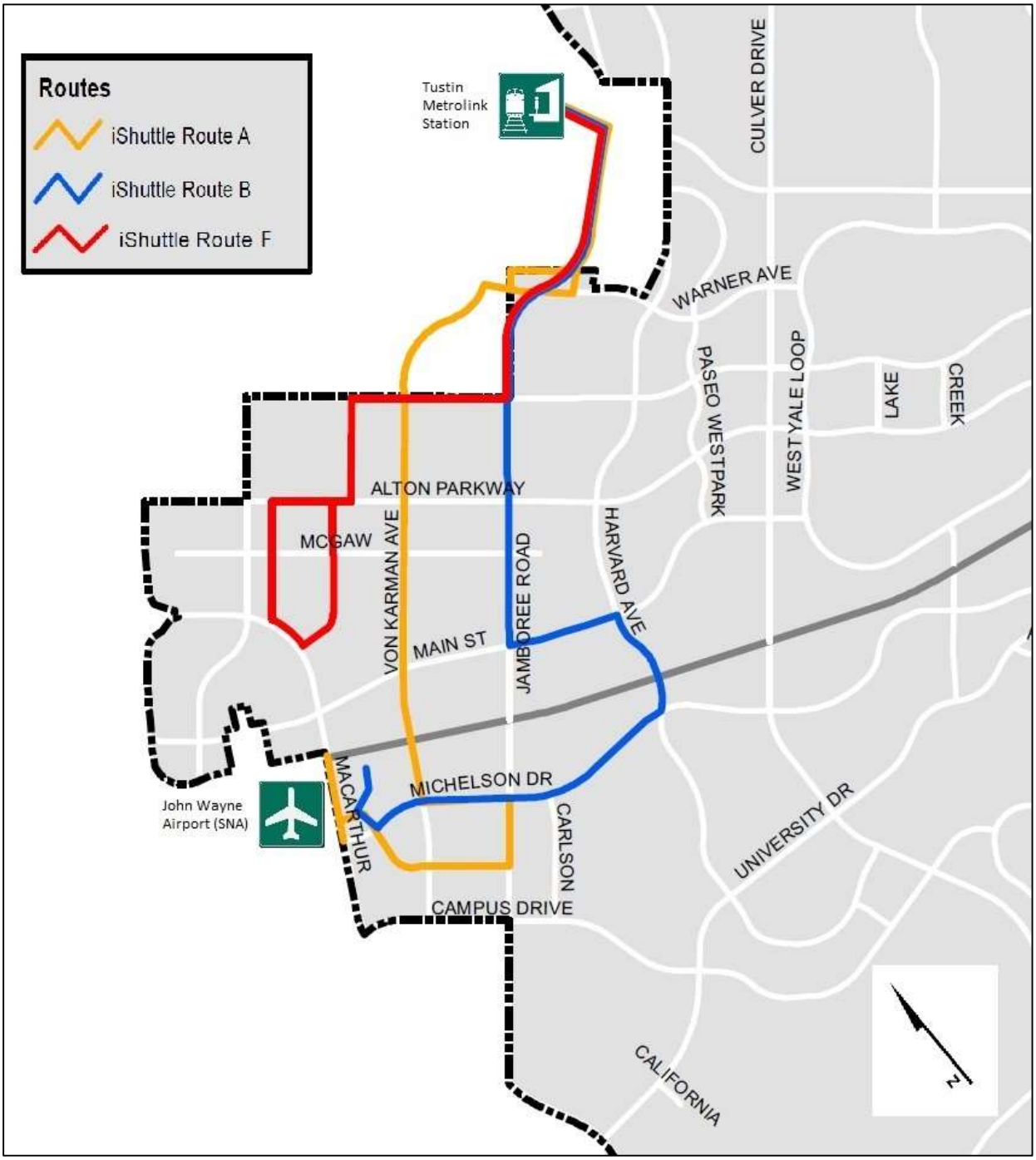


Figure 1.4 – iShuttle Routes



1.6 Traffic Study Update Components

The key traffic study components can be summarized as follows:

- Analysis of existing, near-term Interim year, and Buildout (Post-2035) traffic conditions in the IBC area, as well as adjacent intersections in the Cities of Irvine, Tustin, Santa Ana, Newport Beach, and Costa Mesa
- Assessment of traffic analysis performance criteria for each jurisdiction
- Peak Hour Intersection Capacity Utilization (ICU) analysis for study area intersections
- Daily and peak hour arterial segment analysis for study area arterial segments (peak hour analysis only within the City of Irvine)
- Peak hour Volume/Capacity (V/C) and Highway Capacity Manual (HCM) analysis for selected study area freeway segments and ramps
- Identification of and timing of mitigation measure requirements and summary of levels of service under mitigated conditions
- Special issues in particular performance of traffic signal warrant analysis at selected unsignalized intersections.
- Evaluation of funding requirements and fair-share percentages for identified mitigation measures and implementation mechanism for improvements

1.7 Report Organization

This report summarizes the existing conditions, Future Interim Year, Future Buildout Year conditions for the City of Irvine's IBC Vision Area as well as wo Alternative Buildout network scenarios.

The analysis identifies roadway segments, intersections, freeway mainline segments, and ramps that are currently deficient, or that will become deficient based on the proposed land use changes. The report is organized as follows:

- Chapter 1: Introduction
- Chapter 2: Methodology
- Chapter 3: Existing Conditions
- Chapter 4: Interim Year Conditions
- Chapter 5: Buildout Year Conditions
- Chapter 6: Improvements and Cost Estimates
- Chapter 7: Special Issues - Signal Warrants
- Chapter 8: Summary of Impacts and Comparison to 2015 Vision Plan Traffic Study
- Chapter 9: References
- Chapter 10: Glossary of Transportation Terms

2 METHODOLOGY

2.1 Traffic Analysis Methodology

The IBC Vison Plan adopted in 2010 established a cap of 15,000 dwelling units for the IBC area, which allows for up to 17,038 dwelling units with inclusion of density bonus units pursuant to state law. With this residential cap, there was a corresponding reduction of non-residential office equivalency square footage. Since that time, development has occurred in the IBC with a number of projects currently being processed for approval, and a number of projects either constructed or currently under construction. Several of these projects required a Transfer of Development Rights (TDRs) thus changing the land use categories and the distribution of trips within IBC compared to the 2010 Vision Plan, thus changing traffic patterns.

The study uses current and forecasted (Interim and Buildout years) land use data, as well as the current and forecasted circulation system within the study area. In order to assess potential impacts associated with the updated land uses and future network assumptions, the following analyses are performed:

- Daily arterial segment volume-to-capacity (V/C) analysis,
- Peak hour arterial segment V/C analysis (for potentially deficient daily segments in the City of Irvine),
- A.M. and P.M. peak hour intersection analysis using Intersection Capacity Utilization (ICU),
- Freeway peak hour mainline segment V/C and Highway Capacity Manual (HCM) analysis using HCS software,
- Freeway peak hour ramp V/C analysis and HCM analysis using HCS software, and
- Assessment of bike and pedestrian activity within the IBC.

2.2 Traffic Forecasting Methodology

Traffic modeling is commonly used to explain and project land use and travel relationships. The City of Irvine staff provided traffic modeling services for this traffic study update via the industry standard four step planning procedure to document trip generation, trip distribution, modal split, and traffic assignment as outlined below.

The Irvine Transportation Analysis Model (ITAM) was developed by the City of Irvine in accordance with the Orange County Transportation Authority Subarea Modeling Guidelines and is consistent with the Orange County Transportation Analysis Model (OCTAM). Land use assumptions include input from the development community and applicable jurisdictions for land uses outside the City. A large-scale traffic count program was completed in Spring 2018. These 2018 traffic counts were incorporated into the existing conditions analysis.

Future forecast volumes from ITAM were post-processed using the ITAM post-processing module that was developed using National Cooperative Highway Research Program (NCHRP) Report 255 methodology, which is the industry standard post-processing technique.

This uses existing count volumes as the basis for development of future daily and peak hour forecast volumes. Consistent with industry-standard practice and OCTAM methodology, post-processing applies the growth between the existing and future year model forecasts to existing count volumes to develop future

year forecast volumes.

2.2.1 Trip Generation

Trip generation is the first of the four-step modeling procedures used to forecast land use impacts on the travel network. Trip generation mathematically relates survey-reported trip making to land-use types, using statistical procedures to establish trip rates. Firstly, the quantity of land use (typically dwelling units or square feet) for each land use type within a Traffic Analysis Zone (TAZ) is established using the Citywide land use database. These land use quantities are then converted to socioeconomic data (SED) using pre-determined factors. Next, the SED is converted to trip productions (origins) and attractions (destinations) for seven different trip purposes using factors developed specifically for ITAM for each TAZ within the City, in order to develop trip generation by TAZ. The ITAM TAZ system is showing in **Appendix B**. **Table 2.1** shows the SED based trip rates for the IBC study area.

Table 2.1 – Socioeconomic Based Trip Rates

Trip Type	Prod/ Attract	SDU	MDU	Popn	Employed Residents	Retail 'EES	Service 'EES	Other 'EES	Students	Univ	Income
Home Based Work	P	0.00	0.00	0.00	1.27	0.00	0.00	0.00	0.00	0.00	0.00
	A	0.10	0.10	0.00	0.00	1.24	1.24	1.26	0.00	0.00	0.00
Other Based Work	P	1.05	0.60	0.24	0.00	0.00	0.00	0.00	0.00	0.00	13.00
	A	0.40	0.39	0.00	0.00	3.46	0.90	0.10	0.00	0.20	1.00
Home Based Other	P	1.05	0.60	0.24	0.00	0.00	0.00	0.00	0.00	0.00	13.00
	A	0.40	0.39	0.00	0.00	3.46	0.90	0.10	0.00	0.00	1.00
Home Based Shop	P	0.89	0.46	0.11	0.00	0.00	0.00	0.00	0.00	0.00	11.00
	A	0.00	0.00	0.00	0.00	5.54	0.00	0.00	0.00	0.00	0.00
Other Based Other	P	0.44	0.43	0.00	0.00	5.20	1.08	0.24	0.00	0.20	2.00
	A	0.41	0.45	0.00	0.00	4.84	1.10	0.20	0.00	0.20	2.00
Home Based University	P	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.91	0.00
	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Home Based School	P	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00

Source: ITAM

The seven trip purposes in **Table 2.1** are then aggregated to the following five trip purposes, which are consistent with the OCTAM trip purposes:

- Home-based Work (HBW)
- Home-based Other (HBO) – Combines Home Based Other and Home Base Shopping trips
- Other-based Other (OBO)
- Non-home Based (NHB)
- Home-based School (HBSc) – Combines School and University trips

Trip generation calculates trips by production and attraction for each trip purpose. The number of trips generated by residential uses is a function of the number of occupied dwelling units, dwelling unit population density, number of employed residents and median household income, while that of non-residential uses is a function of the type of employees (retail, service and other). For schools, colleges and universities trip generation is a function of employees and students.

Table 2.2 shows the trip generation for each alternative within Planning Area 36. Detailed trip generation quantities by ITAM TAZ are provided in **Appendix C**.

Table 2.2 – IBC TAZ Trip Generation Summary for Future Forecast Scenarios

TIME PERIOD	INTERIM CUMULATIVE BASELINE NO UPDATE	INTERIM CUMULATIVE WITH UPDATE	BUILDOUT CUMULATIVE BASELINE NO UPDATE	BUILDOUT CUMULATIVE WITH UPDATE
AM Peak Hour Out	13,431	17,775	13,515	19,083
AM Peak Hour In	29,878	32,004	29,964	36,511
PM Peak Hour Out	28,533	31,503	28,695	35,768
PM Peak Hour In	19,342	23,278	19,544	25,845
Daily	551,618	632,470	551,618	709,492

2.2.2 Trip Distribution

Trip distribution, the second step in traffic modeling, links the trip production (or origin) to the attractions (or destinations) in order to produce estimates of travel patterns. The ITAM trip distribution is based on OCTAM trip distribution output. ITAM trip generation productions and attractions are developed for the primary and secondary ITAM study areas based on land use and SED for the City. Regional trip tables are then factored to match the total trips generated within the primary and secondary study areas. The factoring process, referred to as the Fratar process, maintains trip distribution patterns of the regional model while iteratively applying factors to adjust origin and destination totals for the revised study area trips generated by subarea model trip generation component. The outcome of the Fratar process and subsequent trip table expansion into the refined ITAM traffic analysis zones is a set of trip matrices by trip purpose, which reflect the ITAM trip generation and OCTAM trip distribution patterns. The resulting trip production and attraction (P/A) tables by trip purpose are then converted to origin and destination (O/D) trip tables for four time periods (AM, PM, Midday and Nighttime).

2.2.3 Mode Choice

Mode choice is the third step in traffic modeling. It can consider converting person-trips into automobile trips, transit trips, bicycle and pedestrian trips. Subarea traffic models such as ITAM are generally vehicle-based models and hence, do not include an explicit mode choice component. Instead, ITAM uses post-mode choice vehicle trip tables from the OCTAM model as a starting point. Nevertheless, it is important to note that US Census household surveys (see http://www.census.gov/censusexplorer/censusexplorer-commuting.html) have documented IBC census tracts with bicycle commuters comprising from 0.5% up to 10.2% of work trips. In order to be able to address the magnitude of non-motorized trips off-model, pedestrian and bicycle intersection counts were included in the City of Irvine's spring 2018 count collection program.

2.2.4 Traffic Assignment

The fourth and final step of the traffic modeling process, traffic assignment, loads the vehicle trips estimated

from the preceding steps onto the transportation network as coded in the model. Trips from the O/D trip tables are assigned to ITAM roadway network for each time period (AM Peak: 6:00 AM – 9:00 AM, Midday: 9:00 AM-3:00 PM, PM Peak: 3:00 PM - 7:00 PM and Nighttime: 7:00 PM - 6:00 AM) using an equilibrium assignment algorithm. The trip tables in ITAM maintain two vehicle classes for the purpose of assignment: drive alone and carpool. Finally AM and PM peak period volumes are factored to peak hour volumes and all four time periods are added together to generate daily volumes.

2.2.5 Land Use Assumptions and Trip Budget

The 2010 approval of the IBC Vision Plan General Plan Amendment and Zone Change (GPA/ZC) established a cap of 15,000 dwelling units (DU) for the IBC area, with a corresponding reduction of non-residential square footage such that the GPA/ZC was intensity (trip) neutral. Intensity neutrality was established by using IBC database land use Development Intensity Values (DIVs) for multi-family residential units. The most conservative (highest) peak hour DIV rate for each land use category from the IBC database expected to be reduced was multiplied by the appropriate quantity being reduced for industrial and office land uses. To calculate traffic for various land uses within the IBC, the most conservative peak hour DIV rate was utilized, AM peak hour DIV rate for industrial land uses and the PM peak hour DIV rate for all other land uses.

The 2010 IBC Vision Plan Traffic Study analyzed the full 15,000 DU cap ("base units") plus 2,038 density bonus DUs (which are exempt by state law from local intensity limitations), making certain assumptions of the number and location of future dwelling units. At that time, the status of 11,050 DUs of the 15,000 DU cap was known (either existing, under construction, approved but not yet constructed, or in process at the time). The location, density, and design of the remaining 3,950 potential DUs were unknown at that time and therefore certain assumptions were made as to the location and density of these 3,950 DUs, as well as the 1,383 density bonus DUs that were possible (maximum of 35 percent of the base total.) These 1,383 units, when added to 345 existing units at that time, yield the 2,038 total density bonus units assumed in the 2010 Traffic Study.

At the time of the IBC Vision Plan Five-Year Update traffic study in 2015, the locations of 14,940 DU of the 15,000 DU cap were accounted for, and as of July 1, 2018, the status of all 15,000 units are accounted for as outlined in **Table 2.3** below.

Table 2.3 – IBC Dwelling Unit Status as of July 2018

BASE UNITS	DENSITY BONUS UNITS	TOTAL UNITS	DESCRIPTION
8,720	707	9,427	Built/Existing
3,269	364	3,633	Under Construction
2,844	691	3,535	Approved (not yet built)
242	84	326	Remaining units (application in process - CUP or MP)
15,075	**1,846**	**16,921**	**Total**

Since no base units are allowed over the 15,000 unit cap, the 242 base units in process are assumed to be reduced by 75 units to 167 units. Because of this reduction, the number of density bonus units in process is adjusted accordingly by assuming a theoretical maximum of 35 percent (maximum density bonus units allowed by State law) of the 167 units in process, yielding 58 density bonus units instead of the 84 units associated with the 242 unit project. This reduction of 26 density bonus units yields a revised total of 1,820 density bonus units. **Table 2.4** below shows the revised unit totals reflecting unit count adjustments to meet the 15,000 unit cap.

Table 2.4 – IBC Dwelling Unit Status as of July 2018 – Adjusted to meet 15,000 Unit Cap

BASE UNITS	DENSITY BONUS UNITS	TOTAL UNITS	DESCRIPTION
8,720	707	9,427	Built/Existing
3,269	364	3,633	Under Construction
2,844	691	3,535	Approved (not yet built)
167	***58***	***225***	Remaining units (application in process - CUP or MP)
15,000	***1,820***	***16,820***	**Total**

The total DU count analyzed in this Vision Plan Update study is therefore 16,820 units (15,000 base units plus 1,820 density bonus.

All DUs for which the status is known (i.e. existing, under construction or approved) as outlined in **Table 2.4** above are assumed to be completed by the interim study year. The remaining 167 base DUs and 58 density bonus units in process are also assumed to be completed by Interim study year. These assumptions represent the most conservative estimates of IBC build-out to identify the earliest point at which potential impacts might occur.

The Vision Plan Update analyzes the change in traffic resulting from all known projects approved and in-process for multiple study scenarios. Potential traffic impact locations are identified in the Existing Condition scenario, the Interim condition and the Buildout condition.
Specific land use assumptions are provided in **Appendix J**.

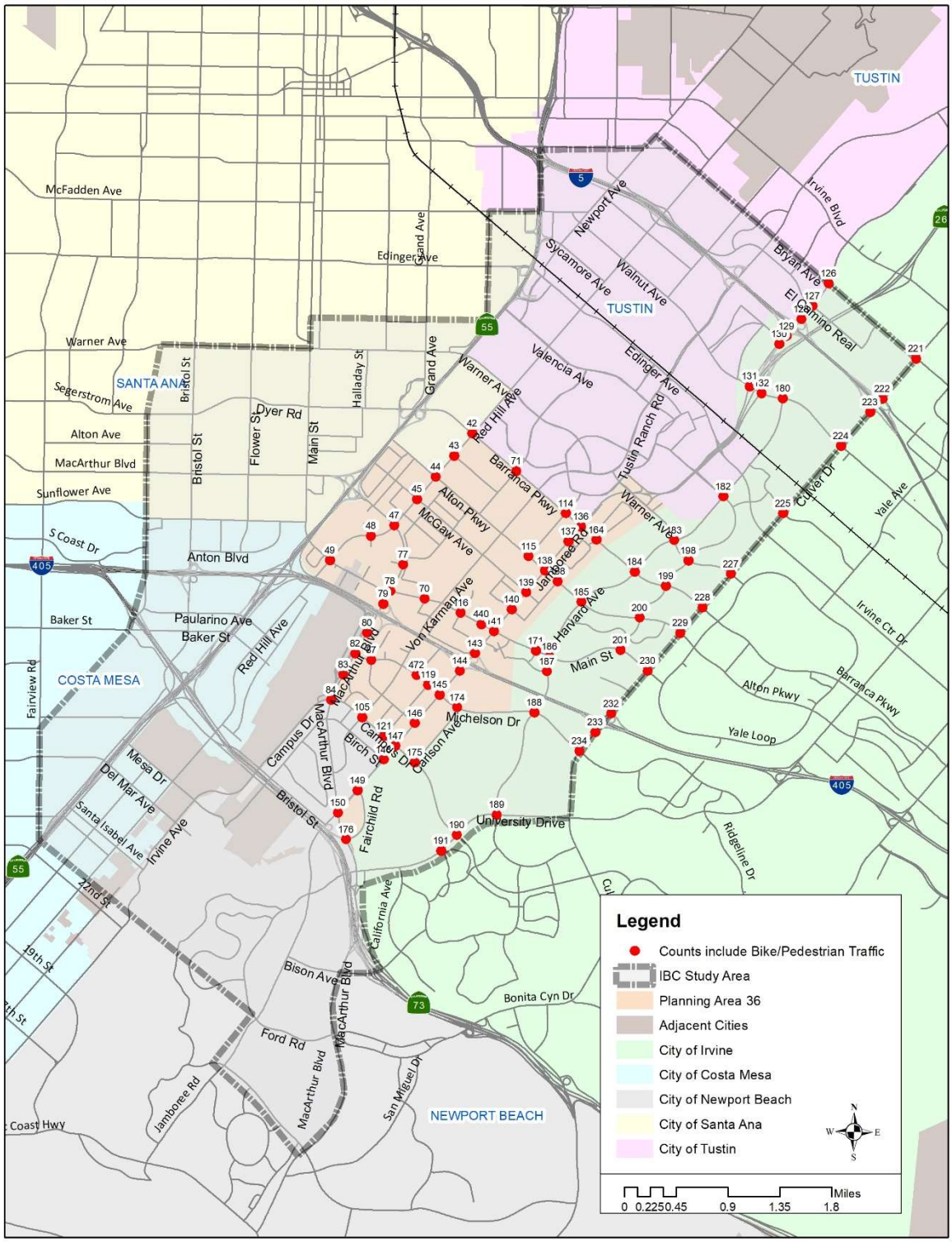
2.3 Traffic Counts

Intersection and arterial count data was collected within the study area and at IBC study area locations in adjacent jurisdictions outside the City of Irvine. The counts were quality controlled and checked for continuity of flow where appropriate and compared to historical count data provided by the City in order to ensure that the counts used for the analyses are reasonable.

For this study, the peak periods for the count program were determined by the City to be 7:00 AM - 9:00 AM and 4:00 PM - 6:30 PM for counts within the City of Irvine and 7:00 - 9:00 AM and 4:00 - 6:00 PM for counts outside the City of Irvine, consistent with the 2010 and 2015 studies. In addition, bike and pedestrian counts were collected at a number of intersections within the City of Irvine as shown in **Figure 2.1**.

For intersections within the City of Irvine intersections and arterial counts were counted for two days (Tuesday to Thursday). Outside the City, intersection counts were typically only counted for one day (Tuesday to Thursday) though arterial tubes counts were conducted for two days (Tuesday to Thursday). Congestion Management Program (CMP) locations were counted for three weekdays (Tuesday to Thursday) regardless of jurisdiction.

Figure 2.1 – Bicycle and Pedestrian Count Locations



2.4 Performance Criteria

The City of Irvine and adjacent communities have established performance criteria for circulation system operations. The neighboring cities of Santa Ana, Costa Mesa, Tustin, and Newport Beach, use slightly different classifications for the Levels of Service (LOS), Volume to Capacity (V/C) relationships and Intersection Capacity Utilization (ICU) compared to the City of Irvine. The list below describes the LOS at each level, based on the City of Irvine's Traffic Performance Criteria, located within the City's General Plan.

- LOS A – Traffic volumes are generally low and speed is not restricted by other vehicles. All signal cycles clear with no vehicles waiting through more than one original cycle.
- LOS B – Traffic volumes begin to be affected by other traffic. Between one and ten percent of the signal cycles have one or more vehicles that have to wait through more than one signal cycle during peak traffic periods.
- LOS C – Operating speeds and maneuverability are controlled by other traffic. Between 11 and 30 % of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak periods.
- LOS D – Traffic operates at tolerable operating speeds, although with restricted maneuverability
- LOS E – Traffic will experience restricted speeds and vehicles will frequently have to wait through two or more cycles at signalized intersections. Any additional traffic will result in the breakdown of the carrying capacity of the system.
- LOS F – Long traffic queues, unstable traffic flow, heavy congestion, overall traffic volumes are less than at LOS E.

Deficient intersections within the IBC study area fall under two categories of deficiencies: project related significant impacts and cumulative deficiencies. Project related significant impacts are determined using the definition of significant impacts from each city's traffic impact analysis protocol. The City of Irvine threshold for defining project significant impacts is any increase of ICU from acceptable to unacceptable LOS or an increase of 0.02 or greater for a deficient location. For locations with shared jurisdictional boundaries, the stricter or more conservative methodology is employed.

Cumulative deficiencies are identified as those locations that fail in both the No Update and With Update conditions but do not have a project significant impact as identified by the above noted criteria and therefore are not caused or significantly impacted by the project.

For the cities of Costa Mesa, Santa Ana, and Tustin, significant impacts are identified as an increase in intersection ICU of 0.01 or greater under With Update conditions of a deficient intersection when compared between the With Update and No Update scenarios. For the City of Newport Beach, a project significant impact is identified as an increase of 0.01 or more of the critical movement of a deficient intersection.

In a 2009 agreement between the City of Irvine and Caltrans staff it was agreed that for Traffic Studies within the City of Irvine, that project impact thresholds for freeway mainlines and ramps will be based on a methodology that utilizes V/C ratios and project trip contribution to a facility. Project impacts are identified by determining whether or not a freeway mainline segment or ramp is near deficiency (LOS D/E cusp, or V/C=0.89) and calculating the difference in peak hour trips between the No Update and With Update scenarios.

If the proposed Project causes a mainline segment or ramp to deteriorate from better than the LOS D/E cusp (V/C<0.89) to worse than the LOS D/E cusp and adds 200 peak hour trips (mainline segments) or 30 peak hour trips (ramps) once beyond the D/E cusp, then the location is considered to have an initial project impact.

For these initially impacted locations, a secondary analysis is then performed using the Highway Capacity Manual (HCM) methodology to determine LOS, and final project impacts. However, for any segments or ramps with V/C ratios indicating LOS F using ICU methodologies, an HCM methodology analysis is not required since HCM methodology is not appropriate for locations with LOS F or worse.

2.5 Intersection Analysis

For existing and future (Interim and Buildout year) conditions, levels of service at intersections was calculated through application of the Intersection Capacity Utilization (ICU) methodology. This methodology calculates the ratio of the sum of critical turning movement volumes to saturated flow rates (V/C ratio) and allocates this V/C ratio to a Level of Service category as shown in **Table 2.5**.

Table 2.5 – Intersection V/C Ratio and LOS

LOS	INTERSECTION V/C RATIO
A	0-0.60
B	0.61-0.70
C	0.71-0.80
D	0.81-0.90
E	0.91-1.00
F	>1.00

Source: City of Irvine Traffic Impact Analysis Guidelines, 2004

ICU analysis is performed by running post-processed ITAM model outputs through a standalone ICU calculation program developed by the City of Irvine. The program uses existing traffic counts and forecast turning movement volumes generated through ITAM to develop ICU worksheets and summary tables for all study intersections for existing and future scenarios. ICU worksheets are included as **Appendix E**.

The assumptions for this analysis are consistent with the countywide Congestion Management Program (CMP) assumptions as follows:

- 1,700 vehicles per hour of green time in through lanes (1,600 for Newport Beach and Costa Mesa),
- 1,700 vehicles per hour of green time in turn lanes (1,600 for Newport Beach and Costa Mesa),
- 5 percent of total intersection capacity is lost due to the clearance interval (Newport Beach and Costa Mesa do not assume a 5% clearance interval),
- De-facto right-turn lane is assumed in the ICU calculation if 19 feet from edge of outside of through-lane exists and parking is prohibited during peak periods, and
- A credit of 0.05 is applied to the ICU if an intersection is identified with an Advanced Traffic Management System (ATMS) (ATMS credit is not applied to intersections within IBC).

Additional detail on the ICU performance criteria is provided in **Table 2.6**.

Table 2.6 – Circulation System Performance Criteria: Intersections

Intersections ICU Calculation Methodology: Level of service to be based on peak hour intersection capacity utilization (ICU) values calculated using the following assumptions:
Saturation Flow Rate: 1,700 vehicles/hour/lane (1,600 for the City of Newport Beach and Costa Mesa) **Clearance Interval**: 0.05 (no clearance interval for the City of Newport Beach and Costa Mesa) **Right-Turn-On-Red Utilization Factor*** 0.00 for County of Orange intersections, 0.75 for intersections in all other jurisdictions. (applies to all jurisdictions in the study area—defaulted in the ICU analysis) • "De-facto" right-turn lane is assumed in the ICU calculation if 19 feet from edge of outside of through-lane exists and parking is prohibited during peak periods.
Performance Standard: IBC Area, CMP, Airport intersections between IBC and Newport Beach, and certain intersections in Santa Ana, including Main at MacArthur and SR-55 at MacArthur: Level of Service E (peak hour ICU less than or equal to 1.00). All other locations within the study area: Level of Service D (peak hour ICU less than or equal to 0.90)
Mitigation Requirement: For peak hour ICU within the City of Irvine greater than the acceptable level of service, mitigation of the project contribution is required to bring location back to acceptable level of service or to existing conditions if project contribution is greater than or equal to 0.02. The Cities of Santa Ana, Tustin, and Costa Mesa require mitigation for deficient intersections that fail under peak hour conditions and the project contribution is greater than or equal to 0.01. Newport Beach requires mitigation for deficient intersections where the intersection critical movement increases by greater than or equal to 0.01.

The following intersections were allocated an ATMS credit through approved traffic studies. Four different intersections have ATMS already paid under the program and ATMS credit applied in the Interim Year and six intersections have ATMS allocated in the Buildout Year. No ATMS will be applied as mitigation to impacted intersections within the IBC.

Interim Year ATMS Applied Intersections

190 - University Drive at Campus Drive
226 - Culver Drive at Irvine Center Drive
229 - Culver Drive at Alton Parkway
235 - Culver Drive at University Drive

Buildout Year ATMS Applied Intersections

190 - University Drive at Campus Drive
224 - Culver Drive at Walnut Avenue
226 - Culver Drive at Irvine Center Drive
228 - Culver Drive at Barranca Parkway
229 - Culver Drive at Alton Parkway
235 - Culver Drive at University Drive

2.6 Arterial Analysis

The arterial roadway criteria involves the calculation of Average Daily Traffic (ADT) V/C ratios supplemented by the City of Irvine's Link Capacity Analysis guidelines that require that arterial deficiencies identified based on ADT V/C ratios be further examined using peak hour data per adopted methodology. LOS E (V/C not to exceed 1.00) is the performance standard specified in the Orange County Congestion Management Program (CMP) for arterials that are part of the CMP roadway network and is applied in this analysis as the performance standard for CMP arterials outside the City of Irvine. LOS E is also the adopted performance standard for arterials within City of Irvine Planning Area 36 (the IBC area). LOS D (V/C not to exceed 0.90) is the performance standard that has been adopted for the remainder of the study area circulation system by the local jurisdictions in the study area. **Table 2.7** shows the relationship between arterial V/C and LOS.

Table 2.7 – Arterial V/C Ratio and LOS

LOS	ARTERIAL SEGMENT V/C RATIO
A	0-0.60
B	0.61-0.70
C	0.71-0.80
D	0.81-0.90
E	0.91-1.00
F	>1.00

Source: City of Irvine Traffic Impact Analysis Guidelines. 2004

The City's Traffic Impact Analysis Guidelines mandate a peak hour link analysis be performed on all links that exceed the permissible daily LOS threshold applicable to the segment. A peak hour link analysis determines directional AM and PM peak hour V/C ratios for each link that exceeds the daily LOS threshold. The peak hour capacity is determined by multiplying the mid-block number of lanes for each direction by a lane capacity of 1,600 vehicles per hour, except when the distance between controlled intersections is greater than a mile. In such situations, the peak hour lane capacity is assumed to be 2,000 vehicles per hour. Existing peak hour segment volumes are determined from the peak hour intersection directional approach and departure count volumes. Future peak hour analysis is based on forecast intersection approach and departure volumes of the upstream and downstream intersections. The peak hour link analysis is only applied to roadway segments within the City of Irvine. The cities of Newport Beach, Tustin, and Costa Mesa evaluate daily ADT and assess impacts at the intersection. The City of Santa Ana evaluates daily LOS as a screening tool with no specific peak hour methodology specified.

If the directional peak hour V/C surpasses the City LOS threshold, then additional lanes are required. The determination of whether the additional lanes need to be through lanes or auxiliary lanes is based on the ICU analysis as well as improvement needs of the downstream intersection. **Table 2.8** shows the capacities used by jurisdiction and roadway classification.

Since the adoption of the 2010 Vision Plan, the City of Irvine General Plan has been amended with the following downgrades:

- Barranca Parkway between Red Hill Avenue and Jamboree Road (downgraded from 8-lane divided roadway to 7-lane divided roadway),
- Jamboree Road between Barranca Parkway and McGaw Avenue (downgraded from a 10-lane divided roadway to a 8-lane divided roadway),
- Main Street between Red Hill and Harvard Avenue (downgraded from 6-lane divided arterial with 2 auxiliary lanes to 6-lane divided roadway),
- MacArthur Boulevard between Fitch and Main Street (downgraded from 8-lane divided roadway to 7-lane divided roadway),
- Red Hill Avenue between Barranca Parkway and Main Street (downgraded from an 8-lane divided roadway to a 6-lane roadway),
- Alton Avenue between Red Hill Avenue and Jamboree Road (downgraded from a 6-lane divided roadway to 4-lane divided roadway), and
- Von Karman Avenue between Barranca Parkway and Michelson Drive (downgraded from 6-lane roadway to 4-lane roadway).

Although the 2010 Vision Plan Traffic Study stated that it was the City's intention to remove the proposed HOV ramps at Von Karman Avenue on the I-405 freeway, it was determined that this improvement was of regional significance and therefore should remain part of the Buildout baseline assumptions. The following improvements remain part of the Buildout baseline assumptions based on the 2011 Agreement between the City of Irvine and City of Santa Ana:

- Alton Avenue Overcrossing at the SR-55 freeway
- Dyer Road Widening from six-lanes to eight-lanes between Red Hill Avenue and SR-55 freeway northbound on-ramp.

Also since 2010, the City of Tustin has widened Barranca Parkway to a 7-lane divided roadway between Red Hill Avenue and Jamboree Road by adding a fourth westbound through lane and has recently widened Red Hill Avenue from a 6-lane to a 7-lane facility by adding an additional northbound lane from Barranca Parkway to Valencia Avenue. All IBC Vision Plan improvements previously identified in the original Vision Plan approval have been removed for the purposes of reassessing transportation needs.

Table 2.8 – Circulation System Performance Criteria: Arterial Segments

Arterial Roads V/C Calculation Methodology: Level of service to be based on average daily traffic (ADT) volume/capacity (V/C) ratios calculated using the following capacities:			
City of Irvine	Major Arterial Primary Arterial Secondary Arterial Divided Collector Commuter	8 lane 6 lane 4 lane 4 lane 2 lane divided 2 lane	72,000 54,000 32,000 28,000 18,000 13,000
City of Santa Ana	Principal Arterial Major Arterial Primary Arterial Secondary Arterial Divided Collector Collector/Commuter	8 lane 6 lane 4 lane 4 lane 2 lane divided 2 lane	75,000 56,300 37,500 24,000 18,000 12,500
City of Tustin	Major Arterial Primary Arterial Secondary Arterial Divided Collector Commuter	8 lane 6 lane 4 lane 4 lane 2 lane divided 2 lane	75,000 56,300 37,500 25,000 18,000 12,500
City of Costa Mesa	Major Arterial Primary Arterial Secondary Arterial Divided Collector Commuter	8 lane 6 lane 4 lane 4 lane 2 lane divided 2 lane	75,000 56,000 38,000 25,000 18,000 12,500
City of Newport Beach	Principal Arterial Augmented Arterial Primary Arterial Secondary Arterial Divided Collector Commuter	8 lane 6 lane 4 lane 4 lane 2 lane divided 2 lane	68,000 58,000* 40,000 23,000 18,000 10,000
Auxiliary lanes are assumed to have 0.5 the capacity of a standard lane.			
*Figure for Major Arterial without Turn Lane is 51,000. 58,000 was used in traffic analysis as the typical capacity (Source: City of Newport Beach).			
As required by the City of Irvine and Neighboring Cities Link Capacity Analysis guidelines, ADT is the standard reference; however, arterial deficiencies identified based on ADT V/C ratios were further examined using peak hour data.			
Performance Standard: Level of Service E for segments within the Planning Area 36 (IBC area), CMP arterials inside and outside the City of Irvine, and Smart Streets (Irvine Boulevard, Edinger Avenue, Jamboree Road South of Irvine Boulevard) in the City of Tustin.			
All other arterials: Level of Service D (peak hour V/C less than or equal to 0.90).			

2.7 Freeway and Ramp Volume/Capacity & HCM Density Analysis

There are several major state and interstate highways contained within the study area, including sections of I-5, I-405, SR-55, SR-73, and SR-261. Therefore, an analysis of project impacts on freeway mainline segments and ramps has been performed.

2.7.1 Freeway Mainlines

Existing year volume data was collected for the freeway mainline from Caltrans' freeway Performance Measurement System (PeMS). Average weekday peak period data were extracted and averaged over multiple weekdays (Tuesday to Thursday) in typical traffic months (March and October) to obtain typical peak hour freeway volumes. Future forecast peak hour traffic volumes were obtained from ITAM.

Pursuant to Caltrans agreements, the freeway mainline criteria for this traffic study are based on peak hour V/C ratios. The freeway mainline capacities applied in this analysis of 2,000 vehicles per lane are based on information contained in the Caltrans Highway Design Manual and the Caltrans Ramp Meter Design Manual and has been verified by Caltrans. The LOS D/E cusp (V/C not to exceed 0.89) has been established by Caltrans as the operating standard for freeway mainline segments and freeway ramps within the study area. **Table 2.9** presents the V/C ranges for freeway/tollway segments and their association with LOS.

Table 2.9 – Freeway Segment V/C Ratio and LOS

LOS	FREEWAY SEGMENT V/C RATIO
A	0-0.30
B	0.31-0.50
C	0.51-0.71
D	0.72-0.89
E	0.90-1.00
F	>1.00

Source: HCM 2000

A two-tiered traffic analysis approach was used to determine the level of analysis needed and to identify significant impacts contributed by a project. This methodology was agreed between Caltrans and the City of Irvine in January 2011. A copy of the executed agreement is included in **Appendix F.** For locations with V/C ratios just above the V/C LOS deficiency threshold, an additional level of analysis is conducted to evaluate operating conditions for Caltrans planning purposes. The HCM freeway analysis consists of utilizing HCS software (HCS 2010) and processes inputs of speed, peak hour factors, peak hour volumes, truck percentages, and number of lanes to produce a traffic density measures by the number of passenger vehicles per mile per lane which correlates to an LOS indicating the amount of congestion on a particular facility. The HCS software package applies HCM methodology and formulae for the various types of HCM analyses.

Resulting densities from the HCM analysis indicate how well traffic flow is accommodated by a freeway or ramp. Higher densities indicate greater congestion on the facility and less ability for vehicles to weave and pass, as well as limiting speed. The output or density is the number of passenger vehicles per mile per lane of freeway. The LOS thresholds for freeway mainline segments is shown in **Table 2.10**.

Table 2.10 – Freeway Mainline Segment Density LOS

FREEWAY MAINLINE SEGMENT DENSITY (PC/MI/LN)	LOS
0-11.0	A
11.0-18.0	B
18.0-26.0	C
26.0-35.0	D
35.0-45.0	E
>45.0	F

Source: Highway Capacity Manual, 2010

According to the HCM, LOS F (>45.0 for freeway mainlines segments) is the maximum density at which sustained flows at capacity are expected to occur. The HCM density analysis does not take into account high-occupancy vehicle (HOV) lanes, as those are classified as separate facilities by the HCM. The analysis also does not take into consideration metering on the ramps. HCS worksheets for the freeway mainline segments and ramps that fall under the conditions described above are included in **Appendix G**. The two-stage process can be summarized as:

1. Freeway mainline segments and ramps are evaluated using ICU methodology to calculate peak hour V/C ratios. If the V/C ratio indicates LOS F (>1.00) for a given freeway mainline segment, HCM methodology (second step below) was not applied. (The logic behind this is if LOS F is reached, the facility is at full capacity and HCM is not a useful tool to determine operational LOS).
2. HCM freeway mainline analysis is performed when a mainline segment operates at LOS D/E cusp (0.89) or worse, but better than LOS E/F cusp (1.00), and the project contributes greater than 200 vehicles per hour (based on the comparison of No Update and With Update V/C ratios) to that mainline segment.

HCM freeway mainline analysis was developed for Caltrans planning purposes only and is not used to identify project impacts. Furthermore, the HCM analysis is performed for the With Update scenarios, for those links that meet the criteria above. Identification of significant impact for freeway facilities is based purely on peak-hour V/C ratios and is detailed in **Table 2.13**.

2.7.2 Freeway Ramps

For most freeway ramp locations the existing year peak hour volume data was obtained from turning movement counts at the intersections. For freeway ramps without available intersection counts, volume data was collected from the PeMS system for the same dates as the freeway mainlines. At locations with only PeMS data available existing counts were added to the difference in the raw ITAM model data between the existing model and the with and without Project model runs. For freeway ramps with available intersection counts these locations were post-processed using the City's post-processor and the resulting volumes utilized in the freeway ramp analysis.

LOS D/E cusp (V/C not to exceed 0.89) has been established by Caltrans as the operating standard for freeway ramps within the study area. The V/C and LOS relationship for freeway ramps are identical to those used for freeway mainline segments and the V/C ranges are presented in **Table 2.11**.

Table 2.11 – Freeway Ramps V/C Ratio and LOS

LOS	FREEWAY RAMP V/C RATIO
A	0-0.30
B	0.31-0.50
C	0.51-0.71
D	0.72-0.89
E	0.90-1.00
F	>1.00

Source: Highway Capacity Manual, 2000

As in the case with the freeway mainline analysis a two-tiered traffic analysis approach is used to determine the level of analysis needed and to identify significant impacts contributed by the project. This methodology was agreed between Caltrans and the City of Irvine in November 2009. For locations with V/C just above the V/C LOS deficiency threshold, an additional level of analysis was conducted to evaluate operating conditions for Caltrans planning purposes.

The HCM LOS thresholds for freeway ramps are shown in **Table 2.12** According to the HCM, LOS E (>35.0 for ramps) is the maximum density at which sustained flows at capacity are expected to occur. HCS worksheets

for the freeway mainline segments and ramps that fall under the conditions described above are included in **Appendix H**. The two-stage process can be summarized as:

1. Freeway ramps are first evaluated using the ICU methodology to calculate peak hour V/C ratios. If the V/C ratio indicates LOS F (>1.00) for a given freeway ramp, HCM methodology (second step below) was not applied. (The logic behind this is if LOS F is reached, the facility is at full capacity and HCM is not a useful tool to determine operational LOS).
2. HCM analysis is performed when a ramp operates at LOS D/E cusp (0.89) or worse, but better than LOS E/F cusp (1.00), and the project contributes greater than 30 vehicles per hour (based on the comparison of no-project and with-project V/C ratios) to that ramp.

HCM ramp analysis was developed for Caltrans planning purposes only and is not used to identify project impacts. Furthermore, the HCM analysis was performed for the With Update scenarios, for those ramps that meet the criteria above. Identification of significant impact for freeway facilities is based purely on peak-hour V/C ratios and is detailed in **Table 2.12**.

Table 2.12 – Freeway Ramp Density LOS

Freeway Ramp Density (pc/mi/ln)	LOS
0-10.0	A
10.0-20.0	B
20.0-28.0	C
28.0-35.0	D
>35.0	E
Exceeds HCM Limits	F

Source: Highway Capacity Manual, 2010

The freeway ramp capacities applied in this analysis and shown in **Table 2.13** are based on information contained in the Caltrans Highway Design Manual and the Caltrans Ramp Meter Design Manual and have previously been verified through discussions with Caltrans staff. Since metered and non-metered on-ramps have different assumed capacities fieldwork was performed to confirm which on-ramps were metered versus unmetered in existing conditions.

Table 2.13 – Circulation System Performance Criteria: Freeway Mainlines and Ramps (V/C Analysis)

Freeway Segment and Freeway Ramp Calculation Methodology Level of service to be based on peak hour volume/capacity (V/C) ratios calculated using the following assumptions:
V/C Calculation Methodology
Freeway Mainline Segments
General purpose lane capacity of 2,000 passenger cars per hour per lane.
Freeway Ramps
Metered On-Ramps
A maximum capacity of 900 vehicles per hour for a one-lane metered on-ramp with only one mixed-flow lane at the meter.
A maximum capacity of 1,080 (20% greater than 900) vph for a one-lane metered on-ramp with one mixed-flow lane at the meter plus one high occupancy vehicle (HOV) preferential lane at the meter.
A maximum capacity of 1,500 vph for a one-lane metered on-ramp with two mixed-flow lanes at the meter.
A maximum capacity of 1,800 vph for a two-lane metered on-ramp with two-mixed flow lanes at the meter.
Toll Ramps (On-Ramps and Off-Ramps)
A maximum capacity of 1,500 vph for a one-lane toll ramp with one cash (stopped) lane and one FastTrack (unstopped) lane.
Non-Metered and Non-Tolled On-Ramps and Off-Ramps
A maximum capacity of 1,500 vph for a one-lane ramp.
A maximum capacity of 2,250 (50% greater than 1,500) vph for a two-lane on-ramp that tapers to one merge lane at or beyond the freeway mainline gore point and for a two-lane off-ramp with only one auxiliary lane.
A maximum capacity of 3,000 vph for a two-lane on-ramp that does not taper to one merge lane and for a two-lane off-ramp with two auxiliary lanes.
Performance Standard
Mainlines: Level of Service D/E cusp (peak hour V/C less than or equal to 0.89).

Freeway Segment and Freeway Ramp Calculation Methodology Level of service to be based on peak hour volume/capacity (V/C) ratios calculated using the following assumptions:
Ramps: Level of Service D/E cusp (peak hour V/C less than or equal to 0.89).
Mitigation Requirement: For the locations identified as project impacts resulting from the impact threshold methodology agreed to by the City of Irvine and Caltrans, opportunities for feasible mitigation alternatives including Intelligent Transportation Management Strategies (ITMS) will be considered in order to mitigate the project impacts to pre-project conditions. Freeway Mainline Segments: A significant impact occurs when: a. The segment LOS is better than D/E cusp (<0.89) without the project and the project adds additional trips that degrades the segment beyond the LOS D/E cusp and the project contributes more than 200 vehicles per hour once beyond the LOS D/E cusp, or b. The segment is at LOS D/E cusp or worse (>=0.89) without project and the project contributes greater than 200 vehicle trips per hour. Off-Ramps and On-Ramps: A significant impact occurs when: a.The ramp LOS is better than D/E cusp (<0.89) without the project and the project adds additional trips that degrades the segment beyond the LOS D/E cusp and the project contributes more than 30 vehicles per hour once beyond the LOS D/E cusp, or b.The ramp is at LOS D/E cusp or worse (>=0.89) without the project and the project contributes greater than 30 vehicle trips per hour.

3 EXISTING CONDITIONS

3.1 Introduction

This section describes the existing land uses and circulation system within the IBC study area. The IBC itself encompasses an approximate 2,600-acre land area and associated transportation network within the City of Irvine. In addition, key locations from the surrounding and overlapping agencies within the sphere of influence of the IBC area were also included in the study area. There are 282 arterial segments, 221 intersections, 60 freeway mainline segments (30 northbound and 30 southbound), and 98 freeway ramps within the study area that were analyzed as part of the IBC Vision Plan 2018 Traffic Study Update.

3.2 Existing Land Use

The current setting for land use is reflective of the IBC evolution from a major employment center and office park complex into a vibrant mixed-use neighborhood. Recent development patterns have been transforming the IBC into a mixed-use community through integration of residential and supporting land uses. Existing residential units total 9,427, and there are another 7,168 units approved and/or under construction. **Table 3.1** presents the existing land use quantities by ITAM land use type for the IBC traffic study area as developed by the City of Irvine. This information is illustrated in **Appendix D**, which presents land use quantities by type and by IBC TAZs as well as a land use summary by individual project. The Existing Conditions scenario is based upon the existing Land Uses documented for 2018.

Table 3.1 – Existing Land Use Summary

SCENARIO	MULTI-FAMILY RESIDENTIAL (DU)	RETAIL MIX (TSF)	HOTEL (ROOM)	OFFICE MIX (TSF)	INDUSTRIAL MIX (TSF)	MINI-WAREHOUSE (TSF)	EXTENDED STAY HOTEL (ROOM)
Existing	9,427	1,314	2,511	27,101	13,040	1,430	1,156

Source: City of Irvine, ITAM

3.3 Existing Daily Arterial Segment Analysis

Under existing conditions, traffic on arterials within the IBC study area is generally heaviest in the north-south direction, with Jamboree Road and Culver Drive being the highest traveled corridors. In addition, other heavily traveled north-south arterials include MacArthur Boulevard in Santa Ana; Tustin Ranch Road and Red Hill Avenue in Tustin; MacArthur Boulevard in Newport Beach and Bristol Street in Costa Mesa. The heaviest traveled segment of these arterials is Jamboree Road between Edinger Avenue and Warner Avenue, which serves up to 83,900 vehicles per day (VPD) followed by Jamboree Road north of Michelson Drive with volumes of 74,300 VPD. In the east-west direction, the main thoroughfares are Barranca Parkway/Dyer Road/Flower Street, where some of the heavily used segments carry 45,500 VPD; and Irvine Center Drive/Edinger Avenue and Main Street, where heavily used segments carry approximately 30,000 VPD. The Top 10 most heavily traveled arterial segments within the study area by VPD are:

- Jamboree Road (Irvine/Tustin)
  - Edinger Avenue to Warner Avenue (83,900)
  - Michelson Drive to I-405 southbound off-ramp (74,300)

  - Main Street to I-405 (71,800)
  - Warner Avenue to Barranca Parkway (68,700)
  - Walnut to Edinger Avenue (& Frontage Roads) (68,100)
  - I-5 NB Ramps to I-5 SB ramps (66,500)
  - Kelvin Avenue to Main Street (61,200)
  - McGaw Avenue to Kelvin Avenue (57,500)
  - Alton Parkway to McGaw Avenue (56,700)
- Culver Drive (Irvine)
  - I-5 NB Ramps to I-5 SB Ramps (57,400)

Table 3.2 presents the study area arterial roadway segments, including VPD traffic volume information, V/C ratio and corresponding LOS on each segment. Existing arterial traffic conditions were analyzed based on the existing counts and lane configurations. Deficient segments within the City of Irvine were further analyzed for peak hour performance. Alternative capacities used by other cities within the study area as identified in **Table 2.8** were utilized. As noted, LOS E or F indicates a deficient segment for all arterial segments outside PA 36 within the City of Irvine. Planning Area 36 segments are considered deficient at LOS F as are Orange County's CMP segments. The arterial analysis indicates that the following 14 segments are deficient under the Existing daily conditions:

- Campus Drive
  - 879 – Campus Drive from Carlson Avenue to University Drive (Irvine)
- Culver Drive
  - 726 – Culver Drive from I-5 NB Ramps to I-5 SB Ramps (Irvine)
  - 213 – Culver Drive from I-5 SB Ramps to Scottsdale Drive (Irvine)
  - 221 – Culver Drive from Main Street to San Leandro (Irvine)
  - 222 – Culver Drive from San Leandro to I-405 NB Ramps (Irvine)
  - 224 – Culver Drive from I-405 SB Ramps to Michelson Drive (Irvine)
- Harvard Avenue
  - 183 – Harvard Avenue from Michelson Drive to University Drive (Irvine)
- Jamboree Road
  - 133 – Jamboree Road from Michelle Drive to Walnut Avenue (Irvine)
- University Drive
  - 189 – University Drive from MacArthur Boulevard to California Avenue (Irvine)
  - 188 – University Drive from California Avenue to Mesa Road (Irvine)
  - 187 – University Drive from Mesa Road to Campus Drive (Irvine)
- Bristol Street
  - 1312 – Bristol Street Southbound West of Jamboree Road (Newport Beach)*
- MacArthur Boulevard
  - 1301 – MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*
  - 1884 – MacArthur Boulevard from Main Street to SR-55 (Santa Ana)*

*Deficient locations under existing daily conditions—no further analysis required based on performance criteria.

Figure 3.1 and **Figure 3.2** present the daily Existing ADT and LOS for all major arterials within the IBC study area.

Table 3.2 – Existing Daily Arterial LOS Summary

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	EXISTING ARTERIAL SEGMENT CLASSIFICATIONS	EXISTING		
						VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	4D	8,370	0.22	A
2721	Baker St	Bear St to Bristol St		CM	4D	21,940	0.58	A
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	4D	29,170	0.77	C
1294	Baker St	SR 55 SB to SR 55 NB		CM	4D	22,700	0.60	A
1468	Baker St	SR 55 NB to Red Hill Ave		CM	4D	18,570	0.49	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	2D	3,620	0.20	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	30,630	0.55	A
2733	Bristol St	Segerstrom Ave to West Alton Ave		CM	6D	36,460	0.65	B
2737	Bristol St	West Alton Ave to MacArthur Blvd		CM	6D	39,930	0.71	C
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	37,860	0.68	B
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	48,080	0.86	D
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	9D	53,920	0.67	B
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	49,450	0.66	B
2745	Bristol St	I-405 SB Ramps to Paularino Ave		CM	6D	38,320	0.68	B
2732	Bristol St	Paularino Ave to Baker St		CM	6D	31,730	0.57	A
2730	Bristol St	Baker St to SR 55		CM	6D	19,570	0.35	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	20,420	0.36	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	15,320	0.40	A
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	2U	6,310	0.50	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	12,990	0.34	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	9,410	0.25	A
2760	Flower St	Sunflower Ave to Anton Blvd		CM	4D	5,330	0.14	A
2756	Main St	Sunflower Ave to SR-55		CM	6D	24,740	0.44	A
2785	Mesa Dr	Newport Blvd SB to Newport Blvd NB		CM	2U	6,210	0.50	A
2783	Mesa Dr	Newport Blvd NB to Santa Ana Ave		CM	2U	7,370	0.59	A
2779	Mesa Dr	Irvine Ave to Birch St		CM	4D	7,510	0.20	A
2742	Paularino Ave	Bear St to Bristol St		CM	2U	7,730	0.62	B
2746	Paularino Ave	Bristol St to SR-55 SB		CM	4D	17,980	0.47	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	16,860	0.44	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	13,420	0.35	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	5,020	0.13	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	4D	17,460	0.46	A
1340	Red Hill Ave	Paularino Ave to Baker St		CM	4D	18,270	0.48	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	15,380	0.40	A
41	Santa Ana Ave	Mesa Dr to Bristol St		CM	4D	10,960	0.29	A
2769	University Dr	Santa Ana Ave to Irvine Ave		CM	2U	6,400	0.51	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	4,820	0.15	A
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	13,940	0.44	A
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	15,900	0.50	A
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	19,960	0.37	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	20,260	0.38	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	15,520	0.29	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	19,370	0.36	A
783	Alton Pkwy	San Marino to Culver Dr		Irv	6D	23,930	0.44	A
735	Barranca Pkwy (Dyer Rd)	Pullman to Red Hill Ave		Irv	6D	30,520	0.57	A
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	7D	35,300	0.56	A
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	35,220	0.56	A
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	31,440	0.50	A
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	25,490	0.47	A
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	21,380	0.40	A

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						VOLUME	V/C	LOS
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	20,540	0.38	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	20,980	0.39	A
748	Barranca Pkwy	Santa Rosa to Culver Dr		Irv	6D	23,590	0.44	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	20,650	0.65	B
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	20,650	0.65	B
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	20,650	0.65	B
540	Bryan Ave	Rubicon to Culver		Irv	4D	20,650	0.65	B
869	Campus Dr	MacArthur Blvd to Martin	a	Irv	6U	12,100	0.22	A
870	Campus Dr	Martin to Von Karman Ave	a	Irv	4D	12,100	0.38	A
871	Campus Dr	Von Karman Ave to Teller Ave	a	Irv	4D	10,340	0.32	A
872	Campus Dr	Teller Ave to Jamboree Rd	a	Irv	4D	10,340	0.32	A
877	Campus Dr	Jamboree Rd to Carlson Ave	a	Irv	4D	17,000	0.53	A
879	Campus Dr	Carlson Ave to University		Irv	2U	17,000	1.31	F
166	Carlson Ave	Michelson Dr to Campus Dr	a	Irv	4D	6,010	0.19	A
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps		Irv	7D	57,370	0.91	E
213	Culver Dr	I-5 SB Ramps to Scottsdale Dr		Irv	6D	49,610	0.92	E
214	Culver Dr	Scottsdale Dr to Walnut Ave		Irv	6D	44,760	0.83	D
215	Culver Dr	Walnut Ave to Deerfield Ave		Irv	6D	41,720	0.77	C
216	Culver Dr	Deerfield Ave to Irvine Center Dr		Irv	Maj6D+ 1AUX	39,560	0.68	B
217	Culver Dr	Irvine Center Dr to Warner Ave		Irv	6D	45,530	0.84	D
218	Culver Dr	Warner Ave to Barranca Pkwy		Irv	6D	44,710	0.83	D
219	Culver Dr	Barranca Pkwy to Alton Pkwy		Irv	6D	47,640	0.88	D
220	Culver Dr	Alton Pkwy to Main St		Irv	6D	46,420	0.86	D
221	Culver Dr	Main St to San Leandro		Irv	6D	51,490	0.95	E
222	Culver Dr	San Leandro to I-405 NB On-Ramp		Irv	6D	51,490	0.95	E
224	Culver Dr	I-405 SB Ramps to Michelson Dr		Irv	6D	52,060	0.96	E
225	Culver Dr	Michelson Dr to Sandburg Way		Irv	6D	38,010	0.70	B
226	Culver Dr	Sandburg Way to University Dr		Irv	6D	34,910	0.65	B
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	18,470	0.58	A
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,010	0.19	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	2U	8,560	0.66	B
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	2U	9,980	0.77	C
171	Harvard Ave	Deerfield Ave to Irvine Center Dr		Irv	3D	9,980	0.40	A
172	Harvard Ave	Irvine Center Dr to Paseo Westpark		Irv	4D	11,420	0.36	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	11,050	0.35	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	16,320	0.51	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	20,010	0.63	B
2829	Harvard Ave	San Juan to San Leon		Irv	4D	19,250	0.60	A
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	19,990	0.62	B
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	24,520	0.77	C
180	Harvard Ave	San Marino to Main St		Irv	4D	24,320	0.76	C
181	Harvard Ave	Main St to Coronado		Irv	4D	24,000	0.75	C
182	Harvard Ave	Coronado to Michelson Dr		Irv	4D	24,830	0.78	C
183	Harvard Ave	Michelson Dr to University Dr		Irv	2U	18,960	1.46	F
675	Irvine Center Dr	Harvard Ave to Hearthstone	b	Irv	6D	25,990	0.48	A
676	Irvine Center Dr	Hearthstone to Culver Dr	b	Irv	6D	25,990	0.48	A
129	Jamboree Rd	Bryan Ave to El Camino	b	Irv	8D	50,160	0.70	B
130	Jamboree Rd	El Camino Real to I-5 NB Ramps	b	Irv	Maj7D+ 1AUX	50,160	0.74	C
958	Jamboree Rd	I-5 NB Ramps to I-5 SB Ramps	b	Irv	8D	66,480	0.92	E
131	Jamboree Rd	I-5 SB Ramps to Michelle Dr	b	Irv	8D	55,040	0.76	C
133	Jamboree Rd	Michelle Dr to Walnut Ave	b	Irv	5D	55,040	1.28	F

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135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rds)*	b	Irv	Exp8	68,070	0.38	A
136	Jamboree Rd	Edinger Ave to Warner Ave*	b	Irv	Exp8	83,930	0.47	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	68,700	0.38	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	51,690	0.72	C
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	53,930	0.75	C
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	56,650	0.79	C
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	57,520	0.80	C
144	Jamboree Rd	Kelvin Ave to Main St	a,b	Irv	8D	61,220	0.85	D
145	Jamboree Rd	Main St to I-405 NB Ramps	b	Irv	Maj8D+ 2AUX	71,800	0.89	D
148	Jamboree Rd	I-405 SB Ramps to Michelson Dr	a,b	Irv	Maj8D+ 2AUX	74,280	0.92	E
149	Jamboree Rd	Michelson Dr to Dupont Dr	a,b	Irv	7D	47,550	0.75	C
150	Jamboree Rd	Dupont Dr to Campus Dr	a,b	Irv	7D	40,230	0.64	B
151	Jamboree Rd	Campus Dr to Birch St	b	Irv	6D	40,320	0.75	C
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	37,550	0.60	A
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	7D	32,930	0.52	A
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	34,320	0.64	B
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	7D	40,900	0.65	B
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	26,130	0.41	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	26,130	0.41	A
60	MacArthur Blvd	Main St to I-405 NB Ramps	a	Irv	Maj8D+ 2AUX	50,260	0.62	B
62	MacArthur Blvd	I-405 SB Ramps to Michelson Dr	a	Irv	Maj8D+ 1AUX	51,810	0.68	B
63	MacArthur Blvd	Michelson Dr to Douglass	a	Irv	8D	35,730	0.50	A
64	MacArthur Blvd	Douglas to Campus Dr		Irv	8D	35,730	0.50	A
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	37,880	0.70	B
917	MacArthur Blvd	Fairchild Rd to University Dr	b	Irv	6D	37,880	0.70	B
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	25,340	0.47	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	23,990	0.44	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	23,990	0.44	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	32,500	0.48	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	32,500	0.56	A
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	21,420	0.40	A
823	Main St	Siglo to Jamboree Rd	a	Irv	6D	21,420	0.40	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+ 1AUX	22,650	0.39	A
825	Main St	Veneto to Harvard Ave		Irv	6D	22,650	0.42	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	11,590	0.36	A
827	Main St	Paseo Westpark to Culver Dr		Irv	4D	11,590	0.36	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	6,520	0.20	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	8,440	0.26	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	8,590	0.27	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	3,020	0.09	A
840	Michelson Dr	MacArthur Blvd to Dupont Dr	a	Irv	5D	11,620	0.27	A
843	Michelson Dr	Bixby to Von Karman Ave	a	Irv	4D	11,620	0.36	A
844	Michelson Dr	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	17,650	0.49	A
845	Michelson Dr	Teller Ave to Jamboree Rd	a	Irv	5D	17,650	0.41	A
846	Michelson Dr	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+ 2AUX	17,670	0.44	A
847	Michelson Dr	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	17,670	0.49	A
848	Michelson Dr	Riparian View to Harvard Ave		Irv	4D	17,670	0.55	A
1346	Michelson Dr	Harvard Ave to Parkside Dr		Irv	4D	15,460	0.48	A
850	Michelson Dr	Parkside Dr to Culver Dr		Irv	4D	15,460	0.48	A
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	26,670	0.49	A
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	26,540	0.49	A

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33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	26,820	0.50	A
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	38,160	0.71	C
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	4D	16,710	0.52	A
38	Red Hill Ave	Skypark to Main St	a	Irv	4D	14,620	0.46	A
189	University Dr	MacArthur Blvd to California Ave		Irv	4D	34,040	1.06	F
188	University Dr	California Ave to Mesa Rd		Irv	4D	34,040	1.06	F
187	University Dr	Mesa Rd to Campus Dr		Irv	4D	34,040	1.06	F
880	University Dr	Campus Dr to Harvard Ave		Irv	6D	27,780	0.51	A
881	University Dr	Harvard Ave to San Joaquin Hills Rd		Irv	6D	23,450	0.43	A
882	University Dr	San Joaquin Hills Rd to Culver Dr		Irv	6D	23,450	0.43	A
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	26,170	0.82	D
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	23,790	0.74	C
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	23,050	0.72	C
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	23,050	0.72	C
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	23,140	0.64	B
107	Von Karman Ave	Quartz to Michelson Dr	a	Irv	Prim4D+ 1AUX	21,290	0.59	A
108	Von Karman Ave	Michelson Dr to Dupont Dr	a	Irv	4D	17,010	0.53	A
110	Von Karman Ave	Dupont Dr to Martin	a	Irv	4D	17,010	0.53	A
111	Von Karman Ave	Martin to Campus Dr	a	Irv	4D	17,010	0.53	A
594	Walnut Ave	Myford to Jamboree SB Ramp		Irv	Prim4D+ 1AUX	20,440	0.57	A
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+ 1AUX	20,250	0.35	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+ 1AUX	20,250	0.43	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	18,740	0.59	A
597	Walnut Ave	Mall St to Culver Dr		Irv	4D	18,740	0.59	A
728	Warner Ave	Construction North to Harvard Ave		Irv	4D	16,790	0.52	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	11,440	0.36	A
732	Warner Ave	Santa Ynez to Culver Dr		Irv	4D	9,060	0.28	A
1223	Birch St	Mesa Dr to Bristol St SB		NB	4D	11,630	0.29	A
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	16,980	0.42	A
874	Birch St	East of MacArthur Blvd		NB	4D	7,730	0.19	A
69	Birch St	West of MacArthur Blvd		NB	4D	11,110	0.28	A
875	Birch St	East of Von Karman Ave		NB	4D	4,570	0.11	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	7,500	0.13	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	11,690	0.29	A
920	Bristol St SB	Red Hill Ave to Campus Dr		NB	2D	13,710	0.76	C
1310	Bristol St NB	Campus Dr to Red Hill Ave		NB	3D	13,720	0.47	A
1303	Bristol St SB	Campus Dr to Birch St		NB	3D	15,760	0.54	A
1305	Bristol St NB	Birch St to Campus Dr		NB	3D	23,360	0.81	D
1312	Bristol St SB	West of Jamboree Rd		NB	4D	39,560	0.99	E
1580	Bristol St NB	West of Jamboree Rd		NB	3D	14,520	0.50	A
66	Campus Dr	Bristol St NB to MacArthur Blvd		NB	6D	27,680	0.48	A
1778	Ford Rd	Jamboree Rd to MacArthur Blvd		NB	4D	10,480	0.26	A
1304	Irvine Ave	Bristol St NB to Bristol St SB		NB	6D	26,390	0.46	A
67	Irvine Ave	Bristol St SB to Mesa Dr		NB	6D	25,830	0.45	A
2768	Irvine Ave	South of University Dr		NB	4D	29,300	0.73	C
156	Jamboree Rd	South of MacArthur Blvd		NB	6D	31,570	0.54	A
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	6D	47,780	0.82	D
157	Jamboree Rd	South of Bristol St		NB	8D	51,460	0.76	C
159	Jamboree Rd	University Dr to Bison Ave		NB	6D	48,550	0.84	D
1777	Jamboree Rd	Bison Ave to Ford Rd		NB	6D	50,890	0.88	D
73	MacArthur Blvd	Campus Dr to Birch St		NB	8D	18,080	0.27	A

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75	MacArthur Blvd	South of Birch St		NB	6D	16,730	0.29	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	26,680	0.46	A
953	MacArthur Blvd	University Dr to Bison Ave	b	NB	6D	23,030	0.40	A
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	72,570	1.07	F
2767	University Dr	East of Irvine Ave		NB	2U	1,010	0.10	A
1774	University Dr	Jamboree Rd to MacArthur Blvd		NB	5D	12,330	0.25	A
112	Von Karman Ave	South of Campus Dr		NB	4D	10,340	0.26	A
113	Von Karman Ave	South of Birch St		NB	4D	10,230	0.26	A
2795	Dyer Rd	Main St to Halladay St		SA	6D	30,600	0.54	A
2799	Dyer Rd	Halladay St to SR-55 SB		SA	6D	38,350	0.68	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	45,530	0.81	D
734	Dyer Rd	SR-55 NB to Pullman St		SA	6D	47,720	0.85	D
2764	Grand Ave	Warner Ave to Hotel Terrace Dr		SA	6D	26,200	0.47	A
2806	Grand Ave	Hotel Terrace Dr to SR-55 NB		SA	6D	25,420	0.45	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	2U	4,470	0.36	A
2822	Halladay St	Alton Ave to McGaw Ave(Columbine)		SA	2U	2,290	0.18	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	35,920	0.64	B
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	55,500	0.99	E
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	28,700	0.51	A
2826	Main St	Alton Ave to McGaw Ave(Columbine)		SA	6D	28,500	0.51	A
2809	Main St	McGaw(Columbine) to MacArthur Blvd		SA	6D	30,580	0.54	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	23,180	0.41	A
2823	McGaw Ave (Alton)	Main St to Halladay St		SA	4U	3,010	0.13	A
2736	Segerstrom Ave	Bristol St to Flower St		SA	4D	23,560	0.63	B
2771	Segerstrom Ave	Flower St to Main St		SA	4D	24,860	0.66	B
2763	Warner Ave	Grand Ave to SR-55		SA	6D	21,480	0.38	A
2761	Sunflower Ave	Bristol St to Flower St		SA/CM	6D	20,580	0.37	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/CM	6D	18,010	0.32	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/CM	6D	23,410	0.42	A
1198	Browning Ave	Walnut Ave to I-5		Tus	2U	4,970	0.40	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	17,410	0.70	B
535	Bryan Ave	Red Hill Ave to Browning		Tus	4D	17,940	0.48	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	17,740	0.47	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	19,160	0.51	A
44	Edinger Ave	West of Newport Ave	b	Tus	6D	39,350	0.70	B
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	30,070	0.53	A
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	22,990	0.41	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4D	13,280	0.35	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	2D	9,430	0.52	A
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4D	9,550	0.25	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	18,570	0.50	A
672	Irvine Center Dr (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	27,370	0.49	A
674	Irvine Center Dr	Jamboree Rd to Harvard Ave	b	Tus	6D	29,220	0.52	A
2777	Mitchell Ave	Newport Ave to Red Hill Ave		Tus	2U	6,700	0.54	A
2775	Mitchell Ave	Red Hill Ave to Browning Ave		Tus	2U	3,890	0.31	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	35,980	0.64	B
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	30,640	0.54	A
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	28,840	0.51	A
49	Newport Ave	North of Sycamore Ave		Tus	6D	10,830	0.19	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	15,660	0.28	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	6,180	0.49	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	EXISTING ARTERIAL SEGMENT CLASSIFICATIONS	EXISTING		
						VOLUME	V/C	LOS
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	4,410	0.35	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	38,060	0.68	B
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	34,040	0.60	A
21	Red Hill Ave	Nisson Rd to I-5 SB Ramps		Tus	6D	35,210	0.63	B
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	25,840	0.46	A
22	Red Hill Ave	Mitchell Ave to Walnut Ave		Tus	6D	24,600	0.44	A
23	Red Hill Ave	Walnut Ave to Sycamore Ave		Tus	6D	25,250	0.45	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	29,310	0.52	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	19,100	0.34	A
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	19,050	0.34	A
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	23,120	0.35	A
1363	Sycamore Ave	SR-55 NB to Newport Ave		Tus	4D	9,160	0.24	A
1920	Sycamore Ave	Newport Ave to Red Hill Ave		Tus	2U	9,000	0.72	C
85	Tustin Ranch Rd	North of I-5		Tus	6D	44,040	0.78	C
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	40,520	0.72	C
2174	Tustin Ranch Rd	Walnut Ave to Valencia Ave		Tus	6D	30,260	0.54	A
2073	Tustin Ranch Rd	Valencia Ave to Warner Ave		Tus	6D	28,830	0.51	A
2071	Tustin Ranch Rd	Warner Ave to Park Ave		Tus	6D	21,130	0.38	A
2070	Tustin Ranch Rd	Park Ave to Barranca Pkwy		Tus	6D	25,410	0.45	A
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4D	8,550	0.23	A
632	Valencia Ave	Red Hill Ave to Armstrong Ave		Tus	4D	8,340	0.22	A
2844	Valencia Ave	Armstrong Ave to Kensington Park		Tus	4D	9,520	0.25	A
2842	Valencia Ave	Kensington Park to Tustin Ranch Rd		Tus	4D	11,760	0.31	A
587	Walnut Ave	East of Newport Ave		Tus	4U	17,220	0.69	B
589	Walnut Ave	East of Red Hill Ave		Tus	4D	16,200	0.43	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	19,450	0.52	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	18,670	0.50	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	19,660	0.35	A
F	Denotes intersection operating at a deficient LOS							
a	Intersection within Irvine Planning Area 36--LOS E acceptable							
b	Orange County Congestion Management Program (CMP) locations							

Figure 3.1 – Existing Daily Arterial ADT

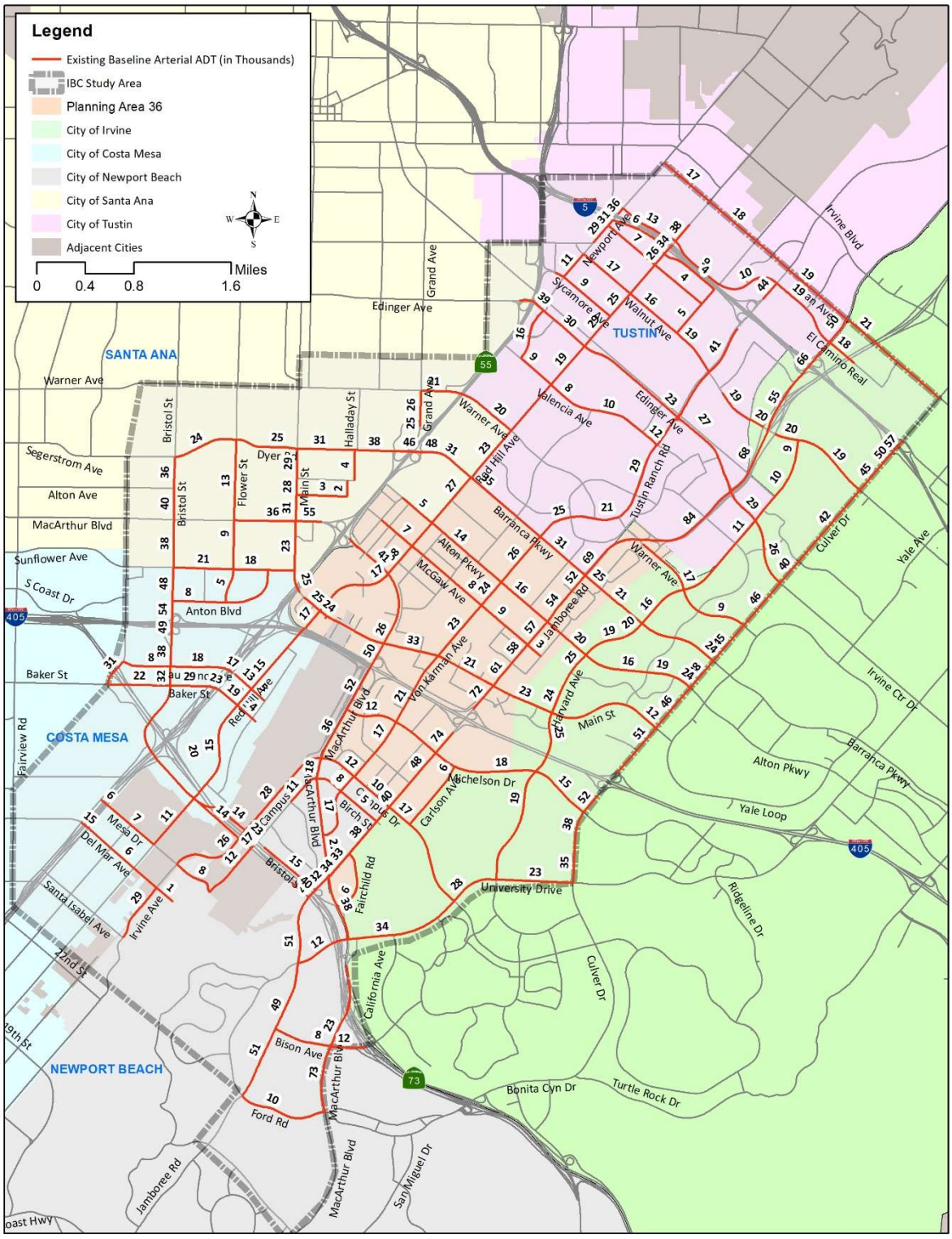
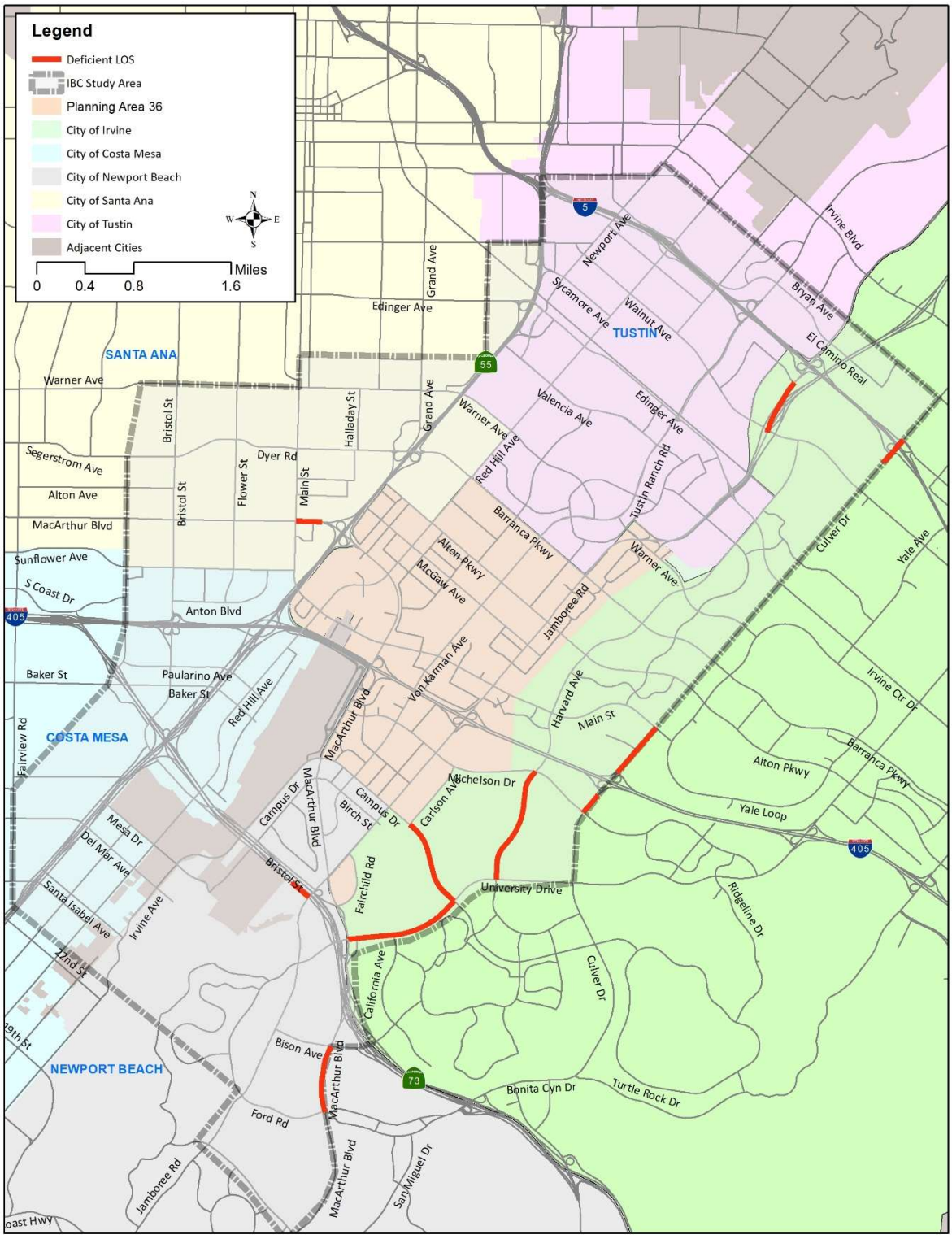


Figure 3.2 – Existing Arterial Daily Deficiencies



3.4 Existing Peak Hour Link Analysis

As noted in **Chapter 2**, the City's Traffic Impact Analysis Guidelines mandate a peak hour link analysis on all links that exceed the permissible daily LOS threshold applicable to the segment. The City's acceptable threshold is LOS D, unless the arterial segment is located within the IBC area (Planning Area #36), where LOS E is acceptable. Based on the findings presented in **Table 3.2**, the 11 potentially deficient arterial segments within Irvine were further evaluated under peak hour conditions. Adjacent jurisdictions do not evaluate segments under peak hour conditions.

Peak hour directional traffic volumes were directly obtained from peak hour counts for upstream and downstream intersections for each deficient arterial segment. When analyzing an arterial link for peak hour analysis, directional traffic volumes were obtained from turning movement counts reported at the adjacent intersections.

Table 3.3 presents the results of peak hour link analysis. It documents that all arterial segments that were identified as being potentially deficient under daily conditions operate at an acceptable LOS in both peak hours. Hence no mitigation measures are recommended for the existing arterial segments within the City of Irvine.

For segments outside the City of Irvine, the jurisdiction's segment analysis guidelines are applied. As noted in **Chapter 2**, Costa Mesa, Newport Beach, Tustin and Santa Ana assess segment impacts at the intersection level. Improvements at the intersections that feed into deficient arterial segments should eliminate deficiencies.

Table 3.3 – Existing Arterial Peak Hour Link Analysis

ARTERIAL	SEGMENT LIMITS	EXISTING VOLUME					AM		PM	
		FACILITY TYPE	AM		PM		NB/EB	SB/WB	NB/EB	SB/WB
			NB/EB	SB/WB	NB/EB	SB/WB				
Campus Dr	Carlson Ave to University	2U	410	990	400	1,290	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	I-5 NB Ramps to I-5 SB Ramps	7D	970	1,710	2,320	1,700	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,380	0	3,130	0	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	Main St to San Leandro	6D	810	1,860	1,300	1,060	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	San Leandro to I-405 NB On-Ramp	6D	700	1,090	1,250	860	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	1,250	1,440	1,950	1,250	Acceptable	Acceptable	Acceptable	Acceptable
Harvard Ave	Michelson Dr to University Dr	2U	850	740	1,880	580	Acceptable	Acceptable	Acceptable	Acceptable
Jamboree Rd	Michelle Dr to Walnut Ave	5D	1,000	660	2,230	600	Acceptable	Acceptable	Acceptable	Acceptable
University Dr	MacArthur Blvd to California Ave	6D	760	1,110	870	700	Acceptable	Acceptable	Acceptable	Acceptable
University Dr	California Ave to Mesa Rd	4D	710	990	970	1,290	Acceptable	Acceptable	Acceptable	Acceptable
University Dr	Mesa Rd to Campus Dr	4D	410	990	400	1,290	Acceptable	Acceptable	Acceptable	Acceptable

3.5 Existing Intersection Analysis

There are 231 intersections in the study area, 221 of which are existing locations and 10 future intersections that are expected to be built in the City of Tustin as a part of the Tustin Legacy development.
The 221 existing intersections were analyzed for peak hour conditions under existing conditions based on peak hour counts collected at these locations. The City of Irvine's general acceptable LOS threshold for

intersections is LOS D or better, while in PA 36 (IBC area) and for CMP intersections outside the City of Irvine and some select locations in the City of Santa Ana, the threshold is LOS E or better. **Table 3.4** summarizes the results for Existing intersection ICU and LOS and **Appendix E** presents detailed ICU worksheets for each intersection. For existing conditions, turning movement counts were collected between April and June 2018 on two consecutive typical weekdays (three days at CMP locations) to properly reflect traffic activity during the peak hour. The intersection analysis reports intersection ICU and the corresponding LOS. Significant impact criteria for locations outside the City of Irvine are shown in **Table 2.6**. For shared jurisdictions, the more conservative methodology was used.

Based on existing peak hour count volumes, one intersection within the study area is currently operating at a deficient LOS. In order to meet the growing demand for travel within the study area, this intersection will need to be improved to operate efficiently:

- #156: Jamboree Road at Ford (Newport Beach)—AM Peak Hour LOS E with a 0.91 V/C

Figure 3.3 and **Figure 3.4** graphically depict intersection performance under existing conditions. Improvements for deficient locations are discussed in detail in **Chapter 6**.

Table 3.4 – Existing Intersection Peak Hour LOS Summary

ID	INTERSECTION	PA36 / CMP / SANTA ANA	JURISDICTION	EXISTING CONDITIONS			
				AM		PM	
				ICU	LOS	ICU	LOS
10	SR-55 Frontage Rd SB at Paularino Ave		CM	0.75	C	0.60	A
11	SR-55 Frontage Rd NB at Paularino Ave		CM	0.56	A	0.63	B
12	SR-55 Frontage Rd SB at Baker St		CM	0.63	B	0.83	D
13	SR-55 Frontage Rd NB at Baker St		CM	0.66	B	0.64	B
50	Red Hill Ave at Paularino Ave		CM	0.53	A	0.65	B
51	Red Hill Ave at Baker St		CM	0.43	A	0.58	A
52	Red Hill Ave at Bristol St		CM	0.44	A	0.51	A
541	Bear at Baker St		CM	0.60	A	0.72	C
542	Bear at Paularino Ave		CM	0.34	A	0.62	B
545	Bristol at Sunflower		CM	0.49	A	0.73	C
546	Bristol at Anton		CM	0.30	A	0.52	A
547	Bristol at Paularino Ave		CM	0.48	A	0.69	B
548	Bristol at Baker St		CM	0.53	A	0.69	B
549	Newport Blvd SB at Bristol		CM	0.12	A	0.47	A
550	Newport Blvd NB at Bristol		CM	0.32	A	0.22	A
715	Bristol at I-405 NB Off Ramp		CM	0.45	A	0.64	B
716	Bristol at I-405 SB Ramps		CM	0.39	A	0.54	A
717	Bear at SR-73 SB Ramps		CM	0.41	A	0.70	B
720	Flower at MacArthur Blvd		CM	0.57	A	0.75	C
721	Flower at Sunflower		CM	0.43	A	0.49	A
722	Anton at Sunflower		CM	0.37	A	0.38	A
726	Main St at Sunflower		CM	0.55	A	0.68	B
735	Newport Blvd NB at Del mar		CM	0.74	C	0.43	A
736	Newport Blvd SB at Fair/Del Mar		CM	0.36	A	0.45	A
737	Newport Blvd NB at Mesa Rd		CM	0.32	A	0.37	A
738	Newport Blvd SB at Mesa Rd		CM	0.23	A	0.64	B
32	Daimler St at McGaw Ave		Irv	0.15	A	0.16	A
45	Red Hill Ave at McGaw Ave	a	Irv	0.40	A	0.63	B
47	Red Hill Ave at MacArthur Blvd	a	Irv	0.62	B	0.74	C
48	Red Hill Ave at Sky Park N	a	Irv	0.35	A	0.56	A

ID	INTERSECTION	PA36 / CMP / SANTA ANA	JURISDICTION	EXISTING CONDITIONS			
				AM		PM	
				ICU	LOS	ICU	LOS
49	Red Hill Ave at Main St	a	Irv	0.59	A	0.83	D
66	Gillette Ave at Alton Pkwy	A	Irv	0.37	A	0.54	A
67	Gillette Ave at McGaw Ave	a	Irv	0.29	A	0.40	A
70	Gillette Ave at Main Street	a	Irv	0.32	A	0.63	B
73	Armstrong Ave and Alton Pkwy West	a	Irv	0.24	A	0.36	A
74	Armstrong Ave	a	Irv	0.31	A	0.34	A
77	MacArthur Blvd at Sky Park East	a	Irv	0.30	A	0.40	A
78	MacArthur Blvd at Main St	a	Irv	0.55	A	0.75	C
79	MacArthur Blvd at I-405 NB Ramps	a	Irv	0.64	B	0.58	A
80	MacArthur Blvd at I-405 SB Ramps	a	Irv	0.60	A	0.65	B
82	MacArthur Blvd at Michelson Dr	a	Irv	0.63	B	0.70	B
83	MacArthur Blvd at Douglas Ave	a	Irv	0.30	A	0.38	A
87	Dupont Dr at Michelson Dr	a	Irv	0.36	A	0.41	A
98	Von Karman Ave at Alton Pkwy	a	Irv	0.74	C	0.80	C
99	Von Karman Ave at McGaw Ave	a	Irv	0.62	B	0.64	B
100	Von Karman Ave at Main St	a	Irv	0.60	A	0.64	B
101	Von Karman Ave at Morse Ave	a	Irv	0.56	A	0.54	A
102	Von Karman Ave at Michelson Dr	a	Irv	0.52	A	0.65	B
103	Von Karman Ave at Dupont Dr	a	Irv	0.40	A	0.48	A
104	Von Karman Ave at Martin	a	Irv	0.35	A	0.49	A
115	Millikan Ave at Alton Pkwy	a	Irv	0.34	A	0.57	A
116	Cartwright Rd at Main St	a	Irv	0.35	A	0.53	A
119	Teller Ave at Michelson Dr	a	Irv	0.42	A	0.41	A
128	Jamboree Rd at I-5 NB Ramps	b	Irv	0.75	C	0.73	C
129	Jamboree Rd at I-5 SB Ramps	b	Irv	0.69	B	0.55	A
130	Jamboree Rd at Michelle Dr		Irv	0.58	A	0.64	B
131	Jamboree Rd SB at Walnut Ave		Irv	0.50	A	0.52	A
132	Jamboree Rd NB at Walnut Ave		Irv	0.34	A	0.53	A
135	Jamboree Road NB Ramps at Warner Ave		Irv	0.33	A	0.67	B
137	Jamboree Rd at Beckman Ave	a	Irv	0.57	A	0.68	B
138	Jamboree Rd at Alton Pkwy	a	Irv	0.66	B	0.80	C
139	Jamboree Rd at McGaw Ave	a	Irv	0.58	A	0.70	B
140	Jamboree Rd at Kelvin Ave	a	Irv	0.59	A	0.64	B
141	Jamboree Rd at Main St	a	Irv	0.74	C	0.84	D
143	Jamboree Rd at I-405 NB Ramps	a,b	Irv	0.72	C	0.82	D
144	Jamboree Rd at I-405 SB Ramps	a,b	Irv	0.91	E	0.91	E
145	Jamboree Rd at Michelson Dr	a	Irv	0.60	A	0.81	D
146	Jamboree Rd at Dupont Rd	a	Irv	0.56	A	0.54	A
164	Construction S at Barranca Pkwy	a	Irv	0.31	A	0.50	A
168	Murphy Ave at Alton Pkwy	a	Irv	0.33	A	0.56	A
170	Union at Main St	a	Irv	0.33	A	0.56	A
171	Veneto at Main St		Irv	0.35	A	0.51	A
174	Carlson Ave at Michelson Dr		Irv	0.46	A	0.49	A
175	Carlson Ave at Campus Dr		Irv	0.38	A	0.57	A
180	Harvard Ave at Walnut Ave		Irv	0.35	A	0.50	A
183	Harvard Ave at Warner Ave		Irv	0.48	A	0.63	B
184	Harvard Ave at Barranca Pkwy		Irv	0.58	A	0.63	B
185	Harvard Ave at Alton Pkwy		Irv	0.64	B	0.72	C
186	Harvard Ave at Main St		Irv	0.58	A	0.69	B
187	Harvard Ave at Coronado		Irv	0.56	A	0.59	A
188	Harvard Ave Michelson Dr		Irv	0.58	A	0.85	D
189	Harvard Ave University Dr		Irv	0.77	C	0.73	C
190	University Dr at Campus Dr		Irv	0.80	C	0.74	C
191	Mesa Rd at University Dr		Irv	0.62	B	0.71	C

ID	INTERSECTION	PA36 / CMP / SANTA ANA	JURISDICTION	EXISTING CONDITIONS			
				AM		PM	
				ICU	LOS	ICU	LOS
192	California Ave at University Dr		Irv	0.90	D	0.73	C
196	Hearthstone Blvd at Irvine Center Dr		Irv	0.38	A	0.47	A
198	Paseo Westpark at Warner Ave		Irv	0.34	A	0.36	A
199	Paseo Westpark at Barranca Pkwy		Irv	0.37	A	0.47	A
200	Paseo Westpark at Alton Pkwy		Irv	0.42	A	0.53	A
201	Paseo Westpark at Main St		Irv	0.56	A	0.47	A
221	Culver Dr at Bryan Ave		Irv	0.67	B	0.63	B
222	Culver Dr at Trabuco Rd		Irv	0.63	B	0.72	C
223	Culver Dr at I-5 SB Ramps		Irv	0.59	A	0.6	A
224	Culver Dr at Walnut Ave		Irv	0.65	B	0.75	C
225	Culver Dr at Deerfield Dr		Irv	0.70	B	0.71	C
226	Culver Dr at Irvine Center Dr		Irv	0.64	B	0.69	B
227	Culver Dr at Warner Ave		Irv	0.66	B	0.65	B
228	Culver Dr at Barranca Pkwy		Irv	0.66	B	0.78	C
229	Culver Dr at Alton Pkwy		Irv	0.67	B	0.81	D
230	Culver Dr at Main St		Irv	0.66	B	0.64	B
231	Culver Dr at San Leandro		Irv	0.71	C	0.55	A
232	Culver Dr at I-405 NB Ramps		Irv	0.53	A	0.69	B
233	Culver Dr at I-405 SB Ramps		Irv	0.61	B	0.64	B
234	Culver Dr at Michelson Dr		Irv	0.55	A	0.74	C
235	Culver Dr at University Dr		Irv	0.70	B	0.82	D
337	Von Karman Ave at Quartz	a	Irv	0.47	A	0.53	A
439	Bixby at Michelson Dr		Irv	0.39	A	0.49	A
440	Siglo at Main St		Irv	0.33	A	0.49	A
472	Obsidian at Michelson Dr	a	Irv	0.45	A	0.49	A
84	MacArthur Blvd at Campus Dr		Irv/NB	0.44	A	0.74	C
105	Von Karman Ave at Campus Dr		Irv/NB	0.53	A	0.63	B
121	Teller Ave at Campus Dr		Irv/NB	0.18	A	0.34	A
147	Jamboree Rd at Campus Dr		Irv/NB	0.60	A	0.58	A
149	Jamboree Rd at Fairchild Rd		Irv/NB	0.53	A	0.64	B
150	Jamboree Rd at MacArthur Blvd	b	Irv/NB	0.57	A	0.66	B
176	Fairchild Ave at MacArthur Blvd		Irv/NB	0.69	B	0.71	C
193	MacArthur Blvd NB at University Dr		Irv/NB	0.54	A	0.43	A
194	MacArthur Blvd SB at University Dr		Irv/NB	0.47	A	0.40	A
195	SR-73 SB Ramps at University Dr		Irv/NB	0.72	C	0.45	A
9	SR-55 NB Ramps at MacArthur Blvd		Irv/SA	0.80	C	0.57	A
31	Daimler St at Alton Pkwy		Irv/SA	0.26	A	0.37	A
43	Red Hill Ave at Deere Ave		Irv/SA	0.38	A	0.54	A
44	Red Hill Ave at Alton Pkwy		Irv/SA	0.44	A	0.68	B
42	Red Hill Ave at Barranca Pkwy/Dyer Rd		Irv/SA/Tus	0.50	A	0.61	B
71	Armstrong Ave at Barranca Pkwy		Irv/Tus	0.36	A	0.60	A
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy		Irv/Tus	0.73	C	0.71	C
112	Myford Rd at Michelle Dr		Irv/Tus	0.18	A	0.31	A
113	Myford Rd at Walnut Ave		Irv/Tus	0.28	A	0.44	A
114	Millikan Ave/District Way at Barranca Pkwy		Irv/Tus	0.41	A	0.55	A
126	Jamboree Rd at Bryan Ave		Irv/Tus	0.64	B	0.68	B
127	Jamboree Rd at El Camino Real		Irv/Tus	0.70	B	0.73	C
134	Loop Rd/Park Ave at Warner Ave		Irv/Tus	0.49	A	0.70	B
136	Jamboree Rd at Barranca Pkwy		Irv/Tus	0.71	C	0.90	D
181	Harvard Ave at Edinger Ave/Irvine Center Dr		Irv/Tus	0.44	A	0.52	A
182	Harvard Ave at Paseo Westpark/Moffett Dr		Irv/Tus	0.30	A	0.32	A
441	Loop Rd at Jamboree Rd SB Ramps		Irv/Tus	0.30	A	0.24	A
61	Campus Dr at Airport Way		NB	0.32	A	0.41	A
62	Campus Dr at Bristol St NB		NB	0.01	A	0.60	A

ID	INTERSECTION	PA36 / CMP / SANTA ANA	JURISDICTION	EXISTING CONDITIONS			
				AM		PM	
				ICU	LOS	ICU	LOS
63	Campus Dr at Bristol St SB		NB	0.61	B	0.22	A
64	Birch St at Bristol St NB		NB	0.79	C	0.49	A
65	Birch St at Bristol St SB		NB	0.45	A	0.87	D
85	MacArthur Blvd at Birch St		NB	0.32	A	0.46	A
106	Von Karman Ave at Birch St		NB	0.29	A	0.36	A
107	Von Karman Ave at MacArthur Blvd		NB	0.27	A	0.48	A
148	Jamboree Rd at Birch St		NB	0.50	A	0.50	A
151	Jamboree Rd at Bristol St NB		NB	0.37	A	0.45	A
153	Jamboree Rd at Bristol St SB		NB	0.68	B	0.64	B
154	Jamboree Rd at Eastbluff Dr		NB	0.62	B	0.57	A
155	Jamboree Rd at Bison Ave		NB	0.47	A	0.48	A
156	Jamboree Rd at Ford Rd		NB	0.91	E	0.78	C
178	MacArthur Blvd at Bison Ave		NB	0.62	B	0.59	A
179	MacArthur Blvd at Ford Rd		NB	0.70	B	0.76	C
741	Jamboree at San Joaquin		NB	0.85	D	0.03	A
742	MacArthur at San Joaquin		NB	0.56	A	0.89	D
733	Irvine at Mesa Rd		NB/OC	0.52	A	0.77	C
734	Irvine at University/Del Mar		NB/OC	0.64	B	0.79	C
4	SR-55 SB Ramps at Edinger Ave	b	SA	0.56	A	0.56	A
5	Hotel Terrace Dr at Dyer Rd		SA	0.58	A	0.72	C
6	Grand Ave at Dyer Rd		SA	0.60	A	0.78	C
7	SR-55 NB Ramps at Dyer Rd		SA	0.57	A	0.61	B
8	SR-55 SB Ramps at MacArthur Blvd	c	SA	0.63	B	0.54	A
29	Pullman St at Barranca Pkwy		SA	0.47	A	0.73	C
543	Bristol at Segerstrom		SA	0.74	C	0.81	D
544	Bristol St at MacArthur Blvd		SA	0.70	B	0.76	C
718	Bear at SR-73 NB Ramps		SA	0.38	A	0.60	A
719	Flower at Segerstrom		SA	0.66	B	0.85	D
723	Main St at Segerstrom		SA	0.73	C	0.87	D
724	Main St at Alton Ave		SA	0.38	A	0.50	A
725	Main and MacArthur (w/o SR-55)	c	SA	0.67	B	0.73	C
727	Halladay at Dyer Rd		SA	0.55	A	0.78	C
728	Halladay E at Alton Pkwy		SA	0.19	A	0.32	A
729	Halladay W at Alton Pkwy		SA	0.19	A	0.30	A
730	Grand Ave at Warner		SA	0.52	A	0.69	B
731	SR-55 SB Ramps at Grand Ave		SA	0.50	A	0.55	A
3	Newport Ave at Edinger Ave		Tus	0.50	A	0.44	A
14	Walnut Ave at McFadden Ave		Tus	0.40	A	0.44	A
18	Newport Ave at Bryan Ave		Tus	0.43	A	0.59	A
19	Newport Ave at Main St		Tus	0.55	A	0.60	A
20	Newport Ave at El Camino Real		Tus	0.71	C	0.62	B
21	Newport Ave at I-5 NB Ramps		Tus	0.61	B	0.61	B
22	Newport Ave at I-5 SB Ramp/Nisson Rd		Tus	0.53	A	0.60	A
23	Newport Ave at McFadden St		Tus	0.59	A	0.44	A
24	Newport Ave at Walnut Ave		Tus	0.56	A	0.66	B
25	Newport Ave at Sycamore Ave		Tus	0.41	A	0.43	A
27	Del Amo Ave at Edinger Ave		Tus	0.33	A	0.43	A
35	Red Hill Ave at Bryan Ave		Tus	0.56	A	0.74	C
36	Red Hill Ave at El Camino Real		Tus	0.58	A	0.58	A
37	Red Hill Ave at Nisson Rd		Tus	0.55	A	0.62	B
38	Red Hill Ave at Walnut Ave		Tus	0.57	A	0.75	C
39	Red Hill Ave at Sycamore Ave		Tus	0.49	A	0.52	A
40	Red Hill Ave at Edinger Ave		Tus	0.54	A	0.74	C
55	Browning Ave at Bryan Ave		Tus	0.29	A	0.48	A

ID	INTERSECTION	PA36 / CMP / SANTA ANA	JURISDICTION	EXISTING CONDITIONS			
				AM		PM	
				ICU	LOS	ICU	LOS
56	Browning Ave at El Camino Real		Tus	0.28	A	0.50	A
58	Browning Ave at Walnut Ave		Tus	0.38	A	0.60	A
92	Tustin Ranch Rd at Bryan Ave		Tus	0.61	B	0.69	B
93	Tustin Ranch Rd at El Camino Real		Tus	0.70	B	0.68	B
94	Tustin Ranch Rd at I-5 NB Ramps		Tus	0.54	A	0.59	A
95	Tustin Ranch Rd at I-5 SB Ramps		Tus	0.62	B	0.67	B
96	Tustin Ranch Rd at Walnut Ave		Tus	0.59	A	0.90	D
109	Myford Rd at Bryan Ave		Tus	0.34	A	0.46	A
110	Myford Rd at El Camino Real		Tus	0.23	A	0.48	A
111	Franklin Ave at Walnut Ave		Tus	0.39	A	0.75	C
133	Jamboree Rd at Edinger Ave	b	Tus	0.40	A	0.52	A
445	Tustin Ranch Rd at Warner Ave N		Tus	0.44	A	0.59	A
446	Tustin Ranch Rd at Warner Ave S		Tus	0.44	A	0.59	A
447	Armstrong Ave/Severyns Rd Valencia Ave		Tus	0.31	A	0.28	A
448	Armstrong Avenue at Warner Avenue		Tus	0.19	A	0.28	A
453	Red Hill Ave at Valencia Ave		Tus	0.48	A	0.49	A
454	Tustin Ranch Rd at Valencia Ave		Tus	0.49	A	0.56	A
455	East Connector/Jamboree Plaza at Edinger Ave		Tus	Analysis not done for Existing Conditions			
456	N Loop Rd at Valencia Ave		Tus				
457	N Loop Rd at Moffett Dr		Tus				
478	Red Hill Ave at I-5 NB Ramps		Tus	0.58	A	0.61	B
479	Red Hill Ave at I-5 SB Ramps		Tus	0.62	B	0.63	B
480	Tustin Ranch Rd/Connector at Edinger Ave		Tus	Analysis not done for Existing Conditions			
732	SR-55 NB Ramp at Newport Ave		Tus	0.49	A	0.59	A
739	Newport Ave at Mitchell Ave		Tus	0.50	A	0.54	A
740	Red Hill Ave at Mitchell Ave		Tus	0.40	A	0.56	A
743	Newport Ave at Valencia		Tus	0.18	A	0.32	A
745	Tustin Ranch Rd at Park Ave		Tus	0.49	A	0.62	B
746	Kensington Park Dr at Edinger Ave		Tus	0.34	A	0.43	A
747	Kensington Park Dr at Valencia Ave		Tus	0.26	A	0.24	A
748	Armstrong Ave at A St		Tus	Analysis not done for Existing Conditions			
749	Park Ave at A St		Tus				
750	Legacy Rd at Warner Ave		Tus				
751	Tustin Ranch Rd at Legacy Rd		Tus				
752	Legacy Rd at N Loop Rd		Tus				
753	Tustin Ranch Rd at Edinger Ave Connector		Tus				
28	Pullman St at Warner Ave		Tus/SA	0.32	A	0.44	A
41	Red Hill Ave at Warner Ave		Tus/SA	0.45	A	0.62	B
754	Red Hill Avenue at Carnegie Avenue		Tus/SA	0.34	A	0.52	A
F	Denotes intersection operating at a deficient LOS						
a	Intersection within Irvine Planning Area 36 – LOS E Acceptable						
b	Orange County Congestion Management Program (CMP) Locations						
c	Intersections within City of Santa Ana – LOS E Deficiency Acceptable						

Figure 3.3 – Existing AM Peak Hour Intersection Deficiencies

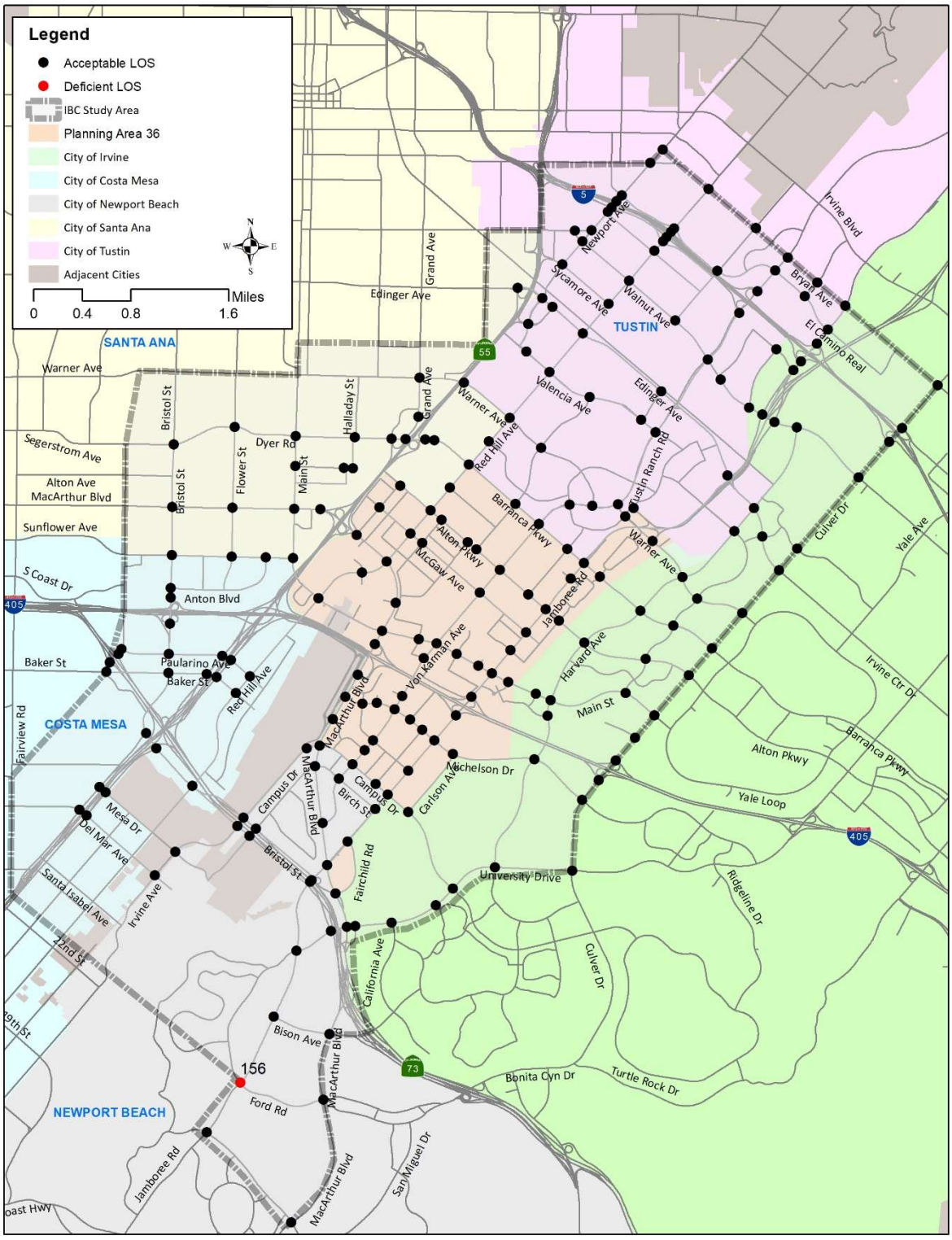
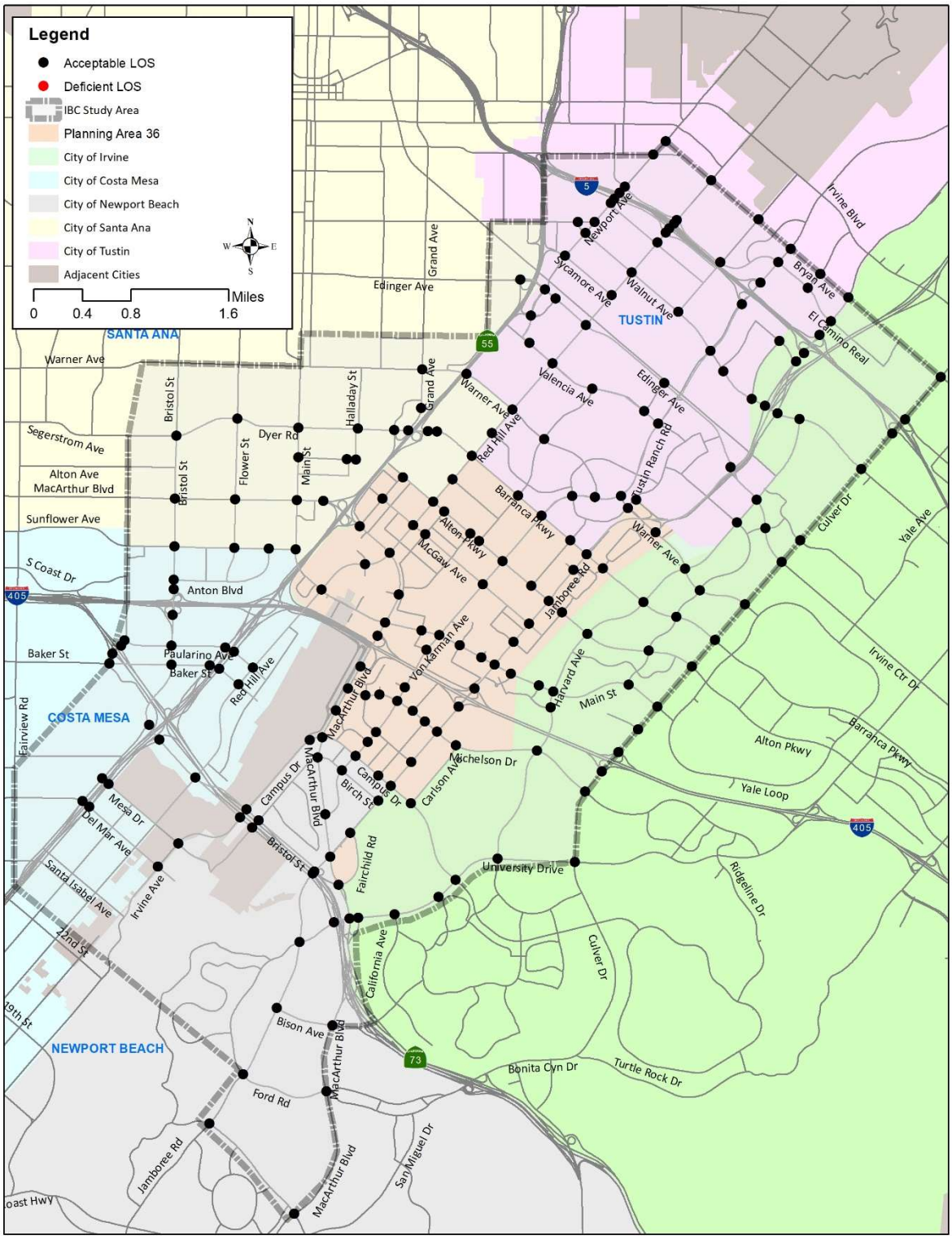


Figure 3.4 – Existing PM Peak Hour Intersection Deficiencies



3.6 Existing Freeway Mainline Analysis

There are five major freeways that provide access to and mobility through the study area, in either the IBC itself or the adjacent areas. Existing freeway count data was extracted for a typical weekday from the California Department of Transportation (Caltrans) Performance Management System (PeMS). The PeMS system is a centralized traffic data warehouse providing near real-time and historical data that is mainly collected through automated detection.

As described in **Chapter 2** a two-tiered approach to mainline analysis is performed. **Table 3.5** presents the LOS range which indicates the mainline segments that operate at a deficient LOS. There are several freeway segments that currently operate at a deficient LOS. In the AM peak 22 out of 60 freeway segments operate at a deficient LOS and in the PM peak 14 out of 60 operate at a deficient LOS. The deficient segments are:

AM Peak Hour:

I-5	**Northbound**	• Between Jamboree Road and Tustin Ranch Road • Between Red Hill Avenue and Newport Avenue • North of SR-55
	Southbound	• Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road
I-405	**Northbound**	• Between Culver Drive and Jamboree Road • Between Jamboree Road and MacArthur Boulevard • Between MacArthur Boulevard and SR-55
	Southbound	• Between SR-55 and MacArthur Boulevard • Between Bristol Street and SR-55 • Between SR-73 and Bristol Street
SR-55	**Northbound**	• Between MacArthur Boulevard and Dyer Road • Between Dyer Road and Edinger Avenue • Between Edinger Avenue and McFadden Street/Sycamore Avenue
	Southbound	• Between MacArthur Boulevard and I-405 • Between Dyer Road and MacArthur Boulevard • Between Edinger Avenue and Dyer Road • Between McFadden Street/Sycamore Avenue and Edinger Avenue • North of I-5
SR-73	**Southbound**	• Between Birch Street and Jamboree Road • Between Campus Drive and Birch Street • Between SR-55 and Campus Drive

PM Peak Hour:

I-5	**Southbound**	• Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road • North of SR-55
I-405	**Northbound**	• Between Jamboree Road and MacArthur Boulevard • Between MacArthur Boulevard and SR-55
SR-55	**Northbound**	• Between Dyer Road and Edinger Avenue • Between McFadden Street/Sycamore Avenue and I-5
	Southbound	• Between SR-73 and Baker Street • Between MacArthur Boulevard and Dyer Road • Between Edinger Avenue and Dyer Road • Between McFadden Street/Sycamore Avenue and Edinger Avenue
SR-73	**Northbound**	• Between Birch Street and Campus Drive • Between SR-55 and Bear Street
	Southbound	• Between Birch Street and Jamboree Road

Table 3.5 – Existing Peak Hour Freeway Mainline LOS

LOCATION		FREEWAY LANES			EXISTING CONDITIONS					
					AM PEAK HOUR			PM PEAK HOUR		
		DIRECTION	LANES	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	Culver Dr to Jamboree Rd	NB	5	10,000	8,874	0.89	D	7,241	0.72	D
		SB	5	10,000	7,866	0.79	D	8,082	0.81	D
	Jamboree Rd to Tustin Ranch Rd	NB	5	10,000	9,328	0.93	E	8,282	0.83	D
		SB	5	10,000	9,896	0.99	E	10,549	1.05	F
	Tustin Ranch Rd to Red Hill Ave	NB	5	10,000	8,672	0.87	D	7,759	0.78	D
		SB	5	10,000	9,987	1.00	E	10,622	1.06	F
	Red Hill Ave to Newport Ave	NB	5	10,000	9,964	1.00	E	8,495	0.85	D
		SB	6	12,000	7,527	0.63	C	7,814	0.65	C
	Newport Ave to SR-55	NB	6	12,000	10,572	0.88	D	9,185	0.77	D
		SB	4	8,000	6,562	0.82	D	6,988	0.87	D
	North of SR-55	NB	5	10,000	10,702	1.07	F	8,345	0.83	D
		SB	5	10,000	8,920	0.89	D	9,736	0.97	E
I-405	Culver Dr to Jamboree Rd	NB	5	10,000	10,661	1.07	F	8,385	0.84	D
		SB	6	12,000	10,171	0.85	D	9,562	0.80	D
	Jamboree Rd to MacArthur Blvd	NB	5	10,000	9,864	0.99	E	8,983	0.90	E
		SB	6	12,000	7,756	0.65	C	6,954	0.58	C
	MacArthur Blvd to SR-55	NB	6	12,000	11,431	0.95	E	11,798	0.98	E
		SB	6	12,000	12,244	1.02	F	10,228	0.85	D
	SR-55 to Bristol St	NB	4	8,000	5,422	0.68	C	5,924	0.74	D
		SB	4	8,000	7,496	0.94	E	6,186	0.77	D
	Bristol St to SR-73	NB	5	10,000	8,155	0.82	D	8,792	0.88	D
		SB	4	8,000	8,433	1.05	F	5,996	0.75	D
SR-55	South of Victoria St	NB	4	8,000	4,216	0.53	C	3,958	0.49	B
		SB	3	6,000	2,881	0.48	B	2,783	0.46	B
	Victoria St to Fair Dr	NB	4	8,000	4,368	0.55	C	3,638	0.45	B
		SB	3	6,000	3,264	0.54	C	3,542	0.59	C
	Fair Dr to SR-73	NB	4	8,000	6,088	0.76	D	4,753	0.59	C
		SB	4	8,000	4,473	0.56	C	6,260	0.78	D
	SR-73 to Baker St	NB	3	6,000	4,782	0.80	D	3,385	0.56	C
		SB	3	6,000	4,702	0.78	D	6,136	1.02	F
	Baker St to I-405	NB	3	6,000	4,777	0.80	D	3,475	0.58	C
		SB	3	6,000	4,564	0.76	D	5,058	0.84	D
	I-405 to MacArthur Blvd	NB	5	10,000	7,907	0.79	D	7,560	0.76	D
		SB	4	8,000	7,671	0.96	E	6,457	0.81	D
	MacArthur Blvd to Dyer Rd	NB	4	8,000	8,403	1.05	F	6,839	0.85	D
		SB	4	8,000	9,142	1.14	F	7,758	0.97	E
	Dyer Rd to Edinger Ave	NB	4	8,000	9,104	1.14	F	8,511	1.06	F
		SB	5	10,000	10,716	1.07	F	9,072	0.91	E
	Edinger Ave to McFadden Street/Sycamore Ave	NB	5	10,000	9,002	0.90	E	8,249	0.82	D
		SB	4	8,000	8,788	1.10	F	8,427	1.05	F
	McFadden St/Sycamore Ave to I-5	NB	3	6,000	5,253	0.88	D	5,624	0.94	E
		SB	4	8,000	6,201	0.78	D	5,459	0.68	C
	North of I-5	NB	3	6,000	4,975	0.83	D	5,285	0.88	D
		SB	3	6,000	5,660	0.94	E	5,138	0.86	D

LOCATION		FREEWAY LANES			EXISTING CONDITIONS					
					AM PEAK HOUR			PM PEAK HOUR		
		DIRECTION	LANES	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS
SR-73	MacArthur Blvd to University Dr	NB	3	6,000	4,680	0.78	D	3,274	0.55	C
		SB	3	6,000	3,343	0.56	C	4,260	0.71	C
	University Dr to Jamboree Rd	NB	4	8,000	6,741	0.84	D	5,584	0.70	C
		SB	3	6,000	4,602	0.77	D	4,884	0.81	D
	Jamboree Rd to Birch St	NB	4	8,000	6,432	0.80	D	6,318	0.79	D
		SB	3	6,000	5,813	0.97	E	5,648	0.94	E
	Birch St to Campus Dr	NB	3	6,000	5,329	0.89	D	5,674	0.95	E
		SB	3	6,000	5,655	0.94	E	5,230	0.87	D
	Campus Dr to SR-55	NB	4	8,000	6,452	0.81	D	6,339	0.79	D
		SB	4	8,000	7,735	0.97	E	6,686	0.84	D
	SR-55 to Bear St	NB	3	6,000	3,987	0.66	C	5,538	0.92	E
		SB	3	6,000	5,110	0.85	D	4,243	0.71	C
	Bear St to I-405	NB	3	6,000	3,741	0.62	C	4,666	0.78	D
		SB	3	6,000	4,234	0.71	C	4,393	0.73	D
SR-261	South of El Camino Real	NB	2	4,000	493	0.12	A	2,805	0.70	C
		SB	2	4,000	3,041	0.76	D	605	0.15	A

3.7 Existing Freeway Ramp Analysis

Table 3.6 presents the LOS for Freeway Ramps within the study area. Ramps with a V/C LOS greater than LOS D are assumed to be deficient. Ten of the 98 ramps in the study area are deficient in the AM peak and 11 ramps are deficient in the PM peak. The following ramps are deficient under existing conditions:

AM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
I-405	**Northbound**	• Off-Ramp to Jamboree Road • Off-Ramp to MacArthur Boulevard
	Southbound	• Off-Ramp to Jamboree Road • Off-Ramp to MacArthur Boulevard
SR-55	**Northbound**	• Direct On-Ramp from Fair Drive • On-Ramp from Paularino Avenue
	Southbound	• Off-Ramp to Paularino Avenue
SR-73	**Northbound**	• Off-Ramp to Birch Street
	Southbound	• Off-Ramp to MacArthur Boulevard

PM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
I-405	**Northbound**	• Off-Ramp to Bristol Street
SR-55	**Northbound**	• Direct On-Ramp from Fair Drive • On-Ramp from Paularino Avenue • Direct On-Ramp from MacArthur Boulevard • On-Ramp from Edinger Avenue
SR-73	**Northbound**	• On-Ramp from Jamboree Road • On-Ramp from Campus Drive • Off-Ramp from SR-73 at Bear
	Southbound	• Off-Ramp to MacArthur Boulevard • On-Ramp to SR-73 at Bear

Figure 3.5 and **Figure 3.6** present the Existing Condition speeds during the peak hours for the freeway mainlines.

Table 3.6 – Existing Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		EXISTING CONDITIONS					
			NUMBER OF LANES	RAMP LENGTH	AM PEAK HOUR			PM PEAK HOUR		
					VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	Culver Drive	SB On Direct	1	1,000	315	0.35	B	405	0.45	B
		SB On Loop	1	1,000	649	0.72	D	349	0.39	B
		SB Off	2	500	929	0.41	B	1,776	0.79	D
		NB On Loop	1	1,000	751	0.50	B	477	0.32	B
		NB On Direct	1	1,000	784	0.87	D	194	0.22	A
		NB Off	1	500	360	0.24	A	665	0.44	B
	Jamboree Road	SB On Direct	1	1,000	426	0.28	A	1,207	0.8	D
		SB On Loop	1	1,000	850	0.57	C	477	0.32	B
		SB Off	2	500	1,094	0.36	B	1,181	0.39	B
		NB On Loop	1	1,000	527	0.49	B	338	0.31	B
		NB On Direct	1	1,000	626	0.58	C	296	0.27	A
		NB Off	1	500	1,411	0.94	E	1,496	1	E
	Tustin Ranch Road	SB On	1	1,000	664	0.44	B	686	0.46	B
		NB On	2	1,000	859	0.48	B	807	0.45	B
		NB Off	1	500	416	0.28	A	455	0.3	A
		SB Off	2	500	1,003	0.45	B	1,060	0.47	B
	Red Hill Avenue	SB On	1	1,000	800	0.53	C	705	0.47	B
		NB On	1	1,000	785	0.52	C	696	0.46	B
		NB Off	1	500	532	0.35	B	884	0.59	C
		SB Off	1	500	391	0.26	A	555	0.37	B
	Newport Boulevard	SB Off	1	500	511	0.34	B	853	0.57	C
		NB On	1	1,000	917	0.61	C	959	0.64	C
I-405	Culver Drive	SB On Direct	1	1,000	361	0.24	A	713	0.48	B
		SB On Loop	1	1,000	366	0.41	B	342	0.38	B
		SB Off	2	500	1,026	0.34	B	1,285	0.43	B
		NB On Loop	1	1,000	729	0.49	B	265	0.18	A
		NB On Direct	1	1,000	1,226	0.82	D	463	0.31	B
		NB Off	2	500	698	0.31	B	720	0.32	B
	Jamboree Road	SB On Direct	2	1,000	381	0.21	A	824	0.46	B
		SB On Loop	1	1,000	216	0.14	A	497	0.33	B
		SB Off	2	500	2,671	1.19	F	1,880	0.84	D
		NB On Loop	1	1,000	502	0.33	B	629	0.42	B
		NB On Direct	2	1,000	1,408	0.78	D	1,015	0.56	C
		NB Off	2	500	2,042	0.91	E	1,241	0.55	C
	Macarthur Boulevard	SB Direct On	2	1,000	505	0.28	A	1,050	0.58	C
		SB Off	2	500	2,395	1.06	E	1,079	0.48	B
		NB On	1	1,000	579	0.39	B	1,252	0.83	D
		NB Off	1	500	1,975	1.32	F	755	0.5	B
	Bristol Street	SB Loop On	1	1,000	855	0.57	C	1,025	0.68	C
		SB Off	2	500	1,130	0.50	B	913	0.41	B
		NB On Loop	1	1,000	169	0.19	A	153	0.17	A
		NB On Direct	1	1,000	650	0.43	B	1,342	0.89	D
		NB Off	1	500	867	0.58	C	1,995	1.33	F
SR-55	Victoria Street	SB Direct On	1	1,000	45	0.05	A	38	0.04	A
		SB Off	2	500	616	0.27	A	519	0.23	A
		NB Direct On	1	1,000	828	0.55	C	736	0.49	B
		NB Off	1	500	51	0.03	A	45	0.03	A

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		EXISTING CONDITIONS					
			NUMBER OF LANES	RAMP LENGTH	AM PEAK HOUR			PM PEAK HOUR		
					VOLUME	V/C	LOS	VOLUME	V/C	LOS
SR-55	Fair Drive	SB Direct On	1	1,000	95	0.11	A	129	0.14	A
		SB Off	2	500	482	0.21	A	653	0.29	A
		NB Direct On	1	1,000	1,781	1.19	F	1,506	1	E
		NB Off	1	500	355	0.24	A	300	0.2	A
	Baker Street	SB On	1	1,000	523	0.35	B	1,272	0.85	D
		SB Off	1	500	810	0.54	C	965	0.64	C
		NB Off	1	500	1,063	0.71	C	693	0.46	B
	Paularino Avenue	SB Off	1	500	1,487	0.99	E	958	0.64	C
		NB On	1	1,000	1,166	1.30	F	977	1.09	E
	MacArthur Boulevard	SB On Direct	1	1,000	918	0.61	C	951	0.63	C
		SB On Loop	1	1,000	156	0.17	A	555	0.62	C
		SB Off	2	500	1,806	0.80	D	930	0.41	B
		NB On Loop	1	1,000	808	0.54	C	645	0.43	B
		NB On Direct	1	1,000	238	0.26	A	970	1.08	E
		NB Off	2	500	1,777	0.79	D	1,100	0.49	B
	Dyer Road	SB On	1	1,000	915	0.61	C	981	0.65	C
		SB Off Loop	1	500	739	0.49	B	528	0.35	B
		SB Off to Grand	1	500	691	0.46	B	570	0.38	B
		NB On Direct	1	1,000	406	0.27	A	928	0.62	C
		NB On Loop	1	1,000	643	0.71	C	665	0.74	D
		NB Off	1	500	1,113	0.74	D	235	0.16	A
	Edinger Avenue	SB On	1	1,000	850	0.57	C	731	0.49	B
		SB Off	1	500	884	0.59	C	709	0.47	B
		NB On	1	1,000	933	0.62	C	1,507	1	E
		NB Off	1	500	567	0.38	B	93	0.06	A
	McFadden Avenue	SB On	1	1,000	544	0.36	B	359	0.24	A
		SB Off	2	500	427	0.19	A	1,000	0.44	B
		NB On	1	1,000	1,250	0.83	D	1,031	0.69	C
		NB Off	1	500	499	0.33	B	985	0.66	C
SR-73	Bison Avenue	SB On	1	1,000	118	0.08	A	358	0.24	A
		SB Off	1	500	844	0.56	C	380	0.25	A
		NB On	1	1,000	278	0.19	A	1,061	0.71	C
	MacArthur Boulevard	SB On	1	1,000	121	0.08	A	1,016	0.68	C
		SB Off	1	500	1,353	0.90	E	1,429	0.95	E
		NB On s/o University Dr	1	1,000	779	0.52	C	1,224	0.82	D
		NB On n/o University Dr	1	1,000	537	0.36	B	927	0.62	C
	University Drive	SB Off	1	500	1,033	0.69	C	663	0.44	B
	Jamboree Road	SB On	2	500	485	0.32	B	958	0.64	C
		SB Off	1	1,000	1,460	0.65	C	1,027	0.46	B
		NB On	1	500	1,227	0.82	D	2,141	1.43	F
	Birch Street	NB Off	2	500	1,394	0.93	E	1,054	0.7	C
	Campus Drive	SB Off	1	1,000	1,772	0.79	D	1,202	0.53	C
		NB On	1	1,000	769	0.51	C	2,492	1.66	F
	Bear Street	SB On	1	500	867	0.58	C	1,422	0.95	E
		SB Off	1	500	286	0.19	A	1,271	0.85	D
		NB Off	1	1,000	633	0.42	B	1,495	1	E
		NB On	2	1,000	243	0.16	A	326	0.22	A
SR-261	Jamboree Road	SB On	2	250	1,149	0.38	B	1,065	0.36	B
		NB Off	1	1,000	438	0.19	A	1,107	0.49	B
	Walnut Avenue	NB On	1	500	336	0.22	A	929	0.62	C
		SB Off	1	1,000	890	0.59	C	556	0.37	B

F Denotes ramp operating at a deficient LOS

Figure 3.5 – Existing Freeway AM Peak Hour Speeds

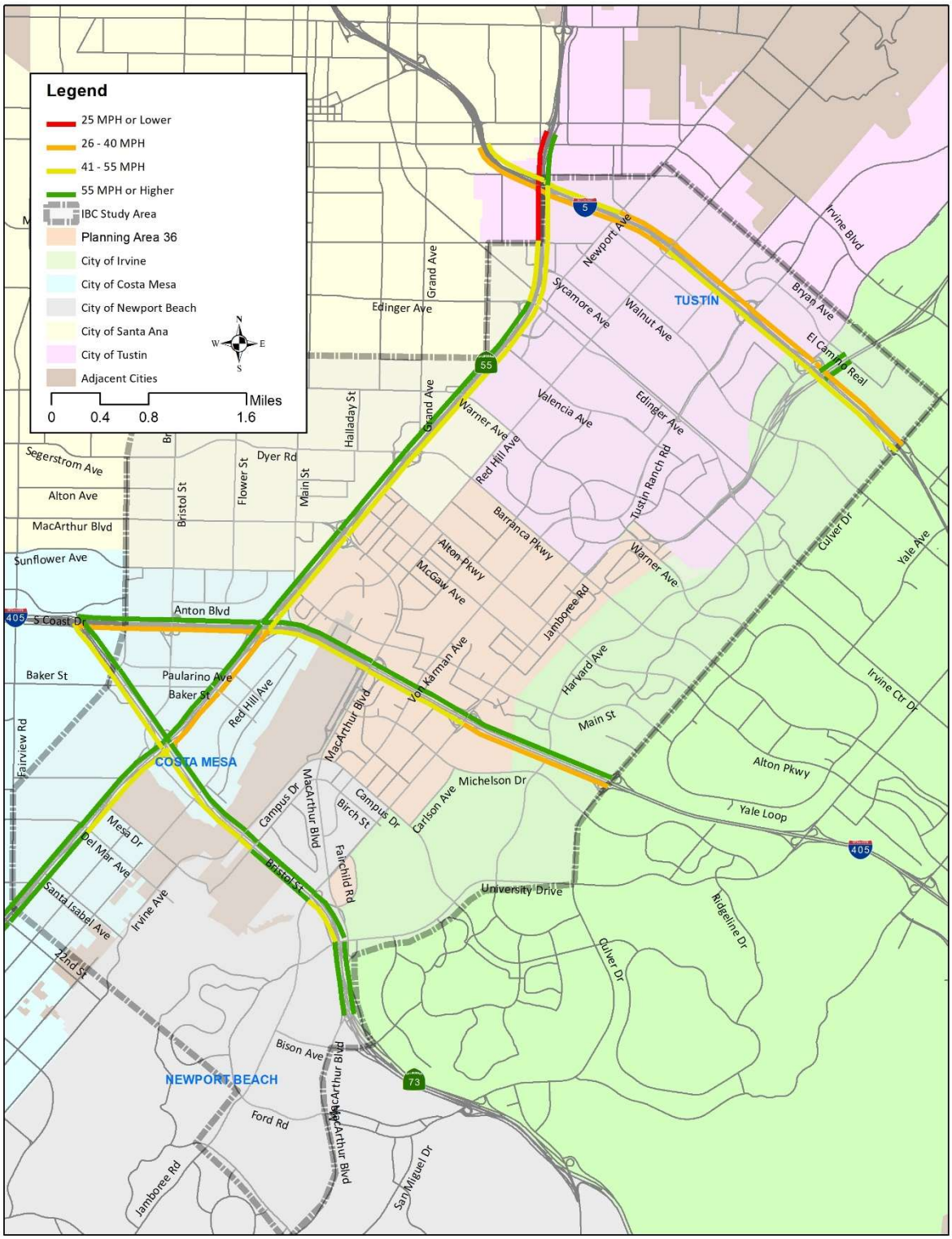
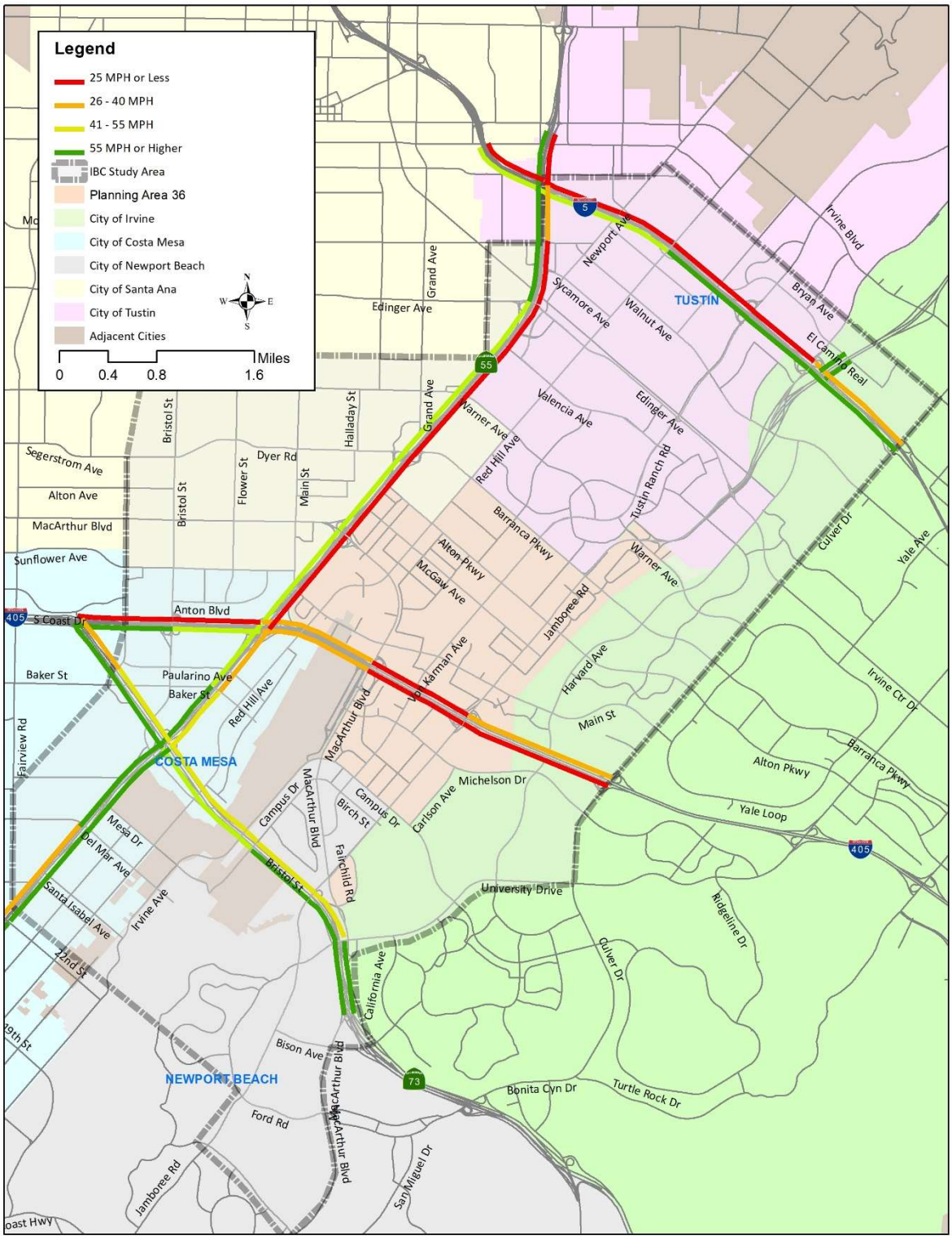


Figure 3.6 – Existing Freeway PM Peak Hour Speeds



3.8 Existing With Update Conditions and Land Use

This theoretical scenario provides an early glimpse of potential impacts associated with implementation of the proposed update. Although this is not a feasible build scenario for the IBC Vision Plan, as the plan cannot be implemented immediately and non-IBC development cannot be prevented, it provides a basis for evaluation of theoretical plan impacts.

In the analysis, the "delta" in the number of trips between the Vision Plan Update and Existing conditions was added to the existing counts to determine the Existing With Update conditions. It should be noted that the existing ground condition does not consider that many of the dwelling units have been approved/entitled already but not yet built; therefore the existing condition does not represent what is left to be approved. Since it is unreasonable to assume that all the trips from the full buildout of the IBC Vision will happen at once, the anticipated impacts should be considered only within the context of a full buildout of the roadway system servicing the IBC and surrounding areas.

Table 3.7 presents the land use quantities by ITAM code for the IBC traffic study area, while **Appendix D** represents land use quantities by type and by IBC TAZ as well as a land use summary by individual project. Land use quantities for Existing Conditions (With Update) have been developed by the City of Irvine. **Figure 3.7** through **Figure 3.13** demonstrate the total quantities and percentage differences in each land use category (Residential Units, Office Mix, Industrial Mix, Commercial, Hotel, Mini-Warehouse and Extended Stay Hotel) between Existing and Existing With Update scenarios.

Table 3.7 – Existing With Update Land Use Summary

SCENARIO	MULTI-FAMILY RESIDENTIAL (DU)	RETAIL MIX (TSF)	HOTEL (ROOM)	OFFICE MIX (TSF)	INDUSTRIAL MIX (TSF)	MINI-WAREHOUSE (TSF)	EXTENDED STAY HOTEL (ROOM)
Existing No Update	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Existing With Update	16,820	1,785	3,078	33,795	12,536	1,228	1,422
Percent Growth (Existing With Update vs. Existing No Update)	**78%**	**36%**	**23%**	**25%**	**-4%**	**-14%**	**23%**

Source: City of Irvine, ITAM

Figure 3.7 – Land Use Comparison between IBC Vision Plan Update and Existing Baseline (Residential Units)

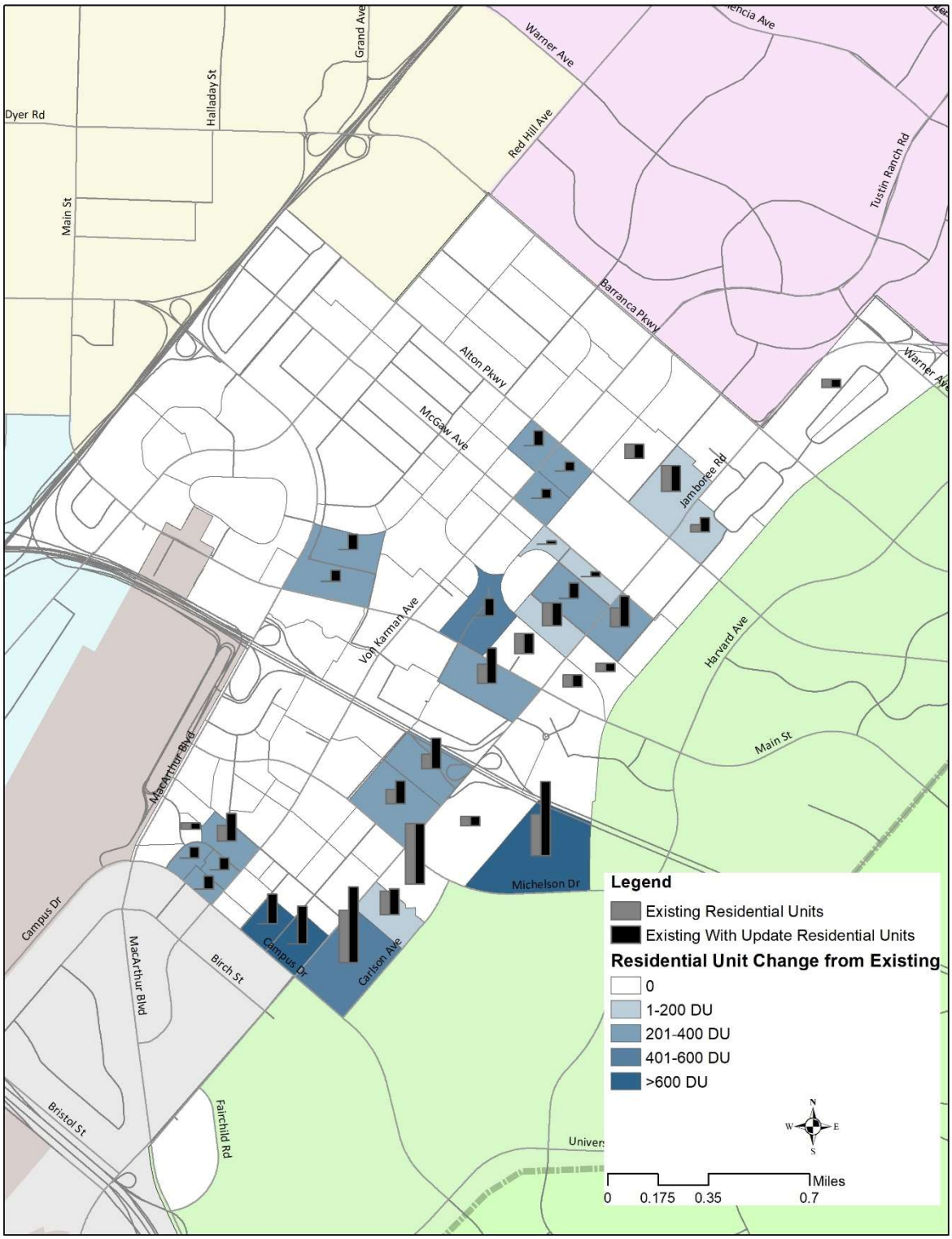


Figure 3.8 – Land Use Comparison between IBC Vision Plan Update and Existing Conditions (Office Mix)

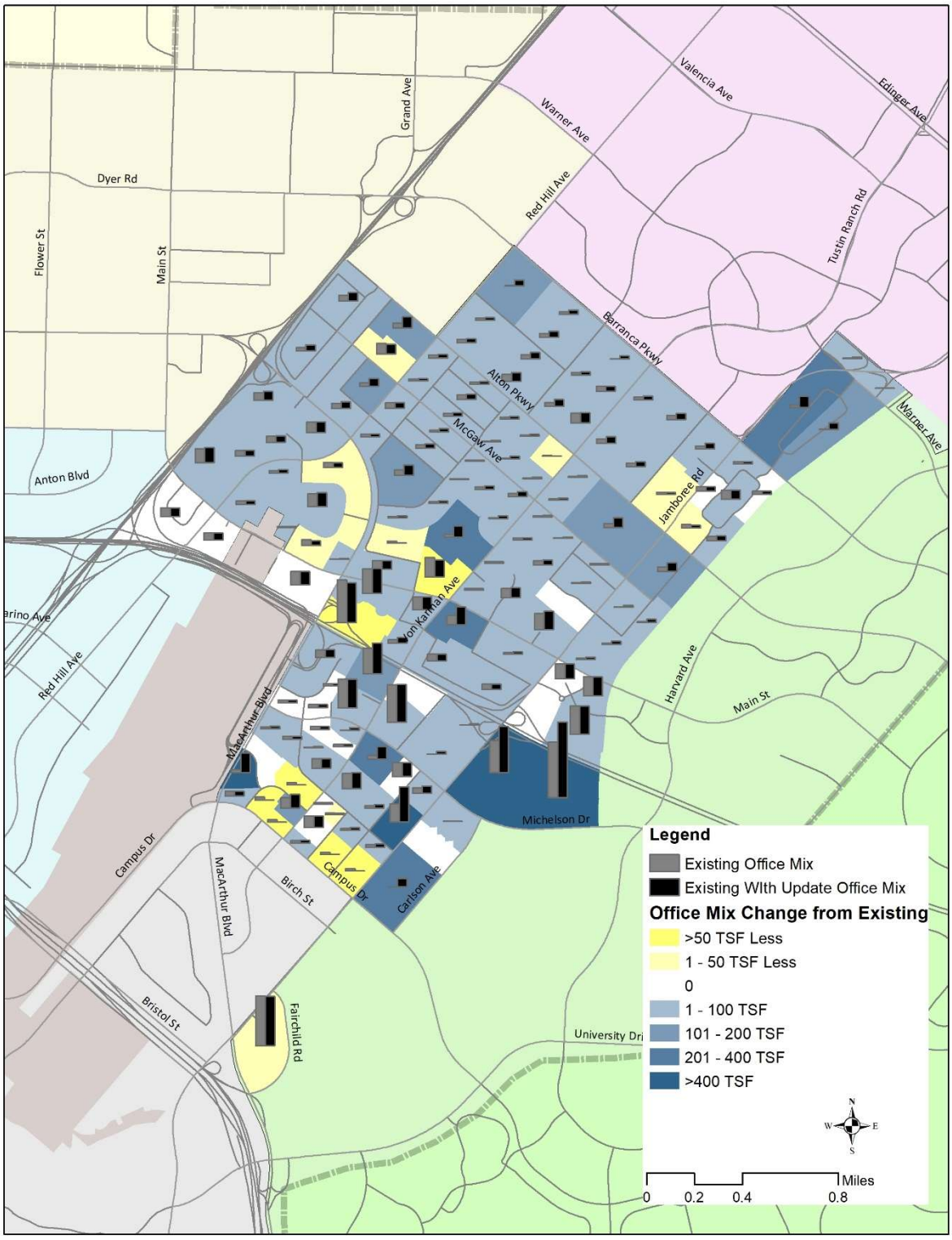


Figure 3.9 – Land Use Comparison between IBC Vision Plan Update and Existing (Industrial Mix)

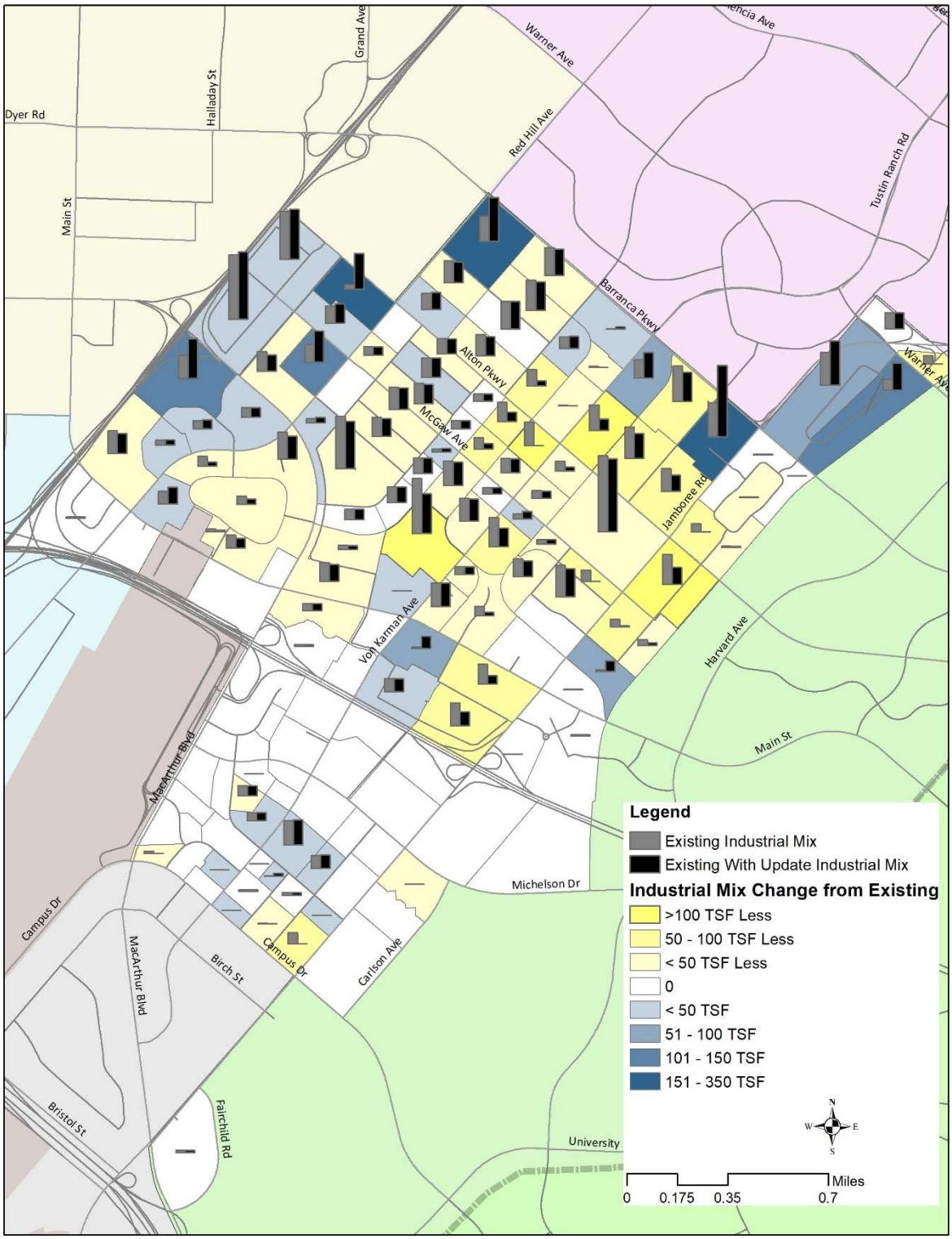


Figure 3.10 – Land Use Comparison between IBC Vision Plan Update and Existing (Commercial)

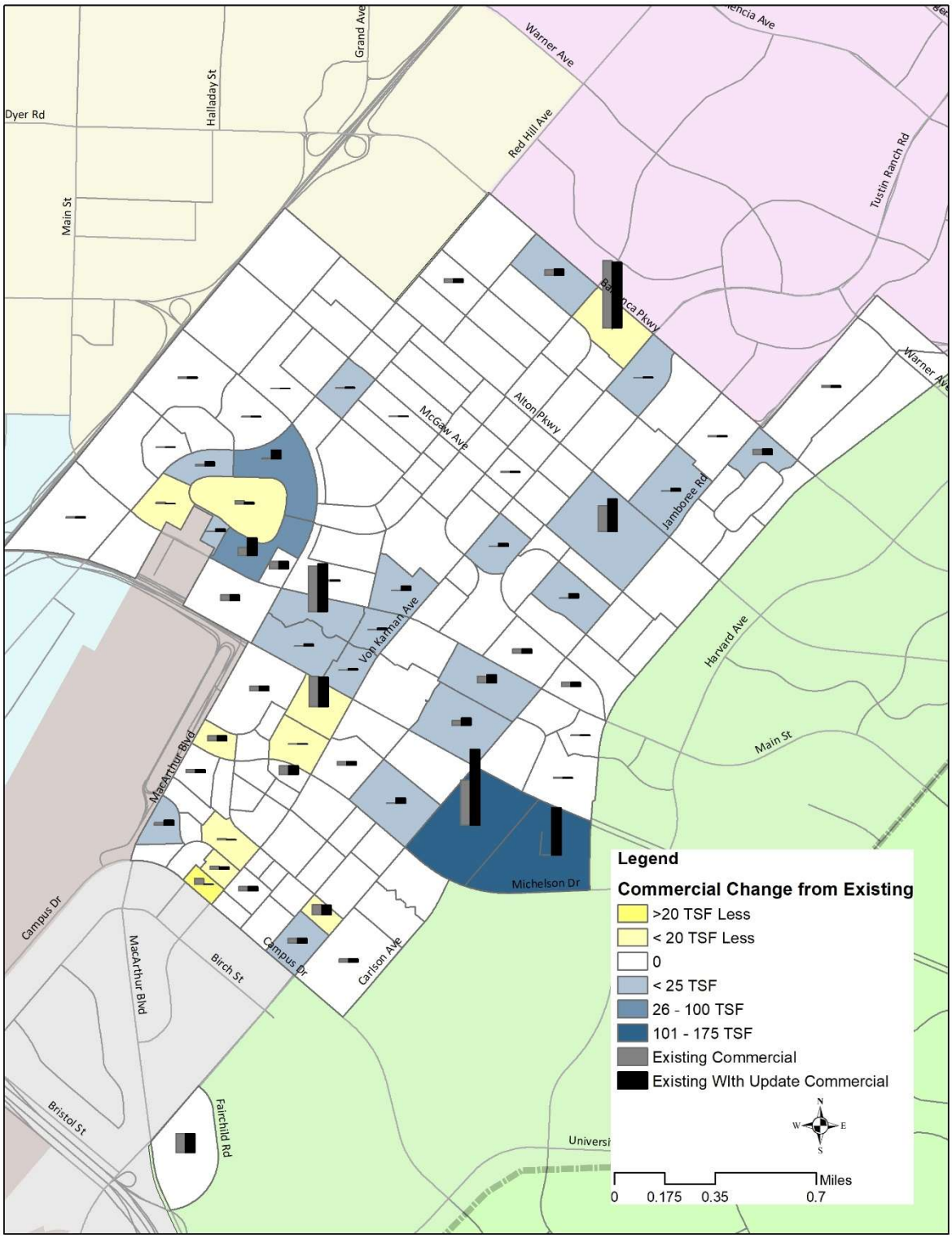


Figure 3.11 – Land Use Comparison between IBC Vision Plan Update and Existing (Hotel)

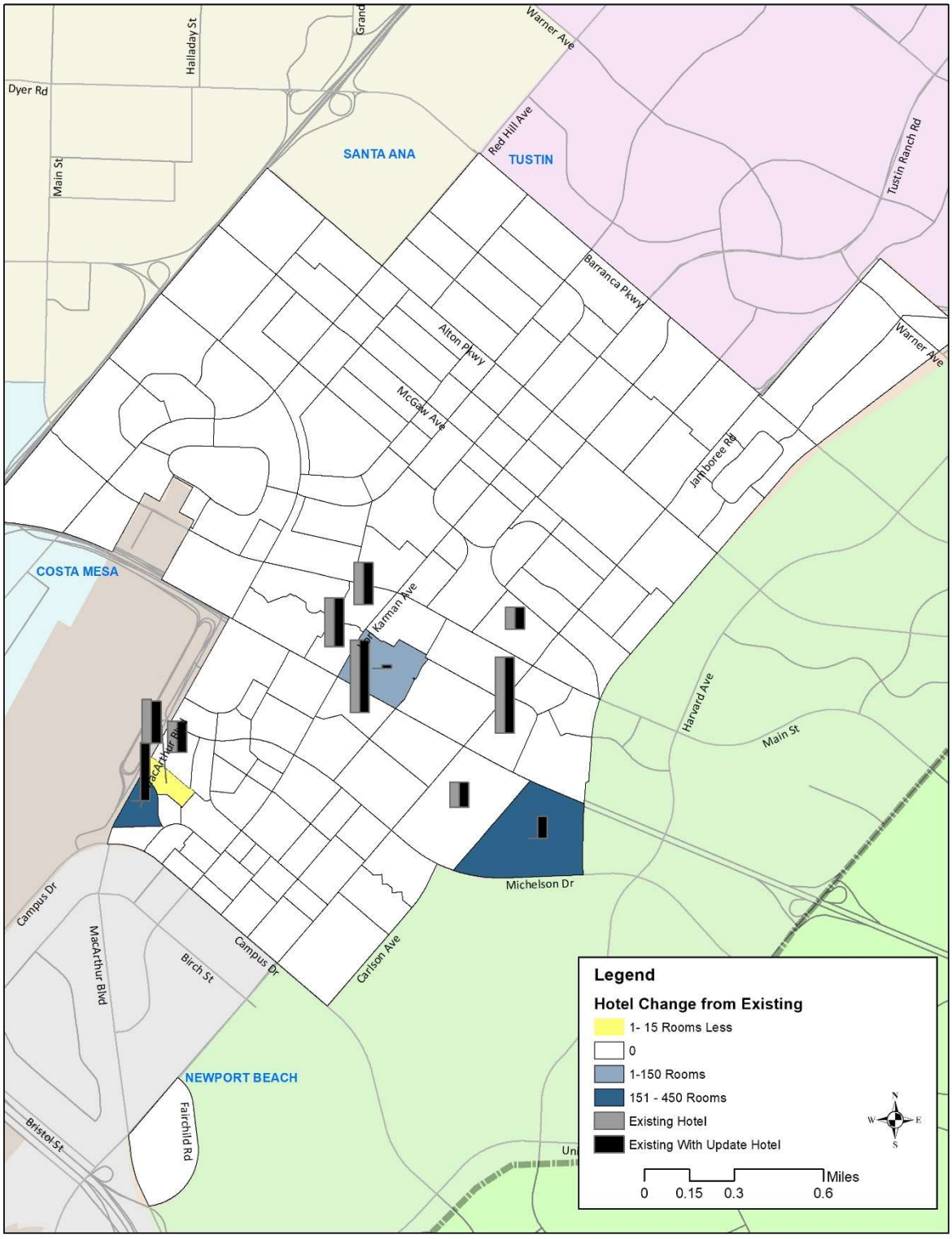


Figure 3.12 – Land Use Comparison between IBC Vision Plan Update and Existing (Mini-Warehouse)

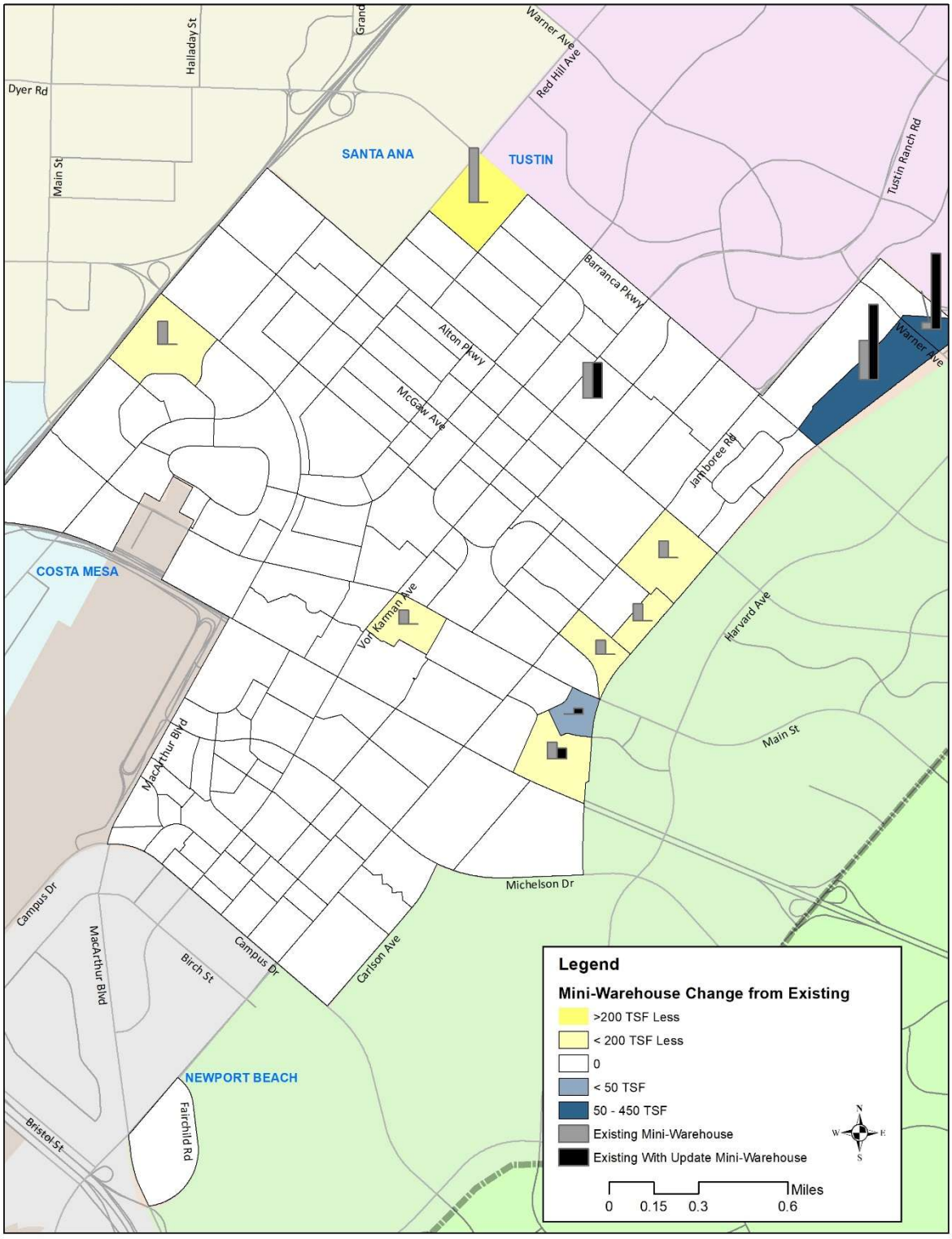
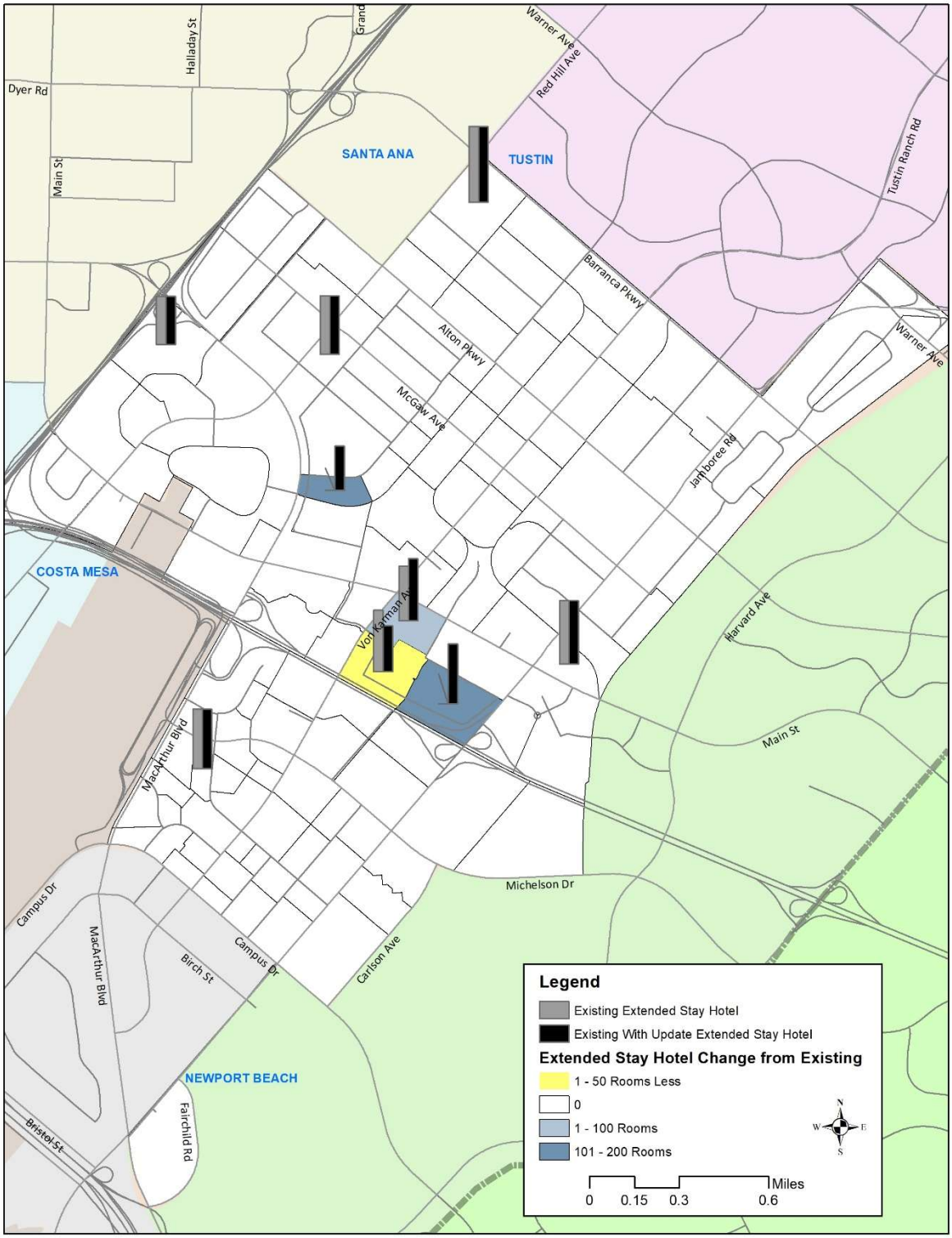


Figure 3.13 – Land Use Comparison between IBC Vision Plan Update and Existing (Extended Stay Hotel)



3.9 Existing With Update Daily Arterial Segment Analysis

Under Existing With Update conditions, traffic patterns throughout the City are generally consistent with existing conditions. **Table 3.8** presents the study area arterial roadway segments, including information on ADT, V/C ratio and LOS on each segment. Existing With Update arterial traffic conditions were analyzed based on the ADT and lane configurations. Deficient segments within the City of Irvine were further analyzed for peak hour performance. **Figure 3.14** and **Figure 3.15** present the Existing With Update ADT and deficient segments for study area arterials.

The arterial analysis indicates that the following 16 segments are potentially deficient when the build-out trips are added to the existing traffic volumes:

- Campus Drive
  - 879 – Campus Drive from Carlson Avenue to University Drive (Irvine)
- Culver Drive
  - 726 – Culver Drive from I-5 NB Ramps to I-5 SB Ramps (Irvine)
  - 213 – Culver Drive from I-5 SB Off-Ramp to Scottsdale Drive (Irvine)
  - 219 – Culver Drive from Barranca Parkway and Alton Parkway (Irvine)
  - 221 – Culver Drive from Main Street to San Leandro (Irvine)
  - 222 – Culver Drive from San Leandro to I-405 NB Ramps (Irvine)
  - 224 – Culver Drive from I-405 SB On-Ramp to Michelson Drive (Irvine)
- Harvard Avenue
  - 183 – Harvard Avenue from Michelson Drive to University Drive (Irvine)
- Jamboree Road
  - 133 – Jamboree Road from Michelle Drive to Walnut Avenue (Irvine)
  - 148 – Jamboree Road from I-405 SB Ramps to Michelson Drive (Irvine)
- University Drive
  - 189 – University Drive from MacArthur Boulevard to California Avenue (Irvine)
  - 188 – University Drive from California Avenue to Mesa Road (Irvine)
  - 187 – University Drive from Mesa Road to Campus Drive (Irvine)
- Bristol Street
  - 1312 – Bristol Street SB West of Jamboree Road (Newport Beach)*
- MacArthur Boulevard
  - 1301 – MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*
  - 1884 – MacArthur Boulevard from Main Street to SR-55 SB (Santa Ana)*

*Deficient locations under daily conditions—no further analysis required.

Table 3.8 – Existing With Update Daily Arterial LOS

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	EXISTING ARTERIAL SEGMENT CLASSIFICATIONS	EXISTING			EXISTING WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	4D	8,370	0.22	A	8,470	0.22	A
2721	Baker St	Bear St to Bristol St		CM	4D	21,940	0.58	A	22,540	0.59	A
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	4D	29,170	0.77	C	29,670	0.78	C
1294	Baker St	SR 55 SB to SR 55 NB		CM	4D	22,700	0.60	A	23,100	0.61	B
1468	Baker St	SR 55 NB to Red Hill Ave		CM	4D	18,570	0.49	A	19,070	0.50	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	2D	3,620	0.20	A	3,620	0.20	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	30,630	0.55	A	30,630	0.55	A
2733	Bristol St	Segerstrom Ave to West Alton Ave		CM	6D	36,460	0.65	B	36,760	0.66	B
2737	Bristol St	West Alton Ave to MacArthur Blvd		CM	6D	39,930	0.71	C	40,530	0.72	C
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	37,860	0.68	B	38,260	0.68	B
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	48,080	0.86	D	48,480	0.87	D
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	9D+1 AUX	53,920	0.67	B	54,320	0.67	B
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	49,450	0.66	B	49,450	0.66	B
2745	Bristol St	I-405 SB Ramps to Paularino Ave		CM	6D	38,320	0.68	B	38,320	0.68	B
2732	Bristol St	Paularino Ave to Baker St		CM	6D	31,730	0.57	A	31,730	0.57	A
2730	Bristol St	Baker St to SR 55		CM	6D	19,570	0.35	A	19,770	0.35	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	20,420	0.36	A	20,920	0.37	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	15,320	0.40	A	15,420	0.41	A
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	2U	6,310	0.50	A	6,310	0.50	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	12,990	0.34	A	13,290	0.35	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	9,410	0.25	A	9,510	0.25	A
2760	Flower St	Sunflower Ave to Anton Blvd		CM	4D	5,330	0.14	A	5,430	0.14	A
2756	Main St	Sunflower Ave to SR-55		CM	6D	24,740	0.44	A	26,840	0.48	A
2785	Mesa Dr	Newport Blvd SB to Newport Blvd NB		CM	2U	6,210	0.50	A	6,410	0.51	A
2783	Mesa Dr	Newport Blvd NB to Santa Ana Ave		CM	2U	7,370	0.59	A	7,470	0.60	A
2779	Mesa Dr	Irvine Ave to Birch St		CM	4D	7,510	0.20	A	7,710	0.20	A
2742	Paularino Ave	Bear St to Bristol St		CM	2U	7,730	0.62	B	7,730	0.62	B
2746	Paularino Ave	Bristol St to SR-55 SB		CM	4D	17,980	0.47	A	18,080	0.48	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	16,860	0.44	A	17,060	0.45	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	13,420	0.35	A	13,720	0.36	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	5,020	0.13	A	5,020	0.13	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	4D	17,460	0.46	A	18,760	0.49	A
1340	Red Hill Ave	Paularino Ave to Baker St		CM	4D	18,270	0.48	A	19,370	0.51	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	15,380	0.40	A	15,680	0.41	A
41	Santa Ana Ave	Mesa Dr to Bristol St		CM	4D	10,960	0.29	A	10,960	0.29	A
2769	University Dr	Santa Ana Ave to Irvine Ave		CM	2U	6,400	0.51	A	6,600	0.53	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	4,820	0.15	A	8,320	0.26	A
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	13,940	0.44	A	15,640	0.49	A
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	15,900	0.50	A	17,100	0.53	A
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	19,960	0.37	A	21,160	0.39	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	20,260	0.38	A	21,660	0.40	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	15,520	0.29	A	16,620	0.31	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	19,370	0.36	A	20,470	0.38	A
783	Alton Pkwy	San Marino to Culver Dr		Irv	6D	23,930	0.44	A	24,930	0.46	A
735	Barranca Pkwy (Dyer Rd)	Pullman to Red Hill Ave		Irv	6D	30,520	0.57	A	33,020	0.61	B
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	6D	35,300	0.56	A	37,100	0.59	A
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	35,220	0.56	A	37,220	0.59	A
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	31,440	0.50	A	33,540	0.53	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	EXISTING ARTERIAL SEGMENT CLASSIFICATIONS	EXISTING			EXISTING WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	25,490	0.47	A	27,890	0.52	A
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	21,380	0.40	A	22,680	0.42	A
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	20,540	0.38	A	21,340	0.40	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	20,980	0.39	A	21,880	0.41	A
748	Barranca Pkwy	Santa Rosa to Culver Dr		Irv	6D	23,590	0.44	A	24,490	0.45	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	20,650	0.65	B	20,650	0.65	B
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	20,650	0.65	B	20,750	0.65	B
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	20,650	0.65	B	20,650	0.65	B
540	Bryan Ave	Rubicon to Culver		Irv	4D	20,650	0.65	B	20,750	0.65	B
869	Campus Dr	MacArthur Blvd to Martin	a	Irv	6U	12,100	0.22	A	14,500	0.27	A
870	Campus Dr	Martin to Von Karman Ave	a	Irv	4D	12,100	0.38	A	14,100	0.44	A
871	Campus Dr	Von Karman Ave to Teller Ave	a	Irv	4D	10,340	0.32	A	12,340	0.39	A
872	Campus Dr	Teller Ave to Jamboree Rd	a	Irv	4D	10,340	0.32	A	11,640	0.36	A
877	Campus Dr	Jamboree Rd to Carlson Ave	a	Irv	4D	17,000	0.53	A	18,300	0.57	A
879	Campus Dr	Carlson Ave to University		Irv	2U	17,000	1.31	F	17,400	1.34	F
166	Carlson Ave	Michelson Dr to Campus Dr	a	Irv	4D	6,010	0.19	A	7,110	0.22	A
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps		Irv	7D	57,370	0.91	E	57,870	0.92	E
213	Culver Dr	I-5 SB Ramps to Scottsdale Dr		Irv	6D	49,610	0.92	E	50,510	0.94	E
214	Culver Dr	Scottsdale Dr to Walnut Ave		Irv	6D	44,760	0.83	D	45,760	0.85	D
215	Culver Dr	Walnut Ave to Deerfield Ave		Irv	6D	41,720	0.77	C	42,720	0.79	C
216	Culver Dr	Deerfield Ave to Irvine Center Dr		Irv	Maj6D+ 1AUX	39,560	0.68	B	40,660	0.70	B
217	Culver Dr	Irvine Center Dr to Warner Ave		Irv	6D	45,530	0.84	D	47,130	0.87	D
218	Culver Dr	Warner Ave to Barranca Pkwy		Irv	6D	44,710	0.83	D	46,010	0.85	D
219	Culver Dr	Barranca Pkwy to Alton Pkwy		Irv	6D	47,640	0.88	D	49,240	0.91	E
220	Culver Dr	Alton Pkwy to Main St		Irv	6D	46,420	0.86	D	48,120	0.89	D
221	Culver Dr	Main St to San Leandro		Irv	6D	51,490	0.95	E	52,890	0.98	E
222	Culver Dr	San Leandro to I-405 NB On-Ramp		Irv	6D	51,490	0.95	E	52,790	0.98	E
224	Culver Dr	I-405 SB Ramps to Michelson Dr		Irv	6D	52,060	0.96	E	54,460	1.01	F
225	Culver Dr	Michelson Dr to Sandburg Way		Irv	6D	38,010	0.70	B	38,110	0.71	C
226	Culver Dr	Sandburg Way to University Dr		Irv	6D	34,910	0.65	B	35,010	0.65	B
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	18,470	0.58	A	18,470	0.58	A
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,010	0.19	A	6,110	0.19	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	2U	8,560	0.66	B	8,560	0.66	B
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	2U	9,980	0.77	C	10,180	0.78	C
171	Harvard Ave	Deerfield Ave to Irvine Center Dr		Irv	3D	9,980	0.40	A	10,180	0.41	A
172	Harvard Ave	Irvine Center Dr to Paseo Westpark		Irv	4D	11,420	0.36	A	12,220	0.38	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	11,050	0.35	A	11,950	0.37	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	16,320	0.51	A	17,120	0.54	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	20,010	0.63	B	21,510	0.67	B
2829	Harvard Ave	San Juan to San Leon		Irv	4D	19,250	0.60	A	20,850	0.65	B
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	19,990	0.62	B	21,590	0.67	B
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	24,520	0.77	C	26,220	0.82	D
180	Harvard Ave	San Marino to Main St		Irv	4D	24,320	0.76	C	26,220	0.82	D
181	Harvard Ave	Main St to Coronado		Irv	4D	24,000	0.75	C	26,200	0.82	D
182	Harvard Ave	Coronado to Michelson Dr		Irv	4D	24,830	0.78	C	27,230	0.85	D
183	Harvard Ave	Michelson Dr to University Dr		Irv	2U	18,960	1.46	F	19,660	1.51	F
675	Irvine Center Dr	Harvard Ave to Hearthstone	b	Irv	6D	25,990	0.48	A	26,290	0.49	A
676	Irvine Center Dr	Hearthstone to Culver Dr	b	Irv	6D	25,990	0.48	A	26,290	0.49	A
129	Jamboree Rd	Bryan Ave to El Camino	b	Irv	8D	50,160	0.70	B	50,560	0.70	B
130	Jamboree Rd	El Camino Real to I-5 NB Ramps	b	Irv	Maj7D+ 1AUX	50,160	0.74	C	50,660	0.75	C

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	EXISTING ARTERIAL SEGMENT CLASSIFICATIONS	EXISTING			EXISTING WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
958	Jamboree Rd	I-5 NB Ramps to I-5 SB Ramps	b	Irv	8D	66,480	0.92	E	67,380	0.94	E
131	Jamboree Rd	I-5 SB Ramps to Michelle Dr	b	Irv	8D	55,040	0.76	C	56,440	0.78	C
133	Jamboree Rd	Michelle Dr to Walnut Ave	b	Irv	5D	55,040	1.28	F	56,640	1.32	F
135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rds)	b	Irv	Exp8	68,070	0.38	A	71,870	0.40	A
136	Jamboree Rd	Edinger Ave to Warner Ave	b	Irv	Exp8	83,930	0.47	A	88,030	0.49	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	68,700	0.38	A	72,400	0.40	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	51,690	0.72	C	55,490	0.77	C
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	53,930	0.75	C	57,730	0.80	C
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	56,650	0.79	C	60,750	0.84	D
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	57,520	0.80	C	62,020	0.86	D
144	Jamboree Rd	Kelvin Ave to Main St	a,b	Irv	8D	61,220	0.85	D	68,120	0.95	E
145	Jamboree Rd	Main St to I-405 NB Ramps	b	Irv	Maj8D+ 2AUX	71,800	0.89	D	79,100	0.98	E
148	Jamboree Rd	I-405 SB Ramps to Michelson Dr	a,b	Irv	Maj8D+ 2AUX	74,280	0.92	E	84,980	1.05	F
149	Jamboree Rd	Michelson Dr to Dupont Dr	a,b	Irv	7D	47,550	0.75	C	51,150	0.81	D
150	Jamboree Rd	Dupont Dr to Campus Dr	a,b	Irv	7D	40,230	0.64	B	41,730	0.66	B
151	Jamboree Rd	Campus Dr to Birch St	b	Irv	6D	40,320	0.75	C	42,620	0.79	C
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	37,550	0.60	A	40,350	0.64	B
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	7D	32,930	0.52	A	35,530	0.56	A
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	34,320	0.64	B	36,820	0.68	B
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	7D	40,900	0.65	B	45,400	0.72	C
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	26,130	0.41	A	29,230	0.46	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	26,130	0.41	A	29,330	0.47	A
60	MacArthur Blvd	Main St to I-405 NB Ramps	a	Irv	Maj8D+ 2AUX	50,260	0.62	B	56,060	0.69	B
62	MacArthur Blvd	I-405 SB Ramps to Michelson Dr	a	Irv	Maj8D+ 1AUX	51,810	0.68	B	58,910	0.77	C
63	MacArthur Blvd	Michelson Dr to Douglass	a	Irv	8D	35,730	0.50	A	40,830	0.57	A
64	MacArthur Blvd	Douglas to Campus Dr		Irv	8D	35,730	0.50	A	37,630	0.52	A
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	37,880	0.70	B	39,880	0.74	C
917	MacArthur Blvd	Fairchild Rd to University Dr	b	Irv	6D	37,880	0.70	B	40,280	0.75	C
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	25,340	0.47	A	27,340	0.51	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	23,990	0.44	A	26,290	0.49	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	23,990	0.44	A	26,490	0.49	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	32,500	0.48	A	35,300	0.52	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	32,500	0.56	A	37,500	0.64	B
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	21,420	0.40	A	24,920	0.46	A
823	Main St	Siglo to Jamboree Rd	a	Irv	6D	21,420	0.40	A	24,320	0.45	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+ 1AUX	22,650	0.39	A	24,050	0.41	A
825	Main St	Veneto to Harvard Ave		Irv	6D	22,650	0.42	A	24,050	0.45	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	11,590	0.36	A	12,290	0.38	A
827	Main St	Paseo Westpark to Culver Dr		Irv	4D	11,590	0.36	A	12,090	0.38	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	6,520	0.20	A	7,720	0.24	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	8,440	0.26	A	10,540	0.33	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	8,590	0.27	A	10,490	0.33	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	3,020	0.09	A	4,120	0.13	A
840	Michelson Dr	MacArthur Blvd to Dupont Dr	a	Irv	5D	11,620	0.27	A	13,620	0.32	A
843	Michelson Dr	Bixby to Von Karman Ave	a	Irv	4D	11,620	0.36	A	13,820	0.43	A
844	Michelson Dr	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	17,650	0.49	A	20,550	0.57	A
845	Michelson Dr	Teller Ave to Jamboree Rd	a	Irv	5D	17,650	0.41	A	20,050	0.47	A
846	Michelson Dr	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+ 2AUX	17,670	0.44	A	22,670	0.57	A
847	Michelson Dr	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	17,670	0.49	A	23,470	0.65	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	EXISTING ARTERIAL SEGMENT CLASSIFICATIONS	EXISTING			EXISTING WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
848	Michelson Dr	Riparian View to Harvard Ave		Irv	4D	17,670	0.55	A	22,070	0.69	B
1346	Michelson Dr	Harvard Ave to Parkside Dr		Irv	4D	15,460	0.48	A	17,760	0.56	A
850	Michelson Dr	Parkside Dr to Culver Dr		Irv	4D	15,460	0.48	A	18,060	0.56	A
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	26,670	0.49	A	30,170	0.56	A
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	26,540	0.49	A	30,140	0.56	A
33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	26,820	0.50	A	29,920	0.55	A
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	38,160	0.71	C	43,660	0.81	D
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	4D	16,710	0.52	A	18,410	0.58	A
38	Red Hill Ave	Skypark to Main St	a	Irv	4D	14,620	0.46	A	16,020	0.50	A
189	University Dr	MacArthur Blvd to California Ave		Irv	4D	34,040	1.06	F	34,440	1.08	F
188	University Dr	California Ave to Mesa Rd		Irv	4D	34,040	1.06	F	34,440	1.08	F
187	University Dr	Mesa Rd to Campus Dr		Irv	4D	34,040	1.06	F	34,540	1.08	F
880	University Dr	Campus Dr to Harvard Ave		Irv	6D	27,780	0.51	A	28,080	0.52	A
881	University Dr	Harvard Ave to San Joaquin Hills Rd		Irv	6D	23,450	0.43	A	23,650	0.44	A
882	University Dr	San Joaquin Hills Rd to Culver Dr		Irv	6D	23,450	0.43	A	23,550	0.44	A
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	26,170	0.82	D	28,570	0.89	D
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	23,790	0.74	C	27,490	0.86	D
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	23,050	0.72	C	26,250	0.82	D
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	23,050	0.72	C	26,450	0.83	D
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	23,140	0.64	B	27,040	0.75	C
107	Von Karman Ave	Quartz to Michelson Dr	a	Irv	Prim4D+ 1AUX	21,290	0.59	A	25,090	0.70	B
108	Von Karman Ave	Michelson Dr to Dupont Dr	a	Irv	4D	17,010	0.53	A	20,010	0.63	B
110	Von Karman Ave	Dupont Dr to Martin	a	Irv	4D	17,010	0.53	A	20,110	0.63	B
111	Von Karman Ave	Martin to Campus Dr	a	Irv	4D	17,010	0.53	A	18,910	0.59	A
594	Walnut Ave	Myford to Jamboree SB Ramp		Irv	Prim4D+ 1AUX	20,440	0.57	A	20,740	0.58	A
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+ 1AUX	20,250	0.35	A	20,350	0.35	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+ 1AUX	20,250	0.43	A	20,350	0.43	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	18,740	0.59	A	18,940	0.59	A
597	Walnut Ave	Mall St to Culver Dr		Irv	4D	18,740	0.59	A	18,940	0.59	A
728	Warner Ave	Construction North to Harvard Ave		Irv	4D	16,790	0.52	A	17,390	0.54	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	11,440	0.36	A	12,040	0.38	A
732	Warner Ave	Santa Ynez to Culver Dr		Irv	4D	9,060	0.28	A	9,560	0.30	A
1223	Birch St	Mesa Dr to Bristol St SB		NB	4D	11,630	0.29	A	12,130	0.30	A
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	16,980	0.42	A	17,380	0.43	A
874	Birch St	East of MacArthur Blvd		NB	4D	7,730	0.19	A	8,830	0.22	A
69	Birch St	West of MacArthur Blvd		NB	4D	11,110	0.28	A	12,210	0.31	A
875	Birch St	East of Von Karman Ave		NB	4D	4,570	0.11	A	5,170	0.13	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	7,500	0.13	A	7,500	0.13	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	11,690	0.29	A	11,690	0.29	A
920	Bristol St SB	Red Hill Ave to Campus Dr*		NB	2D	13,710	0.76	C	14,310	0.80	C
1310	Bristol St NB	Campus Dr to Red Hill Ave*		NB	3D	13,720	0.47	A	14,520	0.50	A
1303	Bristol St SB	Campus Dr to Birch St*		NB	3D	15,760	0.54	A	15,760	0.54	A
1305	Bristol St NB	Birch St to Campus Dr*		NB	3D	23,360	0.81	D	24,060	0.83	D
1312	Bristol St SB	West of Jamboree Rd*		NB	4D	39,560	0.99	E	39,660	0.99	E
1580	Bristol St NB	West of Jamboree Rd*		NB	3D	14,520	0.50	A	14,820	0.51	A
66	Campus Dr	Bristol St NB to MacArthur Blvd		NB	6D	27,680	0.48	A	31,080	0.54	A
1778	Ford Rd	Jamboree Rd to MacArthur Blvd		NB	4D	10,480	0.26	A	10,480	0.26	A
1304	Irvine Ave	Bristol St NB to Bristol St SB		NB	6D	26,390	0.46	A	28,790	0.50	A
67	Irvine Ave	Bristol St SB to Mesa Dr		NB	6D	25,830	0.45	A	26,630	0.46	A
2768	Irvine Ave	South of University Dr		NB	4D	29,300	0.73	C	30,100	0.75	C

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	EXISTING ARTERIAL SEGMENT CLASSIFICATIONS	EXISTING			EXISTING WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
156	Jamboree Rd	South of MacArthur Blvd		NB	6D	31,570	0.54	A	33,770	0.58	A
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	6D	47,780	0.82	D	49,380	0.85	D
157	Jamboree Rd	South of Bristol St		NB	8D	51,460	0.76	C	52,460	0.77	C
159	Jamboree Rd	University Dr to Bison Ave		NB	6D	48,550	0.84	D	49,250	0.85	D
1777	Jamboree Rd	Bison Ave to Ford Rd		NB	6D	50,890	0.88	D	51,290	0.88	D
73	MacArthur Blvd	Campus Dr to Birch St		NB	8D	18,080	0.27	A	18,680	0.27	A
75	MacArthur Blvd	South of Birch St		NB	6D	16,730	0.29	A	17,230	0.30	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	26,680	0.46	A	28,080	0.48	A
953	MacArthur Blvd	University Dr to Bison Ave	b	NB	6D	23,030	0.40	A	23,330	0.40	A
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	72,570	1.07	F	73,070	1.07	F
2767	University Dr	East of Irvine Ave		NB	2U	1,010	0.10	A	1,010	0.10	A
1774	University Dr	Jamboree Rd to MacArthur Blvd		NB	5D	12,330	0.25	A	12,330	0.25	A
112	Von Karman Ave	South of Campus Dr		NB	4D	10,340	0.26	A	11,340	0.28	A
113	Von Karman Ave	South of Birch St		NB	4D	10,230	0.26	A	11,330	0.28	A
2795	Dyer Rd	Main St to Halladay St		SA	6D	30,600	0.54	A	31,300	0.56	A
2799	Dyer Rd	Halladay St to SR-55 SB		SA	6D	38,350	0.68	B	39,150	0.70	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	45,530	0.81	D	48,030	0.85	D
734	Dyer Rd	SR-55 NB to Pullman St		SA	6D	47,720	0.85	D	50,920	0.90	D
2764	Grand Ave	Warner Ave to Hotel Terrace Dr		SA	6D	26,200	0.47	A	27,100	0.48	A
2806	Grand Ave	Hotel Terrace Dr to SR-55 NB		SA	6D	25,420	0.45	A	26,420	0.47	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	2U	4,470	0.36	A	4,670	0.37	A
2822	Halladay St	Alton Ave to McGaw Ave (Columbine)		SA	2U	2,290	0.18	A	2,390	0.19	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	35,920	0.64	B	36,820	0.65	B
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	55,500	0.99	E	56,900	1.01	F
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	28,700	0.51	A	29,500	0.52	A
2826	Main St	Alton Ave to McGaw Ave (Columbine)		SA	6D	28,500	0.51	A	29,300	0.52	A
2809	Main St	McGaw (Columbine) to MacArthur		SA	6D	30,580	0.54	A	31,380	0.56	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	23,180	0.41	A	23,780	0.42	A
2823	McGaw Ave (Alton)	Main St to Halladay St		SA	4U	3,010	0.13	A	3,010	0.13	A
2736	Segerstrom Ave	Bristol St to Flower St		SA	4D	23,560	0.63	B	23,860	0.64	B
2771	Segerstrom Ave	Flower St to Main St		SA	4D	24,860	0.66	B	25,460	0.68	B
2763	Warner Ave	Grand Ave to SR-55		SA	6D	21,480	0.38	A	22,780	0.40	A
2761	Sunflower Ave	Bristol St to Flower St		SA/CM	6D	20,580	0.37	A	21,680	0.39	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/CM	6D	18,010	0.32	A	19,310	0.34	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/CM	6D	23,410	0.42	A	24,910	0.44	A
1198	Browning Ave	Walnut Ave to I-5		Tus	2U	4,970	0.40	A	5,070	0.41	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	17,410	0.70	B	17,510	0.70	B
535	Bryan Ave	Red Hill Ave to Browning		Tus	4D	17,940	0.48	A	18,040	0.48	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	17,740	0.47	A	17,840	0.48	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	19,160	0.51	A	19,160	0.51	A
44	Edinger Ave	West of Newport Ave	b	Tus	6D	39,350	0.70	B	40,150	0.71	C
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	30,070	0.53	A	30,470	0.54	A
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	22,990	0.41	A	23,190	0.41	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4D	13,280	0.35	A	13,480	0.36	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	2D	9,430	0.52	A	9,430	0.52	A
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4D	9,550	0.25	A	9,550	0.25	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	18,570	0.50	A	18,570	0.50	A
672	Irvine Center Dr (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	27,370	0.49	A	27,570	0.49	A
674	Irvine Center Dr	Jamboree Rd to Harvard Ave	b	Tus	6D	29,220	0.52	A	30,020	0.53	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	EXISTING ARTERIAL SEGMENT CLASSIFICATIONS	EXISTING			EXISTING WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
2777	Mitchell Ave	Newport Ave to Red Hill Ave		Tus	2U	6,700	0.54	A	6,900	0.55	A
2775	Mitchell Ave	Red Hill Ave to Browning Ave		Tus	2U	3,890	0.31	A	3,890	0.31	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	35,980	0.64	B	36,380	0.65	B
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	30,640	0.54	A	31,140	0.55	A
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	28,840	0.51	A	29,240	0.52	A
49	Newport Ave	North of Sycamore Ave		Tus	6D	10,830	0.19	A	10,930	0.19	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	15,660	0.28	A	15,960	0.28	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	6,180	0.49	A	6,180	0.49	A
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	4,410	0.35	A	4,510	0.36	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	38,060	0.68	B	38,260	0.68	B
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	34,040	0.60	A	34,540	0.61	B
21	Red Hill Ave	Nisson Rd to I-5 SB Ramps		Tus	6D	35,210	0.63	B	35,810	0.64	B
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	25,840	0.46	A	26,540	0.47	A
22	Red Hill Ave	Mitchell Ave to Walnut Ave		Tus	6D	24,600	0.44	A	25,500	0.45	A
23	Red Hill Ave	Walnut Ave to Sycamore Ave		Tus	6D	25,250	0.45	A	25,750	0.46	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	29,310	0.52	A	30,410	0.54	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	19,100	0.34	A	20,100	0.36	A
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	19,050	0.34	A	20,750	0.37	A
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	23,120	0.35	A	24,820	0.38	A
1363	Sycamore Ave	SR-55 NB to Newport Ave		Tus	4D	9,160	0.24	A	9,160	0.24	A
1920	Sycamore Ave	Newport Ave to Red Hill Ave		Tus	2U	9,000	0.72	C	9,000	0.72	C
85	Tustin Ranch Rd	North of I-5		Tus	6D	44,040	0.78	C	44,240	0.79	C
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	40,520	0.72	C	41,820	0.74	C
2174	Tustin Ranch Rd	Walnut Ave to Valencia Ave		Tus	6D	30,260	0.54	A	31,760	0.56	A
2073	Tustin Ranch Rd	Valencia Ave to Warner Ave		Tus	6D	28,830	0.51	A	30,530	0.54	A
2071	Tustin Ranch Rd	Warner Ave to Park Ave		Tus	6D	21,130	0.38	A	22,630	0.40	A
2070	Tustin Ranch Rd	Park Ave to Barranca Pkwy		Tus	6D	25,410	0.45	A	26,610	0.47	A
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4D	8,550	0.23	A	9,550	0.25	A
632	Valencia Ave	Red Hill Ave to Armstrong Ave		Tus	4D	8,340	0.22	A	8,340	0.22	A
2844	Valencia Ave	Armstrong Ave to Kensington Park		Tus	4D	9,520	0.25	A	9,620	0.26	A
2842	Valencia Ave	Kensington Park to Tustin Ranch Rd		Tus	4D	11,760	0.31	A	11,860	0.32	A
587	Walnut Ave	East of Newport Ave		Tus	4U	17,220	0.69	B	17,520	0.70	B
589	Walnut Ave	East of Red Hill Ave		Tus	4D	16,200	0.43	A	16,300	0.43	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	19,450	0.52	A	19,750	0.53	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	18,670	0.50	A	18,870	0.50	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	19,660	0.35	A	21,160	0.38	A
F	Denotes segment operating at a deficient LOS										
a	Intersection within Irvine Planning Area 36--LOS E acceptable										
b	Orange County Congestion Management Program (CMP) locations										

Figure 3.14 – Existing With Update Daily Arterial ADT

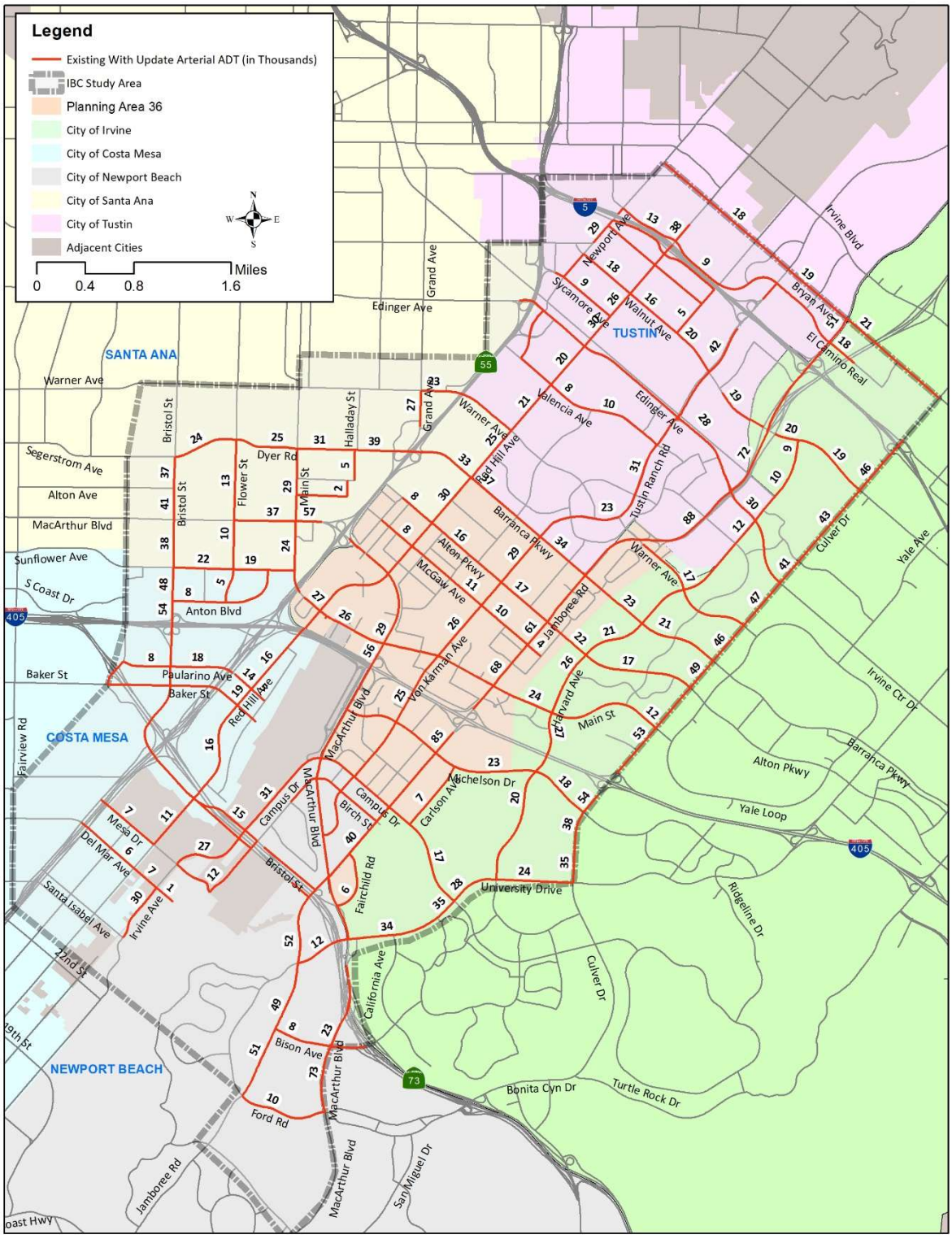
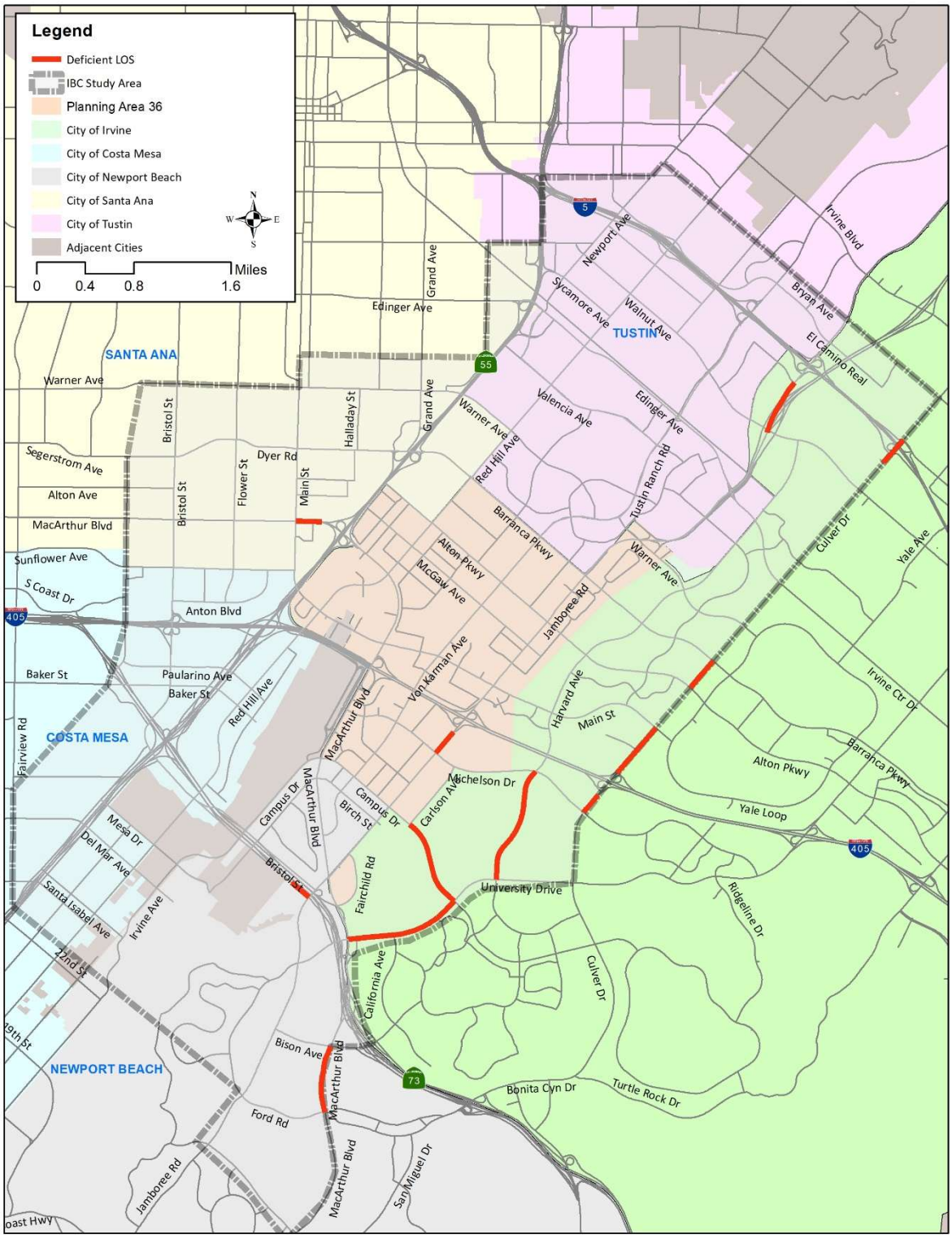


Figure 3.15 – Existing Arterial With Update Daily Deficiencies



3.10 Existing With Update Peak Hour Link Analysis

Table 3.9 presents the results of peak hour link analysis for the City of Irvine, indicating that all 13 arterial segments that are potentially deficient under daily conditions operate at an acceptable LOS in both peak hours, and hence no mitigation measures are recommended at this time for these facilities.

There are no segments within the City of Irvine that fail under peak hour Existing With Update conditions. For segments outside the City of Irvine, the jurisdiction's segment analysis guidelines are applied. As noted in **Chapter 2,** Costa Mesa, Newport Beach, Tustin and Santa Ana assess segment impacts at the intersection level, with the assumption that improvements at the intersections that feed into deficient arterial segments should eliminate deficiencies. One arterial segment in Santa Ana that is deficient under Existing With Update conditions: MacArthur Boulevard from Main Street to SR-55 SB, though based on City of Santa Ana criteria no additional analysis is required.

Table 3.9 – Existing With Update Peak Hour Link Analysis

ARTERIAL	SEGMENT LIMITS	EXISTING WITH UPDATE VOLUME					AM		PM	
		FACILITY TYPE	AM		PM		NB/EB	SB/WB	NB/EB	SB/WB
			NB/EB	SB/WB	NB/EB	SB/WB				
Campus Dr	Carlson Ave to University	4U	420	1,010	410	1,356	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	I-5 NB Ramps to I-5 SB Ramps	7D	970	1,770	2,330	1,725	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,380	0	3,170	0	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	Barranca Pkwy to Alton Pkwy	6D	900	1,670	1,910	1,467	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	Main St to San Leandro	6D	850	1,890	1,350	1,104	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	San Leandro to I-405 NB On-Ramp	6D	740	1,150	1,280	929	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	1,300	1,550	2,010	1,351	Acceptable	Acceptable	Acceptable	Acceptable
Harvard Ave	Michelson Dr to University Dr	2U	900	810	1,950	690	Acceptable	Acceptable	Acceptable	Acceptable
Jamboree Rd	Michelle Dr to Walnut Ave	5D	1,020	740	2,260	614	Acceptable	Acceptable	Acceptable	Acceptable
Jamboree Rd	I-405 On-Ramp to Michelson Dr	Maj8D+ 2AUX	1,690	1,220	2,820	1,056	Acceptable	Acceptable	Acceptable	Acceptable
University Dr	MacArthur Blvd to California Ave	6D	790	1,120	890	710	Acceptable	Acceptable	Acceptable	Acceptable
University Dr	California Ave to Mesa Rd	4D	740	1,010	1,360	1,356	Acceptable	Acceptable	Acceptable	Acceptable
University Dr	Mesa Rd to Campus Dr	4D	420	1,010	410	1,356	Acceptable	Acceptable	Acceptable	Acceptable

3.11 Existing With Update Peak Hour Intersection Analysis

Using the Existing With Update forecast volumes added to the existing counts, an ICU analysis was developed for study area intersections. The thresholds are consistent with existing conditions and the deficiencies are identified in red in **Table 3.10**. Detailed ICU worksheets are presented in **Appendix E**. **Figure 3.16** and **Figure 3.17** graphically display the AM and PM peak hour intersection deficiencies.

The Existing With Update analysis determined that four intersections within the study area would operate at a deficient LOS. Many of the deficiencies are temporary and are addressed as part of already planned circulation improvements within the study area. The deficient intersections are:

- #144: Jamboree Road at I-405 Southbound ramps (Irvine)* - AM peak hour LOS F with a 1.07
- #192 California Avenue at University Drive (Irvine)*—AM peak hour LOS E with a 0.91

- #156: Jamboree Road at Ford Road (Newport Beach)—AM peak hour LOS E with a 0.91
- #136: Jamboree Road at Barranca Parkway (Irvine/Tustin)*—PM peak hour LOS E with a 0.94
- #96: Tustin Ranch Road at Walnut (Tustin)*—PM peak hour LOS E with a 0.91

*Denotes theoretical significant impact in Existing With Update

Table 3.10 – Existing With Update Peak Hour Intersection LOS

ID	INTERSECTION	PA36 / CMP / SANTA ANA	JURISDICTION	EXISTING CONDITIONS				EXISTING WITH UPDATE			
				AM		PM		AM		PM	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
10	SR-55 Frontage Rd SB at Paularino Ave		CM	0.75	C	0.60	A	0.76	C	0.59	A
11	SR-55 Frontage Rd NB at Paularino Ave		CM	0.56	A	0.63	B	0.57	A	0.66	B
12	SR-55 Frontage Rd SB at Baker St		CM	0.63	B	0.83	D	0.64	B	0.83	D
13	SR-55 Frontage Rd NB at Baker St		CM	0.66	B	0.64	B	0.68	B	0.67	B
50	Red Hill Ave at Paularino Ave		CM	0.53	A	0.65	B	0.56	A	0.69	B
51	Red Hill Ave at Baker St		CM	0.43	A	0.58	A	0.45	A	0.61	B
52	Red Hill Ave at Bristol St		CM	0.44	A	0.51	A	0.44	A	0.53	A
541	Bear at Baker St		CM	0.60	A	0.72	C	0.60	A	0.71	C
542	Bear at Paularino Ave		CM	0.34	A	0.62	B	0.33	A	0.62	B
545	Bristol at Sunflower		CM	0.49	A	0.73	C	0.53	A	0.75	C
546	Bristol at Anton		CM	0.30	A	0.52	A	0.32	A	0.52	A
547	Bristol at Paularino Ave		CM	0.48	A	0.69	B	0.48	A	0.69	B
548	Bristol at Baker St		CM	0.53	A	0.69	B	0.54	A	0.69	B
549	Newport Blvd SB at Bristol		CM	0.12	A	0.47	A	0.13	A	0.48	A
550	Newport Blvd NB at Bristol		CM	0.32	A	0.22	A	0.32	A	0.22	A
715	Bristol at I-405 NB Off Ramp		CM	0.45	A	0.64	B	0.45	A	0.65	B
716	Bristol at I-405 SB Ramps		CM	0.39	A	0.54	A	0.38	A	0.54	A
717	Bear at SR-73 SB Ramps		CM	0.41	A	0.70	B	0.41	A	0.70	B
720	Flower at MacArthur Blvd		CM	0.57	A	0.75	C	0.59	A	0.78	C
721	Flower at Sunflower		CM	0.43	A	0.49	A	0.45	A	0.53	A
722	Anton at Sunflower		CM	0.37	A	0.38	A	0.39	A	0.40	A
726	Main St at Sunflower		CM	0.55	A	0.68	B	0.59	A	0.72	C
735	Newport Blvd NB at Del mar		CM	0.74	C	0.43	A	0.76	C	0.43	A
736	Newport Blvd SB at Fair/Del Mar		CM	0.36	A	0.45	A	0.37	A	0.45	A
737	Newport Blvd NB at Mesa Rd		CM	0.32	A	0.37	A	0.33	A	0.39	A
738	Newport Blvd SB at Mesa Rd		CM	0.23	A	0.64	B	0.24	A	0.65	B
32	Daimler St at McGaw Ave		Irv	0.15	A	0.16	A	0.18	A	0.19	A
45	Red Hill Ave at McGaw Ave	a	Irv	0.40	A	0.63	B	0.48	A	0.71	C
47	Red Hill Ave at MacArthur Blvd	a	Irv	0.62	B	0.74	C	0.73	C	0.80	C
48	Red Hill Ave at Sky Park N	a	Irv	0.35	A	0.56	A	0.39	A	0.58	A
49	Red Hill Ave at Main St	a	Irv	0.59	A	0.83	D	0.62	B	0.87	D
66	Gillette Ave at Alton Pkwy	a	Irv	0.37	A	0.54	A	0.40	A	0.57	A
67	Gillette Ave at McGaw Ave	a	Irv	0.29	A	0.40	A	0.36	A	0.48	A
70	Gillette Ave at Main Street	a	Irv	0.32	A	0.63	B	0.36	A	0.67	B
73	Armstrong Ave and Alton Pkwy West	a	Irv	0.24	A	0.36	A	0.27	A	0.40	A
74	Armstrong Ave	a	Irv	0.31	A	0.34	A	0.36	A	0.38	A
77	MacArthur Blvd at Sky Park East	a	Irv	0.30	A	0.40	A	0.33	A	0.42	A
78	MacArthur Blvd at Main St	a	Irv	0.55	A	0.75	C	0.64	B	0.84	D
79	MacArthur Blvd at I-405 NB Ramps	a	Irv	0.64	B	0.58	A	0.69	B	0.63	B
80	MacArthur Blvd at I-405 SB Ramps	a	Irv	0.60	A	0.65	B	0.70	B	0.74	C
82	MacArthur Blvd at Michelson Dr	a	Irv	0.63	B	0.70	B	0.69	B	0.83	D
83	MacArthur Blvd at Douglas Ave	a	Irv	0.30	A	0.38	A	0.43	A	0.56	A
87	Dupont Dr at Michelson Dr	a	Irv	0.36	A	0.41	A	0.45	A	0.50	A
98	Von Karman Ave at Alton Pkwy	a	Irv	0.74	C	0.80	C	0.80	C	0.85	D
99	Von Karman Ave at McGaw Ave	a	Irv	0.62	B	0.64	B	0.72	C	0.75	C
100	Von Karman Ave at Main St	a	Irv	0.60	A	0.64	B	0.68	B	0.72	C

ID	INTERSECTION	PA36 / CMP / SANTA ANA	JURISDICTION	EXISTING CONDITIONS				EXISTING WITH UPDATE			
				AM		PM		AM		PM	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
101	Von Karman Ave at Morse Ave	a	Irv	0.56	A	0.54	A	0.61	B	0.60	A
102	Von Karman Ave at Michelson Dr	a	Irv	0.52	A	0.65	B	0.60	A	0.74	C
103	Von Karman Ave at Dupont Dr	a	Irv	0.40	A	0.48	A	0.55	A	0.61	B
104	Von Karman Ave at Martin	a	Irv	0.35	A	0.49	A	0.40	A	0.56	A
115	Millikan Ave at Alton Pkwy	a	Irv	0.34	A	0.57	A	0.39	A	0.61	B
116	Cartwright Rd at Main St	a	Irv	0.35	A	0.53	A	0.48	A	0.63	B
119	Teller Ave at Michelson Dr	a	Irv	0.42	A	0.41	A	0.50	A	0.46	A
128	Jamboree Rd at I-5 NB Ramps	b	Irv	0.75	C	0.73	C	0.76	C	0.74	C
129	Jamboree Rd at I-5 SB Ramps	b	Irv	0.69	B	0.55	A	0.71	C	0.56	A
130	Jamboree Rd at Michelle Dr		Irv	0.58	A	0.64	B	0.59	A	0.65	B
131	Jamboree Rd SB at Walnut Ave		Irv	0.50	A	0.52	A	0.55	A	0.53	A
132	Jamboree Rd NB at Walnut Ave		Irv	0.34	A	0.53	A	0.35	A	0.54	A
135	Jamboree Road NB Ramps at Warner Ave		Irv	0.33	A	0.67	B	0.36	A	0.72	C
137	Jamboree Rd at Beckman Ave	a	Irv	0.57	A	0.68	B	0.62	B	0.74	C
138	Jamboree Rd at Alton Pkwy	a	Irv	0.66	B	0.80	C	0.68	B	0.83	D
139	Jamboree Rd at McGaw Ave	a	Irv	0.58	A	0.70	B	0.66	B	0.73	C
140	Jamboree Rd at Kelvin Ave	a	Irv	0.59	A	0.64	B	0.68	B	0.72	C
141	Jamboree Rd at Main St	a	Irv	0.74	C	0.84	D	0.78	C	0.90	D
143	Jamboree Rd at I-405 NB Ramps	a,b	Irv	0.72	C	0.82	D	0.77	C	0.89	D
144	Jamboree Rd at I-405 SB Ramps*	a,b	Irv	0.91	E	0.91	E	1.07	F	0.99	E
145	Jamboree Rd at Michelson Dr	a	Irv	0.60	A	0.81	D	0.76	C	0.93	E
146	Jamboree Rd at Dupont Rd	a	Irv	0.56	A	0.54	A	0.69	B	0.64	B
164	Construction S at Barranca Pkwy	a	Irv	0.31	A	0.50	A	0.39	A	0.58	A
168	Murphy Ave at Alton Pkwy	a	Irv	0.33	A	0.56	A	0.37	A	0.64	B
170	Union at Main St	a	Irv	0.33	A	0.56	A	0.36	A	0.58	A
171	Veneto at Main St		Irv	0.35	A	0.51	A	0.37	A	0.53	A
174	Carlson Ave at Michelson Dr		Irv	0.46	A	0.49	A	0.60	A	0.70	B
175	Carlson Ave at Campus Dr		Irv	0.38	A	0.57	A	0.41	A	0.58	A
180	Harvard Ave at Walnut Ave		Irv	0.35	A	0.50	A	0.36	A	0.50	A
183	Harvard Ave at Warner Ave		Irv	0.48	A	0.63	B	0.51	A	0.62	B
184	Harvard Ave at Barranca Pkwy		Irv	0.58	A	0.63	B	0.63	B	0.65	B
185	Harvard Ave at Alton Pkwy		Irv	0.64	B	0.72	C	0.68	B	0.75	C
186	Harvard Ave at Main St		Irv	0.58	A	0.69	B	0.65	B	0.73	C
187	Harvard Ave at Coronado		Irv	0.56	A	0.59	A	0.61	B	0.63	B
188	Harvard Ave Michelson Dr		Irv	0.58	A	0.85	D	0.72	C	0.90	D
189	Harvard Ave University Dr		Irv	0.77	C	0.73	C	0.78	C	0.75	C
190	University Dr at Campus Dr		Irv	0.80	C	0.74	C	0.82	D	0.75	C
191	Mesa Rd at University Dr		Irv	0.62	B	0.71	C	0.63	B	0.72	C
192	California Ave at University Dr*		Irv	0.90	D	0.73	C	0.91	E	0.73	C
196	Hearthstone Blvd at Irvine Center Dr		Irv	0.38	A	0.47	A	0.38	A	0.47	A
198	Paseo Westpark at Warner Ave		Irv	0.34	A	0.36	A	0.37	A	0.37	A
199	Paseo Westpark at Barranca Pkwy		Irv	0.37	A	0.47	A	0.41	A	0.49	A
200	Paseo Westpark at Alton Pkwy		Irv	0.42	A	0.53	A	0.43	A	0.54	A
201	Paseo Westpark at Main St		Irv	0.56	A	0.47	A	0.58	A	0.49	A
221	Culver Dr at Bryan Ave		Irv	0.67	B	0.63	B	0.68	B	0.60	B
222	Culver Dr at Trabuco Rd		Irv	0.63	B	0.72	C	0.64	B	0.73	C
223	Culver Dr at I-5 SB Ramps		Irv	0.59	A	0.60	A	0.61	B	0.60	A
224	Culver Dr at Walnut Ave		Irv	0.65	B	0.75	C	0.68	B	0.77	C
225	Culver Dr at Deerfield Dr		Irv	0.70	B	0.71	C	0.70	C	0.72	C
226	Culver Dr at Irvine Center Dr		Irv	0.64	B	0.69	B	0.65	B	0.69	B
227	Culver Dr at Warner Ave		Irv	0.66	B	0.65	B	0.71	C	0.69	B
228	Culver Dr at Barranca Pkwy		Irv	0.66	B	0.78	C	0.70	B	0.82	D
229	Culver Dr at Alton Pkwy		Irv	0.67	B	0.81	D	0.71	C	0.85	D
230	Culver Dr at Main St		Irv	0.66	B	0.64	B	0.67	B	0.67	B

ID	INTERSECTION	PA36 / CMP / SANTA ANA	JURISDICTION	EXISTING CONDITIONS				EXISTING WITH UPDATE			
				AM		PM		AM		PM	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
231	Culver Dr at San Leandro		Irv	0.71	C	0.55	A	0.71	C	0.56	A
232	Culver Dr at I-405 NB Ramps		Irv	0.53	A	0.69	B	0.56	A	0.70	B
233	Culver Dr at I-405 SB Ramps		Irv	0.61	B	0.64	B	0.63	B	0.65	B
234	Culver Dr at Michelson Dr		Irv	0.55	A	0.74	C	0.63	B	0.75	C
235	Culver Dr at University Dr		Irv	0.70	B	0.82	D	0.71	C	0.82	D
337	Von Karman Ave at Quartz	a	Irv	0.47	A	0.53	A	0.51	A	0.59	A
439	Bixby at Michelson Dr		Irv	0.39	A	0.49	A	0.44	A	0.59	A
440	Siglo at Main St		Irv	0.33	A	0.49	A	0.36	A	0.54	A
472	Obsidian at Michelson Dr	a	Irv	0.45	A	0.49	A	0.45	A	0.55	A
84	MacArthur Blvd at Campus Dr		Irv/NB	0.44	A	0.74	C	0.51	A	0.80	C
105	Von Karman Ave at Campus Dr		Irv/NB	0.53	A	0.63	B	0.62	B	0.73	C
121	Teller Ave at Campus Dr		Irv/NB	0.18	A	0.34	A	0.32	A	0.39	A
147	Jamboree Rd at Campus Dr		Irv/NB	0.60	A	0.58	A	0.63	B	0.64	B
149	Jamboree Rd at Fairchild Rd		Irv/NB	0.53	A	0.64	B	0.55	A	0.66	B
150	Jamboree Rd at MacArthur Blvd	b	Irv/NB	0.57	A	0.66	B	0.60	A	0.70	B
176	Fairchild Ave at MacArthur Blvd		Irv/NB	0.69	B	0.71	C	0.71	C	0.75	C
193	MacArthur Blvd NB at University Dr		Irv/NB	0.54	A	0.43	A	0.55	A	0.45	A
194	MacArthur Blvd SB at University Dr		Irv/NB	0.47	A	0.40	A	0.47	A	0.41	A
195	SR-73 SB Ramps at University Dr		Irv/NB	0.72	C	0.45	A	0.74	C	0.47	A
9	SR-55 NB Ramps at MacArthur Blvd		Irv/SA	0.80	C	0.57	A	0.85	D	0.60	A
31	Daimler St at Alton Pkwy		Irv/SA	0.26	A	0.37	A	0.31	A	0.43	A
43	Red Hill Ave at Deere Ave		Irv/SA	0.38	A	0.54	A	0.44	A	0.60	A
44	Red Hill Ave at Alton Pkwy		Irv/SA	0.44	A	0.68	B	0.55	A	0.73	C
42	Red Hill Ave at Barranca Pkwy/Dyer Rd		Irv/SA/Tus	0.50	A	0.61	B	0.57	A	0.63	B
71	Armstrong Ave at Barranca Pkwy		Irv/Tus	0.36	A	0.60	A	0.43	A	0.69	B
97	Von Karman Ave/Tustin Ranch Rd at Barranca		Irv/Tus	0.73	C	0.71	C	0.80	C	0.74	C
112	Myford Rd at Michelle Dr		Irv/Tus	0.18	A	0.31	A	0.18	A	0.30	A
113	Myford Rd at Walnut Ave		Irv/Tus	0.28	A	0.44	A	0.29	A	0.44	A
114	Millikan/District Way at Barranca Pkwy		Irv/Tus	0.41	A	0.55	A	0.46	A	0.59	A
126	Jamboree Rd at Bryan Ave		Irv/Tus	0.64	B	0.68	B	0.64	B	0.69	B
127	Jamboree Rd at El Camino Real		Irv/Tus	0.70	B	0.73	C	0.71	C	0.72	C
134	Loop Rd/Park Ave at Warner Ave		Irv/Tus	0.49	A	0.70	B	0.50	A	0.73	C
136	Jamboree Rd at Barranca Pkwy*		Irv/Tus	0.71	C	0.90	D	0.73	C	0.94	E
181	Harvard Ave at Edinger Ave/Irvine Center		Irv/Tus	0.44	A	0.52	A	0.45	A	0.53	A
182	Harvard Ave at Paseo Westpark/Moffett		Irv/Tus	0.30	A	0.32	A	0.32	A	0.36	A
441	Loop Rd at Jamboree Rd SB Ramps		Irv/Tus	0.30	A	0.24	A	0.31	A	0.24	A
61	Campus Dr at Airport Way		NB	0.32	A	0.41	A	0.47	A	0.54	A
62	Campus Dr at Bristol St NB		NB	0.01	A	0.60	A	0.05	A	0.64	B
63	Campus Dr at Bristol St SB		NB	0.61	B	0.22	A	0.62	B	0.22	A
64	Birch St at Bristol St NB		NB	0.79	C	0.49	A	0.80	C	0.49	A
65	Birch St at Bristol St SB		NB	0.45	A	0.87	D	0.46	A	0.87	D
85	MacArthur Blvd at Birch St		NB	0.32	A	0.46	A	0.39	A	0.50	A
106	Von Karman Ave at Birch St		NB	0.29	A	0.36	A	0.35	A	0.39	A
107	Von Karman Ave at MacArthur Blvd		NB	0.27	A	0.48	A	0.29	A	0.50	A
148	Jamboree Rd at Birch St		NB	0.50	A	0.50	A	0.49	A	0.52	A
151	Jamboree Rd at Bristol St NB		NB	0.37	A	0.45	A	0.38	A	0.47	A
153	Jamboree Rd at Bristol St SB		NB	0.68	B	0.64	B	0.68	B	0.65	B
154	Jamboree Rd at Eastbluff Dr		NB	0.62	B	0.57	A	0.63	B	0.57	A
155	Jamboree Rd at Bison Ave		NB	0.47	A	0.48	A	0.46	A	0.49	A
156	Jamboree Rd at Ford Rd*		NB	0.91	E	0.78	C	0.91	E	0.78	C
178	MacArthur Blvd at Bison Ave		NB	0.62	B	0.59	A	0.62	B	0.59	A
179	MacArthur Blvd at Ford Rd		NB	0.70	B	0.76	C	0.71	C	0.77	C
741	Jamboree at San Joaquin		NB	0.85	D	0.03	A	0.85	D	0.05	A
742	MacArthur at San Joaquin		NB	0.56	A	0.89	D	0.55	A	0.90	D

ID	INTERSECTION	PA36 / CMP / SANTA ANA	JURISDICTION	EXISTING CONDITIONS				EXISTING WITH UPDATE			
				AM		PM		AM		PM	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
733	Irvine at Mesa Rd		NB/OC	0.52	A	0.77	C	0.55	A	0.77	C
734	Irvine at University/Del Mar		NB/OC	0.64	B	0.79	C	0.65	B	0.79	C
4	SR-55 SB Ramps at Edinger Ave	b	SA	0.56	A	0.56	A	0.58	A	0.56	A
5	Hotel Terrace Dr at Dyer Rd		SA	0.58	A	0.72	C	0.59	A	0.74	C
6	Grand Ave at Dyer Rd		SA	0.60	A	0.78	C	0.65	B	0.79	C
7	SR-55 NB Ramps at Dyer Rd		SA	0.57	A	0.61	B	0.62	B	0.65	B
8	SR-55 SB Ramps at MacArthur Blvd	c	SA	0.63	B	0.54	A	0.63	B	0.54	A
29	Pullman St at Barranca Pkwy		SA	0.47	A	0.73	C	0.52	A	0.78	C
543	Bristol at Segerstrom		SA	0.74	C	0.81	D	0.75	C	0.81	D
544	Bristol St at MacArthur Blvd		SA	0.70	B	0.76	C	0.71	C	0.77	C
718	Bear at SR-73 NB Ramps		SA	0.38	A	0.60	A	0.39	A	0.60	A
719	Flower at Segerstrom		SA	0.66	B	0.85	D	0.68	B	0.89	D
723	Main St at Segerstrom		SA	0.73	C	0.87	D	0.76	C	0.89	D
724	Main St at Alton Ave		SA	0.38	A	0.50	A	0.40	A	0.51	A
725	Main and MacArthur (w/o SR-55)	c	SA	0.67	B	0.73	C	0.69	B	0.75	C
727	Halladay at Dyer Rd		SA	0.55	A	0.78	C	0.57	A	0.80	C
728	Halladay E at Alton Pkwy		SA	0.19	A	0.32	A	0.22	A	0.35	A
729	Halladay W at Alton Pkwy		SA	0.19	A	0.30	A	0.22	A	0.32	A
730	Grand Ave at Warner		SA	0.52	A	0.69	B	0.55	A	0.73	C
731	SR-55 SB Ramps at Grand Ave		SA	0.50	A	0.55	A	0.49	A	0.57	A
3	Newport Ave at Edinger Ave		Tus	0.50	A	0.44	A	0.56	A	0.44	A
14	Walnut Ave at McFadden Ave		Tus	0.40	A	0.44	A	0.42	A	0.44	A
18	Newport Ave at Bryan Ave		Tus	0.43	A	0.59	A	0.44	A	0.59	A
19	Newport Ave at Main St		Tus	0.55	A	0.60	A	0.56	A	0.60	A
20	Newport Ave at El Camino Real		Tus	0.71	C	0.62	B	0.71	C	0.64	B
21	Newport Ave at I-5 NB Ramps		Tus	0.61	B	0.61	B	0.62	B	0.61	B
22	Newport Ave at I-5 SB Ramp/Nisson Rd		Tus	0.53	A	0.60	A	0.53	A	0.62	B
23	Newport Ave at McFadden St		Tus	0.59	A	0.44	A	0.60	A	0.44	A
24	Newport Ave at Walnut Ave		Tus	0.56	A	0.66	B	0.58	A	0.67	B
25	Newport Ave at Sycamore Ave		Tus	0.41	A	0.43	A	0.41	A	0.44	A
27	Del Amo Ave at Edinger Ave		Tus	0.33	A	0.43	A	0.34	A	0.41	A
35	Red Hill Ave at Bryan Ave		Tus	0.56	A	0.74	C	0.56	A	0.74	C
36	Red Hill Ave at El Camino Real		Tus	0.58	A	0.58	A	0.59	A	0.59	A
*37	Red Hill Ave at Nisson Rd		Tus	0.55	A	0.62	B	0.54	A	0.63	B
38	Red Hill Ave at Walnut Ave		Tus	0.57	A	0.75	C	0.59	A	0.77	C
39	Red Hill Ave at Sycamore Ave		Tus	0.49	A	0.52	A	0.51	A	0.53	A
40	Red Hill Ave at Edinger Ave		Tus	0.54	A	0.74	C	0.54	A	0.76	C
55	Browning Ave at Bryan Ave		Tus	0.29	A	0.48	A	0.29	A	0.48	A
56	Browning Ave at El Camino Real		Tus	0.28	A	0.50	A	0.27	A	0.50	A
58	Browning Ave at Walnut Ave		Tus	0.38	A	0.60	A	0.39	A	0.61	B
92	Tustin Ranch Rd at Bryan Ave		Tus	0.61	B	0.69	B	0.62	B	0.70	B
93	Tustin Ranch Rd at El Camino Real		Tus	0.70	B	0.68	B	0.69	B	0.68	B
94	Tustin Ranch Rd at I-5 NB Ramps		Tus	0.54	A	0.59	A	0.55	A	0.59	A
95	Tustin Ranch Rd at I-5 SB Ramps		Tus	0.62	B	0.67	B	0.63	B	0.68	B
96	Tustin Ranch Rd at Walnut Ave*		Tus	0.59	A	0.90	D	0.63	B	0.91	E
109	Myford Rd at Bryan Ave		Tus	0.34	A	0.46	A	0.34	A	0.48	A
110	Myford Rd at El Camino Real		Tus	0.23	A	0.48	A	0.23	A	0.48	A
111	Franklin Ave at Walnut Ave		Tus	0.39	A	0.75	C	0.39	A	0.75	C
133	Jamboree Rd at Edinger Ave	b	Tus	0.40	A	0.52	A	0.44	A	0.53	A
445	Tustin Ranch Rd at Warner Ave N		Tus	0.44	A	0.59	A	0.46	A	0.60	A
446	Tustin Ranch Rd at Warner Ave S		Tus	0.44	A	0.59	A	0.48	A	0.60	A
447	Armstrong Ave/Severyns Rd Valencia Ave		Tus	0.31	A	0.28	A	0.31	A	0.29	A
448	Armstrong Avenue at Warner Avenue		Tus	0.19	A	0.28	A	0.21	A	0.31	A
453	Red Hill Ave at Valencia Ave		Tus	0.48	A	0.49	A	0.51	A	0.52	A

ID	INTERSECTION	PA36 / CMP / SANTA ANA	JURISDICTION	EXISTING CONDITIONS				EXISTING WITH UPDATE			
				AM		PM		AM		PM	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
454	Tustin Ranch Rd at Valencia Ave		Tus	0.49	A	0.56	A	0.53	A	0.59	A
455	E Connector/Jamboree Plaza at Edinger Ave		Tus	Analysis not done for Existing Conditions							
456	N Loop Rd at Valencia Ave		Tus								
457	N Loop Rd at Moffett Dr		Tus								
478	Red Hill Ave at I-5 NB Ramps		Tus	0.58	A	0.61	B	0.57	A	0.62	B
479	Red Hill Ave at I-5 SB Ramps		Tus	0.62	B	0.63	B	0.63	B	0.62	B
480	Tustin Ranch Rd/Connector at Edinger Ave		Tus	Analysis not done for Existing Conditions							
732	SR-55 NB Ramp at Newport Ave		Tus	0.49	A	0.59	A	0.50	A	0.59	A
739	Newport Ave at Mitchell Ave		Tus	0.50	A	0.54	A	0.51	A	0.54	A
740	Red Hill Ave at Mitchell Ave		Tus	0.40	A	0.56	A	0.42	A	0.59	A
743	Newport Ave at Valencia		Tus	0.18	A	0.32	A	0.18	A	0.32	A
745	Tustin Ranch Rd at Park Ave		Tus	0.49	A	0.62	B	0.53	A	0.65	B
746	Kensington Park Dr at Edinger Ave		Tus	0.34	A	0.43	A	0.34	A	0.44	A
747	Kensington Park Dr at Valencia Ave		Tus	0.26	A	0.24	A	0.26	A	0.24	A
748	Armstrong Ave at A St		Tus	Analysis not done for Existing Conditions							
749	Park Ave at A St		Tus								
750	Legacy Rd at Warner Ave		Tus								
751	Tustin Ranch Rd at Legacy Rd		Tus								
752	Legacy Rd at N Loop Rd		Tus								
753	Tustin Ranch Rd at Edinger Ave Connector		Tus								
28	Pullman St at Warner Ave		Tus/SA	0.32	A	0.44	A	0.35	A	0.45	A
41	Red Hill Ave at Warner Ave		Tus/SA	0.45	A	0.62	B	0.48	A	0.65	B
754	Red Hill Avenue at Carnegie Avenue		Tus/SA	0.34	A	0.52	A	0.38	A	0.55	A
F	Denotes intersection operating at a deficient LOS										
a	Intersection within Irvine Planning Area 36 – LOS E Acceptable										
b	Orange County Congestion Management Program (CMP) Locations										
c	Intersections within City of Santa Ana – LOS E Deficiency Acceptable										

*Denotes theoretical significant impact

Figure 3.16 – Existing With Update Intersection AM Peak Hour Deficiencies

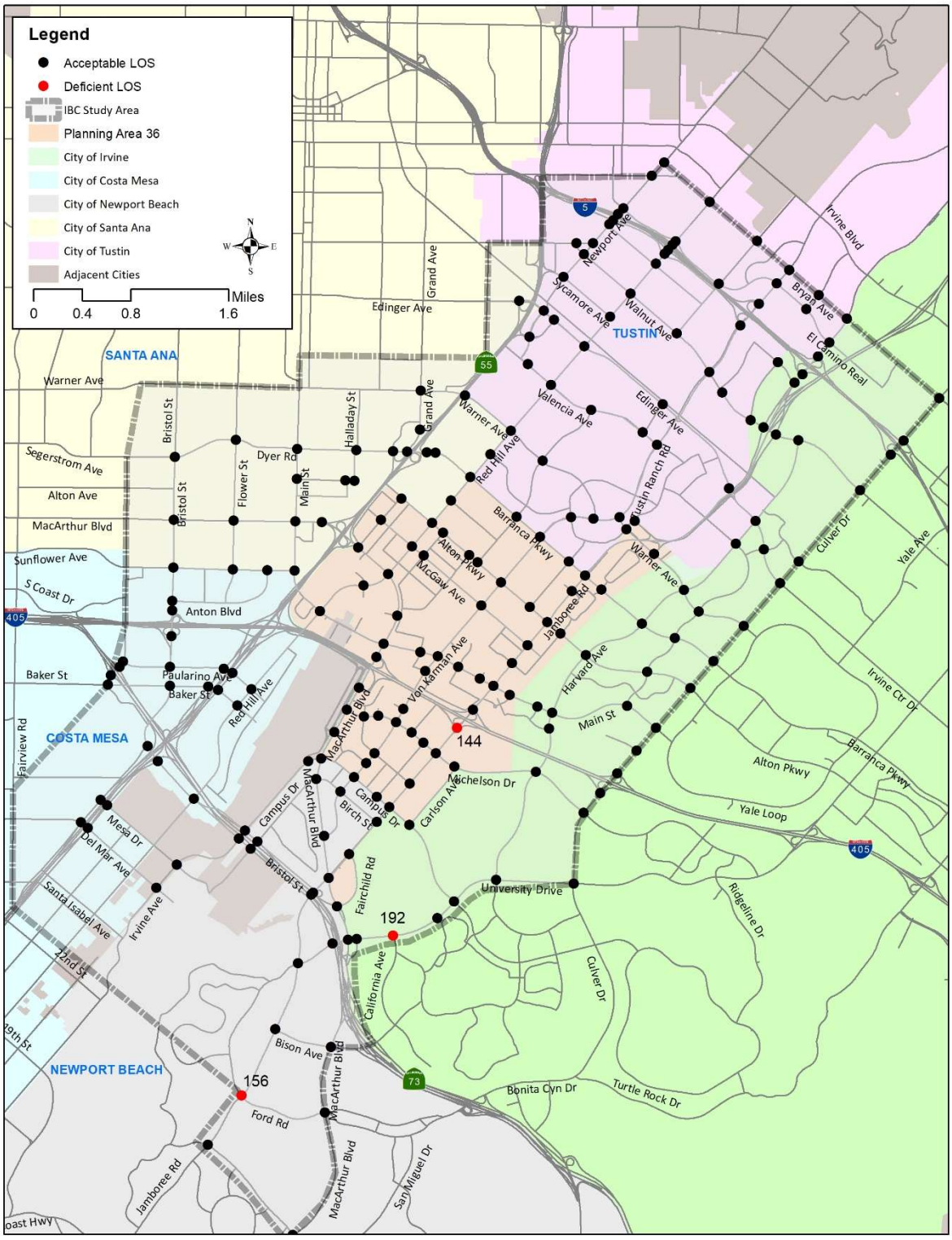
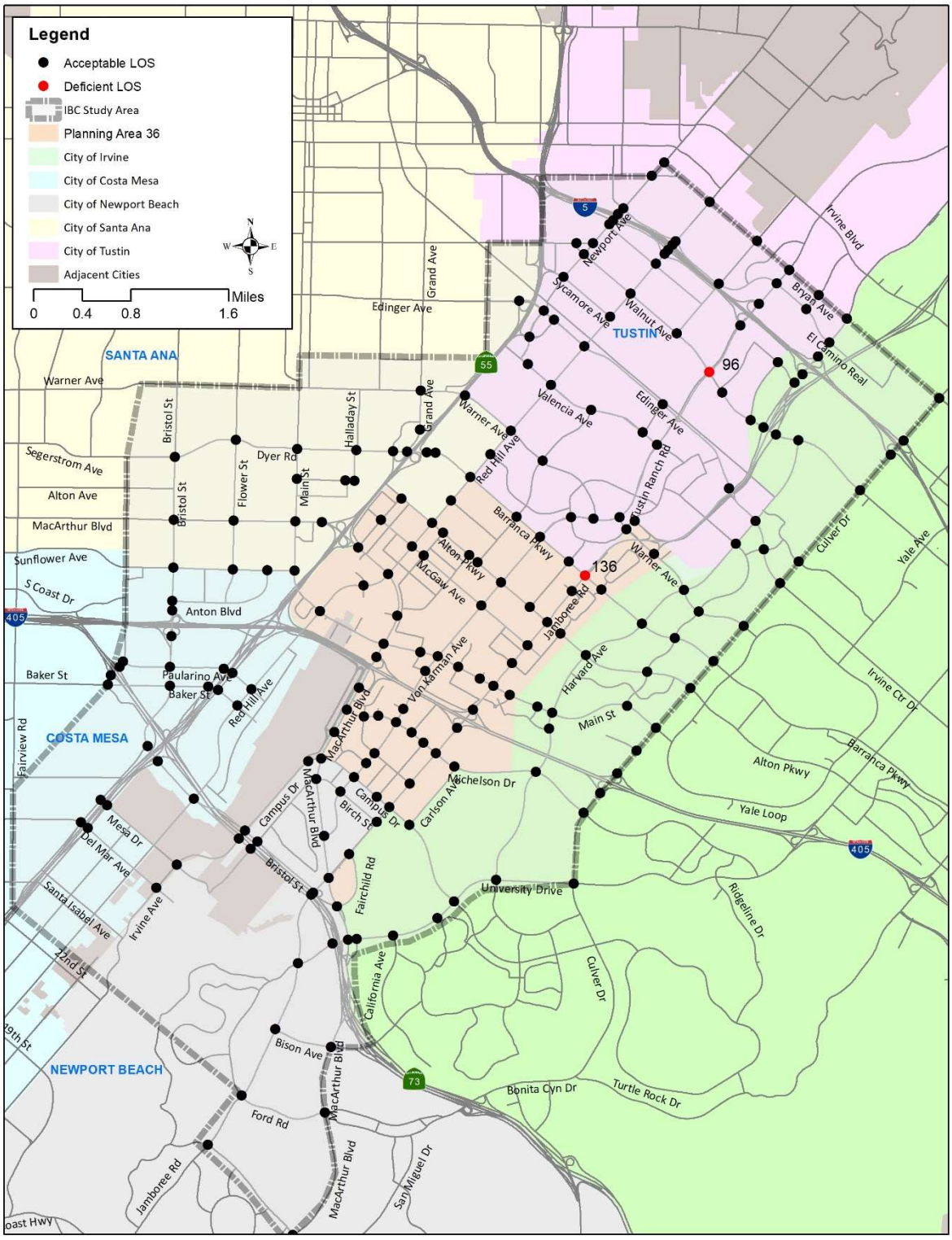


Figure 3.17– Existing With Update Intersection PM Peak Hour Deficiencies



3.12 Existing With Update Peak Hour Freeway Mainline Analysis

In order to forecast the trips to be added by the proposed plan update, the delta between the ITAM 2015 Existing and Existing With Update forecast volumes was added to the existing counts from PeMS. The volumes are similar to the Existing scenario, with some increases and decreases representing the redistribution of trips with the increased residential land use under the IBC Vision Plan. **Table 3.11** displays the volume, density, and LOS for the freeway mainlines under the Existing With Update conditions, while **Appendix G** presents the HCS freeway mainline analysis worksheets.

In the AM peak, 27 of the 60 freeway mainline segments are deficient and in the PM peak 22 segments are deficient. When compared to the Baseline conditions, five additional segments in the AM and six additional segments in the PM become deficient under the Existing With Update conditions:

AM Peak Hour:

- I-5 Southbound North of SR-55
- I-405 Southbound between Jamboree Road and Culver Drive
- SR-55 Northbound between I-405 and MacArthur Boulevard
- SR-73 Northbound between University Drive and Jamboree Road
- SR-73 Southbound between I-405 and Bear Street

PM Peak Hour:

- I-405 Southbound between Jamboree Road and Culver Drive
- I-405 Northbound between SR-73 and Bristol Street
- SR-55 Northbound between I-405 and MacArthur Boulevard
- SR-55 Northbound North of I-5
- SR-73 Northbound between Jamboree Road and University Drive
- SR-73 Southbound between I-405 and Bear Street

The following freeway segments are forecast to operate at a deficient LOS under the Existing With Update scenario:

AM Peak Hour:

I-5	**Northbound**	• Between Jamboree Road and Tustin Ranch Road • Between Red Hill Avenue and Newport Avenue • North of SR-55
	Southbound	• North of SR-55 • Between Red Hill Avenue and Tustin Ranch Road • Between Tustin Ranch Road and Jamboree Road
I-405	**Northbound**	• Between Culver Drive and Jamboree Road • Between Jamboree Road and MacArthur Boulevard • Between MacArthur Boulevard and SR-55
	Southbound	• Between Jamboree and Culver Drive • Between SR-55 and MacArthur Boulevard • Between Bristol Street and SR-55 • Between SR-73 and Bristol Street
SR-55	**Northbound**	• Between I-405 and MacArthur Boulevard • Between MacArthur Boulevard and Dyer Road • Between Dyer Road and Edinger Avenue • Between Edinger Avenue and McFadden Street/Sycamore Avenue

	Southbound	• Between MacArthur Boulevard and I-405 • Between Dyer Road and MacArthur Boulevard • Between Edinger Avenue and Dyer Road • Between McFadden Street/Sycamore Avenue and Edinger Avenue • North of I-5
SR-73	**Northbound**	• Between University Drive and Jamboree Road
	Southbound	• Between I-405 and Bear Street • Between Birch Street and Jamboree Road • Between Campus Drive and Birch Street • Between SR-55 and Campus Drive

PM Peak Hour:

I-5	**Southbound**	• Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road • North of SR-55
I-405	**Northbound**	• Between Jamboree Road and MacArthur Boulevard • Between MacArthur Boulevard and SR-55 • Between SR-73 and Bristol Street
	Southbound	• Between Jamboree Road and Culver Drive
SR-55	**Northbound**	• Between Dyer Road and Edinger Avenue • Between McFadden Street/Sycamore Avenue and I-5 • Between I-405 and MacArthur Boulevard • North of I-5
	Southbound	• Between SR-73 and Baker Street • Between MacArthur Boulevard and Dyer Road • Between Edinger Avenue and Dyer Road • Between McFadden Street/Sycamore Avenue and Edinger Avenue
SR-73	**Northbound**	• Between Birch Street and Campus Drive • Between SR-55 and Bear Street • Between University Drive and Jamboree Road
	Southbound	• Between I-405 and Bear Street • Between Birch Street and Campus Drive • Between SR-55 and Bear Street • Between Birch Street and Jamboree Road

Table 3.11 – Existing With Update Peak Hour Freeway Mainline LOS

LOCATION		FREEWAY LANES			EXISTING CONDITIONS						EXISTING WITH UPDATE									
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
		DIRECTION	LANES	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM Density	HCM LOS	VOLUME	V/C	LOS	HCM Density	HCM LOS
I-5	Culver Dr to Jamboree Rd	NB	5	10,000	8,874	0.89	D	7,241	0.72	D	8,880	0.89	D			7,263	0.73	D		
		SB	5	10,000	7,866	0.79	D	8,082	0.81	D	7,908	0.79	D			8,056	0.81	D		
	Jamboree Rd to Tustin Ranch Rd	NB	5	10,000	9,328	0.93	E	8,282	0.83	D	9,340	0.78	D			8,316	0.69	C		
		SB	5	10,000	9,896	0.99	E	10,549	1.05	F	9,958	1.00	E			10,558	1.06	F		
	Tustin Ranch Rd to Red Hill Ave	NB	5	10,000	8,672	0.87	D	7,759	0.78	D	8,748	0.87	D			7,811	0.78	D		
		SB	5	10,000	9,987	1.00	E	10,622	1.06	F	10,136	1.01	F			10,617	1.06	F		
	Red Hill Ave to Newport Ave	NB	5	10,000	9,964	1.00	E	8,495	0.85	D	10,038	1.00	E			8,560	0.86	D		
		SB	6	12,000	7,527	0.63	C	7,814	0.65	C	7,664	0.64	C			7,803	0.65	C		
	Newport Ave to SR-55	NB	6	12,000	10,572	0.88	D	9,185	0.77	D	10,627	0.89	D			9,222	0.77	D		
		SB	4	8,000	6,562	0.82	D	6,988	0.87	D	6,644	0.83	D			6,964	0.87	D		
	North of SR-55	NB	5	10,000	10,702	1.07	F	8,345	0.83	D	10,721	1.07	F			8,504	0.85	D		
		SB	5	10,000	8,920	0.89	D	9,736	0.97	E	8,965	0.9	E			9,741	0.97	E		

	LOCATION	FREEWAY LANES			EXISTING CONDITIONS						EXISTING WITH UPDATE								
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
		DIRECTION	LANES	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM Density	HCM LOS	VOLUME	V/C	LOS	HCM Density	HCM LOS
I-405	Culver Dr to Jamboree Rd	NB	5	10,000	10,661	1.07	F	8,385	0.84	D	10,784	1.08	F			8,439	0.84	D		
		SB	6	12,000	10,171	0.85	D	9,562	0.80	D	10,226	1.28	F			9,614	1.20	F		
	Jamboree Rd to MacArthur Blvd	NB	5	10,000	9,864	0.99	E	8,983	0.90	E	9,972	1.00	E			9,127	0.91	E		
		SB	6	12,000	7,756	0.65	C	6,954	0.58	C	7,982	0.67	C			7,232	0.60	C		
	MacArthur Blvd to SR-55	NB	6	12,000	11,431	0.95	E	11,798	0.98	E	11,585	0.97	E			12,062	1.01	F		
		SB	6	12,000	12,244	1.02	F	10,228	0.85	D	12,547	1.05	F			10,439	0.87	D		
	SR-55 to Bristol St	NB	4	8,000	5,422	0.68	C	5,924	0.74	D	5,496	0.69	C			6,075	0.76	D		
		SB	4	8,000	7,496	0.94	E	6,186	0.77	D	7,711	0.96	E	35.6	E	6,279	0.78	D		
	Bristol St to SR-73	NB	5	10,000	8,155	0.82	D	8,792	0.88	D	8,214	0.82	D			8,952	0.90	E		
		SB	4	8,000	8,433	1.05	F	5,996	0.75	D	8,634	1.08	F			6,031	0.75	D		
SR-55	South of Victoria St	NB	4	8,000	4,216	0.53	C	3,958	0.49	B	4,261	0.53	C			3,913	0.49	B		
		SB	3	6,000	2,881	0.48	B	2,783	0.46	B	2,883	0.48	B			2,800	0.47	B		
	Victoria St to Fair Dr	NB	4	8,000	4,368	0.55	C	3,638	0.45	B	4,412	0.55	C			3,624	0.45	B		
		SB	3	6,000	3,264	0.54	C	3,542	0.59	C	3,284	0.55	C			3,564	0.59	C		
	Fair Dr to SR-73	NB	4	8,000	6,088	0.76	D	4,753	0.59	C	6,155	0.77	D			4,740	0.59	C		
		SB	4	8,000	4,473	0.56	C	6,260	0.78	D	4,501	0.56	C			6,287	0.79	D		
	SR-73 to Baker St	NB	3	6,000	4,782	0.80	D	3,385	0.56	C	4,798	0.80	D			3,441	0.57	C		
		SB	3	6,000	4,702	0.78	D	6,136	1.02	F	4,736	0.79	D			6,183	1.03	F		
	Baker St to I-405	NB	3	6,000	4,777	0.80	D	3,475	0.58	C	4,793	0.80	D			3,531	0.59	C		
		SB	3	6,000	4,564	0.76	D	5,058	0.84	D	4,597	0.77	D			5,105	0.85	D		
	I-405 to MacArthur Blvd	NB	5	10,000	7,907	0.79	D	7,560	0.76	D	8,116	1.01	F			7,766	0.97	E	20.6	C
		SB	4	8,000	7,671	0.96	E	6,457	0.81	D	7,815	0.98	E			6,611	0.83	D		
	MacArthur Blvd to Dyer Rd	NB	4	8,000	8,403	1.05	F	6,839	0.85	D	8,594	1.07	F			6,964	0.87	D		
		SB	4	8,000	9,142	1.14	F	7,758	0.97	E	9,288	1.16	F			7,866	0.98	E		
	Dyer Rd to Edinger Ave	NB	4	8,000	9,104	1.14	F	8,511	1.06	F	9,230	1.15	F			8,701	1.09	F		
		SB	5	10,000	10,716	1.07	F	9,072	0.91	E	10,909	1.36	F			9,159	1.14	F		
	Edinger Ave to McFadden St/ Sycamore Ave	NB	5	10,000	9,002	0.90	E	8,249	0.82	D	9,131	0.76	D			8,441	0.70	C		
		SB	4	8,000	8,788	1.10	F	8,427	1.05	F	9,022	1.13	F			8,515	1.06	F		
	McFadden St/ Sycamore Ave to I-5	NB	3	6,000	5,253	0.88	D	5,624	0.94	E	5,350	0.89	D			5,819	0.97	E		
		SB	4	8,000	6,201	0.78	D	5,459	0.68	C	6,349	0.79	D			5,531	0.69	C		
	North of I-5	NB	3	6,000	4,975	0.83	D	5,285	0.88	D	5,066	0.84	D			5,429	0.90	E		
		SB	3	6,000	5,660	0.94	E	5,138	0.86	D	5,775	0.96	E			5,182	0.86	D		
SR-73	MacArthur Blvd to University Dr	NB	3	6,000	4,680	0.78	D	3,274	0.55	C	4,706	0.78	D			3,266	0.54	C		
		SB	3	6,000	3,343	0.56	C	4,260	0.71	C	3,439	0.57	C			4,279	0.71	C		
	University Dr to Jamboree Rd	NB	4	8,000	6,741	0.84	D	5,584	0.70	C	6,767	1.13	F			5,576	0.93	E		
		SB	3	6,000	4,602	0.77	D	4,884	0.81	D	4,686	0.78	D			4,895	0.82	D		
	Jamboree Rd to Birch St	NB	4	8,000	6,432	0.80	D	6,318	0.79	D	6,453	0.81	D			6,357	0.79	D		
		SB	3	6,000	5,813	0.97	E	5,648	0.94	E	5,920	0.99	E			5,671	0.95	E		
	Birch St to Campus Dr	NB	3	6,000	5,329	0.89	D	5,674	0.95	E	5,361	0.89	D			5,731	0.96	E		
		SB	3	6,000	5,655	0.94	E	5,230	0.87	D	5,791	0.97	E			5,278	0.88	D		
	Campus Dr to SR-55	NB	4	8,000	6,452	0.81	D	6,339	0.79	D	6,566	0.82	D			6,481	0.81	D		
		SB	4	8,000	7,735	0.97	E	6,686	0.84	D	7,920	0.99	E			6,763	0.85	D		
	SR-55 to Bear St	NB	3	6,000	3,987	0.66	C	5,538	0.92	E	4,013	0.67	C			5,545	0.92	E		
		SB	3	6,000	5,110	0.85	D	4,243	0.71	C	5,186	0.86	D			4,252	0.71	C		

LOCATION		FREEWAY LANES			EXISTING CONDITIONS						EXISTING WITH UPDATE									
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
		DIRECTION	LANES	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM Density	HCM LOS	VOLUME	V/C	LOS	HCM Density	HCM LOS
SR-73	Bear St to I-405	NB	3	6,000	3,741	0.62	C	4,666	0.78	D	3,760	0.63	C			4,669	0.78	D		
		SB	3	6,000	4,234	0.71	C	4,393	0.73	D	4,300	1.08	F			4,393	1.10	F		
SR-261	South of El Camino Real	NB	2	4,000	493	0.12	A	2,805	0.70	C	537	0.13	A			2,933	0.73	D		
		SB	2	4,000	3,041	0.76	D	605	0.15	A	3,146	0.79	D			653	0.16	A		

Note: *Theoretical impacts. No HCM Analysis required for LOS F locations per performance criteria.

3.13 Existing With Update Peak Hour Freeway Ramp Analysis

Table 3.12 exhibits the volume, density, and LOS for the freeway ramps under the Existing With Update conditions and **Appendix H** presents the HCS freeway ramp analysis worksheets. In the AM peak 10 of the 98 ramps are forecast to operate at a deficient LOS while in the PM peak 14 ramps are forecast to be deficient. The following freeway ramps are forecast to operate at a deficient LOS under the Existing With Update scenario:

AM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
I-405	**Northbound**	• Off-Ramp to Jamboree Road* • Off-Ramp to MacArthur Boulevard*
	Southbound	• Off-Ramp to Jamboree Road* • Off-Ramp to MacArthur Boulevard*
SR-55	**Northbound**	• Direct On-Ramp from Fair Drive* • On-Ramp from Paularino Avenue*
	Southbound	• Off-Ramp to Paularino Avenue*
SR-73	**Northbound**	• Off-Ramp to Birch Street*
	Southbound	• Off-Ramp to MacArthur Boulevard*

PM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
I-405	**Northbound**	• On-Ramp from MacArthur Road* • Direct On-Ramp from Bristol Street • Off-Ramp to Bristol Street
	Southbound	• Off-Ramp to Jamboree Road*
SR-55	**Northbound**	• Direct On-Ramp from Fair Drive • On-Ramp from Paularino Avenue* • Direct On-Ramp from MacArthur Boulevard • On-Ramp from Edinger Avenue*
SR-73	**Northbound**	• On-Ramp from Jamboree Road • On-Ramp from Campus Drive* • Off-Ramp from SR-73 at Bear
	Southbound	• Off-Ramp to MacArthur Boulevard • On-Ramp to SR-73 at Bear

*Denotes freeway ramp impacts.

Table 3.12 – Existing With Update Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		EXISTING CONDITIONS						EXISTING CONDITIONS WITH UPDATE								
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
			NO. OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
I-5	Culver Dr	SB On Direct	1	1,000	315	0.35	B	405	0.45	B	315	0.35	B			398	0.44	B		
		SB On Loop	1	1,000	649	0.72	D	349	0.39	B	621	0.69	C			345	0.38	B		
		SB Off	2	500	929	0.41	B	1,776	0.79	D	922	0.41	B			1,772	0.79	D		
		NB On Loop	2	1,000	751	0.50	B	477	0.32	B	748	0.50	B			481	0.32	B		
		NB On Direct	1	1,000	784	0.87	D	194	0.22	A	777	0.86	D			193	0.21	A		
		NB Off	1	500	360	0.24	A	665	0.44	B	360	0.24	A			654	0.44	B		
	Jamboree Rd	SB On Direct	2	1,000	426	0.28	A	1,207	0.80	D	428	0.29	A			1,228	0.82	D		
		SB On Loop	2	1,000	850	0.57	C	477	0.32	B	851	0.57	C			471	0.31	B		
		SB Off	2	500	1,094	0.36	B	1,181	0.39	B	1,137	0.38	B			1,191	0.4	B		
		NB On Loop	2	1,000	527	0.49	B	338	0.31	B	537	0.50	B			349	0.32	B		
		NB On Direct	2	1,000	626	0.58	C	296	0.27	A	618	0.57	C			289	0.27	A		
		NB Off	1	500	1,411	0.94	E	1,496	1.00	E	1,410	0.94	E			1,498	1.00	E		
	Tustin Ranch Rd	SB On	2	1,000	664	0.44	B	686	0.46	B	667	0.44	B			682	0.45	B		
		NB On	3	1,000	859	0.48	B	807	0.45	B	856	0.48	B			823	0.46	B		
		NB Off	1	500	416	0.28	A	455	0.30	A	419	0.28	A			453	0.30	A		
		SB Off	2	500	1,003	0.45	B	1,060	0.47	B	1,092	0.49	B			1,042	0.46	B		
	Red Hill Ave	SB On	2	1,000	800	0.53	C	705	0.47	B	808	0.54	C			710	0.47	B		
		NB On	2	1,000	785	0.52	C	696	0.46	B	778	0.52	C			705	0.47	B		
		NB Off	1	500	532	0.35	B	884	0.59	C	527	0.35	B			880	0.59	C		
		SB Off	1	500	391	0.26	A	555	0.37	B	426	0.28	A			543	0.36	B		
	Newport Blvd	SB Off	1	500	511	0.34	B	853	0.57	C	524	0.35	B			844	0.56	C		
		NB On	2	1,000	917	0.61	C	959	0.64	C	898	0.60	C			960	0.64	C		
I-405	Culver Dr	SB On Direct	1	1,000	361	0.24	A	713	0.48	B	407	0.27	A			786	0.52	C		
		SB On Loop	1	1,000	366	0.41	B	342	0.38	B	365	0.41	B			356	0.40	B		
		SB Off	2	500	1,026	0.34	B	1,285	0.43	B	1,038	0.35	B			1,341	0.45	B		
		NB On Loop	1	1,000	729	0.49	B	265	0.18	A	752	0.50	B			268	0.18	A		
		NB On Direct	1	1,000	1,226	0.82	D	463	0.31	B	1,247	0.83	D			476	0.32	B		
		NB Off	2	500	698	0.31	B	720	0.32	B	790	0.35	B			776	0.34	B		
	Jamboree Rd	SB On Direct	2	1,000	381	0.21	A	824	0.46	B	505	0.28	A			927	0.52	C		
		SB On Loop	1	1,000	216	0.14	A	497	0.33	B	280	0.19	A			528	0.35	B		
		SB Off	2	500	2,671	1.19	F	1,880	0.84	D	3,090	1.37	F	*		2,203	0.98	E	14.8[1]	B
		NB On Loop	1	1,000	502	0.33	B	629	0.42	B	628	0.42	B			839	0.56	C		
		NB On Direct	2	1,000	1,408	0.78	D	1,015	0.56	C	1,463	0.81	D			1,073	0.6	C		
		NB Off	2	500	2,042	0.91	E	1,241	0.55	C	2,190	0.97	E	23.1	C	1,359	0.6	C		
	MacArthur Blvd	SB Direct On	2	1,000	505	0.28	A	1,050	0.58	C	545	0.30	A			1,163	0.65	C		
		SB Off	2	500	2,395	1.06	E	1,079	0.48	B	2,574	1.14	F	*		1,149	0.51	C		
		NB On	1	1,000	579	0.39	B	1,252	0.83	D	689	0.46	B			1,492	0.99	E	26.8	C
		NB Off	1	500	1,975	1.32	F	755	0.50	B	2,081	1.39	F	*		817	0.54	C		
	Bristol St	SB Loop On	1	1,000	855	0.57	C	1,025	0.68	C	874	0.58	C			1,051	0.70	C		
		SB Off	2	500	1,130	0.50	B	913	0.41	B	1,128	0.50	B			902	0.40	B		
		NB On Loop	1	1,000	169	0.19	A	153	0.17	A	169	0.19	A			153	0.17	A		
		NB On Direct	1	1,000	650	0.43	B	1,342	0.89	D	638	0.43	B			1,349	0.90	E		
		NB Off	1	500	867	0.58	C	1,995	1.33	F	864	0.58	C			2,025	1.35	F		
SR-55	Victoria St	SB Direct On	1	1,000	45	0.05	A	38	0.04	A	45	0.05	A			38	0.04	A		
		SB Off	2	500	616	0.27	A	519	0.23	A	616	0.27	A			519	0.23	A		
		NB Direct On	1	1,000	828	0.55	C	736	0.49	B	828	0.55	C			736	0.49	B		
		NB Off	1	500	51	0.03	A	45	0.03	A	51	0.03	A			45	0.03	A		
	Fair Dr	SB Direct On	1	1,000	95	0.11	A	129	0.14	A	95	0.11	A			129	0.14	A		

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		EXISTING CONDITIONS						EXISTING CONDITIONS WITH UPDATE								
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
			NO. OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
SR-55		SB Off	2	500	482	0.21	A	653	0.29	A	482	0.21	A			653	0.29	A		
		NB Direct On	1	1,000	1,781	1.19	F	1,506	1.00	E	1,781	1.19	F			1,506	1.00	E		
		NB Off	1	500	355	0.24	A	300	0.20	A	355	0.24	A			300	0.20	A		
	Baker St	SB On	1	1,000	523	0.35	B	1,272	0.85	D	525	0.35	B			1,270	0.85	D		
		SB Off	1	500	810	0.54	C	965	0.64	C	829	0.55	C			951	0.63	C		
		NB Off	1	500	1,063	0.71	C	693	0.46	B	1,100	0.73	D			709	0.47	B		
	Paularino Ave	SB Off	1	500	1,487	0.99	E	958	0.64	C	1,503	1.00	E			943	0.63	C		
		NB On	1	1,000	1,166	1.30	F	977	1.09	E	1,169	1.30	F			1,015	1.13	F	*	
	MacArthur Blvd	SB On Direct	1	1,000	918	0.61	C	951	0.63	C	918	0.61	C			951	0.63	C		
		SB On Loop	1	1,000	156	0.17	A	555	0.62	C	156	0.17	A			555	0.62	C		
		SB Off	2	500	1,806	0.80	D	930	0.41	B	1,806	0.80	D			930	0.41	B		
		NB On Loop	1	1,000	808	0.54	C	645	0.43	B	803	0.54	C			638	0.43	B		
		NB On Direct	1	1,000	238	0.26	A	970	1.08	E	336	0.37	B			959	1.07	E		
		NB Off	2	500	1,777	0.79	D	1,100	0.49	B	1,871	0.83	D			1,150	0.51	C		
	Dyer Rd	SB On	1	1,000	915	0.61	C	981	0.65	C	922	0.61	C			1,000	0.67	C		
		SB Off Loop	1	500	739	0.49	B	528	0.35	B	754	0.50	B			540	0.36	B		
		SB Off to Grand	1	500	691	0.46	B	570	0.38	B	699	0.47	B			559	0.37	B		
		NB On Direct	1	1,000	406	0.27	A	928	0.62	C	414	0.28	A			997	0.66	C		
		NB On Loop	1	1,000	643	0.71	C	665	0.74	D	630	0.70	C			653	0.73	D		
		NB Off	1	500	1,113	0.74	D	235	0.16	A	1,155	0.77	D			259	0.17	A		
	Edinger Ave	SB On	1	1,000	850	0.57	C	731	0.49	B	866	0.58	C			749	0.50	B		
		SB Off	1	500	884	0.59	C	709	0.47	B	941	0.63	C			729	0.49	B		
		NB On	1	1,000	933	0.62	C	1,507	1.00	E	957	0.64	C			1,539	1.03	F	*	
		NB Off	1	500	567	0.38	B	93	0.06	A	588	0.39	B			120	0.08	A		
	McFadden Ave	SB On	1	1,000	544	0.36	B	359	0.24	A	559	0.37	B			355	0.24	A		
		SB Off	2	500	427	0.19	A	1,000	0.44	B	403	0.18	A			977	0.43	B		
		NB On	1	1,000	1,250	0.83	D	1,031	0.69	C	1,222	0.81	D			1,035	0.69	C		
		NB Off	1	500	499	0.33	B	985	0.66	C	503	0.34	B			985	0.66	C		
SR-73	Bison Ave	SB On	1	1,000	118	0.08	A	358	0.24	A	113	0.08	A			350	0.23	A		
		SB Off	1	500	844	0.56	C	380	0.25	A	844	0.56	C			385	0.26	A		
		NB On	1	1,000	278	0.19	A	1,061	0.71	C	295	0.20	A			1,065	0.71	C		
	MacArthur Blvd	SB On	1	1,000	121	0.08	A	1,016	0.68	C	134	0.09	A			1,070	0.71	C		
		SB Off	1	500	1,353	0.90	E	1,429	0.95	E	1,347	0.90	E			1,435	0.96	E		
		NB On s/o University Dr	1	1,000	779	0.52	C	1,224	0.82	D	798	0.53	C			1,242	0.83	D		
		NB On n/o University Dr	1	1,000	537	0.36	B	927	0.62	C	559	0.37	B			974	0.65	C		
	University Dr	SB Off	1	500	1,033	0.69	C	663	0.44	B	1,057	0.70	C			676	0.45	B		
	Jamboree Rd	SB On	1	1,000	485	0.32	B	958	0.64	C	498	0.33	B			970	0.65	C		
		SB Off	2	500	1,460	0.65	C	1,027	0.46	B	1,488	0.66	C			1,062	0.47	B		
		NB On	1	1,000	1,227	0.82	D	2,141	1.43	F	1,200	0.80	D			2,158	1.44	F	*	
	Birch St	NB Off	1	500	1,394	0.93	E	1,054	0.70	C	1,384	0.92	E			1,029	0.69	C		
	Campus Dr	SB Off	2	500	1,772	0.79	D	1,202	0.53	C	1,822	0.81	D			1,243	0.55	C		
		NB On	1	1,000	769	0.51	C	2,492	1.66	F	851	0.57	C			2,607	1.74	F		
	SR-73 at Bear	SB On	1	1,000	867	0.58	C	1,422	0.95	E	858	0.57	C			1,427	0.95	E		
		SB Off	1	500	286	0.19	A	1,271	0.85	D	267	0.18	A			1,271	0.85	D		
		NB Off	1	500	633	0.42	B	1,495	1.00	E	641	0.43	B			1,495	1.00	E		
		NB On	1	1,000	243	0.16	A	326	0.22	A	243	0.16	A			324	0.22	A		

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		EXISTING CONDITIONS						EXISTING CONDITIONS WITH UPDATE									
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
			NO. OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
SR-261	Jamboree Rd	SB On	2	1,000	1,149	0.38	B	1,065	0.36	B	1,220	0.41	B			1,034	0.34	B		
		NB Off	2	250	438	0.19	A	1,107	0.49	B	461	0.20	A			1,215	0.54	C		
	Walnut Ave	NB On	1	1,000	336	0.22	A	929	0.62	C	336	0.22	A			982	0.65	C		
		SB Off	1	500	890	0.59	C	556	0.37	B	912	0.61	C			549	0.37	B		

F Denotes ramp operating at a deficient LOS

Note:
[1] HCM 2010 limits Ramp HCM Density calculations with freeway lanes to 5 or less. HCM density was adjusted to include freeway lanes of 5 or more lanes.
*Theoretical impacts. No HCM Analysis required for LOS F locations per performance criteria.

3.14 Existing With Update Summary

The Existing and Existing With Update analysis shows that while much of the study area is operating within acceptable traffic thresholds, there are several segments and intersections that are operating under a deficient LOS during daily and peak hour conditions. While the Existing With Update scenario is a theoretical exercise, the results indicate where trips are likely to be most concentrated in the future alternatives. Between the Existing and Existing With Update scenarios, there are a number of additional deficiencies.

For arterial segments, two additional segments fails under daily conditions (#219 Culver Drive from Barranca Parkway to Alton Parkway and #148 Jamboree Road from I-405 SB On-Ramp to Michelson Drive in the City of Irvine). For intersections, in the Existing With Update condition four additional intersections fail under daily conditions. In the AM peak hour #192 California Avenue at University Drive and #144 Jamboree Road at I-405 Southbound Ramps in the City of Irvine and in the PM peak hour #136 Jamboree Road at Barranca Parkway in the City of Irvine and City of Tustin and #96 Tustin Ranch Road at Walnut Avenue in the City of Tustin operate deficiently. For freeway mainlines in the AM peak hour five additional segments operate deficiently: I-5 Southbound North of SR-55, I-405 Southbound between Jamboree Road and Culver Drive, SR-55 Northbound between I-405 and MacArthur Boulevard, SR-73 Northbound between University Drive and Jamboree Road, and SR-73 Southbound between I-405 and Bear Street. In the PM Peak hour six additional freeway mainlines operate deficiently: I-405 Southbound between Jamboree Road and Culver Drive, I-405 Northbound between Sr-73 and Bristol Street, SR-55 Northbound between I-405 and MacArthur Boulevard, SR-55 Northbound North of I-5, SR-73 Northbound between Jamboree Road and University Drive, and SR-73 Southbound between I-405 and Bear Street. There are three additional ramps become deficient under the With Update scenario: Southbound I-405 Off-Ramp at Jamboree Road in the PM Peak, Northbound On-Ramp from MacArthur Boulevard in the PM Peak, and Northbound I-405 Direct On-Ramp from Bristol Street in the PM Peak. Impacts and improvement strategies are discussed in **Chapter 6**.

4 INTERIM YEAR CONDITIONS

4.1 Introduction

The City of Irvine's traffic model, the Irvine Traffic Analysis Model (ITAM) was used to forecast the traffic data for the Interim year conditions. This chapter describes the change in trips generated within the study area as a result of land use assumptions and development. Additionally, an assessment of deficiencies in the study area circulation system was performed to identify changes to the mitigation identified in the 2010 IBC Vision General Plan Amendment and Zoning Code. Using the existing conditions as a starting point, "Baseline" and "With Update" scenarios were developed for analysis under Interim year conditions. Interim conditions represent conditions approximately five years in the future.

As part of the IBC Vision plan, the 6,133 known pending residential units currently in process and an associated 1,055 density bonus units would be expected to be completed in the next five years. The remaining 167 units under the existing General Plan cap and associated 58 potential density bonus units (or non-residential equivalent thereof) are expected to be completed by Vision Plan Buildout timeframe. Each proposed scenario evaluates impacts to the circulation system based on the land use assumptions. For the Interim year scenarios, only those circulation improvements that are 100% funded and expected to be constructed in the next five years have been assumed in the baseline. Unfunded or partially funded improvements in the IBC are not included in the traffic study. The assumed Interim year circulation system is consistent for both of the Interim scenarios.

4.2 Interim Cumulative Baseline Conditions, Land Use, and Trip Generation

Under the Interim Cumulative Baseline scenario, the circulation system consists of the roadway network of interstate and state highways, major arterials, primary arterials, secondary arterials, and commuter roadways. The assumed Interim circulation system is consistent for both the Baseline and With Update scenarios. In the Interim year, 282 arterial segments, 229 intersections, 60 freeway mainline segments, and 98 freeway ramps were analyzed as part of the IBC Vision Plan Two-Year Traffic Study Update. The Interim Cumulative Baseline scenario analyzes the effects on the circulation system of future forecast growth in the study area, without the proposed update.

The Interim Baseline scenario assumes existing on-the-ground land uses within the IBC area and estimated Interim land use growth outside the IBC area. **Table 4.1** displays the Interim Cumulative Baseline land use assumed in the model for the IBC. **Table 4.2** displays the Trip Generation table from ITAM for the Interim Cumulative Baseline scenario. **Appendix C** presents the trip generation and **Appendix D** presents land use quantities by type and IBC TAZs as well as a land use summary by individual project.

The Baseline analysis will display expected circulation system deficiencies in the Interim year, without the plan update. Following the Baseline analysis, impacts can be determined through a comparison with the With Update scenario.

Table 4.1 – Interim Cumulative Baseline Land Use Summary

SCENARIO	MULTI-FAMILY RESIDENTIAL (DU)	RETAIL MIX (TSF)	HOTEL (ROOM)	OFFICE MIX (TSF)	INDUSTRIAL MIX (TSF)	MINI-WAREHOUSE (TSF)	EXTENDED STAY HOTEL (ROOM)
Existing Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Existing With Update	16,820	1,785	3,078	33,795	12,536	1,228	1,422
Interim Cumulative Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Percent Growth (Interim Baseline vs. Existing Baseline)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Source: City of Irvine, ITAM

Table 4.2 – Interim Cumulative Baseline Trip Generation

SCENARIO	AM-OUT	AM-IN	PM-OUT	PM-IN	ADT
Existing Baseline	13,460	29,926	28,517	19,373	551,618
Existing With Update	18,561	36,384	35,386	25,314	709,486
Interim Baseline	13,431	29,878	28,533	19,342	551,618
Percent Growth (Interim Baseline vs. Existing Baseline)	-0.2%	-0.2%	0.1%	-0.2%	0.0%

Source: ITAM

4.3 Interim Cumulative Baseline Daily Arterial Segment Analysis

Under the Interim Cumulative Baseline scenario, traffic within the City shows some growth related to development of the study area as a whole. **Table 4.3** presents the study area arterial roadway segment analysis displaying the V/C ratio and LOS. As noted in **Chapter 2**, deficient segments in the daily condition are identified for all cities. Deficient segments in the City of Irvine under daily conditions are analyzed for peak hour performance. A comparison between the Interim Cumulative Baseline and With Update scenarios is provided under Interim Cumulative With Update conditions analysis. Generally, only those segments where the update has a theoretical impact are required to be evaluated further by the peak hour link methodology. In this study, the peak hour link methodology has been applied to all of the forecast deficient roadway segments within the City of Irvine for Baseline and With Update scenarios.

Table 4.3 indicates that 17 segments are deficient under the Interim Cumulative Baseline daily conditions, with 12 of the segments in the City of Irvine. As noted above, unless a segment is a CMP location, LOS E indicates a deficient segment for all arterial segments outside Planning Area (PA) 36 within the City of Irvine. It should be noted that daily V/C ratio analysis arterial segments in Costa Mesa, Newport Beach, and Tustin are not evaluated further and any deficiencies are addressed at the intersections. PA 36 segments are considered deficient at LOS F. Deficient segments under daily Interim Year Cumulative Baseline conditions include:

- Campus Drive:
  - 879—Campus Drive from Carlson Avenue to University Drive (Irvine)
- Culver Drive:
  - 726—Culver Drive from I-5 NB Ramps to I-5 SB Ramps (Irvine)
  - 213—Culver Drive from I-5 SB Ramps to Scottsdale Drive (Irvine)
  - 214—Culver Drive from Scottsdale Drive to Walnut Avenue (Irvine)
  - 219—Culver Drive from Barranca Parkway to Alton Parkway (Irvine)
  - 221—Culver Drive from Main Street to San Leandro (Irvine)

  - 222—Culver Drive from San Leandro to I-405 NB On-Ramp (Irvine)
  - 224—Culver Drive from I-405 SB On-Ramp to Michelson Drive (Irvine)
- Harvard Avenue:
  - 183—Harvard Avenue from Michelson Drive to University Drive (Irvine)
- Jamboree Road:
  - 133—Jamboree Road from Michelle Drive to Walnut Avenue (Irvine)
- University Drive:
  - 188—University Drive from California Avenue to Mesa Road (Irvine)
  - 187—University Drive from Mesa Road to Campus Drive (Irvine)
- Bristol Street:
  - 920—Bristol Street SB Red Hill Avenue to Campus Drive (Newport Beach)*
- MacArthur Boulevard:
  - 953—MacArthur Boulevard from University Drive to Bison Avenue (Newport Beach)*
  - 1301—MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*
- Dyer Road:
  - 1326—Dyer Road from SR-55 SB Ramp to SR-55 NB Ramp (Santa Ana)*
  - 734—Dyer Road from SR-55 NB Ramp to Pullman Street (Santa Ana)*

*Deficient locations under daily conditions – no peak hour link analysis required.

Figure 4.1 and **Figure 4.2** graphically depict the ADT traffic volumes and deficient segment LOS, respectively, for the Interim Cumulative Baseline scenario. Deficient segments in the City of Irvine are evaluated under Peak Hour conditions in the following section.

Table 4.3 – Interim Cumulative Baseline Daily Arterial LOS

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	INTERIM YEAR ARTERIAL SEGMENT CLASSIFICATIONS	INTERIM CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	4D	14,600	0.38	A
2721	Baker St	Bear St to Bristol St		CM	4D	23,800	0.63	B
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	4D	29,200	0.77	C
1294	Baker St	SR 55 SB to SR 55 NB		CM	4D	23,300	0.61	B
1468	Baker St	SR 55 NB to Red Hill Ave		CM	4D	13,700	0.36	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	2D	5,000	0.28	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	29,700	0.53	A
2733	Bristol St	Segerstrom Ave to West Alton Ave		CM	6D	36,800	0.66	B
2737	Bristol St	West Alton Ave to MacArthur Blvd		CM	6D	39,500	0.71	C
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	39,500	0.71	C
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	41,200	0.74	C
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	9D+1 AUX	57,800	0.71	C
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	57,400	0.77	C
2745	Bristol St	I-405 SB Ramps to Paularino Ave		CM	6D	40,600	0.72	C
2732	Bristol St	Paularino Ave to Baker St		CM	6D	31,900	0.57	A
2730	Bristol St	Baker St to SR 55		CM	6D	24,000	0.43	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	17,400	0.31	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	17,000	0.45	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	INTERIM YEAR ARTERIAL SEGMENT CLASSIFICATIONS	INTERIM CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	2U	6,400	0.51	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	11,200	0.29	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	8,300	0.22	A
2760	Flower St	Sunflower Ave to Anton Blvd		CM	4D	5,700	0.15	A
2756	Main St	Sunflower Ave to SR-55		CM	6D	25,100	0.45	A
2785	Mesa Dr	Newport Blvd SB to Newport Blvd NB		CM	2U	6,200	0.50	A
2783	Mesa Dr	Newport Blvd NB to Santa Ana Ave		CM	2U	7,000	0.56	A
2779	Mesa Dr	Irvine Ave to Birch St		CM	4D	8,100	0.21	A
2742	Paularino Ave	Bear St to Bristol St		CM	2U	8,200	0.66	B
2746	Paularino Ave	Bristol St to SR-55 SB		CM	4D	19,300	0.51	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	16,700	0.44	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	12,300	0.32	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	5,100	0.13	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	4D	23,000	0.61	B
1340	Red Hill Ave	Paularino Ave to Baker St		CM	4D	19,600	0.52	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	16,500	0.43	A
41	Santa Ana Ave	Mesa Dr to Bristol St		CM	4D	10,600	0.28	A
2769	University Dr	Santa Ana Ave to Irvine Ave		CM	2U	5,700	0.46	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	5,700	0.18	A
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	16,900	0.53	A
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	17,000	0.53	A
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	21,100	0.39	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	20,700	0.38	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	17,300	0.32	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	19,100	0.35	A
783	Alton Pkwy	San Marino to Culver Dr		Irv	6D	26,700	0.49	A
735	Barranca Pkwy (Dyer Rd)	Pullman to Red Hill Ave		Irv	6D	35,900	0.66	B
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	6D	39,800	0.63	B
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	45,700	0.73	C
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	44,700	0.71	C
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	30,600	0.57	A
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	25,300	0.47	A
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	23,400	0.43	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	25,300	0.47	A
748	Barranca Pkwy	Santa Rosa to Culver Dr		Irv	6D	26,700	0.49	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	22,300	0.70	B
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	22,600	0.71	C
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	21,700	0.68	B
540	Bryan Ave	Rubicon to Culver		Irv	4D	23,500	0.73	C
869	Campus Dr	MacArthur Blvd to Martin	a	Irv	6U	13,900	0.26	A
870	Campus Dr	Martin to Von Karman Ave	a	Irv	4D	14,000	0.44	A
871	Campus Dr	Von Karman Ave to Teller Ave	a	Irv	4D	11,400	0.36	A
872	Campus Dr	Teller Ave to Jamboree Rd	a	Irv	4D	11,600	0.36	A
877	Campus Dr	Jamboree Rd to Carlson Ave	a	Irv	4D	19,000	0.59	A
879	Campus Dr	Carlson Ave to University		Irv	2U	19,000	1.46	F
166	Carlson Ave	Michelson Dr to Campus Dr	a	Irv	4D	8,100	0.25	A
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps		Irv	7D	64,000	1.02	F
213	Culver Dr	I-5 SB Ramps to Scottsdale Dr		Irv	6D	56,700	1.05	F
214	Culver Dr	Scottsdale Dr to Walnut Ave		Irv	6D	49,500	0.92	E
215	Culver Dr	Walnut Ave to Deerfield Ave		Irv	6D	45,800	0.85	D

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	INTERIM YEAR ARTERIAL SEGMENT CLASSIFICATIONS	INTERIM CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
216	Culver Dr	Deerfield Ave to Irvine Center Dr		Irv	Maj6D+ 1AUX	44,500	0.76	C
217	Culver Dr	Irvine Center Dr to Warner Ave		Irv	6D	47,100	0.87	D
218	Culver Dr	Warner Ave to Barranca Pkwy		Irv	6D	45,900	0.85	D
219	Culver Dr	Barranca Pkwy to Alton Pkwy		Irv	6D	50,800	0.94	E
220	Culver Dr	Alton Pkwy to Main St		Irv	6D	48,600	0.90	D
221	Culver Dr	Main St to San Leandro		Irv	6D	52,100	0.96	E
222	Culver Dr	San Leandro to I-405 NB On-Ramp		Irv	6D	53,000	0.98	E
224	Culver Dr	I-405 SB Ramps to Michelson Dr		Irv	6D	53,300	0.99	E
225	Culver Dr	Michelson Dr to Sandburg Way		Irv	6D	39,500	0.73	C
226	Culver Dr	Sandburg Way to University Dr		Irv	6D	35,700	0.66	B
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	22,800	0.71	C
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,000	0.19	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	2U	8,700	0.67	B
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	2U	10,100	0.78	C
171	Harvard Ave	Deerfield Ave to Irvine Center Dr		Irv	3D	10,100	0.40	A
172	Harvard Ave	Irvine Center Dr to Paseo Westpark		Irv	4D	13,100	0.41	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	11,900	0.37	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	16,100	0.50	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	19,400	0.61	B
2829	Harvard Ave	San Juan to San Leon		Irv	4D	18,200	0.57	A
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	19,200	0.60	A
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	19,400	0.61	B
180	Harvard Ave	San Marino to Main St		Irv	4D	23,400	0.73	C
181	Harvard Ave	Main St to Coronado		Irv	4D	23,500	0.73	C
182	Harvard Ave	Coronado to Michelson Dr		Irv	4D	23,100	0.72	C
183	Harvard Ave	Michelson Dr to University Dr		Irv	2U	18,300	1.41	F
675	Irvine Center Dr	Harvard Ave to Hearthstone	b	Irv	6D	26,700	0.49	A
676	Irvine Center Dr	Hearthstone to Culver Dr	b	Irv	6D	27,100	0.50	A
129	Jamboree Rd	Bryan Ave to El Camino	b	Irv	8D	48,500	0.67	B
130	Jamboree Rd	El Camino Real to I-5 NB Ramps	b	Irv	Maj7D+ 1AUX	66,700	0.99	E
958	Jamboree Rd	I-5 NB Ramps to I-5 SB Ramps	b	Irv	8D	65,000	0.90	D
131	Jamboree Rd	I-5 SB Ramps to Michelle Dr	b	Irv	8D	56,000	0.78	C
133	Jamboree Rd	Michelle Dr to Walnut Ave	b	Irv	5D	67,800	1.58	F
135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rds)	b	Irv	Exp8	62,900	0.35	A
136	Jamboree Rd	Edinger Ave to Warner Ave	b	Irv	Exp8	79,100	0.44	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	63,000	0.35	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	53,800	0.75	C
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	57,100	0.79	C
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	61,100	0.85	D
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	54,500	0.76	C
144	Jamboree Rd	Kelvin Ave to Main St	a,b	Irv	8D	64,200	0.89	D
145	Jamboree Rd	Main St to I-405 NB Ramps	b	Irv	Maj8D+ 2AUX	70,100	0.87	D
148	Jamboree Rd	I-405 SB Ramps to Michelson Dr	a,b	Irv	Maj8D+ 2AUX	75,000	0.93	E
149	Jamboree Rd	Michelson Dr to Dupont Dr	a,b	Irv	7D	52,200	0.83	D
150	Jamboree Rd	Dupont Dr to Campus Dr	a,b	Irv	7D	42,600	0.68	B
151	Jamboree Rd	Campus Dr to Birch St	b	Irv	6D	40,600	0.75	C
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	39,600	0.63	B
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	7D	33,700	0.53	A
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	35,100	0.65	B
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	7D	38,400	0.61	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	INTERIM YEAR ARTERIAL SEGMENT CLASSIFICATIONS	INTERIM CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	23,600	0.37	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	23,500	0.37	A
60	MacArthur Blvd	Main St to I-405 NB Ramps	a	Irv	Maj8D+ 2AUX	50,600	0.62	B
62	MacArthur Blvd	I-405 SB Ramps to Michelson Dr	a	Irv	Maj8D+ 1AUX	54,100	0.71	C
63	MacArthur Blvd	Michelson Dr to Douglass	a	Irv	8D	36,300	0.50	A
64	MacArthur Blvd	Douglas to Campus Dr		Irv	8D	36,200	0.50	A
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	39,800	0.74	C
917	MacArthur Blvd	Fairchild Rd to University Dr	b	Irv	6D	39,700	0.74	C
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	25,200	0.47	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	25,900	0.48	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	25,300	0.47	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	33,600	0.50	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	34,400	0.59	A
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	24,800	0.46	A
823	Main St	Siglo to Jamboree Rd	a	Irv	6D	23,900	0.44	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+ 1AUX	23,700	0.41	A
825	Main St	Veneto to Harvard Ave		Irv	6D	24,200	0.45	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	13,000	0.41	A
827	Main St	Paseo Westpark to Culver Dr		Irv	4D	13,100	0.41	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	6,200	0.19	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	9,500	0.30	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	8,400	0.26	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	2,400	0.08	A
840	Michelson Dr	MacArthur Blvd to Dupont Dr	a	Irv	5D	20,700	0.48	A
843	Michelson Dr	Bixby to Von Karman Ave	a	Irv	4D	12,700	0.40	A
844	Michelson Dr	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	19,900	0.55	A
845	Michelson Dr	Teller Ave to Jamboree Rd	a	Irv	5D	19,000	0.44	A
846	Michelson Dr	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+ 2AUX	22,200	0.56	A
847	Michelson Dr	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	21,300	0.59	A
848	Michelson Dr	Riparian View to Harvard Ave		Irv	4D	21,500	0.67	B
1346	Michelson Dr	Harvard Ave to Parkside Dr		Irv	4D	17,200	0.54	A
850	Michelson Dr	Parkside Dr to Culver Dr		Irv	4D	17,000	0.53	A
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	31,100	0.58	A
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	31,100	0.58	A
33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	31,600	0.59	A
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	41,400	0.77	C
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	4D	21,100	0.66	B
38	Red Hill Ave	Skypark to Main St	a	Irv	4D	17,300	0.54	A
189	University Dr	MacArthur Blvd to California Ave		Irv	4D	25,400	0.79	C
188	University Dr	California Ave to Mesa Rd		Irv	4D	31,600	0.99	E
187	University Dr	Mesa Rd to Campus Dr		Irv	4D	32,200	1.01	F
880	University Dr	Campus Dr to Harvard Ave		Irv	6D	27,800	0.51	A
881	University Dr	Harvard Ave to San Joaquin Hills Rd		Irv	6D	25,000	0.46	A
882	University Dr	San Joaquin Hills Rd to Culver Dr		Irv	6D	25,000	0.46	A
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	27,600	0.86	D
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	25,200	0.79	C
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	24,800	0.78	C
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	24,700	0.77	C
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	25,800	0.72	C
107	Von Karman Ave	Quartz to Michelson Dr	a	Irv	Prim4D+ 1AUX	22,300	0.62	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	INTERIM YEAR ARTERIAL SEGMENT CLASSIFICATIONS	INTERIM CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
108	Von Karman Ave	Michelson Dr to Dupont Dr	a	Irv	4D	16,900	0.53	A
110	Von Karman Ave	Dupont Dr to Martin	a	Irv	4D	17,000	0.53	A
111	Von Karman Ave	Martin to Campus Dr	a	Irv	4D	16,900	0.53	A
594	Walnut Ave	Myford to Jamboree SB Ramp		Irv	Prim4D+ 1AUX	22,200	0.62	B
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+ 1AUX	20,800	0.36	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+ 1AUX	20,800	0.44	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	19,400	0.61	B
597	Walnut Ave	Mall St to Culver Dr		Irv	4D	19,200	0.60	A
728	Warner Ave	Construction North to Harvard Ave		Irv	4D	15,000	0.47	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	11,000	0.34	A
732	Warner Ave	Santa Ynez to Culver Dr		Irv	4D	10,700	0.33	A
1223	Birch St	Mesa Dr to Bristol St SB		NB	4D	11,100	0.28	A
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	13,500	0.34	A
874	Birch St	East of MacArthur Blvd		NB	4D	10,300	0.26	A
69	Birch St	West of MacArthur Blvd		NB	4D	14,900	0.37	A
875	Birch St	East of Von Karman Ave		NB	4D	6,200	0.16	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	7,100	0.12	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	13,100	0.33	A
920	Bristol St SB	Red Hill Ave to Campus Dr		NB	2D	27,900	1.55	F
1310	Bristol St NB	Campus Dr to Red Hill Ave		NB	3D	13,500	0.47	A
1303	Bristol St SB	Campus Dr to Birch St		NB	3D	20,300	0.70	B
1305	Bristol St NB	Birch St to Campus Dr		NB	3D	22,700	0.78	C
1312	Bristol St SB	West of Jamboree Rd		NB	4D	34,500	0.86	D
1580	Bristol St NB	West of Jamboree Rd		NB	3D	17,300	0.60	A
66	Campus Dr	Bristol St NB to MacArthur Blvd		NB	6D	30,400	0.52	A
1778	Ford Rd	Jamboree Rd to MacArthur Blvd		NB	4D	9,500	0.24	A
1304	Irvine Ave	Bristol St NB to Bristol St SB		NB	6D	29,500	0.51	A
67	Irvine Ave	Bristol St SB to Mesa Dr		NB	6D	25,800	0.44	A
2768	Irvine Ave	South of University Dr		NB	4D	28,300	0.71	C
156	Jamboree Rd	South of MacArthur Blvd		NB	6D	35,200	0.61	B
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	6D	43,600	0.75	C
157	Jamboree Rd	South of Bristol St		NB	8D	51,600	0.76	C
159	Jamboree Rd	University Dr to Bison Ave		NB	6D	42,700	0.74	C
1777	Jamboree Rd	Bison Ave to Ford Rd		NB	6D	32,200	0.56	A
73	MacArthur Blvd	Campus Dr to Birch St		NB	8D	19,100	0.28	A
75	MacArthur Blvd	South of Birch St		NB	6D	19,700	0.34	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	20,600	0.36	A
953	MacArthur Blvd	University Dr to Bison Ave	b	NB	6D	67,100	1.16	F
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	76,000	1.12	F
2767	University Dr	East of Irvine Ave		NB	2U	3,600	0.36	A
1774	University Dr	Jamboree Rd to MacArthur Blvd		NB	5D	11,300	0.23	A
112	Von Karman Ave	South of Campus Dr		NB	4D	11,600	0.29	A
113	Von Karman Ave	South of Birch St		NB	4D	10,000	0.25	A
2795	Dyer Rd	Main St to Halladay St		SA	6D	30,000	0.53	A
2799	Dyer Rd	Halladay St to SR-55 SB		SA	6D	37,900	0.67	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	58,100	1.03	F
734	Dyer Rd	SR-55 NB to Pullman St		SA	6D	52,800	0.94	E
2764	Grand Ave	Warner Ave to Hotel Terrace Dr		SA	6D	28,900	0.51	A
2806	Grand Ave	Hotel Terrace Dr to SR-55 NB		SA	6D	28,900	0.51	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	2U	3,400	0.27	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	INTERIM YEAR ARTERIAL SEGMENT CLASSIFICATIONS	INTERIM CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
2822	Halladay St	Alton Ave to McGaw Ave(Columbine)		SA	2U	1,800	0.14	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	34,100	0.61	B
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	38,700	0.69	B
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	28,000	0.50	A
2826	Main St	Alton Ave to McGaw Ave(Columbine)		SA	6D	26,800	0.48	A
2809	Main St	McGaw(Columbine) to MacArthur Blvd		SA	6D	28,500	0.51	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	22,800	0.40	A
2823	McGaw Ave (Alton)	Main St to Halladay St		SA	4U	4,100	0.17	A
2736	Segerstrom Ave	Bristol St to Flower St		SA	4D	22,400	0.60	A
2771	Segerstrom Ave	Flower St to Main St		SA	4D	24,000	0.64	B
2763	Warner Ave	Grand Ave to SR-55		SA	6D	18,300	0.33	A
2761	Sunflower Ave	Bristol St to Flower St		SA/CM	6D	22,500	0.40	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/CM	6D	18,700	0.33	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/CM	6D	25,100	0.45	A
1198	Browning Ave	Walnut Ave to I-5		Tus	2U	5,500	0.44	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	17,300	0.69	B
535	Bryan Ave	Red Hill Ave to Browning		Tus	4D	18,000	0.48	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	18,400	0.49	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	20,800	0.55	A
44	Edinger Ave	West of Newport Ave	b	Tus	6D	42,500	0.75	C
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	31,100	0.55	A
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	28,100	0.50	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4D	13,900	0.37	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	2D	11,600	0.64	B
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4D	10,900	0.29	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	17,900	0.48	A
672	Irvine Center Dr (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	31,400	0.56	A
674	Irvine Center Dr	Jamboree Rd to Harvard Ave	b	Tus	6D	29,500	0.52	A
2777	Mitchell Ave	Newport Ave to Red Hill Ave		Tus	2U	6,800	0.54	A
2775	Mitchell Ave	Red Hill Ave to Browning Ave		Tus	2U	4,900	0.39	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	45,900	0.82	D
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	36,900	0.66	B
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	33,300	0.59	A
49	Newport Ave	North of Sycamore Ave		Tus	6D	17,200	0.31	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	23,200	0.41	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	5,500	0.44	A
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	5,700	0.46	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	40,600	0.72	C
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	37,800	0.67	B
21	Red Hill Ave	Nisson Rd to I-5 SB Ramps		Tus	6D	42,100	0.75	C
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	30,700	0.55	A
22	Red Hill Ave	Mitchell Ave to Walnut Ave		Tus	6D	26,900	0.48	A
23	Red Hill Ave	Walnut Ave to Sycamore Ave		Tus	6D	28,000	0.50	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	29,200	0.52	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	26,200	0.47	A
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	31,100	0.55	A
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	35,000	0.53	A
1363	Sycamore Ave	SR-55 NB to Newport Ave		Tus	4D	9,700	0.26	A
1920	Sycamore Ave	Newport Ave to Red Hill Ave		Tus	2U	10,000	0.80	C
85	Tustin Ranch Rd	North of I-5		Tus	6D	47,700	0.85	D

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	INTERIM YEAR ARTERIAL SEGMENT CLASSIFICATIONS	INTERIM CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	38,300	0.68	B
2174	Tustin Ranch Rd	Walnut Ave to Valencia Ave		Tus	6D	19,500	0.35	A
2073	Tustin Ranch Rd	Valencia Ave to Warner Ave		Tus	6D	18,800	0.33	A
2071	Tustin Ranch Rd	Warner Ave to Park Ave		Tus	6D	20,500	0.36	A
2070	Tustin Ranch Rd	Park Ave to Barranca Pkwy		Tus	6D	20,900	0.37	A
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4D	6,400	0.17	A
632	Valencia Ave	Red Hill Ave to Armstrong Ave		Tus	4D	14,400	0.38	A
2844	Valencia Ave	Armstrong Ave to Kensington Park		Tus	4D	7,500	0.20	A
2842	Valencia Ave	Kensington Park to Tustin Ranch Rd		Tus	4D	7,400	0.20	A
587	Walnut Ave	East of Newport Ave		Tus	4U	17,900	0.72	C
589	Walnut Ave	East of Red Hill Ave		Tus	4D	18,200	0.49	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	21,100	0.56	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	19,800	0.53	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	16,700	0.30	A
F	Denotes intersection operating at a deficient LOS							
a	Intersection within Irvine Planning Area 36--LOS E acceptable							
b	Orange County Congestion Management Program (CMP) locations							

Figure 4.1 – Interim Cumulative Baseline Daily Arterial ADT

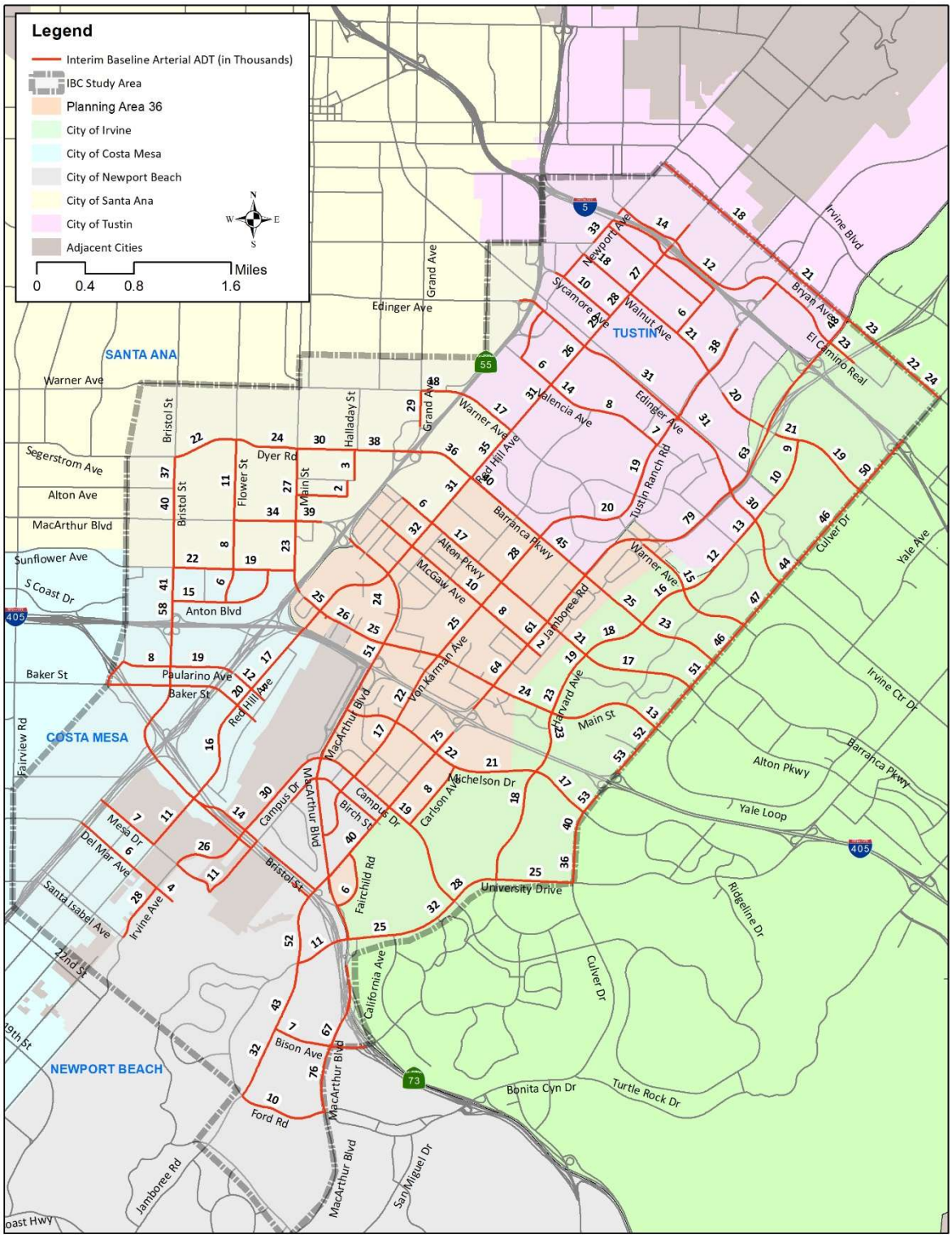
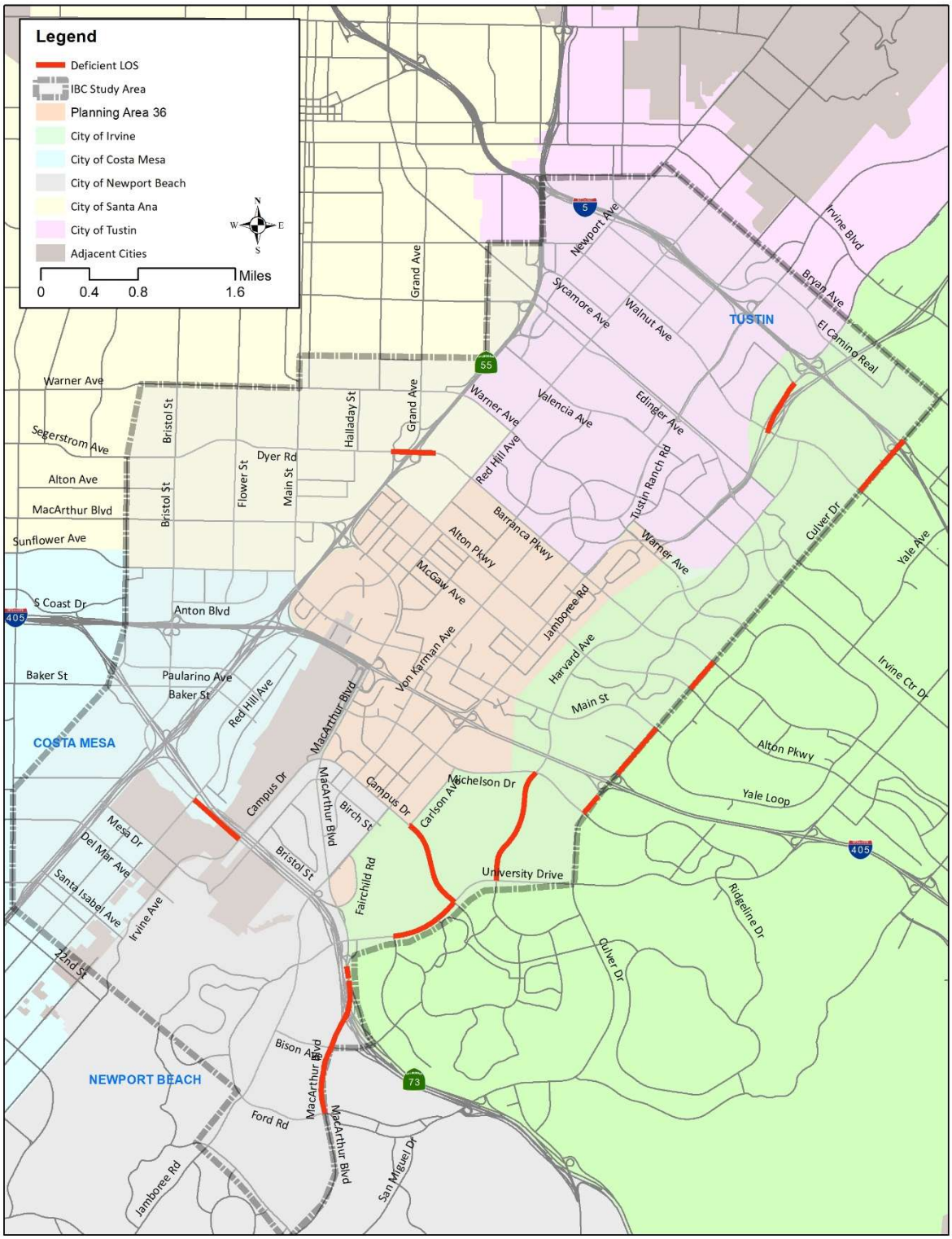


Figure 4.2 – Interim Cumulative Baseline Daily Arterial Deficiencies



4.4 Interim Cumulative Baseline Peak Hour Link Analysis

Peak hour directional traffic volumes were directly obtained from peak hour forecast intersection turning movement volumes for intersections upstream and downstream for each deficient arterial segment. **Table 4.4** presents the results of peak hour link analysis, indicating that all City of Irvine arterial segments that are deficient under daily conditions operate at an acceptable LOS in both peak hours.

Table 4.4 – Interim Cumulative Baseline Peak Hour Link Analysis

ID	ARTERIAL	SEGMENT LIMITS	FACILITY TYPE	PEAK HOUR VOLUME				AM		PM	
				AM		PM		NB/EB	SB/WB	NB/EB	SB/WB
				NB/EB	SB/WB	NB/EB	SB/WB				
879	Campus Dr	Carlson Ave to University	2U	620	800	1,050	740	Acceptable	Acceptable	Acceptable	Acceptable
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps	7D	1,830	3,330	3,650	1,930	Acceptable	Acceptable	Acceptable	Acceptable
213	Culver Dr	I-5 SB Ramps to Scottsdale Dr	6D	1,530	2,900	2,790	2,300	Acceptable	Acceptable	Acceptable	Acceptable
214	Culver Dr	Scottsdale Dr to Walnut Ave	6D	1,240	2,600	2,330	1,740	Acceptable	Acceptable	Acceptable	Acceptable
219	Culver Dr	Barranca Pkwy to Alton Pkwy	6D	1,320	2,650	2,460	1,690	Acceptable	Acceptable	Acceptable	Acceptable
221	Culver Dr	Main Street to San Leandro	6D	1,520	2,830	2,710	1,860	Acceptable	Acceptable	Acceptable	Acceptable
222	Culver Dr	San Leandro to I-405 NB On-Ramp	6D	1,630	3,030	2,850	1,900	Acceptable	Acceptable	Acceptable	Acceptable
224	Culver Dr	I-405 SB Ramps to Michelson Dr	6D	2,230	2,320	2,750	1,790	Acceptable	Acceptable	Acceptable	Acceptable
183	Harvard Ave	Michelson Dr to University Dr	2U	530	1,000	1,080	820	Acceptable	Acceptable	Acceptable	Acceptable
133	Jamboree Rd	Michelle Dr to Walnut Ave	5D	770	2,310	1,740	1,580	Acceptable	Acceptable	Acceptable	Acceptable
188	University Dr	California Ave to Mesa Rd	4D	1,440	800	1,760	740	Acceptable	Acceptable	Acceptable	Acceptable
187	University Dr	Mesa Rd to Campus Dr	4D	1,000	800	1,470	740	Acceptable	Acceptable	Acceptable	Acceptable

4.5 Interim Cumulative Baseline Peak Hour Intersection Analysis

Using the turning movement volumes from each intersection within the study area assumed to be built by the Interim year, ICU analysis was developed for every intersection within the study area. The intersection analysis includes both a reporting of intersection ICU and the corresponding LOS. **Table 4.5** displays the ICU analysis for the Interim Cumulative Baseline conditions sorted by jurisdiction. For shared jurisdictions, the more conservative methodology was utilized. **Figure 4.3** and **Figure 4.4** graphically represent the AM and PM peak hour intersection ICU for deficient intersections. Detailed ICU worksheets for each Interim alternative are available in **Appendix E**.

For the intersections that are deficient, further discussion of specific significant impacts or cumulative deficiencies and improvements are addressed in **Chapter 6.** The following intersections are deficient in the Interim Cumulative Baseline scenario:

- #97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (Irvine/Tustin) – PM Peak Hour LOS E with a 0.97 V/C
- #136 Jamboree Road at Barranca Parkway (Irvine/Tustin) – PM Peak Hour LOS F with a 1.05 V/C
- #723 Main Street at Segerstrom (Santa Ana)– PM Peak Hour LOS E with a 0.93 V/C

Table 4.5 – Interim Cumulative Baseline Peak Hour Intersection LOS

ID	INTERSECTION	PA 36/CMP SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS	JURISDICTION	INTERIM CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
10	SR-55 Frontage Road SB at Paularino Avenue			CM	0.77	C	0.67	B
11	SR-55 Frontage Road NB at Paularino Avenue			CM	0.61	B	0.71	C
12	SR-55 Frontage Road SB at Baker Street			CM	0.67	B	0.81	D
13	SR-55 Frontage Road NB at Baker Street			CM	0.73	C	0.72	C
50	Red Hill Avenue at Paularino Avenue			CM	0.61	B	0.69	B
51	Red Hill Avenue at Baker Street			CM	0.48	A	0.67	B
52	Red Hill Avenue at Bristol Street			CM	0.52	A	0.58	A
541	Bear at Baker Street			CM	0.59	A	0.71	C
542	Bear at Paularino Avenue			CM	0.40	A	0.63	B
545	Bristol at Sunflower			CM	0.58	A	0.72	C
546	Bristol at Anton			CM	0.35	A	0.54	A
547	Bristol at Paularino Avenue			CM	0.50	A	0.73	C
548	Bristol at Baker Street			CM	0.55	A	0.71	C
549	Newport Boulevard SB at Bristol			CM	0.24	A	0.50	A
550	Newport Boulevard NB at Bristol			CM	0.33	A	0.49	A
715	Bristol at I-405 NB Off Ramp			CM	0.44	A	0.70	B
716	Bristol at I-405 SB Ramps			CM	0.41	A	0.57	A
717	Bear at SR-73 SB Ramps			CM	0.40	A	0.50	A
720	Flower at MacArthur Boulevard			CM	0.59	A	0.78	C
721	Flower at Sunflower			CM	0.39	A	0.49	A
722	Anton at Sunflower			CM	0.42	A	0.40	A
726	Main Street at Sunflower			CM	0.55	A	0.67	B
735	Newport Boulevard NB at Del mar			CM	0.82	D	0.42	A
736	Newport Boulevard SB at Fair/Del Mar			CM	0.39	A	0.44	A
737	Newport Boulevard NB at Mesa Road			CM	0.39	A	0.37	A
738	Newport Boulevard SB at Mesa Road			CM	0.24	A	0.65	B
32	Daimler Street at McGaw Avenue			Irv	0.15	A	0.15	A
45	Red Hill Avenue at McGaw Avenue	a		Irv	0.53	A	0.71	C
47	Red Hill Avenue at MacArthur Boulevard	a		Irv	0.72	C	0.83	D
48	Red Hill Avenue at Sky Park North	a		Irv	0.36	A	0.54	A
49	Red Hill Avenue at Main Street	a		Irv	0.68	B	0.89	D
66	Gillette Avenue at Alton Parkway	a		Irv	0.41	A	0.59	A
67	Gillette Avenue at McGaw Avenue	a		Irv	0.34	A	0.51	A
70	Gillette Avenue at Main Street	a		Irv	0.38	A	0.62	B
73	Armstrong Avenue at Alton Parkway West	a		Irv	0.29	A	0.40	A
74	Armstrong Avenue at Alton Parkway East	a		Irv	0.34	A	0.40	A
77	MacArthur Boulevard at Sky Park East	a		Irv	0.34	A	0.48	A
78	MacArthur Boulevard at Main Street	a		Irv	0.63	B	0.76	C
79	MacArthur Boulevard at I-405 NB Ramps	a		Irv	0.72	C	0.64	B
80	MacArthur Boulevard at I-405 SB Ramps	a		Irv	0.61	B	0.67	B
82	MacArthur Boulevard at Michelson Drive	a		Irv	0.80	C	0.84	D
83	MacArthur Boulevard at Douglas Avenue	a		Irv	0.37	A	0.42	A
87	Dupont Drive at Michelson Drive	a		Irv	0.41	A	0.40	A
98	Von Karman Avenue at Alton Parkway	a		Irv	0.80	C	0.85	D
99	Von Karman Avenue at McGaw Avenue	a		Irv	0.69	B	0.75	C
100	Von Karman Avenue at Main Street	a		Irv	0.65	B	0.77	C
101	Von Karman Avenue at Morse Avenue	a		Irv	0.53	A	0.65	B
102	Von Karman Avenue at Michelson Drive	a		Irv	0.59	A	0.70	B
103	Von Karman Avenue at Dupont Drive	a		Irv	0.45	A	0.54	A

ID	INTERSECTION	PA 36/CMP SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS	JURISDICTION	INTERIM CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
104	Von Karman Avenue at Martin	a		Irv	0.38	A	0.53	A
115	Millikan Avenue at Alton Parkway	a		Irv	0.39	A	0.54	A
116	Cartwright Road at Main Street	a		Irv	0.43	A	0.60	A
119	Teller Avenue at Michelson Drive	a		Irv	0.48	A	0.54	A
128	Jamboree Road at I-5 NB Ramps	b		Irv	0.85	D	0.73	C
129	Jamboree Road at I-5 SB Ramps	b		Irv	0.74	C	0.60	A
130	Jamboree Road at Michelle Drive			Irv	0.61	B	0.78	C
131	Jamboree Road SB at Walnut Avenue			Irv	0.57	A	0.56	A
132	Jamboree Road NB at Walnut Avenue			Irv	0.42	A	0.59	A
135	Jamboree Road NB Ramps at Warner Avenue			Irv	0.35	A	0.66	B
137	Jamboree Road at Beckman Avenue	a		Irv	0.60	A	0.70	B
138	Jamboree Road at Alton Parkway	a		Irv	0.71	C	0.84	D
139	Jamboree Road at McGaw Avenue	a		Irv	0.64	B	0.76	C
140	Jamboree Road at Kelvin Avenue	a		Irv	0.59	A	0.61	B
141	Jamboree Road at Main Street	a		Irv	0.75	C	0.88	D
143	Jamboree Road at I-405 NB Ramps	a,b		Irv	0.73	C	0.80	C
144	Jamboree Road at I-405 SB Ramps	a,b		Irv	0.95	E	0.90	D
145	Jamboree Road at Michelson Drive	a		Irv	0.72	C	0.85	D
146	Jamboree Road at Dupont Road	a		Irv	0.54	A	0.60	A
164	Construction South at Barranca Parkway	a		Irv	0.34	A	0.54	A
168	Murphy Avenue at Alton Parkway	a		Irv	0.36	A	0.65	B
170	Union at Main Street	a		Irv	0.39	A	0.63	B
171	Veneto at Main Street			Irv	0.42	A	0.57	A
174	Carlson Avenue at Michelson Drive	a		Irv	0.52	A	0.63	B
175	Carlson Avenue at Campus Drive	a		Irv	0.44	A	0.69	B
180	Harvard Avenue at Walnut Avenue			Irv	0.46	A	0.54	A
183	Harvard Avenue at Warner Avenue			Irv	0.49	A	0.58	A
184	Harvard Avenue at Barranca Parkway			Irv	0.58	A	0.66	B
185	Harvard Avenue at Alton Parkway			Irv	0.68	B	0.69	B
186	Harvard Avenue at Main Street			Irv	0.59	A	0.75	C
187	Harvard Avenue at Coronado			Irv	0.54	A	0.59	A
188	Harvard Avenue Michelson Drive			Irv	0.68	B	0.85	D
189	Harvard Avenue University Drive			Irv	0.72	C	0.75	C
190	University Drive at Campus Drive		√	Irv	0.79	C	0.78	C
191	Mesa Road at University Drive			Irv	0.64	B	0.71	C
192	California Avenue at University Drive			Irv	0.74	C	0.84	D
196	Hearthstone Boulevard at Irvine Center Drive			Irv	0.51	A	0.49	A
198	Paseo Westpark at Warner Avenue			Irv	0.43	A	0.35	A
199	Paseo Westpark at Barranca Parkway			Irv	0.44	A	0.55	A
200	Paseo Westpark at Alton Parkway			Irv	0.50	A	0.60	A
201	Paseo Westpark at Main Street			Irv	0.55	A	0.55	A
221	Culver Drive at Bryan Avenue			Irv	0.79	C	0.73	C
222	Culver Drive at Trabuco Road			Irv	0.82	D	0.80	C
223	Culver Drive at I-5 SB Ramps			Irv	0.66	B	0.66	B
224	Culver Drive at Walnut Avenue			Irv	0.77	C	0.85	D
225	Culver Drive at Deerfield Drive			Irv	0.76	C	0.74	C
226	Culver Drive at Irvine Center Drive		√	Irv	0.71	C	0.71	C
227	Culver Drive at Warner Avenue			Irv	0.78	C	0.68	B
228	Culver Drive at Barranca Parkway			Irv	0.78	C	0.84	D
229	Culver Drive at Alton Parkway		√	Irv	0.76	C	0.80	C

ID	INTERSECTION	PA 36/CMP SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS	JURISDICTION	INTERIM CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
230	Culver Drive at Main Street			Irv	0.70	B	0.72	C
231	Culver Drive at San Leandro			Irv	0.73	C	0.60	A
232	Culver Drive at I-405 NB Ramps			Irv	0.56	A	0.78	C
233	Culver Drive at I-405 SB Ramps			Irv	0.65	B	0.69	B
234	Culver Drive at Michelson Drive			Irv	0.61	B	0.90	D
235	Culver Drive at University Drive		√	Irv	0.72	C	0.74	C
337	Von Karman Avenue at Quartz	a		Irv	0.56	A	0.59	A
439	Bixby at Michelson Drive			Irv	0.42	A	0.48	A
440	Siglo at Main Street			Irv	0.40	A	0.55	A
472	Obsidian at Michelson Drive	a		Irv	0.57	A	0.56	A
84	MacArthur Boulevard at Campus Drive	a		Irv/NB	0.57	A	0.84	D
105	Von Karman Avenue at Campus Drive	a		Irv/NB	0.59	A	0.75	C
121	Teller Avenue at Campus Drive	a		Irv/NB	0.27	A	0.40	A
147	Jamboree Road at Campus Drive	a		Irv/NB	0.64	B	0.64	B
149	Jamboree Road at Fairchild Road	a		Irv/NB	0.61	B	0.71	C
150	Jamboree Road at MacArthur Boulevard	a,b		Irv/NB	0.69	B	0.74	C
176	Fairchild Avenue at MacArthur Boulevard	a		Irv/NB	0.74	C	0.74	C
193	MacArthur Boulevard NB at University Drive			Irv/NB	0.48	A	0.51	A
194	MacArthur Boulevard SB at University Drive			Irv/NB	0.47	A	0.39	A
195	SR-73 SB Ramps at University Drive			Irv/NB	0.70	B	0.46	A
9	SR-55 NB Ramps at MacArthur Boulevard	a		Irv/SA	0.85	D	0.58	A
31	Daimler Street at Alton Parkway	a		Irv/SA	0.26	A	0.32	A
43	Red Hill Avenue at Deere Avenue	a		Irv/SA	0.47	A	0.74	C
44	Red Hill Avenue at Alton Parkway	a		Irv/SA	0.54	A	0.82	D
42	Red Hill Avenue at Barranca Parkway/Dyer Road	a		Irv/SA/Tus	0.61	B	0.76	C
71	Armstrong Ave at Barranca Parkway	a		Irv/Tus	0.45	A	0.73	C
97	Von Karman Avenue/Tustin Ranch Road at Barranca Parkway	a		Irv/Tus	0.83	D	0.97	E
112	Myford Road at Michelle Drive			Irv/Tus	0.22	A	0.32	A
113	Myford Road at Walnut Avenue			Irv/Tus	0.35	A	0.41	A
114	Millikan Avenue/District Way at Barranca Parkway	a		Irv/Tus	0.50	A	0.68	B
126	Jamboree Road at Bryan Avenue			Irv/Tus	0.68	B	0.79	C
127	Jamboree Road at El Camino Real			Irv/Tus	0.72	C	0.76	C
134	Loop Road/Park Ave at Warner Avenue			Irv/Tus	0.57	A	0.75	C
136	Jamboree Road at Barranca Parkway	a		Irv/Tus	0.90	D	1.05	F
181	Harvard Avenue at Edinger Avenue/Irvine Center Drive			Irv/Tus	0.50	A	0.60	A
182	Harvard Avenue at Paseo Westpark/Moffett Dr.			Irv/Tus	0.30	A	0.41	A
441	Loop Road at Jamboree Road SB Ramps			Irv/Tus	0.34	A	0.82	D
61	Campus Drive at Airport Way			NB	0.42	A	0.77	C
62	Campus Drive at Bristol Street NB			NB	0.60	A	0.78	C
63	Campus Drive at Bristol Street SB			NB	0.72	C	0.58	A
64	Birch Street at Bristol Street NB			NB	0.52	A	0.50	A
65	Birch Street at Bristol Street SB			NB	0.45	A	0.48	A
85	MacArthur Boulevard at Birch Street			NB	0.48	A	0.56	A
106	Von Karman Avenue at Birch Street			NB	0.39	A	0.43	A
107	Von Karman Avenue at MacArthur Boulevard			NB	0.35	A	0.57	A
148	Jamboree Road at Birch Street			NB	0.56	A	0.53	A
151	Jamboree Road at Bristol Street NB			NB	0.38	A	0.54	A
153	Jamboree Road at Bristol Street SB			NB	0.68	B	0.68	B
154	Jamboree Road at Eastbluff Drive			NB	0.65	B	0.62	B
155	Jamboree Road at Bison Avenue			NB	0.50	A	0.52	A

ID	INTERSECTION	PA 36/CMP SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS	JURISDICTION	INTERIM CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
156	Jamboree Road at Ford Road			NB	0.89	D	0.77	C
178	MacArthur Boulevard at Bison Avenue			NB	0.67	B	0.63	B
179	MacArthur Boulevard at Ford Road			NB	0.74	C	0.77	C
741	Jamboree at San Joaquin			NB	0.61	B	0.53	A
742	MacArthur at San Joaquin			NB	0.58	A	0.88	D
733	Irvine at Mesa Road			NB/OC	0.55	A	0.77	C
734	Irvine at University/Del Mar			NB/OC	0.66	B	0.75	C
4	SR-55 SB Ramps at Edinger Avenue	b		SA	0.61	B	0.60	A
5	Hotel Terrace Drive at Dyer Road			SA	0.58	A	0.73	C
6	Grand Avenue at Dyer Road			SA	0.71	C	0.88	D
7	SR-55 NB Ramps at Dyer Road			SA	0.71	C	0.66	B
8	SR-55 SB Ramps at MacArthur Boulevard	c		SA	0.69	B	0.61	B
29	Pullman Street at Barranca Parkway			SA	0.57	A	0.76	C
543	Bristol at Segerstrom			SA	0.79	C	0.80	C
544	Bristol Street at MacArthur Boulevard			SA	0.70	B	0.81	D
718	Bear at SR-73 NB Ramps			SA	0.38	A	0.60	A
719	Flower at Segerstrom			SA	0.70	B	0.79	C
723	Main Street at Segerstrom			SA	0.77	C	0.93	E
724	Main Street at Alton Avenue			SA	0.36	A	0.48	A
725	Main and MacArthur (w/o SR-55)	c		SA	0.65	B	0.77	C
727	Halladay at Dyer Road			SA	0.62	B	0.71	C
728	Halladay E at Alton Parkway			SA	0.20	A	0.28	A
729	Halladay W at Alton Parkway			SA	0.20	A	0.28	A
730	Grand Avenue at Warner			SA	0.50	A	0.73	C
731	SR-55 SB Ramps at Grand Avenue			SA	0.62	B	0.55	A
3	Newport Avenue at Edinger Avenue			Tus	0.75	C	0.55	A
14	Walnut Avenue at McFadden Avenue			Tus	0.38	A	0.48	A
18	Newport Avenue at Bryan Avenue			Tus	0.46	A	0.59	A
19	Newport Avenue at Main Street			Tus	0.67	B	0.63	B
20	Newport Avenue at El Camino Real			Tus	0.79	C	0.74	C
21	Newport Avenue at I-5 NB Ramps			Tus	0.71	C	0.59	A
22	Newport Avenue at I-5 SB Ramp/Nisson Road			Tus	0.61	B	0.66	B
23	Newport Avenue at McFadden Street			Tus	0.58	A	0.53	A
24	Newport Avenue at Walnut Avenue			Tus	0.65	B	0.66	B
25	Newport Avenue at Sycamore Avenue			Tus	0.65	B	0.68	B
27	Del Amo Avenue at Edinger Avenue			Tus	0.43	A	0.43	A
35	Red Hill Avenue at Bryan Avenue			Tus	0.63	B	0.81	D
36	Red Hill Avenue at El Camino Real			Tus	0.56	A	0.55	A
37	Red Hill Avenue at Nisson Road			Tus	0.61	B	0.72	C
38	Red Hill Avenue at Walnut Avenue			Tus	0.68	B	0.84	D
39	Red Hill Avenue at Sycamore Avenue			Tus	0.65	B	0.58	A
40	Red Hill Avenue at Edinger Avenue			Tus	0.67	B	0.82	D
55	Browning Avenue at Bryan Avenue			Tus	0.38	A	0.55	A
56	Browning Avenue at El Camino Real			Tus	0.34	A	0.50	A
58	Browning Avenue at Walnut Avenue			Tus	0.47	A	0.63	B
92	Tustin Ranch Road at Bryan Avenue			Tus	0.70	B	0.83	D
93	Tustin Ranch Road at El Camino Real			Tus	0.84	D	0.78	C
94	Tustin Ranch Road at I-5 NB Ramps			Tus	0.62	B	0.63	B
95	Tustin Ranch Road at I-5 SB Ramps			Tus	0.65	B	0.70	B
96	Tustin Ranch Road at Walnut Avenue			Tus	0.56	A	0.84	D

ID	INTERSECTION	PA 36/CMP SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS	JURISDICTION	INTERIM CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
109	Myford Road at Bryan Avenue			Tus	0.39	A	0.56	A
110	Myford Road at El Camino Real			Tus	0.30	A	0.52	A
111	Franklin Avenue at Walnut Avenue			Tus	0.50	A	0.77	C
133	Jamboree Road at Edinger Avenue	b		Tus	0.47	A	0.66	B
445	Tustin Ranch Road at Warner Avenue North			Tus	0.44	A	0.52	A
446	Tustin Ranch Road at Warner Avenue South			Tus	0.51	A	0.62	B
447	Armstrong Avenue/Severyns Rd Valencia Avenue			Tus	0.30	A	0.31	A
448	Armstrong Avenue at Warner Avenue			Tus	0.17	A	0.25	A
453	Red Hill Avenue at Valencia Avenue			Tus	0.66	B	0.58	A
454	Tustin Ranch Road at Valencia Avenue			Tus	0.45	A	0.57	A
455	East Connector/Jamboree Plaza at Edinger Avenue			Tus	Not analyzed in Interim conditions			
456	North Loop Road at Valencia Avenue			Tus				
457	North Loop Road at Moffett Drive			Tus	0.06	A	0.07	A
478	Red Hill Avenue at I-5 NB Ramps			Tus	0.65	B	0.64	B
479	Red Hill Avenue at I-5 SB Ramps			Tus	0.70	B	0.79	C
480	Tustin Ranch Road/Connector at Edinger Avenue			Tus	0.13	A	0.12	A
732	SR-55 NB Ramp at Newport Avenue			Tus	0.54	A	0.63	B
739	Newport Avenue at Mitchell Avenue			Tus	0.64	B	0.65	B
740	Red Hill Avenue at Mitchell Avenue			Tus	0.53	A	0.59	A
743	Newport Avenue at Valencia			Tus	0.39	A	0.72	C
745	Tustin Ranch Road at Park Avenue			Tus	0.50	A	0.54	A
746	Kensington Park Drive at Edinger Avenue			Tus	0.41	A	0.49	A
747	Kensington Park Drive at Valencia Avenue			Tus	0.26	A	0.28	A
748	Armstrong Avenue at A Street			Tus	0.27	A	0.24	A
749	Park Avenue at A Street			Tus	0.05	A	0.05	A
750	Legacy Road at Warner Avenue			Tus	0.31	A	0.30	A
751	Tustin Ranch Road at Legacy Road			Tus	0.37	A	0.30	A
752	Legacy Road at North Loop Road			Tus	0.13	A	0.12	A
753	Tustin Ranch Road at Edinger Avenue Connector			Tus	0.37	A	0.29	A
28	Pullman Street at Warner Avenue			Tus/SA	0.51	A	0.55	A
41	Red Hill Avenue at Warner Avenue			Tus/SA	0.48	A	0.64	B
754	Red Hill Avenue at Carnegie Avenue			Tus/SA	0.43	A	0.74	C
F	Denotes intersection operating at a deficient LOS							
a	Intersection within Irvine Planning Area 36--LOS E acceptable							
b	Orange County Congestion Management Program (CMP) locations							
c	Intersections within City of Santa Ana--LOS E acceptable							
√	ATMS credit-Reduction of 0.05 applied to ICU							

Figure 4.3 – Interim Cumulative Baseline AM Peak Hour Intersection Deficiencies

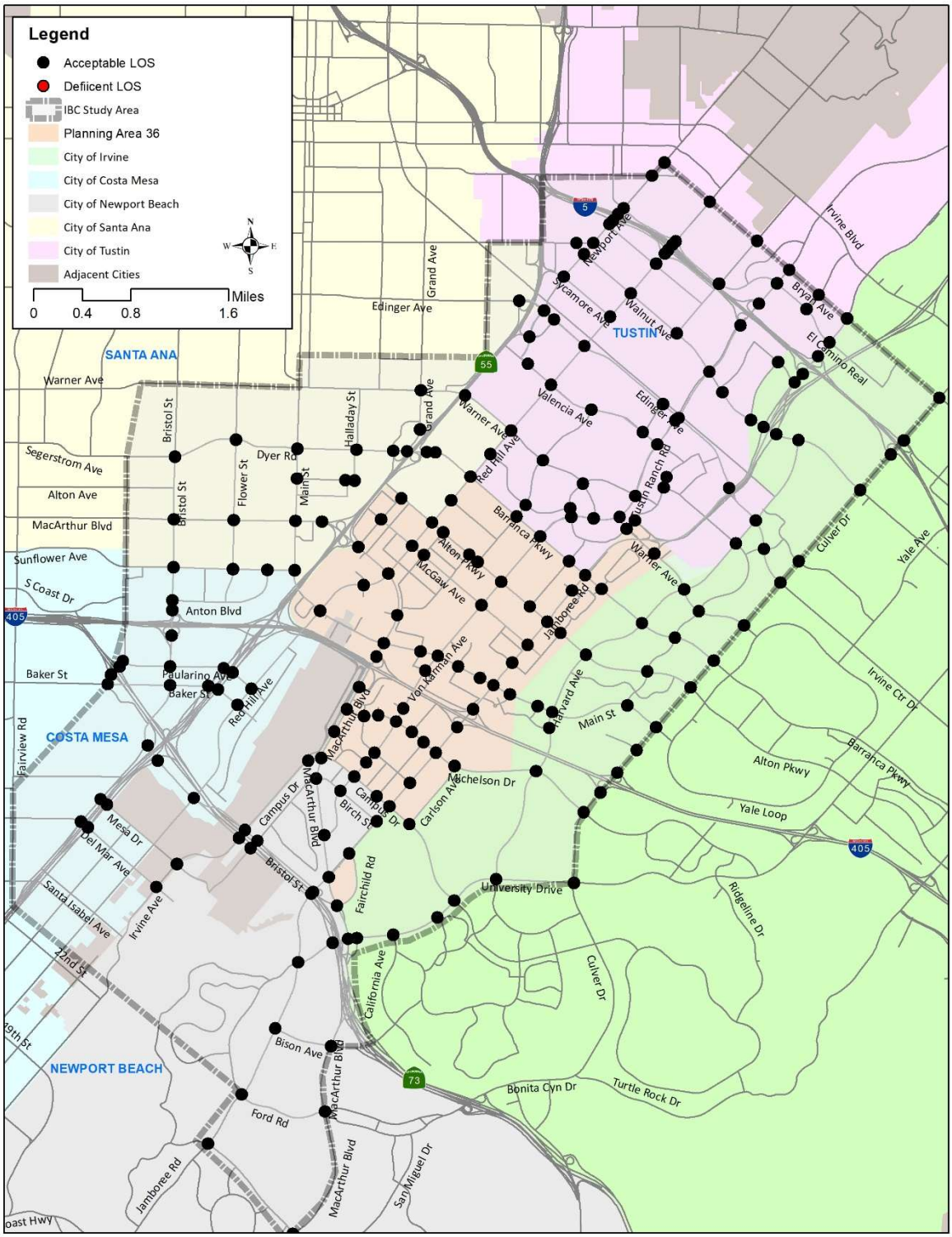
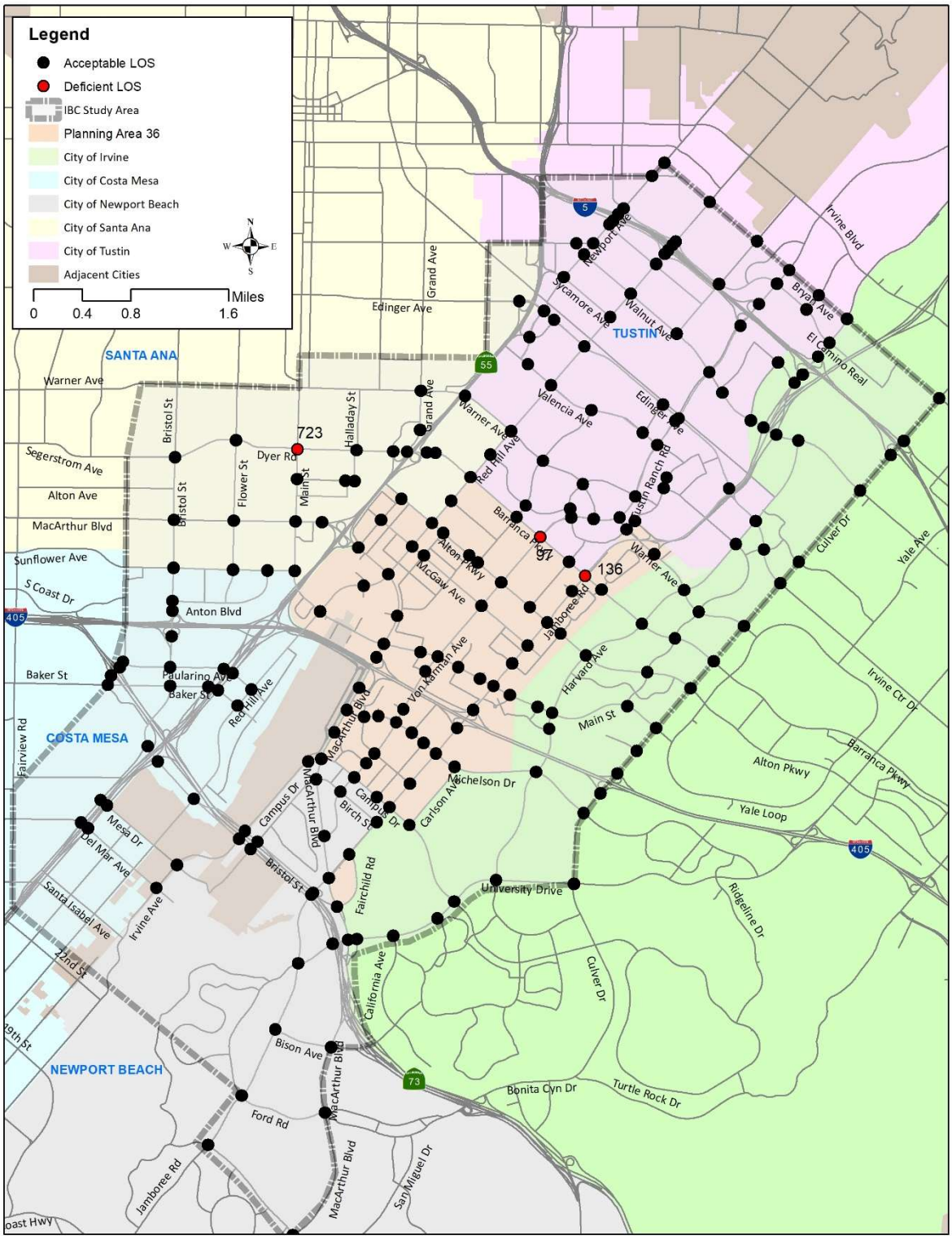


Figure 4.4 – Interim Cumulative Baseline PM Peak Hour Intersection Deficiencies



4.6 Interim Cumulative Baseline Peak Hour Freeway Mainline Analysis

Future freeway mainline volumes are forecasted using the ITAM model. **Table 4.6** provides the freeway mainline segment limits, direction, number of lanes, and peak hour capacity, as well as the volumes, densities, and levels of service. There are no freeway mainline capacity increases within the study area anticipated between the existing conditions and the Interim year.

Using the methodology prescribed by the Orange County Congestion Management Plan (CMP), **Table 4.6** shows deficient freeway mainline segments under the Interim Cumulative Baseline scenario. In the AM peak, 39 out of 60 freeway segments operate at a deficient LOS and in the PM peak 25 out of 60 operate at a deficient LOS. The following segments are forecast to operate at LOS E or F. The deficient segments are:

AM Peak Hour:

I-5	**Northbound**	• Between Culver Drive and Jamboree Road • Between Jamboree Road and Tustin Ranch Road • Between Tustin Ranch Road and Red Hill Avenue • Between Red Hill Avenue and Newport Avenue • Between Newport Avenue and SR-55 • North of SR-55
	Southbound	• Between Jamboree Road and Culver Drive • Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road • Between Newport Avenue and Red Hill Avenue • Between SR-55 and Newport Avenue • North of SR-55
I-405	**Northbound**	• Between Culver Drive and Jamboree Road • Between Jamboree Road and MacArthur Boulevard • Between MacArthur Boulevard and SR-55
	Southbound	• Between Jamboree Road and Culver Drive • Between SR-55 and MacArthur Boulevard • Between Bristol Street and SR-55 • Between SR-73 and Bristol Street
SR-55	**Northbound**	• Between I-405 and MacArthur Boulevard • North of I-5
	Southbound	• Between MacArthur Boulevard and I-405 • Between Dyer Road and MacArthur Boulevard • Between Edinger Avenue and Dyer Road • Between McFadden Street/Sycamore Avenue and Edinger Avenue • Between I-5 and McFadden Street/Sycamore Avenue • North of I-5
SR-73	**Northbound**	• Between MacArthur Boulevard and University Drive • Between University Drive and Jamboree Road • Between Jamboree Road and Birch Street • Between Birch Street and Campus Drive • Between Campus Drive and SR-55 • Between SR-55 and Bear Street • Between Bear Street and I-405
	Southbound	• Between Birch Street and Jamboree Road • Between Campus Drive and Birch Street • Between SR-55 and Campus Drive • Between Bear Street and SR-55 • Between I-405 and Bear Street

PM Peak Hour:

I-5	**Northbound**	• Between Tustin Ranch Road and Red Hill Avenue • Between Red Hill Avenue and Newport Avenue • Between Newport Avenue and SR-55 • North of SR-55
	Southbound	• Between Jamboree Road and Culver Drive • Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road • Between Newport Avenue and Red Hill Avenue • Between SR-55 and Newport Avenue • North of SR-55
I-405	**Southbound**	• Between Jamboree Road and Culver Drive • Between SR-55 and MacArthur Boulevard
SR-55	**Northbound**	• Between I-405 and MacArthur Boulevard • Between MacArthur Boulevard and Dyer Road • Between Dyer Road and Edinger Avenue • Between McFadden Street/Sycamore Avenue and I-5 • North of I-5
	Southbound	• Between MacArthur Boulevard and I-405
SR-73	**Northbound**	• Between Jamboree Road and Birch Street • Between Campus Drive and SR-55 • Between SR-55 and Bear Street • Between Bear Street and I-405
	Southbound	• Between Jamboree Road and University Drive • Between Birch Street and Jamboree Road • Between SR-55 and Campus Drive

Table 4.6 –Interim Cumulative Baseline Freeway Peak Hour Mainline LOS

LOCATION		FREEWAY LANES			INTERIM BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
		DIRECTION	LANES	CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	Culver Drive to Jamboree Road	NB	6	12,000	13,081	1.09	F	10,492	0.87	D
		SB	6	12,000	10,970	0.91	E	11,492	0.96	E
	Jamboree Road to Tustin Ranch Road	NB	6	12,000	12,899	1.07	F	10,591	0.88	D
		SB	6	12,000	11,286	0.94	E	11,194	0.93	E
	Tustin Ranch Road to Red Hill Avenue	NB	6	12,000	13,263	1.11	F	10,896	0.91	E
		SB	6	12,000	12,002	1.00	E	11,895	0.99	E
	Red Hill Avenue to Newport Avenue	NB	5	10,000	12,797	1.28	F	10,501	1.05	F
		SB	6	12,000	11,400	0.95	E	11,295	0.94	E
	Newport Avenue to SR-55	NB	6	12,000	13,872	1.16	F	11,242	0.94	E
		SB	4	8,000	7,959	0.99	E	8,025	1.00	E
	N of SR-55	NB	5	10,000	12,173	1.22	F	10,516	1.05	F
		SB	5	10,000	10,451	1.05	F	9,904	0.99	E
I-405	Culver Drive to Jamboree Road	NB	5	10,000	12,571	1.26	F	8,757	0.88	D
		SB	4	8,000	8,817	1.10	F	11,102	1.39	F
	Jamboree Road to MacArthur Boulevard	NB	6	12,000	12,806	1.07	F	10,155	0.85	D
		SB	7	14,000	10,809	0.77	D	11,548	0.82	D
	MacArthur Boulevard to SR-55	NB	6	12,000	11,905	0.99	E	10,615	0.88	D
		SB	6	12,000	11,777	0.98	E	11,284	0.94	E
	SR-55 to Bristol Street	NB	4	8,000	6,394	0.80	D	6,116	0.76	D
		SB	5	10,000	9,441	0.94	E	7,854	0.79	D
	Bristol Street to SR-73	NB	5	10,000	7,437	0.74	D	7,483	0.75	D
		SB	5	10,000	9,315	0.93	E	7,123	0.71	C

LOCATION		FREEWAY LANES			INTERIM BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
		DIRECTION	LANES	CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS
SR-55	S of Victoria Street	NB	4	8,000	2,029	0.25	A	1,695	0.21	A
		SB	3	6,000	2,569	0.43	B	2,538	0.42	B
	Victoria Street to Fair Drive	NB	4	8,000	4,501	0.56	C	3,352	0.42	B
		SB	3	6,000	3,944	0.66	C	4,297	0.72	D
	Fair Drive to SR-73	NB	4	8,000	6,254	0.78	D	4,894	0.61	C
		SB	4	8,000	5,038	0.63	C	5,203	0.65	C
	SR-73 to Baker Street	NB	4	8,000	5,719	0.71	C	5,151	0.64	C
		SB	4	8,000	5,997	0.75	D	5,570	0.70	C
	Baker Street to I-405	NB	4	8,000	5,719	0.71	C	5,151	0.64	C
		SB	4	8,000	5,997	0.75	D	5,570	0.70	C
	I-405 to MacArthur Boulevard	NB	4	8,000	7,549	0.94	E	7,463	0.93	E
		SB	4	8,000	8,779	1.10	F	7,408	0.93	E
	MacArthur Boulevard to Dyer Road	NB	4	8,000	6,836	0.85	D	7,485	0.94	E
		SB	4	8,000	8,425	1.05	F	6,575	0.82	D
	Dyer Road to Edinger Avenue	NB	4	8,000	6,962	0.87	D	8,101	1.01	F
		SB	4	8,000	8,589	1.07	F	6,176	0.77	D
	Edinger Avenue to McFadden Street/Sycamore Avenue	NB	5	10,000	7,491	0.75	D	8,588	0.86	D
		SB	4	8,000	9,440	1.18	F	6,864	0.86	D
	McFadden Street/Sycamore Avenue to I-5	NB	5	10,000	8,367	0.84	D	9,050	0.90	E
		SB	5	10,000	9,328	0.93	E	7,208	0.72	D
	N of I-5	NB	3	6,000	5,742	0.96	E	6,450	1.08	F
		SB	3	6,000	6,850	1.14	F	5,308	0.88	D
SR-73	MacArthur Boulevard to University Drive	NB	3	6,000	7,188	1.20	F	5,289	0.88	D
		SB	4	8,000	5,353	0.67	C	6,288	0.79	D
	University Drive to Jamboree Road	NB	3	6,000	7,188	1.2	F	5,289	0.88	D
		SB	3	6,000	4,828	0.80	D	5,554	0.93	E
	Jamboree Road to Birch Street	NB	4	8,000	8,974	1.12	F	7,547	0.94	E
		SB	3	6,000	5,906	0.98	E	6,391	1.07	F
	Birch Street to Campus Drive	NB	4	8,000	7,553	0.94	E	6,765	0.85	D
		SB	4	8,000	7,237	0.9	E	7,117	0.89	D
	Campus Drive to SR-55	NB	4	8,000	8,281	1.04	F	8,549	1.07	F
		SB	4	8,000	8,916	1.11	F	8,000	1.00	E
	SR-55 to Bear Street	NB	3	6,000	6,058	1.01	F	6,128	1.02	F
		SB	3	6,000	5,918	0.99	E	5,261	0.88	D
	Bear Street to I-405	NB	3	6,000	5,482	0.91	E	5,773	0.96	E
		SB	3	6,000	5,821	0.97	E	4,758	0.79	D
SR-261	S of El Camino Real	NB	2	4,000	1,093	0.27	A	3,137	0.78	D
		SB	2	4,000	3,503	0.88	D	1,477	0.37	B

F Denotes mainline segments operating at a deficient LOS

4.7 Interim Cumulative Baseline Peak Hour Freeway Ramp Analysis

The freeway ramp volumes were forecast using the ITAM model. Since most ramps in the network are associated with intersection legs in the model the post-processed volume from that leg of the intersection provided the forecast volume for the freeway ramp. **Table 4.7** displays the freeway ramp interchange, ramp type, number of lanes, and peak hour capacity, as well as the volumes, and levels of service, as with the freeway mainlines. Ten of the 98 ramps in the study area are forecast to be deficient in the AM peak. In the PM peak, 7 ramps

are forecast to be deficient. In the Interim Cumulative Baseline scenario, the following are forecast to be deficient during the AM or PM peak hour:

AM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
I-405	**Northbound**	• Off-Ramp to Jamboree Road • Off-Ramp to MacArthur Boulevard
	Southbound	• Off-Ramp to Jamboree Road • Off-Ramp to MacArthur Boulevard
SR-55	**Northbound**	• Direct On-Ramp from Victoria Drive • On-Ramp from Paularino Avenue • On-Ramp from McFadden
	Southbound	• Off-Ramp to Paularino Avenue
SR-73	**Northbound**	• Off-Ramp to Birch Street

PM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
I-405	**Northbound**	• Off-Ramp to Bristol Street
SR-55	**Northbound**	• On-Ramp from Paularino Avenue • Direct On-Ramp from MacArthur Boulevard • On-Ramp from Edinger Avenue
SR-73	**Northbound**	• On-Ramp from Jamboree Road • Off-Ramp from SR-73 at Bear

Figure 4.5 and **Figure 4.6** graphically depict the Interim Cumulative Baseline freeway and ramp deficiencies.

Table 4.7 – Interim Cumulative Baseline Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		INTERIM BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	Culver Drive	SB On Direct	1	1,000	290	0.32	B	459	0.51	C
		SB On Loop	1	1,000	570	0.63	C	300	0.33	B
		SB Off	2	500	936	0.42	B	1,980	0.88	D
		NB On Loop	2	1,000	900	0.60	C	612	0.41	B
		NB On Direct	1	1,000	672	0.75	D	179	0.20	A
		NB Off	1	500	439	0.29	A	745	0.50	B
	Jamboree Road	SB On Direct	2	1,000	353	0.24	A	1,339	0.89	D
		SB On Loop	2	1,000	846	0.56	C	503	0.34	B
		SB Off	2	500	1,159	0.39	B	1,292	0.43	B
		NB On Loop	2	1,000	540	0.50	B	570	0.53	C
		NB On Direct	2	1,000	590	0.55	C	370	0.34	B
		NB Off	1	500	1,661	1.11	F	1,418	0.95	E
	Tustin Ranch Road	SB On	2	1,000	640	0.43	B	670	0.45	B
		NB On	3	1,000	1,100	0.61	C	980	0.54	C
		NB Off	1	500	541	0.36	B	500	0.33	B
		SB Off	2	500	1,070	0.48	B	1,122	0.50	B

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		INTERIM BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	Red Hill Avenue	SB On	2	1,000	900	0.60	C	960	0.64	C
		NB On	2	1,000	801	0.53	C	742	0.49	B
		NB Off	1	500	724	0.48	B	870	0.58	C
		SB Off	1	500	460	0.31	B	583	0.39	B
	Newport Boulevard	SB Off	1	500	549	0.37	B	911	0.61	C
		NB On	2	1,000	960	0.64	C	840	0.56	C
I-405	Culver Drive	SB On Direct	1	1,000	430	0.29	A	1,010	0.67	C
		SB On Loop	1	1,000	380	0.42	B	340	0.38	B
		SB Off	2	500	1,142	0.38	B	1,529	0.51	C
		NB On Loop	1	1,000	740	0.49	B	293	0.2	A
		NB On Direct	1	1,000	1,280	0.85	D	444	0.3	A
		NB Off	2	500	689	0.31	B	790	0.35	B
	Jamboree Road	SB On Direct	2	1,000	520	0.29	A	1,230	0.68	C
		SB On Loop	1	1,000	250	0.17	A	630	0.42	B
		SB Off	2	500	2,700	1.20	F	1,977	0.88	D
		NB On Loop	1	1,000	644	0.43	B	650	0.43	B
		NB On Direct	2	1,000	1,459	0.81	D	980	0.54	C
		NB Off	2	500	2,221	0.99	E	1,333	0.59	C
	MacArthur Boulevard	SB Direct On	2	1,000	520	0.29	A	1,140	0.63	C
		SB Off	2	500	2,317	1.03	F	1,091	0.48	B
		NB On	1	1,000	500	0.33	B	1,200	0.80	D
		NB Off	1	500	2,185	1.46	F	803	0.54	C
	Bristol Street	SB Loop On	1	1,000	1,040	0.69	C	1,118	0.75	D
		SB Off	2	500	1,000	0.44	B	949	0.42	B
		NB On Loop	1	1,000	505	0.56	C	310	0.34	B
		NB On Direct	1	1,000	631	0.42	B	973	0.65	C
		NB Off	1	500	824	0.55	C	1,997	1.33	F
SR-55	Victoria Street	SB Direct On	1	1,000	111	0.12	A	115	0.13	A
		SB Off	2	500	1,423	0.63	C	1,480	0.66	C
		NB Direct On	1	1,000	1,499	1.00	E	1,144	0.76	D
		NB Off	1	500	83	0.06	A	63	0.04	A
	Fair Drive	SB Direct On	1	1,000	224	0.25	A	233	0.26	A
		SB Off	2	500	1,148	0.51	C	1,194	0.53	C
		NB Direct On	1	1,000	1,221	0.81	D	932	0.62	C
		NB Off	1	500	250	0.17	A	191	0.13	A
	Baker Street	SB On	1	1,000	521	0.35	B	1,140	0.76	D
		SB Off	1	500	846	0.56	C	1,090	0.73	D
		NB Off	1	500	1,163	0.78	D	911	0.61	C
	Paularino Avenue	SB Off	1	500	1,456	0.97	E	1,140	0.76	D
		NB On	1	1,000	1,260	1.40	F	1,170	1.30	F
	MacArthur Boulevard	SB On Direct	1	1,000	890	0.59	C	830	0.55	C
		SB On Loop	1	1,000	150	0.17	A	650	0.72	D
		SB Off	2	500	1,901	0.84	D	1,043	0.46	B
		NB On Loop	1	1,000	769	0.51	C	645	0.43	B
		NB On Direct	1	1,000	334	0.37	B	1,098	1.22	F
		NB Off	2	500	1,563	0.69	C	1,040	0.46	B
	Dyer Road	SB On	1	1,000	814	0.54	C	1,040	0.69	C
		SB Off Loop	1	500	789	0.53	C	531	0.35	B
		SB Off to Grand	1	500	770	0.51	C	500	0.33	B

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		INTERIM BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
		NB On Direct	1	1,000	290	0.19	A	870	0.58	C
		NB On Loop	1	1,000	640	0.71	C	680	0.76	D
SR-55		NB Off	1	500	1,276	0.85	D	301	0.20	A
SR-55	Edinger Avenue	SB On	1	1,000	759	0.51	C	771	0.51	C
SR-55	Edinger Avenue	SB Off	1	500	1,121	0.75	D	590	0.39	B
SR-55	Edinger Avenue	NB On	1	1,000	929	0.62	C	1,460	0.97	E
SR-55	Edinger Avenue	NB Off	1	500	587	0.39	B	287	0.19	A
SR-55	McFadden Avenue	SB On	1	1,000	485	0.32	B	252	0.17	A
SR-55	McFadden Avenue	SB Off	2	500	625	0.28	A	813	0.36	B
SR-55	McFadden Avenue	NB On	1	1,000	1,365	0.91	E	992	0.66	C
SR-55	McFadden Avenue	NB Off	1	500	489	0.33	B	530	0.35	B
SR-73	Bison Avenue	SB On	1	1,000	140	0.09	A	366	0.24	A
SR-73	Bison Avenue	SB Off	1	500	850	0.57	C	390	0.26	A
SR-73	Bison Avenue	NB On	1	1,000	300	0.20	A	1,064	0.71	C
SR-73	MacArthur Boulevard	SB On	1	1,000	135	0.09	A	806	0.54	C
SR-73	MacArthur Boulevard	SB Off	1	500	1,290	0.86	D	1,067	0.71	C
SR-73	MacArthur Boulevard	NB On s/o University Dr	1	1,000	832	0.55	C	836	0.56	C
SR-73	MacArthur Boulevard	NB On n/o University Dr	1	1,000	575	0.38	B	687	0.46	B
SR-73	University Drive	SB Off	1	500	979	0.65	C	643	0.43	B
SR-73	Jamboree Road	SB On	1	1,000	525	0.35	B	734	0.49	B
SR-73	Jamboree Road	SB Off	2	500	1,331	0.59	C	726	0.32	B
SR-73	Jamboree Road	NB On	1	1,000	1,210	0.81	D	1,571	1.42	F
SR-73	Birch Street	NB Off	1	500	1,420	0.95	E	782	0.52	C
SR-73	Campus Drive	SB Off	2	500	1,679	0.75	D	883	0.39	B
SR-73	Campus Drive	NB On	1	1,000	728	0.49	B	1,784	0.62	C
SR-73	SR-73 at Bear	SB On	1	1,000	780	0.52	C	730	0.49	B
SR-73	SR-73 at Bear	SB Off	1	500	310	0.21	A	290	0.19	A
SR-73	SR-73 at Bear	NB Off	1	500	640	0.43	B	1,474	0.98	E
SR-73	SR-73 at Bear	NB On	1	1,000	250	0.17	A	490	0.33	B
SR-73	Jamboree Road	SB On	2	1,000	1,202	0.40	B	931	0.31	B
SR-73	Jamboree Road	NB Off	2	250	526	0.23	A	898	0.40	B
SR-73	Walnut Avenue	NB On	1	1,000	451	0.30	A	791	0.53	C
SR-73	Walnut Avenue	SB Off	1	500	897	0.60	C	538	0.36	B

F Denotes ramps operating at a deficient LOS

Figure 4.5 – Interim Cumulative Baseline Freeway AM Peak Hour Deficiencies

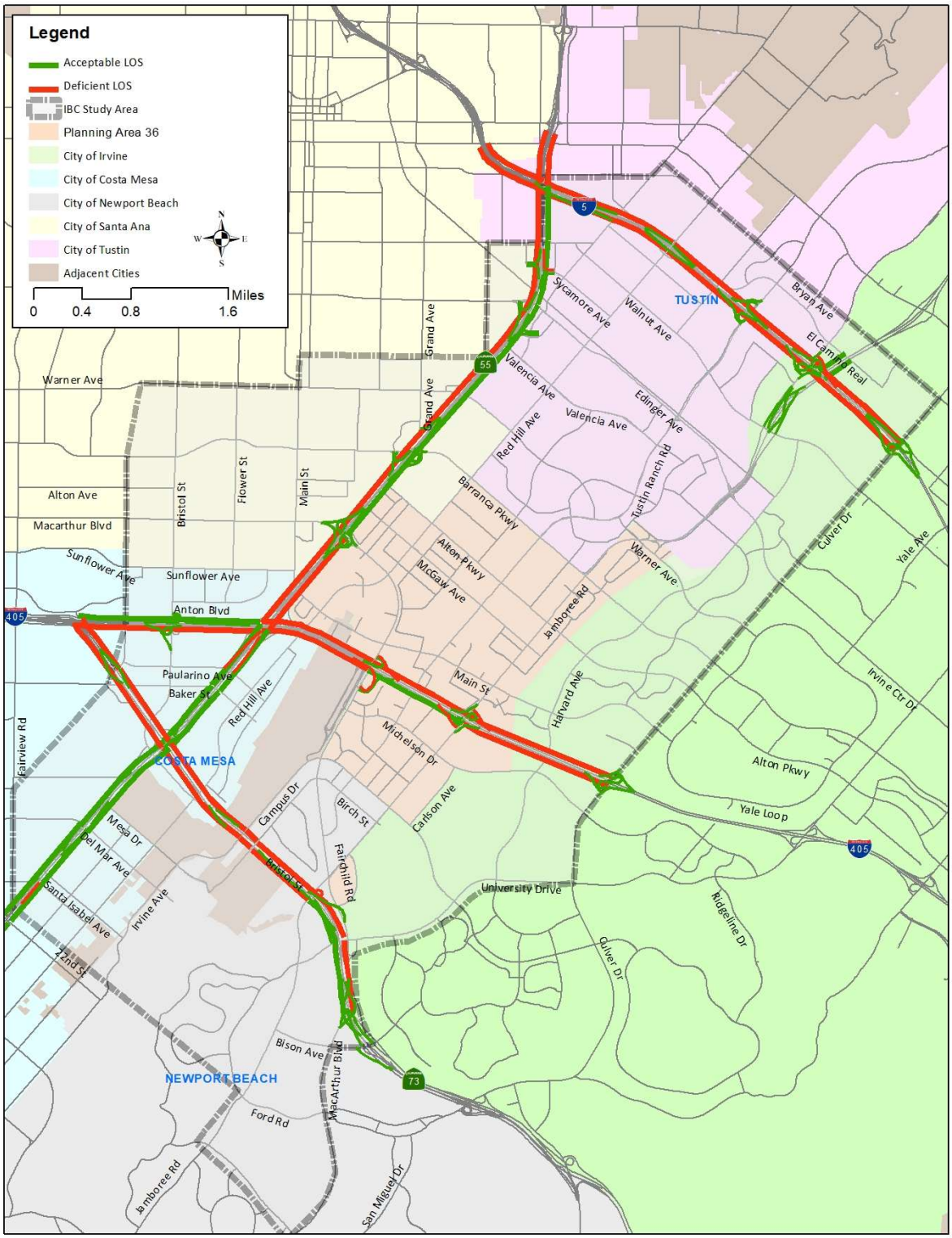
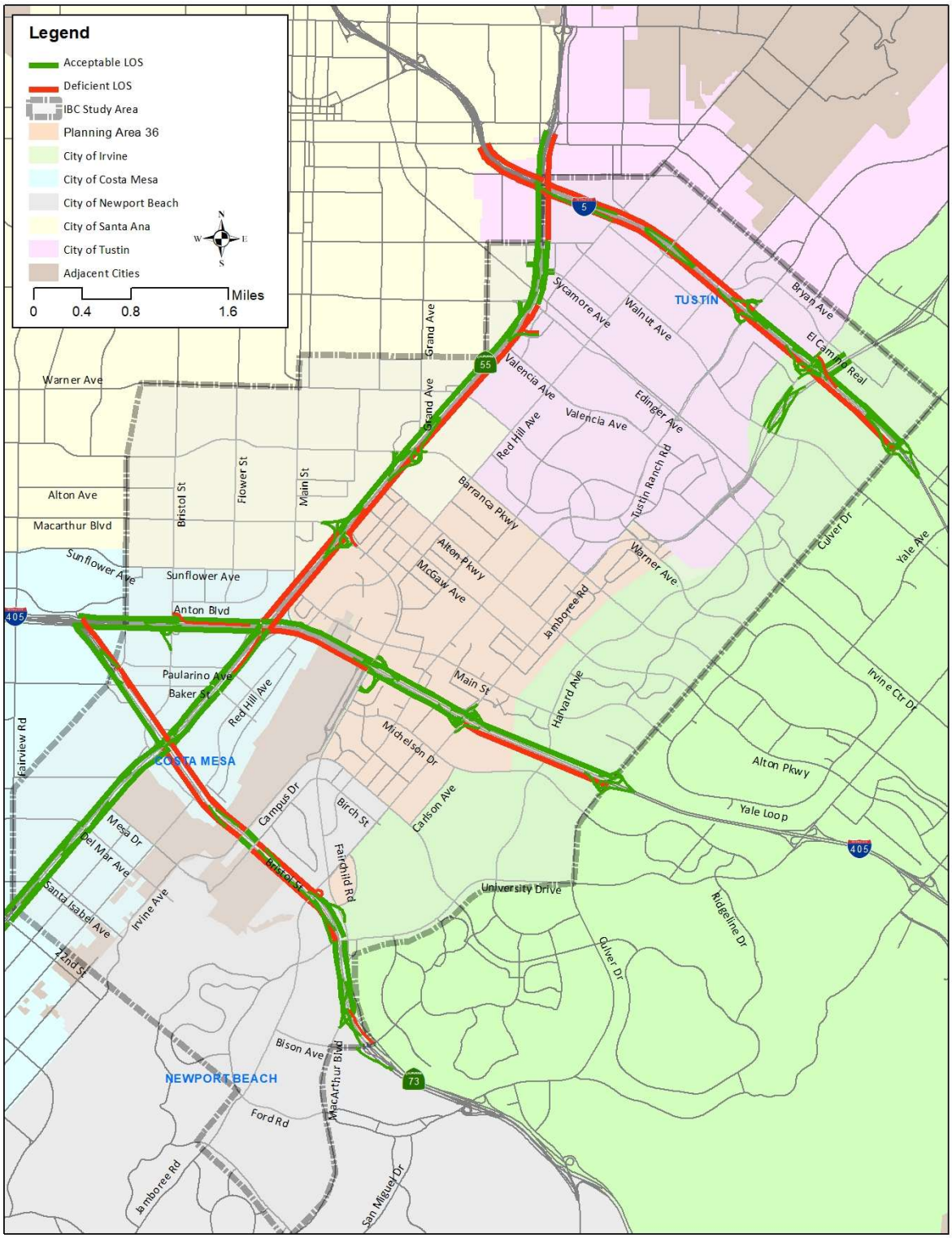


Figure 4.6 – Interim Cumulative Baseline Freeway PM Peak Hour Deficiencies



4.8 Interim Cumulative Baseline With Update Conditions, Land Use, and Trip Generation

As with the Cumulative Baseline scenario, the Interim Cumulative With Update circulation system consists of the roadway network of interstate and state highways, major arterials, primary arterials, secondary arterials, and commuter roadways. The Interim Cumulative With Update scenario analyzes the effects on the circulation system caused by the change in traffic patterns resulting from the expansion of the IBC as a mixed-use/residential community over the next five years.

The current setting for land use is focused on the IBC as a major employment center and office park complex. Changes in the configuration of the IBC have been slowly transforming the complex into a mixed-use community.

Table 4.8 describes the land use quantities for the Interim Cumulative Baseline and With Update scenarios. The transportation networks are consistent between these two future scenarios, and all arterial, intersection, and freeway ramp improvements from existing conditions have been incorporated into the model runs. **Table 4.9** reflects the ITAM trip generation for the Interim Cumulative With Update scenario and compares the total number of trips between the Interim Cumulative With Update and Baseline scenarios. **Figure 4.7** through **Figure 4.13** graphically display the differences in land use quantities between Interim With Update and Baseline conditions by traffic analysis zone (TAZ) for each land use type. It should be noted that the reason the Existing With Update land use is greater than the Interim With Update is that the Existing With Update is a theoretical scenario that assumes full buildout of the Vision Plan while Interim assumes a certain proportion of the ultimate buildout to be in place in the next five years. **Appendix C** presents trip generation and **Appendix D** presents land use quantities by type and IBC TAZs as well as a land use summary by individual project.

Table 4.8 – Interim Cumulative With Update Land Use Summary

SCENARIO	MULTI-FAMILY RESIDENTIAL (DU)	RETAIL MIX (TSF)	HOTEL (ROOM)	OFFICE MIX (TSF)	INDUSTRIAL MIX (TSF)	MINI-WAREHOUSE (TSF)	EXTENDED STAY HOTEL (ROOM)
Existing Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Existing With Update	16,820	1,785	3,078	33,795	12,554	1,228	1,422
Interim Cumulative Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Interim Cumulative With Update	16,820	1,562	2,521	27,970	13,460	1,412	1,422
Percent Growth (Interim With Update vs. Existing Baseline)	**78%**	**19%**	**0%**	**3%**	**3%**	**-1%**	**23%**
Percent Growth (Interim With Update vs. Existing With Update)	**0%**	**-12%**	**-18%**	**-17%**	**7%**	**15%**	**0%**

Source: City of Irvine, ITAM

Table 4.9 – Interim Cumulative With Update Trip Generation

SCENARIO	AM-OUT	AM-IN	PM-OUT	PM-IN	ADT
Existing Baseline	13,460	29,926	28,517	19,373	551,618
Existing With Update	18,561	36,384	35,386	25,314	709,486
Interim Baseline	13,431	29,878	28,533	19,342	551,618
Interim With Update	17,775	32,004	31,503	23,278	632,470
Percent Growth (Interim With Update vs. Existing Baseline)	32.3%	7.1%	10.4%	20.3%	14.7%

Source: ITAM

Figure 4.7 – Land Use Comparison between Interim IBC Vision Plan Update and Interim Baseline (Residential Units)

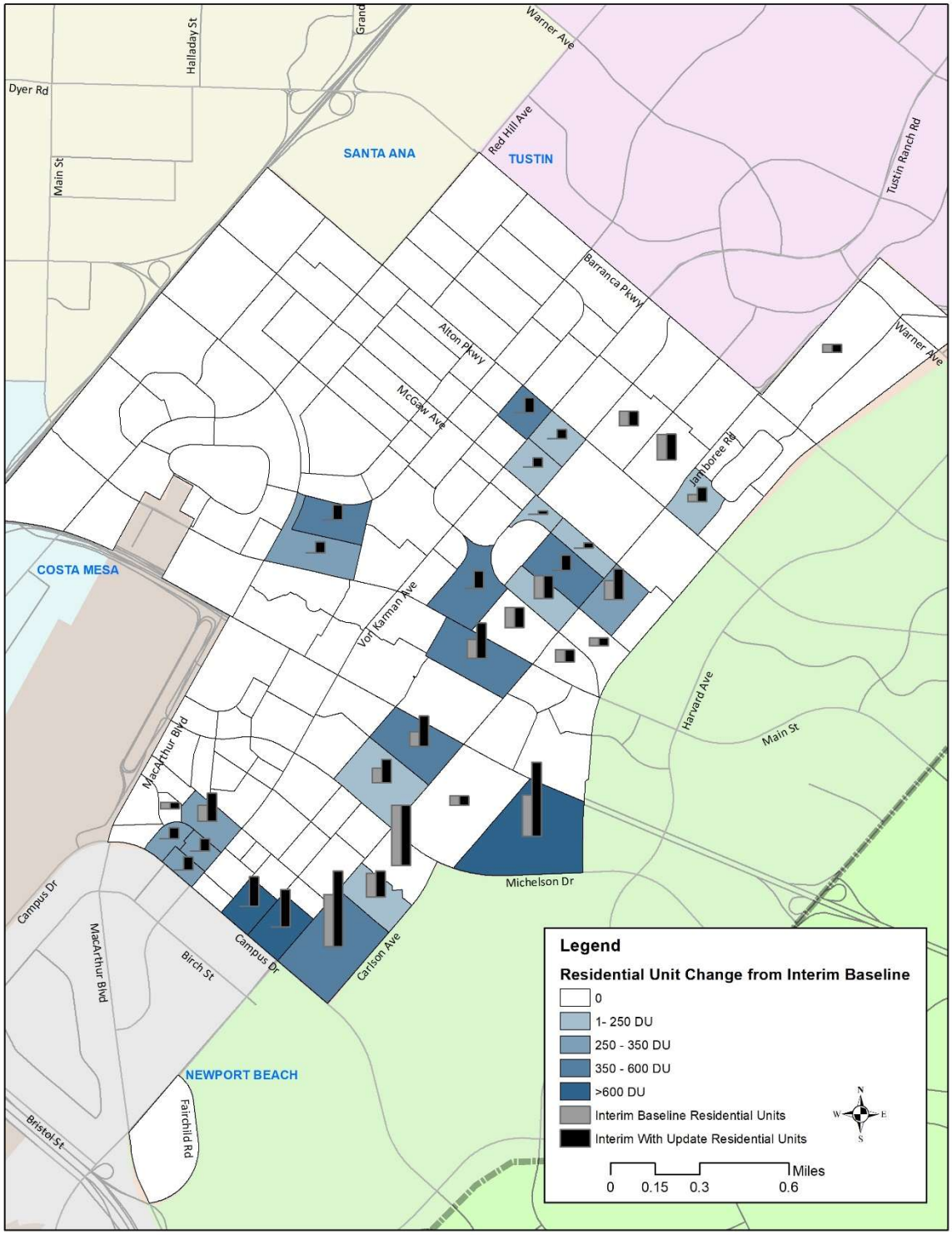


Figure 4.8 – Land Use Comparison between Interim IBC Vision Plan Update and Interim (Office Mix)

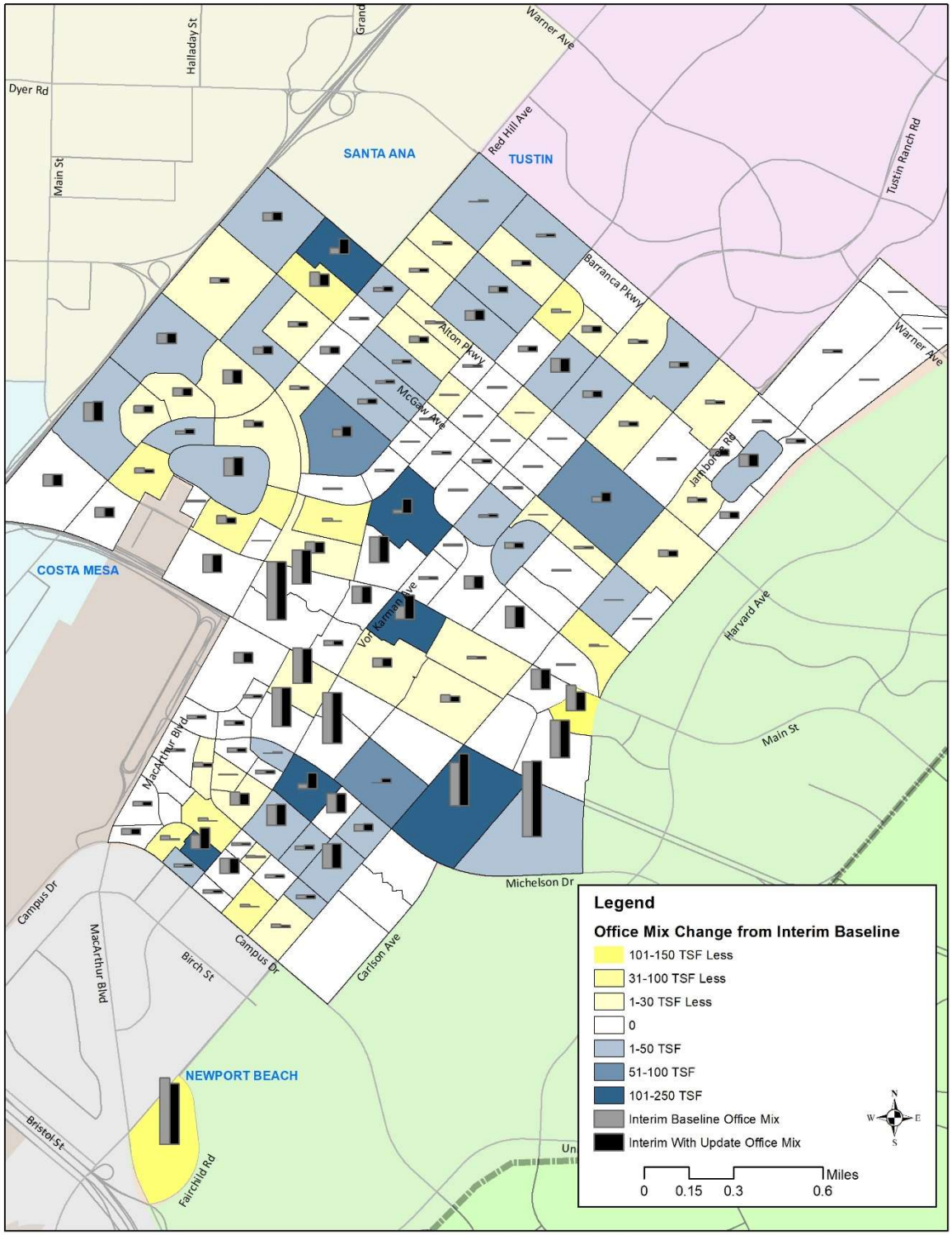


Figure 4.9 – Land Use Comparison between Interim IBC Vision Plan Update and Interim (Industrial Mix)

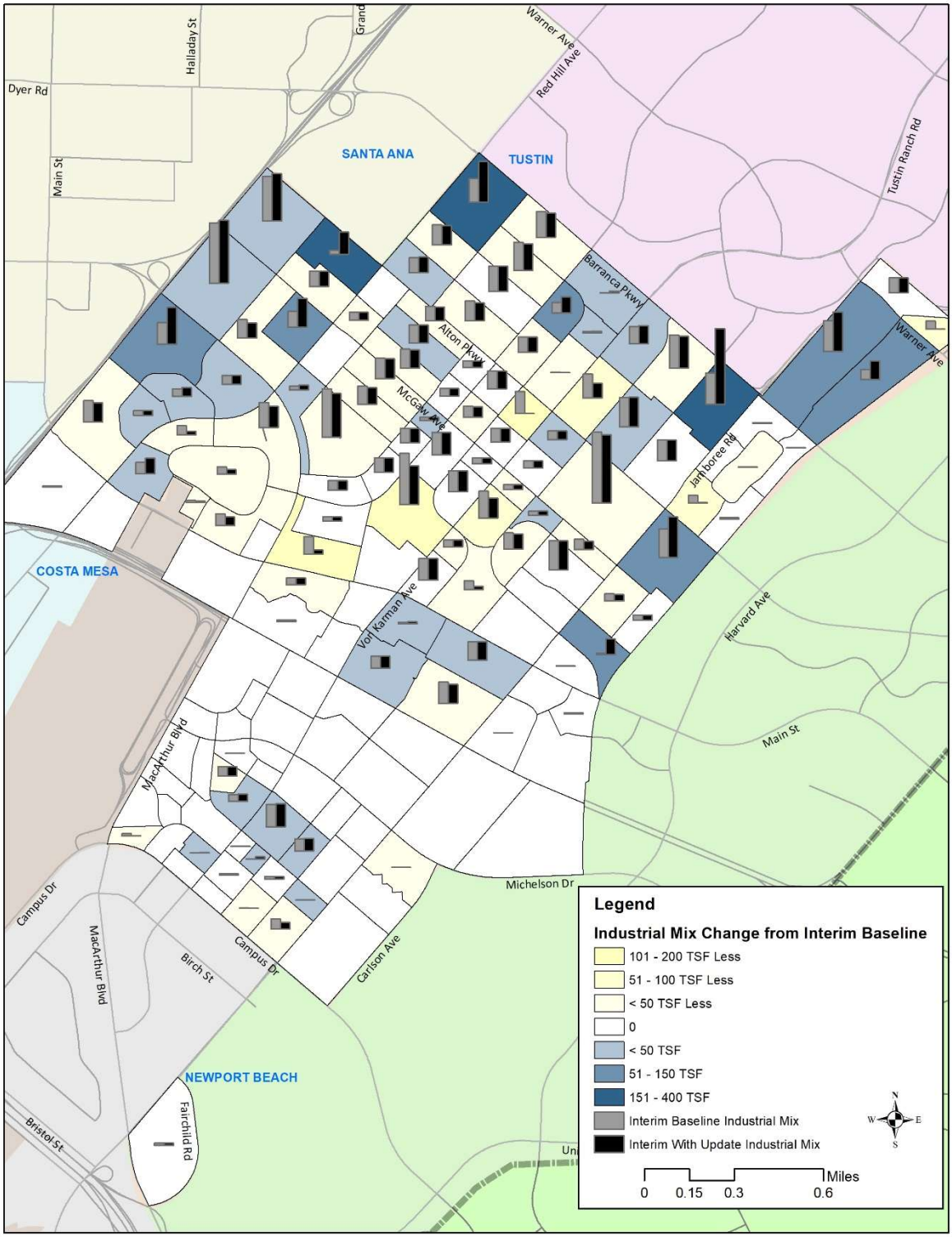


Figure 4.10 – Land Use Comparison between Interim IBC Vision Plan Update and Interim Baseline (Commercial)

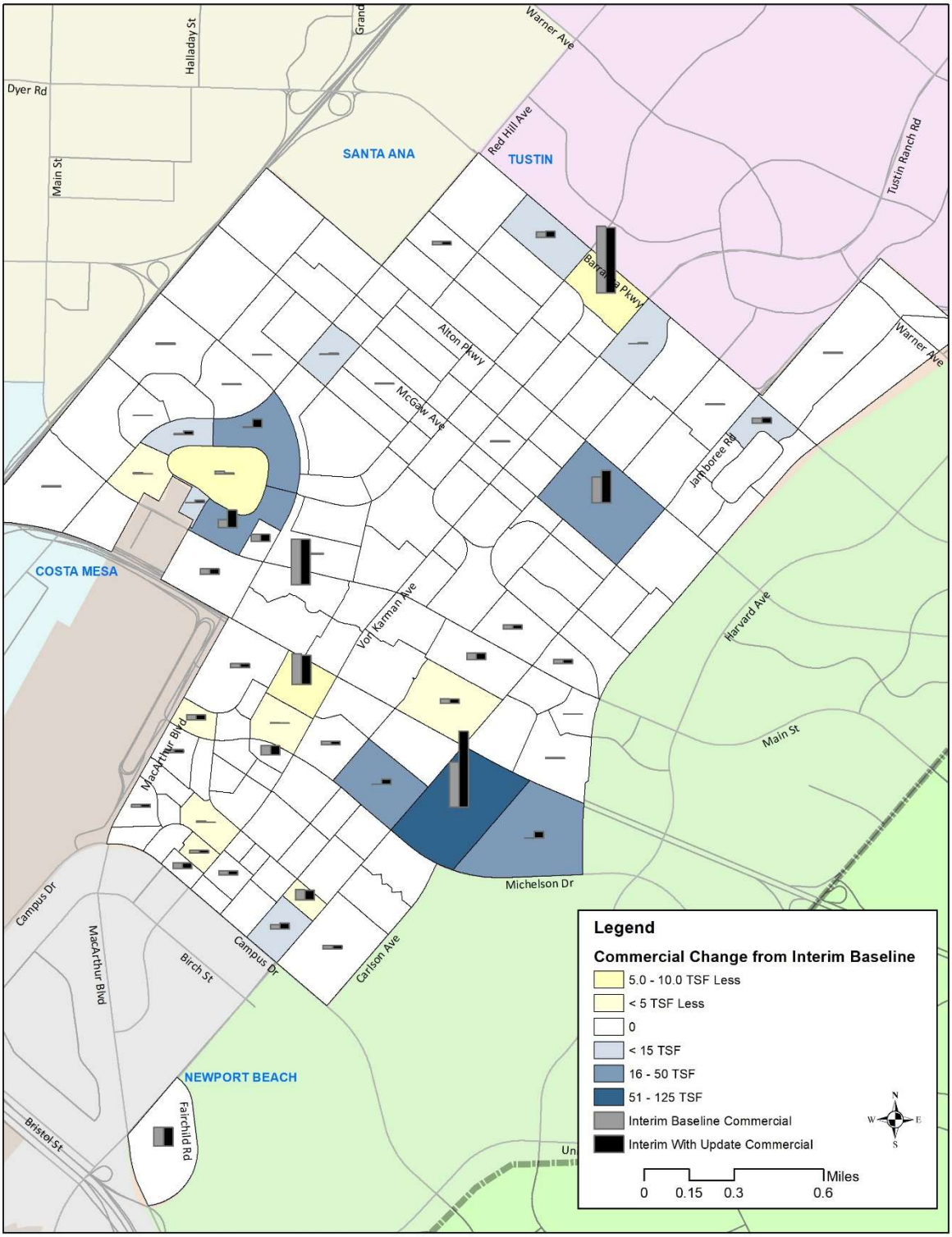


Figure 4.11 – Land Use Comparison between Interim IBC Vision Plan Update and Interim Baseline (Hotel)

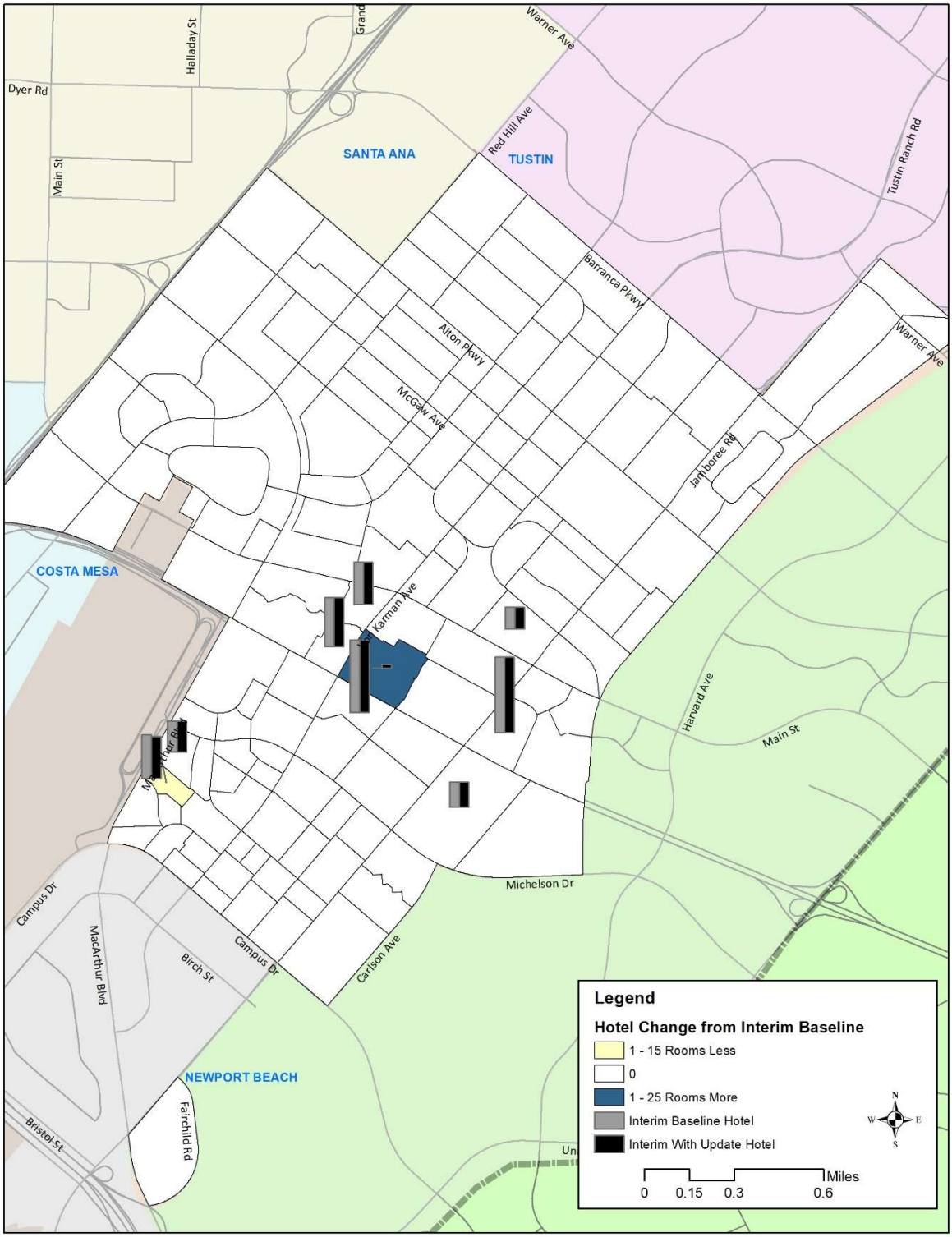


Figure 4.12 – Land Use Comparison between Interim IBC Vision Plan Update and Interim Baseline (Mini-Warehouse)

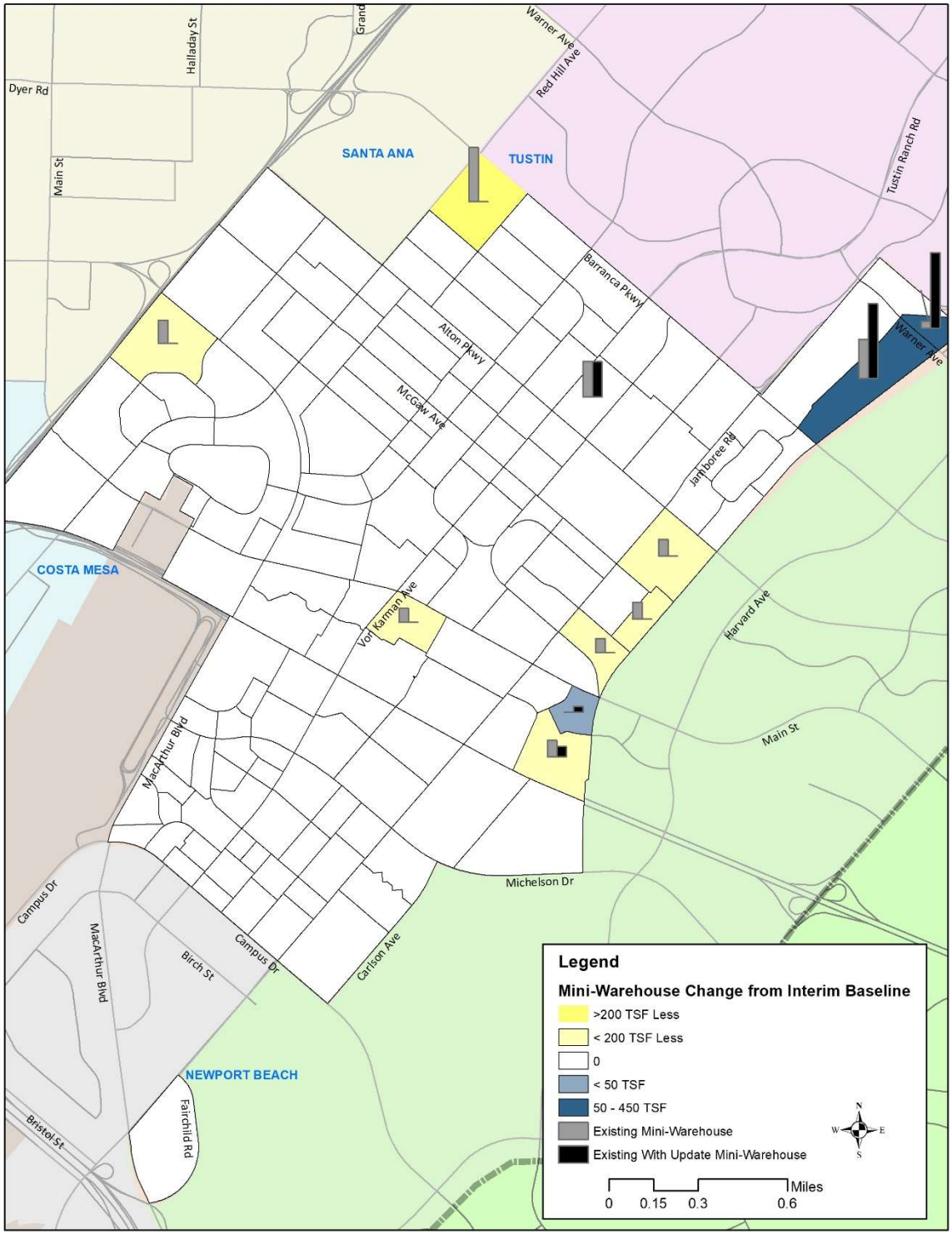
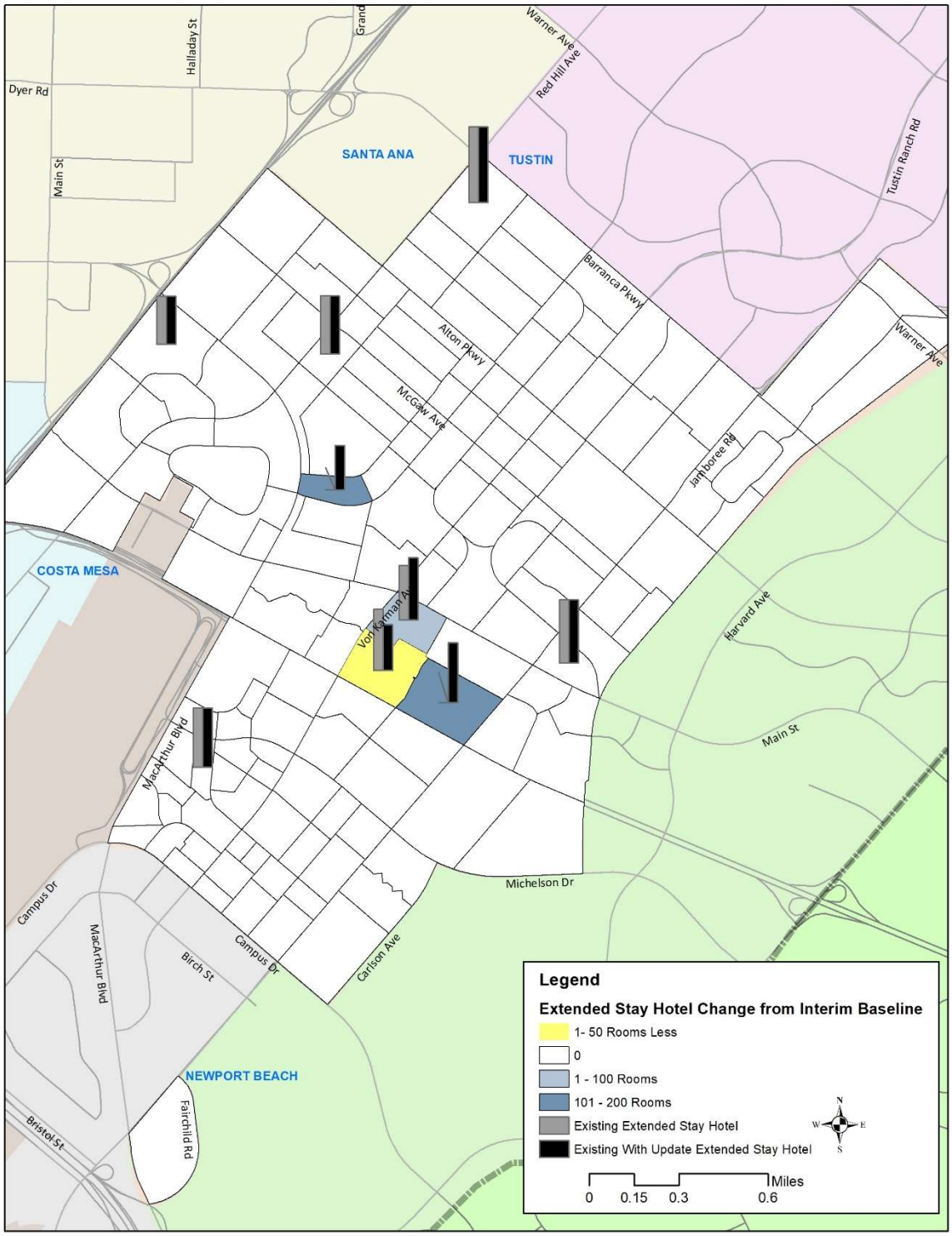


Figure 4.13 – Land Use Comparison between Interim IBC Vision Plan Update and Interim Baseline (Extended-Stay Hotel)



4.9 Interim Cumulative Baseline With Update Daily Arterial Segment Analysis

The Interim Cumulative With Update traffic patterns generally remain consistent with existing conditions and the Interim Cumulative Baseline scenario traffic patterns. For some segments, there is a net increase in ADT and for some a decrease as a result of the update. **Table 4.10** indicates the 18 arterial segments that are forecast to be deficient under the Interim Cumulative With Update daily conditions. As noted above, LOS E indicates a deficient segment for all arterial segments outside Planning Area (PA) 36 within the City of Irvine. PA 36 segments are considered deficient at LOS F. When compared to the Interim Cumulative Baseline, there is one additional deficiencies, arterial segment #220: Culver Drive from Alton Parkway to Main Street in the City of Irvine. Deficient segments under daily Interim Cumulative With Update conditions are:

- Campus Drive
    - 879—Campus Drive from Carlson Avenue to University Drive (Irvine)
- Culver Drive
    - 726—Culver Drive from I-5 NB Ramps to I-5 SB Ramps (Irvine)
    - 213—Culver Drive from I-5 SB Ramps to Scottsdale Drive (Irvine)
    - 214—Culver Drive from Scottsdale Drive to Walnut Avenue (Irvine)
    - 219—Culver Drive from Barranca Parkway to Alton Parkway (Irvine)
    - 220—Culver Drive from Alton Parkway to Main Street (Irvine)
    - 221—Culver Drive from Main Street to San Leandro (Irvine)
    - 222—Culver Drive from San Leandro to I-405 NB On-Ramp (Irvine)
    - 224—Culver Drive from I-405 SB On-Ramp to Michelson Drive (Irvine)
- Harvard Avenue
    - 183—Harvard Avenue from Michelson Dr to University Drive (Irvine)
- Jamboree Road
    - 133—Jamboree Road from Michelle Dr to Walnut Avenue (Irvine)
- University Drive
    - 188—University Drive from California Avenue to Mesa Road (Irvine)
    - 187—University Drive from Mesa Road to Campus Drive (Irvine)
- Bristol Street
    - 920—Bristol Street SB from Red Hill Avenue to Campus Drive (Newport Beach)*
- MacArthur Boulevard
    - 953—MacArthur Boulevard from University Dr to Bison Avenue (Newport Beach)*
    - 1301—MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*
- Dyer Road
    - 1326—Dyer Road from SR-55 SB to SR-55 NB (Santa Ana)*
    - 734—Dyer Road from SR-55 NB to Pullman Street (Santa Ana)*

*Deficient locations under daily conditions—no peak hour link analysis required.

Figure 4.14 and **Figure 4.15** display the arterial ADT and deficient segments for the Interim Cumulative With Update scenario. Deficient segments in the City of Irvine are evaluated under peak hour conditions in the following section. For Costa Mesa, Newport Beach, and Tustin, arterial segments, deficiencies are addressed through intersection improvements. Impacts and improvements are discussed in **Chapter 6**.

Table 4.10 – Interim Cumulative With Update Daily Arterial LOS

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	INTERIM ARTERIAL SEGMENT CLASSIFICATIONS	INTERIM CUMULATIVE BASELINE			INTERIM CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	4D	14,600	0.38	A	14,600	0.38	A
2721	Baker St	Bear St to Bristol St		CM	4D	23,800	0.63	B	24,200	0.64	B
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	4D	29,200	0.77	C	29,600	0.78	C
1294	Baker St	SR 55 SB to SR 55 NB		CM	4D	23,300	0.61	B	23,300	0.61	B
1468	Baker St	SR 55 NB to Red Hill Ave		CM	4D	13,700	0.36	A	13,700	0.36	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	2D	5,000	0.28	A	5,000	0.28	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	29,700	0.53	A	29,700	0.53	A
2733	Bristol St	Segerstrom Ave to West Alton Ave		CM	6D	36,800	0.66	B	36,800	0.66	B
2737	Bristol St	West Alton Ave to MacArthur Blvd		CM	6D	39,500	0.71	C	39,500	0.71	C
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	39,500	0.71	C	39,500	0.71	C
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	41,200	0.74	C	41,200	0.74	C
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	9D+1 AUX	57,800	0.71	C	57,800	0.71	C
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	57,400	0.77	C	57,600	0.77	C
2745	Bristol St	I-405 SB Ramps to Paularino Ave		CM	6D	40,600	0.72	C	40,600	0.72	C
2732	Bristol St	Paularino Ave to Baker St		CM	6D	31,900	0.57	A	32,000	0.57	A
2730	Bristol St	Baker St to SR 55		CM	6D	24,000	0.43	A	24,300	0.43	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	17,400	0.31	A	17,800	0.32	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	17,000	0.45	A	17,100	0.45	A
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	2U	6,400	0.51	A	6,400	0.51	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	11,200	0.29	A	11,200	0.29	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	8,300	0.22	A	8,300	0.22	A
2760	Flower St	Sunflower Ave to Anton Blvd		CM	4D	5,700	0.15	A	5,700	0.15	A
2756	Main St	Sunflower Ave to SR-55		CM	6D	25,100	0.45	A	26,200	0.47	A
2785	Mesa Drive	Newport Blvd SB to Newport Blvd NB		CM	2U	6,200	0.50	A	6,200	0.50	A
2783	Mesa Drive	Newport Blvd NB to Santa Ana Ave		CM	2U	7,000	0.56	A	7,000	0.56	A
2779	Mesa Drive	Irvine Ave to Birch St		CM	4D	8,100	0.21	A	8,200	0.22	A
2742	Paularino Ave	Bear St to Bristol St		CM	2U	8,200	0.66	B	8,200	0.66	B
2746	Paularino Ave	Bristol St to SR-55 SB		CM	4D	19,300	0.51	A	19,200	0.51	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	16,700	0.44	A	17,000	0.45	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	12,300	0.32	A	12,700	0.33	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	5,100	0.13	A	5,100	0.13	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	4D	23,000	0.61	B	24,200	0.64	B
1340	Red Hill Ave	Paularino Ave to Baker St		CM	4D	19,600	0.52	A	20,000	0.53	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	16,500	0.43	A	16,800	0.44	A
41	Santa Ana Ave	Mesa Drive to Bristol St		CM	4D	10,600	0.28	A	10,600	0.28	A
2769	University Drive	Santa Ana Ave to Irvine Ave		CM	2U	5,700	0.46	A	5,800	0.46	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	5,700	0.18	A	8,400	0.26	A
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	16,900	0.53	A	17,800	0.56	A
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	17,000	0.53	A	17,700	0.55	A
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	21,100	0.39	A	21,900	0.41	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	20,700	0.38	A	21,600	0.40	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	17,300	0.32	A	18,100	0.34	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	19,100	0.35	A	19,800	0.37	A
783	Alton Pkwy	San Marino to Culver Drive		Irv	6D	26,700	0.49	A	27,300	0.51	A
735	Barranca Pkwy (Dyer Rd)	Pullman to Red Hill Ave		Irv	6D	35,900	0.66	B	37,200	0.69	B
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	6D	39,800	0.63	B	40,800	0.65	B
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	45,700	0.73	C	46,900	0.74	C
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	44,700	0.71	C	45,800	0.73	C
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	30,600	0.57	A	31,200	0.58	A
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	25,300	0.47	A	25,700	0.48	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	INTERIM ARTERIAL SEGMENT CLASSIFICATIONS	INTERIM CUMULATIVE BASELINE			INTERIM CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	23,400	0.43	A	23,700	0.44	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	25,300	0.47	A	25,700	0.48	A
748	Barranca Pkwy	Santa Rosa to Culver Drive		Irv	6D	26,700	0.49	A	27,100	0.50	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	22,300	0.70	B	22,400	0.70	B
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	22,600	0.71	C	22,700	0.71	C
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	21,700	0.68	B	21,800	0.68	B
540	Bryan Ave	Rubicon to Culver		Irv	4D	23,500	0.73	C	23,500	0.73	C
869	Campus Drive	MacArthur Blvd to Martin	a	Irv	6U	13,900	0.26	A	16,200	0.30	A
870	Campus Drive	Martin to Von Karman Ave	a	Irv	4D	14,000	0.44	A	15,400	0.48	A
871	Campus Drive	Von Karman Ave to Teller Ave	a	Irv	4D	11,400	0.36	A	12,800	0.40	A
872	Campus Drive	Teller Ave to Jamboree Rd	a	Irv	4D	11,600	0.36	A	12,500	0.39	A
877	Campus Drive	Jamboree Rd to Carlson Ave	a	Irv	4D	19,000	0.59	A	19,600	0.61	B
879	Campus Drive	Carlson Ave to University		Irv	2U	19,000	1.46	F	19,100	1.47	F
166	Carlson Ave	Michelson Drive to Campus Drive	a	Irv	4D	8,100	0.25	A	8,800	0.28	A
726	Culver Drive	I-5 NB Ramps to I-5 SB Ramps		Irv	7D	64,000	1.02	F	64,100	1.02	F
213	Culver Drive	I-5 SB Ramps to Scottsdale Drive		Irv	6D	56,700	1.05	F	56,600	1.05	F
214	Culver Drive	Scottsdale Drive to Walnut Ave		Irv	6D	49,500	0.92	E	49,600	0.92	E
215	Culver Drive	Walnut Ave to Deerfield Ave		Irv	6D	45,800	0.85	D	45,800	0.85	D
216	Culver Drive	Deerfield Ave to Irvine Center Drive		Irv	Maj6D+ 1AUX	44,500	0.76	C	44,600	0.76	C
217	Culver Drive	Irvine Center Drive to Warner Ave		Irv	6D	47,100	0.87	D	47,500	0.88	D
218	Culver Drive	Warner Ave to Barranca Pkwy		Irv	6D	45,900	0.85	D	46,300	0.86	D
219	Culver Drive	Barranca Pkwy to Alton Pkwy		Irv	6D	50,800	0.94	E	51,600	0.96	E
220	Culver Drive	Alton Pkwy to Main St		Irv	6D	48,600	0.90	D	49,400	0.91	E
221	Culver Drive	Main St to San Leandro		Irv	6D	52,100	0.96	E	52,600	0.97	E
222	Culver Drive	San Leandro to I-405 NB On-Ramp		Irv	6D	53,000	0.98	E	53,500	0.99	E
224	Culver Drive	I-405 SB Ramps to Michelson Drive		Irv	6D	53,300	0.99	E	54,300	1.01	F
225	Culver Drive	Michelson Drive to Sandburg Way		Irv	6D	39,500	0.73	C	39,700	0.74	C
226	Culver Drive	Sandburg Way to University Drive		Irv	6D	35,700	0.66	B	35,900	0.66	B
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	22,800	0.71	C	22,800	0.71	C
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,000	0.19	A	6,000	0.19	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	2U	8,700	0.67	B	8,800	0.68	B
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	2U	10,100	0.78	C	10,200	0.78	C
171	Harvard Ave	Deerfield Ave to Irvine Center Drive		Irv	3D	10,100	0.40	A	10,200	0.41	A
172	Harvard Ave	Irvine Center Drive to Paseo Westpark		Irv	4D	13,100	0.41	A	13,400	0.42	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	11,900	0.37	A	12,200	0.38	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	16,100	0.50	A	16,500	0.52	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	19,400	0.61	B	19,900	0.62	B
2829	Harvard Ave	San Juan to San Leon		Irv	4D	18,200	0.57	A	18,800	0.59	A
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	19,200	0.60	A	19,800	0.62	B
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	19,400	0.61	B	19,800	0.62	B
180	Harvard Ave	San Marino to Main St		Irv	4D	23,400	0.73	C	24,000	0.75	C
181	Harvard Ave	Main St to Coronado		Irv	4D	23,500	0.73	C	24,200	0.76	C
182	Harvard Ave	Coronado to Michelson Drive		Irv	4D	23,100	0.72	C	23,900	0.75	C
183	Harvard Ave	Michelson Drive to University Drive		Irv	2U	18,300	1.41	F	18,600	1.43	F
675	Irvine Center Drive	Harvard Ave to Hearthstone	b	Irv	6D	26,700	0.49	A	26,900	0.50	A
676	Irvine Center Drive	Hearthstone to Culver Drive	b	Irv	6D	27,100	0.50	A	27,300	0.51	A
129	Jamboree Rd	Bryan Ave to El Camino	b	Irv	8D	48,500	0.67	B	48,500	0.67	B
130	Jamboree Rd	El Camino Real to I-5 NB Ramps	b	Irv	Maj7D+ 1AUX	66,700	0.99	E	66,900	0.99	E
958	Jamboree Rd	I-5 NB Ramps to I-5 SB Ramps	b	Irv	8D	65,000	0.90	D	65,300	0.91	E
131	Jamboree Rd	I-5 SB Ramps to Michelle Drive	b	Irv	8D	56,000	0.78	C	56,400	0.78	C
133	Jamboree Rd	Michelle Drive to Walnut Ave	b	Irv	5D	67,800	1.58	F	68,500	1.59	F

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135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rd)	b	Irv	Exp8	62,900	0.35	A	64,300	0.36	A
136	Jamboree Rd	Edinger Ave to Warner Ave	b	Irv	Exp8	79,100	0.44	A	80,800	0.45	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	63,000	0.35	A	64,500	0.36	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	53,800	0.75	C	55,500	0.77	C
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	57,100	0.79	C	58,900	0.82	D
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	61,100	0.85	D	63,100	0.88	D
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	54,500	0.76	C	56,900	0.79	C
144	Jamboree Rd	Kelvin Ave to Main St	a,b	Irv	8D	64,200	0.89	D	68,400	0.95	E
145	Jamboree Rd	Main St to I-405 NB Ramps	b	Irv	Maj8D+ 2AUX	70,100	0.87	D	74,700	0.92	E
148	Jamboree Rd	I-405 SB Ramps to Michelson Drive	a,b	Irv	Maj8D+ 2AUX	75,000	0.93	E	80,200	0.99	E
149	Jamboree Rd	Michelson Drive to Dupont Drive	a,b	Irv	7D	52,200	0.83	D	54,400	0.86	D
150	Jamboree Rd	Dupont Drive to Campus Drive	a,b	Irv	7D	42,600	0.68	B	44,000	0.70	B
151	Jamboree Rd	Campus Drive to Birch St	b	Irv	6D	40,600	0.75	C	42,200	0.78	C
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	39,600	0.63	B	41,400	0.66	B
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	7D	33,700	0.53	A	35,100	0.56	A
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	35,100	0.65	B	36,600	0.68	B
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	7D	38,400	0.61	B	40,800	0.65	B
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	23,600	0.37	A	25,300	0.40	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	23,500	0.37	A	25,300	0.40	A
60	MacArthur Blvd	Main St to I-405 NB Ramps	a	Irv	Maj8D+ 2AUX	50,600	0.62	B	54,600	0.67	B
62	MacArthur Blvd	I-405 SB Ramps to Michelson Dr	a	Irv	Maj8D+ 1AUX	54,100	0.71	C	57,200	0.75	C
63	MacArthur Blvd	Michelson Drive to Douglass	a	Irv	8D	36,300	0.50	A	37,900	0.53	A
64	MacArthur Blvd	Douglas to Campus Drive		Irv	8D	36,200	0.50	A	37,400	0.52	A
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	39,800	0.74	C	40,700	0.75	C
917	MacArthur Blvd	Fairchild Rd to University Drive	b	Irv	6D	39,700	0.74	C	40,400	0.75	C
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	25,200	0.47	A	26,300	0.49	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	25,900	0.48	A	27,800	0.51	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	25,300	0.47	A	27,600	0.51	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	33,600	0.50	A	36,800	0.55	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	34,400	0.59	A	39,100	0.67	B
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	24,800	0.46	A	28,200	0.52	A
823	Main St	Siglo to Jamboree Rd	a	Irv	6D	23,900	0.44	A	26,200	0.49	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+ 1AUX	23,700	0.41	A	24,000	0.41	A
825	Main St	Veneto to Harvard Ave		Irv	6D	24,200	0.45	A	25,100	0.46	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	13,000	0.41	A	13,600	0.42	A
827	Main St	Paseo Westpark to Culver Drive		Irv	4D	13,100	0.41	A	13,600	0.42	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	6,200	0.19	A	6,200	0.19	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	9,500	0.30	A	10,700	0.33	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	8,400	0.26	A	9,200	0.29	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	2,400	0.08	A	2,900	0.09	A
840	Michelson Drive	MacArthur Blvd to Dupont Drive	a	Irv	5D	20,700	0.48	A	22,300	0.52	A
843	Michelson Drive	Bixby to Von Karman Ave	a	Irv	4D	12,700	0.40	A	14,000	0.44	A
844	Michelson Drive	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	19,900	0.55	A	21,400	0.59	A
845	Michelson Drive	Teller Ave to Jamboree Rd	a	Irv	5D	19,000	0.44	A	20,300	0.47	A
846	Michelson Drive	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+ 2AUX	22,200	0.56	A	25,200	0.63	B
847	Michelson Drive	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	21,300	0.59	A	24,400	0.68	B
848	Michelson Drive	Riparian View to Harvard Ave		Irv	4D	21,500	0.67	B	23,500	0.73	C
1346	Michelson Drive	Harvard Ave to Parkside Drive		Irv	4D	17,200	0.54	A	18,200	0.57	A
850	Michelson Drive	Parkside Drive to Culver Drive		Irv	4D	17,000	0.53	A	18,100	0.57	A
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	31,100	0.58	A	32,600	0.60	A
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	31,100	0.58	A	32,600	0.60	A

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33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	31,600	0.59	A	33,400	0.62	B
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	41,400	0.77	C	43,700	0.81	D
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	4D	21,100	0.66	B	22,200	0.69	B
38	Red Hill Ave	Skypark to Main St	a	Irv	4D	17,300	0.54	A	17,900	0.56	A
189	University Drive	MacArthur Blvd to California Ave		Irv	4D	25,400	0.79	C	25,600	0.80	C
188	University Drive	California Ave to Mesa Rd		Irv	4D	31,600	0.99	E	32,000	1.00	E
187	University Drive	Mesa Rd to Campus Drive		Irv	4D	32,200	1.01	F	32,700	1.02	F
880	University Drive	Campus Drive to Harvard Ave		Irv	6D	27,800	0.51	A	28,100	0.52	A
881	University Drive	Harvard Ave to San Joaquin Hills Rd		Irv	6D	25,000	0.46	A	25,100	0.46	A
882	University Drive	San Joaquin Hills Rd to Culver Drive		Irv	6D	25,000	0.46	A	25,100	0.46	A
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	27,600	0.86	D	29,100	0.91	E
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	25,200	0.79	C	27,400	0.86	D
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	24,800	0.78	C	26,600	0.83	D
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	24,700	0.77	C	26,800	0.84	D
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	25,800	0.72	C	28,100	0.78	C
107	Von Karman Ave	Quartz to Michelson Drive	a	Irv	Prim4D+ 1AUX	22,300	0.62	B	24,700	0.69	B
108	Von Karman Ave	Michelson Diver to Dupont Drive	a	Irv	4D	16,900	0.53	A	18,800	0.59	A
110	Von Karman Ave	Dupont Drive to Martin	a	Irv	4D	17,000	0.53	A	19,100	0.60	A
111	Von Karman Ave	Martin to Campus Drive	a	Irv	4D	16,900	0.53	A	18,100	0.57	A
594	Walnut Ave	Myford to Jamboree SB Ramp		Irv	Prim4D+ 1AUX	22,200	0.62	B	22,300	0.62	B
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+ 1AUX	20,800	0.36	A	21,000	0.36	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+ 1AUX	20,800	0.44	A	21,000	0.44	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	19,400	0.61	B	19,500	0.61	B
597	Walnut Ave	Mall St to Culver Drive		Irv	4D	19,200	0.60	A	19,300	0.60	A
728	Warner Ave	Construction N to Harvard Ave		Irv	4D	15,000	0.47	A	15,200	0.48	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	11,000	0.34	A	11,100	0.35	A
732	Warner Ave	Santa Ynez to Culver Drive		Irv	4D	10,700	0.33	A	10,800	0.34	A
1223	Birch St	Mesa Drive to Bristol St SB		NB	4D	11,100	0.28	A	11,400	0.28	A
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	13,500	0.34	A	13,800	0.34	A
874	Birch St	East of MacArthur Blvd		NB	4D	10,300	0.26	A	11,400	0.28	A
69	Birch St	West of MacArthur Blvd		NB	4D	14,900	0.37	A	16,000	0.40	A
875	Birch St	East of Von Karman Ave		NB	4D	6,200	0.16	A	6,900	0.17	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	7,100	0.12	A	7,100	0.12	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	13,100	0.33	A	13,100	0.33	A
920	Bristol St SB	Red Hill Ave to Campus Drive		NB	2D	27,900	1.55	F	28,800	1.60	F
1310	Bristol St NB	Campus Drive to Red Hill Ave		NB	3D	13,500	0.47	A	14,100	0.49	A
1303	Bristol St SB	Campus Drive to Birch St		NB	3D	20,300	0.70	B	20,300	0.70	B
1305	Bristol St NB	Birch St to Campus Drive		NB	3D	22,700	0.78	C	23,000	0.79	C
1312	Bristol St SB	West of Jamboree Rd		NB	4D	34,500	0.86	D	34,300	0.86	D
1580	Bristol St NB	West of Jamboree Rd		NB	3D	17,300	0.60	A	17,800	0.61	B
66	Campus Drive	Bristol St NB to MacArthur Blvd		NB	6D	30,400	0.52	A	32,700	0.56	A
1778	Ford Rd	Jamboree Rd to MacArthur Blvd		NB	4D	9,500	0.24	A	9,500	0.24	A
1304	Irvine Ave	Bristol St NB to Bristol St SB		NB	6D	29,500	0.51	A	31,400	0.54	A
67	Irvine Ave	Bristol St SB to Mesa Drive		NB	6D	25,800	0.44	A	26,300	0.45	A
2768	Irvine Ave	S of University Drive		NB	4D	28,300	0.71	C	28,700	0.72	C
156	Jamboree Rd	S of MacArthur Blvd		NB	6D	35,200	0.61	B	36,400	0.63	B
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	6D	43,600	0.75	C	44,400	0.77	C
157	Jamboree Rd	S of Bristol St		NB	8D	51,600	0.76	C	52,100	0.77	C
159	Jamboree Rd	University Drive to Bison Ave		NB	6D	42,700	0.74	C	43,100	0.74	C
1777	Jamboree Rd	Bison Ave to Ford Rd		NB	6D	32,200	0.56	A	32,200	0.56	A
73	MacArthur Blvd	Campus Drive to Birch St		NB	8D	19,100	0.28	A	19,400	0.29	A

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75	MacArthur Blvd	S of Birch St		NB	6D	19,700	0.34	A	19,700	0.34	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	20,600	0.36	A	21,100	0.36	A
953	MacArthur Blvd	University Drive to Bison Ave	b	NB	6D	67,100	1.16	F	67,400	1.16	F
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	76,000	1.12	F	76,200	1.12	F
2767	University Drive	East of Irvine Ave		NB	2U	3,600	0.36	A	3,600	0.36	A
1774	University Drive	Jamboree Rd to MacArthur Blvd		NB	5D	11,300	0.23	A	11,300	0.23	A
112	Von Karman Ave	S of Campus Drive		NB	4D	11,600	0.29	A	12,100	0.30	A
113	Von Karman Ave	S of Birch St		NB	4D	10,000	0.25	A	10,000	0.25	A
2795	Dyer Rd	Main St to Halladay St		SA	6D	30,000	0.53	A	30,400	0.54	A
2799	Dyer Rd	Halladay St to SR-55 SB		SA	6D	37,900	0.67	B	38,400	0.68	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	58,100	1.03	F	59,300	1.05	F
734	Dyer Rd	SR-55 NB to Pullman St		SA	6D	52,800	0.94	E	54,300	0.96	E
2764	Grand Ave	Warner Ave to Hotel Terrace Drive		SA	6D	28,900	0.51	A	29,400	0.52	A
2806	Grand Ave	Hotel Terrace Drive to SR-55 NB		SA	6D	28,900	0.51	A	29,400	0.52	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	2U	3,400	0.27	A	3,400	0.27	A
2822	Halladay St	Alton Ave to McGaw Ave(Columbine)		SA	2U	1,800	0.14	A	1,900	0.15	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	34,100	0.61	B	34,500	0.61	B
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	38,700	0.69	B	39,300	0.70	B
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	28,000	0.50	A	28,300	0.50	A
2826	Main St	Alton Ave to McGaw Ave(Columbine)		SA	6D	26,800	0.48	A	27,100	0.48	A
2809	Main St	McGaw(Columbine) to MacArthur Blvd		SA	6D	28,500	0.51	A	29,000	0.52	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	22,800	0.40	A	23,100	0.41	A
2823	McGaw Ave (Alton)	Main St to Halladay St		SA	4U	4,100	0.17	A	4,100	0.17	A
2736	Segerstrom Ave	Bristol St to Flower St		SA	4D	22,400	0.60	A	22,700	0.61	B
2771	Segerstrom Ave	Flower St to Main St		SA	4D	24,000	0.64	B	24,300	0.65	B
2763	Warner Ave	Grand Ave to SR-55		SA	6D	18,300	0.33	A	18,300	0.33	A
2761	Sunflower Ave	Bristol St to Flower St		SA/CM	6D	22,500	0.40	A	23,200	0.41	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/CM	6D	18,700	0.33	A	19,400	0.35	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/CM	6D	25,100	0.45	A	26,000	0.46	A
1198	Browning Ave	Walnut Ave to I-5		Tus	2U	5,500	0.44	A	5,500	0.44	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	17,300	0.69	B	17,400	0.70	B
535	Bryan Ave	Red Hill Ave to Browning		Tus	4D	18,000	0.48	A	18,100	0.48	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	18,400	0.49	A	18,500	0.49	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	20,800	0.55	A	20,900	0.56	A
44	Edinger Ave	West of Newport Ave	b	Tus	6D	42,500	0.75	C	42,800	0.76	C
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	31,100	0.55	A	31,300	0.56	A
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	28,100	0.50	A	28,400	0.50	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4D	13,900	0.37	A	13,900	0.37	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	2D	11,600	0.64	B	11,600	0.64	B
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4D	10,900	0.29	A	10,900	0.29	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	17,900	0.48	A	18,000	0.48	A
672	Irvine Center Drive (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	31,400	0.56	A	31,700	0.56	A
674	Irvine Center Drive	Jamboree Rd to Harvard Ave	b	Tus	6D	29,500	0.52	A	29,900	0.53	A
2777	Mitchell Ave	Newport Ave to Red Hill Ave		Tus	2U	6,800	0.54	A	6,800	0.54	A
2775	Mitchell Ave	Red Hill Ave to Browning Ave		Tus	2U	4,900	0.39	A	4,900	0.39	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	45,900	0.82	D	45,900	0.82	D
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	36,900	0.66	B	37,300	0.66	B
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	33,300	0.59	A	33,500	0.60	A
49	Newport Ave	N of Sycamore Ave		Tus	6D	17,200	0.31	A	17,300	0.31	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	23,200	0.41	A	22,900	0.41	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	5,500	0.44	A	5,500	0.44	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	INTERIM ARTERIAL SEGMENT CLASSIFICATIONS	INTERIM CUMULATIVE BASELINE			INTERIM CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	5,700	0.46	A	5,800	0.46	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	40,600	0.72	C	40,700	0.72	C
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	37,800	0.67	B	37,900	0.67	B
21	Red Hill Ave	Nisson Rd to I-5 SB Ramps		Tus	6D	42,100	0.75	C	42,200	0.75	C
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	30,700	0.55	A	30,900	0.55	A
22	Red Hill Ave	Mitchell Ave to Walnut Ave		Tus	6D	26,900	0.48	A	26,900	0.48	A
23	Red Hill Ave	Walnut Ave to Sycamore Ave		Tus	6D	28,000	0.50	A	28,000	0.50	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	29,200	0.52	A	29,200	0.52	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	26,200	0.47	A	26,400	0.47	A
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	31,100	0.55	A	31,700	0.56	A
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	35,000	0.53	A	35,700	0.54	A
1363	Sycamore Ave	SR-55 NB to Newport Ave		Tus	4D	9,700	0.26	A	9,900	0.26	A
1920	Sycamore Ave	Newport Ave to Red Hill Ave		Tus	2U	10,000	0.80	C	10,100	0.81	D
85	Tustin Ranch Rd	N of I-5		Tus	6D	47,700	0.85	D	47,700	0.85	D
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	38,300	0.68	B	38,300	0.68	B
2168	Tustin Ranch Road	Walnut Avenue to Valencia Avenue		Tus	6D	19,500	0.35	A	19,800	0.35	A
2073	Tustin Ranch Road	Valencia Avenue to Warner Avenue		Tus	6D	18,800	0.33	A	19,200	0.34	A
2071	Tustin Ranch Road	Warner Avenue to Park Avenue		Tus	6D	20,500	0.36	A	20,700	0.37	A
2070	Tustin Ranch Road	Park Avenue to Barranca Parkway		Tus	6D	20,900	0.37	A	21,400	0.38	A
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4D	6,400	0.17	A	6,600	0.18	A
632	Valencia Avenue	Red Hill Avenue to Armstrong Avenue		Tus	4D	14,400	0.38	A	14,500	0.39	A
2844	Valencia Avenue	Armstrong Avenue to Kensington Park		Tus	4D	7,500	0.20	A	7,600	0.20	A
2842	Valencia Avenue	Kensington Park to Tustin Ranch Road		Tus	4D	7,400	0.20	A	7,500	0.20	A
587	Walnut Ave	East of Newport Ave		Tus	4U	17,900	0.72	C	18,200	0.73	C
589	Walnut Ave	East of Red Hill Ave		Tus	4D	18,200	0.49	A	18,400	0.49	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	21,100	0.56	A	21,300	0.57	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	19,800	0.53	A	19,900	0.53	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	16,700	0.30	A	16,700	0.30	A

a Intersection within Irvine Planning Area 36--LOS E acceptable
b Orange County Congestion Management Program (CMP) locations

Figure 4.14 – Interim Cumulative With Update Daily Arterial ADT

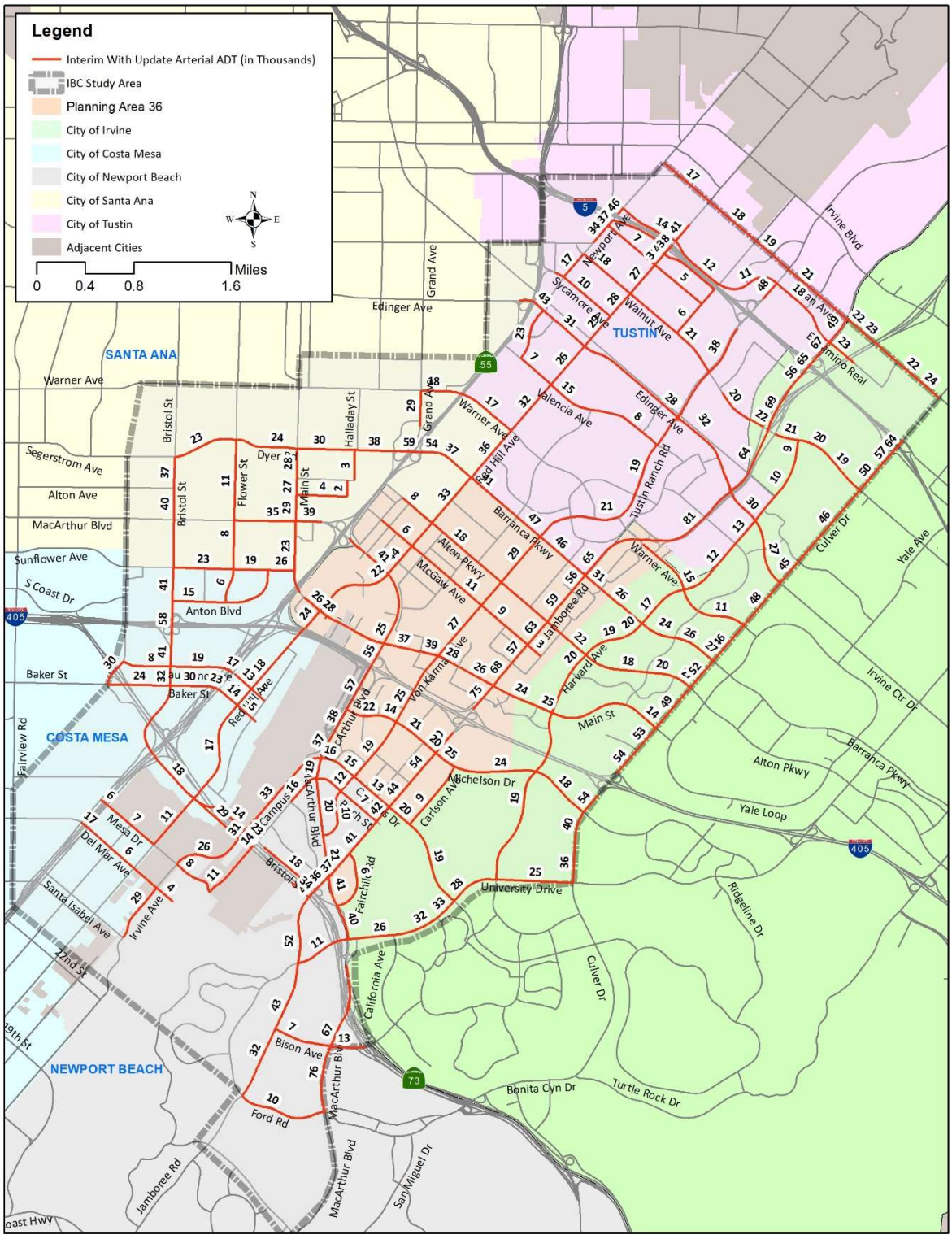
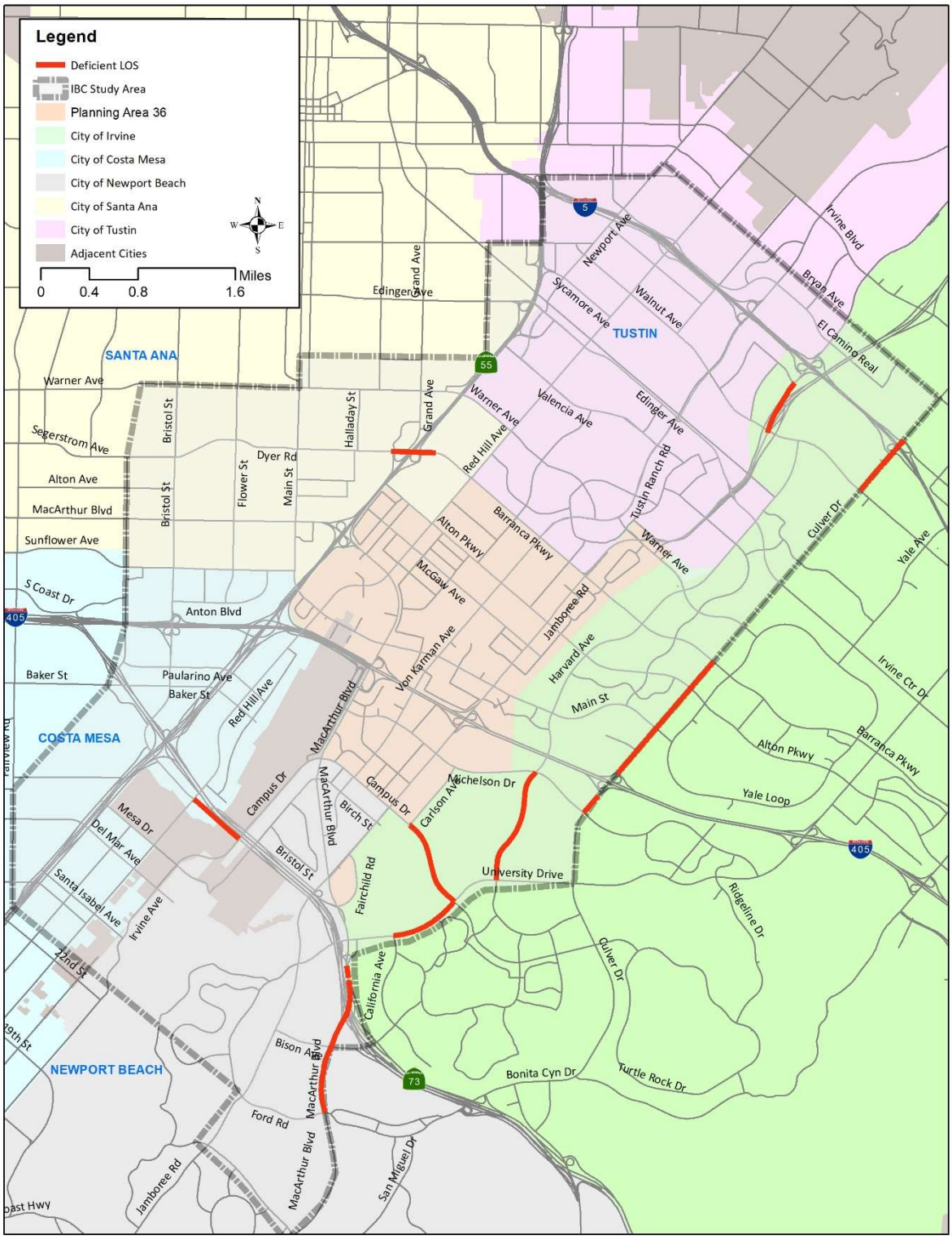


Figure 4.15 – Interim Cumulative With Update Daily Arterial Deficiencies



4.10 Interim Cumulative Baseline with Update Peak Hour Link Analysis

Peak hour directional traffic volumes were directly obtained from peak hour forecast turning movement volumes for intersections upstream and downstream for each deficient arterial segment. **Table 4.11** presents the results of peak hour link analysis, indicating that all arterial segments within the City of Irvine that are deficient under daily conditions operate at an acceptable LOS in both peak hours, and hence no mitigation measures are recommended at this time for these facilities.

Table 4.11 – Interim Cumulative With Update Peak Hour Link Analysis

ID	ARTERIAL	SEGMENT LIMITS	FACILITY TYPE	INTERIM FORECAST VOLUME WITH UPDATE				AM		PM	
				AM		PM		NB/EB	SB/WB	NB/EB	SB/WB
				NB/EB	SB/WB	NB/EB	SB/WB				
879	Campus Dr	Carlson Ave to University	4U	620	804	1,047	738	Acceptable	Acceptable	Acceptable	Acceptable
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps	7D	1,834	3,325	3,650	1,932	Acceptable	Acceptable	Acceptable	Acceptable
213	Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,533	2,900	2,791	2,300	Acceptable	Acceptable	Acceptable	Acceptable
214	Culver Dr	Scottsdale Drive to Walnut Ave	6D	1,243	2,599	2,334	1,740	Acceptable	Acceptable	Acceptable	Acceptable
219	Culver Dr	Barranca Parkway to Alton Pkwy	6D	1,316	2,654	2,464	1,690	Acceptable	Acceptable	Acceptable	Acceptable
220	Culver Dr	Alton Parkway to Main Street	6D	1,502	2,622	2,660	1,725	Acceptable	Acceptable	Acceptable	Acceptable
221	Culver Dr	Main St to San Leandro	6D	1,523	2,830	2,712	1,857	Acceptable	Acceptable	Acceptable	Acceptable
222	Culver Dr	San Leandro to I-405 NB On-Ramp	6D	1,625	3,026	2,852	1,895	Acceptable	Acceptable	Acceptable	Acceptable
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	2,225	2,318	2,748	1,789	Acceptable	Acceptable	Acceptable	Acceptable
183	Harvard Ave	Michelson Dr to University Dr	2U	525	996	1,076	820	Acceptable	Acceptable	Acceptable	Acceptable
133	Jamboree Rd	Michelle Dr to Walnut Avenue	5D	767	2,311	1,737	1,582	Acceptable	Acceptable	Acceptable	Acceptable
188	University Dr	California Ave to Mesa Rd	4D	1,440	804	1,761	738	Acceptable	Acceptable	Acceptable	Acceptable
187	University Dr	Mesa Rd to Campus Dr	4D	1,000	804	1,465	738	Acceptable	Acceptable	Acceptable	Acceptable

4.11 Interim Cumulative Baseline with Update Peak Hour Intersection Analysis

Using the turning movement volumes from each intersection assumed to be built by the Interim Year, ICU analysis was developed for every intersection within the study area. The intersection analysis includes both a reporting of intersection ICU and the corresponding LOS. **Table 4.12** displays the ICU analysis for the Interim Cumulative With Update conditions sorted by jurisdiction, while **Appendix E** presents detailed ICU worksheets. For shared jurisdictions, the more conservative methodology was utilized. The differences in the ICU values between the Interim Cumulative Baseline and With Update scenarios vary by intersection. While most of the intersections either stay the same or experience an increase in the ICU under the With Update conditions, a number of intersections experience a decrease (33 intersections in the AM peak and 20 intersections in the PM peak). This is likely due to the redistribution of trips within the IBC study area under the With Update conditions, with a greater amount of residential dwelling units, and a reduction in commercial, office, and industrial square footage. For deficient intersections or intersections that become deficient with the Vision Plan within the City of Irvine where the ICU value increases by 0.02 over the Baseline conditions that intersection experiences a significant impact. For intersections outside the City of Irvine in Costa Mesa, Tustin, and Santa Ana, an increase of 0.01 over the Baseline ICU constitutes a significant impact. For deficient intersections within the City of Newport Beach, an increase of 0.01 of a critical movement constitutes a significant impact. The significant impacts and improvement strategies are discussed in detail in **Chapter 6**.

Figure 4.16 and **Figure 4.17** graphically present the AM and PM peak hour intersection ICU for deficient

intersections. Further discussion of specific impacts, improvements, and fair-share cost analysis is addressed in **Chapter 6**. Three intersections are deficient in the Interim Cumulative With Update scenario, including two shared locations between Irvine and Tustin and one in Santa Ana. When compared to the Baseline scenario, there are no additional intersection deficiencies. Of the three intersections, one of these would ordinarily be considered a signficant impact #97 – Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (ICU increase of 0.02) in Irvine and Tustin. However, due to prior agreements with adjoining Cities and acceptable level of service within the City of Irvine, one intersection is significantly impacted by the Update: #136 Jamboree Road at Barranca Parkway.

- #97: Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (Irvine/Tustin) – PM Peak Hour LOS E with a 0.97 ICU*
- #136: Jamboree Road at Barranca Parkway (Irvine/Tustin) – PM Peak Hour LOS F with a 1.05 ICU
- #723: Main Street at Segerstrom (Santa Ana) – PM Peak Hour LOS E with a 0.93 ICU

** Denotes impacted intersection is located in cities of Tustin and Irvine. This intersection is not a significant impact in the City of Tustin based on signed agreement between the City of Irvine and City of Tustin. In the City of Irvine, this intersection is not deficient because LOS E is acceptable in the IBC area.*

All locations operating at a deficient LOS with an increase in the ICU value exceeding the significance threshold are identified as impacts and discussed in **Chapter 6.**

Table 4.12 – Interim Cumulative With Update Peak Hour Intersection LOS

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (INTERIM)	JURISDICTION	INTERIM CUMULATIVE BASELINE				INTERIM CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
10	SR-55 Frontage Rd SB at Paularino Ave			CM	0.77	C	0.67	B	0.77	C	0.67	B
11	SR-55 Frontage Rd NB at Paularino Ave			CM	0.61	B	0.71	C	0.61	B	0.74	C
12	SR-55 Frontage Rd SB at Baker St			CM	0.67	B	0.81	D	0.67	B	0.81	D
13	SR-55 Frontage Rd NB at Baker St			CM	0.73	C	0.72	C	0.73	C	0.74	C
50	Red Hill Ave at Paularino Ave			CM	0.61	B	0.69	B	0.63	B	0.75	C
51	Red Hill Ave at Baker St			CM	0.48	A	0.67	B	0.49	A	0.66	B
52	Red Hill Ave at Bristol St			CM	0.52	A	0.58	A	0.53	A	0.58	A
541	Bear at Baker St			CM	0.59	A	0.71	C	0.59	A	0.71	C
542	Bear at Paularino Ave			CM	0.40	A	0.63	B	0.40	A	0.63	B
545	Bristol at Sunflower			CM	0.58	A	0.72	C	0.59	A	0.72	C
546	Bristol at Anton			CM	0.35	A	0.54	A	0.35	A	0.54	A
547	Bristol at Paularino Ave			CM	0.50	A	0.73	C	0.51	A	0.73	C
548	Bristol at Baker St			CM	0.55	A	0.71	C	0.54	A	0.70	B
549	Newport Blvd SB at Bristol			CM	0.24	A	0.50	A	0.24	A	0.50	A
550	Newport Blvd NB at Bristol			CM	0.33	A	0.49	A	0.33	A	0.49	A
715	Bristol at I-405 NB Off Ramp			CM	0.44	A	0.70	B	0.43	A	0.70	B
716	Bristol at I-405 SB Ramps			CM	0.41	A	0.57	A	0.40	A	0.57	A
717	Bear at SR-73 SB Ramps			CM	0.40	A	0.50	A	0.40	A	0.50	A
720	Flower at MacArthur Blvd			CM	0.59	A	0.78	C	0.58	A	0.80	C
721	Flower at Sunflower			CM	0.39	A	0.49	A	0.39	A	0.50	A
722	Anton at Sunflower			CM	0.42	A	0.40	A	0.43	A	0.42	A
726	Main St at Sunflower			CM	0.55	A	0.67	B	0.55	A	0.68	B

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (INTERIM)	JURISDICTION	INTERIM CUMULATIVE BASELINE				INTERIM CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
735	Newport Blvd NB at Del mar			CM	0.82	D	0.42	A	0.82	D	0.43	A
736	Newport Blvd SB at Fair/Del Mar			CM	0.39	A	0.44	A	0.39	A	0.45	A
737	Newport Blvd NB at Mesa Rd			CM	0.39	A	0.37	A	0.41	A	0.37	A
738	Newport Blvd SB at Mesa Rd			CM	0.24	A	0.65	B	0.24	A	0.65	B
32	Daimler St at McGaw Ave			Irv	0.15	A	0.15	A	0.16	A	0.16	A
45	Red Hill Ave at McGaw Ave	a		Irv	0.53	A	0.71	C	0.54	A	0.73	C
47	Red Hill Ave at MacArthur Blvd	a		Irv	0.72	C	0.83	D	0.75	C	0.88	D
48	Red Hill Ave at Sky Park N	a		Irv	0.36	A	0.54	A	0.38	A	0.56	A
49	Red Hill Ave at Main St	a		Irv	0.68	B	0.89	D	0.71	C	0.90	D
66	Gillette Avenue at Alton Parkway	a		Irv	0.41	A	0.59	A	0.40	A	0.62	B
67	Gillette Ave at McGaw Ave	a		Irv	0.34	A	0.51	A	0.42	A	0.55	A
70	Gillette Ave at Main Street	a		Irv	0.38	A	0.62	B	0.48	A	0.63	B
73	Armstrong Avenue and Alton Pkwy West	a			0.29	A	0.40	A	0.30	A	0.43	A
74	Armstrong Ave and Alton Pkwy East	a			0.34	A	0.40	A	0.38	A	0.43	A
77	MacArthur Blvd at Sky Park East	a		Irv	0.34	A	0.48	A	0.35	A	0.49	A
78	MacArthur Blvd at Main St	a		Irv	0.63	B	0.76	C	0.68	B	0.82	D
79	MacArthur Blvd at I-405 NB Ramps	a		Irv	0.72	C	0.64	B	0.77	C	0.66	B
80	MacArthur Blvd at I-405 SB Ramps	a		Irv	0.63	B	0.72	C	0.84	D	0.89	D
82	MacArthur Blvd at Michelson Dr	a		Irv	0.70	B	0.87	D	0.76	C	0.92	E
83	MacArthur Blvd at Douglas Ave	a		Irv	0.37	A	0.42	A	0.41	A	0.45	A
87	Dupont Dr at Michelson Dr	a		Irv	0.41	A	0.40	A	0.46	A	0.45	A
98	Von Karman Ave at Alton Pkwy	a		Irv	0.80	C	0.85	D	0.82	D	0.87	D
99	Von Karman Ave at McGaw Ave	a		Irv	0.69	B	0.75	C	0.74	C	0.79	C
100	Von Karman Ave at Main St	a		Irv	0.65	B	0.77	C	0.72	C	0.81	D
101	Von Karman Ave at Morse Ave	a		Irv	0.53	A	0.65	B	0.54	A	0.67	B
102	Von Karman Ave at Michelson Dr	a		Irv	0.59	A	0.70	B	0.65	B	0.73	C
103	Von Karman Ave at Dupont Dr	a		Irv	0.45	A	0.54	A	0.52	A	0.62	B
104	Von Karman Ave at Martin	a		Irv	0.38	A	0.53	A	0.41	A	0.57	A
115	Millikan Ave at Alton Pkwy	a		Irv	0.39	A	0.54	A	0.40	A	0.55	A
116	Cartwright Rd at Main St	a		Irv	0.43	A	0.60	A	0.55	A	0.66	B
119	Teller Ave at Michelson Dr	a		Irv	0.48	A	0.54	A	0.60	A	0.61	B
128	Jamboree Rd at I-5 NB Ramps	b		Irv	0.85	D	0.73	C	0.85	D	0.73	C
129	Jamboree Rd at I-5 SB Ramps	b		Irv	0.74	C	0.60	A	0.75	C	0.60	A
130	Jamboree Rd at Michelle Dr			Irv	0.61	B	0.78	C	0.61	B	0.78	C
131	Jamboree Rd SB at Walnut Ave			Irv	0.57	A	0.56	A	0.59	A	0.57	A
132	Jamboree Rd NB at Walnut Ave			Irv	0.42	A	0.59	A	0.43	A	0.59	A
135	Jamboree Rd NB Ramps at Warner Ave			Irv	0.35	A	0.66	B	0.36	A	0.67	B
137	Jamboree Rd at Beckman Ave	a		Irv	0.60	A	0.70	B	0.61	B	0.71	C
138	Jamboree Rd at Alton Pkwy	a		Irv	0.71	C	0.84	D	0.71	C	0.86	D
139	Jamboree Rd at McGaw Ave	a		Irv	0.64	B	0.76	C	0.69	B	0.75	C
140	Jamboree Rd at Kelvin Ave	a		Irv	0.59	A	0.61	B	0.66	B	0.66	B
141	Jamboree Rd at Main St	a		Irv	0.75	C	0.88	D	0.80	C	0.90	D
143	Jamboree Rd at I-405 NB Ramps	a,b		Irv	0.73	C	0.80	C	0.77	C	0.84	D
144	Jamboree Rd at I-405 SB Ramps	a,b		Irv	0.95	E	0.90	D	0.98	E	0.93	E
145	Jamboree Rd at Michelson Dr	a		Irv	0.72	C	0.85	D	0.81	D	0.93	E
146	Jamboree Rd at Dupont Rd	a		Irv	0.54	A	0.60	A	0.57	A	0.63	B
164	Construction S at Barranca Pkwy	a		Irv	0.34	A	0.54	A	0.36	A	0.56	A
168	Murphy Ave at Alton Pkwy	a		Irv	0.36	A	0.65	B	0.39	A	0.70	B
170	Union at Main St	a		Irv	0.39	A	0.63	B	0.38	A	0.63	B

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (INTERIM)	JURISDICTION	INTERIM CUMULATIVE BASELINE				INTERIM CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
171	Veneto at Main St			Irv	0.42	A	0.57	A	0.41	A	0.59	A
174	Carlson Ave at Michelson Dr			Irv	0.52	A	0.63	B	0.61	B	0.74	C
175	Carlson Ave at Campus Dr			Irv	0.44	A	0.69	B	0.46	A	0.69	B
180	Harvard Ave at Walnut Ave			Irv	0.46	A	0.54	A	0.48	A	0.54	A
183	Harvard Ave at Warner Ave			Irv	0.49	A	0.58	A	0.49	A	0.58	A
184	Harvard Ave at Barranca Pkwy			Irv	0.58	A	0.66	B	0.59	A	0.67	B
185	Harvard Ave at Alton Pkwy			Irv	0.68	B	0.69	B	0.70	B	0.70	B
186	Harvard Ave at Main St			Irv	0.59	A	0.75	C	0.61	B	0.78	C
187	Harvard Ave at Coronado			Irv	0.54	A	0.59	A	0.55	A	0.61	B
188	Harvard Ave Michelson Dr			Irv	0.68	B	0.85	D	0.69	B	0.86	D
189	Harvard Ave University Dr			Irv	0.72	C	0.75	C	0.72	C	0.75	C
190	University Dr at Campus Dr		√	Irv	0.79	C	0.78	C	0.80	C	0.78	C
191	Mesa Rd at University Dr			Irv	0.64	B	0.71	C	0.65	B	0.72	C
192	California Ave at University Dr			Irv	0.74	C	0.84	D	0.75	C	0.85	D
196	Hearthstone Blvd at Irvine Center Dr			Irv	0.51	A	0.49	A	0.51	A	0.50	A
198	Paseo Westpark at Warner Ave			Irv	0.43	A	0.35	A	0.44	A	0.35	A
199	Paseo Westpark at Barranca Pkwy			Irv	0.44	A	0.55	A	0.43	A	0.54	A
200	Paseo Westpark at Alton Pkwy			Irv	0.50	A	0.60	A	0.50	A	0.62	B
201	Paseo Westpark at Main St			Irv	0.55	A	0.55	A	0.56	A	0.54	A
221	Culver Dr at Bryan Ave			Irv	0.79	C	0.73	C	0.79	C	0.73	C
222	Culver Dr at Trabuco Rd			Irv	0.82	D	0.80	C	0.81	D	0.80	C
223	Culver Dr at I-5 SB Ramps			Irv	0.66	B	0.66	B	0.65	B	0.65	B
224	Culver Dr at Walnut Ave			Irv	0.77	C	0.85	D	0.77	C	0.85	D
225	Culver Dr at Deerfield Dr			Irv	0.76	C	0.74	C	0.77	C	0.74	C
226	Culver Dr at Irvine Center Dr		√	Irv	0.71	C	0.71	C	0.71	C	0.70	B
227	Culver Dr at Warner Ave			Irv	0.78	C	0.68	B	0.76	C	0.69	B
228	Culver Dr at Barranca Pkwy			Irv	0.78	C	0.84	D	0.78	C	0.85	D
229	Culver Dr at Alton Pkwy		√	Irv	0.76	C	0.80	C	0.75	C	0.81	D
230	Culver Dr at Main St			Irv	0.70	B	0.72	C	0.70	B	0.73	C
231	Culver Dr at San Leandro			Irv	0.73	C	0.60	A	0.74	C	0.60	A
232	Culver Dr at I-405 NB Ramps			Irv	0.56	A	0.78	C	0.56	A	0.78	C
233	Culver Dr at I-405 SB Ramps			Irv	0.65	B	0.69	B	0.66	B	0.69	B
234	Culver Dr at Michelson Dr			Irv	0.61	B	0.90	D	0.63	B	0.90	D
235	Culver Dr at University Dr		√	Irv	0.72	C	0.74	C	0.72	C	0.74	C
337	Von Karman Ave at Quartz	a		Irv	0.56	A	0.59	A	0.57	A	0.63	B
439	Bixby at Michelson Dr			Irv	0.42	A	0.48	A	0.45	A	0.51	A
440	Siglo at Main St			Irv	0.40	A	0.55	A	0.41	A	0.56	A
472	Obsidian at Michelson Dr	a		Irv	0.57	A	0.56	A	0.57	A	0.61	B
84	MacArthur Blvd at Campus Dr			Irv/NB	0.57	A	0.84	D	0.64	B	0.88	D
105	Von Karman Ave at Campus Dr			Irv/NB	0.59	A	0.75	C	0.65	B	0.79	C
121	Teller Ave at Campus Dr			Irv/NB	0.27	A	0.40	A	0.32	A	0.43	A
147	Jamboree Rd at Campus Dr			Irv/NB	0.64	B	0.64	B	0.71	C	0.67	B
149	Jamboree Rd at Fairchild Rd			Irv/NB	0.61	B	0.71	C	0.62	B	0.71	C
150	Jamboree Rd at MacArthur Blvd	b		Irv/NB	0.69	B	0.74	C	0.69	B	0.76	C
176	Fairchild Ave at MacArthur Blvd			Irv/NB	0.74	C	0.74	C	0.75	C	0.74	C
193	MacArthur Blvd NB at University Dr			Irv/NB	0.48	A	0.51	A	0.49	A	0.52	A
194	MacArthur Blvd SB at University Dr			Irv/NB	0.47	A	0.39	A	0.48	A	0.39	A
195	SR-73 SB Ramps at University Dr			Irv/NB	0.70	B	0.46	A	0.71	C	0.47	A
9	SR-55 NB Ramps at MacArthur Blvd			Irv/SA	0.85	D	0.58	A	0.85	D	0.58	A

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (INTERIM)	JURISDICTION	INTERIM CUMULATIVE BASELINE				INTERIM CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
31	Daimler St at Alton Pkwy			Irv/SA	0.26	A	0.32	A	0.27	A	0.33	A
43	Red Hill Ave at Deere Ave			Irv/SA	0.47	A	0.74	C	0.48	A	0.76	C
44	Red Hill Ave at Alton Pkwy			Irv/SA	0.54	A	0.82	D	0.60	A	0.86	D
42	Red Hill Ave at Barranca Pkwy/Dyer Rd			Irv/SA/Tus	0.61	B	0.76	C	0.62	B	0.77	C
71	Armstrong Ave at Barranca Pkwy			Irv/Tus	0.45	A	0.73	C	0.46	A	0.76	C
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	*		Irv/Tus	0.83	D	0.97	E	0.84	D	0.99	E
112	Myford Rd at Michelle Dr			Irv/Tus	0.22	A	0.32	A	0.21	A	0.32	A
113	Myford Rd at Walnut Ave			Irv/Tus	0.35	A	0.41	A	0.36	A	0.41	A
114	Millikan Ave/District Way at Barranca Pkwy			Irv/Tus	0.50	A	0.68	B	0.52	A	0.69	B
126	Jamboree Rd at Bryan Ave			Irv/Tus	0.68	B	0.79	C	0.68	B	0.79	C
127	Jamboree Rd at El Camino Real			Irv/Tus	0.72	C	0.76	C	0.72	C	0.76	C
134	Loop Rd/Park Ave at Warner Ave			Irv/Tus	0.57	A	0.75	C	0.58	A	0.75	C
136	Jamboree Rd at Barranca Pkwy			Irv/Tus	0.90	D	1.05	F	0.90	D	1.06	F
181	Harvard Ave at Edinger Ave/Irvine Center Dr			Irv/Tus	0.50	A	0.60	A	0.52	A	0.60	A
182	Harvard Ave at Paseo Westpark/Moffett Dr.			Irv/Tus	0.30	A	0.41	A	0.31	A	0.41	A
441	Loop Rd at Jamboree Rd SB Ramps			Irv/Tus	0.34	A	0.82	D	0.34	A	0.83	D
61	Campus Dr at Airport Way			NB	0.42	A	0.77	C	0.46	A	0.80	C
62	Campus Dr at Bristol St NB			NB	0.60	A	0.77	C	0.64	B	0.78	C
63	Campus Dr at Bristol St SB			NB	0.72	C	0.58	A	0.74	C	0.59	A
64	Birch St at Bristol St NB			NB	0.52	A	0.50	A	0.59	A	0.50	A
65	Birch St at Bristol St SB			NB	0.45	A	0.48	A	0.44	A	0.48	A
85	MacArthur Blvd at Birch St			NB	0.48	A	0.56	A	0.50	A	0.61	B
106	Von Karman Ave at Birch St			NB	0.39	A	0.43	A	0.42	A	0.45	A
107	Von Karman Ave at MacArthur Blvd			NB	0.35	A	0.57	A	0.34	A	0.57	A
148	Jamboree Rd at Birch St			NB	0.56	A	0.53	A	0.58	A	0.53	A
151	Jamboree Rd at Bristol St NB			NB	0.38	A	0.54	A	0.44	A	0.54	A
153	Jamboree Rd at Bristol St SB			NB	0.68	B	0.68	B	0.68	B	0.68	B
154	Jamboree Rd at Eastbluff Dr			NB	0.65	B	0.62	B	0.66	B	0.61	B
155	Jamboree Rd at Bison Ave			NB	0.50	A	0.52	A	0.49	A	0.52	A
156	Jamboree Rd at Ford Rd			NB	0.89	D	0.77	C	0.89	D	0.76	C
178	MacArthur Blvd at Bison Ave			NB	0.67	B	0.63	B	0.67	B	0.64	B
179	MacArthur Blvd at Ford Rd			NB	0.74	C	0.77	C	0.74	C	0.77	C
741	Jamboree at San Joaquin			NB	0.61	B	0.53	A	0.61	B	0.53	A
742	MacArthur at San Joaquin			NB	0.58	A	0.88	D	0.57	A	0.89	D
733	Irvine at Mesa Rd			NB/OC	0.55	A	0.77	C	0.53	A	0.76	C
734	Irvine at University/Del Mar			NB/OC	0.66	B	0.75	C	0.67	B	0.75	C
4	SR-55 SB Ramps at Edinger Ave	b		SA	0.61	B	0.60	A	0.61	B	0.62	B
5	Hotel Terrace Dr at Dyer Rd			SA	0.58	A	0.73	C	0.59	A	0.74	C
6	Grand Ave at Dyer Rd			SA	0.71	C	0.88	D	0.73	C	0.88	D
7	SR-55 NB Ramps at Dyer Rd			SA	0.71	C	0.66	B	0.71	C	0.67	B
8	SR-55 SB Ramps at MacArthur Blvd	c		SA	0.69	B	0.61	B	0.69	B	0.61	B
29	Pullman St at Barranca Pkwy			SA	0.57	A	0.76	C	0.58	A	0.77	C
543	Bristol at Segerstrom			SA	0.79	C	0.80	C	0.80	C	0.79	C
544	Bristol St at MacArthur Blvd			SA	0.70	B	0.81	D	0.70	B	0.82	D
718	Bear at SR-73 NB Ramps			SA	0.38	A	0.60	A	0.38	A	0.60	A

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (INTERIM)	JURISDICTION	INTERIM CUMULATIVE BASELINE				INTERIM CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
719	Flower at Segerstrom			SA	0.70	B	0.79	C	0.70	B	0.79	C
723	Main St at Segerstrom			SA	0.77	C	0.93	E	0.78	C	0.93	E
724	Main St at Alton Ave			SA	0.36	A	0.48	A	0.36	A	0.48	A
725	Main and MacArthur (w/o SR-55)	c		SA	0.65	B	0.77	C	0.65	B	0.78	C
727	Halladay at Dyer Rd			SA	0.62	B	0.71	C	0.62	B	0.72	C
728	Halladay E at Alton Pkwy			SA	0.20	A	0.28	A	0.21	A	0.30	A
729	Halladay W at Alton Pkwy			SA	0.20	A	0.28	A	0.20	A	0.28	A
730	Grand Ave at Warner			SA	0.50	A	0.73	C	0.51	A	0.74	C
731	SR-55 SB Ramps at Grand Ave			SA	0.62	B	0.55	A	0.64	B	0.55	A
3	Newport Ave at Edinger Ave			Tus	0.75	C	0.55	A	0.73	C	0.55	A
14	Walnut Ave at McFadden Ave			Tus	0.38	A	0.48	A	0.39	A	0.48	A
18	Newport Ave at Bryan Ave			Tus	0.46	A	0.59	A	0.45	A	0.59	A
19	Newport Ave at Main St			Tus	0.67	B	0.63	B	0.68	B	0.62	B
20	Newport Ave at El Camino Real			Tus	0.79	C	0.74	C	0.78	C	0.74	C
21	Newport Ave at I-5 NB Ramps			Tus	0.71	C	0.59	A	0.71	C	0.59	A
22	Newport Ave at I-5 SB Ramp/Nisson Rd			Tus	0.61	B	0.66	B	0.62	B	0.66	B
23	Newport Ave at McFadden St			Tus	0.58	A	0.53	A	0.59	A	0.53	A
24	Newport Ave at Walnut Ave			Tus	0.65	B	0.66	B	0.65	B	0.66	B
25	Newport Ave at Sycamore Ave			Tus	0.65	B	0.68	B	0.66	B	0.69	B
27	Del Amo Ave at Edinger Ave			Tus	0.43	A	0.43	A	0.43	A	0.45	A
35	Red Hill Ave at Bryan Ave			Tus	0.63	B	0.81	D	0.63	B	0.82	D
36	Red Hill Ave at El Camino Real			Tus	0.56	A	0.55	A	0.56	A	0.56	A
37	Red Hill Ave at Nisson Rd			Tus	0.61	B	0.72	C	0.61	B	0.73	C
38	Red Hill Ave at Walnut Ave			Tus	0.68	B	0.84	D	0.67	B	0.84	D
39	Red Hill Ave at Sycamore Ave			Tus	0.65	B	0.58	A	0.65	B	0.58	A
40	Red Hill Ave at Edinger Ave			Tus	0.67	B	0.82	D	0.67	B	0.82	D
55	Browning Ave at Bryan Ave			Tus	0.38	A	0.55	A	0.38	A	0.55	A
56	Browning Ave at El Camino Real			Tus	0.34	A	0.50	A	0.35	A	0.49	A
58	Browning Ave at Walnut Ave			Tus	0.47	A	0.63	B	0.47	A	0.62	B
92	Tustin Ranch Rd at Bryan Ave			Tus	0.70	B	0.83	D	0.70	B	0.82	D
93	Tustin Ranch Rd at El Camino Real			Tus	0.84	D	0.78	C	0.83	D	0.77	C
94	Tustin Ranch Rd at I-5 NB Ramps			Tus	0.62	B	0.63	B	0.61	B	0.62	B
95	Tustin Ranch Rd at I-5 SB Ramps			Tus	0.65	B	0.70	B	0.64	B	0.70	B
96	Tustin Ranch Rd at Walnut Ave			Tus	0.56	A	0.84	D	0.55	A	0.84	D
109	Myford Rd at Bryan Ave			Tus	0.39	A	0.56	A	0.39	A	0.56	A
110	Myford Rd at El Camino Real			Tus	0.30	A	0.52	A	0.30	A	0.52	A
111	Franklin Ave at Walnut Ave			Tus	0.50	A	0.77	C	0.52	A	0.77	C
133	Jamboree Rd at Edinger Ave	b		Tus	0.47	A	0.66	B	0.48	A	0.67	B
445	Tustin Ranch Rd at Warner Ave N			Tus	0.44	A	0.52	A	0.43	A	0.53	A
446	Tustin Ranch Rd at Warner Ave S			Tus	0.51	A	0.62	B	0.50	A	0.61	B
447	Armstrong Ave/Severyns Rd Valencia Ave			Tus	0.30	A	0.31	A	0.29	A	0.31	A
448	Armstrong Ave at Warner Ave			Tus	0.17	A	0.25	A	0.18	A	0.25	A
453	Red Hill Ave at Valencia Ave			Tus	0.66	B	0.58	A	0.66	B	0.61	B
454	Tustin Ranch Rd at Valencia Ave			Tus	0.45	A	0.57	A	0.45	A	0.56	A
455	E Connector/Jamboree Plaza at Edinger Ave			Tus	Not analyzed in Interim conditions							
456	N Loop Rd at Valencia Ave			Tus								
457	N Loop Rd at Moffett Dr			Tus	0.06	A	0.07	A	0.07	A	0.07	A

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (INTERIM)	JURISDICTION	INTERIM CUMULATIVE BASELINE				INTERIM CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
478	Red Hill Ave at I-5 NB Ramps			Tus	0.65	B	0.64	B	0.65	B	0.65	B
479	Red Hill Ave at I-5 SB Ramps			Tus	0.70	B	0.79	C	0.69	B	0.80	C
480	Tustin Ranch Rd/Connector at Edinger Ave			Tus	0.13	A	0.12	A	0.13	A	0.13	A
732	SR-55 NB Ramp at Newport Ave			Tus	0.54	A	0.63	B	0.57	A	0.64	B
739	Newport Ave at Mitchell Ave			Tus	0.64	B	0.65	B	0.65	B	0.65	B
740	Red Hill Ave at Mitchell Ave			Tus	0.53	A	0.59	A	0.54	A	0.59	A
743	Newport Ave at Valencia			Tus	0.39	A	0.72	C	0.39	A	0.73	C
745	Tustin Ranch Rd at Park Ave			Tus	0.50	A	0.54	A	0.48	A	0.55	A
746	Kensington Park Dr at Edinger Ave			Tus	0.41	A	0.49	A	0.41	A	0.50	A
747	Kensington Park Dr at Valencia Ave			Tus	0.26	A	0.28	A	0.27	A	0.28	A
748	Armstrong Ave at A St			Tus	0.27	A	0.24	A	0.27	A	0.24	A
749	Park Ave at A St			Tus	0.05	A	0.05	A	0.05	A	0.05	A
750	Legacy Rd at Warner Ave			Tus	0.31	A	0.30	A	0.33	A	0.31	A
751	Tustin Ranch Rd at Legacy Rd			Tus	0.37	A	0.30	A	0.37	A	0.30	A
752	Legacy Rd at N Loop Rd			Tus	0.13	A	0.12	A	0.13	A	0.12	A
753	Tustin Ranch Rd at Edinger Ave Connector			Tus	0.37	A	0.29	A	0.36	A	0.29	A
28	Pullman St at Warner Ave			Tus/SA	0.51	A	0.55	A	0.52	A	0.54	A
41	Red Hill Ave at Warner Ave			Tus/SA	0.48	A	0.64	B	0.47	A	0.67	B
754	Red Hill Ave at Carnegie Ave			Tus/SA	0.43	A	0.74	C	0.43	A	0.75	C
F	Denotes intersection operating at a deficient LOS											
a	Intersection within Irvine Planning Area 36--LOS E acceptable											
b	Orange County Congestion Management Program (CMP) locations											
c	Intersections within City of Santa Ana--LOS E acceptable											
√	ATMS credit-Reduction of 0.05 applied to ICU											
*	Impact											

Figure 4.16 – Interim Cumulative With Update AM Peak Hour Intersection Deficiencies

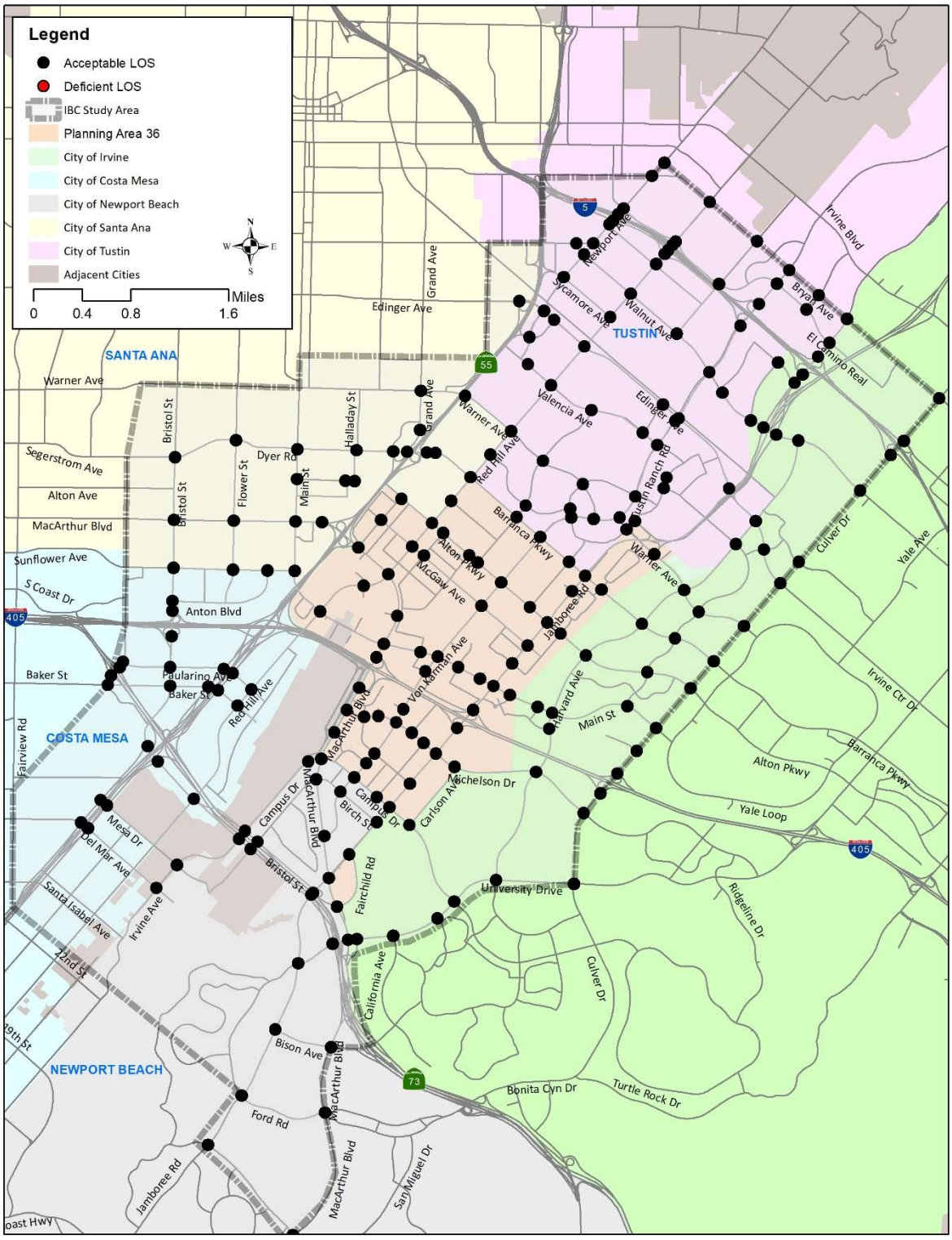
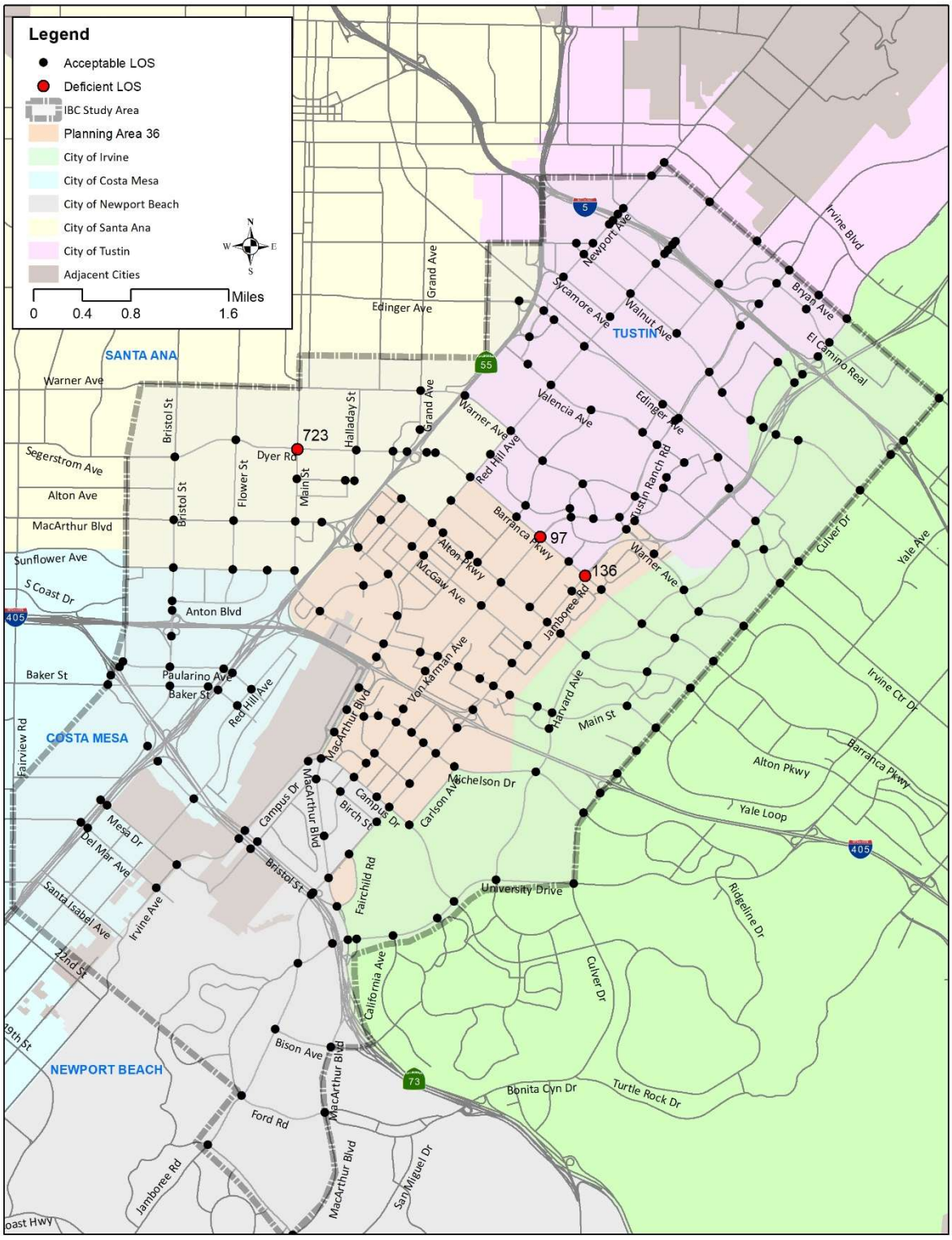


Figure 4.17 – Interim Cumulative With Update PM Peak Hour Intersection Deficiencies



4.12 Interim Cumulative Baseline With Update Peak Hour Freeway Mainline Analysis

Future freeway mainline volumes are based on forecast traffic using the ITAM model. **Table 4.13** presents the freeway mainline segment analysis for Interim Cumulative With Update conditions and compares mainline segment performance to Interim Cumulative Baseline conditions. The With Update scenario does not include any freeway mainline capacity improvements, consequently, the capacities are consistent with the Baseline scenario. **Appendix G** presents detailed HCS worksheets for mainline analysis. The following segments are forecast to be deficient in the Interim year. In the AM peak 39 out of 60 freeway segments operate at a deficient LOS and in the PM peak 27 out of 60 operate at a deficient LOS. In total 43 segments are deficient in one or both peaks. When compared to the Baseline conditions, two additional segments become deficient under the Interim With Update conditions.

PM Peak Hour:

- SR-55 Southbound North of I-5
- SR-73 Southbound between Birch Street and Campus Drive

The deficient segments are:

AM Peak Hour:

I-5	**Northbound**	• Between Culver Drive and Jamboree Road • Between Jamboree Road and Tustin Ranch Road • Between Tustin Ranch Road and Red Hill Avenue • Between Red Hill Avenue and Newport Avenue • Between Newport Avenue and SR-55 • North of SR-55
	Southbound	• Between Jamboree Road and Culver Drive • Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road • Between Newport Avenue and Red Hill Avenue • Between SR-55 and Newport Avenue • North of SR-55
I-405	**Northbound**	• Between Culver Drive and Jamboree Road • Between Jamboree Road and MacArthur Boulevard • Between MacArthur Boulevard and SR-55*
	Southbound	• Between Jamboree Road and Culver Drive • Between SR-55 and MacArthur Boulevard • Between Bristol Street and SR-55 • Between SR-73 and Bristol Street
SR-55	**Northbound**	• Between I-405 and MacArthur Boulevard • North of I-5
	Southbound	• Between MacArthur Boulevard and I-405 • Between Dyer Road and MacArthur Boulevard • Between Edinger Avenue and Dyer Road • Between McFadden Street/Sycamore Avenue and Edinger Avenue • Between I-5 and McFadden Street/Sycamore Avenue • North of I-5
SR-73	**Northbound**	• Between MacArthur Boulevard and University Drive • Between University Drive and Jamboree Road • Between Jamboree Road and Birch Street • Between Birch Street and Campus Drive • Between Campus Drive and SR-55*

		• Between SR-55 and Bear Street • Between Bear Street and I-405
	Southbound	• Between Birch Street and Jamboree Road • Between Campus Drive and Birch Street • Between SR-55 and Campus Drive • Between Bear Street and SR-55 • Between I-405 and Bear Street

PM Peak Hour:

I-5	**Northbound**	• Between Tustin Ranch Road and Red Hill Avenue • Between Red Hill Avenue and Newport Avenue • Between Newport Avenue and SR-55 • North of SR-55
	Southbound	• Between Jamboree Road and Culver Drive • Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road • Between Newport Avenue and Red Hill Avenue • Between SR-55 and Newport Avenue • North of SR-55
I-405	**Southbound**	• Between Jamboree Road and Culver Drive • Between SR-55 and MacArthur Boulevard*
SR-55	**Northbound**	• Between I-405 and MacArthur Boulevard • Between MacArthur Boulevard and Dyer Road • Between Dyer Road and Edinger Avenue • Between McFadden Street/Sycamore Avenue and I-5 • North of I-5
	Southbound	• North of I-5 • Between MacArthur Boulevard and I-405
SR-73	**Northbound**	• Between Jamboree Road and Birch Street • Between Campus Drive and SR-55 • Between SR-55 and Bear Street • Between Bear Street and I-405
	Southbound	• Between Jamboree Road and University Drive • Between Campus Drive and Birch Street • Between Birch Street and Jamboree Road • Between SR-55 and Campus Drive

*Denotes freeway segment impacts.

Table 4.13 – Interim Cumulative With Update Freeway Peak Hour Mainline LOS

LOCATION		FREEWAY LANES			INTERIM CUMULATIVE BASELINE						INTERIM CUMULATIVE WITH UPDATE									
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
		DIRECTION	LANES	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
I-5	Culver Dr to Jamboree Rd	NB	6	12,000	13,081	1.09	F	10,492	0.87	D	13,074	1.09	F			10,513	0.88	D		
		SB	6	12,000	10,970	0.91	E	11,492	0.96	E	10,942	0.91	E			11,566	0.96	E		
	Jamboree Rd to Tustin Ranch Rd	NB	6	12,000	12,899	1.07	F	10,591	0.88	D	12,895	1.07	F			10,555	0.88	D		
		SB	6	12,000	11,286	0.94	E	11,194	0.93	E	11,175	0.93	E			11,273	0.94	E		
	Tustin Ranch Rd to Red Hill Ave	NB	6	12,000	13,263	1.11	F	10,896	0.91	E	13,329	1.11	F			10,920	0.91	E		
		SB	6	12,000	12,002	1.00	E	11,895	0.99	E	11,889	0.99	E			11,993	1.00	E		
	Red Hill Ave to Newport Ave	NB	5	10,000	12,797	1.28	F	10,501	1.05	F	12,851	1.29	F			10,539	1.05	F		
		SB	6	12,000	11,400	0.95	E	11,295	0.94	E	11,274	0.94	E			11,441	0.95	E		
	Newport Ave to SR-55	NB	6	12,000	13,872	1.16	F	11,242	0.94	E	13,944	1.16	F			11,258	0.94	E		
		SB	4	8,000	7,959	0.99	E	8,025	1.00	E	7,894	0.99	E			8,113	1.01	F		
	North of SR-55	NB	5	10,000	12,173	1.22	F	10,516	1.05	F	12,291	1.23	F			10,523	1.05	F		
		SB	5	10,000	10,451	1.05	F	9,904	0.99	E	10,385	1.04	F			9,985	1.00	E		

	LOCATION	FREEWAY LANES			INTERIM CUMULATIVE BASELINE						INTERIM CUMULATIVE WITH UPDATE								
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
		DIRECTION	LANES	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
I-405	Culver Dr to Jamboree Rd	NB	5	10,000	12,571	1.26	F	8,757	0.88	D	12,599	1.26	F			8,812	0.88	D		
		SB	4	8,000	8,817	1.10	F	11,102	1.39	F	8,831	1.10	F			11,150	1.39	F		
	Jamboree Rd to MacArthur Blvd	NB	6	12,000	12,806	1.07	F	10,155	0.85	D	12,953	1.08	F			10,195	0.85	D		
		SB	7	14,000	10,809	0.77	D	11,548	0.82	D	10,725	0.77	D			11,788	0.84	D		
	MacArthur Blvd to SR-55	NB	6	12,000	11,905	0.99	E	10,615	0.88	D	12,138	1.01	F	*		10,692	0.89	D		
		SB	6	12,000	11,777	0.98	E	11,284	0.94	E	11,760	0.98	E			11,542	0.96	E	35.4	E
	SR-55 to Bristol St	NB	4	8,000	6,394	0.80	D	6,116	0.76	D	6,524	0.82	D			6,187	0.77	D		
		SB	5	10,000	9,441	0.94	E	7,854	0.79	D	9,371	0.94	E			8,005	0.8	D		
	Bristol St to SR-73	NB	5	10,000	7,437	0.74	D	7,483	0.75	D	7,578	0.76	D			7,556	0.76	D		
		SB	5	10,000	9,315	0.93	E	7,123	0.71	C	9,165	0.92	E			7,157	0.72	D		
SR-55	South of Victoria St	NB	4	8,000	2,029	0.25	A	1,695	0.21	A	2,043	0.26	A			1,708	0.21	A		
		SB	3	6,000	2,569	0.43	B	2,538	0.42	B	2,590	0.43	B			2,543	0.42	B		
	Victoria St to Fair Dr	NB	4	8,000	4,501	0.56	C	3,352	0.42	B	4,498	0.56	C			3,374	0.42	B		
		SB	3	6,000	3,944	0.66	C	4,297	0.72	D	3,980	0.66	C			4,313	0.72	D		
	Fair Dr to SR-73	NB	4	8,000	6,254	0.78	D	4,894	0.61	C	6,246	0.78	D			4,928	0.62	C		
		SB	4	8,000	5,038	0.63	C	5,203	0.65	C	5,110	0.64	C			5,222	0.65	C		
	SR-73 to Baker St	NB	4	8,000	5,719	0.71	C	5,151	0.64	C	5,738	0.72	D			5,186	0.65	C		
		SB	4	8,000	5,997	0.75	D	5,570	0.70	C	6,009	0.75	D			5,584	0.70	C		
	Baker St to I-405	NB	4	8,000	5,719	0.71	C	5,151	0.64	C	5,738	0.72	D			5,186	0.65	C		
		SB	4	8,000	5,997	0.75	D	5,570	0.70	C	6,009	0.75	D			5,584	0.70	C		
	I-405 to MacArthur Blvd	NB	4	8,000	7,549	0.94	E	7,463	0.93	E	7,694	0.96	E			7,523	0.94	E		
		SB	4	8,000	8,779	1.10	F	7,408	0.93	E	8,793	1.10	F			7,485	0.94	E		
	MacArthur Blvd to Dyer Rd	NB	4	8,000	6,836	0.85	D	7,485	0.94	E	7,009	0.88	D			7,508	0.94	E		
		SB	4	8,000	8,425	1.05	F	6,575	0.82	D	8,390	1.05	F			6,681	0.84	D		
	Dyer Rd to Edinger Ave	NB	4	8,000	6,962	0.87	D	8,101	1.01	F	7,143	0.89	D			8,100	1.01	F		
		SB	4	8,000	8,589	1.07	F	6,176	0.77	D	8,567	1.07	F			6,277	0.78	D		
	Edinger to McFadden St/ Sycamore Ave	NB	5	10,000	7,491	0.75	D	8,588	0.86	D	7,719	0.77	D			8,592	0.86	D		
		SB	4	8,000	9,440	1.18	F	6,864	0.86	D	9,372	1.17	F			6,964	0.87	D		
	McFadden St/Sycamore Ave to I-5	NB	5	10,000	8,367	0.84	D	9,050	0.9	E	8,574	0.86	D			9,060	0.91	E		
		SB	5	10,000	9,328	0.93	E	7,208	0.72	D	9,263	0.93	E			7,304	0.73	D		
	North of I-5	NB	3	6,000	5,742	0.96	E	6,450	1.08	F	5,927	0.99	E			6,365	1.06	F		
		SB	3	6,000	6,850	1.14	F	5,308	0.88	D	6,833	1.14	F			5,404	0.90	E		
SR-73	MacArthur Blvd to University Dr	NB	3	6,000	7,188	1.2	F	5,289	0.88	D	7,198	1.20	F			5,274	0.88	D		
		SB	4	8,000	5,353	0.67	C	6,288	0.79	D	5,367	0.67	C			6,310	0.79	D		
	University Dr to Jamboree Rd	NB	3	6,000	7,188	1.20	F	5,289	0.88	D	7,198	1.20	F			5,274	0.88	D		
		SB	3	6,000	4,828	0.80	D	5,554	0.93	E	4,844	0.81	D			5,578	0.93	E		
	Jamboree Rd to Birch St	NB	4	8,000	8,974	1.12	F	7,547	0.94	E	9,054	1.13	F			7,525	0.94	E		
		SB	3	6,000	5,906	0.98	E	6,391	1.07	F	5,928	0.99	E			6,428	1.07	F		
	Birch St to Campus Dr	NB	4	8,000	7,553	0.94	E	6,765	0.85	D	7,663	0.96	E			6,752	0.84	D		
		SB	4	8,000	7,237	0.90	E	7,117	0.89	D	7,285	0.91	E			7,178	0.9	E		
	Campus Dr to SR-55	NB	4	8,000	8,281	1.04	F	8,549	1.07	F	8,527	1.07	F	*		8,591	1.07	F		
		SB	4	8,000	8,916	1.11	F	8,000	1.00	E	8,921	1.12	F			8,106	1.01	F		
	SR-55 to Bear St	NB	3	6,000	6,058	1.01	F	6,128	1.02	F	6,202	1.03	F			6,133	1.02	F		
		SB	3	6,000	5,918	0.99	E	5,261	0.88	D	5,904	0.98	E			5,353	0.89	D		
	Bear St to I-405	NB	3	6,000	5,482	0.91	E	5,773	0.96	E	5,610	0.93	E			5,759	0.96	E		
		SB	3	6,000	5,821	0.97	E	4,758	0.79	D	5,805	0.97	E			4,850	0.81	D		
SR-261	SR-261 South of El Camino Real	NB	2	4,000	1,093	0.27	A	3,137	0.78	D	1,145	0.29	A			3,132	0.78	D		
		SB	2	4,000	3,503	0.88	D	1,477	0.37	B	3,471	0.87	D			1,516	0.38	B		

Note:
*Impacted location. No HCM Analysis required for LOS F locations With Update impacts per performance criteria.

4.13 Interim Cumulative Baseline With Update Peak Hour Freeway Ramp Analysis

The ramp analysis methodology for Interim Cumulative With Update is consistent with that applied for Interim Cumulative Baseline. **Table 4.14** displays the freeway ramp interchange, ramp type, number of lanes, peak hour capacity, volumes, densities, and LOS. **Appendix H** presents detailed HCS worksheets for ramp analysis. When compared to the Interim Baseline scenario, there is one additional deficient locations; however, there are some ramps that deteriorate further as trips are added. Impacts on freeway ramps are addressed in **Chapter 6** in accordance with the impact criteria agreed to by the City and Caltrans. Nine of the 98 ramps in the study area are forecast to be deficient in the AM peak. In the PM peak, 12 ramps are forecast to be deficient. One additional ramp becomes deficient in the With Update scenario this being Southbound I-405 Off-Ramp to Jamboree Road in the PM Peak. The deficient ramp locations are:

AM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
I-405	**Northbound**	• Off-Ramp to Jamboree Road • Off-Ramp to MacArthur Boulevard
	Southbound	• Off-Ramp to Jamboree Road* • Off-Ramp to MacArthur Boulevard*
SR-55	**Northbound**	• Direct On-Ramp from Fair Drive • On-Ramp from Paularino Avenue
	Southbound	• Off-Ramp to Paularino Avenue
SR-73	**Northbound**	• Off-Ramp to Birch Street

PM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
I-405	**Northbound**	• Off-Ramp to Bristol Street
	Southbound	• Off-Ramp to Jamboree Road*
SR-55	**Northbound**	• On-Ramp from Fair Drive • On-Ramp from Paularino Avenue • Direct On-Ramp from MacArthur Boulevard • On-Ramp from Edinger Avenue • On-Ramp from McFadden
	Southbound	• Off-Ramp from MacArthur Boulevard
SR-73	**Northbound**	• On-Ramp from Jamboree Road • Off-Ramp from Campus Drive • Off-Ramp from SR-73 at Bear

*Denotes freeway ramp impacts.

Figures 4.18 and **4.19** graphically depict the Interim Cumulative With Update freeway and ramp deficiencies.

Table 4.14 – Interim Cumulative With Update Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		INTERIM CUMULATIVE BASELINE						INTERIM CUMULATIVE WITH UPDATE									
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
I-5	Culver Dr	SB On Direct	1	1,000	290	0.32	B	370	0.41	B	290	0.32	B			360	0.4	B		
		SB On Loop	1	1,000	570	0.63	C	300	0.33	B	570	0.63	C			300	0.33	B		
		SB Off	2	500	936	0.42	B	1,980	0.88	D	926	0.41	B			2,011	0.89	D		
		NB On Loop	2	1,000	900	0.60	C	612	0.41	B	910	0.61	C			610	0.41	B		

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		INTERIM CUMULATIVE BASELINE						INTERIM CUMULATIVE WITH UPDATE								
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
I-5		NB On Direct	1	1,000	672	0.75	D	179	0.2	A	671	0.75	D			179	0.2	A		
		NB Off	1	500	439	0.29	A	745	0.5	B	439	0.29	A			745	0.5	B		
	Jamboree Rd	SB On Direct	2	1,000	353	0.24	A	1,339	0.89	D	352	0.23	A			1,337	0.89	D		
		SB On Loop	2	1,000	846	0.56	C	503	0.34	B	845	0.56	C			503	0.34	B		
		SB Off	2	500	1,159	0.39	B	1,292	0.43	B	1,158	0.39	B			1,293	0.43	B		
		NB On Loop	2	1,000	540	0.50	B	570	0.53	C	560	0.52	C			570	0.53	C		
		NB On Direct	2	1,000	590	0.55	C	370	0.34	B	590	0.55	C			370	0.34	B		
		NB Off	1	500	1,661	1.11	F	1,418	0.95	E	1,641	1.09	E			1,420	0.95	E		
	Tustin Ranch Rd	SB On	2	1,000	640	0.43	B	670	0.45	B	640	0.43	B			660	0.44	B		
		NB On	3	1,000	1,100	0.61	C	980	0.54	C	1,113	0.62	C			970	0.54	C		
		NB Off	1	500	541	0.36	B	500	0.33	B	540	0.36	B			491	0.33	B		
		SB Off	2	500	1,070	0.48	B	1,122	0.5	B	1,071	0.48	B			1,140	0.51	C		
	Red Hill Ave	SB On	2	1,000	900	0.60	C	960	0.64	C	893	0.60	C			961	0.64	C		
		NB On	2	1,000	801	0.53	C	742	0.49	B	800	0.53	C			750	0.5	B		
		NB Off	1	500	724	0.48	B	870	0.58	C	741	0.49	B			872	0.58	C		
		SB Off	1	500	460	0.31	B	583	0.39	B	451	0.30	A			580	0.39	B		
	Newport Blvd	SB Off	1	500	549	0.37	B	911	0.61	C	541	0.36	B			930	0.62	C		
		NB On	2	1,000	960	0.64	C	840	0.56	C	953	0.64	C			840	0.56	C		
I-405	Culver Dr	SB On Direct	1	1,000	430	0.29	A	1,010	0.67	C	461	0.31	B			1,010	0.67	C		
		SB On Loop	1	1,000	380	0.42	B	340	0.38	B	381	0.42	B			350	0.39	B		
		SB Off	2	500	1,142	0.38	B	1,529	0.51	C	1,150	0.38	B			1,563	0.52	C		
		NB On Loop	1	1,000	740	0.49	B	293	0.2	A	741	0.49	B			292	0.19	A		
		NB On Direct	1	1,000	1,280	0.85	D	444	0.3	A	1,292	0.86	D			442	0.29	A		
		NB Off	2	500	689	0.31	B	790	0.35	B	690	0.31	B			790	0.35	B		
	Jamboree Rd	SB On Direct	2	1,000	520	0.29	A	1,230	0.68	C	640	0.36	B			1,270	0.71	C		
		SB On Loop	1	1,000	250	0.17	A	630	0.42	B	280	0.19	A			630	0.42	B		
		SB Off	2	500	2,700	1.20	F	1,977	0.88	D	2,780	1.24	F	*		2,266	1.01	E	24.6[1]	C
		NB On Loop	1	1,000	644	0.43	B	650	0.43	B	741	0.49	B			700	0.47	B		
		NB On Direct	2	1,000	1,459	0.81	D	980	0.54	C	1,542	0.86	D			1,000	0.56	C		
		NB Off	2	500	2,221	0.99	E	1,333	0.59	C	2,242	1.00	E			1,424	0.63	C		
	MacArthur Blvd	SB Direct On	2	1,000	520	0.29	A	1,140	0.63	C	530	0.29	A			1,172	0.65	C		
		SB Off	2	500	2,317	1.03	E	1,091	0.48	B	2,350	1.04	E	28.5[1]	c	1,152	0.51	C		
		NB On	1	1,000	500	0.33	B	1,200	0.8	D	570	0.38	B			1,200	0.8	D		
		NB Off	1	500	2,185	1.46	F	803	0.54	C	2,173	1.45	F			826	0.55	C		
	Bristol St	SB Loop On	1	1,000	1,040	0.69	C	1,118	0.75	D	1,050	0.70	C			1,149	0.77	D		
		SB Off	2	500	1,000	0.44	B	949	0.42	B	1,004	0.45	B			950	0.42	B		
		NB On Loop	1	1,000	160	0.18	A	230	0.26	A	162	0.18	A			230	0.26	A		
		NB On Direct	1	1,000	631	0.42	B	1,323	0.88	D	624	0.42	B			1,320	0.88	D		
		NB Off	1	500	824	0.55	C	1,997	1.33	F	820	0.55	C			1,998	1.33	F		
SR-55	Victoria St	SB Direct On	1	1,000	45	0.05	A	40	0.04	A	45	0.05	A			40	0.04	A		
		SB Off	2	500	616	0.27	A	545	0.24	A	616	0.27	A			545	0.24	A		
		NB Direct On	1	1,000	828	0.55	C	772	0.51	C	828	0.55	C			772	0.51	C		
		NB Off	1	500	51	0.03	A	47	0.03	A	51	0.03	A			47	0.03	A		
	Fair Dr	SB Direct On	1	1,000	95	0.11	A	135	0.15	A	95	0.11	A			135	0.15	A		
		SB Off	2	500	482	0.21	A	686	0.3	A	482	0.21	A			686	0.3	A		
		NB Direct On	1	1,000	1,781	1.19	F	1,581	1.05	E	1,781	1.19	F			1,581	1.05	E		
		NB Off	1	500	355	0.24	A	315	0.21	A	355	0.24	A			315	0.21	A		
	Baker St	SB On	1	1,000	521	0.35	B	1,140	0.76	D	524	0.35	B			1,129	0.75	D		
		SB Off	1	500	846	0.56	C	1,090	0.73	D	880	0.59	C			1,079	0.72	D		

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		INTERIM CUMULATIVE BASELINE						INTERIM CUMULATIVE WITH UPDATE								
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
SR-55		NB Off	1	500	1,163	0.78	D	911	0.61	C	1,164	0.78	D			920	0.61	C		
	Paularino Ave	SB Off	1	500	1,456	0.97	E	1,140	0.76	D	1,471	0.98	E			1,130	0.75	D		
		NB On	1	1,000	1,260	1.40	F	1,170	1.3	F	1,260	1.40	F			1,194	1.33	F		
	MacArthur Blvd	SB On Direct	1	1,000	890	0.59	C	830	0.55	C	882	0.59	C			830	0.55	C		
		SB On Loop	1	1,000	150	0.17	A	650	0.72	D	160	0.18	A			650	0.72	D		
		SB Off	2	500	1,901	0.84	D	1,043	0.46	B	1,887	0.84	D			1,061	0.47	B		
		NB On Loop	1	1,000	769	0.51	C	645	0.43	B	758	0.51	C			630	0.42	B		
		NB On Direct	1	1,000	334	0.37	B	1,098	1.22	F	394	0.44	B			1,100	1.22	F		
		NB Off	2	500	1,563	0.69	C	1,040	0.46	B	1,562	0.69	C			1,040	0.46	B		
	Dyer Rd	SB On	1	1,000	814	0.54	C	1,040	0.69	C	816	0.54	C			1,041	0.69	C		
		SB Off Loop	1	500	789	0.53	C	531	0.35	B	781	0.52	C			529	0.35	B		
		SB Off to Grand	1	500	770	0.51	C	500	0.33	B	771	0.51	C			500	0.33	B		
		NB On Direct	1	1,000	290	0.19	A	870	0.58	C	290	0.19	A			870	0.58	C		
		NB On Loop	1	1,000	640	0.71	C	680	0.76	D	640	0.71	C			680	0.76	D		
		NB Off	1	500	1,276	0.85	D	301	0.2	A	1,270	0.85	D			310	0.21	A		
	Edinger Ave	SB On	1	1,000	759	0.51	C	771	0.51	C	800	0.53	C			771	0.51	C		
		SB Off	1	500	1,121	0.75	D	590	0.39	B	1,121	0.75	D			591	0.39	B		
		NB On	1	1,000	929	0.62	C	1,460	0.97	E	980	0.65	C			1,460	0.97	E		
		NB Off	1	500	587	0.39	B	287	0.19	A	598	0.40	B			302	0.2	A		
	McFadden Ave	SB On	1	1,000	485	0.32	B	343	0.23	A	484	0.32	B			339	0.23	A		
		SB Off	2	500	625	0.28	A	1,105	0.49	B	626	0.28	A			1,108	0.49	B		
		NB On	1	1,000	1,365	0.91	E	1,347	0.9	E	1,340	0.89	D			1,361	0.91	E		
		NB Off	1	500	489	0.33	B	720	0.48	B	485	0.32	B			725	0.48	B		
SR-73	Bison Ave	SB On	1	1,000	140	0.09	A	366	0.24	A	130	0.09	A			365	0.24	A		
		SB Off	1	500	850	0.57	C	390	0.26	A	845	0.56	C			400	0.27	A		
		NB On	1	1,000	300	0.20	A	1,064	0.71	C	310	0.21	A			1,060	0.71	C		
	MacArthur Blvd	SB On	1	1,000	135	0.09	A	1,096	0.73	D	165	0.11	A			1,103	0.74	D		
		SB Off	1	500	1,290	0.86	D	1,449	0.97	E	1,284	0.86	D			1,464	0.98	E		
		NB On s/o University Dr	1	1,000	832	0.55	C	1,136	0.76	D	832	0.55	C			1,105	0.74	D		
		NB On n/o University Dr	1	1,000	575	0.38	B	933	0.62	C	634	0.42	B			938	0.63	C		
	University Dr	SB Off	1	500	979	0.65	C	643	0.43	B	982	0.65	C			655	0.44	B		
	Jamboree Rd	SB On	1	1,000	525	0.35	B	997	0.66	C	523	0.35	B			995	0.66	C		
		SB Off	2	500	1,331	0.59	C	987	0.44	B	1,358	0.60	C			1,019	0.45	B		
		NB On	1	1,000	1,210	0.81	D	2,135	1.42	F	1,222	0.81	D			2,121	1.41	F		
	Birch St	NB Off	1	500	1,420	0.95	E	1,062	0.71	C	1,391	0.93	E			1,051	0.7	C		
	Campus Dr	SB Off	2	500	1,679	0.75	D	1,200	0.53	C	1,635	0.73	D			1,261	0.56	C		
		NB On	1	1,000	728	0.49	B	2,424	1.62	F	865	0.58	C			2,499	1.67	F	*	
	SR-73 at Bear	SB On	1	1,000	780	0.52	C	730	0.49	B	780	0.52	C			730	0.49	B		
		SB Off	1	500	310	0.21	A	290	0.19	A	310	0.21	A			290	0.19	A		
		NB Off	1	500	640	0.43	B	1,474	0.98	E	661	0.44	B			1,470	0.98	E		
		NB On	1	1,000	250	0.17	A	490	0.33	B	250	0.17	A			472	0.31	B		
SR-261	Jamboree Rd	SB On	2	1,000	1,202	0.40	B	1,266	0.42	B	1,250	0.42	B			1,340	0.45	B		
		NB Off	2	250	526	0.23	A	1,220	0.54	C	588	0.26	A			1,228	0.55	C		
	Walnut Ave	NB On	1	1,000	451	0.30	A	1,074	0.72	D	463	0.31	B			1,078	0.72	D		
		SB Off	1	500	897	0.60	C	730	0.49	B	897	0.60	C			753	0.5	B		

F Denotes ramp operating at a deficient LOS

Note:

[1] HCM2010 limits Ramp HCM Density calculations with freeway lanes to 5 or less. HCM density was adjusted to include freeway lanes of 5 or more lanes.

*Theoretical impacts. No HCM Analysis required for LOS F locations per performance criteria.

Figure 4.18 – Interim Cumulative With Update Freeway AM Peak Hour Deficiencies

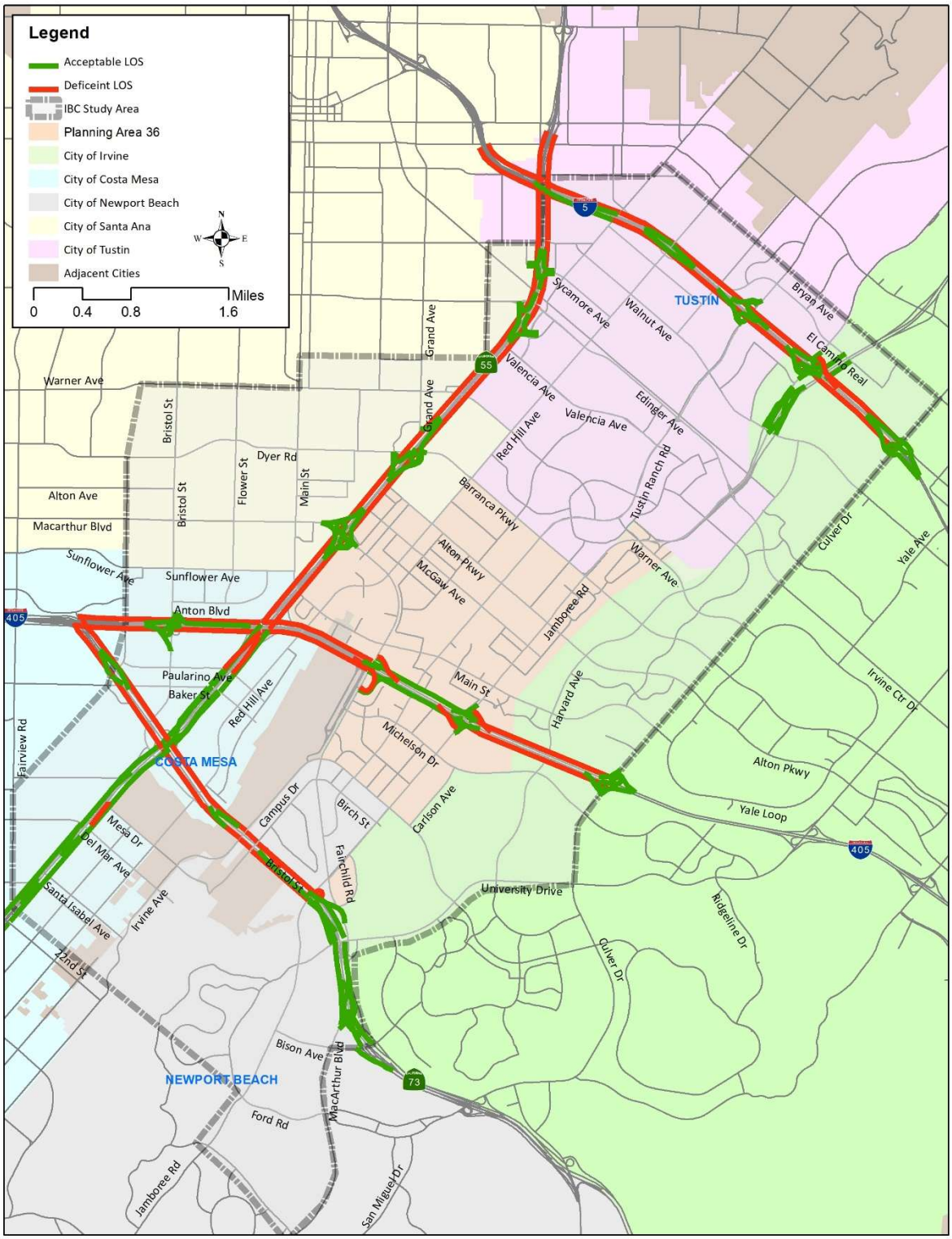
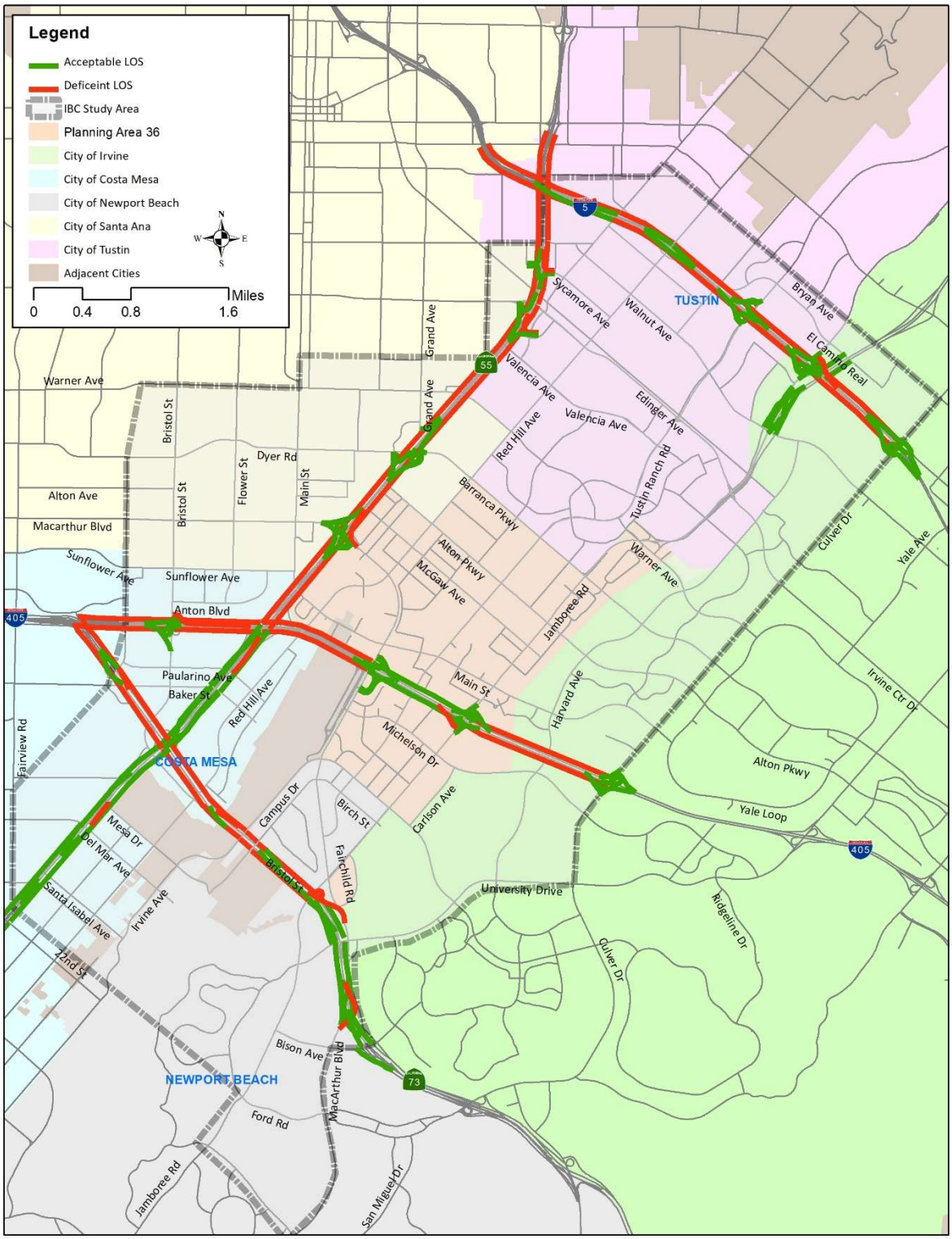


Figure 4.19 – Interim Cumulative With Update Freeway PM Peak Hour Deficiencies



4.14 Interim With Update Summary

The Interim and Interim With Update analysis shows that while much of the study area is operating within acceptable traffic thresholds, there are several segments and three intersections that are operating under a deficient LOS during daily and peak hour conditions. Of the three deficient intersections, one has a significant impact. While the Interim With Update scenario is a theoretical exercise, the results indicate where trips are likely to be most concentrated in the future alternatives. Between the Interim and Interim With Update scenarios, there are a number of additional deficiencies.

One additional arterial segment fails under daily conditions (Culver Drive from Alton Parkway to Main Street in the City of Irvine). Based on peak hour link analysis, this segment operates at an acceptable level of service. No additional intersection locations operate deficiently but one intersection is impacted: #136 Jamboree Road at Barranca Parkway. For freeways two additional mainline segments are deficient in the PM Peak (SR-55 Southbound North of I-5 and SR-73 Southbound between Birch Street and Campus Drive) and one additional ramp becomes deficient under the With Update scenario in the PM Peak hour (Southbound I-405 Off-Ramp to Jamboree Road). Impacts and improvement strategies are discussed in **Chapter 6.**

5 BUILDOUT FUTURE CONDITIONS

5.1 Introduction

The City of Irvine's traffic model, ITAM Version 18 was also used to forecast the traffic data for the Buildout Baseline and Buildout With Update scenarios. The Buildout traffic study methodology and analysis mirrors those used in the Interim scenarios. Similarly, assessment of deficiencies in the study area circulation system was also performed to identify changes to the mitigation identified in the 2010 IBC Vision General Plan Amendment and Zoning Code. Buildout scenario conditions represent conditions at the full Vision Plan project buildout.

As part of the IBC Vision plan, the 6,113 known pending residential units currently in process and an associated 1,055 density bonus units would be expected to be completed in the next five years. The remaining 167 units under the existing General Plan cap and associated 58 potential density bonus units (or non-residential equivalent thereof) are expected to be completed by Vision Plan Buildout.

The Buildout traffic conditions are analyzed based on the forecast volumes and future lane configurations consistent with the City of Irvine's and adjacent Cities' General Plan buildout assumptions. Based on the 2011 Agreement between the Cities of Santa Ana and Irvine, the Dyer Road widening between Red Hill and SR-55 northbound ramp and the Alton/SR-55 overcrossing that provides a 4-lane Alton Avenue linking the Cities of Santa Ana and Irvine over the SR-55 freeway are assumed to be included in the Buildout Baseline network. Also, the widening of Red Hill Avenue from four lanes to six lanes between MacArthur Boulevard and Main Street is assumed in the Buildout Baseline since it is the one missing roadway widening in IBC that is needed to fulfill OCTA's Master Plan of Arterial Highways (MPAH).

5.2 Buildout Cumulative Baseline Conditions, Land Use, and Trip Generation

Under the Buildout Cumulative Baseline scenario, the circulation system consists of the roadway network of interstate and state highways, major arterials, primary arterials, secondary arterials, and commuter roadways. The assumed Buildout circulation system is consistent for both the Baseline and With Update scenarios. In the Buildout year, 282 arterial segments, 229 intersections, 60 freeway mainline segments, and 98 freeway ramps were analyzed as part of the IBC Vision Plan Two-Year Traffic Study Update. The Buildout Cumulative Baseline scenario analyzes the effects on the circulation system of future forecast growth in the study area, without the proposed update.

The Buildout Baseline scenario assumes existing on-the-ground land uses within the IBC area and estimated Buildout land use growth outside the IBC area. **Table 5.1** displays the Buildout Cumulative Baseline land use assumed in the model for the IBC. **Table 5.2** displays the Trip Generation table from ITAM for the Buildout Cumulative Baseline scenario. **Appendix C** presents the trip generation and **Appendix D** presents land use quantities by type and IBC TAZs as well as a land use summary by individual project.

The Baseline analysis will display expected circulation system deficiencies in the Buildout year, without the plan update. Following the Baseline and Interim analysis, impacts can be determined through a comparison with the With Update scenario.

Table 5.1 – Buildout Cumulative Baseline Land Use Summary

SCENARIO	MULTI-FAMILY RESIDENTIAL (DU)	RETAIL MIX (TSF)	HOTEL (ROOM)	OFFICE MIX (TSF)	INDUSTRIAL MIX (TSF)	MINI-WAREHOUSE (TSF)	EXTENDED STAY HOTEL (ROOM)
Existing Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Existing With Update	16,820	1,785	3,078	33,795	12,554	1,228	1,422
Interim Cumulative Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Interim With Update	16,820	1,562	2,521	27,970	13,460	1,412	1,422
Buildout Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Percent Growth (Buildout Baseline vs. Interim Baseline)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
Percent Growth (Buildout Baseline vs. Existing Baseline)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Source: City of Irvine

Table 5.2 – Buildout Cumulative Baseline Trip Generation

SCENARIO	AM-OUT	AM-IN	PM-OUT	PM-IN	ADT
Existing Baseline	13,460	29,926	28,517	19,373	551,618
Existing With Update	18,561	36,384	35,386	25,314	709,486
Interim Baseline	13,431	29,878	28,533	19,342	551,618
Interim With Update	17,775	32,004	31,503	23,278	632,470
Buildout Baseline	13,515	29,964	28,695	19,544	551,618
Percent Growth (Buildout Baseline vs. Interim Baseline)	0.6%	0.3%	0.6%	1.0%	0.0%
Percent Growth (Buildout Baseline vs. Existing Baseline)	0.4%	0.1%	0.6%	0.9%	0.0%

Source: ITAM

5.3 Buildout Cumulative Baseline Daily Arterial Segment Analysis

Under the Buildout Cumulative Baseline scenario, traffic within the City shows some growth related to development of the study area as a whole. **Table 5.3** presents the study area arterial roadway segment analysis displaying the V/C ratio and LOS. As noted in **Chapter 2** deficient segments in the daily condition are identified for all cities. Deficient segments in the City of Irvine under daily conditions are analyzed for peak hour performance. A comparison between the Buildout Cumulative Baseline and With Update scenarios is provided under Buildout Cumulative With Update conditions analysis. Generally, only those segments where the update has a theoretical impact are required to be evaluated further by the peak hour link methodology. In this study, the peak hour link methodology has been applied to all of the forecast deficient roadway segments within the City of Irvine for Baseline and With Update scenarios.

Table 5.3 indicates that 19 segments are deficient under the Buildout Cumulative Baseline daily conditions, with 13 of the segments in the City of Irvine. As noted above, unless a segment is a CMP location, LOS E indicates a deficient segment for all arterial segments outside Planning Area (PA) 36 within the City of Irvine. It should be noted that daily V/C ratio analysis arterial segments in Costa Mesa, Newport Beach, and Tustin are not evaluated further and any deficiencies are addressed at the intersections. PA 36 segments are considered deficient at LOS F. Deficient segments under daily Buildout Cumulative Baseline conditions include:

- Culver Drive:
  - 726—Culver Drive from I-5 NB Ramps to I-5 SB Ramps (Irvine)
  - 213—Culver Drive from I-5 SB Ramps to Scottsdale Drive (Irvine)

  - 214—Culver Drive from Scottsdale Drive to Walnut Avenue (Irvine)
  - 215—Culver Drive from Walnut Avenue to Deerfield Avenue(Irvine)
  - 219—Culver Drive from Barranca Parkway to Alton Parkway (Irvine)
  - 220—Culver Drive from Alton Parkway to Main Street (Irvine)
  - 221—Culver Drive from Main Street to San Leandro (Irvine)
  - 222—Culver Drive from San Leandro to I-405 NB On-Ramp (Irvine)
  - 224—Culver Drive from I-405 SB On-Ramp to Michelson Drive (Irvine)
- Harvard Avenue:
  - 183 – Harvard Avenue from Michelson Drive to University Drive (Irvine)
- Jamboree Road:
  - 133—Jamboree Road from Michelle Drive to Walnut Avenue (Irvine)
- Von Karman Avenue:
  - 97—Von Karman Avenue from Barranca Parkway to Alton Parkway (Irvine)
  - 100—Von Karman Avenue from Alton Parkway to McGaw Avenue (Irvine)
- Bristol Street:
  - 920—Bristol Street SB Red Hill Avenue to Campus Drive (Newport Beach)*
  - 1303—Bristol Street SB from Campus Drive to Birch Street (Newport Beach)*
  - 1305—Bristol Street NB from Birch Street to Campus Drive (Newport Beach)*
- MacArthur Boulevard:
  - 953—MacArthur Boulevard from University Drive to Bison Avenue (Newport Beach)*
  - 1301—MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*
- Dyer Road:
  - 1326—Dyer Road from SR-55 SB Ramp to SR-55 NB Ramp (Santa Ana)*

*Deficient locations under daily conditions – no peak hour link analysis required.

Figure 5.1 and **Figure 5.2** graphically depict the ADT traffic volumes and deficient segment LOS, respectively, for the Buildout Cumulative Baseline scenario. Deficient segments in the City of Irvine are evaluated under Peak Hour conditions in the following section.

Table 5.3 – Buildout Cumulative Baseline Daily Arterial LOS

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	BUILDOUT YEAR ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	4D	21,500	0.57	A
2721	Baker St	Bear St to Bristol St		CM	6D	29,200	0.52	A
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	6D	33,200	0.59	A
1294	Baker St	SR 55 SB to SR 55 NB		CM	6D	25,900	0.46	A
1468	Baker St	SR 55 NB to Red Hill Ave		CM	6D	14,400	0.26	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	6D	4,900	0.09	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	31,100	0.56	A
2733	Bristol St	Segerstrom Ave to West Alton Ave		CM	6D	40,400	0.72	C
2737	Bristol St	West Alton Ave to MacArthur Blvd		CM	6D	45,100	0.81	D
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	44,500	0.79	C
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	46,400	0.83	D
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	9D+1 AUX	65,600	0.78	C
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	64,700	0.86	D

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	BUILDOUT YEAR ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
2745	Bristol St	I-405 SB Ramps to Paularino Ave		CM	6D	45,000	0.80	C
2732	Bristol St	Paularino Ave to Baker St		CM	6D	36,300	0.65	B
2730	Bristol St	Baker St to SR 55		CM	6D	26,400	0.47	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	20,000	0.36	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	23,600	0.62	B
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	4D	12,100	0.32	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	13,500	0.36	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	10,500	0.28	A
2760	Flower St	Sunflower Ave to Anton Blvd		CM	4D	6,400	0.17	A
2756	Main St	Sunflower Ave to SR-55		CM	6D	24,200	0.43	A
2785	Mesa Drive	Newport Blvd SB to Newport Blvd NB		CM	2U	6,100	0.49	A
2783	Mesa Drive	Newport Blvd NB to Santa Ana Ave		CM	2U	6,100	0.49	A
2779	Mesa Drive	Irvine Ave to Birch St		CM	4D	14,100	0.37	A
2742	Paularino Ave	Bear St to Bristol St		CM	4D	9,200	0.24	A
2746	Paularino Ave	Bristol St to SR-55 SB		CM	4D	19,700	0.52	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	17,200	0.45	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	12,900	0.34	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	5,700	0.15	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	4D	20,600	0.54	A
1340	Red Hill Ave	Paularino Ave to Baker St		CM	4D	18,300	0.48	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	17,000	0.45	A
41	Santa Ana Ave	Mesa Drive to Bristol St		CM	4D	9,200	0.24	A
2769	University Drive	Santa Ana Ave to Irvine Ave		CM	4D	11,700	0.31	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	26,600	0.83	D
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	20,600	0.64	B
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	21,200	0.66	B
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	24,600	0.46	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	23,400	0.43	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	17,900	0.33	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	19,400	0.36	A
783	Alton Pkwy	San Marino to Culver Drive		Irv	6D	26,600	0.49	A
735	Barranca Pkwy (Dyer Rd)	Pullman to Red Hill Ave		Irv	8D	40,900	0.57	A
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	7D	46,000	0.73	C
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	43,700	0.69	B
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	47,000	0.75	C
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	32,800	0.61	B
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	26,800	0.50	A
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	26,000	0.48	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	29,800	0.55	A
748	Barranca Pkwy	Santa Rosa to Culver Drive		Irv	6D	29,600	0.55	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	23,100	0.72	C
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	23,000	0.72	C
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	22,200	0.69	B
540	Bryan Ave	Rubicon to Culver		Irv	4D	25,000	0.78	C
869	Campus Drive	MacArthur Blvd to Martin	a	Irv	6U	14,300	0.26	A
870	Campus Drive	Martin to Von Karman Ave	a	Irv	4D	14,700	0.46	A
871	Campus Drive	Von Karman Ave to Teller Ave	a	Irv	4D	13,900	0.43	A
872	Campus Drive	Teller Ave to Jamboree Rd	a	Irv	4D	14,600	0.46	A
877	Campus Drive	Jamboree Rd to Carlson Ave	a	Irv	4D	24,900	0.78	C
879	Campus Drive	Carlson Ave to University		Irv	4D	28,500	0.89	D
166	Carlson Ave	Michelson Drive to Campus Drive	a	Irv	4D	8,700	0.27	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	BUILDOUT YEAR ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
726	Culver Drive	I-5 NB Ramps to I-5 SB Ramps		Irv	7D	60,100	0.95	E
213	Culver Drive	I-5 SB Ramps to Scottsdale Drive		Irv	6D	58,500	1.08	F
214	Culver Drive	Scottsdale Drive to Walnut Ave		Irv	6D	51,700	0.96	E
215	Culver Drive	Walnut Ave to Deerfield Ave		Irv	6D	48,900	0.91	E
216	Culver Drive	Deerfield Ave to Irvine Center Drive		Irv	Maj6D+ 1AUX	45,600	0.78	C
217	Culver Drive	Irvine Center Drive to Warner Ave		Irv	6D	48,600	0.90	D
218	Culver Drive	Warner Ave to Barranca Pkwy		Irv	6D	46,800	0.87	D
219	Culver Drive	Barranca Pkwy to Alton Pkwy		Irv	6D	54,000	1.00	E
220	Culver Drive	Alton Pkwy to Main St		Irv	6D	50,900	0.94	E
221	Culver Drive	Main St to San Leandro		Irv	6D	51,400	0.95	E
222	Culver Drive	San Leandro to I-405 NB On-Ramp		Irv	6D	53,600	0.99	E
224	Culver Drive	I-405 SB Ramps to Michelson Drive		Irv	6D	55,800	1.03	F
225	Culver Drive	Michelson Drive to Sandburg Way		Irv	6D	42,800	0.79	C
226	Culver Drive	Sandburg Way to University Drive		Irv	6D	38,900	0.72	C
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	24,200	0.76	C
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,300	0.20	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	4U	10,700	0.38	A
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	4U	12,600	0.45	A
171	Harvard Ave	Deerfield Ave to Irvine Center Drive		Irv	4U	12,700	0.45	A
172	Harvard Ave	Irvine Center Drive to Paseo Westpark		Irv	4D	12,400	0.39	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	15,400	0.48	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	17,200	0.54	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	19,400	0.61	B
2829	Harvard Ave	San Juan to San Leon		Irv	4D	17,900	0.56	A
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	18,900	0.59	A
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	21,200	0.66	B
180	Harvard Ave	San Marino to Main St		Irv	4D	25,800	0.81	D
181	Harvard Ave	Main St to Coronado		Irv	4D	25,600	0.80	C
182	Harvard Ave	Coronado to Michelson Drive		Irv	4D	25,500	0.80	C
183	Harvard Ave	Michelson Drive to University Drive		Irv	2U	20,700	1.59	F
675	Irvine Center Drive	Harvard Ave to Hearthstone	b	Irv	6D	30,300	0.56	A
676	Irvine Center Drive	Hearthstone to Culver Drive	b	Irv	6D	34,200	0.63	B
129	Jamboree Rd	Bryan Ave to El Camino	b	Irv	8D	48,500	0.67	B
130	Jamboree Rd	El Camino Real to I-5 NB Ramps	b	Irv	Maj7D+ 1AUX	66,300	0.98	E
958	Jamboree Rd	I-5 NB Ramps to I-5 SB Ramps	b	Irv	8D	62,500	0.87	D
131	Jamboree Rd	I-5 SB Ramps to Michelle Drive	b	Irv	8D	56,500	0.78	C
133	Jamboree Rd	Michelle Drive to Walnut Ave	b	Irv	5D	71,000	1.65	F
135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rds)	b	Irv	Exp8	81,700	0.46	A
136	Jamboree Rd	Edinger Ave to Warner Ave	b	Irv	Exp8	82,000	0.46	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	b	Irv	Exp8	63,400	0.35	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	54,200	0.75	C
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	59,200	0.82	D
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	62,200	0.86	D
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	57,600	0.80	C
144	Jamboree Rd	Kelvin Ave to Main St	a,b	Irv	8D	67,500	0.94	E
145	Jamboree Rd	Main St to I-405 NB Ramps	b	Irv	Maj8D+ 2AUX	72,600	0.90	D
148	Jamboree Rd	I-405 SB Ramps to Michelson Drive	a,b	Irv	Maj8D+ 2AUX	80,500	0.99	E
149	Jamboree Rd	Michelson Drive to Dupont Drive	a,b	Irv	7D	59,800	0.95	E
150	Jamboree Rd	Dupont Drive to Campus Drive	a,b	Irv	7D	51,000	0.81	D
151	Jamboree Rd	Campus Drive to Birch St	b	Irv	6D	47,300	0.88	D
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	45,100	0.72	C
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	7D	39,700	0.63	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	BUILDOUT YEAR ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	39,900	0.74	C
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	7D	36,100	0.57	A
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	25,800	0.41	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	25,500	0.40	A
60	MacArthur Blvd	Main St to I-405 NB Ramps	a	Irv	Maj8D+ 2AUX	55,000	0.68	B
62	MacArthur Blvd	I-405 SB Ramps to Michelson Drive	a	Irv	Maj8D+ 1AUX	61,600	0.81	D
63	MacArthur Blvd	Michelson Drive to Douglass	a	Irv	8D	44,100	0.61	B
64	MacArthur Blvd	Douglas to Campus Drive		Irv	8D	45,100	0.63	B
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	51,600	0.96	E
917	MacArthur Blvd	Fairchild Rd to University Drive	b	Irv	6D	51,300	0.95	E
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	25,600	0.47	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	25,400	0.47	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	23,800	0.44	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	31,600	0.47	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	32,600	0.56	A
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	24,100	0.45	A
823	Main St	Siglo to Jamboree Rd	a	Irv	6D	23,300	0.43	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+ 1AUX	23,000	0.39	A
825	Main St	Veneto to Harvard Ave		Irv	6D	22,900	0.42	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	12,200	0.38	A
827	Main St	Paseo Westpark to Culver Drive		Irv	4D	12,200	0.38	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	6,800	0.21	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	10,500	0.33	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	8,800	0.28	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	2,400	0.08	A
840	Michelson Drive	MacArthur Blvd to Dupont Drive	a	Irv	5D	21,000	0.49	A
843	Michelson Drive	Bixby to Von Karman Ave	a	Irv	4D	14,000	0.44	A
844	Michelson Drive	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	23,200	0.64	B
845	Michelson Drive	Teller Ave to Jamboree Rd	a	Irv	5D	21,000	0.49	A
846	Michelson Drive	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+ 2AUX	22,800	0.57	A
847	Michelson Drive	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	21,300	0.59	A
848	Michelson Drive	Riparian View to Harvard Ave		Irv	4D	20,300	0.63	B
1346	Michelson Drive	Harvard Ave to Parkside Drive		Irv	4D	17,200	0.54	A
850	Michelson Drive	Parkside Drive to Culver Drive		Irv	4D	17,000	0.53	A
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	34,600	0.64	B
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	34,700	0.64	B
33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	33,000	0.61	B
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	40,600	0.75	C
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	6D	20,600	0.38	A
38	Red Hill Ave	Skypark to Main St	a	Irv	6D	16,600	0.31	A
189	University Drive	MacArthur Blvd to California Ave		Irv	6D	35,000	0.65	B
188	University Drive	California Ave to Mesa Rd		Irv	6D	37,200	0.69	B
187	University Drive	Mesa Rd to Campus Drive		Irv	6D	37,700	0.70	B
880	University Drive	Campus Drive to Harvard Ave		Irv	6D	33,500	0.62	B
881	University Drive	Harvard Ave to San Joaquin Hills Rd		Irv	6D	31,400	0.58	A
882	University Drive	San Joaquin Hills Rd to Culver Drive		Irv	6D	31,200	0.58	A
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	39,800	1.24	F
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	32,700	1.02	F
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	29,500	0.92	E
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	29,700	0.93	E
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	30,200	0.84	D
107	Von Karman Ave	Quartz to Michelson Drive	a	Irv	Prim4D+ 1AUX	32,100	0.89	D

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	BUILDOUT YEAR ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
108	Von Karman Ave	Michelson Drive to Dupont Drive	a	Irv	4D	23,200	0.72	C
110	Von Karman Ave	Dupont Drive to Martin	a	Irv	4D	22,500	0.70	B
111	Von Karman Ave	Martin to Campus Drive	a	Irv	4D	23,000	0.72	C
594	Walnut Ave	Myford to Jamboree SB Ramp		Irv	Prim4D+ 1AUX	23,600	0.66	B
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+ 1AUX	21,100	0.36	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+ 1AUX	21,100	0.45	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	19,500	0.61	B
597	Walnut Ave	Mall St to Culver Drive		Irv	4D	19,900	0.62	B
728	Warner Ave	Construction North to Harvard Ave		Irv	4D	17,500	0.55	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	13,200	0.41	A
732	Warner Ave	Santa Ynez to Culver Drive		Irv	4D	13,300	0.42	A
1223	Birch St	Mesa Drive to Bristol St SB		NB	4D	22,400	0.56	A
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	26,800	0.67	B
874	Birch St	East of MacArthur Blvd		NB	4D	14,700	0.37	A
69	Birch St	West of MacArthur Blvd		NB	4D	22,400	0.56	A
875	Birch St	East of Von Karman Ave		NB	4D	9,600	0.24	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	6,100	0.11	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	13,700	0.34	A
920	Bristol St SB	Red Hill Ave to Campus Drive		NB	2D	32,300	1.79	F
1310	Bristol St NB	Campus Drive to Red Hill Ave		NB	3D	16,300	0.56	A
1303	Bristol St SB	Campus Drive to Birch St		NB	3D	26,500	0.91	E
1305	Bristol St NB	Birch St to Campus Drive		NB	3D	30,500	1.05	F
1312	Bristol St SB	West of Jamboree Rd		NB	4D	35,300	0.88	D
1580	Bristol St NB	West of Jamboree Rd		NB	3D	15,800	0.54	A
66	Campus Drive	Bristol St NB to MacArthur Blvd		NB	6D	34,600	0.60	A
1778	Ford Rd	Jamboree Rd to MacArthur Blvd		NB	4D	9,500	0.24	A
1304	Irvine Ave	Bristol St NB to Bristol St SB		NB	6D	30,000	0.52	A
67	Irvine Ave	Bristol St SB to Mesa Drive		NB	6D	25,800	0.44	A
2768	Irvine Ave	South of University Drive		NB	4D	29,500	0.74	C
156	Jamboree Rd	South of MacArthur Blvd		NB	6D	32,800	0.57	A
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	6D	42,900	0.74	C
157	Jamboree Rd	South of Bristol St		NB	8D	44,300	0.65	B
159	Jamboree Rd	University Drive to Bison Ave		NB	6D	42,000	0.72	C
1777	Jamboree Rd	Bison Ave to Ford Rd		NB	6D	32,200	0.56	A
73	MacArthur Blvd	Campus Drive to Birch St		NB	8D	24,800	0.36	A
75	MacArthur Blvd	South of Birch St		NB	6D	22,000	0.38	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	21,900	0.38	A
953	MacArthur Blvd	University Drive to Bison Ave	b	NB	6D	70,400	1.21	F
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	78,900	1.16	F
2767	University Drive	East of Irvine Ave		NB	2U	5,100	0.51	A
1774	University Drive	Jamboree Rd to MacArthur Blvd		NB	5D	14,000	0.29	A
112	Von Karman Ave	South of Campus Drive		NB	4D	16,600	0.42	A
113	Von Karman Ave	South of Birch St		NB	4D	14,000	0.35	A
2795	Dyer Rd	Main St to Halladay St		SA	6D	33,200	0.59	A
2799	Dyer Rd	Halladay St to SR-55 SB		SA	6D	37,100	0.66	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	57,200	1.02	F
734	Dyer Rd	SR-55 NB to Pullman St		SA	8D	58,400	0.78	C
2764	Grand Ave	Warner Ave to Hotel Terrace Drive		SA	6D	27,700	0.49	A
2806	Grand Ave	Hotel Terrace Drive to SR-55 NB		SA	6D	27,500	0.49	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	4D	8,500	0.23	A
2822	Halladay St	Alton Ave to McGaw Ave(Columbine)		SA	2U	3,400	0.27	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	40,600	0.72	C

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	BUILDOUT YEAR ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	38,000	0.67	B
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	32,800	0.58	A
2826	Main St	Alton Ave to McGaw Ave(Columbine)		SA	6D	28,100	0.50	A
2809	Main St	McGaw(Columbine) to MacArthur Blvd		SA	6D	28,900	0.51	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	22,400	0.40	A
2823	McGaw Ave (Alton)	Main St to Halladay St		SA	4U	11,100	0.46	A
2736	Segerstrom Ave	Bristol St to Flower St		SA	4D	26,900	0.72	C
2771	Segerstrom Ave	Flower St to Main St		SA	4D	28,200	0.75	C
2763	Warner Ave	Grand Ave to SR-55		SA	6D	24,800	0.44	A
2761	Sunflower Ave	Bristol St to Flower St		SA/CM	6D	21,800	0.39	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/CM	6D	19,600	0.35	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/CM	6D	25,800	0.46	A
1198	Browning Ave	Walnut Ave to I-5		Tus	2U	6,500	0.52	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	18,000	0.72	C
535	Bryan Ave	Red Hill Ave to Browning		Tus	4D	17,900	0.48	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	18,300	0.49	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	22,500	0.60	A
44	Edinger Ave	West of Newport Ave	b	Tus	6D	53,300	0.95	E
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	35,200	0.63	B
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	31,800	0.56	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4D	14,200	0.38	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	4D	9,300	0.25	A
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4D	10,500	0.28	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	19,400	0.52	A
672	Irvine Center Drive (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	31,200	0.55	A
674	Irvine Center Drive	Jamboree Rd to Harvard Ave	b	Tus	6D	29,700	0.53	A
2777	Mitchell Ave	Newport Ave to Red Hill Ave		Tus	2U	7,400	0.59	A
2775	Mitchell Ave	Red Hill Ave to Browning Ave		Tus	2U	5,800	0.46	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	49,800	0.88	D
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	41,800	0.74	C
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	39,000	0.69	B
49	Newport Ave	North of Sycamore Ave		Tus	6D	22,700	0.40	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	30,700	0.55	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	5,700	0.46	A
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	6,700	0.54	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	38,100	0.68	B
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	35,300	0.63	B
21	Red Hill Ave	Nisson Rd to I-5 SB Ramps		Tus	6D	42,300	0.75	C
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	31,000	0.55	A
22	Red Hill Ave	Mitchell Ave to Walnut Ave		Tus	6D	29,700	0.53	A
23	Red Hill Ave	Walnut Ave to Sycamore Ave		Tus	6D	30,000	0.53	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	33,200	0.59	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	36,300	0.64	B
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	37,200	0.66	B
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	42,200	0.64	B
1363	Sycamore Ave	SR-55 NB to Newport Ave		Tus	4D	8,400	0.22	A
1920	Sycamore Ave	Newport Ave to Red Hill Ave		Tus	4D	10,000	0.27	A
85	Tustin Ranch Rd	North of I-5		Tus	6D	43,900	0.78	C
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	44,200	0.79	C
2174	Tustin Ranch Rd	Walnut Ave to Valencia Ave		Tus	6D	31,600	0.56	A
2073	Tustin Ranch Rd	Valencia Ave to Warner Ave		Tus	6D	32,200	0.57	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	BUILDOUT YEAR ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
2071	Tustin Ranch Rd	Warner Ave to Park Ave		Tus	6D	40,200	0.71	C
2070	Tustin Ranch Rd	Park Ave to Barranca Pkwy		Tus	6D	28,500	0.51	A
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4D	10,300	0.27	A
632	Valencia Ave	Red Hill Ave to Armstrong Ave		Tus	4D	17,900	0.48	A
2844	Valencia Ave	Armstrong Ave to Kensington Park		Tus	4D	11,300	0.30	A
2842	Valencia Ave	Kensington Park to Tustin Ranch Rd		Tus	4D	12,100	0.32	A
587	Walnut Ave	East of Newport Ave		Tus	4U	22,500	0.90	D
589	Walnut Ave	East of Red Hill Ave		Tus	4D	19,200	0.51	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	22,600	0.60	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	21,000	0.56	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	21,700	0.39	A
F	Denotes intersection operating at a deficient LOS							
a	Intersection within Irvine Planning Area 36--LOS E acceptable							
b	Orange County Congestion Management Program (CMP) locations							

5.4 Buildout Cumulative Baseline Peak Hour Link Analysis

Peak hour directional traffic volumes were directly obtained from peak hour forecast intersection turning movement volumes for intersections upstream and downstream for each deficient arterial segment. **Table 5.4** presents the results of peak hour link analysis, indicating that all City of Irvine arterial segments that are deficient under daily conditions operate at an acceptable LOS in both peak hours.

Table 5.4 – Buildout Cumulative Baseline Peak Hour Link Analysis

ID	ARTERIAL	SEGMENT LIMITS	FACILITY TYPE	PEAK HOUR VOLUME				AM		PM	
				AM		PM		NB/EB	SB/WB	NB/EB	SB/WB
				NB/EB	SB/WB	NB/EB	SB/WB				
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps	7D	1,620	3,370	3,310	2,030	Acceptable	Acceptable	Acceptable	Acceptable
213	Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,580	3,050	2,950	2,530	Acceptable	Acceptable	Acceptable	Acceptable
214	Culver Dr	Scottsdale Dr to Walnut Ave	6D	1,540	2,630	2,760	2,110	Acceptable	Acceptable	Acceptable	Acceptable
215	Culver Dr	Walnut Ave to Deerfield Ave	6D	1,310	2,710	1,900	2,710	Acceptable	Acceptable	Acceptable	Acceptable
219	Culver Dr	Barranca Pkwy to Alton Pkwy	6D	1,380	2,660	2,660	1,750	Acceptable	Acceptable	Acceptable	Acceptable
220	Culver Dr	Alton Pkwy to Main St	6D	1,520	2,630	2,890	1,750	Acceptable	Acceptable	Acceptable	Acceptable
221	Culver Dr	Main St to San Leandro	6D	1,460	2,740	2,810	1,780	Acceptable	Acceptable	Acceptable	Acceptable
222	Culver Dr	San Leandro to I-405 NB On-Ramp	6D	1,560	3,000	3,050	1,840	Acceptable	Acceptable	Acceptable	Acceptable
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	2,120	2,710	2,750	2,150	Acceptable	Acceptable	Acceptable	Acceptable
183	Harvard Ave	Michelson Dr to University Dr	2U	520	1,130	1,200	910	Acceptable	Acceptable	Acceptable	Acceptable
133	Jamboree Rd	Michelle Dr to Walnut Ave	5D	800	2,570	1,800	1,720	Acceptable	Acceptable	Acceptable	Acceptable
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	4D	870	2,000	2,140	1,280	Acceptable	Acceptable	Acceptable	Acceptable
100	Von Karman Ave	Alton Pkwy to McGaw Ave	4D	850	1,800	1,860	1,280	Acceptable	Acceptable	Acceptable	Acceptable

Figure 5.1 – Buildout Cumulative Baseline Daily Arterial ADT

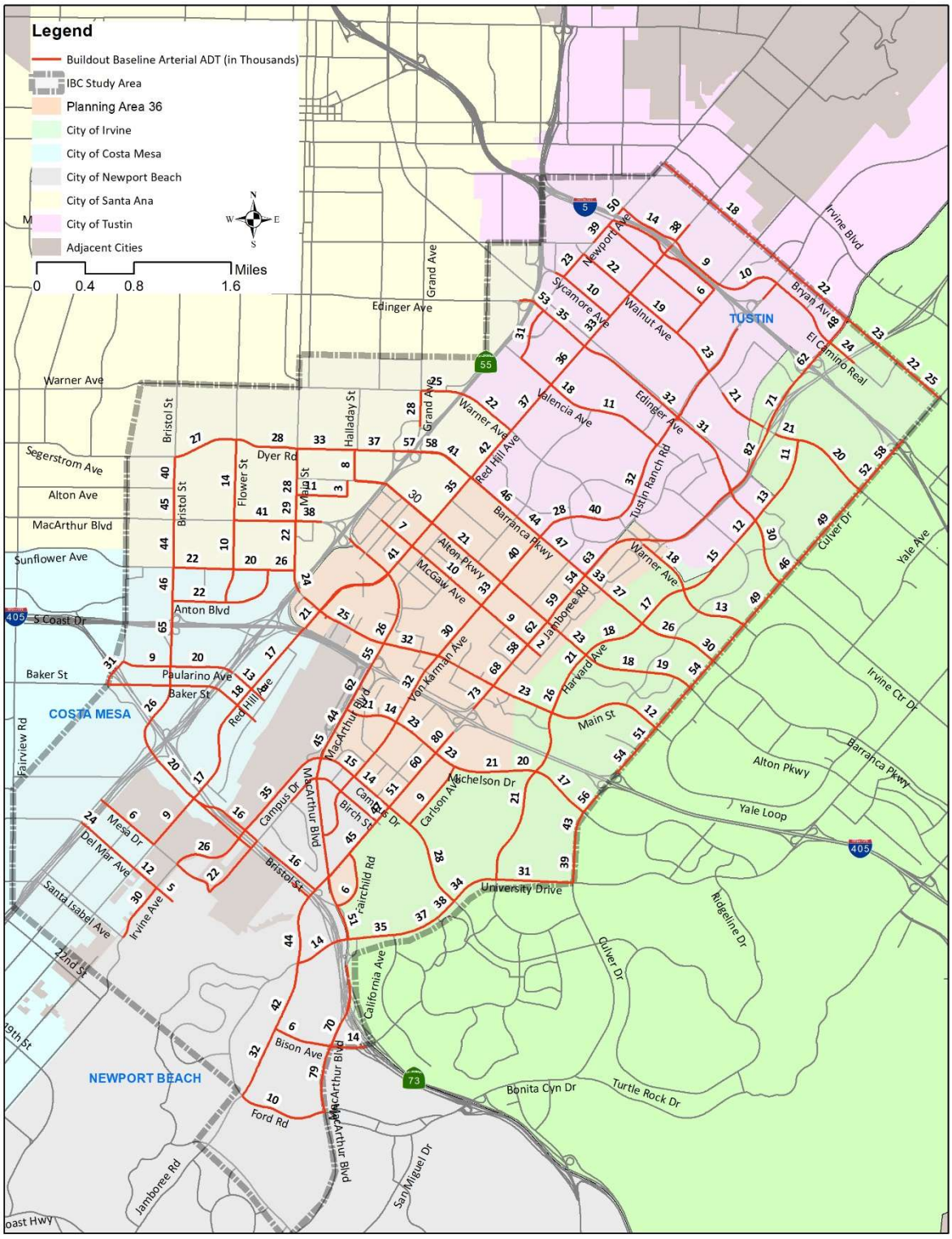
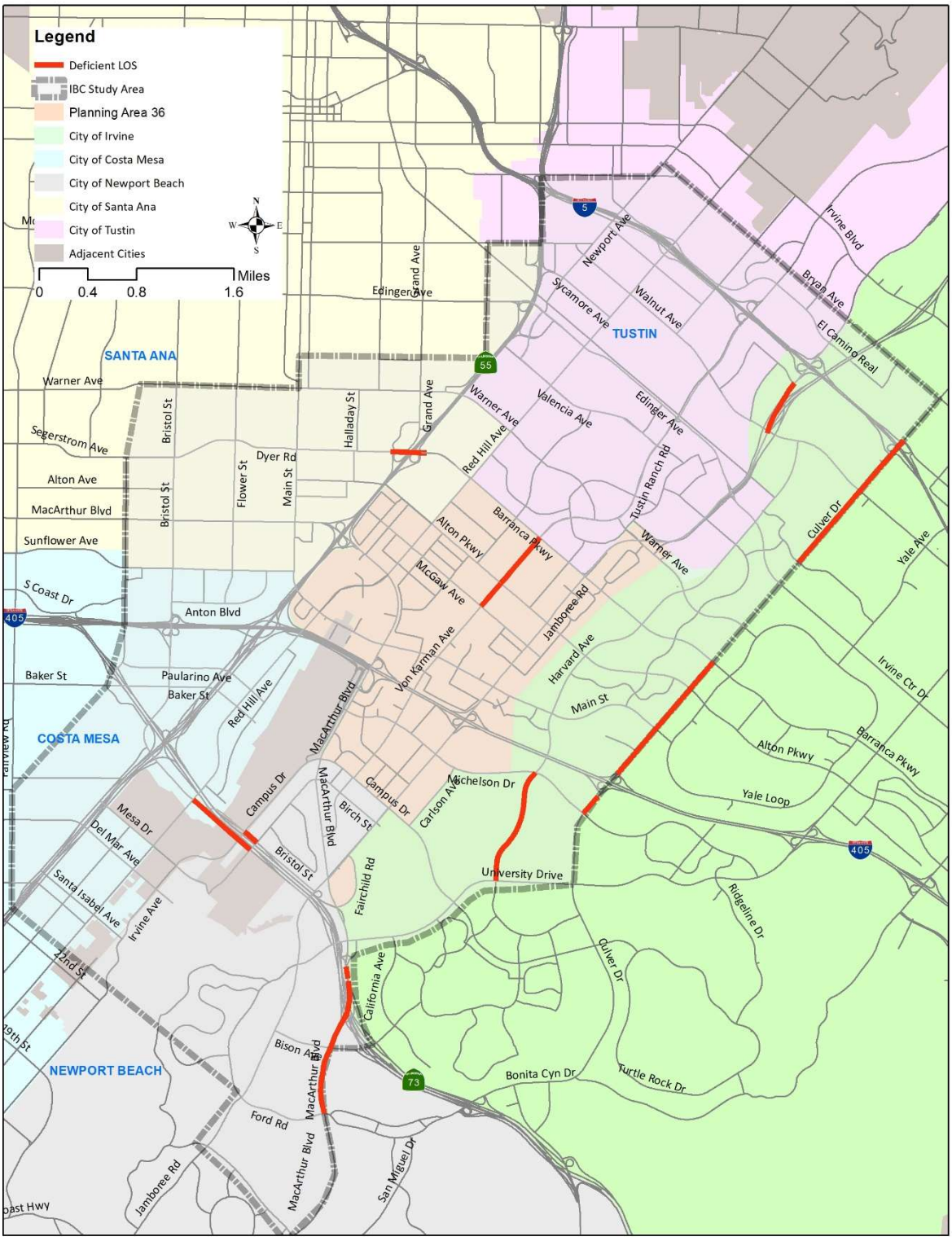


Figure 5.2 –Buildout Cumulative Baseline Daily Arterial Deficiencies



5.5 Buildout Cumulative Baseline Peak Hour Intersection Analysis

ICU analysis was developed for every intersection within the study area for the Buildout Cumulative Baseline scenario. These intersections are evaluated under all future scenarios. The intersection analysis includes both a reporting of intersection ICU and the corresponding LOS and displayed in **Table 5.5**. For shared jurisdictions, the more conservative methodology was utilized. Intersection improvements in each jurisdiction are consistent with the City's General Plan buildout assumptions. Within the IBC, all intersection improvements identified in the 2010 IBC Vision Plan study and 2015 Update were removed to determine the need for mitigations.

Figure 5.3 and **Figure 5.4** graphically represent the AM and PM peak hour intersection ICU for deficient intersections for the Buildout Cumulative Baseline scenario. **Appendix E** presents detailed ICU worksheets for study intersections.

Based on the Buildout Cumulative Baseline intersection ICU analysis, the following 14 intersections within the study area are forecast to operate at deficient LOS:

- #192 California Avenue at University Drive (Irvine) – AM Peak Hour LOS E with a 0.96 ICU
- #44 Red Hill Avenue at Alton Parkway (Irvine/Santa Ana) – PM Peak Hour LOS E with 0.93 ICU
- #97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (Irvine/Tustin) – PM Peak Hour LOS F with a 1.16 ICU
- #136 Jamboree Road at Barranca Parkway (Irvine/Tustin) – AM Peak Hour LOS E with a 0.91 ICU and PM Peak Hour LOS E with 1.07 ICU
- #156 Jamboree Road at Ford Road (Newport Beach) – AM Peak Hour LOS E with a 0.91 ICU
- #543 Bristol at Segerstrom (Santa Ana) – AM Peak Hour LOS E with a 0.97 ICU and PM Peak Hour LOS E with a 0.91 ICU
- #719 Flower at Segerstrom (Santa Ana) – PM Peak Hour LOS E with a 1.00 ICU
- #723 Main Street at Segerstrom (Santa Ana) – AM Peak Hour LOS E with a 0.97 ICU and PM Peak Hour LOS F with a 1.15 ICU
- #727 Halladay at Dyer Road – PM Peak Hour LOS E with a 0.97 ICU
- #728 Halladay East at Alton Parkway (Santa Ana) – AM Peak Hour LOS F with a 1.07 ICU
- #3 Newport Avenue at Edinger Avenue (Tustin) – AM Peak Hour LOS F with a 1.13 ICU
- #38 Red Hill Avenue at Walnut Avenue (Tustin) – PM Peak Hour LOS E with a 0.92 ICU
- #453 Red Hill Avenue at Valencia Avenue (Tustin) – AM Peak Hour LOS E with a 0.98 ICU
- #749 Park Avenue at A Street (Tustin) – PM Peak Hour LOS E with a 0.97 ICU

Table 5.5 – Buildout Cumulative Baseline Peak Hour Intersection LOS

ID	INTERSECTION	PA 36/CMP SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (BUILDOUT)	JURISDICTION	BUILDOUT CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
10	SR-55 Frontage Road SB at Paularino Avenue			CM	0.84	D	0.77	C
11	SR-55 Frontage Road NB at Paularino Avenue			CM	0.71	C	0.62	B
12	SR-55 Frontage Road SB at Baker Street			CM	0.89	D	0.80	C
13	SR-55 Frontage Road NB at Baker Street			CM	0.81	D	0.71	C
50	Red Hill Avenue at Paularino Avenue			CM	0.73	C	0.69	B
51	Red Hill Avenue at Baker Street			CM	0.58	A	0.69	B
52	Red Hill Avenue at Bristol Street			CM	0.71	C	0.62	B
541	Bear at Baker Street			CM	0.74	C	0.74	C
542	Bear at Paularino Avenue			CM	0.48	A	0.71	C
545	Bristol at Sunflower			CM	0.66	B	0.72	C
546	Bristol at Anton			CM	0.45	A	0.67	B
547	Bristol at Paularino Avenue			CM	0.50	A	0.78	C
548	Bristol at Baker Street			CM	0.57	A	0.66	B
549	Newport Boulevard SB at Bristol			CM	0.30	A	0.57	A
550	Newport Boulevard NB at Bristol			CM	0.41	A	0.52	A
715	Bristol at I-405 NB Off Ramp			CM	0.49	A	0.73	C
716	Bristol at I-405 SB Ramps			CM	0.47	A	0.60	A
717	Bear at SR-73 SB Ramps			CM	0.43	A	0.55	A
720	Flower at MacArthur Boulevard			CM	0.85	D	0.86	D
721	Flower at Sunflower			CM	0.51	A	0.56	A
722	Anton at Sunflower			CM	0.41	A	0.38	A
726	Main Street at Sunflower			CM	0.63	B	0.70	B
735	Newport Boulevard NB at Del mar			CM	0.75	C	0.54	A
736	Newport Boulevard SB at Fair/Del Mar			CM	0.52	A	0.58	A
737	Newport Boulevard NB at Mesa Road			CM	0.42	A	0.36	A
738	Newport Boulevard SB at Mesa Road			CM	0.23	A	0.70	B
32	Daimler Street at McGaw Avenue			Irv	0.24	A	0.20	A
45	Red Hill Avenue at McGaw Avenue	a		Irv	0.52	A	0.72	C
47	Red Hill Avenue at MacArthur Boulevard	a		Irv	0.73	C	0.84	D
48	Red Hill Avenue at Sky Park North	a		Irv	0.31	A	0.45	A
49	Red Hill Avenue at Main Street	a		Irv	0.78	C	0.91	E
66	Gillette Avenue at Alton Parkway	a		Irv	0.64	B	0.68	B
67	Gillette Avenue at McGaw Avenue	a		Irv	0.39	A	0.58	A
70	Gillette Avenue at Main Street	a		Irv	0.35	A	0.60	A
73	Armstrong Avenue and Alton Parkway West	a		Irv	0.33	A	0.35	A
74	Armstrong Avenue and Alton Parkway East	a		Irv	0.33	A	0.44	A
77	MacArthur Boulevard at Sky Park East	a		Irv	0.39	A	0.51	A
78	MacArthur Boulevard at Main Street	a		Irv	0.73	C	0.81	D
79	MacArthur Boulevard at I-405 NB Ramps	a		Irv	0.72	C	0.68	B
80	MacArthur Boulevard at I-405 SB Ramps	a		Irv	0.65	B	0.75	C
82	MacArthur Boulevard at Michelson Drive	a		Irv	0.87	D	0.88	D
83	MacArthur Boulevard at Douglas Avenue	a		Irv	0.42	A	0.50	A
87	Dupont Drive at Michelson Drive	a		Irv	0.41	A	0.40	A
98	Von Karman Avenue at Alton Parkway	a		Irv	0.89	D	1.00	E
99	Von Karman Avenue at McGaw Avenue	a		Irv	0.70	B	0.83	D
100	Von Karman Avenue at Main Street	a		Irv	0.68	B	0.78	C
101	Von Karman Avenue at Morse Avenue	a		Irv	0.54	A	0.64	B

ID	INTERSECTION	PA 36/CMP SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (BUILDOUT)	JURISDICTION	BUILDOUT CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
102	Von Karman Avenue at Michelson Drive	a		Irv	0.77	C	0.89	D
103	Von Karman Avenue at Dupont Drive	a		Irv	0.51	A	0.60	A
104	Von Karman Avenue at Martin	a		Irv	0.43	A	0.59	A
115	Millikan Avenue at Alton Parkway	a		Irv	0.44	A	0.60	A
116	Cartwright Road at Main Street	a		Irv	0.40	A	0.58	A
119	Teller Avenue at Michelson Drive	a		Irv	0.51	A	0.58	A
128	Jamboree Road at I-5 NB Ramps	b		Irv	0.85	D	0.73	C
129	Jamboree Road at I-5 SB Ramps	b		Irv	0.74	C	0.60	A
130	Jamboree Road at Michelle Drive			Irv	0.71	C	0.79	C
131	Jamboree Road SB at Walnut Avenue			Irv	0.62	B	0.64	B
132	Jamboree Road NB at Walnut Avenue			Irv	0.46	A	0.62	B
135	Jamboree Road NB Ramps at Warner Avenue			Irv	0.44	A	0.87	D
137	Jamboree Road at Beckman Avenue	a		Irv	0.61	B	0.71	C
138	Jamboree Road at Alton Parkway	a		Irv	0.76	C	0.87	D
139	Jamboree Road at McGaw Avenue	a		Irv	0.66	B	0.73	C
140	Jamboree Road at Kelvin Avenue	a		Irv	0.60	A	0.63	B
141	Jamboree Road at Main Street	a		Irv	0.75	C	0.87	D
143	Jamboree Road at I-405 NB Ramps	a,b		Irv	0.77	C	0.89	D
144	Jamboree Road at I-405 SB Ramps	a,b		Irv	0.97	E	0.89	D
145	Jamboree Road at Michelson Drive	a		Irv	0.75	C	0.91	E
146	Jamboree Road at Dupont Road	a		Irv	0.60	A	0.67	B
164	Construction South at Barranca Parkway	a		Irv	0.35	A	0.59	A
168	Murphy Avenue at Alton Parkway	a		Irv	0.37	A	0.65	B
170	Union at Main Street	a		Irv	0.36	A	0.63	B
171	Veneto at Main Street			Irv	0.38	A	0.56	A
174	Carlson Avenue at Michelson Drive	a		Irv	0.53	A	0.67	B
175	Carlson Avenue at Campus Drive	a		Irv	0.65	B	0.73	C
180	Harvard Avenue at Walnut Avenue			Irv	0.43	A	0.56	A
183	Harvard Avenue at Warner Avenue			Irv	0.49	A	0.72	C
184	Harvard Avenue at Barranca Parkway			Irv	0.53	A	0.72	C
185	Harvard Avenue at Alton Parkway			Irv	0.67	B	0.67	B
186	Harvard Avenue at Main Street			Irv	0.61	B	0.76	C
187	Harvard Avenue at Coronado			Irv	0.61	B	0.63	B
188	Harvard Avenue Michelson Drive			Irv	0.68	B	0.88	D
189	Harvard Avenue University Drive			Irv	0.80	C	0.84	D
190	University Drive at Campus Drive		√	Irv	0.69	B	0.76	C
191	Mesa Road at University Drive			Irv	0.49	A	0.60	A
192	California Avenue at University Drive			Irv	0.96	E	0.80	C
196	Hearthstone Boulevard at Irvine Center Drive			Irv	0.74	C	0.64	B
198	Paseo Westpark at Warner Avenue			Irv	0.44	A	0.44	A
199	Paseo Westpark at Barranca Parkway			Irv	0.46	A	0.59	A
200	Paseo Westpark at Alton Parkway			Irv	0.50	A	0.65	B
201	Paseo Westpark at Main Street			Irv	0.56	A	0.56	A
221	Culver Drive at Bryan Avenue			Irv	0.79	C	0.71	C
222	Culver Drive at Trabuco Road			Irv	0.83	D	0.77	C
223	Culver Drive at I-5 SB Ramps			Irv	0.69	B	0.63	B
224	Culver Drive at Walnut Avenue		√	Irv	0.75	C	0.84	D
225	Culver Drive at Deerfield Drive			Irv	0.80	C	0.83	D

ID	INTERSECTION	PA 36/CMP SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (BUILDOUT)	JURISDICTION	BUILDOUT CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
226	Culver Drive at Irvine Center Drive		√	Irv	0.75	C	0.77	C
227	Culver Drive at Warner Avenue			Irv	0.79	C	0.71	C
228	Culver Drive at Barranca Parkway		√	Irv	0.78	C	0.79	C
229	Culver Drive at Alton Parkway		√	Irv	0.74	C	0.84	D
230	Culver Drive at Main Street			Irv	0.67	B	0.76	C
231	Culver Drive at San Leandro			Irv	0.77	C	0.61	B
232	Culver Drive at I-405 NB Ramps			Irv	0.67	B	0.90	D
233	Culver Drive at I-405 SB Ramps			Irv	0.72	C	0.71	C
234	Culver Drive at Michelson Drive			Irv	0.60	A	0.81	D
235	Culver Drive at University Drive		√	Irv	0.81	D	0.79	C
337	Von Karman Avenue at Quartz	a		Irv	0.75	C	0.77	C
439	Bixby at Michelson Drive			Irv	0.41	A	0.49	A
440	Siglo at Main Street			Irv	0.38	A	0.52	A
472	Obsidian at Michelson Drive	a		Irv	0.57	A	0.58	A
84	MacArthur Boulevard at Campus Drive	a		Irv/NB	0.69	B	0.90	D
105	Von Karman Avenue at Campus Drive	a		Irv/NB	0.72	C	0.83	D
121	Teller Avenue at Campus Drive	a		Irv/NB	0.35	A	0.53	A
147	Jamboree Road at Campus Drive	a		Irv/NB	0.74	C	0.78	C
149	Jamboree Road at Fairchild Road	a		Irv/NB	0.68	B	0.74	C
150	Jamboree Road at MacArthur Boulevard	a,b		Irv/NB	0.83	D	0.83	D
176	Fairchild Avenue at MacArthur Boulevard	a		Irv/NB	0.81	D	0.87	D
193	MacArthur Boulevard NB at University Drive			Irv/NB	0.71	C	0.76	C
194	MacArthur Boulevard SB at University Drive			Irv/NB	0.75	C	0.65	B
195	SR-73 SB Ramps at University Drive			Irv/NB	0.81	D	0.56	A
9	SR-55 NB Ramps at MacArthur Boulevard	a		Irv/SA	0.74	C	0.63	B
31	Daimler Street at Alton Parkway	a		Irv/SA	0.64	B	0.66	B
43	Red Hill Avenue at Deere Avenue	a		Irv/SA	0.47	A	0.82	D
44	Red Hill Avenue at Alton Parkway	a		Irv/SA	0.79	C	0.93	E
42	Red Hill Avenue at Barranca Parkway/Dyer Road	a		Irv/SA/Tus	0.73	C	0.89	D
71	Armstrong Ave at Barranca Parkway	a		Irv/Tus	0.49	A	0.70	B
97	Von Karman Avenue/Tustin Ranch Road at Barranca Parkway	a		Irv/Tus	0.87	D	1.16	F
112	Myford Road at Michelle Drive			Irv/Tus	0.37	A	0.28	A
113	Myford Road at Walnut Avenue			Irv/Tus	0.35	A	0.48	A
114	Millikan Avenue/District Way at Barranca Parkway	a		Irv/Tus	0.49	A	0.68	B
126	Jamboree Road at Bryan Avenue			Irv/Tus	0.71	C	0.80	C
127	Jamboree Road at El Camino Real			Irv/Tus	0.74	C	0.79	C
134	Loop Road/Park Ave at Warner Avenue			Irv/Tus	0.46	A	0.78	C
136	Jamboree Road at Barranca Parkway	a		Irv/Tus	0.91	E	1.07	F
181	Harvard Avenue at Edinger Avenue/Irvine Center Drive			Irv/Tus	0.53	A	0.72	C
182	Harvard Avenue at Paseo Westpark/Moffett Dr.			Irv/Tus	0.40	A	0.49	A
441	Loop Road at Jamboree Road SB Ramps			Irv/Tus	0.39	A	0.78	C
61	Campus Drive at Airport Way			NB	0.53	A	0.84	D
62	Campus Drive at Bristol Street NB			NB	0.75	C	0.77	C
63	Campus Drive at Bristol Street SB			NB	0.89	D	0.74	C
64	Birch Street at Bristol Street NB			NB	0.73	C	0.71	C
65	Birch Street at Bristol Street SB			NB	0.60	A	0.64	B
85	MacArthur Boulevard at Birch Street			NB	0.62	B	0.74	C
106	Von Karman Avenue at Birch Street			NB	0.48	A	0.56	A

ID	INTERSECTION	PA 36/CMP SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (BUILDOUT)	JURISDICTION	BUILDOUT CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
107	Von Karman Avenue at MacArthur Boulevard			NB	0.45	A	0.64	B
148	Jamboree Road at Birch Street			NB	0.61	B	0.56	A
151	Jamboree Road at Bristol Street NB			NB	0.35	A	0.54	A
153	Jamboree Road at Bristol Street SB			NB	0.69	B	0.60	A
154	Jamboree Road at Eastbluff Drive			NB	0.70	B	0.62	B
155	Jamboree Road at Bison Avenue			NB	0.47	A	0.55	A
156	Jamboree Road at Ford Road			NB	0.91	E	0.77	C
178	MacArthur Boulevard at Bison Avenue			NB	0.67	B	0.66	B
179	MacArthur Boulevard at Ford Road			NB	0.65	B	0.68	B
741	Jamboree at San Joaquin			NB	0.61	B	0.56	A
742	MacArthur at San Joaquin			NB	0.51	A	0.73	C
733	Irvine at Mesa Road			NB/OC	0.72	C	0.73	C
734	Irvine at University/Del Mar			NB/OC	0.65	B	0.74	C
4	SR-55 SB Ramps at Edinger Avenue	b		SA	0.81	D	0.69	B
5	Hotel Terrace Drive at Dyer Road			SA	0.61	B	0.76	C
6	Grand Avenue at Dyer Road			SA	0.76	C	0.69	B
7	SR-55 NB Ramps at Dyer Road			SA	0.79	C	0.55	A
8	SR-55 SB Ramps at MacArthur Boulevard	c		SA	0.67	B	0.60	A
29	Pullman Street at Barranca Parkway			SA	0.57	A	0.77	C
543	Bristol at Segerstrom			SA	0.97	E	0.91	E
544	Bristol Street at MacArthur Boulevard			SA	0.79	C	0.90	D
718	Bear at SR-73 NB Ramps			SA	0.37	A	0.64	B
719	Flower at Segerstrom			SA	0.82	D	1.00	E
723	Main Street at Segerstrom			SA	0.97	E	1.15	F
724	Main Street at Alton Avenue			SA	0.61	B	0.78	C
725	Main and MacArthur (w/o SR-55)	c		SA	0.67	B	0.80	C
727	Halladay at Dyer Road			SA	0.88	D	0.97	E
728	Halladay E at Alton Parkway			SA	1.07	F	0.81	D
729	Halladay W at Alton Parkway			SA	0.79	C	0.75	C
730	Grand Avenue at Warner			SA	0.62	B	0.70	B
731	SR-55 SB Ramps at Grand Avenue			SA	0.61	B	0.51	A
3	Newport Avenue at Edinger Avenue			Tus	1.13	F	0.65	B
14	Walnut Avenue at McFadden Avenue			Tus	0.48	A	0.52	A
18	Newport Avenue at Bryan Avenue			Tus	0.53	A	0.66	B
19	Newport Avenue at Main Street			Tus	0.83	D	0.78	C
20	Newport Avenue at El Camino Real			Tus	0.84	D	0.84	D
21	Newport Avenue at I-5 NB Ramps			Tus	0.79	C	0.62	B
22	Newport Avenue at I-5 SB Ramp/Nisson Road			Tus	0.61	B	0.73	C
23	Newport Avenue at McFadden Street			Tus	0.67	B	0.56	A
24	Newport Avenue at Walnut Avenue			Tus	0.82	D	0.81	D
25	Newport Avenue at Sycamore Avenue			Tus	0.68	B	0.65	B
27	Del Amo Avenue at Edinger Avenue			Tus	0.49	A	0.48	A
35	Red Hill Avenue at Bryan Avenue			Tus	0.62	B	0.80	C
36	Red Hill Avenue at El Camino Real			Tus	0.54	A	0.54	A
37	Red Hill Avenue at Nisson Road			Tus	0.67	B	0.80	C
38	Red Hill Avenue at Walnut Avenue			Tus	0.79	C	0.92	E
39	Red Hill Avenue at Sycamore Avenue			Tus	0.72	C	0.66	B
40	Red Hill Avenue at Edinger Avenue			Tus	0.74	C	0.89	D

ID	INTERSECTION	PA 36/CMP SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (BUILDOUT)	JURISDICTION	BUILDOUT CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
55	Browning Avenue at Bryan Avenue			Tus	0.41	A	0.58	A
56	Browning Avenue at El Camino Real			Tus	0.50	A	0.49	A
58	Browning Avenue at Walnut Avenue			Tus	0.48	A	0.66	B
92	Tustin Ranch Road at Bryan Avenue			Tus	0.72	C	0.81	D
93	Tustin Ranch Road at El Camino Real			Tus	0.86	D	0.76	C
94	Tustin Ranch Road at I-5 NB Ramps			Tus	0.64	B	0.57	A
95	Tustin Ranch Road at I-5 SB Ramps			Tus	0.69	B	0.67	B
96	Tustin Ranch Road at Walnut Avenue			Tus	0.66	B	0.86	D
109	Myford Road at Bryan Avenue			Tus	0.52	A	0.65	B
110	Myford Road at El Camino Real			Tus	0.44	A	0.66	B
111	Franklin Avenue at Walnut Avenue			Tus	0.52	A	0.83	D
133	Jamboree Road at Edinger Avenue	b		Tus	0.44	A	0.73	C
445	Tustin Ranch Road at Warner Avenue North			Tus	0.52	A	0.71	C
446	Tustin Ranch Road at Warner Avenue South			Tus	0.63	B	0.80	C
447	Armstrong Avenue/Severyns Rd Valencia Avenue			Tus	0.36	A	0.40	A
448	Armstrong Avenue at Warner Avenue			Tus	0.35	A	0.42	A
453	Red Hill Avenue at Valencia Avenue			Tus	0.98	E	0.77	C
454	Tustin Ranch Road at Valencia Avenue			Tus	0.57	A	0.66	B
455	East Connector/Jamboree Plaza at Edinger Avenue			Tus	0.57	A	0.66	B
456	North Loop Road at Valencia Avenue			Tus	0.17	A	0.15	A
457	North Loop Road at Moffett Drive			Tus	0.46	A	0.37	A
478	Red Hill Avenue at I-5 NB Ramps			Tus	0.67	B	0.64	B
479	Red Hill Avenue at I-5 SB Ramps			Tus	0.69	B	0.78	C
480	Tustin Ranch Road/Connector at Edinger Avenue			Tus	0.20	A	0.19	A
732	SR-55 NB Ramp at Newport Avenue			Tus	0.63	B	0.65	B
739	Newport Avenue at Mitchell Avenue			Tus	0.74	C	0.70	B
740	Red Hill Avenue at Mitchell Avenue			Tus	0.57	A	0.65	B
743	Newport Avenue at Valencia			Tus	0.59	A	0.88	D
745	Tustin Ranch Road at Park Avenue			Tus	0.49	A	0.65	B
746	Kensington Park Drive at Edinger Avenue			Tus	0.45	A	0.59	A
747	Kensington Park Drive at Valencia Avenue			Tus	0.35	A	0.36	A
748	Armstrong Avenue at A Street			Tus	0.34	A	0.46	A
749	Park Avenue at A Street			Tus	0.75	C	0.97	E
750	Legacy Road at Warner Avenue			Tus	0.44	A	0.67	B
751	Tustin Ranch Road at Legacy Road			Tus	0.62	B	0.71	C
752	Legacy Road at North Loop Road			Tus	0.17	A	0.15	A
753	Tustin Ranch Road at Edinger Avenue Connector			Tus	0.45	A	0.38	A
28	Pullman Street at Warner Avenue			Tus/SA	0.62	B	0.64	B
41	Red Hill Avenue at Warner Avenue			Tus/SA	0.53	A	0.73	C
754	Red Hill Avenue at Carnegie Avenue			Tus/SA	0.51	A	0.65	B
F	Denotes intersection operating at a deficient LOS							
a	Intersection within Irvine Planning Area 36--LOS E acceptable							
b	Orange County Congestion Management Program (CMP) locations							
c	Intersections within City of Santa Ana--LOS E acceptable							
√	ATMS credit-Reduction of 0.05 applied to ICU							

Figure 5.3 – Buildout Cumulative Baseline AM Peak Hour Intersection Deficiencies

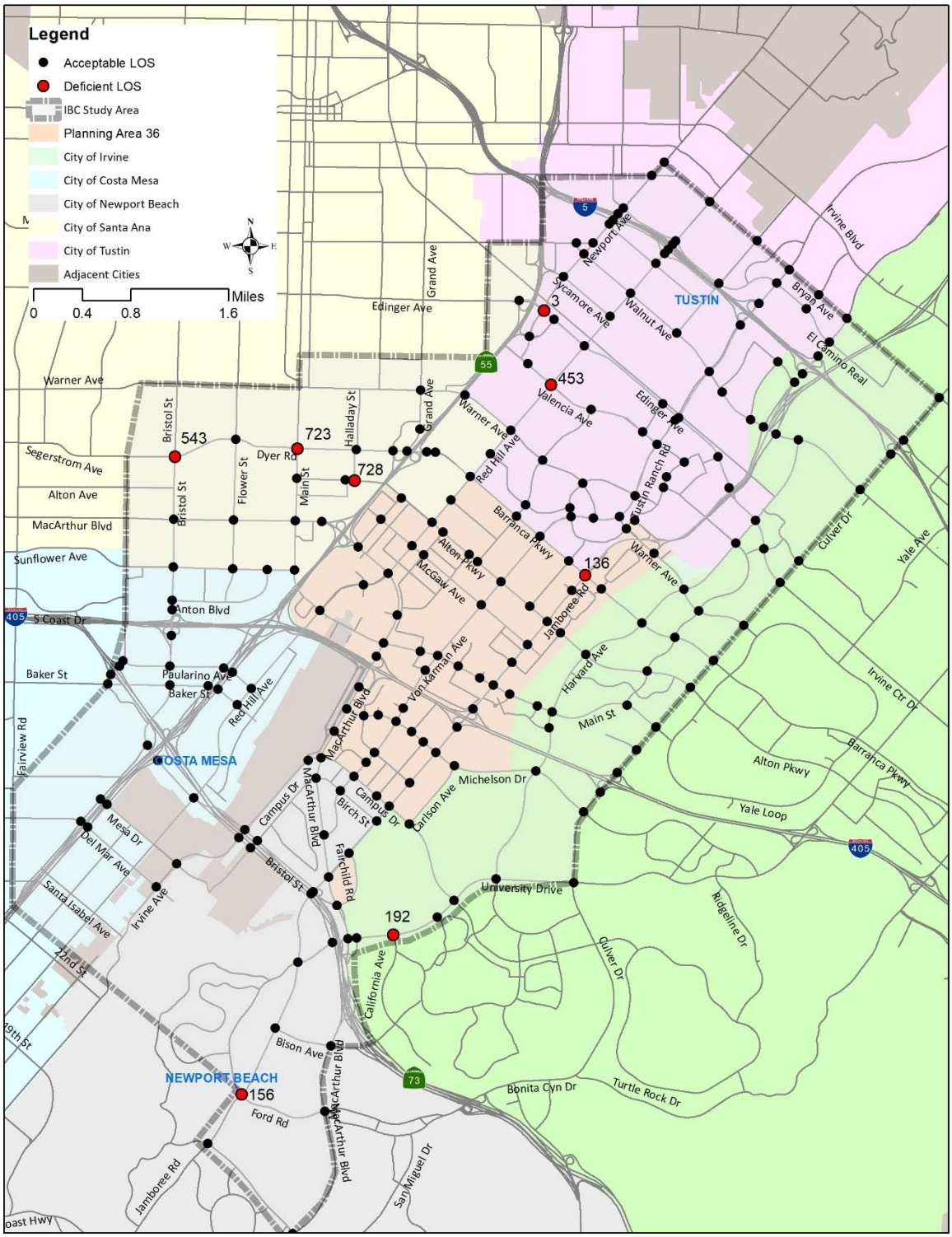
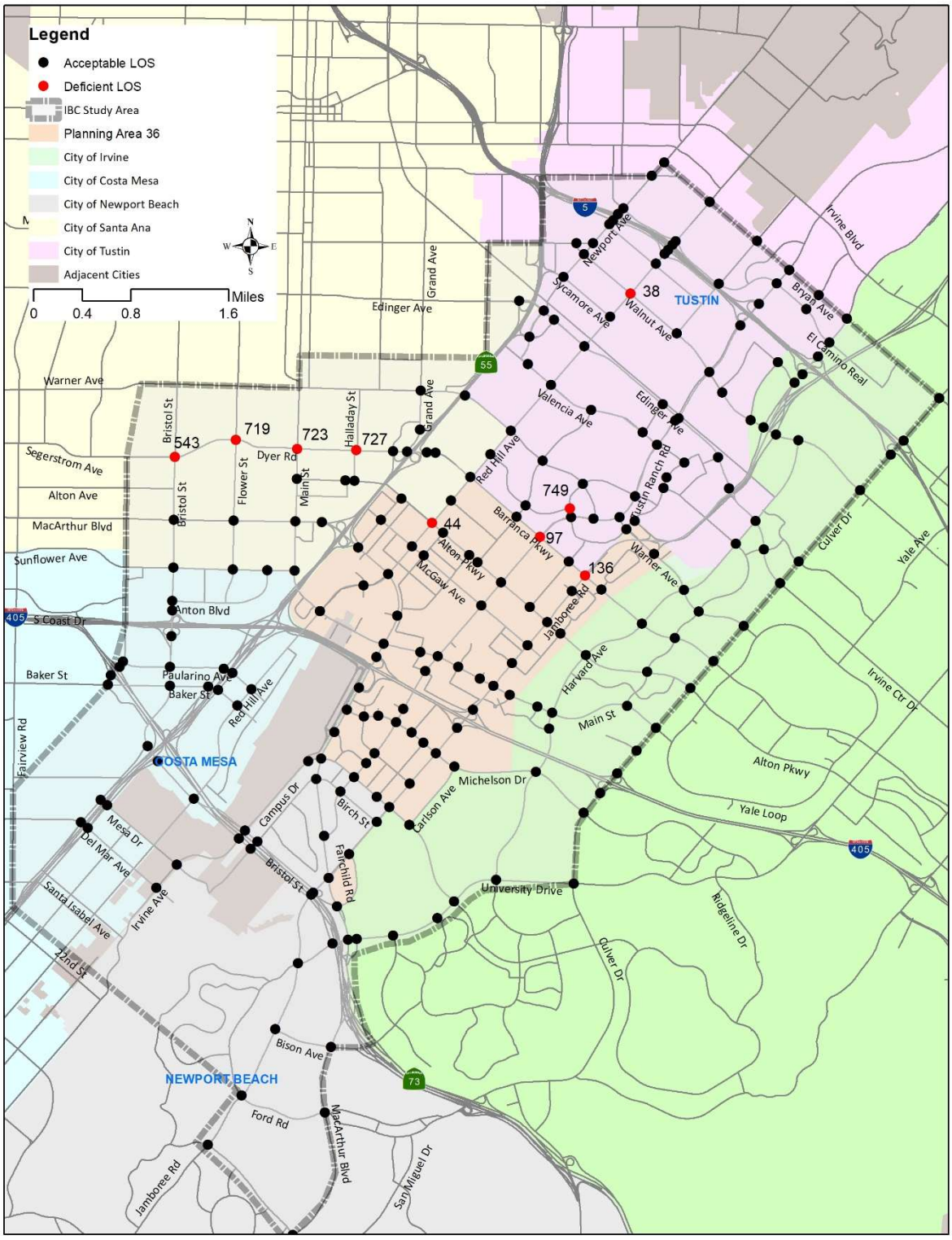


Figure 5.4 – Buildout Cumulative Baseline PM Peak Hour Intersection Deficiencies



5.6 Buildout Cumulative Baseline Peak Hour Freeway Mainline Analysis

Future freeway mainline volumes are forecasted using the ITAM model. **Table 5.6** provides the freeway mainline segment limits, direction, number of lanes, and peak hour capacity, as well as the volumes, densities, and levels of service. There are no freeway mainline capacity increases anticipated between the existing conditions and the Buildout year.

Using the methodology prescribed by the Orange County Congestion Management Plan (CMP), **Table 5.6** shows deficient freeway mainline segments under the Buildout Cumulative Baseline scenario. In the AM peak, 32 out of 60 freeway segments operate at a deficient LOS and in the PM peak 27 out of 60 operate at a deficient LOS. The following segments are forecast to operate at LOS E or F. The deficient segments are:

AM Peak Hour:

I-5	**Northbound**	• Between Culver Drive and Jamboree Road • Between Jamboree Road and Tustin Ranch Road • Between Tustin Ranch Road and Red Hill Avenue • Between Red Hill Avenue and Newport Avenue • Between Newport Avenue and SR-55 • North of SR-55
	Southbound	• Between Jamboree Road and Culver Drive • Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road • Between Newport Avenue and Red Hill Avenue • North of SR-55
I-405	**Northbound**	• Between Culver Drive and Jamboree Road • Between Jamboree Road and MacArthur Boulevard • Between MacArthur Boulevard and SR-55
	Southbound	• Between Jamboree Road and Culver Drive • Between SR-55 and MacArthur Boulevard • Between Bristol Street and SR-55 • Between SR-73 and Bristol Street
SR-55	**Northbound**	• Fair Drive to SR-73
	Southbound	• Between Dyer Road and MacArthur Boulevard • Between Edinger Avenue and Dyer Road • Between McFadden Street/Sycamore Avenue and Edinger Avenue • Between I-5 and McFadden Street/Sycamore Avenue
SR-73	**Northbound**	• Between MacArthur Boulevard and University Drive • Between University Drive and Jamboree Road • Between Jamboree Road and Birch Street • Between Birch Street and Campus Drive • Between Campus Drive and SR-55
	Southbound	• Between University Drive and MacArthur Boulevard • Between Campus Drive and Birch Street • Between SR-55 and Campus Drive
SR-261	**Southbound**	• South of El Camino Real

PM Peak Hour:

I-5	**Northbound**	• Between Culver Drive to Jamboree Road • Between Jamboree Road to Tustin Rach Road • Between Tustin Ranch Road and Red Hill Avenue • Between Red Hill Avenue and Newport Avenue • Between Newport Avenue and SR-55 • North of SR-55

	Southbound	• Between Jamboree Road and Culver Drive • Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road • Between Newport Avenue and Red Hill Avenue • North of SR-55
I-405	**Northbound**	• Between Jamboree Road and MacArthur Boulevard • Between SR-55 and MacArthur Boulevard
	Southbound	• Between Jamboree Road and MacArthur Boulevard • Between SR-55 and MacArthur Boulevard
SR-55	**Northbound**	• Between MacArthur Boulevard and Dyer Road • Between Dyer Road and Edinger Avenue • Between Edinger Avenue to McFadden Street/Sycamore Avenue • Between McFadden Street/Sycamore Avenue and I-5
	Southbound	• Between Edinger Avenue and Dyer Road
SR-73	**Northbound**	• Between Jamboree Road and Birch Street • Between Birch Street and Campus Drive • Between Campus Drive and SR-55 • Between SR-55 and Bear Street
	Southbound	• Between MacArthur Boulevard and University Drive • Between Birch Street and Campus Drive • Between SR-55 and Campus Drive

Table 5.6 –Buildout Cumulative Baseline Freeway Peak Hour Mainline LOS

LOCATION		FREEWAY LANES			BUILDOUT BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
		DIRECTION	LANES	CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	Culver Drive to Jamboree Road	NB	6	12,000	13,549	1.13	F	11,815	0.98	E
		SB	6	12,000	12,908	1.08	F	12,262	1.02	F
	Jamboree Road to Tustin Ranch Road	NB	6	12,000	13,227	1.10	F	11,780	0.98	E
		SB	6	12,000	12,968	1.08	F	11,838	0.99	E
	Tustin Ranch Road to Red Hill Avenue	NB	6	12,000	13,380	1.12	F	12,023	1.00	E
		SB	6	12,000	13,487	1.12	F	12,230	1.02	F
	Red Hill Avenue to Newport Avenue	NB	5	10,000	12,749	1.06	F	11,504	0.96	E
		SB	6	12,000	13,058	1.09	F	11,522	0.96	E
	Newport Avenue to SR-55	NB	6	12,000	13,357	1.11	F	12,185	1.02	F
		SB	4	8,000	9,958	0.83	D	8,733	0.73	D
	N of SR-55	NB	5	10,000	11,069	1.11	F	10,450	1.04	F
		SB	5	10,000	10,334	1.03	F	9,054	0.91	E
I-405	Culver Drive to Jamboree Road	NB	5	10,000	13,772	1.15	F	10,486	0.87	D
		SB	4	8,000	10,469	1.05	F	12,058	1.21	F
	Jamboree Road to MacArthur Boulevard	NB	6	12,000	13,586	1.13	F	11,382	0.95	E
		SB	7	14,000	12,028	0.86	D	11,977	0.86	D
	MacArthur Boulevard to SR-55	NB	6	12,000	12,327	1.03	F	12,259	1.02	F
		SB	6	12,000	13,570	1.13	F	11,571	0.96	E
	SR-55 to Bristol Street	NB	4	8,000	6,149	0.61	C	6,624	0.66	C
		SB	5	10,000	10,341	1.03	F	7,824	0.78	D
	Bristol Street to SR-73	NB	5	10,000	7,214	0.72	D	8,054	0.81	D
		SB	5	10,000	10,041	1.00	E	6,834	0.68	C
SR-55	S of Victoria Street	NB	4	8,000	3,985	0.66	C	3,399	0.57	C
		SB	3	6,000	3,176	0.53	C	3,250	0.54	C
	Victoria Street to Fair Drive	NB	4	8,000	6,392	0.8	D	4,854	0.61	C
		SB	3	6,000	4,979	0.62	C	5,496	0.69	C

LOCATION		FREEWAY LANES			BUILDOUT BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
		DIRECTION	LANES	CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS
SR-55	Fair Drive to SR-73	NB	4	8,000	7,898	0.99	E	6,186	0.77	D
		SB	4	8,000	5,870	0.73	D	6,428	0.80	D
	SR-73 to Baker Street	NB	4	8,000	6,992	0.87	D	6,046	0.76	D
		SB	4	8,000	6,781	0.85	D	6,554	0.82	D
	Baker Street to I-405	NB	4	8,000	6,992	0.87	D	6,046	0.76	D
		SB	4	8,000	6,781	0.85	D	6,554	0.82	D
	I-405 to MacArthur Boulevard	NB	4	8,000	8,843	0.74	D	9,045	0.75	D
		SB	4	8,000	10,514	0.88	D	8,760	0.73	D
	MacArthur Boulevard to Dyer Road	NB	4	8,000	7,880	0.79	D	9,179	0.92	E
		SB	4	8,000	10,500	1.05	F	7,870	0.79	D
	Dyer Road to Edinger Avenue	NB	4	8,000	8,007	0.80	D	10,000	1.00	E
		SB	4	8,000	10,697	1.34	F	7,507	0.94	E
	Edinger Avenue to McFadden Street/Sycamore Avenue	NB	5	10,000	8,238	0.82	D	10,127	1.01	F
		SB	4	8,000	11,336	1.13	F	7,959	0.80	D
	McFadden Street/Sycamore Avenue to I-5	NB	5	10,000	8,946	0.89	D	10,710	1.07	F
		SB	5	10,000	10,792	1.08	F	7,865	0.79	D
	N of I-5	NB	3	6,000	6,049	0.60	C	7,660	0.77	D
		SB	3	6,000	8,376	0.84	D	5,716	0.57	C
SR-73	MacArthur Boulevard to University Drive	NB	3	6,000	8,346	1.04	F	6,851	0.86	D
		SB	4	8,000	7,428	0.93	E	7,548	0.94	E
	University Drive to Jamboree Road	NB	3	6,000	7,578	0.95	E	5,726	0.72	D
		SB	3	6,000	5,566	0.70	C	6,066	0.76	D
	Jamboree Road to Birch Street	NB	4	8,000	9,641	1.21	F	8,554	1.07	F
		SB	3	6,000	6,861	0.86	D	7,068	0.88	D
	Birch Street to Campus Drive	NB	4	8,000	7,786	0.97	E	7,407	0.93	E
		SB	4	8,000	8,228	1.03	F	7,649	0.96	E
	Campus Drive to SR-55	NB	4	8,000	8,655	1.08	F	9,691	1.21	F
		SB	4	8,000	10,473	1.31	F	8,736	1.09	F
	SR-55 to Bear Street	NB	3	6,000	6,399	0.80	D	7,190	0.90	E
		SB	3	6,000	7,128	0.89	D	5,854	0.73	D
	Bear Street to I-405	NB	3	6,000	5,462	0.68	C	6,212	0.78	D
		SB	3	6,000	6,551	0.82	D	5,125	0.64	C
SR-261	SR-261 S of El Camino Real	NB	2	4,000	896	0.11	A	3,009	0.38	B
		SB	2	4,000	3,622	0.91	E	1,241	0.31	B

F Denotes mainline segments operating at a deficient LOS

5.7 Buildout Cumulative Baseline Peak Hour Freeway Ramp Analysis

The freeway ramp volumes were forecast using the ITAM model. Since most ramps in the network are associated with intersection legs in the model the post-processed volume from that leg of the intersection provided the forecast volume for the freeway ramp. **Table 5.7** displays the freeway ramp interchange, ramp type, number of lanes, and peak hour capacity, as well as the volumes, and levels of service, as with the freeway mainlines. Twelve of the 98 ramps in the study area are forecast to be deficient in the AM peak. In the PM peak, 17 ramps are forecast to be deficient. In the Buildout Cumulative Baseline scenario, the following are forecast to be deficient during the AM or PM peak hour:

AM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
I-405	**Northbound**	• Off-Ramp to Jamboree Road • Off-Ramp to MacArthur Boulevard
	Southbound	• Off-Ramp to Jamboree Road • Off-Ramp to MacArthur Boulevard
SR-55	**Northbound**	• Direct On-Ramp from Fair Drive • On-Ramp from Paularino Avenue • On-Ramp from Dyer Road
	Southbound	• Off-Ramp to Paularino Avenue
SR-73	**Northbound**	• Off-Ramp to Birch Street
	Southbound	• Off-Ramp to Campus Drive • Off-Ramp to MacArthur Boulevard

PM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
	Southbound	• Direct On-Ramp from Jamboree Road
I-405	**Northbound**	• Off-Ramp to Bristol Street
	Southbound	• Off-Ramp to Bristol Street
SR-55	**Northbound**	• On-Ramp from Fair Drive • On-Ramp from Paularino Avenue • Direct On-Ramp from MacArthur Boulevard • On-Ramp from Edinger Avenue • On-Ramp from McFadden
	Southbound	• Off-Ramp to Victoria Street • Off-Ramp to Paularino Avenue
SR-73	**Northbound**	• On-Ramp from Jamboree Road • Off-Ramp to Birch Street • Off-Ramp from Campus Drive • Off-Ramp to Bear Street
	Southbound	• Off-Ramp to McArthur Boulevard • On-Ramp North from University from MacArthur Boulevard

*Denotes freeway ramp impacts.

Figure 5.5 and **Figure 5.6** graphically depict the Buildout Cumulative Baseline freeway and ramp deficiencies.

Table 5.7 – Buildout Cumulative Baseline Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		BUILDOUT BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	Culver Drive	SB On Direct	1	1,000	334	0.37	B	529	0.59	C
		SB On Loop	1	1,000	595	0.66	C	301	0.33	B
		SB Off	2	500	841	0.37	B	1,810	0.80	D
		NB On Loop	2	1,000	750	0.50	B	480	0.32	B
		NB On Direct	1	1,000	654	0.73	D	175	0.19	A
		NB Off	1	500	509	0.34	B	766	0.51	C
	Jamboree Road	SB On Direct	2	1,000	402	0.27	A	1,410	0.94	E
		SB On Loop	2	1,000	845	0.56	C	440	0.29	A
		SB Off	2	500	1,161	0.39	B	1,313	0.44	B
		NB On Loop	2	1,000	580	0.54	C	560	0.52	C
		NB On Direct	2	1,000	480	0.44	B	300	0.28	A
		NB Off	1	500	1,670	1.11	F	1,437	0.96	E
	Tustin Ranch Road	SB On	2	1,000	709	0.47	B	760	0.51	C
		NB On	3	1,000	1,090	0.61	C	970	0.54	C
		NB Off	1	500	692	0.46	B	551	0.37	B
		SB Off	2	500	1,070	0.48	B	1,029	0.46	B
	Red Hill Avenue	SB On	2	1,000	890	0.59	C	1,000	0.67	C
		NB On	2	1,000	827	0.55	C	756	0.5	B
		NB Off	1	500	830	0.55	C	990	0.66	C
		SB Off	1	500	509	0.34	B	493	0.33	B
	Newport Boulevard	SB Off	1	500	771	0.51	C	901	0.60	C
		NB On	2	1,000	930	0.62	C	870	0.58	C
I-405	Culver Drive	SB On Direct	1	1,000	520	0.35	B	1,175	0.78	D
		SB On Loop	1	1,000	430	0.48	B	385	0.43	B
		SB Off	2	500	1,098	0.37	B	1,508	0.50	B
		NB On Loop	1	1,000	740	0.49	B	290	0.19	A
		NB On Direct	1	1,000	1,250	0.83	D	430	0.29	A
		NB Off	2	500	1,092	0.49	B	1,406	0.62	C
	Jamboree Road	SB On Direct	2	1,000	664	0.37	B	1,425	0.79	D
		SB On Loop	1	1,000	306	0.20	A	652	0.43	B
		SB Off	2	500	2,691	1.20	F	1,880	0.84	D
		NB On Loop	1	1,000	621	0.41	B	630	0.42	B
		NB On Direct	2	1,000	1,392	0.77	D	970	0.54	C
		NB Off	2	500	2,521	1.12	F	1,690	0.75	D
	MacArthur Boulevard	SB Direct On	2	1,000	580	0.32	B	1,300	0.72	D
		SB Off	2	500	2,436	1.08	E	1,093	0.49	B
		NB On	1	1,000	500	0.33	B	1,200	0.80	D
		NB Off	1	500	2,495	1.66	F	873	0.58	C
	Bristol Street	SB Loop On	1	1,000	1,062	0.71	C	1,077	0.72	D
		SB Off	2	500	993	0.44	B	951	0.42	B
		NB On Loop	1	1,000	160	0.18	A	230	0.26	A
		NB On Direct	1	1,000	682	0.45	B	1,434	0.96	E
		NB Off	1	500	824	0.55	C	2,045	1.36	F
SR-55	Victoria Street	SB Direct On	1	1,000	504	0.56	C	644	0.72	D
		SB Off	2	500	1,245	0.55	C	2,089	0.93	E
		NB Direct On	1	1,000	1,225	0.82	D	1,124	0.75	D
		NB Off	1	500	672	0.45	B	786	0.52	C
	Fair Drive	SB Direct On	1	1,000	265	0.29	A	336	0.37	B
		SB Off	2	500	1,157	0.51	C	1,603	0.71	C

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		BUILDOUT BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
SR-55		NB Direct On	1	1,000	1,678	1.12	F	1,958	1.31	F
		NB Off	1	500	172	0.11	A	148	0.10	A
	Baker Street	SB On	1	1,000	555	0.37	B	1,140	0.76	D
		SB Off	1	500	939	0.63	C	1,330	0.89	D
		NB Off	1	500	1,203	0.80	D	1,001	0.67	C
	Paularino Avenue	SB Off	1	500	1,710	1.14	F	1,490	0.99	E
		NB On	1	1,000	1,540	1.71	F	1,209	1.34	F
	MacArthur Boulevard	SB On Direct	1	1,000	1,020	0.68	C	835	0.56	C
		SB On Loop	1	1,000	170	0.19	A	704	0.78	D
		SB Off	2	500	1,954	0.87	D	1,007	0.45	B
		NB On Loop	1	1,000	780	0.52	C	620	0.41	B
		NB On Direct	1	1,000	230	0.26	A	960	1.07	E
		NB Off	2	500	1,601	0.71	C	1,120	0.50	B
	Dyer Road	SB On	1	1,000	931	0.62	C	1,210	0.81	D
		SB Off Loop	1	500	825	0.55	C	570	0.38	B
		SB Off to Grand	1	500	810	0.54	C	500	0.33	B
		NB On Direct	1	1,000	400	0.27	A	1,080	0.72	D
		NB On Loop	1	1,000	640	0.71	C	680	0.76	D
		NB Off	1	500	1,386	0.92	E	463	0.31	B
	Edinger Avenue	SB On	1	1,000	1,007	0.67	C	922	0.61	C
		SB Off	1	500	1,120	0.75	D	580	0.39	B
		NB On	1	1,000	961	0.64	C	1,461	0.97	E
		NB Off	1	500	804	0.54	C	598	0.40	B
	McFadden Avenue	SB On	1	1,000	604	0.40	B	568	0.38	B
		SB Off	2	500	609	0.27	A	980	0.44	B
		NB On	1	1,000	1,230	0.82	D	1,552	1.03	E
		NB Off	1	500	522	0.35	B	760	0.51	C
SR-73	Bison Avenue	SB On	1	1,000	150	0.10	A	360	0.24	A
		SB Off	1	500	994	0.66	C	472	0.31	B
		NB On	1	1,000	454	0.30	A	1,197	0.80	D
	MacArthur Boulevard	SB On	1	1,000	197	0.13	A	1,179	0.79	D
		SB Off	1	500	1,381	0.92	E	1,385	0.92	E
		NB On s/o University Dr	1	1,000	720	0.48	B	1,171	0.78	D
		NB On n/o University Dr	1	1,000	986	0.66	C	1,831	1.22	F
	University Drive	SB Off	1	500	1,169	0.78	D	800	0.53	C
	Jamboree Road	SB On	1	1,000	478	0.32	B	918	0.61	C
		SB Off	2	500	1,367	0.61	C	790	0.35	B
		NB On	1	1,000	1,077	0.72	D	2,012	1.34	F
	Birch Street	NB Off	1	500	1,855	1.24	F	1,558	1.04	E
	Campus Drive	SB Off	2	500	2,245	1.00	E	1,477	0.66	C
		NB On	1	1,000	869	0.58	C	3,103	2.07	F
	SR-73 at Bear	SB On	1	1,000	830	0.55	C	733	0.49	B
		SB Off	1	500	400	0.27	A	390	0.26	A
		NB Off	1	500	714	0.48	B	1,583	1.06	E
		NB On	1	1,000	250	0.17	A	471	0.31	B
SR-261	Jamboree Road	SB On	2	1,000	1,266	0.42	B	1,247	0.42	B
		NB Off	2	250	513	0.23	A	1,337	0.59	C
	Walnut Avenue	NB On	1	1,000	351	0.23	A	1,118	0.75	D
		SB Off	1	500	991	0.66	C	519	0.35	B

F Denotes ramps operating at a deficient LOS

Figure 5.5 – Buildout Cumulative Baseline Freeway AM Peak Hour Deficiencies

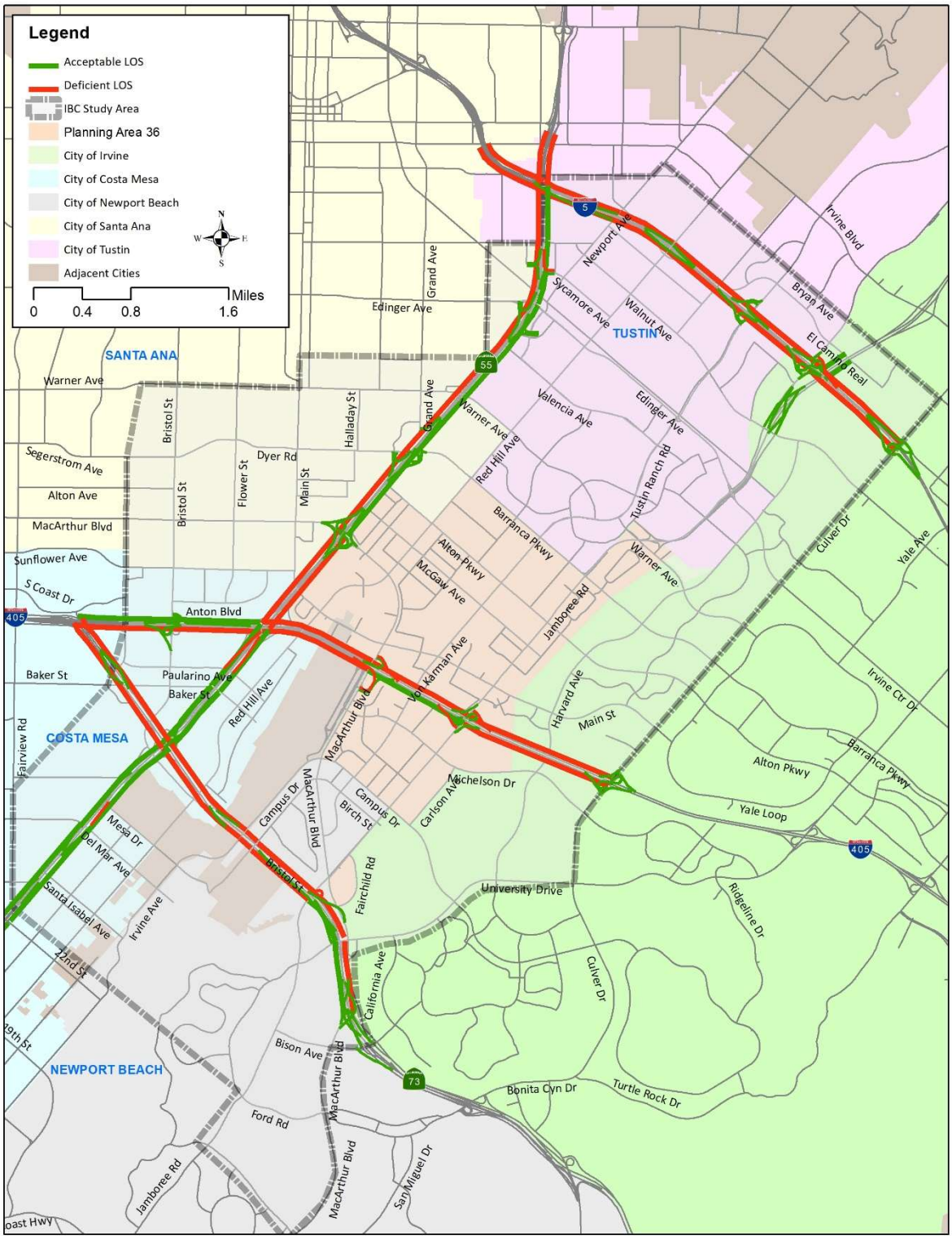
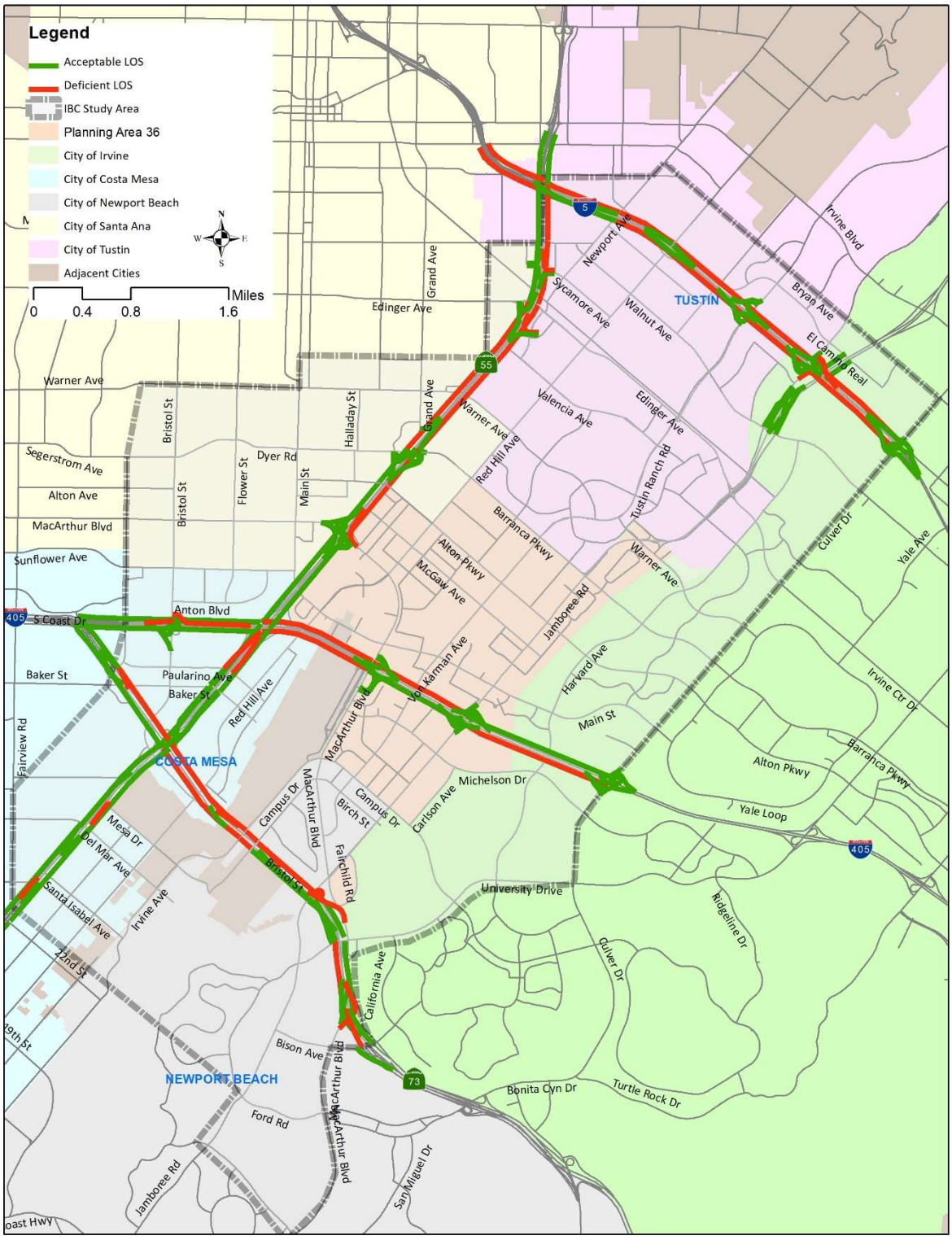


Figure 5.6 – Buildout Cumulative Baseline Freeway PM Peak Hour Deficiencies



5.8 Buildout Cumulative Baseline With Update

The Buildout Cumulative With Update impact analysis evaluates the buildout of the proposed IBC Vision Plan update within the study area. The circulation network for the Buildout Cumulative With Update analysis is identical to that of the Buildout Cumulative Baseline condition. The analysis assesses circulation system impacts associated with the full implementation of the proposed IBC Vision Plan land uses.

5.9 Buildout Cumulative Baseline With Update Land Use and Trip Generation

The land use setting for Buildout Cumulative With Update incorporates the land use changes that will result from the full buildout of the proposed IBC Vision Plan. **Table 5.8** provides a comparison of land use assumptions between the Buildout Cumulative Baseline and With Update conditions as well as comparison to Interim and Existing conditions within the IBC area. **Table 5.9** provides the ITAM trip generation for the Buildout Cumulative With Update scenario along with a comparison to Interim and Existing conditions. Detailed trip generation quantities and land use quantities by TAZs within the IBC area are included in **Appendix C** and **Appendix D**, respectively. Also included in **Appendix D** is a land use summary by individual project. Figure 5.7 through 4.13 present land use comparisons for Buildout Cumulative Baseline and With Update scenarios.

Table 5.8 – Buildout Cumulative With Update Land Use Summary

SCENARIO	MULTI-FAMILY RESIDENTIAL (DU)	RETAIL MIX (TSF)	HOTEL (ROOM)	OFFICE MIX (TSF)	INDUSTRIAL MIX (TSF)	MINI-WAREHOUSE (TSF)	EXTENDED STAY HOTEL (ROOM)
Existing Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Existing With Update	16,820	1,785	3,078	33,795	12,554	1,228	1,422
Interim Cumulative Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Interim Cumulative With Update	16,820	1,562	2,521	27,970	13,460	1,412	1,422
Buildout Cumulative Baseline	9,427	1,314	2,511	27,101	13,040	1,430	1,156
Buildout Cumulative Baseline With Update	16,820	1,785	3,078	33,795	12,554	1,228	1,422
Percent Growth (Buildout With Update vs. Buildout Baseline)	**78%**	**36%**	**23%**	**25%**	**-4%**	**-14%**	**23%**
Percent Growth (Buildout With Update vs. Interim With Update)	**0%**	**14%**	**22%**	**21%**	**-7%**	**-13%**	**0%**
Percent Growth (Buildout With Update vs. Existing With Update)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Source: City of Irvine

Table 5.9 – Buildout Cumulative With Update Trip Generation

SCENARIO	AM-OUT	AM-IN	PM-OUT	PM-IN	ADT
Existing Baseline	13,460	29,926	28,517	19,373	551,618
Existing With Update	18,561	36,384	35,386	25,314	709,486
Interim Cumulative Baseline	13,431	29,878	28,533	19,342	551,618
Interim Cumulative With Update	17,775	32,004	31,503	23,278	632,470
Buildout Cumulative Baseline	13,515	29,964	28,695	19,544	551,618
Buildout Cumulative With Update	19,083	36,511	35,768	25,845	709,492
Percent Growth (Buildout With Update vs. Buildout Baseline)	41.2%	21.8%	24.6%	32.2%	28.6%
Percent Growth (Buildout With Update vs. Existing Baseline)	7.4%	14.1%	13.5%	11.0%	12.2%
Percent Growth (Interim With Update vs. Existing Baseline)	2.8%	0.3%	1.1%	2.1%	0.0%

Source: ITAM

Figure 5.7 – Land Use Comparison between Buildout IBC Vision Plan Update and Buildout Baseline (Residential Units)

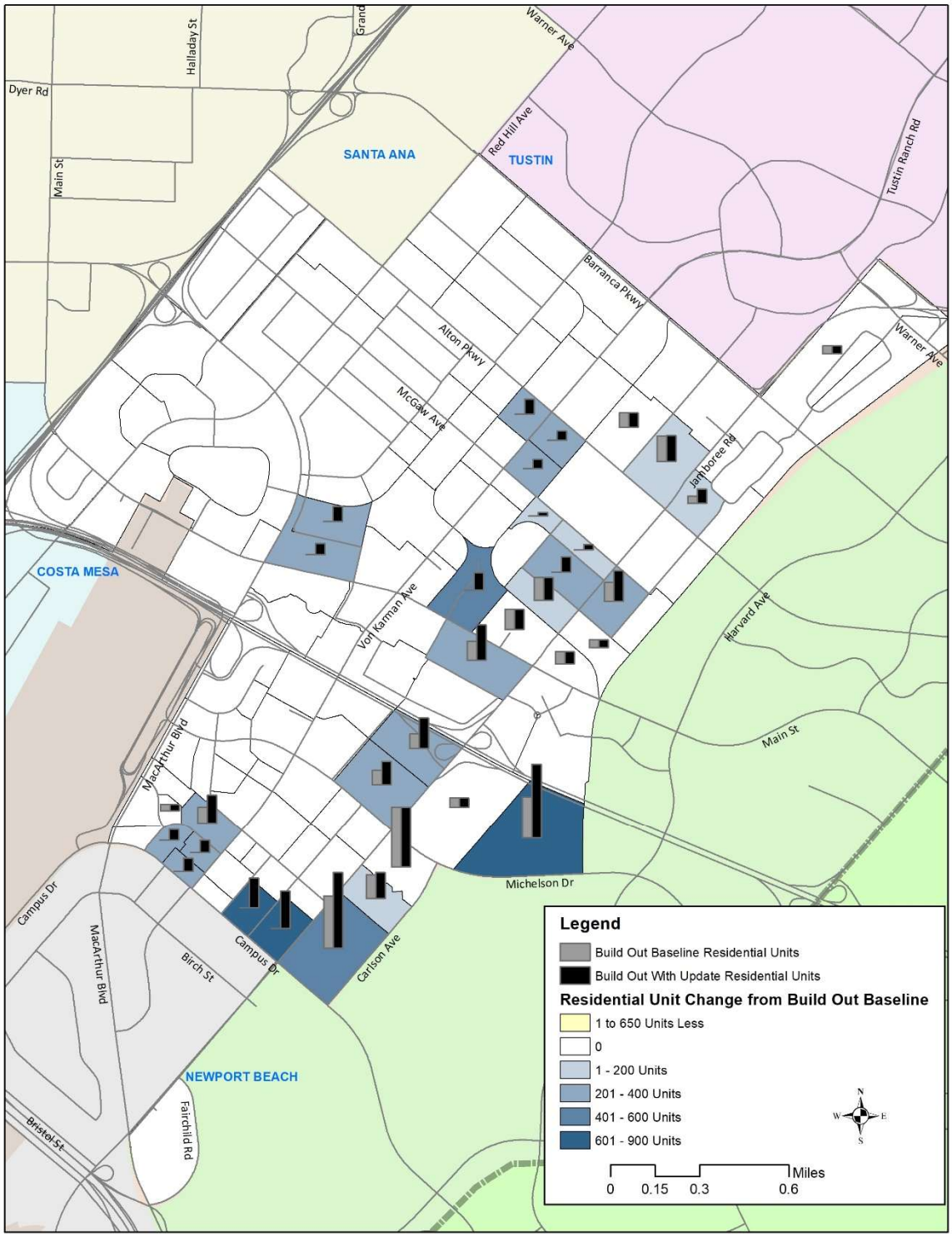


Figure 5.8 – Land Use Comparison between Buildout IBC Vision Plan Update and Buildout (Office Mix)

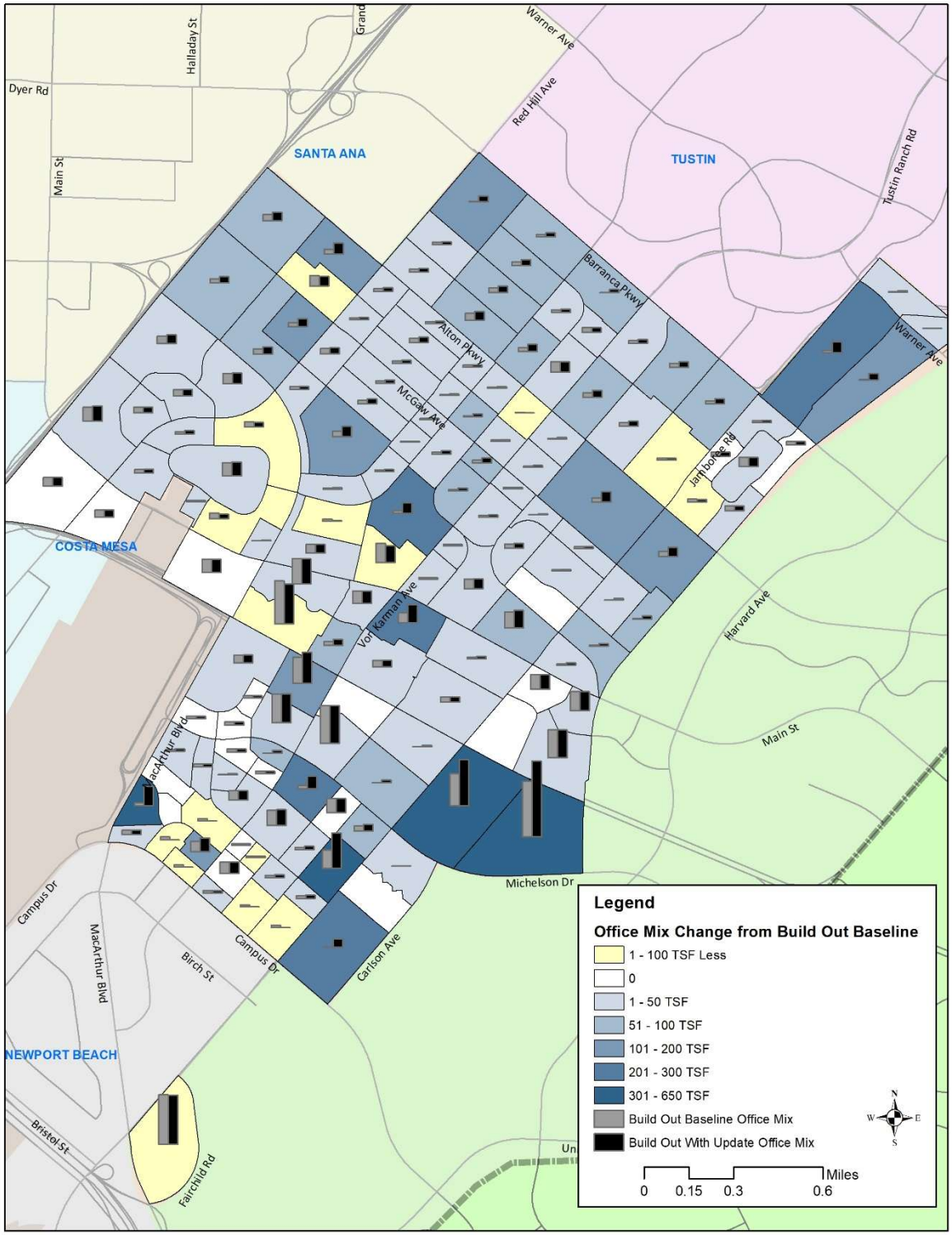


Figure 5.9 – Land Use Comparison between Buildout IBC Vision Plan Update and Buildout (Industrial Mix)

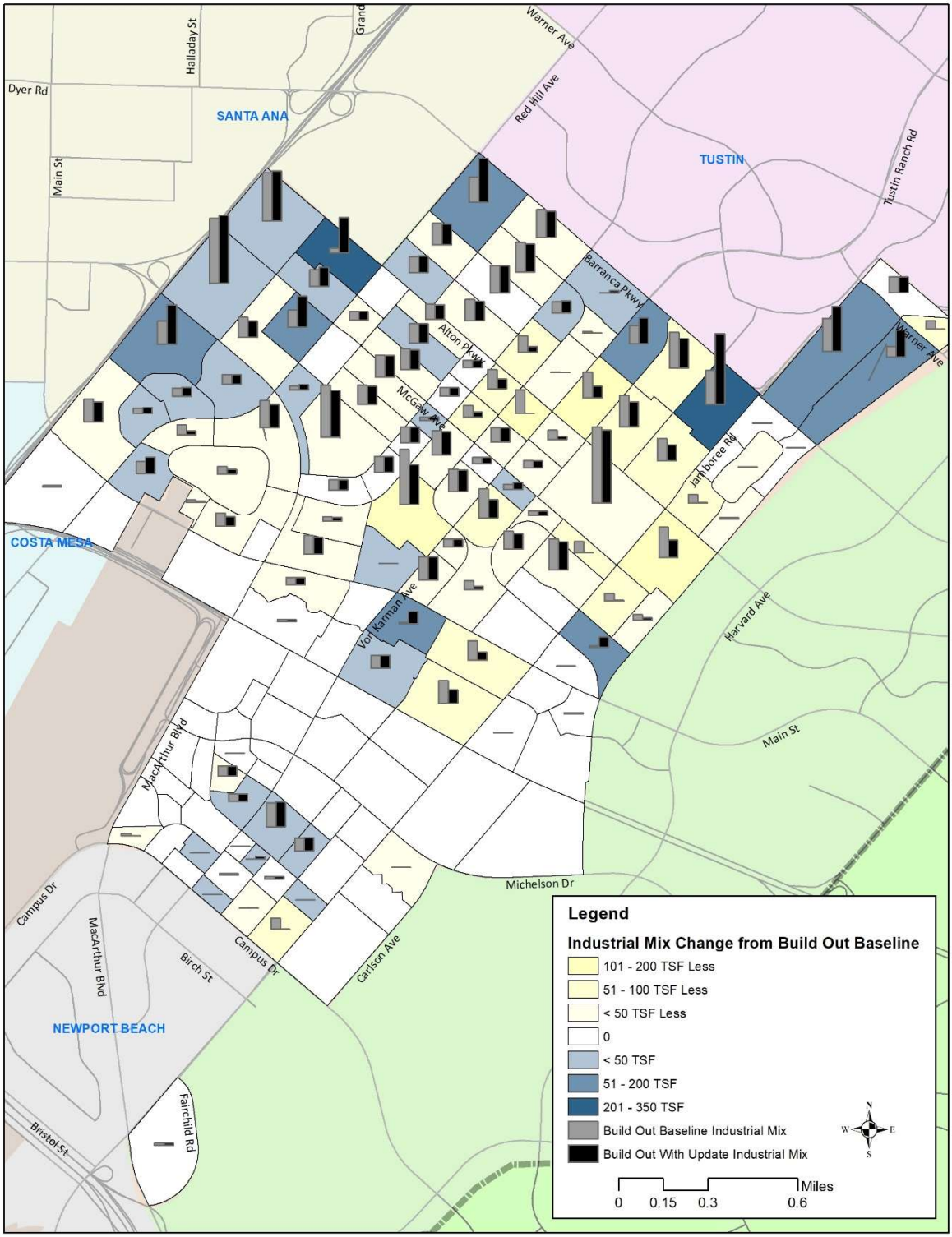


Figure 5.10 – Land Use Comparison between Buildout IBC Vision Plan Update and Buildout Baseline (Commercial)

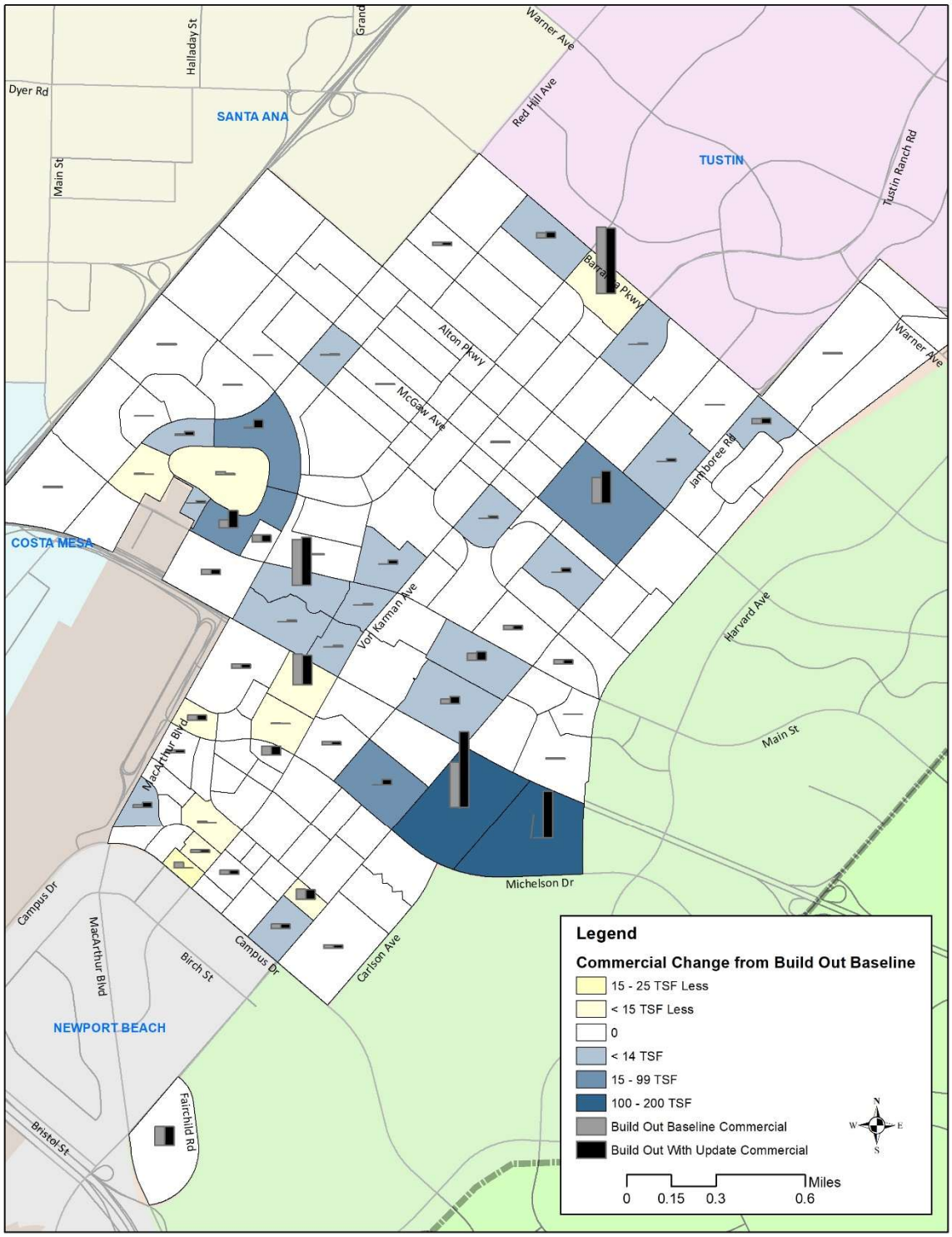


Figure 5.11 – Land Use Comparison between Buildout IBC Vision Plan Update and Buildout Baseline (Hotel)

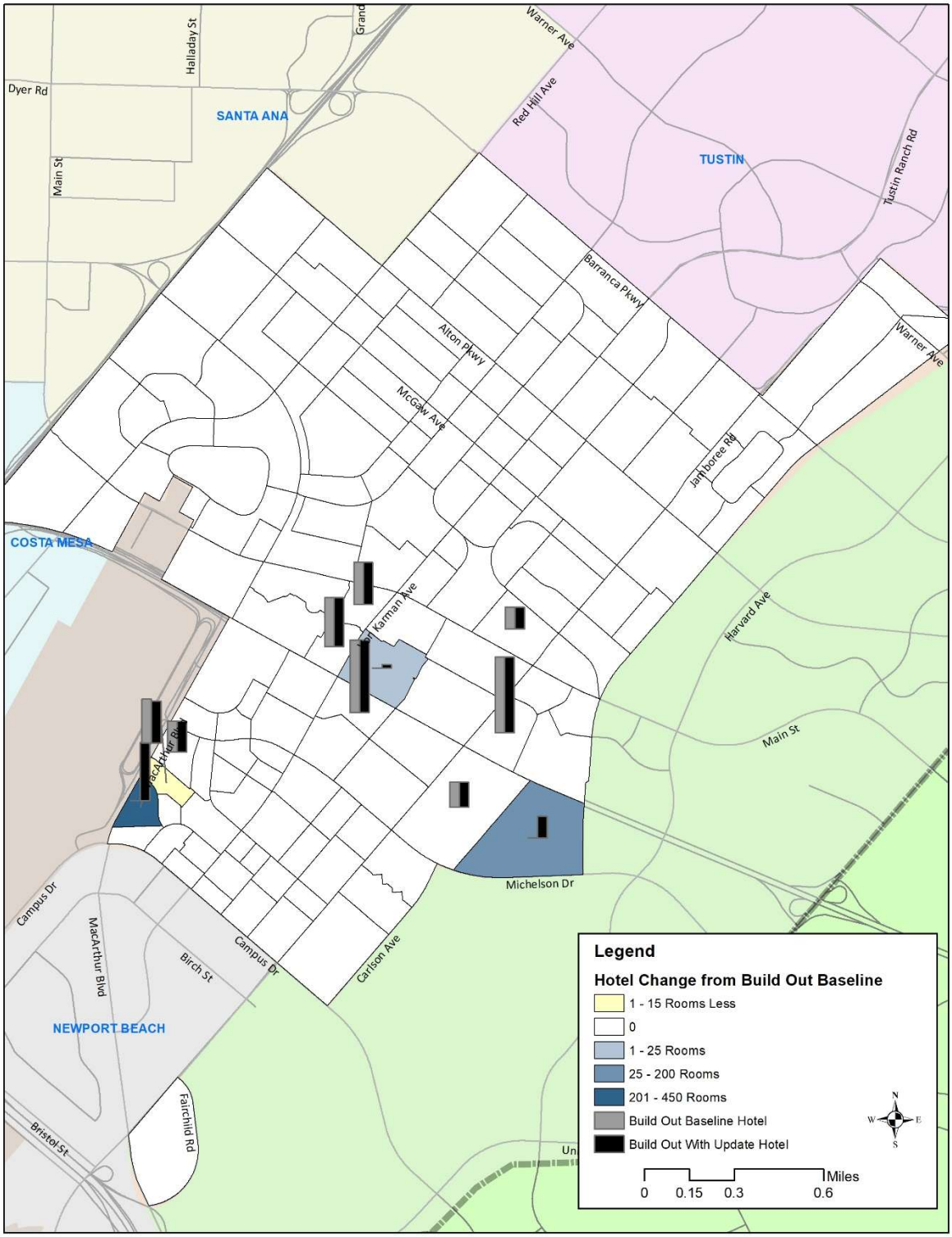


Figure 5.12 – Land Use Comparison between Buildout IBC Vision Plan Update and Buildout Baseline (Mini-Warehouse)

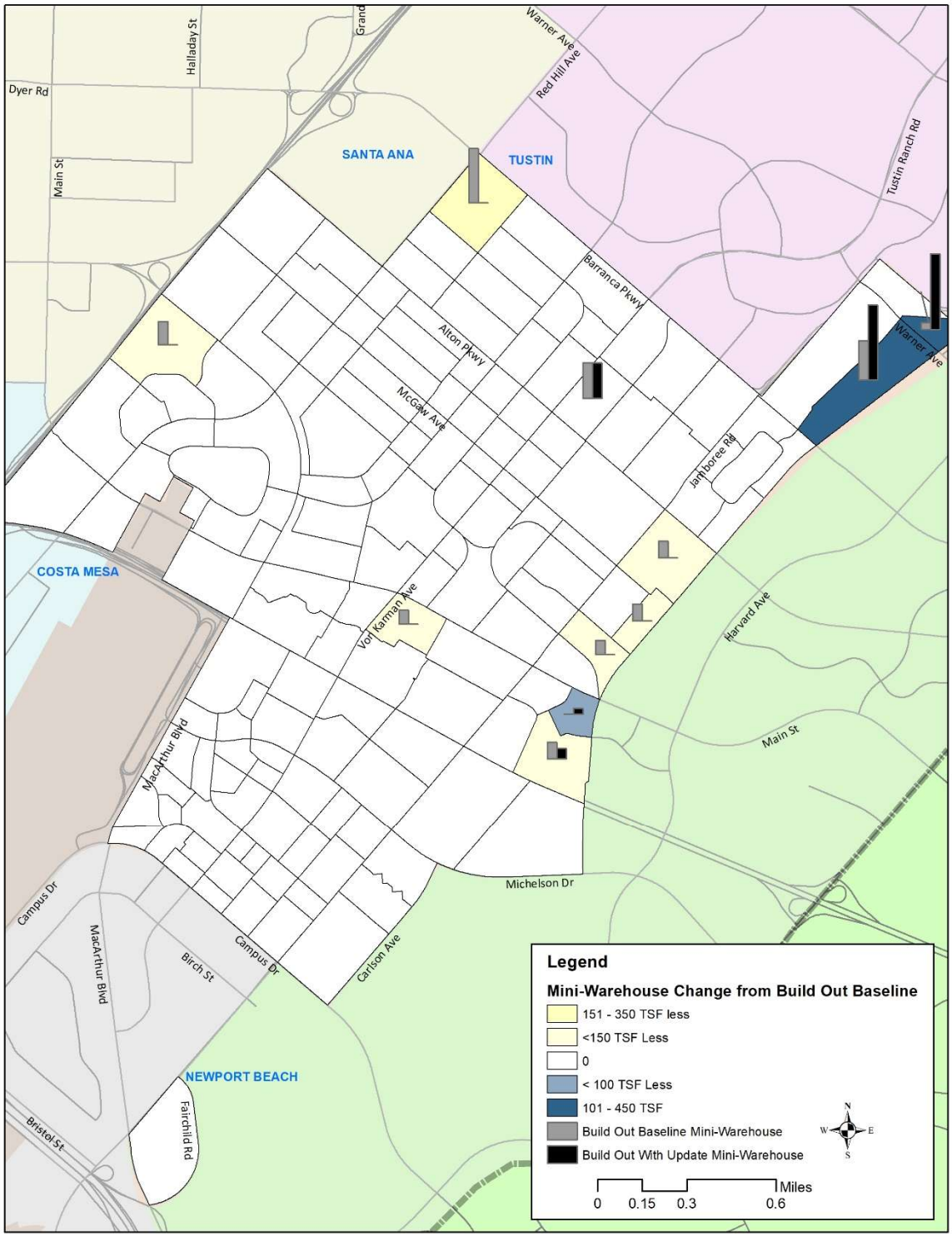
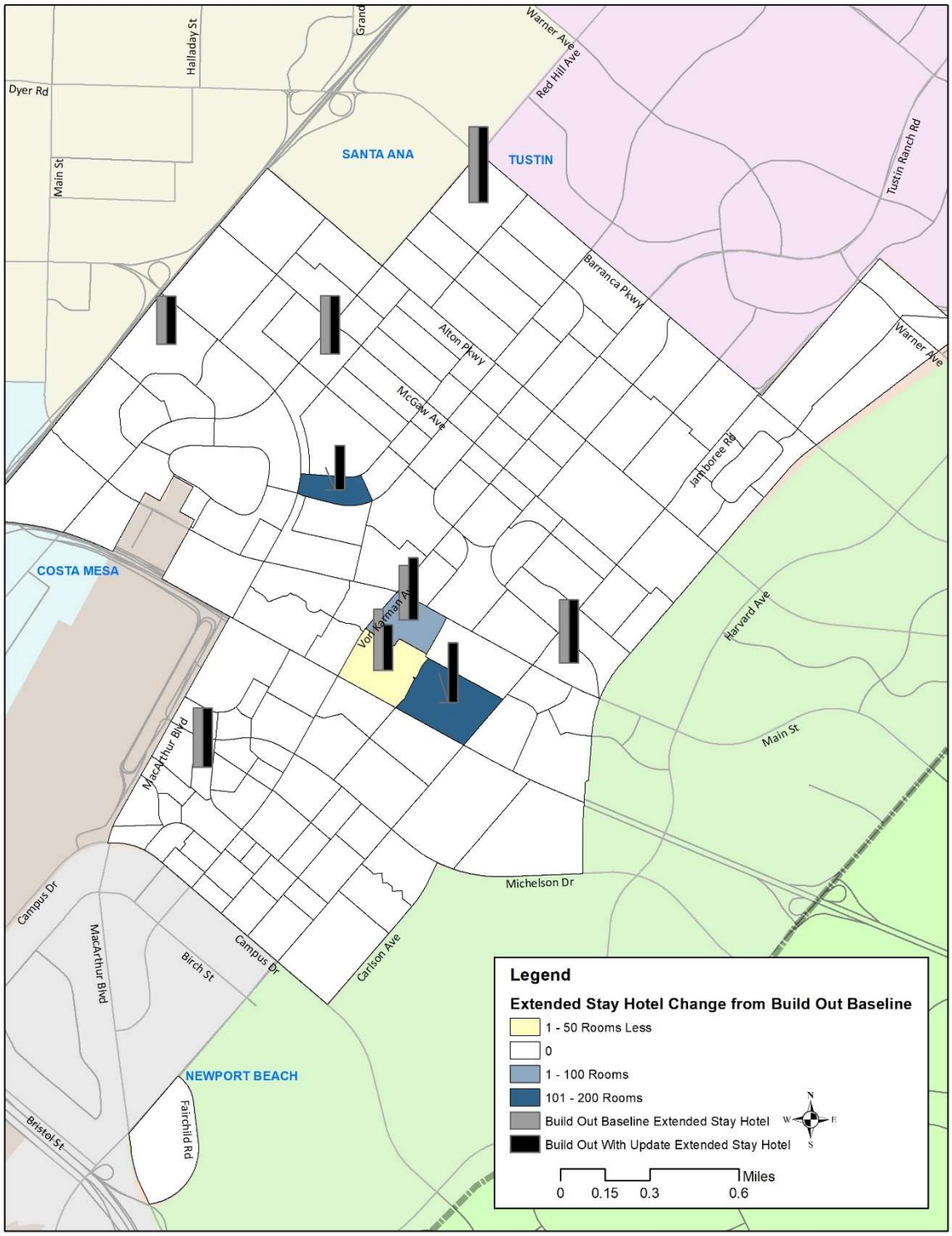


Figure 5.13 – Land Use Comparison between Buildout IBC Vision Plan Update and Buildout Baseline (Extended-Stay Hotel)



5.10 Buildout Cumulative Baseline With Update Daily Arterial Segment Analysis

The Buildout Cumulative With Update traffic patterns generally remain consistent with existing conditions and the Buildout Cumulative Baseline scenario traffic patterns. For some segments, there is a net increase in ADT and for some a decrease as a result of the update. **Table 5.10** indicates the 27 arterial segments that are forecast to be deficient under the Buildout Cumulative With Update daily conditions, 20 of which are located within the City of Irvine. As noted above, LOS E indicates a deficient segment for all arterial segments outside Planning Area (PA) 36 within the City of Irvine. PA 36 segments are considered deficient at LOS F. When compared to the Buildout Cumulative Baseline, there are eight additional deficiencies (shown in bold) in the City of Irvine, City of Newport Beach, and City of Tustin. Deficient segments under daily Buildout Cumulative With Update conditions are:

- Campus Drive:
  - **879—Campus Drive from Carlson Avenue to University Drive (Irvine)**
- Culver Drive:
  - 726—Culver Drive from I-5 NB Ramps to I-5 SB Ramps (Irvine)
  - 213—Culver Drive from I-5 SB Ramps to Scottsdale Drive (Irvine)
  - 214—Culver Drive from Scottsdale Drive to Walnut Avenue (Irvine)
  - 215—Culver Drive from Walnut Avenue to Deerfield Avenue(Irvine)
  - **217—Culver Drive from Irvine Center Drive to Warner Avenue (Irvine)**
  - 219—Culver Drive from Barranca Parkway to Alton Parkway (Irvine)
  - 220—Culver Drive from Alton Parkway to Main Street (Irvine)
  - 221—Culver Drive from Main Street to San Leandro (Irvine)
  - 222—Culver Drive from San Leandro to I-405 NB On-Ramp (Irvine)
  - 224—Culver Drive from I-405 SB On-Ramp to Michelson Drive (Irvine)
- Harvard Avenue:
  - 183—Harvard Avenue from Michelson Drive to University Drive (Irvine)
- Jamboree Road:
  - 133—Jamboree Road from Michelle Drive to Walnut Avenue (Irvine)
  - **144—Jamboree Road from Kelvin Avenue to Main Street (Irvine)**
  - **148—Jamboree Road from I-405 SB Ramps to Michelson Drive (Irvine)**
  - **149—Jamboree Road from Michelson Drive to Dupont Drive (Irvine)**
- Von Karman Avenue:
  - 98—Von Karman Avenue from Barranca Parkway to Alton Parkway (Irvine)
  - 100—Von Karman Avenue from Alton Parkway to McGaw Avenue (Irvine)
  - **102—Von Karman Avenue from McGaw Avenue to Anchor(Irvine)**
  - **103—Von Karman Avenue from Anchor to Main Street (Irvine)**
- Bristol Street:
  - 920—Bristol Street SB Red Hill Avenue to Campus Drive (Newport Beach)*
  - 1303—Bristol Street SB from Campus Drive to Birch Street (Newport Beach)*
  - 1305—Bristol Street NB from Birch Street to Campus Drive (Newport Beach)*
- MacArthur Boulevard:
  - 953—MacArthur Boulevard from University Drive to Bison Avenue (Newport Beach)*
  - 1301—MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*

- Dyer Road:
  - 1326—Dyer Road from SR-55 SB Ramp to SR-55 NB Ramp (Santa Ana)*
- Walnut Avenue:
  - 587—Walnut Avenue East of Newport Avenue (Tustin)*

*Deficient locations under daily conditions—no peak hour link analysis required

Figure 5.14 and **Figure 5.15** display the arterial ADT and deficient segments for the Buildout Cumulative With Update scenario. Deficient segments in the City of Irvine are evaluated under peak hour conditions in the following section. For Costa Mesa, Newport Beach, and Tustin, arterial segments, deficiencies are addressed through intersection improvements. Impacts and improvements are discussed in **Chapter 6**.

Table 5.10 – Buildout Cumulative With Update Daily Arterial LOS

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	BUILDOUT ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE			BUILDOUT CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	4D	21,500	0.57	A	21,700	0.57	A
2721	Baker St	Bear St to Bristol St		CM	6D	29,200	0.52	A	29,500	0.53	A
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	6D	33,200	0.59	A	33,500	0.60	A
1294	Baker St	SR 55 SB to SR 55 NB		CM	6D	25,900	0.46	A	26,000	0.46	A
1468	Baker St	SR 55 NB to Red Hill Ave		CM	6D	14,400	0.26	A	14,600	0.26	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	6D	4,900	0.09	A	5,000	0.09	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	31,100	0.56	A	30,900	0.55	A
2733	Bristol St	Segerstrom Ave to West Alton Ave		CM	6D	40,400	0.72	C	41,000	0.73	C
2737	Bristol St	West Alton Ave to MacArthur Blvd		CM	6D	45,100	0.81	D	45,600	0.81	D
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	44,500	0.79	C	44,800	0.80	C
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	46,400	0.83	D	46,800	0.84	D
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	9D+1 AUX	65,600	0.78	C	66,100	0.78	C
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	64,700	0.86	D	65,100	0.87	D
2745	Bristol St	I-405 SB Ramps to Paularino Ave		CM	6D	45,000	0.80	C	45,000	0.80	C
2732	Bristol St	Paularino Ave to Baker St		CM	6D	36,300	0.65	B	36,500	0.65	B
2730	Bristol St	Baker St to SR 55		CM	6D	26,400	0.47	A	26,700	0.48	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	20,000	0.36	A	20,400	0.36	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	23,600	0.62	B	24,100	0.63	B
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	4D	12,100	0.32	A	12,500	0.33	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	13,500	0.36	A	13,800	0.36	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	10,500	0.28	A	10,700	0.28	A
2760	Flower St	Sunflower Ave to Anton Blvd		CM	4D	6,400	0.17	A	6,400	0.17	A
2756	Main St	Sunflower Ave to SR-55		CM	6D	24,200	0.43	A	26,500	0.47	A
2785	Mesa Drive	Newport Blvd SB to Newport Blvd NB		CM	2U	6,100	0.49	A	6,100	0.49	A
2783	Mesa Drive	Newport Blvd NB to Santa Ana Ave		CM	2U	6,100	0.49	A	6,100	0.49	A
2779	Mesa Drive	Irvine Ave to Birch St		CM	4D	14,100	0.37	A	14,300	0.38	A
2742	Paularino Ave	Bear St to Bristol St		CM	4D	9,200	0.24	A	9,300	0.24	A
2746	Paularino Ave	Bristol St to SR-55 SB		CM	4D	19,700	0.52	A	19,700	0.52	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	17,200	0.45	A	17,300	0.46	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	12,900	0.34	A	13,100	0.34	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	5,700	0.15	A	5,700	0.15	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	4D	20,600	0.54	A	21,000	0.55	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	BUILDOUT ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE			BUILDOUT CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
1340	Red Hill Ave	Paularino Ave to Baker St		CM	4D	18,300	0.48	A	19,300	0.51	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	17,000	0.45	A	17,300	0.46	A
41	Santa Ana Ave	Mesa Drive to Bristol St		CM	4D	9,200	0.24	A	9,200	0.24	A
2769	University Drive	Santa Ana Ave to Irvine Ave		CM	4D	11,700	0.31	A	12,400	0.33	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	26,600	0.83	D	30,000	0.94	E
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	20,600	0.64	B	22,300	0.70	B
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	21,200	0.66	B	22,300	0.70	B
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	24,600	0.46	A	25,800	0.48	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	23,400	0.43	A	24,800	0.46	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	17,900	0.33	A	19,000	0.35	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	19,400	0.36	A	20,500	0.38	A
783	Alton Pkwy	San Marino to Culver Drive		Irv	6D	26,600	0.49	A	27,800	0.51	A
735	Barranca Pkwy (Dyer Rd)	Pullman to Red Hill Ave		Irv	8D	40,900	0.57	A	43,800	0.61	B
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	7D	46,000	0.73	C	48,700	0.77	C
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	43,700	0.69	B	46,600	0.74	C
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	47,000	0.75	C	50,000	0.79	C
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	32,800	0.61	B	35,400	0.66	B
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	26,800	0.50	A	28,400	0.53	A
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	26,000	0.48	A	27,200	0.50	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	29,800	0.55	A	31,000	0.57	A
748	Barranca Pkwy	Santa Rosa to Culver Drive		Irv	6D	29,600	0.55	A	30,800	0.57	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	23,100	0.72	C	23,200	0.72	C
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	23,000	0.72	C	23,100	0.72	C
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	22,200	0.69	B	22,300	0.70	B
540	Bryan Ave	Rubicon to Culver		Irv	4D	25,000	0.78	C	25,100	0.78	C
869	Campus Drive	MacArthur Blvd to Martin	a	Irv	6U	14,300	0.26	A	16,400	0.30	A
870	Campus Drive	Martin to Von Karman Ave	a	Irv	4D	14,700	0.46	A	16,300	0.51	A
871	Campus Drive	Von Karman Ave to Teller Ave	a	Irv	4D	13,900	0.43	A	15,500	0.48	A
872	Campus Drive	Teller Ave to Jamboree Rd	a	Irv	4D	14,600	0.46	A	15,700	0.49	A
877	Campus Drive	Jamboree Rd to Carlson Ave	a	Irv	4D	24,900	0.78	C	26,300	0.82	D
879	Campus Drive	Carlson Ave to University		Irv	4D	28,500	0.89	D	29,400	0.92	E
166	Carlson Ave	Michelson Drive to Campus Drive	a	Irv	4D	8,700	0.27	A	10,000	0.31	A
726	Culver Drive	I-5 NB Ramps to I-5 SB Ramps		Irv	7D	60,100	0.95	E	60,600	0.96	E
213	Culver Drive	I-5 SB Ramps to Scottsdale Drive		Irv	6D	58,500	1.08	F	59,300	1.10	F
214	Culver Drive	Scottsdale Drive to Walnut Ave		Irv	6D	51,700	0.96	E	52,700	0.98	E
215	Culver Drive	Walnut Ave to Deerfield Ave		Irv	6D	48,900	0.91	E	49,600	0.92	E
216	Culver Drive	Deerfield Ave to Irvine Center Drive		Irv	Maj6D+ 1AUX	45,600	0.78	C	46,500	0.79	C
217	Culver Drive	Irvine Center Drive to Warner Ave		Irv	6D	48,600	0.90	D	49,600	0.92	E
218	Culver Drive	Warner Ave to Barranca Pkwy		Irv	6D	46,800	0.87	D	47,800	0.89	D
219	Culver Drive	Barranca Pkwy to Alton Pkwy		Irv	6D	54,000	1.00	E	55,400	1.03	F
220	Culver Drive	Alton Pkwy to Main St		Irv	6D	50,900	0.94	E	52,500	0.97	E
221	Culver Drive	Main St to San Leandro		Irv	6D	51,400	0.95	E	52,600	0.97	E
222	Culver Drive	San Leandro to I-405 NB On-Ramp		Irv	6D	53,600	0.99	E	54,800	1.01	F
224	Culver Drive	I-405 SB Ramps to Michelson Drive		Irv	6D	55,800	1.03	F	58,200	1.08	F
225	Culver Drive	Michelson Drive to Sandburg Way		Irv	6D	42,800	0.79	C	43,000	0.80	C
226	Culver Drive	Sandburg Way to University Drive		Irv	6D	38,900	0.72	C	39,200	0.73	C
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	24,200	0.76	C	24,200	0.76	C
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,300	0.20	A	6,500	0.20	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	4U	10,700	0.38	A	10,900	0.39	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	BUILDOUT ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE			BUILDOUT CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	4U	12,600	0.45	A	12,900	0.46	A
171	Harvard Ave	Deerfield Ave to Irvine Center Drive		Irv	4U	12,700	0.45	A	13,000	0.46	A
172	Harvard Ave	Irvine Center Drive to Paseo Westpark		Irv	4D	12,400	0.39	A	13,100	0.41	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	15,400	0.48	A	16,300	0.51	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	17,200	0.54	A	18,000	0.56	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	19,400	0.61	B	20,600	0.64	B
2829	Harvard Ave	San Juan to San Leon		Irv	4D	17,900	0.56	A	19,100	0.60	A
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	18,900	0.59	A	20,100	0.63	B
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	21,200	0.66	B	22,200	0.69	B
180	Harvard Ave	San Marino to Main St		Irv	4D	25,800	0.81	D	27,000	0.84	D
181	Harvard Ave	Main St to Coronado		Irv	4D	25,600	0.80	C	27,000	0.84	D
182	Harvard Ave	Coronado to Michelson Drive		Irv	4D	25,500	0.80	C	27,200	0.85	D
183	Harvard Ave	Michelson Drive to University Drive		Irv	2U	20,700	1.59	F	21,500	1.65	F
675	Irvine Center Drive	Harvard Ave to Hearthstone	b	Irv	6D	30,300	0.56	A	30,700	0.57	A
676	Irvine Center Drive	Hearthstone to Culver Drive	b	Irv	6D	34,200	0.63	B	34,600	0.64	B
129	Jamboree Rd	Bryan Ave to El Camino	b	Irv	8D	48,500	0.67	B	48,500	0.67	B
130	Jamboree Rd	El Camino Real to I-5 NB Ramps	b	Irv	Maj7D+ 1AUX	66,300	0.98	E	66,300	0.98	E
958	Jamboree Rd	I-5 NB Ramps to I-5 SB Ramps	b	Irv	8D	62,500	0.87	D	62,600	0.87	D
131	Jamboree Rd	I-5 SB Ramps to Michelle Drive	b	Irv	8D	56,500	0.78	C	57,900	0.80	C
133	Jamboree Rd	Michelle Drive to Walnut Ave	b	Irv	5D	71,000	1.65	F	72,600	1.69	F
135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rd)	b	Irv	Exp8	81,700	0.46	A	84,900	0.47	A
136	Jamboree Rd	Edinger Ave to Warner Ave	b	Irv	Exp8	82,000	0.46	A	85,800	0.48	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	63,400	0.35	A	66,700	0.37	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	54,200	0.75	C	58,500	0.81	D
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	59,200	0.82	D	63,600	0.88	D
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	62,200	0.86	D	66,800	0.93	E
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	57,600	0.80	C	62,000	0.86	D
144	Jamboree Rd	Kelvin Ave to Main St	a,b	Irv	8D	67,500	0.94	E	74,700	1.04	F
145	Jamboree Rd	Main St to I-405 NB Ramps	b	Irv	Maj8D+ 2AUX	72,600	0.90	D	80,400	0.99	E
148	Jamboree Rd	I-405 SB Ramps to Michelson Drive	a,b	Irv	Maj8D+ 2AUX	80,500	0.99	E	91,900	1.13	F
149	Jamboree Rd	Michelson Drive to Dupont Drive	a,b	Irv	7D	59,800	0.95	E	65,200	1.03	F
150	Jamboree Rd	Dupont Drive to Campus Drive	a,b	Irv	7D	51,000	0.81	D	53,100	0.84	D
151	Jamboree Rd	Campus Drive to Birch St	b	Irv	6D	47,300	0.88	D	50,900	0.94	E
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	45,100	0.72	C	49,200	0.78	C
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	7D	39,700	0.63	B	43,100	0.68	B
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	39,900	0.74	C	43,200	0.80	C
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	7D	36,100	0.57	A	36,700	0.58	A
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	25,800	0.41	A	28,400	0.45	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	25,500	0.40	A	28,100	0.45	A
60	MacArthur Blvd	Main St to I-405 NB Ramps	a	Irv	Maj8D+ 2AUX	55,000	0.68	B	60,800	0.75	C
62	MacArthur Blvd	I-405 SB Ramps to Michelson Dr	a	Irv	Maj8D+ 1AUX	61,600	0.81	D	68,600	0.90	D
63	MacArthur Blvd	Michelson Drive to Douglass	a	Irv	8D	44,100	0.61	B	49,200	0.68	B
64	MacArthur Blvd	Douglas to Campus Drive		Irv	8D	45,100	0.63	B	47,200	0.66	B
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	51,600	0.96	E	53,500	0.99	E
917	MacArthur Blvd	Fairchild Rd to University Drive	b	Irv	6D	51,300	0.95	E	53,300	0.99	E
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	25,600	0.47	A	27,700	0.51	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	25,400	0.47	A	27,900	0.52	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	23,800	0.44	A	26,500	0.49	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	BUILDOUT ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE			BUILDOUT CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	31,600	0.47	A	35,200	0.52	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	32,600	0.56	A	38,000	0.65	B
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	24,100	0.45	A	28,200	0.52	A
823	Main St	Siglo to Jamboree Rd	a	Irv	6D	23,300	0.43	A	26,700	0.49	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+ 1AUX	23,000	0.39	A	24,200	0.41	A
825	Main St	Veneto to Harvard Ave		Irv	6D	22,900	0.42	A	24,500	0.45	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	12,200	0.38	A	13,100	0.41	A
827	Main St	Paseo Westpark to Culver Drive		Irv	4D	12,200	0.38	A	13,200	0.41	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	6,800	0.21	A	7,900	0.25	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	10,500	0.33	A	12,600	0.39	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	8,800	0.28	A	10,600	0.33	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	2,400	0.08	A	3,200	0.10	A
840	Michelson Drive	MacArthur Blvd to Dupont Drive	a	Irv	5D	21,000	0.49	A	24,200	0.56	A
843	Michelson Drive	Bixby to Von Karman Ave	a	Irv	4D	14,000	0.44	A	16,100	0.50	A
844	Michelson Drive	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	23,200	0.64	B	27,100	0.75	C
845	Michelson Drive	Teller Ave to Jamboree Rd	a	Irv	5D	21,000	0.49	A	23,800	0.55	A
846	Michelson Drive	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+ 2AUX	22,800	0.57	A	28,700	0.72	C
847	Michelson Drive	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	21,300	0.59	A	27,800	0.77	C
848	Michelson Drive	Riparian View to Harvard Ave		Irv	4D	20,300	0.63	B	25,400	0.79	C
1346	Michelson Drive	Harvard Ave to Parkside Drive		Irv	4D	17,200	0.54	A	19,400	0.61	B
850	Michelson Drive	Parkside Drive to Culver Drive		Irv	4D	17,000	0.53	A	19,500	0.61	B
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	34,600	0.64	B	37,500	0.69	B
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	34,700	0.64	B	37,600	0.70	B
33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	33,000	0.61	B	36,400	0.67	B
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	40,600	0.75	C	45,700	0.85	D
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	6D	20,600	0.38	A	22,300	0.41	A
38	Red Hill Ave	Skypark to Main St	a	Irv	6D	16,600	0.31	A	17,700	0.33	A
189	University Drive	MacArthur Blvd to California Ave		Irv	6D	35,000	0.65	B	35,300	0.65	B
188	University Drive	California Ave to Mesa Rd		Irv	6D	37,200	0.69	B	37,600	0.70	B
187	University Drive	Mesa Rd to Campus Drive		Irv	6D	37,700	0.70	B	38,100	0.71	C
880	University Drive	Campus Drive to Harvard Ave		Irv	6D	33,500	0.62	B	34,000	0.63	B
881	University Drive	Harvard Ave to San Joaquin Hills Rd		Irv	6D	31,400	0.58	A	31,700	0.59	A
882	University Drive	San Joaquin Hills Rd to Culver Drive		Irv	6D	31,200	0.58	A	31,500	0.58	A
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	39,800	1.24	F	41,700	1.30	F
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	32,700	1.02	F	36,100	1.13	F
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	29,500	0.92	E	32,700	1.02	F
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	29,700	0.93	E	33,100	1.03	F
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	30,200	0.84	D	33,700	0.94	E
107	Von Karman Ave	Quartz to Michelson Drive	a	Irv	Prim4D+ 1AUX	32,100	0.89	D	36,100	1.00	E
108	Von Karman Ave	Michelson Diver to Dupont Drive	a	Irv	4D	23,200	0.72	C	25,900	0.81	D
110	Von Karman Ave	Dupont Drive to Martin	a	Irv	4D	22,500	0.70	B	25,100	0.78	C
111	Von Karman Ave	Martin to Campus Drive	a	Irv	4D	23,000	0.72	C	24,600	0.77	C
594	Walnut Ave	Myford to Jamboree SB Ramp		Irv	Prim4D+ 1AUX	23,600	0.66	B	23,800	0.66	B
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+ 1AUX	21,100	0.36	A	21,300	0.36	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+ 1AUX	21,100	0.45	A	21,300	0.45	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	19,500	0.61	B	19,500	0.61	B
597	Walnut Ave	Mall St to Culver Drive		Irv	4D	19,900	0.62	B	20,100	0.63	B
728	Warner Ave	Construction N to Harvard Ave		Irv	4D	17,500	0.55	A	17,900	0.56	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	13,200	0.41	A	13,500	0.42	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	BUILDOUT ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE			BUILDOUT CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
732	Warner Ave	Santa Ynez to Culver Drive		Irv	4D	13,300	0.42	A	13,700	0.43	A
1223	Birch St	Mesa Drive to Bristol St SB		NB	4D	22,400	0.56	A	22,900	0.57	A
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	26,800	0.67	B	27,100	0.68	B
874	Birch St	East of MacArthur Blvd		NB	4D	14,700	0.37	A	15,900	0.40	A
69	Birch St	West of MacArthur Blvd		NB	4D	22,400	0.56	A	23,300	0.58	A
875	Birch St	East of Von Karman Ave		NB	4D	9,600	0.24	A	10,200	0.26	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	6,100	0.11	A	6,100	0.11	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	13,700	0.34	A	13,600	0.34	A
920	Bristol St SB	Red Hill Ave to Campus Drive		NB	2D	32,300	1.79	F	33,100	1.84	F
1310	Bristol St NB	Campus Drive to Red Hill Ave		NB	3D	16,300	0.56	A	16,900	0.58	A
1303	Bristol St SB	Campus Drive to Birch St		NB	3D	26,500	0.91	E	26,500	0.91	E
1305	Bristol St NB	Birch St to Campus Drive		NB	3D	30,500	1.05	F	31,100	1.07	F
1312	Bristol St SB	West of Jamboree Rd		NB	4D	35,300	0.88	D	35,400	0.88	D
1580	Bristol St NB	West of Jamboree Rd		NB	3D	15,800	0.54	A	17,000	0.59	A
66	Campus Drive	Bristol St NB to MacArthur Blvd		NB	6D	34,600	0.60	A	37,300	0.64	B
1778	Ford Rd	Jamboree Rd to MacArthur Blvd		NB	4D	9,500	0.24	A	9,500	0.24	A
1304	Irvine Ave	Bristol St NB to Bristol St SB		NB	6D	30,000	0.52	A	32,300	0.56	A
67	Irvine Ave	Bristol St SB to Mesa Drive		NB	6D	25,800	0.44	A	25,800	0.44	A
2768	Irvine Ave	S of University Drive		NB	4D	29,500	0.74	C	30,200	0.76	C
156	Jamboree Rd	S of MacArthur Blvd		NB	6D	32,800	0.57	A	36,000	0.62	B
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	6D	42,900	0.74	C	42,900	0.74	C
157	Jamboree Rd	S of Bristol St		NB	8D	44,300	0.65	B	45,100	0.66	B
159	Jamboree Rd	University Drive to Bison Ave		NB	6D	42,000	0.72	C	42,000	0.72	C
1777	Jamboree Rd	Bison Ave to Ford Rd		NB	6D	32,200	0.56	A	32,200	0.56	A
73	MacArthur Blvd	Campus Drive to Birch St		NB	8D	24,800	0.36	A	25,400	0.37	A
75	MacArthur Blvd	S of Birch St		NB	6D	22,000	0.38	A	23,000	0.40	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	21,900	0.38	A	23,100	0.40	A
953	MacArthur Blvd	University Drive to Bison Ave	b	NB	6D	70,400	1.21	F	71,200	1.23	F
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	78,900	1.16	F	79,400	1.17	F
2767	University Drive	East of Irvine Ave		NB	2U	5,100	0.51	A	5,200	0.52	A
1774	University Drive	Jamboree Rd to MacArthur Blvd		NB	5D	14,000	0.29	A	13,900	0.28	A
112	Von Karman Ave	S of Campus Drive		NB	4D	16,600	0.42	A	18,000	0.45	A
113	Von Karman Ave	S of Birch St		NB	4D	14,000	0.35	A	14,900	0.37	A
2795	Dyer Rd	Main St to Halladay St		SA	6D	33,200	0.59	A	34,200	0.61	B
2799	Dyer Rd	Halladay St to SR-55 SB		SA	6D	37,100	0.66	B	37,700	0.67	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	57,200	1.02	F	59,900	1.06	F
734	Dyer Rd	SR-55 NB to Pullman St		SA	8D	58,400	0.78	C	61,900	0.83	D
2764	Grand Ave	Warner Ave to Hotel Terrace Drive		SA	6D	27,700	0.49	A	28,700	0.51	A
2806	Grand Ave	Hotel Terrace Drive to SR-55 NB		SA	6D	27,500	0.49	A	28,500	0.51	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	4D	8,500	0.23	A	9,200	0.25	A
2822	Halladay St	Alton Ave to McGaw Ave(Columbine)		SA	2U	3,400	0.27	A	3,500	0.28	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	40,600	0.72	C	41,800	0.74	C
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	38,000	0.67	B	38,000	0.67	B
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	32,800	0.58	A	34,300	0.61	B
2826	Main St	Alton Ave to McGaw Ave(Columbine)		SA	6D	28,100	0.50	A	28,600	0.51	A
2809	Main St	McGaw(Columbine) to MacArthur Blvd		SA	6D	28,900	0.51	A	29,900	0.53	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	22,400	0.40	A	22,400	0.40	A
2823	McGaw Ave (Alton)	Main St to Halladay St		SA	4U	11,100	0.46	A	11,700	0.49	A
2736	Segerstrom Ave	Bristol St to Flower St		SA	4D	26,900	0.72	C	27,600	0.74	C

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	BUILDOUT ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE			BUILDOUT CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
2771	Segerstrom Ave	Flower St to Main St		SA	4D	28,200	0.75	C	29,000	0.77	C
2763	Warner Ave	Grand Ave to SR-55		SA	6D	24,800	0.44	A	25,300	0.45	A
2761	Sunflower Ave	Bristol St to Flower St		SA/CM	6D	21,800	0.39	A	22,400	0.40	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/CM	6D	19,600	0.35	A	20,900	0.37	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/CM	6D	25,800	0.46	A	27,400	0.49	A
1198	Browning Ave	Walnut Ave to I-5		Tus	2U	6,500	0.52	A	6,500	0.52	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	18,000	0.72	C	18,100	0.72	C
535	Bryan Ave	Red Hill Ave to Browning		Tus	4D	17,900	0.48	A	18,000	0.48	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	18,300	0.49	A	18,500	0.49	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	22,500	0.60	A	22,700	0.61	B
44	Edinger Ave	West of Newport Ave	b	Tus	6D	53,300	0.95	E	53,800	0.96	E
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	35,200	0.63	B	35,500	0.63	B
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	31,800	0.56	A	32,000	0.57	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4D	14,200	0.38	A	14,300	0.38	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	4D	9,300	0.25	A	9,300	0.25	A
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4D	10,500	0.28	A	10,700	0.29	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	19,400	0.52	A	19,500	0.52	A
672	Irvine Center Drive (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	31,200	0.55	A	31,600	0.56	A
674	Irvine Center Drive	Jamboree Rd to Harvard Ave	b	Tus	6D	29,700	0.53	A	30,600	0.54	A
2777	Mitchell Ave	Newport Ave to Red Hill Ave		Tus	2U	7,400	0.59	A	7,400	0.59	A
2775	Mitchell Ave	Red Hill Ave to Browning Ave		Tus	2U	5,800	0.46	A	5,800	0.46	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	49,800	0.88	D	50,200	0.89	D
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	41,800	0.74	C	42,200	0.75	C
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	39,000	0.69	B	39,400	0.70	B
49	Newport Ave	N of Sycamore Ave		Tus	6D	22,700	0.40	A	23,200	0.41	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	30,700	0.55	A	31,000	0.55	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	5,700	0.46	A	5,800	0.46	A
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	6,700	0.54	A	6,700	0.54	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	38,100	0.68	B	38,400	0.68	B
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	35,300	0.63	B	35,800	0.64	B
21	Red Hill Ave	Nisson Rd to I-5 SB Ramps		Tus	6D	42,300	0.75	C	42,900	0.76	C
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	31,000	0.55	A	31,600	0.56	A
22	Red Hill Ave	Mitchell Ave to Walnut Ave		Tus	6D	29,700	0.53	A	30,500	0.54	A
23	Red Hill Ave	Walnut Ave to Sycamore Ave		Tus	6D	30,000	0.53	A	30,300	0.54	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	33,200	0.59	A	33,900	0.60	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	36,300	0.64	B	37,200	0.66	B
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	37,200	0.66	B	38,500	0.68	B
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	42,200	0.64	B	43,700	0.67	B
1363	Sycamore Ave	SR-55 NB to Newport Ave		Tus	4D	8,400	0.22	A	8,500	0.23	A
1920	Sycamore Ave	Newport Ave to Red Hill Ave		Tus	4D	10,000	0.27	A	10,100	0.27	A
85	Tustin Ranch Rd	N of I-5		Tus	6D	43,900	0.78	C	44,300	0.79	C
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	44,200	0.79	C	45,400	0.81	D
2168	Tustin Ranch Road	Walnut Avenue to Valencia Avenue		Tus	6D	31,600	0.56	A	32,900	0.58	A
2073	Tustin Ranch Road	Valencia Avenue to Warner Avenue		Tus	6D	32,200	0.57	A	33,900	0.60	A
2071	Tustin Ranch Road	Warner Avenue to Park Avenue		Tus	6D	40,200	0.71	C	41,500	0.74	C
2070	Tustin Ranch Road	Park Avenue to Barranca Parkway		Tus	6D	28,500	0.51	A	29,600	0.53	A
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4D	10,300	0.27	A	10,400	0.28	A
632	Valencia Avenue	Red Hill Avenue to Armstrong Avenue		Tus	4D	17,900	0.48	A	18,100	0.48	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	BUILDOUT ARTERIAL SEGMENT CLASSIFICATIONS	BUILDOUT CUMULATIVE BASELINE			BUILDOUT CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
2844	Valencia Avenue	Armstrong Avenue to Kensington Park		Tus	4D	11,300	0.30	A	11,500	0.31	A
2842	Valencia Avenue	Kensington Park to Tustin Ranch Road		Tus	4D	12,100	0.32	A	12,300	0.33	A
587	Walnut Ave	East of Newport Ave		Tus	4U	22,500	0.90	D	22,900	0.92	E
589	Walnut Ave	East of Red Hill Ave		Tus	4D	19,200	0.51	A	19,400	0.52	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	22,600	0.60	A	22,900	0.61	B
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	21,000	0.56	A	21,300	0.57	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	21,700	0.39	A	22,400	0.40	A
F	Denotes intersection operating at a deficient LOS										

a Intersection within Irvine Planning Area 36--LOS E acceptable
b Orange County Congestion Management Program (CMP) locations

Figure 5.14 – Buildout Cumulative With Update Daily Arterial ADT

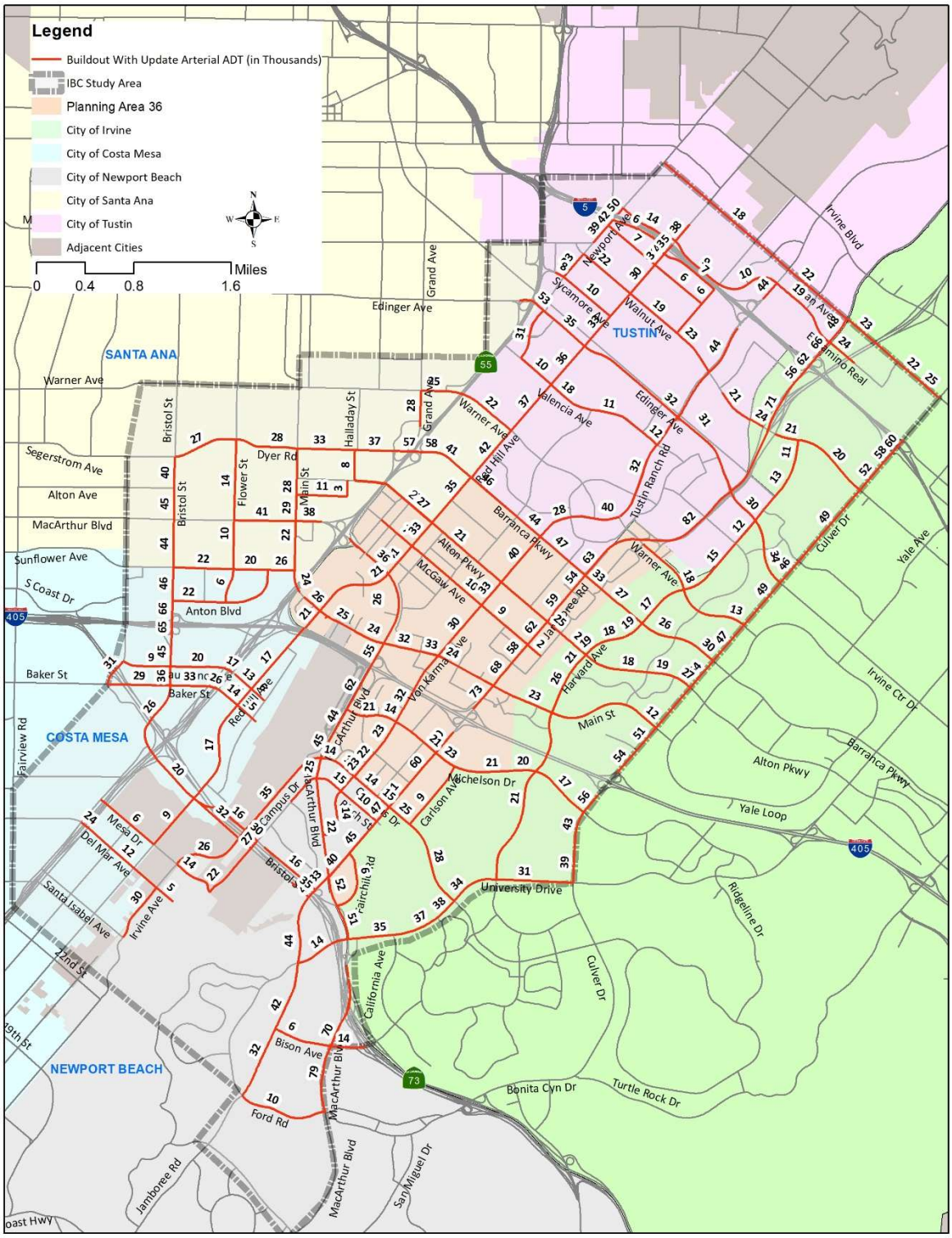
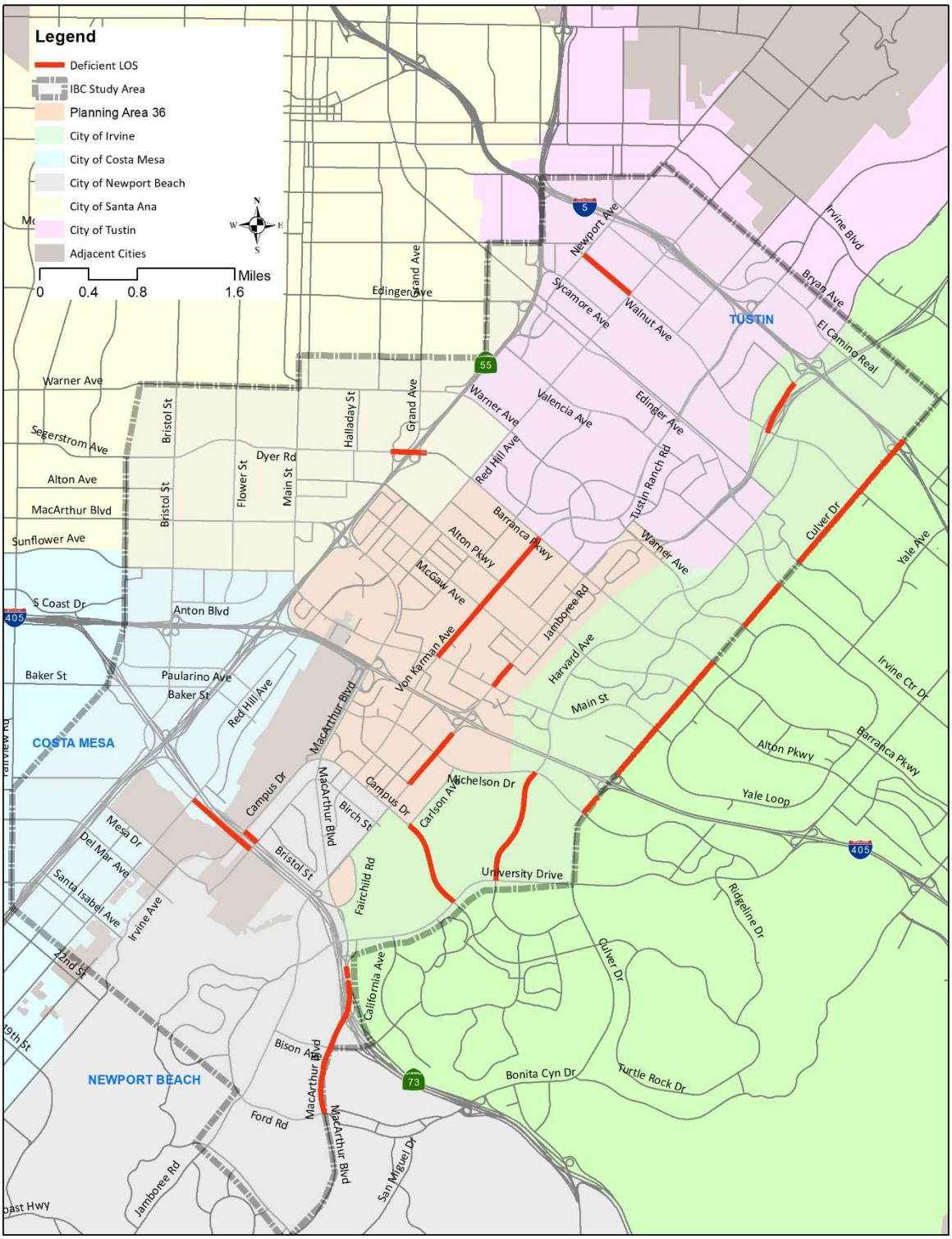


Figure 5.15 –Buildout Cumulative With Update Daily Arterial Deficiencies



5.11 Buildout Cumulative Baseline With Update Peak Hour Link Analysis

Peak hour directional traffic volumes were directly obtained from peak hour forecast turning movement volumes for intersections upstream and downstream for each deficient arterial segment. **Table 5.11** presents the results of peak hour link analysis, indicating that all arterial segments within the City of Irvine that are deficient under daily conditions operate at an acceptable LOS in both peak hours, and hence no mitigation measures are recommended at this time for these facilities.

Table 5.11 – Buildout Cumulative With Update Peak Hour Link Analysis

ID	ARTERIAL	SEGMENT LIMITS	FACILITY TYPE	BUILDOUT FORECAST VOLUME WITH UPDATE				AM		PM	
				AM		PM		NB/EB	SB/WB	NB/EB	SB/WB
				NB/EB	SB/WB	NB/EB	SB/WB				
879	Campus Dr	Carlson Ave to University	4D	645	1,369	1,155	868	Acceptable	Acceptable	Acceptable	Acceptable
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps	7D	1,648	3,406	3,330	2,038	Acceptable	Acceptable	Acceptable	Acceptable
213	Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,615	3,102	3,020	2,556	Acceptable	Acceptable	Acceptable	Acceptable
214	Culver Dr	Scottsdale Dr to Walnut Ave	6D	1,580	2,689	2,839	2,162	Acceptable	Acceptable	Acceptable	Acceptable
215	Culver Dr	Walnut Ave to Deerfield Ave	6D	1,361	2,786	2,565	1,929	Acceptable	Acceptable	Acceptable	Acceptable
217	Culver Dr	Irvine Center Dr to Warner Ave	6D	1,356	2,797	2,650	1,937	Acceptable	Acceptable	Acceptable	Acceptable
219	Culver Dr	Barranca Pkwy to Alton Pkwy	6D	1,462	2,699	2,726	1,830	Acceptable	Acceptable	Acceptable	Acceptable
220	Culver Dr	Alton Pkwy to Main St	6D	1,620	2,669	2,960	1,839	Acceptable	Acceptable	Acceptable	Acceptable
221	Culver Dr	Main St to San Leandro	6D	1,515	2,747	2,860	1,848	Acceptable	Acceptable	Acceptable	Acceptable
222	Culver Dr	San Leandro to I-405 NB On-Ramp	6D	1,626	3,025	3,102	1,925	Acceptable	Acceptable	Acceptable	Acceptable
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	2,133	2,838	2,779	2,266	Acceptable	Acceptable	Acceptable	Acceptable
183	Harvard Ave	Michelson Dr to University Dr	2U	535	1,163	1,221	940	Acceptable	Acceptable	Acceptable	Acceptable
133	Jamboree Rd	Michelle Dr to Walnut Ave	5D	814	2,608	1,801	1,795	Acceptable	Acceptable	Acceptable	Acceptable
144	Jamboree Rd	Kelvin Ave to Main St	8D	1,812	3,399	3,854	2,529	Acceptable	Acceptable	Acceptable	Acceptable
148	Jamboree Rd	I-405 On-Ramp to Michelson Dr	Maj8D+ 2AUX	2,736	5,101	4,521	3,706	Acceptable	Acceptable	Acceptable	Acceptable
149	Jamboree Rd	Michelson Drive to Dupont Dr	7D	2,140	2,576	2,780	2,680	Acceptable	Acceptable	Acceptable	Acceptable
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	4D	957	2,017	2,160	1,352	Acceptable	Acceptable	Acceptable	Acceptable
100	Von Karman Ave	Alton Pkwy to McGaw Ave	4D	942	1,852	1,918	1,110	Acceptable	Acceptable	Acceptable	Acceptable
102	Von Karman Ave	McGaw Ave to Anchor	4D	880	1,881	1,920	1,079	Acceptable	Acceptable	Acceptable	Acceptable
103	Von Karman Ave	Anchor to Main St	4D	1,190	2,101	2,200	1,190	Acceptable	Acceptable	Acceptable	Acceptable

5.12 Buildout Cumulative Baseline With Update Peak Hour Intersection Analysis

The intersection analysis includes both a reporting of intersection ICU and the corresponding LOS, as well as a comparison between Buildout Cumulative Baseline and With Update scenarios. The results of this analysis are presented in **Table 5.12**. Deficient intersections are discussed later in the chapter. The deficiencies, impacts and improvement strategies are discussed in detail in **Chapter 6**.

Figure 5.16 and **Figure 5.17** graphically present the AM and PM peak hour intersection ICU for deficient intersections for the Buildout Cumulative With Update scenario. **Appendix E** presents detailed ICU worksheets. For shared jurisdictions, the more conservative methodology was utilized. Further discussion of specific impacts, improvements, and fair-share cost analysis is addressed in **Chapter 6**. There are 23 intersection deficiencies so compared to the Baseline scenario, there are 9 more intersections that become deficient in the With Update scenario. Further discussion of specific impacts, mitigation, and fair-share cost analysis is addressed in **Chapter 6**. Based on the Buildout Cumulative With Update intersection ICU analysis, the following intersections within the study area are forecast to operate at the deficient LOS:

- #12: SR-55 Frontage Road SB at Baker Street (Costa Mesa) – AM Peak Hour LOS E with a 0.92 ICU*
- #98: Von Karman Avenue at Alton Parkway (Irvine) – PM Peak Hour LOS F with a 1.02 ICU*
- #144: Jamboree Road at I-405 SB Ramps (Irvine) – AM Peak Hour LOS F with a 1.06 ICU*
- #145: Jamboree Road at Michelson Drive (Irvine) – PM Peak Hour LOS F with a 1.02 ICU*
- #188: Harvard Avenue at Michelson Drive (Irvine) – PM Peak Hour LOS E with a 0.91 ICU*
- #192: California Avenue at University Drive (Irvine) – AM Peak Hour LOS E with a 0.97 ICU
- #232: Culver Drive at I-405 NB Ramps (Irvine) – PM Peak Hour LOS E with a 0.92 ICU*
- #84: MacArthur Boulevard at Campus Drive (Irvine/Newport Beach) – PM Peak Hour LOS E with a 0.93 ICU[A]
- #44: Red Hill Avenue at Alton Parkway (Irvine / Santa Ana) – PM Peak Hour LOS E with a 0.97 ICU*
- #97: Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (Irvine/Tustin) – PM Peak Hour LOS F with a 1.19 ICU*
- #136: Jamboree Road at Barranca Parkway (Irvine/Tustin) – AM Peak Hour LOS E with a 0.94 ICU and PM Peak Hour LOS E with a 1.11 ICU*
- #63: Campus Drive at Bristol Street SB (Newport Beach) – AM Peak Hour LOS E with a 0.93 ICU[AA]
- #543: Bristol at Segerstrom (Santa Ana) – AM Peak Hour LOS E with a 1.00 ICU and PM Peak Hour LOS E with a 0.93 ICU[BB]
- #544: Bristol Street at MacArthur Boulevard (Santa Ana) – PM Peak Hour LOS E with a 0.92 ICU[BB]
- #719: Flower at Segerstrom (Santa Ana) – PM Peak Hour LOS E with a 1.00 ICU
- #723: Main Street at Segerstrom (Santa Ana) – AM Peak Hour LOS E with a 1.00 ICU and PM Peak Hour LOS F with a 1.19 ICU[BB]
- #727: Halladay at Dyer (Santa Ana) – PM Peak Hour LOS E with a 1.00 ICU[BB]
- #728: Halladay E at Alton Parkway (Santa Ana) – AM Peak Hour LOS F with a 1.12 ICU[BB]
- #3: Newport Avenue at Edinger Avenue (Tustin) – AM Peak Hour LOS F with a 1.15 ICU[C]
- #38: Red Hill Avenue at Walnut Avenue (Tustin) – PM Peak Hour LOS E with a 0.94 ICU[C]
- #40: Red Hill Avenue at Edinger Avenue (Tustin) – PM Peak Hour LOS E with a 0.91 ICU[C]
- #453: Red Hill Avenue at Valencia Avenue (Tustin) – AM Peak Hour LOS E with a 1.00 ICU[C]
- #749: Park Avenue at A Street (Tustin) – PM Peak Hour LOS E with a 0.97 ICU

*Denotes impact in Buildout Cumulative With Update Scenario

[A]This intersection is located in the cities of Newport Beach and Irvine. For the purposes of this study this intersection is not considered an impact in the City of Newport Beach based on the agreement between the City of Irvine and City of Newport Beach. In the City of Irvine, this intersection is not deficient because LOS E is acceptable in the IBC area.

[AA] This intersection is located in City of Newport Beach. This intersection is not an impact in the City of Newport Beach based on the agreement between the City of Irvine and City of Newport Beach.

[BB] This intersection is located in City of Santa Ana. This intersection is not an impact in the City of Santa Ana based on the agreement between the City of Irvine and City of Santa Ana.

[C] This intersection is located in the City of Tustin. This intersection is not an impact in the City of Tustin based on the agreement between the City of Irvine and City of Tustin.

All locations operating at a deficient LOS with an increase in the ICU value exceeding the significance threshold are identified as impacts and discussed in **Chapter 6.**

Table 5.12 – Buildout Cumulative With Update Peak Hour Intersection LOS

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (BUILDOUT)	JURISDICTION	BUILDOUT CUMULATIVE BASELINE				BUILDOUT CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
10	SR-55 Frontage Rd SB at Paularino Ave			CM	0.84	D	0.77	C	0.85	D	0.77	C
11	SR-55 Frontage Rd NB at Paularino Ave			CM	0.71	C	0.62	B	0.73	C	0.61	B
12	SR-55 Frontage Rd SB at Baker St	*		CM	0.89	D	0.80	C	0.92	E	0.80	C
13	SR-55 Frontage Rd NB at Baker St			CM	0.81	D	0.71	C	0.84	D	0.71	C
50	Red Hill Ave at Paularino Ave			CM	0.73	C	0.69	B	0.75	C	0.69	B
51	Red Hill Ave at Baker St			CM	0.58	A	0.69	B	0.60	A	0.69	B
52	Red Hill Ave at Bristol St			CM	0.71	C	0.62	B	0.74	C	0.65	B
541	Bear at Baker St			CM	0.74	C	0.74	C	0.75	C	0.74	C
542	Bear at Paularino Ave			CM	0.48	A	0.71	C	0.49	A	0.73	C
545	Bristol at Sunflower			CM	0.66	B	0.72	C	0.67	B	0.73	C
546	Bristol at Anton			CM	0.45	A	0.67	B	0.46	A	0.66	B
547	Bristol at Paularino Ave			CM	0.50	A	0.78	C	0.50	A	0.81	D
548	Bristol at Baker St			CM	0.57	A	0.66	B	0.58	A	0.66	B
549	Newport Blvd SB at Bristol			CM	0.30	A	0.57	A	0.31	A	0.57	A
550	Newport Blvd NB at Bristol			CM	0.41	A	0.52	A	0.43	A	0.53	A
715	Bristol at I-405 NB Off Ramp			CM	0.49	A	0.73	C	0.49	A	0.73	C
716	Bristol at I-405 SB Ramps			CM	0.47	A	0.60	A	0.48	A	0.60	A
717	Bear at SR-73 SB Ramps			CM	0.43	A	0.55	A	0.44	A	0.54	A
720	Flower at MacArthur Blvd			CM	0.85	D	0.86	D	0.90	D	0.87	D
721	Flower at Sunflower			CM	0.51	A	0.56	A	0.54	A	0.57	A
722	Anton at Sunflower			CM	0.41	A	0.38	A	0.43	A	0.41	A
726	Main St at Sunflower			CM	0.63	B	0.70	B	0.68	B	0.74	C
735	Newport Blvd NB at Del mar			CM	0.75	C	0.54	A	0.77	C	0.55	A
736	Newport Blvd SB at Fair/Del Mar			CM	0.52	A	0.58	A	0.53	A	0.59	A
737	Newport Blvd NB at Mesa Rd			CM	0.42	A	0.36	A	0.42	A	0.36	A
738	Newport Blvd SB at Mesa Rd			CM	0.23	A	0.70	B	0.24	A	0.70	B
32	Daimler St at McGaw Ave			Irv	0.24	A	0.20	A	0.26	A	0.25	A
45	Red Hill Ave at McGaw Ave	a		Irv	0.52	A	0.72	C	0.56	A	0.81	D
47	Red Hill Ave at MacArthur Blvd	a		Irv	0.73	C	0.84	D	0.80	C	0.89	D
48	Red Hill Ave at Sky Park N	a		Irv	0.31	A	0.45	A	0.35	A	0.47	A
49	Red Hill Ave at Main St	a		Irv	0.78	C	0.91	E	0.83	D	0.94	E
66	Gillette Avenue at Alton Parkway	a		Irv	0.64	B	0.68	B	0.68	B	0.72	C
67	Gillette Ave at McGaw Ave	a		Irv	0.39	A	0.58	A	0.46	A	0.66	B
70	Gillette Ave at Main Street	a		Irv	0.35	A	0.60	A	0.44	A	0.63	B
73	Armstrong Avenue and Alton Pkwy West	a		Irv	0.33	A	0.35	A	0.35	A	0.40	A
74	Armstrong Avenue and Alton Parkway East	a		Irv	0.33	A	0.44	A	0.37	A	0.49	A
77	MacArthur Blvd at Sky Park East	a		Irv	0.39	A	0.51	A	0.42	A	0.53	A
78	MacArthur Blvd at Main St	a		Irv	0.73	C	0.81	D	0.81	D	0.91	E
79	MacArthur Blvd at I-405 NB Ramps	a		Irv	0.72	C	0.68	B	0.76	C	0.72	C
80	MacArthur Blvd at I-405 SB Ramps	a		Irv	0.65	B	0.75	C	0.68	B	0.82	D
82	MacArthur Blvd at Michelson Dr	a*		Irv	0.87	D	0.88	D	0.94	D	0.96	D
83	MacArthur Blvd at Douglas Ave	a		Irv	0.42	A	0.50	A	0.55	A	0.70	B
87	Dupont Dr at Michelson Dr	a		Irv	0.41	A	0.40	A	0.48	A	0.50	A
98	Von Karman Ave at Alton Pkwy	a*		Irv	0.89	D	1.00	E	0.92	E	1.02	F
99	Von Karman Ave at McGaw Ave	a		Irv	0.70	B	0.83	D	0.77	C	0.88	D
100	Von Karman Ave at Main St	a		Irv	0.68	B	0.78	C	0.73	C	0.84	D
101	Von Karman Ave at Morse Ave	a		Irv	0.54	A	0.64	B	0.62	B	0.71	C
102	Von Karman Ave at Michelson Dr	a		Irv	0.77	C	0.89	D	0.87	D	0.95	E

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (BUILDOUT)	JURISDICTION	BUILDOUT CUMULATIVE BASELINE				BUILDOUT CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
103	Von Karman Ave at Dupont Dr	a		Irv	0.51	A	0.60	A	0.66	B	0.71	C
104	Von Karman Ave at Martin	a		Irv	0.43	A	0.59	A	0.48	A	0.64	B
115	Millikan Ave at Alton Pkwy	a		Irv	0.44	A	0.60	A	0.45	A	0.65	B
116	Cartwright Rd at Main St	a		Irv	0.40	A	0.58	A	0.51	A	0.66	B
119	Teller Ave at Michelson Dr	a		Irv	0.51	A	0.58	A	0.67	B	0.64	B
128	Jamboree Rd at I-5 NB Ramps	b		Irv	0.85	D	0.73	C	0.86	D	0.73	C
129	Jamboree Rd at I-5 SB Ramps	b		Irv	0.74	C	0.60	A	0.75	C	0.59	A
130	Jamboree Rd at Michelle Dr			Irv	0.71	C	0.79	C	0.71	C	0.79	C
131	Jamboree Rd SB at Walnut Ave			Irv	0.62	B	0.64	B	0.64	B	0.68	B
132	Jamboree Rd NB at Walnut Ave			Irv	0.46	A	0.62	B	0.48	A	0.63	B
135	Jamboree Rd NB Ramps at Warner Ave			Irv	0.44	A	0.87	D	0.45	A	0.90	D
137	Jamboree Rd at Beckman Ave	a		Irv	0.61	B	0.71	C	0.64	B	0.76	C
138	Jamboree Rd at Alton Pkwy	a		Irv	0.76	C	0.87	D	0.76	C	0.90	D
139	Jamboree Rd at McGaw Ave	a		Irv	0.66	B	0.73	C	0.70	B	0.77	C
140	Jamboree Rd at Kelvin Ave	a		Irv	0.60	A	0.63	B	0.70	B	0.72	C
141	Jamboree Rd at Main St	a		Irv	0.75	C	0.87	D	0.80	C	0.93	E
143	Jamboree Rd at I-405 NB Ramps	a,b		Irv	0.77	C	0.89	D	0.82	D	0.95	E
144	Jamboree Rd at I-405 SB Ramps	a,b*		Irv	0.97	E	0.89	D	1.06	F	0.93	E
145	Jamboree Rd at Michelson Dr	a*		Irv	0.75	C	0.91	E	0.91	E	1.02	F
146	Jamboree Rd at Dupont Rd	a		Irv	0.60	A	0.67	B	0.64	B	0.73	C
164	Construction S at Barranca Pkwy	a		Irv	0.35	A	0.59	A	0.39	A	0.68	B
168	Murphy Ave at Alton Pkwy	a		Irv	0.37	A	0.65	B	0.41	A	0.74	C
170	Union at Main St	a		Irv	0.36	A	0.63	B	0.38	A	0.65	B
171	Veneto at Main St			Irv	0.38	A	0.56	A	0.38	A	0.60	A
174	Carlson Ave at Michelson Dr			Irv	0.53	A	0.67	B	0.67	B	0.84	D
175	Carlson Ave at Campus Dr			Irv	0.65	B	0.73	C	0.71	C	0.81	D
180	Harvard Ave at Walnut Ave			Irv	0.43	A	0.56	A	0.44	A	0.56	A
183	Harvard Ave at Warner Ave			Irv	0.49	A	0.72	C	0.51	A	0.73	C
184	Harvard Ave at Barranca Pkwy			Irv	0.53	A	0.72	C	0.57	A	0.75	C
185	Harvard Ave at Alton Pkwy			Irv	0.67	B	0.67	B	0.69	B	0.69	B
186	Harvard Ave at Main St			Irv	0.61	B	0.76	C	0.64	B	0.80	C
187	Harvard Ave at Coronado			Irv	0.61	B	0.63	B	0.65	B	0.64	B
188	Harvard Ave Michelson Dr	*		Irv	0.68	B	0.88	D	0.75	C	0.91	E
189	Harvard Ave University Dr			Irv	0.80	C	0.84	D	0.83	D	0.86	D
190	University Dr at Campus Dr		√	Irv	0.69	B	0.76	C	0.69	B	0.77	C
191	Mesa Rd at University Dr			Irv	0.49	A	0.60	A	0.49	A	0.60	A
192	California Ave at University Dr			Irv	0.96	E	0.80	C	0.97	E	0.81	D
196	Hearthstone Blvd at Irvine Center Dr			Irv	0.74	C	0.64	B	0.74	C	0.65	B
198	Paseo Westpark at Warner Ave			Irv	0.44	A	0.44	A	0.45	A	0.44	A
199	Paseo Westpark at Barranca Pkwy			Irv	0.46	A	0.59	A	0.47	A	0.61	B
200	Paseo Westpark at Alton Pkwy			Irv	0.50	A	0.65	B	0.50	A	0.68	B
201	Paseo Westpark at Main St			Irv	0.56	A	0.56	A	0.57	A	0.59	A
221	Culver Dr at Bryan Ave			Irv	0.79	C	0.71	C	0.78	C	0.71	C
222	Culver Dr at Trabuco Rd			Irv	0.83	D	0.77	C	0.84	D	0.78	C
223	Culver Dr at I-5 SB Ramps			Irv	0.69	B	0.63	B	0.70	B	0.64	B
224	Culver Dr at Walnut Ave		√	Irv	0.75	C	0.84	D	0.76	C	0.87	D
225	Culver Dr at Deerfield Dr			Irv	0.80	C	0.83	D	0.82	D	0.84	D
226	Culver Dr at Irvine Center Dr		√	Irv	0.75	C	0.77	C	0.78	C	0.78	C
227	Culver Dr at Warner Ave			Irv	0.79	C	0.71	C	0.80	C	0.74	C

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (BUILDOUT)	JURISDICTION	BUILDOUT CUMULATIVE BASELINE				BUILDOUT CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
228	Culver Dr at Barranca Pkwy		√	Irv	0.78	C	0.79	C	0.79	C	0.80	C
229	Culver Dr at Alton Pkwy		√	Irv	0.74	C	0.84	D	0.75	C	0.87	D
230	Culver Dr at Main St			Irv	0.67	B	0.76	C	0.67	B	0.79	C
231	Culver Dr at San Leandro			Irv	0.77	C	0.61	B	0.78	C	0.62	B
232	Culver Dr at I-405 NB Ramps	*		Irv	0.67	B	0.90	D	0.71	C	0.92	E
233	Culver Dr at I-405 SB Ramps			Irv	0.72	C	0.71	C	0.73	C	0.72	C
234	Culver Dr at Michelson Dr			Irv	0.60	A	0.81	D	0.64	B	0.86	D
235	Culver Dr at University Dr		√	Irv	0.81	D	0.79	C	0.82	D	0.79	C
337	Von Karman Ave at Quartz	a		Irv	0.75	C	0.77	C	0.78	C	0.86	D
439	Bixby at Michelson Dr			Irv	0.41	A	0.49	A	0.48	A	0.56	A
440	Siglo at Main St			Irv	0.38	A	0.52	A	0.40	A	0.56	A
472	Obsidian at Michelson Dr	a		Irv	0.57	A	0.58	A	0.58	A	0.68	B
84	MacArthur Blvd at Campus Dr	*		Irv/NB	0.69	B	0.90	D	0.74	C	0.93	E
105	Von Karman Ave at Campus Dr			Irv/NB	0.72	C	0.83	D	0.75	C	0.85	D
121	Teller Ave at Campus Dr			Irv/NB	0.35	A	0.53	A	0.45	A	0.58	A
147	Jamboree Rd at Campus Dr			Irv/NB	0.74	C	0.78	C	0.83	D	0.82	D
149	Jamboree Rd at Fairchild Rd			Irv/NB	0.68	B	0.74	C	0.74	C	0.76	C
150	Jamboree Rd at MacArthur Blvd	b		Irv/NB	0.83	D	0.83	D	0.88	D	0.87	D
176	Fairchild Ave at MacArthur Blvd			Irv/NB	0.81	D	0.87	D	0.83	D	0.90	D
193	MacArthur Blvd NB at University Dr			Irv/NB	0.71	C	0.76	C	0.70	B	0.78	C
194	MacArthur Blvd SB at University Dr			Irv/NB	0.75	C	0.65	B	0.76	C	0.68	B
195	SR-73 SB Ramps at University Dr			Irv/NB	0.81	D	0.56	A	0.82	D	0.57	A
9	SR-55 NB Ramps at MacArthur Blvd			Irv/SA	0.74	C	0.63	B	0.75	C	0.64	B
31	Daimler St at Alton Pkwy			Irv/SA	0.64	B	0.66	B	0.67	B	0.69	B
43	Red Hill Ave at Deere Ave			Irv/SA	0.47	A	0.82	D	0.52	A	0.88	D
44	Red Hill Ave at Alton Pkwy	*		Irv/SA	0. 79	C	0.93	E	0.84	D	0.97	E
42	Red Hill Ave at Barranca Pkwy/Dyer Rd			Irv/SA/Tus	0.73	C	0.89	D	0.77	C	0.90	D
71	Armstrong Ave at Barranca Pkwy			Irv/Tus	0.49	A	0.70	B	0.53	A	0.74	C
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	*		Irv/Tus	0.87	D	1.16	F	0.89	D	1.19	F
112	Myford Rd at Michelle Dr			Irv/Tus	0.37	A	0.28	A	0.36	A	0.28	A
113	Myford Rd at Walnut Ave			Irv/Tus	0.35	A	0.48	A	0.36	A	0.49	A
114	Millikan Ave/District Way at Barranca Pkwy			Irv/Tus	0.49	A	0.68	B	0.53	A	0.72	C
126	Jamboree Rd at Bryan Ave			Irv/Tus	0.71	C	0.80	C	0.72	C	0.80	C
127	Jamboree Rd at El Camino Real			Irv/Tus	0.74	C	0.79	C	0.74	C	0.80	C
134	Loop Rd/Park Ave at Warner Ave			Irv/Tus	0.46	A	0.78	C	0.50	A	0.78	C
136	Jamboree Rd at Barranca Pkwy	*		Irv/Tus	0.91	E	1.07	F	0.94	E	1.11	F
181	Harvard Ave at Edinger Ave/Irvine Center Dr			Irv/Tus	0.53	A	0.72	C	0.54	A	0.72	C
182	Harvard Ave at Paseo Westpark/Moffett Dr.			Irv/Tus	0.40	A	0.49	A	0.42	A	0.52	A
441	Loop Rd at Jamboree Rd SB Ramps			Irv/Tus	0.39	A	0.78	C	0.39	A	0.80	C
61	Campus Dr at Airport Way			NB	0.53	A	0.84	D	0.55	A	0.86	D
62	Campus Dr at Bristol St NB			NB	0.75	C	0.77	C	0.79	C	0.81	D
63	Campus Dr at Bristol St SB	*		NB	0.89	D	0.74	C	0.93	E	0.74	C
64	Birch St at Bristol St NB			NB	0.73	C	0.71	C	0.75	C	0.73	C
65	Birch St at Bristol St SB			NB	0.60	A	0.64	B	0.61	B	0.65	B
85	MacArthur Blvd at Birch St			NB	0.62	B	0.74	C	0.65	B	0.78	C
106	Von Karman Ave at Birch St			NB	0.48	A	0.56	A	0.50	A	0.56	A
107	Von Karman Ave at MacArthur Blvd			NB	0.45	A	0.64	B	0.48	A	0.67	B
148	Jamboree Rd at Birch St			NB	0.61	B	0.56	A	0.68	B	0.58	A

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (BUILDOUT)	JURISDICTION	BUILDOUT CUMULATIVE BASELINE				BUILDOUT CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
151	Jamboree Rd at Bristol St NB			NB	0.35	A	0.54	A	0.37	A	0.58	A
153	Jamboree Rd at Bristol St SB			NB	0.69	B	0.60	A	0.69	B	0.60	A
154	Jamboree Rd at Eastbluff Dr			NB	0.70	B	0.62	B	0.69	B	0.62	B
155	Jamboree Rd at Bison Ave			NB	0.47	A	0.55	A	0.47	A	0.55	A
156	Jamboree Rd at Ford Rd			NB	0.91	E	0.77	C	0.90	D	0.77	C
178	MacArthur Blvd at Bison Ave			NB	0.67	B	0.66	B	0.67	B	0.66	B
179	MacArthur Blvd at Ford Rd			NB	0.65	B	0.68	B	0.66	B	0.68	B
741	Jamboree at San Joaquin			NB	0.61	B	0.56	A	0.62	B	0.56	A
742	MacArthur at San Joaquin			NB	0.51	A	0.73	C	0.51	A	0.73	C
733	Irvine at Mesa Rd			NB/OC	0.72	C	0.73	C	0.73	C	0.74	C
734	Irvine at University/Del Mar			NB/OC	0.65	B	0.74	C	0.68	B	0.75	C
4	SR-55 SB Ramps at Edinger Ave	b		SA	0.81	D	0.69	B	0.81	D	0.69	B
5	Hotel Terrace Dr at Dyer Rd			SA	0.61	B	0.76	C	0.61	B	0.77	C
6	Grand Ave at Dyer Rd			SA	0.76	C	0.69	B	0.81	D	0.68	B
7	SR-55 NB Ramps at Dyer Rd			SA	0.79	C	0.55	A	0.85	D	0.59	A
8	SR-55 SB Ramps at MacArthur Blvd	c		SA	0.67	B	0.60	A	0.70	B	0.62	B
29	Pullman St at Barranca Pkwy			SA	0.57	A	0.77	C	0.60	A	0.81	D
543	Bristol at Segerstrom	*		SA	0.97	E	0.91	E	1.00	E	0.93	E
544	Bristol St at MacArthur Blvd	*		SA	0.79	C	0.90	D	0.80	C	0.92	E
718	Bear at SR-73 NB Ramps			SA	0.37	A	0.64	B	0.37	A	0.64	B
719	Flower at Segerstrom			SA	0.82	D	1.00	E	0.84	D	1.00	E
723	Main St at Segerstrom	*		SA	0.97	E	1.15	F	1.00	E	1.19	F
724	Main St at Alton Ave			SA	0.61	B	0.78	C	0.62	B	0.81	D
725	Main and MacArthur (w/o SR-55)	c		SA	0.67	B	0.80	C	0.67	B	0.83	D
727	Halladay at Dyer Rd	*		SA	0.88	D	0.97	E	0.88	D	1.00	E
728	Halladay E at Alton Pkwy	*		SA	1.07	F	0.81	D	1.12	F	0.84	D
729	Halladay W at Alton Pkwy			SA	0.79	C	0.75	C	0.82	D	0.77	C
730	Grand Ave at Warner			SA	0.62	B	0.70	B	0.65	B	0.72	C
731	SR-55 SB Ramps at Grand Ave			SA	0.61	B	0.51	A	0.63	B	0.53	A
3	Newport Ave at Edinger Ave	*		Tus	1.13	F	0.65	B	1.15	F	0.67	B
14	Walnut Ave at McFadden Ave			Tus	0.48	A	0.52	A	0.51	A	0.52	A
18	Newport Ave at Bryan Ave			Tus	0.53	A	0.66	B	0.54	A	0.67	B
19	Newport Ave at Main St			Tus	0.83	D	0.78	C	0.84	D	0.79	C
20	Newport Ave at El Camino Real			Tus	0.84	D	0.84	D	0.85	D	0.85	D
21	Newport Ave at I-5 NB Ramps			Tus	0.79	C	0.62	B	0.81	D	0.62	B
22	Newport Ave at I-5 SB Ramp/Nisson Rd			Tus	0.61	B	0.73	C	0.63	B	0.73	C
23	Newport Ave at McFadden St			Tus	0.67	B	0.56	A	0.68	B	0.57	A
24	Newport Ave at Walnut Ave			Tus	0.82	D	0.81	D	0.82	D	0.84	D
25	Newport Ave at Sycamore Ave			Tus	0.68	B	0.65	B	0.68	B	0.66	B
27	Del Amo Ave at Edinger Ave			Tus	0.49	A	0.48	A	0.50	A	0.48	A
35	Red Hill Ave at Bryan Ave			Tus	0.62	B	0.80	C	0.62	B	0.80	C
36	Red Hill Ave at El Camino Real			Tus	0.54	A	0.54	A	0.54	A	0.54	A
37	Red Hill Ave at Nisson Rd			Tus	0.67	B	0.80	C	0.67	B	0.78	C
38	Red Hill Ave at Walnut Ave	*		Tus	0.79	C	0.92	E	0.78	C	0.94	E
39	Red Hill Ave at Sycamore Ave			Tus	0.72	C	0.66	B	0.71	C	0.67	B
40	Red Hill Ave at Edinger Ave	*		Tus	0.74	C	0.89	D	0.76	C	0.91	E
55	Browning Ave at Bryan Ave			Tus	0.41	A	0.58	A	0.43	A	0.59	A
56	Browning Ave at El Camino Real			Tus	0.50	A	0.49	A	0.51	A	0.49	A
58	Browning Ave at Walnut Ave			Tus	0.48	A	0.66	B	0.47	A	0.66	B

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (BUILDOUT)	JURISDICTION	BUILDOUT CUMULATIVE BASELINE				BUILDOUT CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
92	Tustin Ranch Rd at Bryan Ave			Tus	0.72	C	0.81	D	0.73	C	0.82	D
93	Tustin Ranch Rd at El Camino Real			Tus	0.86	D	0.76	C	0.86	D	0.76	C
94	Tustin Ranch Rd at I-5 NB Ramps			Tus	0.64	B	0.57	A	0.65	B	0.57	A
95	Tustin Ranch Rd at I-5 SB Ramps			Tus	0.69	B	0.67	B	0.70	B	0.66	B
96	Tustin Ranch Rd at Walnut Ave			Tus	0.66	B	0.86	D	0.68	B	0.87	D
109	Myford Rd at Bryan Ave			Tus	0.52	A	0.65	B	0.52	A	0.66	B
110	Myford Rd at El Camino Real			Tus	0.44	A	0.66	B	0.44	A	0.66	B
111	Franklin Ave at Walnut Ave			Tus	0.52	A	0.83	D	0.53	A	0.84	D
133	Jamboree Rd at Edinger Ave	b		Tus	0.44	A	0.73	C	0.47	A	0.74	C
445	Tustin Ranch Rd at Warner Ave N			Tus	0.52	A	0.71	C	0.54	A	0.73	C
446	Tustin Ranch Rd at Warner Ave S			Tus	0.63	B	0.80	C	0.64	B	0.81	D
447	Armstrong Ave/Severyns Rd Valencia Ave			Tus	0.36	A	0.40	A	0.37	A	0.41	A
448	Armstrong Ave at Warner Ave			Tus	0.35	A	0.42	A	0.38	A	0.43	A
453	Red Hill Ave at Valencia Ave	*		Tus	0.98	**E**	0.77	C	1.00	**E**	0.79	C
454	Tustin Ranch Rd at Valencia Ave			Tus	0.57	A	0.66	B	0.60	A	0.68	B
455	E Connector/Jamboree Plaza at Edinger Ave			Tus	0.57	A	0.66	B	0.58	A	0.66	B
456	N Loop Rd at Valencia Ave			Tus	0.17	A	0.15	A	0.17	A	0.15	A
457	N Loop Rd at Moffett Dr			Tus	0.46	A	0.37	A	0.47	A	0.37	A
478	Red Hill Ave at I-5 NB Ramps			Tus	0.67	B	0.64	B	0.67	B	0.65	B
479	Red Hill Ave at I-5 SB Ramps			Tus	0.69	B	0.78	C	0.68	B	0.80	C
480	Tustin Ranch Rd/Connector at Edinger Ave			Tus	0.20	A	0.19	A	0.21	A	0.19	A
732	SR-55 NB Ramp at Newport Ave			Tus	0.63	B	0.65	B	0.64	B	0.65	B
739	Newport Ave at Mitchell Ave			Tus	0.74	C	0.70	B	0.75	C	0.71	C
740	Red Hill Ave at Mitchell Ave			Tus	0.57	A	0.65	B	0.58	A	0.68	B
743	Newport Ave at Valencia			Tus	0.59	A	0.88	D	0.60	A	0.89	D
745	Tustin Ranch Rd at Park Ave			Tus	0.49	A	0.65	B	0.50	A	0.65	B
746	Kensington Park Dr at Edinger Ave			Tus	0.45	A	0.59	A	0.45	A	0.60	A
747	Kensington Park Dr at Valencia Ave			Tus	0.35	A	0.36	A	0.36	A	0.37	A
748	Armstrong Ave at A St			Tus	0.34	A	0.46	A	0.36	A	0.48	A
749	Park Ave at A St			Tus	0.75	C	0.97	**E**	0.75	C	0.97	**E**
750	Legacy Rd at Warner Ave			Tus	0.44	A	0.67	B	0.45	A	0.67	B
751	Tustin Ranch Rd at Legacy Rd			Tus	0.62	B	0.71	C	0.65	B	0.73	C
752	Legacy Rd at N Loop Rd			Tus	0.17	A	0.15	A	0.17	A	0.16	A
753	Tustin Ranch Rd at Edinger Ave Connector			Tus	0.45	A	0.38	A	0.47	A	0.40	A
28	Pullman St at Warner Ave			Tus/SA	0.62	B	0.64	B	0.62	B	0.67	B
41	Red Hill Ave at Warner Ave			Tus/SA	0.53	A	0.73	C	0.56	A	0.77	C
754	Red Hill Ave at Carnegie Ave			Tus/SA	0.51	A	0.65	B	0.54	A	0.67	B

F	Denotes intersection operating at a deficient LOS
a	Intersection within Irvine Planning Area 36--LOS E acceptable
b	Orange County Congestion Management Program (CMP) locations
c	Intersections within City of Santa Ana--LOS E acceptable
√	ATMS credit-Reduction of 0.05 applied to ICU
*	Impact

Figure 5.16 – Buildout Cumulative With Update AM Peak Hour Intersection Deficiencies

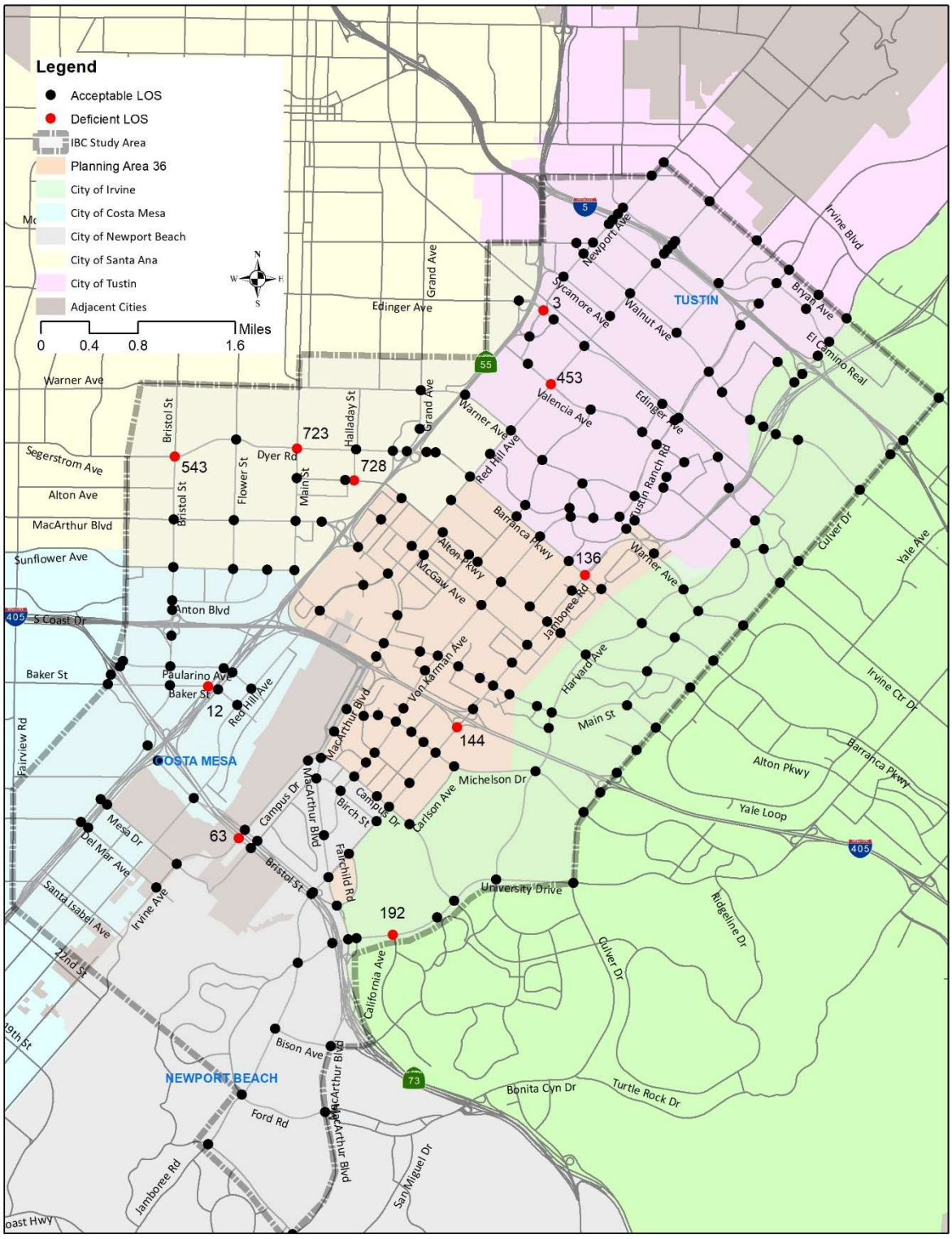
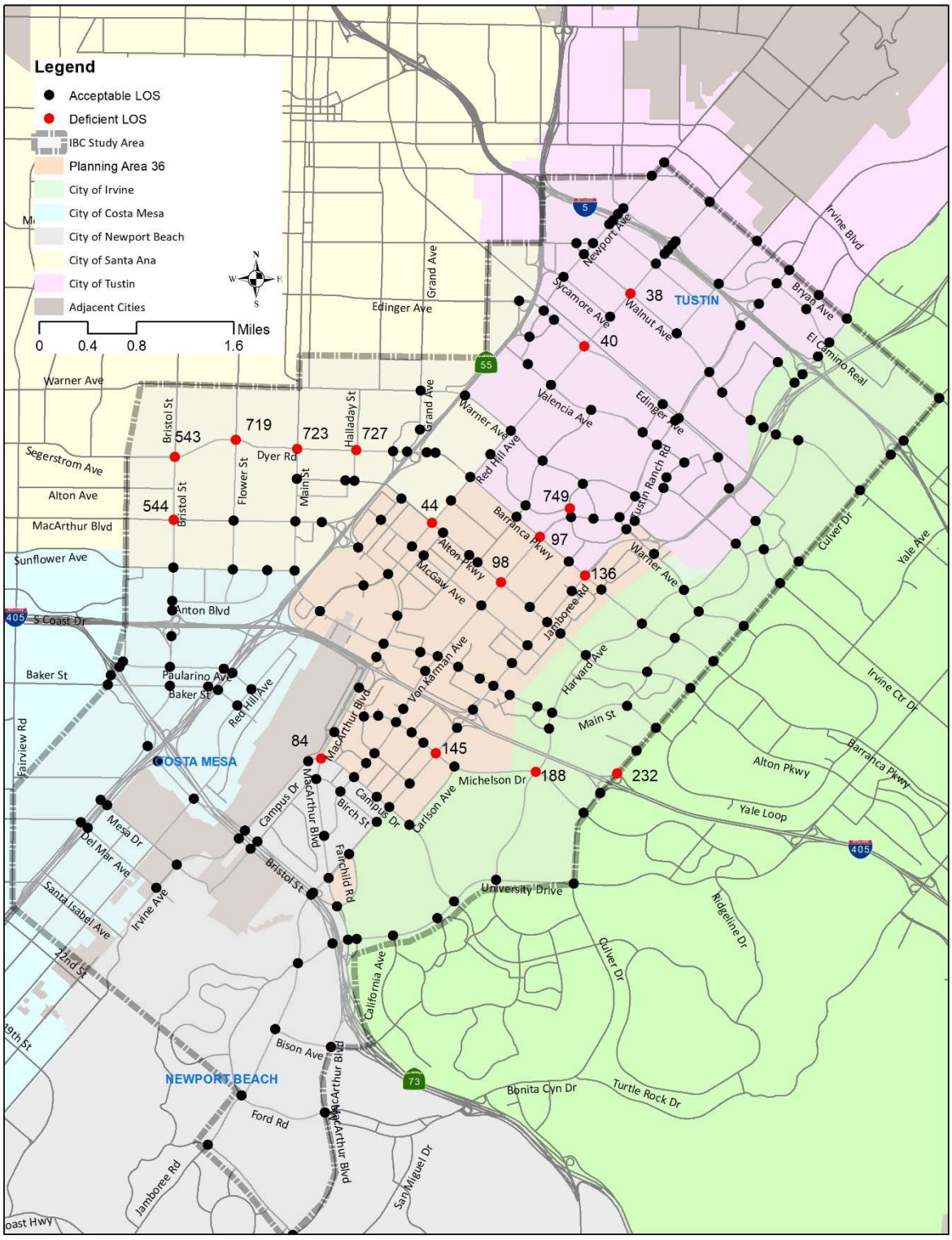


Figure 5.17 – Buildout Cumulative With Update PM Peak Hour Intersection Deficiencies



5.13 Buildout Cumulative Baseline With Update Peak Hour Freeway Mainline Analysis

Future freeway mainline volumes are based on forecast traffic using the ITAM model. **Table 5.13** presents the freeway mainline segment analysis for Buildout Cumulative With Update conditions and compares mainline segment performance to Buildout Cumulative Baseline conditions. The With Update scenario does not include any freeway mainline capacity improvements, consequently, the capacities are consistent with the Baseline scenario. **Appendix G** presents detailed HCS worksheets for mainline analysis.

The following segments are forecast to be deficient in the Buildout year. In the AM peak 34 out of 60 freeway segments operate at a deficient LOS and in the PM peak 27 out of 60 operate at a deficient LOS. In total, 40 segments are deficient in one or both peaks. When compared to the Baseline conditions, one additional segment becomes deficient under the Buildout With Update conditions.

AM Peak Hour:

- SR-55 Northbound between McFadden Street/Sycamore Avenue and I-5

The deficient segments are:

AM Peak Hour:

I-5	**Northbound**	• Between Culver Drive and Jamboree Road • Between Jamboree Road and Tustin Ranch Road • Between Tustin Ranch Road and Red Hill Avenue • Between Red Hill Avenue and Newport Avenue • Between Newport Avenue and SR-55 • North of SR-55
	Southbound	• Between Jamboree Road and Culver Drive • Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road • Between Newport Avenue and Red Hill Avenue • North of SR-55
I-405	**Northbound**	• Between Culver Drive and Jamboree Road • Between Jamboree Road and MacArthur Boulevard • Between MacArthur Boulevard and SR-55
	Southbound	• Between Jamboree Road and Culver Drive • Between SR-55 and MacArthur Boulevard* • Between Bristol Street and SR-55* • Between SR-73 and Bristol Street
SR-55	**Northbound**	• Fair Drive to SR-73 • McFadden Street/Sycamore Avenue to I-5
	Southbound	• Between Dyer Road and MacArthur Boulevard • Between Edinger Avenue and Dyer Road* • Between McFadden Street/Sycamore Avenue and Edinger Avenue* • Between I-5 and McFadden Street/Sycamore Avenue
SR-73	**Northbound**	• Between MacArthur Boulevard and University Drive • Between University Drive and Jamboree Road • Between Jamboree Road and Birch Street • Between Birch Street and Campus Drive • Between Campus Drive and SR-55
	Southbound	• Between University Drive and MacArthur Boulevard

		• Between Campus Drive and Birch Street • Between SR-55 and Campus Drive • Between SR-55 and Bear Street
SR-261	**Southbound**	• South of El Camino Real

PM Peak Hour:

I-5	**Northbound**	• Between Culver Drive to Jamboree Road* • Between Jamboree Road to Tustin Rach Road • Between Tustin Ranch Road and Red Hill Avenue • Between Red Hill Avenue and Newport Avenue • Between Newport Avenue and SR-55 • North of SR-55
	Southbound	• Between Jamboree Road and Culver Drive • Between Tustin Ranch Road and Jamboree Road • Between Red Hill Avenue and Tustin Ranch Road • Between Newport Avenue and Red Hill Avenue • North of SR-55
I-405	**Northbound**	• Between Jamboree Road and MacArthur Boulevard* • Between SR-55 and MacArthur Boulevard*
	Southbound	• Between Jamboree Road and MacArthur Boulevard • Between SR-55 and MacArthur Boulevard
SR-55	**Northbound**	• Between MacArthur Boulevard and Dyer Road* • Between Dyer Road and Edinger Avenue* • Between Edinger Avenue to McFadden Street/Sycamore Avenue* • Between McFadden Street/Sycamore Avenue and I-5*
	Southbound	• Between Edinger Avenue to Dyer Road
SR-73	**Northbound**	• Between Jamboree Road and Birch Street • Between Birch Street and Campus Drive • Between Campus Drive and SR-55 • Between SR-55 and Bear Street
	Southbound	• Between MacArthur Boulevard and University Drive • Between Birch Street and Campus Drive • Between SR-55 and Campus Drive

*Denotes freeway segment impacts.

Table 5.13 – Buildout Cumulative With Update Freeway Peak Hour Mainline LOS

LOCATION		FREEWAY LANES			BUILDOUT CUMULATIVE BASELINE						BUILDOUT CUMULATIVE WITH UPDATE									
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
		DIRECTION	LANES	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
I-5	Culver Dr to Jamboree Rd	NB	6	12,000	13,549	1.13	F	11,815	0.98	E	13,482	1.12	F			12,029	1.00	E	38.2	E
		SB	6	12,000	12,908	1.08	F	12,262	1.02	F	12,970	1.08	F			12,372	1.03	F		
	Jamboree Rd to Tustin Ranch Rd	NB	6	12,000	13,227	1.1	F	11,780	0.98	E	13,158	1.10	F			11,971	1.00	E		
		SB	6	12,000	12,968	1.08	F	11,838	0.99	E	12,969	1.08	F			11,990	1.00	E		
	Tustin Ranch Rd to Red Hill Ave	NB	6	12,000	13,380	1.12	F	12,023	1.00	E	13,299	1.11	F			12,210	1.02	F		
		SB	6	12,000	13,487	1.12	F	12,230	1.02	F	13,562	1.13	F			12,370	1.03	F		
	Red Hill Ave to Newport Ave	NB	5	10,000	12,749	1.06	F	11,504	0.96	E	12,645	1.05	F			11,684	0.97	E		
		SB	6	12,000	13,058	1.09	F	11,522	0.96	E	13,083	1.09	F			11,682	0.97	E		
	Newport Ave to SR-55	NB	6	12,000	13,357	1.11	F	12,185	1.02	F	13,262	1.11	F			12,279	1.02	F		
		SB	4	8,000	9,958	0.83	D	8,733	0.73	D	9,981	0.83	D			8,892	0.74	D		
	North of SR-55	NB	5	10,000	11,069	1.11	F	10,450	1.04	F	11,249	1.12	F			10,466	1.05	F		
		SB	5	10,000	10,334	1.03	F	9,054	0.91	E	10,517	1.05	F			9,123	0.91	E		

	LOCATION	FREEWAY LANES			BUILDOUT CUMULATIVE BASELINE						BUILDOUT CUMULATIVE WITH UPDATE								
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
		DIRECTION	LANES	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
I-405	Culver Dr to Jamboree Rd	NB	5	10,000	13,772	1.15	F	10,486	0.87	D	13,859	1.15	F			10,617	0.88	D		
		SB	4	8,000	10,469	1.05	F	12,058	1.21	F	10,460	1.05	F			12,118	1.21	F		
	Jamboree Rd to MacArthur Blvd	NB	6	12,000	13,586	1.13	F	11,382	0.95	E	13,628	1.14	F			11,628	0.97	E	35.9	E
		SB	7	14,000	12,028	0.86	D	11,977	0.86	D	12,326	0.88	D			12,158	0.87	D		
	MacArthur Blvd to SR-55	NB	6	12,000	12,327	1.03	F	12,259	1.02	F	12,411	1.03	F			12,567	1.05	F	*	
		SB	6	12,000	13,570	1.13	F	11,571	0.96	E	13,969	1.16	F	*s		11,739	0.98	E		
	SR-55 to Bristol St	NB	4	8,000	6,149	0.61	C	6,624	0.66	C	6,152	0.62	C			6,891	0.69	C		
		SB	5	10,000	10,341	1.03	F	7,824	0.78	D	10,591	1.06	F	*		7,946	0.79	D		
	Bristol St to SR-73	NB	5	10,000	7,214	0.72	D	8,054	0.81	D	7,211	0.72	D			8,306	0.83	D		
		SB	5	10,000	10,041	1.00	E	6,834	0.68	C	10,144	1.01	F			6,918	0.69	C		
SR-55	South of Victoria St	NB	4	8,000	3,985	0.66	C	3,399	0.57	C	3,984	0.66	C			3,424	0.57	C		
		SB	3	6,000	3,176	0.53	C	3,250	0.54	C	3,187	0.53	C			3,276	0.55	C		
	Victoria St to Fair Dr	NB	4	8,000	6,392	0.80	D	4,854	0.61	C	6,396	0.80	D			4,867	0.61	C		
		SB	3	6,000	4,979	0.62	C	5,496	0.69	C	5,006	0.63	C			5,556	0.69	C		
	Fair Dr to SR-73	NB	4	8,000	7,898	0.99	E	6,186	0.77	D	7,911	0.99	E			6,210	0.78	D		
		SB	4	8,000	5,870	0.73	D	6,428	0.8	D	5,887	0.74	D			6,500	0.81	D		
	SR-73 to Baker St	NB	4	8,000	6,992	0.87	D	6,046	0.76	D	7,009	0.88	D			6,143	0.77	D		
		SB	4	8,000	6,781	0.85	D	6,554	0.82	D	6,818	0.85	D			6,675	0.83	D		
	Baker St to I-405	NB	4	8,000	6,992	0.87	D	6,046	0.76	D	7,009	0.88	D			6,143	0.77	D		
		SB	4	8,000	6,781	0.85	D	6,554	0.82	D	6,818	0.85	D			6,675	0.83	D		
	I-405 to MacArthur Blvd	NB	4	8,000	8,843	0.74	D	9,045	0.75	D	9,035	0.75	D			9,220	0.77	D		
		SB	4	8,000	10,514	0.88	D	8,760	0.73	D	10,674	0.89	D			8,947	0.75	D		
	MacArthur Blvd to Dyer Rd	NB	4	8,000	7,880	0.79	D	9,179	0.92	E	8,094	0.81	D			9,387	0.94	E	34.0	D
		SB	4	8,000	10,500	1.05	F	7,870	0.79	D	10,668	1.07	F			8,070	0.81	D		
	Dyer Rd to Edinger Ave	NB	4	8,000	8,007	0.80	D	10,000	1.00	E	8,198	0.82	D			10,330	1.03	F	*	
		SB	4	8,000	10,697	1.34	F	7,507	0.94	E	10,999	1.37	F	*		7,674	0.96	E		
	Edinger Ave to McFadden St/ Sycamore Ave	NB	5	10,000	8,238	0.82	D	10,127	1.01	F	8,431	0.84	D			10,377	1.04	F	*	
		SB	4	8,000	11,336	1.13	F	7,959	0.80	D	11,638	1.16	F	*		8,118	0.81	D		
	McFadden St/Sycamore Ave to I-5	NB	5	10,000	8,946	0.89	D	10,710	1.07	F	9,110	0.91	E			10,957	1.10	F	*	
		SB	5	10,000	10,792	1.08	F	7,865	0.79	D	10,964	1.10	F			7,971	0.80	D		
	North of I-5	NB	3	6,000	6,049	0.60	C	7,660	0.77	D	6,114	0.61	C			7,829	0.78	D		
		SB	3	6,000	8,376	0.84	D	5,716	0.57	C	8,447	0.84	D			5,777	0.58	C		
SR-73	MacArthur Blvd to University Dr	NB	3	6,000	8,346	1.04	F	6,851	0.86	D	8,333	1.04	F			6,857	0.86	D		
		SB	4	8,000	7,428	0.93	E	7,548	0.94	E	7,461	0.93	E			7,575	0.95	E		
	University Dr to Jamboree Rd	NB	3	6,000	7,578	0.95	E	5,726	0.72	D	7,563	0.95	E			5,730	0.72	D		
		SB	3	6,000	5,566	0.70	C	6,066	0.76	D	5,583	0.70	C			6,072	0.76	D		
	Jamboree Rd to Birch St	NB	4	8,000	9,641	1.21	F	8,554	1.07	F	9,667	1.21	F			8,562	1.07	F		
		SB	3	6,000	6,861	0.86	D	7,068	0.88	D	6,891	0.86	D			7,095	0.89	D		
	Birch St to Campus Dr	NB	4	8,000	7,786	0.97	E	7,407	0.93	E	7,835	0.98	E			7,412	0.93	E		
		SB	4	8,000	8,228	1.03	F	7,649	0.96	E	8,291	1.04	F			7,711	0.96	E		
	Campus Dr to SR-55	NB	4	8,000	8,655	1.08	F	9,691	1.21	F	8,834	1.10	F			9,839	1.23	F		
		SB	4	8,000	10,473	1.31	F	8,736	1.09	F	10,630	1.33	F			8,854	1.11	F		
	SR-55 to Bear St	NB	3	6,000	6,399	0.80	D	7,190	0.90	E	6,459	0.81	D			7,218	0.90	E		
		SB	3	6,000	7,128	0.89	D	5,854	0.73	D	7,194	0.90	E			5,884	0.74	D		
	Bear St to I-405	NB	3	6,000	5,462	0.68	C	6,212	0.78	D	5,505	0.69	C			6,174	0.77	D		
		SB	3	6,000	6,551	0.82	D	5,125	0.64	C	6,577	0.82	D			5,126	0.64	C		

LOCATION		FREEWAY LANES			BUILDOUT CUMULATIVE BASELINE						BUILDOUT CUMULATIVE WITH UPDATE									
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
		DIRECTION	LANES	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
SR-261	South of El Camino Real	NB	2	4,000	896	0.11	A	3,009	0.38	B	922	0.12	A			3,125	0.39	B		
		SB	2	4,000	3,622	0.91	E	1,241	0.31	B	3,728	0.93	E			1,295	0.32	B		

Note: *Impacted location. No HCM Analysis required for LOS F locations With Update impacts per performance criteria.

5.14 Buildout Cumulative Baseline With Update Peak Hour Freeway Ramp Analysis

The ramp analysis methodology for Buildout Cumulative With Update is consistent with that applied for Buildout Cumulative Baseline. **Table 5.14** displays the freeway ramp interchange, ramp type, number of lanes, peak hour capacity, volumes, densities, and LOS. **Appendix H** presents detailed HCS worksheets for ramp analysis. When compared to the Buildout Baseline scenario, there are no additional deficient locations; however, there are some ramps that deteriorate further as trips are added. Impacts on freeway ramps are addressed in **Chapter 6** in accordance with the impact criteria agreed to by the City and Caltrans. Twelve of the 98 ramps in the study area are forecast to be deficient in the AM peak. In the PM peak 18 ramps are forecast to be deficient. One additional ramp becomes deficient in the With Update scenario this being Southbound I-405 Off-Ramp to Jamboree Road in the PM Peak. The deficient ramp locations are:

AM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
I-405	**Northbound**	• Off-Ramp to Jamboree Road* • Off-Ramp to MacArthur Boulevard*
	Southbound	• Off-Ramp to Jamboree Road • Off-Ramp to MacArthur Boulevard*
SR-55	**Northbound**	• Direct On-Ramp from Fair Drive • On-Ramp from Paularino Avenue • On-Ramp from Dyer Road*
	Southbound	• Off-Ramp to Paularino Avenue*
SR-73	**Northbound**	• Off-Ramp to Birch Street
	Southbound	• Off-Ramp to Campus Drive*

PM Peak Hour:

I-5	**Northbound**	• Off-Ramp to Jamboree Road
	Southbound	• Direct On-Ramp from Jamboree Road
I-405	**Northbound**	• Direct On-Ramp from Bristol Street • Off-Ramp to Bristol Street
	Southbound	• Off-Ramp to Jamboree Road*
SR-55	**Northbound**	• On-Ramp from Fair Drive • On-Ramp from Paularino Avenue • Direct On-Ramp from MacArthur Boulevard • On-Ramp from Edinger Avenue • On-Ramp from McFadden
	Southbound	• Off-Ramp to Victoria Street

		• Off-Ramp to Paularino Avenue
SR-73	**Northbound**	• On-Ramp from Jamboree Road • Off-Ramp to Birch Street • Off-Ramp from Campus Drive* • Off-Ramp to Bear Street
	Southbound	• Off-Ramp to McArthur Boulevard • On-Ramp North from University from MacArthur Boulevard

*Denotes freeway ramp impacts.

Figure 5.18 and **Figure 5.19** graphically depict the Buildout Cumulative With Update freeway and ramp deficiencies.

Table 5.14 –Buildout Cumulative With Update Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		BUILDOUT CUMULATIVE BASELINE						BUILDOUT CUMULATIVE WITH UPDATE									
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
			NO. OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
I-5	Culver Dr	SB On Direct	1	1,000	334	0.37	B	529	0.59	C	335	0.37	B			559	0.62	C		
		SB On Loop	1	1,000	595	0.66	C	301	0.33	B	597	0.66	C			300	0.33	B		
		SB Off	2	500	841	0.37	B	1,810	0.80	D	841	0.37	B			1,811	0.80	D		
		NB On Loop	2	1,000	750	0.50	B	480	0.32	B	750	0.50	B			480	0.32	B		
		NB On Direct	1	1,000	654	0.73	D	175	0.19	A	653	0.73	D			175	0.19	A		
		NB Off	1	500	509	0.34	B	766	0.51	C	504	0.34	B			763	0.51	C		
	Jamboree Rd	SB On Direct	2	1,000	402	0.27	A	1,410	0.94	E	401	0.27	A			1,420	0.95	E		
		SB On Loop	2	1,000	845	0.56	C	440	0.29	A	862	0.57	C			440	0.29	A		
		SB Off	2	500	1,161	0.39	B	1,313	0.44	B	1,160	0.39	B			1,324	0.44	B		
		NB On Loop	2	1,000	580	0.54	C	560	0.52	C	570	0.53	C			570	0.53	C		
		NB On Direct	2	1,000	480	0.44	B	300	0.28	A	480	0.44	B			300	0.28	A		
		NB Off	1	500	1,670	1.11	F	1,437	0.96	E	1,693	1.13	F			1,444	0.96	E		
	Tustin Ranch Rd	SB On	2	1,000	709	0.47	B	760	0.51	C	690	0.46	B			770	0.51	C		
		NB On	3	1,000	1,090	0.61	C	970	0.54	C	1,090	0.61	C			970	0.54	C		
		NB Off	1	500	692	0.46	B	551	0.37	B	698	0.47	B			562	0.37	B		
		SB Off	2	500	1,070	0.48	B	1,029	0.46	B	1,072	0.48	B			1,024	0.46	B		
	Red Hill Ave	SB On	2	1,000	890	0.59	C	1,000	0.67	C	892	0.59	C			1,040	0.69	C		
		NB On	2	1,000	827	0.55	C	756	0.50	B	813	0.54	C			767	0.51	C		
		NB Off	1	500	830	0.55	C	990	0.66	C	840	0.56	C			1,010	0.67	C		
		SB Off	1	500	509	0.34	B	493	0.33	B	500	0.33	B			503	0.34	B		
	Newport Blvd	SB Off	1	500	771	0.51	C	901	0.60	C	760	0.51	C			901	0.60	C		
		NB On	2	1,000	930	0.62	C	870	0.58	C	930	0.62	C			870	0.58	C		
I-405	Culver Dr	SB On Direct	1	1,000	520	0.35	B	1,175	0.78	D	570	0.38	B			1,240	0.83	D		
		SB On Loop	1	1,000	430	0.48	B	385	0.43	B	430	0.48	B			400	0.44	B		
		SB Off	2	500	1,098	0.37	B	1,508	0.50	B	1,089	0.36	B			1,505	0.50	B		
		NB On Loop	1	1,000	740	0.49	B	290	0.19	A	740	0.49	B			290	0.19	A		
		NB On Direct	1	1,000	1,250	0.83	D	430	0.29	A	1,250	0.83	D			430	0.29	A		
		NB Off	2	500	1,092	0.49	B	1,406	0.62	C	1,228	0.55	C			1,431	0.64	C		
	Jamboree Rd	SB On Direct	2	1,000	664	0.37	B	1,425	0.79	D	811	0.45	B			1,560	0.87	D		
		SB On Loop	1	1,000	306	0.20	A	652	0.43	B	365	0.24	A			700	0.47	B		
		SB Off	2	500	2,691	1.20	F	1,880	0.84	D	2,688	1.19	F			2,091	0.93	E	40.6[1]	F
		NB On Loop	1	1,000	621	0.41	B	630	0.42	B	640	0.43	B			630	0.42	B		
		NB On Direct	2	1,000	1,392	0.77	D	970	0.54	C	1,390	0.77	D			970	0.54	C		
		NB Off	2	500	2,521	1.12	F	1,690	0.75	D	2,659	1.18	F	*		1,843	0.82	D		
	MacArthur Blvd	SB Direct On	2	1,000	580	0.32	B	1,300	0.72	D	620	0.34	B			1,370	0.76	D		
		SB Off	2	500	2,436	1.08	F	1,093	0.49	B	2,554	1.14	F	*		1,135	0.5	B		
		NB On	1	1,000	500	0.33	B	1,200	0.8	D	540	0.36	B			1,250	0.83	D		
		NB Off	1	500	2,495	1.66	F	873	0.58	C	2,600	1.73	F	*		931	0.62	C		

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		BUILDOUT CUMULATIVE BASELINE						BUILDOUT CUMULATIVE WITH UPDATE								
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
			NO. OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
I-405	Bristol St	SB Loop On	1	1,000	1,062	0.71	C	1,077	0.72	D	1,112	0.74	D			1,114	0.74	D		
		SB Off	2	500	993	0.44	B	951	0.42	B	993	0.44	B			952	0.42	B		
		NB On Loop	1	1,000	160	0.18	A	230	0.26	A	160	0.18	A			230	0.26	A		
		NB On Direct	1	1,000	682	0.45	B	1,434	0.96	E	672	0.45	B			1,386	0.92	E		
		NB Off	1	500	824	0.55	C	2,045	1.36	F	824	0.55	C			2,058	1.37	F		
SR-55	Victoria St	SB Direct On	1	1,000	504	0.56	C	644	0.72	D	516	0.57	C			655	0.73	D		
		SB Off	2	500	1,245	0.55	C	2,089	0.93	E	1,239	0.55	C			2,084	0.93	E		
		NB Direct On	1	1,000	1,225	0.82	D	1,124	0.75	D	1,252	0.83	D			1,143	0.76	D		
		NB Off	1	500	672	0.45	B	786	0.52	C	676	0.45	B			795	0.53	C		
	Fair Dr	SB Direct On	1	1,000	265	0.29	A	336	0.37	B	257	0.29	A			332	0.37	B		
		SB Off	2	500	1,157	0.51	C	1,603	0.71	C	1,138	0.51	C			1,615	0.72	D		
		NB Direct On	1	1,000	1,678	1.12	F	1,958	1.31	F	1,691	1.13	F			1,971	1.31	F		
		NB Off	1	500	172	0.11	A	148	0.10	A	176	0.12	A			146	0.10	A		
	Baker St	SB On	1	1,000	555	0.37	B	1,140	0.76	D	559	0.37	B			1,150	0.77	D		
		SB Off	1	500	939	0.63	C	1,330	0.89	D	979	0.65	C			1,323	0.88	D		
		NB Off	1	500	1,203	0.80	D	1,001	0.67	C	1,243	0.83	D			1,021	0.68	C		
	Paularino Ave	SB Off	1	500	1,710	1.14	F	1,490	0.99	E	1,741	1.16	F	*		1,470	0.98	E		
		NB On	1	1,000	1,540	1.71	F	1,209	1.34	F	1,570	1.74	F			1,210	1.34	F		
	MacArthur Blvd	SB On Direct	1	1,000	1,020	0.68	C	835	0.56	C	1,000	0.67	C			839	0.56	C		
		SB On Loop	1	1,000	170	0.19	A	704	0.78	D	200	0.22	A			738	0.82	D		
		SB Off	2	500	1,954	0.87	D	1,007	0.45	B	1,981	0.88	D			1,018	0.45	B		
		NB On Loop	1	1,000	780	0.52	C	620	0.41	B	770	0.51	C			625	0.42	B		
		NB On Direct	1	1,000	230	0.26	A	960	1.07	E	310	0.34	B			977	1.09	E		
		NB Off	2	500	1,601	0.71	C	1,120	0.5	B	1,704	0.76	D			1,161	0.52	C		
	Dyer Rd	SB On	1	1,000	931	0.62	C	1,210	0.81	D	960	0.64	C			1,249	0.83	D		
		SB Off Loop	1	500	825	0.55	C	570	0.38	B	852	0.57	C			570	0.38	B		
		SB Off to Grand	1	500	810	0.54	C	500	0.33	B	830	0.55	C			499	0.33	B		
		NB On Direct	1	1,000	400	0.27	A	1,080	0.72	D	430	0.29	A			1,190	0.79	D		
		NB On Loop	1	1,000	640	0.71	C	680	0.76	D	640	0.71	C			680	0.76	D		
		NB Off	1	500	1,386	0.92	E	463	0.31	B	1,445	0.96	E	34.5	D	475	0.32	B		
	Edinger Ave	SB On	1	1,000	1,007	0.67	C	922	0.61	C	1,022	0.68	C			936	0.62	C		
		SB Off	1	500	1,120	0.75	D	580	0.39	B	1,120	0.75	D			580	0.39	B		
		NB On	1	1,000	961	0.64	C	1,461	0.97	E	957	0.64	C			1,459	0.97	E		
		NB Off	1	500	804	0.54	C	598	0.40	B	834	0.56	C			625	0.42	B		
	McFadden Ave	SB On	1	1,000	604	0.40	B	568	0.38	B	634	0.42	B			594	0.40	B		
		SB Off	2	500	609	0.27	A	980	0.44	B	602	0.27	A			955	0.42	B		
		NB On	1	1,000	1,230	0.82	D	1,552	1.03	E	1,199	0.80	D			1,558	1.04	E		
		NB Off	1	500	522	0.35	B	760	0.51	C	520	0.35	B			770	0.51	C		
SR-73	Bison Ave	SB On	1	1,000	150	0.10	A	360	0.24	A	150	0.10	A			360	0.24	A		
		SB Off	1	500	994	0.66	C	472	0.31	B	1,015	0.68	C			482	0.32	B		
		NB On	1	1,000	454	0.30	A	1,197	0.80	D	463	0.31	B			1,201	0.80	D		
	MacArthur Blvd	SB On	1	1,000	197	0.13	A	1,179	0.79	D	218	0.15	A			1,208	0.81	D		
		SB Off	1	500	1,381	0.92	E	1,385	0.92	E	1,371	0.91	E			1,403	0.94	E		
		NB On s/o University Dr	1	1,000	720	0.48	B	1,171	0.78	D	723	0.48	B			1,203	0.80	D		
		NB On n/o University Dr	1	1,000	986	0.66	C	1,831	1.22	F	1,012	0.67	C			1,858	1.24	F		
	University Dr	SB Off	1	500	1,169	0.78	D	800	0.53	C	1,180	0.79	D			820	0.55	C		
	Jamboree Rd	SB On	1	1,000	478	0.32	B	918	0.61	C	476	0.32	B			950	0.63	C		
		SB Off	2	500	1,367	0.61	C	790	0.35	B	1,399	0.62	C			837	0.37	B		
		NB On	1	1,000	1,077	0.72	D	2,012	1.34	F	1,092	0.73	F			1,991	1.33	F		
	Birch St	NB Off	1	500	1,855	1.24	F	1,558	1.04	E	1,832	1.22	F			1,563	1.04	E		

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		BUILDOUT CUMULATIVE BASELINE						BUILDOUT CUMULATIVE WITH UPDATE								
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR					PM PEAK HOUR				
			NO. OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS	VOLUME	V/C	LOS	HCM DENSITY	LOS
SR-73	Campus Dr	SB Off	2	500	2,245	1.00	E	1,477	0.66	C	2,339	1.04	E	65.2	F	1,553	0.69	C		
		NB On	1	1,000	869	0.58	C	3,103	2.07	F	999	0.67	C			3,298	2.20	F	*	
	Bear Street	SB On	1	1,000	830	0.55	C	733	0.49	B	830	0.55	C			740	0.49	B		
		SB Off	1	500	400	0.27	A	390	0.26	A	390	0.26	A			391	0.26	A		
		NB Off	1	500	714	0.48	B	1,583	1.06	E	724	0.48	B			1,582	1.05	E		
		NB On	1	1,000	250	0.17	A	471	0.31	B	250	0.17	A			501	0.33	B		
SR-261	Jamboree Rd	SB On	2	1,000	1,266	0.42	B	1,247	0.42	B	1,215	0.40	B			1,329	0.44	B		
		NB Off	2	250	513	0.23	A	1,337	0.59	C	559	0.25	A			1,386	0.62	C		
	Walnut Ave	NB On	1	1,000	351	0.23	A	1,118	0.75	D	358	0.24	A			1,176	0.78	D		
		SB Off	1	500	991	0.66	C	519	0.35	B	1,034	0.69	C			529	0.35	B		

F Denotes ramp operating at a deficient LOS

Note: [1] HCM 2010 limits Ramp HCM Density calculations with freeway lanes to 5 or less. HCM density was adjusted to include freeway lanes of 5 or more lanes.

*Theoretical impacts. No HCM Analysis required for LOS F locations per performance criteria.

Figure 5.18 – Buildout Cumulative With Update Freeway AM Peak Hour Deficiencies

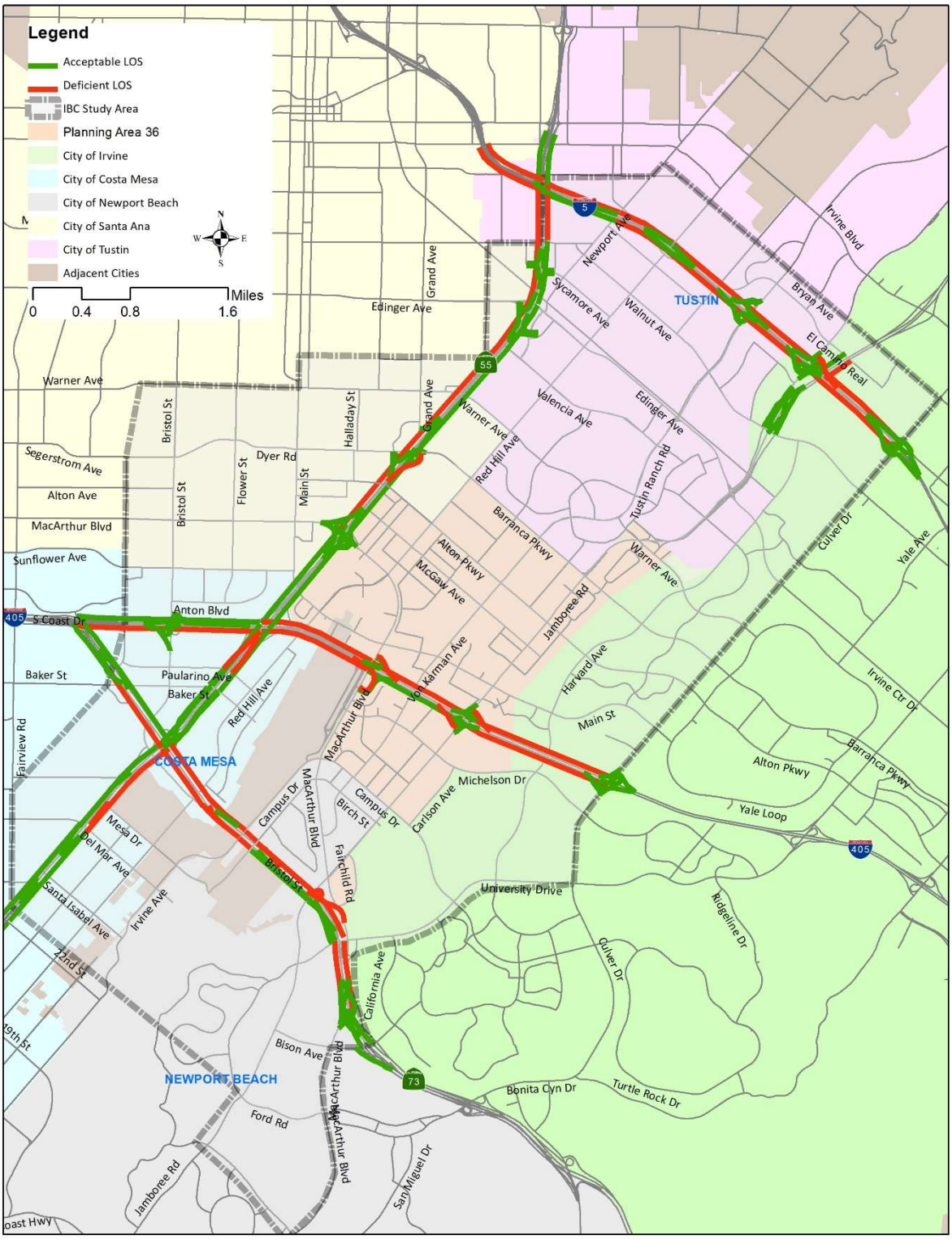
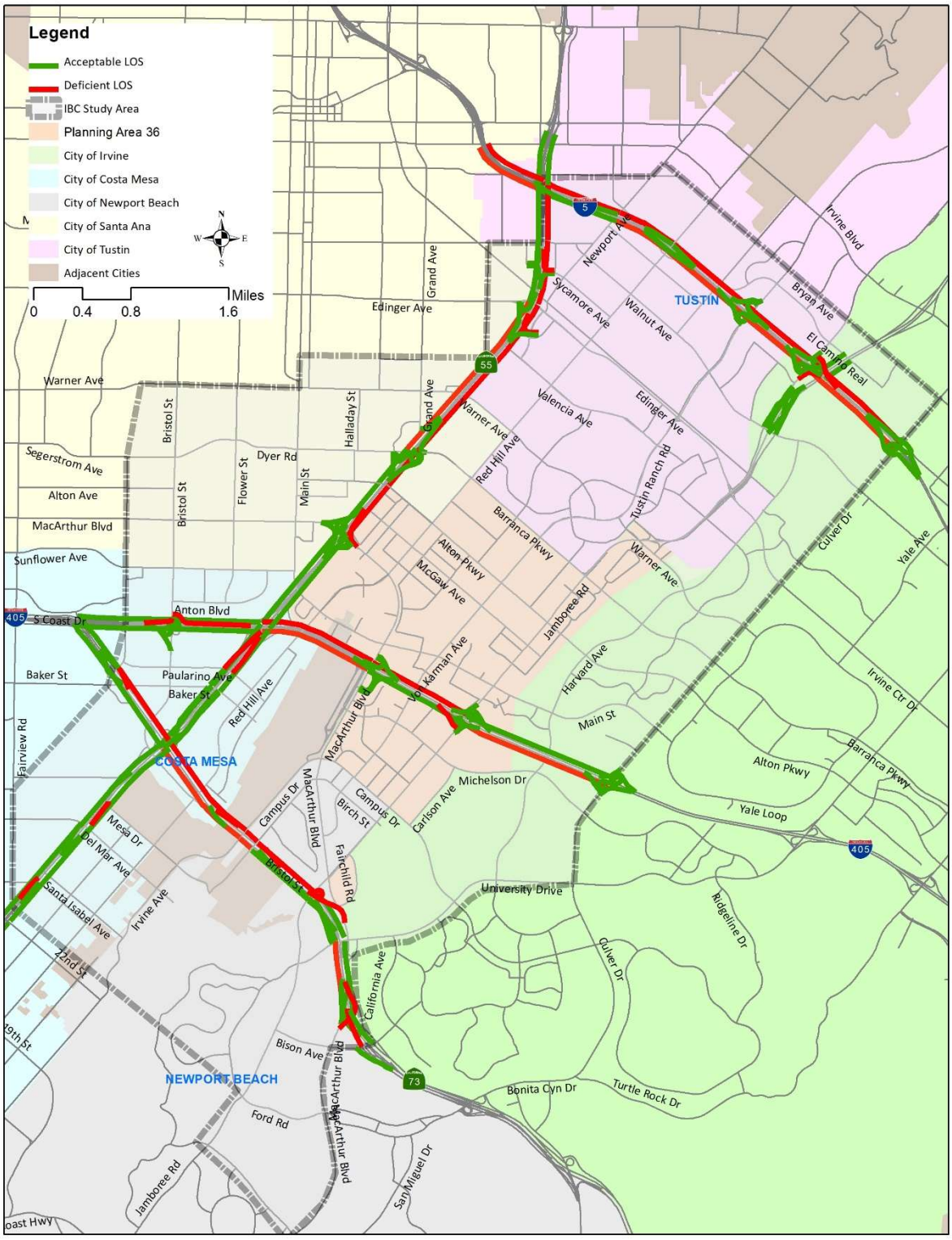


Figure 5.19 – Buildout Cumulative With Update Freeway PM Peak Hour Deficiencies



5.15 Buildout With Update Summary

The Buildout and Buildout With Update analysis shows that while much of the study area is operating within acceptable traffic thresholds, there are several segments and intersections that are operating under a deficient LOS during daily and peak hour conditions.

Eight additional arterial segments fail under daily conditions (seven in the City of Irvine and one in the City of Tustin). For intersections, in the Buildout With Update condition there are 11 additional intersections that become deficient (one in the City of Costa Mesa, five in the City of Irvine, one jointly in the cities of Irvine and Newport Beach, one in the City of Newport Beach, one in the City of Santa Ana, and two in the City of Tustin). For freeways, one additional mainline segment becomes deficient in the AM Peak (SR-55 Northbound between McFadden Street/Sycamore Avenue and I-5) and one additional segment becomes deficient in the PM Peak (SR-73 Southbound between SR-55 and Bear Street) and one additional ramps becomes deficient under the With Update scenario in the PM Peak hour (Southbound I-405 Off-Ramp to Jamboree Road). Impacts, deficiencies, and improvement strategies are discussed in **Chapter 6.**

6 FUTURE IMPROVEMENTS AND MITIGATIONS FOR IBC VISION PLAN

6.1 Policy Framework

A number of agreements were signed between the City of Irvine and adjacent jurisdictions during the 2010 IBC Vision Plan effort, which required the City of Irvine to provide specific dollar amounts of infrastructure funding to each adjacent jurisdiction. These agreements were premised on the understanding that the Vision Plan had no additional responsibilities toward improvements identified, provided the residential unit cap within the IBC is not exceeded.

The residential unit intensity cap has not increased since the 2010 study. This traffic study update is intended only to analyze the change in traffic conditions since the 2010 approval. Except as otherwise specified in those existing agreements with adjacent jurisdictions, the Vision Plan is not responsible for improvements identified in this study update within the cities of Tustin, Newport Beach, Santa Ana, or for improvements on Caltrans facilities.

The impacts identified under the Existing With Update scenario are theoretical. The Vision Plan is not responsible for funding improvements resulting from the Existing Conditions With Update scenario but the locations are identified for information and future planning purposes. The Existing With Update scenario is a theoretical exercise to determine what would happen if all buildout trips are applied to the existing circulation system.

The Two-Year Update only identifies improvements for relevant significant impacts and cumulative deficiencies in future scenarios (Interim and Buildout scenarios) in the study area, which require mitigation as specified by the agreements. Locations with significant impacts that do not require a mitigation are noted for informational and planning purposes. For impacts and cumulative deficiencies located within the City of Irvine, full responsibility is assumed towards the costs of the improvements.

6.2 Fee Assessment/Fair-share for Improvements

For the sole purpose of providing a reference, a fair-share methodology has been performed to evaluate what the financial participation of improving impacts would be in the absence of the above-mentioned agreements. The following methodology is applied:

- For impacts within the City of Irvine, the update assumes full responsibility.
- For impacts outside the City of Irvine, the update assumes fair-share responsibility (for informational purposes only).

Cumulative deficiencies may operate deficiently in both the Baseline and With Update conditions but do not necessarily have an impact as identified by the criteria.

For impacts that are located in adjacent jurisdictions where the intersection becomes deficient under the With Update condition, a fair-share to an improvement cost that achieves acceptable performance is provided for reference and comparison purposes. The fair-share calculation is based on the difference between the Future With Update and Future Baseline total intersection entering volumes divided by the total growth entering volume from Existing to Future With Update conditions. The fair-share proportion is based on the value associated with the peak hour for which the deficiency has been identified. A computational example of the fair-share analysis is provided in **Table 6.1**.

Table 6.1 – Fair-share Analysis Computational Example

SAMPLE INTERSECTION																	
EXISTING															DIFFERENCE FROM EXISTING	DIFFERENCE FROM BASELINE	FAIR SHARE
	ICU	SBL	SBT	SBR	WBL	WBT	WBR	NBL	NBT	NBR	EBL	EBT	EBR	Total			
AM	0.59	12	1316	85	175	168	17	284	706	181	78	151	147	3,317			
PM	0.58	24	746	107	170	295	22	391	1285	215	78	188	196	3,712			
BUILDOUT CUMULATIVE BASELINE																	
AM	0.59	90	1278	49	402	237	70	248	662	173	90	229	230	3,758	**442**		
PM	0.91	309	586	47	395	929	162	384	815	439	23	972	129	5,190	**1,478**		
BUILDOUT CUMULATIVE BASELINE WITH UPDATE																	
AM	0.60	93	1273	53	407	257	75	255	676	171	94	231	226	3,811	**495**	**53**	**11%**
PM	0.92	310	596	47	400	928	161	385	816	440	23	990	134	5,230	**1,518**	**40**	**3%**

Table 6.1 indicates that the update's fair-share on the proposed improvement to improve the identified AM peak hour deficiency at this intersection is 11%. For each scenario analyzed, a fair-share is identified for impacts. For intersections where the fair-share varies between the Interim and Buildout scenarios studied, the scenario with the highest percentage is used. Detailed fair-share calculation worksheets are included in **Appendix I**.

For Caltrans facilities, the fair-share was developed by calculating the future forecast With Update AM and PM peak hour volume minus the future forecast Baseline AM and PM peak hour volume, divided by the future forecast With Update volume. Thus, the share represents the total growth that the IBC Vision Plan contributes to the freeway system under Buildout conditions. The highest share between the AM and PM peak hour is utilized for impacted locations.

6.3 Development of Improvement Strategies

Table 6.2 shows the number of significantly impacted locations for arterials, intersections, freeway mainline and ramps. Improvement strategies for each are discussed in turn.

Table 6.2 - Comparison of Number of Significantly Impacted Locations in the Study Area between With Update Scenarios

FACILITY	EXISTING	INTERIM	BUILDOUT
Arterial Segments	0	0	0
Intersections	3	1	20
Freeway Mainline	6	3	11
Freeway Ramps	8	3	8
Total	**18**	**9**	**39**

Arterial Segments

Based on the City of Irvine and adjacent cities' criteria, there are no arterial segments that are significantly impacted in the future conditions. All deficient arterials in the City of Irvine under daily conditions perform acceptably in the peak hours and are not significantly impacted. Deficient arterials in the City of Tustin, City of Costa Mesa, and City of Newport Beach are addressed at the adjacent intersections. The City of Santa Ana identifies significant plan update impacts based on the arterial daily LOS analysis. Based on calculated ICU and LOS, no arterial segments are significantly impacted in the scenarios modeled.

Intersection Improvements

Deficient intersections within the IBC study area fall under two categories: – impact and cumulative deficiency. Impacts are determined using the definition from each city's traffic impact analysis protocol, presented in **Chapter 2**. For the cities of Costa Mesa, Santa Ana, and Tustin, significant impacts are identified as an increase in intersection ICU of 0.01 or greater under With Update conditions of a deficient intersection when compared to Baseline conditions. For the City of Newport Beach, an impact is identified as an increase of 0.01 or more of the critical movement of a deficient intersection. Cumulative deficiencies are identified as those intersections that fail under both the Baseline and With Update conditions but do not have an update impact as identified by the above noted criteria. The City of Irvine threshold for defining impact is degradation of an intersection from acceptable to deficient LOS, or for a location already deficient in the baseline, an increase of 0.02 or greater of an intersection ICU. For intersections with shared jurisdictional boundaries, the more conservative methodology was employed.

Three intersections under Interim With Update and 25 intersections in Buildout With Update scenarios are forecast to operate at a deficient LOS. Of those deficient intersections, a significant impact is forecast for one intersection in the Interim With Update and 20 intersections in the Buildout With Update scenarios. A cumulative deficiency is forecast for one intersection in the Buildout With Update scenario. Of the impacted intersections and cumulative deficient intersection, 9 need intersection improvements, subject to the existing Agreements. The remaining deficient intersections are deficiencies outside the City of Irvine, for which existing Agreements preclude participation. **Table 6.3** identifies intersections with significant impacts and cumulative deficiencies for the Interim Year and Buildout Year scenarios studied. Impacts identified under the existing scenarios are not included as impacts because they are considered theoretical impacts.

Table 6.3 –Intersections Significantly Impacted and Cumulative Deficiencies in the Study Area

ID	LOCATION	JURSDICTION	SIGNIFICANT IMPACT	CUMULATIVE DEFICIENCY	MITIGATION REQUIRED
12	SR-55 Frontage Road SB at Baker Street	Costa Mesa	Buildout		Yes
192	California Avenue at University Drive	Irvine		Buildout	Yes
98	Von Karman Avenue at Alton Parkway	Irvine	Buildout		Yes
144	Jamboree Road at I-405 SB Ramps	Irvine	Buildout		No
145	Jamboree Road at Michelson Drive	Irvine	Buildout		Yes
188	Harvard Avenue at Michelson Drive	Irvine	Buildout		Yes
232	Culver Drive at I-405 NB Ramps	Irvine	Buildout		Yes
97	Von Karman Avenue/Tustin Ranch Road at Barranca Parkway	Irv/Tustin	Interim/Buildout		Yes (Buildout Only)
136	Jamboree Road at Barranca Parkway	Irv/Tustin	Buildout		Yes
44	Red Hill Avenue at Alton Parkway	Irv/SA	Buildout		No
84	MacArthur Boulevard at Campus Drive	Irv/NB	Buildout		No
63	Campus Drive at Bristol Street SB	Newport	Buildout		No
543	Bristol Street at Segerstrom Avenue	Santa Ana	Buildout		No

ID	LOCATION	JURSDICTION	SIGNIFICANT IMPACT	CUMULATIVE DEFICIENCY	MITIGATION REQUIRED
544	Bristol Street at MacArthur Boulevard	Santa Ana	Buildout		No
719	Flower Street at Segerstrom Avenue	Santa Ana		Buildout	No
723	Main Street at Dyer Road	Santa Ana	Buildout		No
727	Halladay at Dyer Road	Santa Ana	Buildout		No
728	Halladay East at Alton Parkway	Santa Ana	Buildout		No
3	Newport Avenue at Edinger Avenue	Tustin	Buildout		No
38	Red Hill Avenue at Walnut Avenue	Tustin	Buildout		No
40	Red Hill Avenue at Edinger Avenue	Tustin	Buildout		No
453	Red Hill Avenue at Valencia Avenue	Tustin	Buildout		No
749	Park Avenue at A Street	Tustin		Buildout	No
	Total Number Locations		**20**	**3**	**8**

Source: ITAM, City of Irvine, ICU analysis

Improvements

The development of improvements began with identification of any measures that were recommended as part of the 2010 IBC Vision Plan traffic study and the 2015 IBC Vision Plan traffic study update. These mitigation measures were then applied to determine whether they result in facility operation within acceptable thresholds. If mitigation measures were not previously identified either as part of a traffic study or planned future improvements, mitigation is proposed by providing adequate capacity for the critical movement for an intersection. Critical movements are conflicting intersection movements that have the highest ICU for opposing movements. Since the combination of the ICU values for each critical movement defines the ICU, providing additional through lanes or turning lanes is dependent upon whether the critical movement is a through or turn (left or right) movement. The decision of whether additional lanes should be auxiliary lanes that just add capacity to the intersection without widening the street segment or extended along the street segment to adjacent intersections is dependent upon the performance, proximity and improvement needs of adjacent intersections.

Improvements are further analyzed for feasibility. A preliminary feasibility assessment is based upon potential cost-effectiveness and right-of-way acquisition. Right-of-way acquisitions are least preferred, as they can require relocation of businesses and residents. Compensation for such relocation is an added financial burden to the plan update. Wherever feasible, additional capacity for through movements or turning movements is sought through re-striping or spot-widening. Some factors involved in widening an intersection to provide an additional left or right turning lane or to add a through lane are:

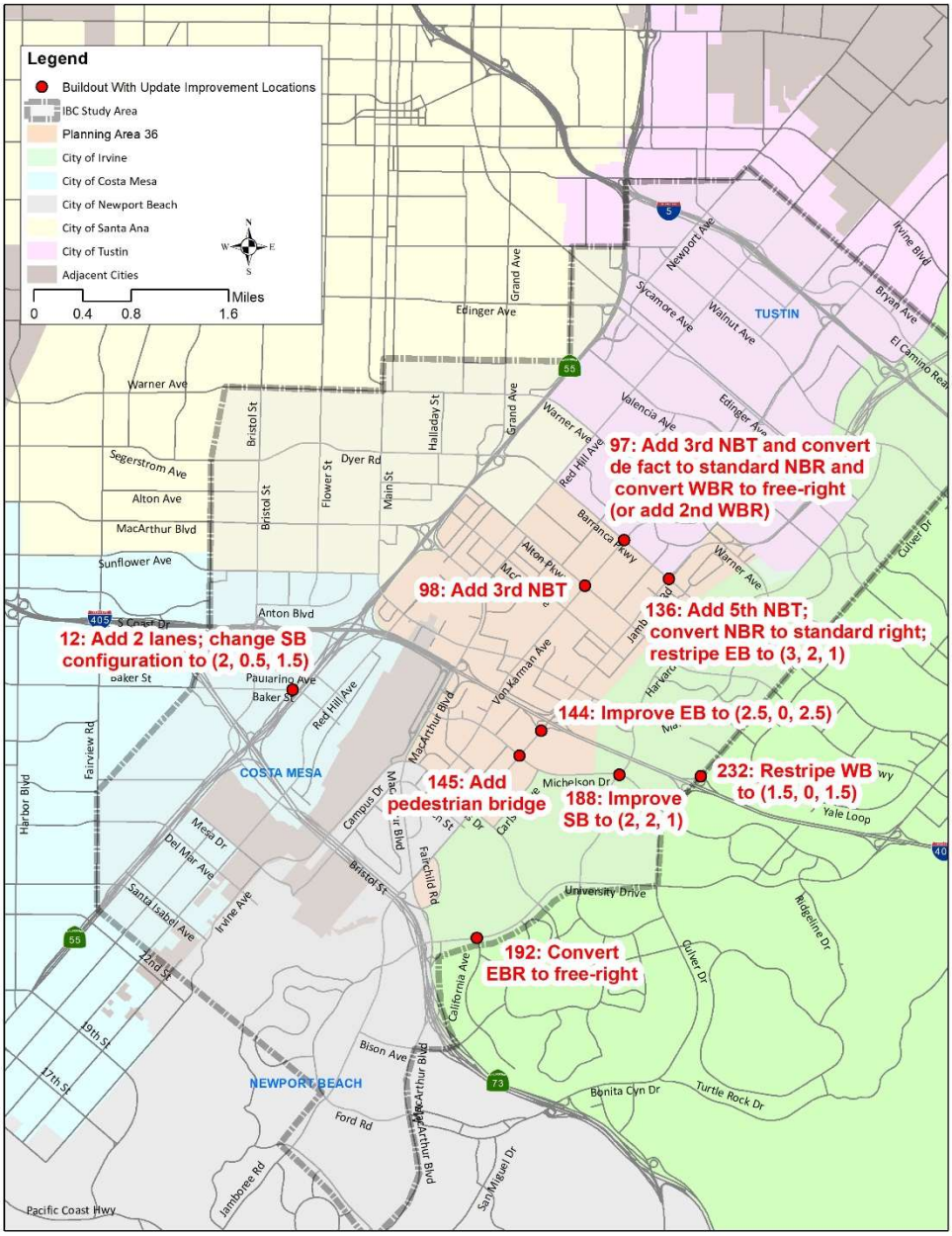
- Whether there are a sufficient number of receiving lanes through the intersection to accommodate the added lane (triple lefts need at least 3 lanes to turn into)
- Whether the opposing left turns would align (triple lefts opposite a dual left may not be able to occur simultaneously), so the signal phasing would need to be modified to provide split phasing or lead-lag operations.
- How far to extend a receiving lane past the intersection so that it has sufficient benefit in increasing the capacity of the intersection. If the through lane ends too soon after the intersection, motorists may not want to bother using it due to the inconvenience of merging back in to the narrower section

Where applicable, feasible improvements identified in the 2010 Vision Plan and 2015 Update that have yet to be implemented were recommended as improvements. Additionally, traffic studies and other planning documents were sourced in adjacent jurisdictions to develop improvement strategies for intersection

deficiencies.

Consistent with the IBC Vision Plan Traffic Study, the improvements recommended in this update study include physical improvements rather than operational improvements. Advanced Traffic Management System (ATMS) strategies have not been recommended as improvement strategies for this study. Physical improvements including restriping, intersection geometrics, or addition of intersection capacity to more efficiently serve forecast future traffic volumes have been identified for all impact locations. Recommended improvements have been developed and evaluated through site analysis to determine feasibility. **Figure 6.1** identifies the locations of the intersection impacts and cumulative deficiencies with a description of the improvement for each location.

Figure 6.1 – IBC Vision Study Area Improvement Locations



The following sections discuss the intersection deficiencies and recommended mitigations for each jurisdiction within the study area. If an intersection impact occurs only in Interim and subsequent improvements result in acceptable LOS under Buildout conditions, the impact is considered temporary.

6.3.1 Irvine

Seven intersections within the City of Irvine are forecast to operate deficiently under future conditions and will require mitigation to achieve an acceptable LOS. The seven deficient City of Irvine intersections have plan update related significant impacts and deficient in the Buildout With Update scenario. **Table 6.4** presents the

mitigation strategy for significantly impacted and cumulative deficient City of Irvine intersections before and after the mitigation measures are applied. Because these intersections are located within the City of Irvine, the update assumes full responsibility. Significantly impacted intersections located in both the City of Irvine and an adjacent city are discussed in later sections. The following mitigations are recommended for intersections that are significantly impacted by the proposed plan Update:

- **Intersection #98: Von Karman Avenue and Alton Parkway**
  The intersection at Von Karman Avenue and Alton Parkway is forecast to have a plan update related significant impact under PM peak hour conditions in the Buildout With Update scenario. Because of the high Von Karman volume on the north through movement, the recommended improvement is to add a third northbound through lane. This improvement is consistent with the plan previously identified in the 2015 Nexus Fee Study. With this improvement, the intersection returns to an acceptable LOS. The mitigation appears to be physically feasible.

- **Intersection #144: Jamboree Road at I-405 SB Ramps**
  The I-405 SB freeway ramp intersection with Jamboree Road is forecast to have plan update related significant impact under AM peak hour conditions in the Buildout With Update scenario. The recommended improvement include adding a fifth off-ramp lane and striping it for a shared left-right turns. This intersection improvement is consistent with previously identified Caltrans ramp improvement in the 2010 and 2015 Nexus Fee Studies, and would return the intersection to an acceptable LOS. The project does not have responsibility towards funding this improvement because of the agreement with Caltrans.

- **Intersection #145: Jamboree Road and Michelson Drive**
  This intersection is significantly impacted under the Buildout With Update scenario, with a forecast ICU of 1.06 in the PM peak hour. Critical movements include eastbound and southbound left turns and northbound through movements. Physical constraints associated with the proposed improvements, including Southern California Edison (SCE) 220kV transmission lines along the west side of Jamboree Road and an SCE substation located at the southeast corner of this intersection, constrain the feasible improvements that could add capacity at this location. Conceptual improvements developed to achieve acceptable LOS include the addition of a third westbound through lane, a third eastbound left turn lane, and restriping of the southbound approach to provide a third southbound left turn lane by reducing the number of southbound through lanes from four to three. It is noted that the latter restriping option moves the southbound lane drop that now occurs about 600 feet south of Michelson Drive. There are multiple issues with the conceptually identified improvements: 1) the addition of triple left turn lanes would not operationally improve the intersection capacity due to the uneven loading of the three lanes – i.e., many motorists making the eastbound left turn are destined for the I-405 on ramps and they only have 500 feet in which to merge into the right lanes while weaving with the westbound free right traffic that does not stop. Similarly, the proximity of the destination for the southbound triple left would inhibit the full operational benefits of this movement, as motorists would primarily load in the left and middle lanes of a southbound triple left because many are destined to the Park Place retail center on the northeast corner of Jamboree and Michelson. In recognition of the approximate 700 daily pedestrians currently crossing this intersection, and the traffic signal timing now allocated for pedestrians crossing the 230 feet of roadway, an improvement for a future pedestrian overcrossing is recommended at this intersection. This pedestrian crossing may also improve signal operations and ICU levels at this intersection. This improvement is consistent with the plan previously

identified in the 2015 Nexus Fee Study.

- **Intersection #188: Harvard Avenue and Michelson Drive**
  The intersection is forecast to have a significant impact under PM peak hour conditions in the Buildout With Update scenario. The forecast ICU is 0.91 in the PM peak hour. The recommended improvement involves the addition of a second southbound left turn lane on Harvard. This improvement is consistent with the plan previously identified in the 2015 Nexus Fee Study. It would return the intersection to an acceptable LOS, and appears to be physically feasible with widening to either the east or west.

- **Intersection #232: Culver Drive and I-405 NB Ramps**
  The intersection at Culver Drive and the I-405 NB Ramps is forecast to have an impact under PM peak hour conditions in the Buildout With Update scenario, with a forecast ICU of 0.92. The recommended improvement involves restriping the westbound approach to convert the second left-turn lane into a shared left-right turn lane. This intersection improvement is consistent with the plan identified in the 2010 Nexus Fee Study. The improvement would return the intersection to an acceptable LOS and is physically feasible.

- **Intersection #192: California Avenue at University Drive (Cumulative Deficiency)**
  The intersection at California Avenue at University Drive is forecast to have a cumulative deficiency under AM peak hour conditions in the Buildout With Update scenario, with a forecast ICU of 0.97. The recommended improvement involves converting the eastbound right-turn lane into a free-right turn lane. This would provide increased capacity for eastbound right-turn traffic entering the University of California, Irvine campus. This improvement would also require some widening of California Avenue in order to provide additional receiving lanes. The improvement would return the intersection to an acceptable LOS and is physically feasible.

Table 6.4 – City of Irvine Intersection Improvements

ID	INTERSECTION	BUILDOUT CUMULATIVE WITH UPDATE				BUILDOUT CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				IMPROVEMENT STRATEGY	RRESPONSIBILITY
		AM		PM		AM		PM			
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS		
98	Von Karman Ave at Alton Pkwy	0.92	E	1.02	F	0.92	E	0.86	D	Add 3rd NBT	Full
144	Jamboree Rd at I-405 SB Ramps	1.06	F	0.93	E	0.90	D	0.84	D	Improve EB to (2.5, 0, 2.5)	N/A
145	Jamboree Rd at Michelson Dr	0.91	E	1.02	F	Unable to quantify at this time				Add pedestrian bridge	Full
188	Harvard Ave at Michelson Dr	0.75	C	0.91	E	0.75	C	0.81	D	Improve SB to (2, 2, 1)	Full
232	Culver Dr at I-405 NB Ramps	0.71	C	0.92	E	0.71	C	0.82	D	Restripe WB to (1.5, 0, 1.5)	Full
192	California Ave at University Dr	0.97	E	0.81	D	0.67	B	0.81	D	Convert EBR to free-right turn lane	Full

6.3.2 Tustin and Irvine/Tustin

The City of Irvine has an agreement with City of Tustin stating that Irvine is not financially responsible for any further impacts that occur in the City of Tustin resulting from any update study following the 2010 study, as long as the City of Irvine does not increase the residential cap beyond 15,000 units. Therefore, this study does not discuss recommended improvements for arterials and intersections within the City of Tustin. The following locations would require improvements to achieve an acceptable LOS for information and planning purposes:

Existing With Update (theoretical impact):

- Intersection #96: Tustin Ranch Road and Walnut Avenue

Buildout With Update

- Intersection #3: Newport Avenue and Edinger Avenue
- Intersection #38: Red Hill Avenue and Walnut Avenue
- Intersection #40: Red Hill Avenue and Edinger Avenue
- Intersection #453: Red Hill Avenue and Valencia Avenue

There are two intersections shared by the City of Irvine and the City of Tustin that are significantly impacted in the Buildout With Update scenario that require mitigations. **Table 6.5** identifies the improvement strategies and corresponding ICUs. Because these intersections are also located within the City of Irvine, the Update assumes full responsibility. The following mitigations are recommended for intersections that are significantly impacted by the proposed plan update:

- **Intersection #97: Von Karman Avenue/Tustin Ranch Road and Barranca Parkway**
  This location is a shared location between the cities of Irvine and Tustin. ICU analysis indicates that the intersection of Von Karman Avenue/Tustin Ranch Road at Barranca Parkway is forecast to have a significant impact under PM peak hour in the Buildout With Update scenario. Because of the high volume on the north through movement, recommended improvements include adding a third northbound through lane and conversion of the northbound de facto right-turn to a standard right-turn lane on Von Karman Avenue. These improvements are consistent with the improvement identified in the 2015 Nexus Fee Study. Additionally, the recommended improvement also includes converting the standard westbound right-turn lane to a free right-turn lane (or alternatively adding a second right-turn lane). With this improvement, the intersection returns to an acceptable LOS and the mitigation appears to be physically feasible.

- **Intersection #136: Jamboree Road at Barranca Parkway**
  The intersection at Jamboree Road and Barranca Parkway is forecast to be significantly impacted under PM peak hour conditions in the Buildout With Update scenario. The City of Irvine's CIP includes a plan to add a 5th northbound through lane, converting the northbound free right-turn lane into a standard right-turn lane, and restriping the eastbound approach to have three left-turn lanes, two through lanes, and one right-turn lane would bring the intersection back to an acceptable LOS. This improvement appears to be physically feasible.

Table 6.5 – City of Irvine/City of Tustin Intersection Improvements

ID	INTERSECTION	BUILDOUT CUMULATIVE WITH UPDATE				BUILDOUT CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				IMPROVEMENT STRATEGY	Responsibility SHARE
		AM		PM		AM		PM			
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS		
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	0.89	D	1.19	F	0.89	D	0.97	E	Add 3rd NBT and convert de facto to standard NBR and convert WBR to free-right (or add 2nd WBR)	Full
136	Jamboree Rd at Barranca Pkwy	0.94	E	1.11	F	0.95	E	0.97	E	Add 5th NBT; convert NBR to standard right; restripe EB to (3, 2, 1) (improvement associated with CIP)	Full

6.3.3 Santa Ana and Irvine/Santa Ana

The City has an agreement with City of Santa Ana in place where any impacts that occur in the City of Santa Ana in any update study following the 2010 study will not be paid by the City due to its contributions towards the Alton/SR-55 Overcrossing and the Dyer Roadway Widening Capital Improvement Plan (CIP) Projects. Therefore, this study does not discuss recommended improvements for intersections within the City of Santa Ana. The following locations located within the City of Santa Ana would require improvements to achieve an acceptable LOS for information and planning purposes:

Buildout With Update

- Intersection #543: Bristol Street and Segerstrom
- Intersection #544: Bristol Street and MacArthur Boulevard
- Intersection #723: Main Street and Dyer Road
- Intersection #727: Halladay Road and Dyer Road
- Intersection #728: Halladay Road East and Alton Parkway
- Intersection #44: Red Hill Avenue and Alton Parkway

6.3.4 Costa Mesa

The City of Irvine has an agreement with the City of Costa Mesa that the IBC Vision Plan is financially responsible for its fair-share for any further impacts that occur in the City of Costa Mesa from any update study following the 2010 study. **Table 6.6** identifies the recommended improvement and fair-share for the one intersection location with a significant impact within the City of Costa Mesa. Because the intersection is located outside the City of Irvine, the update assumes fair-share responsibility. The location with a significant impact in the Buildout With Update scenario and the associated mitigation is:

- **Intersection #12: SR-55 Frontage Road SB and Baker Street**
  This intersection is deficient under the Buildout With Update scenario in the AM peak. The recommended improvement is similar to the one identified in the 2010 Nexus Fee Study which improves the southbound approach to accommodate high traffic volume by increasing the approach to four lanes. The current configuration has two approach lanes but there is a proposed improvement in the City of Costa Mesa's CIP to widen this to three approach lanes by 2022. The recommended improvement in this study is to stripe the southbound configuration to include two left-turn lanes, one shared through-right lane and one standard right-turn lane. Implementation of this improvement would result in acceptable operations under all scenarios and appears to be physically feasible. These improvements are provided for information and future planning purposes.

Table 6.6 – City of Costa Mesa Intersection Improvement

ID	INTERSECTION	BUILDOUT CUMULATIVE WITH UPDATE				BUILDOUT CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				IMPROVEMENT STRATEGY	RESPONSIBILITY
		AM		PM		AM		PM			
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS		
12	SR-55 Frontage Rd SB and Baker St	0.92	E	0.80	C	0.74	C	0.81	D	Add two lanes (over existing) and change the SB configuration to (2, 0.5, 1.5)	5.0%

*Fair-share percentage is shown for informational and comparison purposes only

6.3.5 Newport Beach and Irvine/Newport Beach

The City of Irvine has an agreement with City of Newport Beach that the IBC Vision plan is not financially responsible for any further impacts that occur in the City of Newport Beach from any update study following the 2010 study, as long as the City of Irvine does not increase the residential cap beyond the cap approved as part of the 2010 IBC Vision Plan effort. The following intersection would require improvements to achieve an acceptable LOS for information and planning purposes:

Buildout With Update

- Intersection #84: MacArthur Boulevard and Campus Drive
- Intersection #63: Campus Drive and Bristol Street Southbound

6.4 Freeway Mainline and Ramp Improvements

The City of Irvine has an agreement with Caltrans from 2009, stating that Irvine is not financially responsible for any further impacts that occur on freeway facilities resulting from any update study following the 2010 study, as long as the City of Irvine does not increase the residential cap beyond the dwelling unit cap studied in the 2010 Vision Plan study, which is the case with this study update. In light of this agreement, the following is provided for information and future planning purposes only.

6.4.1 Freeway Mainlines

As identified in **Chapters 4 and 5**, there are 40 freeway mainline deficiencies under the Interim and Buildout future scenarios and increase of 4 locations compared to the 2015 Update. For the Buildout Cumulative With Update scenario, which includes all regional growth, the volume on all freeway segments within the study area increases when compared with Existing Conditions. The volumes are consistent with the Baseline scenario forecast volumes, with some segments experiencing an increase in the peak hour volume of over 200 vehicles per hour, triggering impacts under the City of Irvine and Caltrans agreed impact criteria. In the Interim year three mainline segments are impacted and in the Buildout year 11 mainline segments are impacted:

Interim With Update:

- I-405 Northbound from MacArthur Boulevard to SR-55 (AM)
- I-405 Southbound from SR-55 to MacArthur Boulevard (PM)
- SR-73 Northbound from Campus Drive to SR-55 (AM)

Buildout With Update:

- I-5 Northbound from Culver Drive to Jamboree Road (PM)
- I-405 Northbound from Jamboree Road to MacArthur Boulevard (PM)
- I-405 Northbound from MacArthur Boulevard to SR-55 (PM)
- I-405 Southbound from SR-55 to MacArthur Boulevard (AM)
- I-405 Southbound from SR-55 to Bristol Street (AM)
- SR-55 Northbound from MacArthur Boulevard to Dyer Road (PM)
- SR-55 Northbound from Dyer Road to Edinger Avenue (PM)
- SR-55 Southbound from Edinger Avenue to Dyer Road (AM)

- SR-55 Northbound from Edinger Avenue to McFadden Street/Sycamore Avenue (PM)
- SR-55 Southbound from McFadden Street/Sycamore Avenue to Edinger Avenue (AM)
- SR-55 Northbound from McFadden Street/Sycamore Avenue to I-5 (PM)

There are already a number of freeway improvements programmed in SCAG's fiscally constrained Regional Transportation Plan (RTP), which include improvements on I-405, I-5 and SR-55 within the IBC Study area, as well as a major widening of I-405 between SR-73 and SR-22 that will involve additional mainline and HOV/HOT lanes. These improvements are reflected in the Buildout ITAM network but not the Interim network. Since these programmed mainline improvements will affect traffic patterns considerably, the three locations impacted in Interim only are considered to be interim only, so no fair-share analysis of Interim conditions has been performed. **Table 6.7** identifies the eleven impacted freeway mainline segments under Buildout conditions, with fair-shares identified for information only since the agreement is in-place.

Table 6.7 – Freeway Mainline Plan Update Impacts and Fair-Share

LOCATION		DIRECTION	BUILDOUT LANES		BUILDOUT CUMULATIVE BASELINE						BUILDOUT CUMULATIVE BASELINE WITH UPDATE						IMPACTS IDENTIFIED			
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR			PM PEAK HOUR						
			LANE	PEAK HOUR CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	TRIP DIFFERENCE AM (+200 CARS=IMPACT)	TRIP DIFFERENCE PM (+200 CARS=IMPACT)	IMPACT V/C	FAIR-SHARE
I-5	Culver Dr to jamboree Rd	NB	6	12,000	13,549	1.13	F	11,815	0.98	E	13,482	1.12	F	12,029	1.00	E	-67	+214	*	1.8%
I-405	Jamboree Rd to MacArthur Blvd	NB	6	12,000	13,586	1.13	F	11,382	0.95	E	13,628	1.14	F	11,628	0.97	E	+41	+245	*	2.1%
	MacArthur Blvd to SR-55	NB	6	12,000	12,327	1.03	F	12,259	1.02	F	12,411	1.03	F	12,567	1.05	F	+84	+308	*	2.5%
		SB	6	12,000	13,570	1.13	F	11,571	0.96	E	13,969	1.16	F	11,739	0.98	E	+400	+168	*	2.9%
	SR-55 to Bristol St	SB	5	10,000	10,341	1.03	F	7,824	0.78	D	10,591	1.06	F	7,946	0.79	D	+250	+121	*	2.4%
SR-55	MacArthur Blvd to Dyer Rd	NB	5	10,000	7,880	0.79	D	9,179	0.92	E	8,094	0.81	D	9,387	0.94	E	+214	+208	*	2.2%
	Dyer Rd to Edinger Ave	NB	5	10,000	8,007	0.80	D	10,000	1.00	E	8,198	0.82	D	10,330	1.03	F	+190	+330	*	3.2%
		SB	4	8,000	10,697	1.34	F	7,507	0.94	E	10,999	1.37	F	7,674	0.96	E	+302	+167	*	2.7%
	Edinger Ave to McFadden St/Sycamore Ave	NB	5	10,000	8,238	0.82	D	10,127	1.01	F	8,431	0.84	D	10,377	1.04	F	+193	+250	*	2.4%
		SB	5	10,000	11,336	1.13	F	7,959	0.80	D	11,638	1.16	F	8,118	0.81	D	+302	+159	*	2.6%
	McFadden St/Sycamore Ave to I-5	NB	5	10,000	8,946	0.89	D	10,710	1.07	F	9,110	0.91	E	10,957	1.10	F	+164	+248	*	2.3%

*Fair-share percentage is shown for informational and comparison purposes only

6.4.2 Freeway Ramps

As identified in **Chapters 4 and 5**, there are 22 freeway ramps which are deficient under the Interim and Buildout future scenarios. For the IBC Buildout Cumulative With Update scenario, which includes all regional growth, the volume on many freeway ramps increases when compared with Existing Conditions. The volumes are generally consistent with the Baseline scenario forecast volumes, with some segments and ramps experiencing an increase in the peak hour volume of over 30 vehicles per hour, triggering an impact under the impact criteria as agreed to by the City of Irvine and Caltrans. **Table 6.8** identifies the eight impacted freeway ramps and fair-shares under the Buildout Cumulative With Update conditions for information and

future planning purposes since the agreement between the City and Caltrans is in-place.

Table 6.8 – Freeway Ramp Plan update Impacts and Fair-Share

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		BUILDOUT CUMULATIVE BASELINE						BUILDOUT CUMULATIVE BASELINE WITH UPDATE						IMPACT IDENTIFIED			
					AM PEAK HOUR			PM PEAK HOUR			AM PEAK HOUR			PM PEAK HOUR						
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	VOLUME	V/C	LOS	TRIP DIFFERENCE AM (+30 CARS=IMPACT)	TRIP DIFFERENCE PM (+30 CARS=IMPACT)	IMPACT V/C	PLAN UPDATE FAIR-SHARE
I-405	Jamboree Road	NB Off	2	500	2,521	1.12	**F**	1,690	0.75	D	2,659	1.18	**F**	1,843	0.82	D	+138	+153	*	5.2%
		SB Off	2	500	2,691	1.20	F	1,880	0.84	**D**	2,688	1.19	F	2,091	0.93	**E**	-3	+211	*	10.1%
	MacArthur Boulevard	SB Off	1	500	2,436	1.08	**F**	1,093	0.49	B	2,554	1.14	**F**	1,135	0.50	**B**	+118	+42	*	4.6%
		NB Off	1	500	2,495	1.66	**F**	873	0.58	C	2,600	1.73	**F**	931	0.62	C	+105	+58	*	4.0%
SR-55	Paularino Avenue	SB Off	1	500	1,710	1.14	F	1,490	0.99	**E**	1,741	1.16	F	1,470	0.98	**E**	+31	-20	*	1.8%
	Dyer Road	NB Off	1	500	1,386	0.92	**E**	463	0.31	B	1,445	0.96	**E**	475	0.32	B	+59	+12	*	4.1%
SR-73	Campus Drive	NB On	1	1,000	869	0.58	**C**	3,103	2.07	F	999	0.67	**C**	3,298	2.20	F	+130	+195	*	5.9%
		SB Off	2	500	2,245	1.00	E	1,477	0.66	**C**	2,339	1.04	E	1,553	0.69	**C**	+94	+76	*	4.0%

*Fair-share percentage is shown for informational and comparison purposes only

6.5 Cost Estimates for Mitigation Improvements

Planning level cost estimates were developed for each of the required mitigation locations. This involved the development of concept plans for each of the improvements overlaid on recent aerial imagery provided by the City. Unit costs were updated based on recent Caltrans cost estimates and on bid data provided to the City. These unit costs were then applied to the construction requirements identified in the concept plans.

Utility identification, including sewer and overhead electrical lines, were determined to the extent possible from the aerial imagery. Length of turn pocket date was determined from traffic data where appropriate. Consistent with the 2010 Vision Plan Traffic Fee Nexus Study and the 2015 Update, cost estimates include provisions for the following:

- Preliminary project development
- Right-of-way
- Design Engineering and Administration Cost
- Construction Engineering Cost and Administration
- Construction Cost
- Construction Contingency

Table 6.9 shows the cost estimates for the improvements identified for the Buildout. Concept plans and detailed cost estimates broken down into component categories are provided in **Appendix L.** For the purposes of cost development intersections #97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway and #98 Von Karman Avenue at Alton Parkway were combined and treated as one contiguous corridor on Von Karman Avenue between Alton Parkway and Barranca Parkway due to the close proximity of the two improvements. There are two Options at #97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway.

Table 6.9 – Intersection and Arterial Costs and Fair-Share

Intersections

ID	Jurisdiction	Intersection	Improvement	Cost ($000's)	Responsibility	($ 000's)
12	Costa Mesa	SR-55 Frontage Road SB at Baker Street	Change SB config to (2, 0.5, 1.5)	$1,017	5.0%	$51
97/98	*Irvine/ Tustin*	*#97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway / #98 Von Karman Avenue at Alton Parkway*	*Option A: Add 3rd NBT at both intersections and convert de facto to standard NBR and add 2nd WBR at Von Karman/Barranca*	$10,001	Full	$10,001
97/98	*Irvine/ Tustin*	*#97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway/ #98 Von Karman Avenue at Alton Parkway*	*Option B: Add 3rd NBT at both intersections and convert de facto to standard NBR and convert WBR to a free right at Von Karman/Barranca*	$11,082	Full	$11,082
145	Irvine	Jamboree Road at Michelson Drive **	Pedestrian Bridge	$8,237	Full	$8,237
188	Irvine	Harvard Avenue at Michelson Drive	Improve SB to (2,2,1)	$3,438	Full	$3,438
232	Irvine	Culver Drive at I-405 NB Ramps	Restripe WB to (1.5, 0, 1.5)	$269	Full	$269
136	Irvine/ Tustin	Jamboree Road at Barranca Parkway **	Add 5th NBT convert NBR to standard NBR and restripe EB to (3,2,1) (improvement associated with CIP)	$6,570	Full	$6,570
192	Irvine	California at University	Add EB free-right turn-lane and widen SB California to three lanes	$2,770	Full	$2,770
			All Intersections - Option A	**$32,302**		**$31,336**
			All Intersections - Option B	**$33,383**		**$32,417**

Arterials

ID	Jurisdiction	Segment	Improvement	Cost ($000's)	Responsibility	($ 000's)
A	Irvine	Red Hill Avenue between Main Street and MacArthur Blvd	Widen from 4 to 6 lanes	$24,054	Full	$24,054
B	Irvine/ Santa Ana	Alton/SR-55 Overcrossing***	Includes #44 Red Hill Ave at Alton Parkway (add 1 NBR, 1 SBR, 2nd EBL, and 2nd WBL) associated w/ Alton Overcrossing, signalization of Daimler at Alton and Halliday Street at Alton	$61,185	50%	$30,593
C	Santa Ana	Dyer Road between Red Hill Avenue and SR-55 NB Ramps***	Widen from 6 to 8 lanes	$18,047	Full	$18,047
			All Arterials	**$103,286**		**$72,694**

All Improvements

Option	Improvement	Total Cost ($000's)	Responsibility ($ 000's)
A	All Intersection Improvements with Option A for Intersections #97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway / #98 Von Karman Avenue at Alton Parkway *(Add 3rd NBT at both intersections and convert de facto to standard NBR and add 2nd WBR at Von Karman/Barranca)* + All Arterial Improvements	**$135,588**	**$104,029**
B	All Intersection Improvements with Option B for Intersections #97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway / #98 Von Karman Avenue at Alton Parkway *(Add 3rd NBT at both intersections and convert de facto to standard NBR and convert WBR to a free right at Von Karman/Barranca)* + All Arterial Improvements	**$136,669**	**$105,110**

Notes

*The City's obligation is addressed in the agreement with Caltrans.
** CIP allocation for funding of Jamboree/Barranca and partial funding for the Jamboree/Michelson pedestrian bridge.
*** Responsibility as identified in Irvine/Santa Ana Agreement

7 SPECIAL ISSUES

7.1 Signal Warrants

To determine whether installation of a traffic control signal is justified at any of the three studied unsignalized intersections within IBC study area, analyses were completed for Existing conditions, Interim scenario, and Buildout scenario post-processed volume forecasts. Using available data, the intersections were evaluated to determine whether the installation of a traffic signal would be warranted. The warrants set in the California Manual on Uniform Traffic Control Devices (MUTCD) published in November 7, 2014 were utilized. **Figure 7.1** displays studied unsignalized intersections. **Table 7.1 through 7.3** summarizes the results of the signal warrant analysis at the four unsignalized intersections based upon the criteria set forth in the California MUTCD for Existing, Interim With Update and Buildout With Update Conditions. Signal warrant analysis worksheets are included in **Appendix M**.

Table 7.1 – Signal Warrant Analysis Summary for Existing Conditions

INTERSECTION		WARRANT SATISFIED?								
		WARRANT 1	WARRANT 2	WARRANT 3	WARRANT 4	WARRANT 5	WARRANT 6	WARRANT 7	WARRANT 8	WARRANT 9
		8-Hour Vehicle	4-Hour Vehicle	Peak Hour	Pedestrian Volume	School Crossing	Coord. Signal System	Crash Experience	Roadway Network	Grade Crossing
1003	Gillette Ave at Alton Pkwy	No Data	No	YES	No	Not Applicable (No established school crossing across Major Street)	No	No	No	Not Applicable (No Grade Crossing on Minor Street)
1005	Armstrong Ave East at Alton Pkwy		No	No	No		No	No	No	
1006	Armstrong Ave West at Alton Pkwy		YES	YES	No		No	No	No	
1007	Warner Ave at Construction North		No	YES	No		YES	No	No	

Source: California Manual of Uniform Traffic Control Devices (MUTCD) 2014.

Table 7.2 – Signal Warrant Analysis Summary for Interim Year With Update Conditions

INTERSECTION		WARRANT SATISFIED?								
		WARRANT 1	WARRANT 2	WARRANT 3	WARRANT 4	WARRANT 5	WARRANT 6	WARRANT 7	WARRANT 8	WARRANT 9
		8-Hour Vehicle	4-Hour Vehicle	Peak Hour	Pedestrian Volume	School Crossing	Coord. Signal System	Crash Experience	Roadway Network	Grade Crossing
1003	Gillette Ave at Alton Pkwy	No Data	No Data	YES	No	Not Applicable (No established school crossing across Major Street)	No	No Data	No	Not Applicable (No Grade Crossing on Minor Street)
1005	Armstrong Ave East at Alton Pkwy			YES	No		No		No	
1006	Armstrong Ave West at Alton Pkwy			YES	No		No		No	
1007	Warner Ave at Construction North			YES	No		YES		No	

Source: California Manual of Uniform Traffic Control Devices (MUTCD) 2014.

Table 7.3 – Signal Warrant Analysis Summary for Buildout with Update Conditions

INTERSECTION		WARRANT SATISFIED?								
		WARRANT 1	WARRANT 2	WARRANT 3	WARRANT 4	WARRANT 5	WARRANT 6	WARRANT 7	WARRANT 8	WARRANT 9
		8-Hour Vehicle	4-Hour Vehicle	Peak Hour	Pedestrian Volume	School Crossing	Coord. Signal System	Crash Experience	Roadway Network	Grade Crossing
1003	Gillette Ave at Alton Pkwy	No Data	No Data	YES	No	Not Applicable (No established school crossing across Major Street)	No	No Data	No	Not Applicable (No Grade Crossing on Minor Street)
1005	Armstrong Ave East at Alton Pkwy			YES	No		No		No	
1006	Armstrong Ave West at Alton Pkwy			YES	No		No		No	
1007	Warner Ave at Construction North			YES	No		YES		No	

Source: California Manual of Uniform Traffic Control Devices (MUTCD) 2014.

It should be noted that the California MUTCD guidelines state "the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal." Warrant applicability is based on the location and the configuration of the intersection as well as available data. For Existing Conditions, three unsignalized intersections warrant a signal:

- Gillette Avenue at Alton Parkway: "Peak Hour Warrant" (Warrant 3) is satisfied
- Armstrong Avenue West at Alton Parkway: "Peak Hour Warrant" (Warrant 3) is satisfied
- Warner Avenue at Construction North: "Peak Hour Warrant" (Warrant 3) is satisfied and "Coordinated Signal System" (Warrant 6)

In Interim With Update Conditions, three unsignalized intersections warrant a signal:

- Gillette Avenue at Alton Parkway: "Peak Hour Warrant" (Warrant 3) is satisfied
- Armstrong Avenue East at Alton Parkway: "Peak Hour Warrant" (Warrant 3) is satisfied
- Armstrong Avenue West at Alton Parkway: "Peak Hour Warrant" (Warrant 3) is satisfied
- Warner Avenue at Construction North: "Peak Hour Warrant" (Warrant 3) is satisfied and "Coordinated Signal System" (Warrant 6)

In Existing With Update Conditions, three unsignalized intersections warrant a signal:

- Gillette Avenue at Alton Parkway: "Peak Hour Warrant" (Warrant 3) is satisfied
- Armstrong Avenue East at Alton Parkway: "Peak Hour Warrant" (Warrant 3) is satisfied
- Armstrong Avenue West at Alton Parkway: "Peak Hour Warrant" (Warrant 3) is satisfied
- Warner Avenue at Construction North: "Peak Hour Warrant" (Warrant 3) is satisfied and "Coordinated Signal System" (Warrant 6)

7.1.1 Gillette Avenue at Alton Parkway

As indicated by the signal warrant analysis, adding a signal to the Gillette Avenue and Alton Parkway intersection may improve intersection operations, particularly during the peak hour when traffic volumes are high. Office and industrial facilities south of the intersection generate commute trips. Traffic volumes exceed the threshold for Warrant 3: Peak Hour Warrant during the PM peak hour as workers use Gillette Avenue to leave adjacent employment centers to commute home.

The distance between a signal at the Gillette Avenue at Alton Parkway intersection and the existing Red Hill Avenue at Alton Parkway intersection to the west is less than the recommended guidelines outlined in the City of Irvine Transportation Design Procedures (TDP) (February 2007). The TDP indicates the recommended ideal distance between signalized intersections for a primary highway, such as Alton Parkway, is ½ mile and the recommended minimum spacing is ¼ mile. At less than 1/8 mile, the distance between the two signalized intersections would be much shorter than both the recommended ideal and minimum spacing. A signal could still be accommodated if the City Traffic Engineers are consulted and a signal progression analysis demonstrates that the proposed new signalized intersection can be reasonably accommodated without detrimentally impacting traffic flow. This could be achieved by designing signal timing plans that work in coordination with the Red Hill Avenue at Alton Parkway intersection signal.

7.1.2 Armstrong Avenue East at Alton Parkway and Armstrong Avenue West at Alton Parkway

As indicated by the signal warrant analysis, adding signals to the Armstrong Avenue East at Alton Parkway and Armstrong Avenue West at Alton Parkway intersections may improve intersection operations, particularly during AM and PM peak hours. The Armstrong Avenue East at Alton Parkway intersection satisfies Warrant 2: 4-Hour Vehicles and Warrant 3: Peak Hour under Existing conditions and both intersections satisfy Warrant 3: Peak Hour in Interim and Buildout scenarios. Field observations show a high volume of vehicles pass through both intersections during the commute hours as they travel north-south on Armstrong Avenue likely traveling to and from residential locations north of the study area and job sites in the IBC.Traffic patterns at these two intersections may change in the near future pending the opening of Armstrong Avenue between of Barranca Parkway and Warner Avenue in the City of Tustin. This segment would open an alternative route for vehicles traveling north-south in the study area. New traffic counts and signal warrant analyses should be conducted again once this road segment is open to traffic.

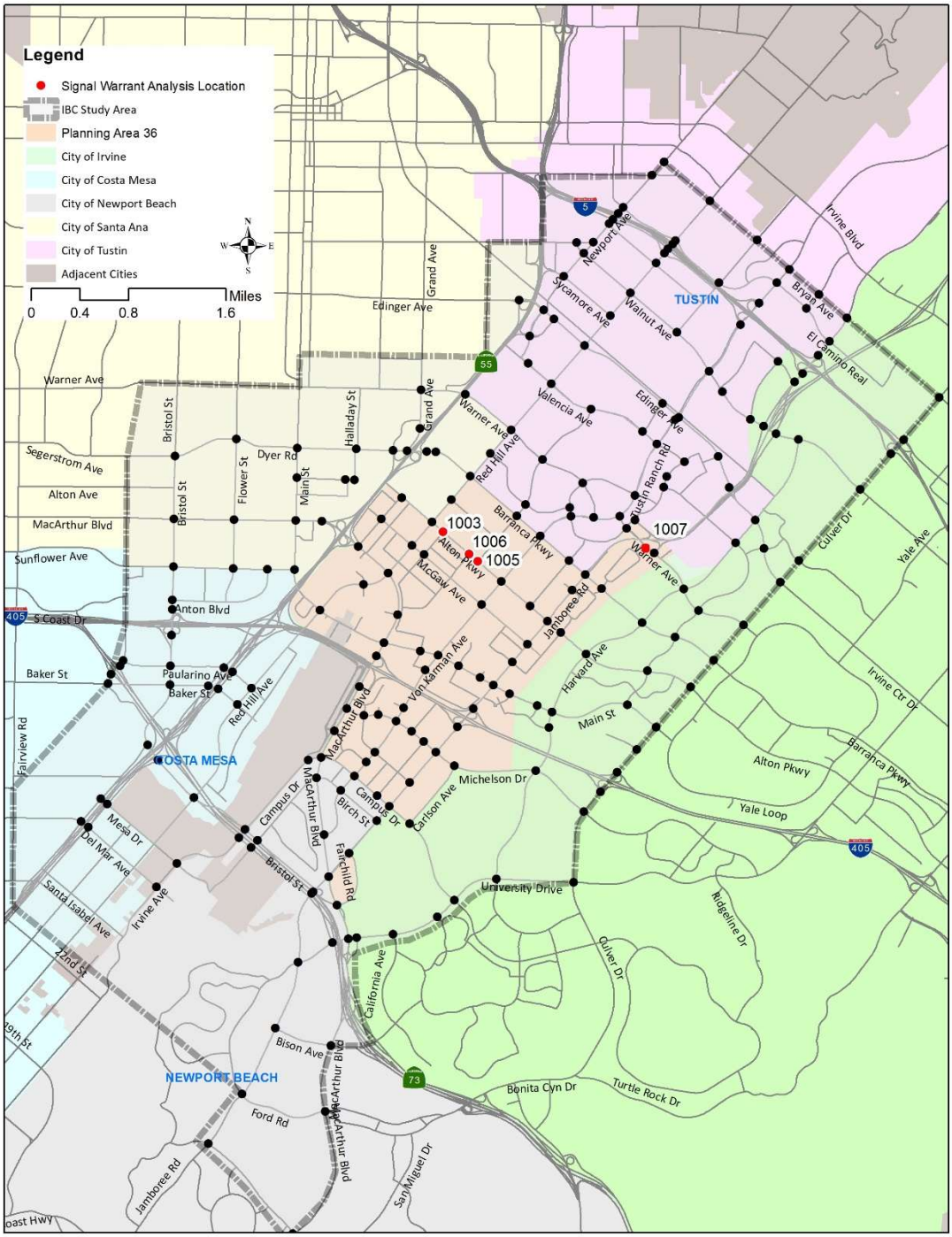
The distance between these two intersections is 500 feet, which is much shorter than both the recommended ideal and minimum spacing guidelines for a primary highway in the City of Irvine TDP. Signals may be accommodated at both locations if the City Traffic Engineers are consulted and a signal progression analysis demonstrates that the proposed new signalized intersections can be reasonably accommodated without detrimentally impacting traffic flow. This could be achieved by designing signal timing plans for the intersections that work in coordination using peer-to-peer operations or using a single controller.

An alternative to adding three new traffic signals in close proximity along Alton Parkway would be to explore left-turn restrictions during peak hours or all day at some or all of these locations in lieu of a traffic signal. However, additional analysis would be required since travel patterns would shift and potentially impact traffic operations at adjacent intersections and on alternative routes.

7.1.3 Warner Avenue and Construction North

As indicated by the signal warrant analysis, adding signals to the Warner Avenue and Construction North intersection may improve intersection operations during peak hours. The intersection satisfies Warrant 3: Peak Hour and Warrant 6: Coordinated Signal System under Existing, Interim and Buildout conditions. Field observations show a high volume of vehicles traveling east-west on Warner to enter and exit the City of Irvine and access the Jamboree/SR-261 on- and off-ramps. This intersection also has a high share of truck traffic due to the industrial facilities located on Construction North. There is not ample platooning of vehicles traveling on Warner Avenue making it especially difficult for the northbound-left movement.

Figure 7.1 – Signal Warrant Analysis Locations



7.1.4 Cost Estimates for Signal Warrant Locations

Planning level cost estimates were developed for each of the signal warrant locations. Unit costs were updated based on recent Caltrans cost estimates and on bid data provided to the City. These unit costs were then applied to the construction requirements for installing new signal controls at the four locations. **Table 7.4** shows the cost estimates for new traffic signals at the four locations. Detailed cost estimates broken down into component categories are provided in **Appendix L.**

Table 7.4 – Intersection and Arterial Costs and Fair-Share

Intersection	Cost ($000's)
Alton Parkway and Armstrong East	$504
Alton Parkway and Armstrong West	$504
Alton Parkway and Gillette	$504
Warner Avenue and Construction North	$593
All Intersections	**$2,105**

8 SUMMARY OF IMPACTS AND COMPARISON TO 2015 VISION PLAN TRAFFIC STUDY

This 2018 Two-Year Vision Plan Traffic Study Update has considered the shifts in land uses, both regionally and internal to the IBC. A number of real-world factors have changed between the original 2010 Vision Plan Study, 2015 Update, and the 2018 Update Existing Conditions that influence the traffic conditions and the number and location of impacts.

Table 8.1 shows impacted locations for the 2018 Update. The table reflects a net overall increase compared to the 2015 Update and a total comparable to the 2010 Vision Plan Study. Since Existing With Update impacts are theoretical, these are not compared to previous studies. The Interim year forecast impacts reduce from ten to nine, while the Buildout year forecast impacts increase from 22 to 41 between the 2015 Update and the 2018 Update. However, due to agreements signed between adjacent Jurisdictions not all these locations are considered impacts associated with the Update.

Table 8.1 - Number of Impacted Locations for 2010 IBC Traffic Study, 2015 Update and 2018 Update

	INTERIM YEAR			BUILDOUT YEAR		
Facility Type	**2010 Study**	**2015 Update**	**2018 Update**	**2010 Study**	**2015 Update**	**2018 Update**
Arterial Segments	0	1	0	1	1	0
Intersections	4	1	1	15	10	20
Freeway Mainline	4	6	3	14	5	11
Freeway Ramps	5	2	3	11	6	8
Total	**13**	**10**	**7**	**41**	**22**	**39**

The 2015 Traffic Study Update was conducted during a time when the City (and the region, in general) was still recovering from recession that had affected many businesses and developments in Orange County and the IBC in particular. Since 2015, employment has steadily increased and development has continued throughout the City including residential developments within the IBC and the Tustin Legacy development to the north of the IBC. Other land use changes outside the City of Irvine may also be contributing to shifts in regional travel patterns.

Since 2015, a number of new roadways have been constructed in the Tustin Legacy area including the connection of Warner Avenue between Tustin Ranch Road and Red Hill Avenue. Traffic volumes on the Tustin Ranch Road connection between Walnut Avenue in the City of Tustin and Von Karman/Barranca Parkway at the City of Irvine/Tustin boundary which opened in January 2014 has increased significantly since 2015.

Other social factors contributing to shifting travel patterns include: Shared Mobility Systems from ridesharing companies like Lyft and Uber to traditional car sharing and bike sharing systems and electric scooters. These shared transportation networks aggregate transportation options for users, complement public transit and ideally provide cross-communication between all modes. Also, the continued rise in telecommuting and increased part-time workers whose travel patterns may not coincide with traditional peak hours.

The combination of these factors has affected observed 2018 traffic compared to 2015. A comparison of historical ADT counts suggest daily traffic has increased roughly 5% within the City of Irvine since 2010. In

terms of deficient intersections just one location is deficient in the current Update existing conditions whereas four locations were found to be deficient in the 2015 Study's existing condition.

Changes in future assumptions contribute to differences in future traffic conditions. Current ITAM 18 forecasts were based on OCTAM version 3.4 which uses OCP 2015 projections while the 2015 ITAM used OCP 2010 forecasts. There are significant differences in socio-economic data inputs to the two different versions of OCTAM model. These affect the number and distribution of regional trips which are used as inputs to ITAM.

Within the City of Irvine, ITAM uses land use forecasts, which reflect changes in existing land use as well as proposed future land use changes. Existing development patterns within the IBC have changed compared to what was originally forecast; these in turn affect future projections. The current study includes the most up to date information regarding existing and planned development in the City based on the City's permitting database. Other major changes in future land uses since the 2010 study occurred in the City's Planning Area 51 (Orange County Great Park, Great Park Neighborhoods and adjacent County parcels).

Finally, since a significant proportion of the proposed 15,000 dwelling units (plus density bonus units) in IBC have been built since 2010 the increment between existing ground conditions and the proposed IBC Vision Plan buildout is smaller now than in 2010 study and the 2015 Update.

8.1 Arterial System Deficiencies

Individual arterial segments that operate at a deficient LOS under daily conditions within the City of Irvine are candidates for peak hour analysis to determine performance during the AM and PM peak hour. The peak hour analysis conducted for each of the forecast future scenarios revealed no arterial segments operating at a deficient level in either peak hour within the City of Irvine. For arterial segments within the Cities of Newport Beach, Costa Mesa, Tustin and Santa Ana, daily arterial segment LOS analysis is valuable for long-range planning purposes but the Cities do not assess segment deficiencies under daily conditions. Deficiencies are assessed at intersections at either end of the arterial segment. Intersection deficiencies for the IBC Vision have been assessed and conclusions discussed in the next section. Hence, there are no deficiencies or impacts expected in future forecast scenarios for arterial segments within Newport Beach, Costa Mesa, Tustin, and Santa Ana Santa Ana.

8.2 Intersection Deficiencies and Impacts

Analysis of the intersections was conducted for all intersections within the defined IBC Vision study area. For each jurisdiction, the established and published criteria for evaluating impacts have been employed in this study. Plan update impacts are identified for the study area using the methodology for each respective jurisdiction. **Table 8.2** identifies all impacted intersections and the arterial segment for the forecasted scenarios studied with this update. Due to agreements with adjacent cities, there are no expected shares for improvements outside of Irvine other than in Costa Mesa for SR-55 SB Ramps/Baker.

Table 8.2 – Intersection Impacts/Cumulative Deficiencies

ID	INTERSECTION	JURISD.	IBC VISION WITH UPDATE INTERIM YEAR		IBC VISION WITH UPDATE BUILDOUT		RESPONSIBILITY		
			CUMULATIVE DEFICIENCY	IMPACT	CUMULATIVE DEFICIENCY	IMPACT	INTERIM WITH UPDATE	BUILDOUT WITH UPDATE	EXPECTED SHARE (VISION PLAN)
12	SR-55 Frontage Rd SB at Baker St	CM				X	-	5.0%	5.0%
98	Von Karman Ave at Alton Pkwy	Irv				X	-	Full	Full
144	Jamboree Rd at I-405 SB Ramps	Irv				X	-	Full	No Share*
145	Jamboree Rd at Michelson	Irv				X	-	Full	Full
63	Campus Dr at Bristol St SB	NB				X	-	14.7%	No Share*
192	California Ave at University Dr	Irv			X		-	Full	Full
188	Harvard Ave at Michelson Dr	Irv				X	-	Full	Full
232	Culver Dr at I-405 NB Ramps	Irv				X	-	Full	Full
84	MacArthur Blvd at Campus Dr	Irv/NB				X	-	4.4%	No Share*
44	Red Hill Ave at Alton Pkwy	Irv/SA				X	-	50%	No Share*
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	Irv/Tus		X		X		Full	Full
136	Jamboree Rd at Barranca Pkwy	Irv/Tus	X			X	Full	Full	Full
543	Bristol St at Segerstrom Ave	SA				X	-	18.9%	No Share*
544	Bristol St at MacArthur Blvd	SA				X	-	13.1%	No Share*
719	Flower St at Segerstrom Ave	SA			X		-	11.2%	No Share*
723	Main St at Segerstrom	SA	X			X	13.9%	14.7%	No Share*
727	Halladay at Dyer Rd	SA				X	-	9.8%	No Share*
728	Halladay East at Alton Pkwy	SA				X	-	4.4%	No Share*
3	Newport Ave at Edinger Ave	Tus				X	-	2.7%	No Share*
38	Red Hill Ave at Walnut Ave	Tus				X	-	7.0%	No Share*
40	Red Hill Ave at Edinger Ave	Tus				X	-	8.7%	No Share*
453	Red Hill Ave at Valencia Ave	Tus				X	-	5.0%	No Share*
749	Park Ave at A St	Tus			X		-	1.1%	No Share*

*Cumulative deficiency or responsibility as identified in an agreement with adjacent jurisdiction.

Table 8.3 compares the impacted intersections in both traffic studies for the Interim year. In the 2015 Update one intersections was impacted and in the 2018 Update one intersection is impacted.

Table 8.3 – Intersection Impacts - Interim Year (2015 Update vs. 2018 Update)

ID	LOCATION	JURISDICTION	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
36	Red Hill Ave at El Camino Real	Tustin	PM	X		
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	Irvine/Tustin	PM			X
			Sum	**1**	**0**	**1**
			Total Impacts (2015 Update)	**1**	**Total Impacts (2018 Update)**	**1**

Table 8.4 compares the impacted intersection in both 2015 Update and 2018 Update for the Buildout. **Table 8.4** shows that while 10 intersections were impacted and two locations had cumulative deficiencies in Buildout in the 2015 Update, 20 are impacted and one has a cumulative deficiency in the 2018 Update Buildout condition. The following seven locations are impacted in both studies:

- #98: Von Karman Avenue at Alton Parkway (Irvine)

- #144: Jamboree Road at I-405 SB Ramps (Irvine)
- #145: Jamboree Road at Michelson Drive (Irvine)
- #188: Harvard Avenue at Michelson Drive (Irvine)
- #97: Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (Irvine/Tustin)
- #723: Main Street at Segerstrom Avenue (Santa Ana)
- #728: Halladay East at Alton Parkway (Santa Ana)

Table 8.4 – Intersection Impacts - Buildout Year (2015 Update vs. 2018 Update)

INT ID	LOCATION	JURISDICTION	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
12	SR-55 Frontage Road SB at Baker Street	Costa Mesa	AM			X
98	Von Karman Avenue at Alton Parkway	Irvine	PM		X	
144	Jamboree Road at I-405 SB Ramps	Irvine	AM		X	
145	Jamboree Road at Michelson Drive	Irvine	PM		X	
135	Jamboree NB Ramps/Warner	Irvine	PM	c		
192	California Avenue at University Drive	Irvine	AM			c
229	Culver Drive at Alton Parkway	Irvine	PM	X		
232	Culver Drive at I-405 NB Ramps	Irvine	PM			X
188	Harvard Avenue at Michelson Drive	Irvine	PM		X	
84	MacArthur Boulevard at Campus Drive	Irvine/Newport Beach	PM			X
44	Red Hill Avenue at Alton Parkway	Irvine/Santa Ana	PM			X
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	Irvine/Tustin	PM		X	
134	Loop Road/Park Ave at Warner Avenue	Irvine/Tustin	PM	c		
136	Jamboree Road at Barranca Parkway	Irvine/Tustin	PM			X
85	MacArthur Boulevard at Birch Street	Newport Beach	PM	X		
63	Campus Drive at Bristol Street SB	Newport Beach	AM			X
3	Newport Avenue at Edinger	Tustin	AM			X
453	Red Hill Avenue at Valencia Avenue	Tustin	AM			X
38	Red Hill Avenue at Walnut Drive	Tustin	PM			X
40	Red Hill Avenue at Edinger Avenue	Tustin	PM			X
445	Tustin Ranch Road at Warner Avenue N	Tustin	PM	X		
543	Bristol Street at Segerstrom Avenue	Santa Ana	AM&PM			X
544	Bristol Street at MacArthur Boulevard	Santa Ana	PM			X
723	Main Street at Segerstrom Avenue	Santa Ana	AM&PM*		X	
727	Halladay at Dyer Road	Santa Ana	PM			X
728	Halladay East at Alton Parkway	Santa Ana	AM/PM**		X	
			Sum	**3**	**7**	**13**
			Total Impacts (2015 Update)	**10**	**Total Impacts (2018 Update)**	**20**

c Irvine cumulative deficiency
* PM only in 2015
** AM only in 2018

8.3 Freeway Mainline and Ramps

Table 8.5 compares the Interim Year impacted freeway mainline segments in both traffic studies. In the 2015 Update, six segments were impacted, whereas in the 2018 Update three locations were impacted. All three locations in the 2018 Update were also found to be impacted in the 2015 Study.

Table 8.5 – Freeway Mainline Impacts - Interim Year (2015 Update vs. 2018 Update)

FREEWAY	SEGMENT	DIRECTION	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
I-405	Jamboree Road to MacArthur Boulevard	NB	AM	X		
I-5	North of SR-55	NB	AM	X		
SR-55	Dyer Road to Edinger Avenue	NB	AM	X		
I-405	MacArthur Boulevard to SR-55	NB	AM		X	
I-405	MacArthur Boulevard to SR-55	SB	PM		X	
SR-73	Campus Drive to SR-55	NB	AM		X	
			Sum	**3**	**3**	**0**
			Total Impacts (2015 Update)	**6**	**Total Impacts (2018 Update)**	**3**

Table 8.6 compares the Buildout year impacted freeway mainline segments in both traffic studies. In the 2015 Update, five segments were impacted, whereas in the 2018 Update, 11 locations are impacted. All five locations impacted in the 2015 Update are also impacted in the 2018 Study.

Table 8.6 – Freeway Mainline Impacts - Buildout Year (2015 Update vs. 2018 Update)

FREEWAY	SEGMENT	DIRECTION	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
I-405	Jamboree Road to MacArthur Boulevard	NB	AM&PM*		X	
SR-55	Dyer Road to Edinger Avenue	NB	PM		X	
I-405	MacArthur Boulevard to SR-55	NB	AM&PM**		X	
I-405	MacArthur Boulevard to SR-55	SB	AM&PM***		X	
SR-55	McFadden Street/Sycamore Avenue to I-5	NB	PM		X	
I-405	Bristol Street to SR-55	SB	AM			X
SR-55	Edinger Avenue to Dyer Road	SB	AM			X
SR-55	McFadden St/Sycamore Ave to Edinger Ave	SB	AM			X
I-5	Culver Drive to Jamboree Road	NB	PM			X
SR-55	MacArthur Boulevard to Dyer Road	NB	PM			X
SR-55	Edinger Ave to McFadden St/Sycamore Ave	NB	PM			X
			Sum	**0**	**5**	**6**
			Total Impacts (2015 Update)	**5**	**Total Impacts (2018 Update)**	**11**

* AM in 2015 Update; PM in 2018 Update
** AM only in 2015 Update
*** PM only in 2015 Update

Table 8.7 compares the Interim year impacted freeway ramps in both traffic studies. In the 2015 Update, two ramps were impacted, whereas in the 2018 Update, three locations are impacted. The Southbound I-405 off-ramp to Jamboree Road is impacted in both the 2015 Update and 2018 Update.

Table 8.7 – Freeway Ramp Impacts - Interim Year (2015 Update vs. 2018 Update)

FREEWAY	LOCATION	RAMP	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
I-405	Bristol Street	SB Loop On	PM	X		
I-405	Jamboree Road	SB Off	AM/PM*		X	
I-405	MacArthur Boulevard	SB Off	AM			X
SR-73	Campus Drive	NB On	PM			X
			Sum	**1**	**1**	**2**
			Total Impacts (2015 Update)	**2**	**Total Impacts (2018 Update)**	**3**

* AM in 2018 Update only

Table 8.8 compares the Buildout year impacted freeway ramps in both traffic studies. In the 2015 Update, six ramps were impacted, whereas in the 2018 Update, seven ramps are impacted. Two of the ramps impacted in the 2018 Update and were also impacts in the 2015 Update.

Table 8.8 – Freeway Ramp Impacts - Buildout Year (2015 Update vs. 2018 Update)

FREEWAY	LOCATION	RAMP	PERIOD	2015 UPDATE ONLY	2015 UPDATE & 2018 UPDATE	2018 UPDATE ONLY
I-405	Bristol Street	SB Loop On	PM	X		
SR-55	Dyer Road	NB On Direct	PM	X		
SR-55	Dyer Road	NB Off	AM	X		
SR-73	Campus Drive	SB Off	AM		X	
I-405	MacArthur Boulevard	NB Off	AM		X	
I-405	Jamboree Road	NB Off	AM		X	
I-405	MacArthur Boulevard	SB Off	AM			X
SR-55	Dyer Road	NB Off	AM			X
SR-55	Paularino Avenue	SB Off	AM			X
I-405	Jamboree Road	SB Off	PM			X
SR-73	Campus Drive	NB On	PM			X
			Sum	**3**	**3**	**5**
			Total Impacts (2015 Update)	**6**	**Total Impacts (2018 Update)**	**8**

9 REFERENCES

- City of Irvine General Plan—2006
- City of Tustin General Plan—2008
- City of Costa Mesa General Plan—2000
- City of Newport Beach General Plan–2006
- Irvine City Council Ordinance No. 03-08, April 2003
- National Cooperative Highway Research Program Report 255, Transportation Research Board.
- ICU Worksheets Methodology, Austin-Foust Associates, Inc.
- Irvine Business Complex General Plan Amendment and Rezoning Project Environmental Impact Report, Robert Bein, William Frost and Associates, October 1992
- North Irvine Transportation Mitigation (NITM) Program Nexus Study Five Year Review, Parsons Brinckerhoff, July 2008
- Irvine Business Complex Vision Plan Traffic Study, March 2010 Parson Brinkerhoff
- 2012 Citywide Circulation Phasing Report, Iteris, 2013
- Irvine Business Complex Vision Plan Traffic Study, January 13 2016, Iteris

10 GLOSSARY OF TRANSPORTATION TERMS

Common Abbreviations

ADT	Average Daily Traffic
ITAM	Irvine Traffic Analysis Model
Caltrans	The California Department of Transportation
DU	Dwelling Unit
HCM	Highway Capacity Manual
HCS	Highway Capacity Software (Software package utilizing the formulae in the Highway Capacity Manual)
HOV	High Occupancy Vehicle lane
ICU	Intersection Capacity Utilization
ITAM	Irvine Traffic Analysis Model
OCTA	Orange County Transportation Authority
OCTAM	Orange County Transportation Analysis Model
TSF	Thousands of Square Feet
V/C	Volume/Capacity Ratio
VMT	Vehicle Miles Traveled

AUXILIARY LANE: A non-capacity enhancing lane that provides operational benefits to the freeway mainline. Typically an auxiliary lane extends between an on-ramp and off-ramp to facilitate the weave movement between the interchange without detrimental effects to the mainline through lanes.

AVERAGE DAILY TRAFFIC: The total volume during a year divided by the number of days in a year. Usually only weekdays are included.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A constriction along a travelway that limits the amount of traffic that can proceed downstream from its location.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. lf there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CRITICAL MOVEMENT: Conflicting intersection turning movements that are found to have the highest ICU for opposing movements; i.e. each of the approaches at a four-legged intersection will contain a critical movement that conflicts with an opposing movement.

DAILY CAPACITY: The daily volume of traffic that will result in a volume during the peak hour equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERGE AREA (HCM): the two right shoulder lanes plus the auxiliary lane for 1500 feet downstream from the ramp gore point (location where the ramp intersects with the freeway mainline.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

HIGH OCCUPANCY VEHICLE (HOV) LANE: A lane restricted for use by vehicles with 2 or more persons.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MERGE AREA (HCM): the two right shoulder lanes plus the auxiliary lane for 1500 feet downstream from the ramp gore point (location where the ramp intersects with the freeway mainline.

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MIXED USE DEVELOPMENT: The practice of allowing more than one type of lane use in a building or set of buildings. In planning terms, this can mean some combination of residential, commercial, industrial, office, institutional, or other land uses.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: the time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON; A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

ORANGE COUNTY TRANSPORTATION ANALYSIS MODEL (OCTAM): The regional model developed and maintained by OCTA that is the parent model to the City of Irvine subarea model, ITAM.

ORIGIN-DESTINATION SURVEY: A survey to determine the point of origin and the point of destination for a given vehicle trip.

PASSENGER CAR EQUIVALENTS (PGE): One car is one Passenger car Equivalent. A truck is equal to two or three Passenger car Equivalents in that a truck requires longer to start, goes slower, and accelerates slower. Loaded trucks have a higher Passenger Car Equivalent than empty trucks.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PEAK HOUR FACTOR: the period during which peak hour traffic volume is at its highest. Peak Hour factor is determined by calculating the hourly volume divided by the peak rate of flow within the hour, which is the highest 15 minute interval multiplied by four.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SIGNAL CYCLE: The time in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

SIGNIFICANT IMPACT (CEQA): Projects can cause significant impacts by direct physical changes to the environment or by triggering reasonably foreseeable indirect physical changes. Physical changes caused by a project can contribute incrementally to cumulative effects that are significant, even if individual changes resulting from a project are limited. You must determine whether the cumulative impact is significant, as well as whether an individual effect is “cumulatively considerable.” This means “the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects” (CEQA Guidelines Section 15064(h)(1)).

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through a signalized intersection.

SYNCHRO: A complete software package for modeling, optimizing, managing and simulating traffic systems. Synchro implements the HCM methodologies for intersection analysis and is applied for State Highway System ramp termini intersections.

TRANSIT ORIENTED DEVELOPMENT: A mixed-use residential or commercial area designed to maximize access to public transport, and often incorporates features to encourage transit ridership.

TRIP: The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home are two trips, not one.

TRIP-END: one end of a trip at either the origin or destination; i.e. each trip has two trip-ends. A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quality of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

UNBALANCED Flow: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

WEAVING AREA: The area of a freeway where there is cross traffic from either a on or off-ramp or transition to another freeway. Typically weaving segments are formed when merge areas are followed closely by diverge areas (within 2,500 feet) and the two are joined by an auxiliary lane requiring the crossing of two or more traffic streams traveling in the same general direction along a significant length of highway without the aid of traffic control devices.

11 APPENDICES

11.1 Appendix A: Settlement Agreements with Adjacent Jurisdictions

11.2 Appendix B: Traffic Analysis Zones

11.3 Appendix C: Trip Generation Quantities by TAZ (within IBC)

11.4 Appendix D: Land Use Quantities by TAZ/IBC Database/TDRs

11.5 Appendix E: ICU Worksheets

11.6 Appendix F: Caltrans Freeway and Ramp Mitigation Agreement and Methodology Agreement

11.7 Appendix G: HCS Mainline Analysis

11.8 Appendix H: HCS Ramp Analysis

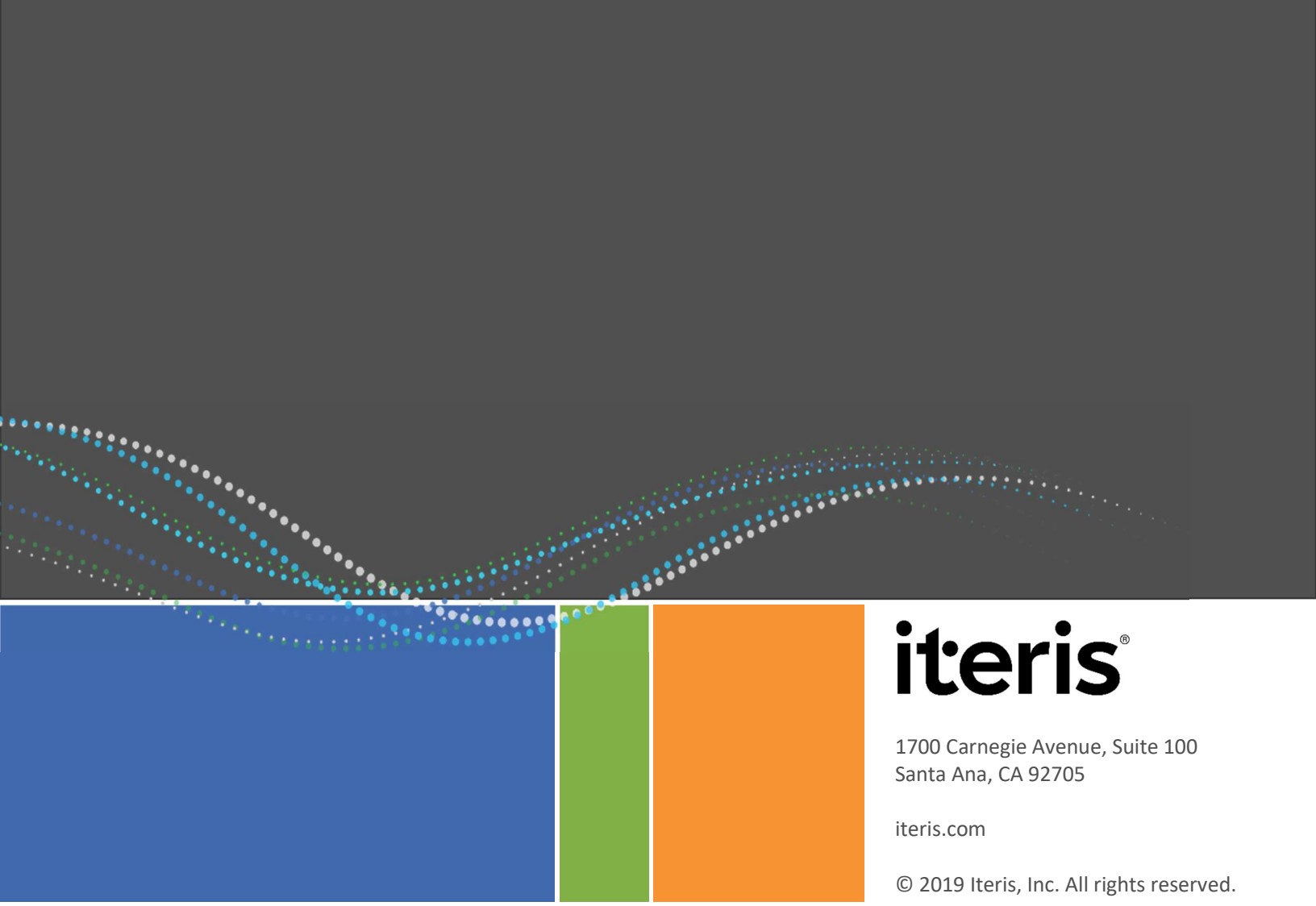
11.9 Appendix I: Fair Share Analysis

11.10 Appendix J: ICU Worksheet for Mitigation Intersection

11.11 Appendix K: Intersection Improvement List

11.12 Appendix L: Improvement Concept Plans and Cost Estimates

11.13 Appendix M: Signal Warrant Analysis



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