Irvine Business Complex Vision Plan

2015 Five Year Traffic Study Update

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Prepared for:

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ES EXECUTIVE SUMMARY

ES.1.1 Introduction

This 2015 IBC Vision Plan Five-Year Traffic Study Update fulfills requirements of the City of Irvine Zoning Ordinance, which was updated as part of the 2010 IBC Vision Plan approval to require the City to re-evaluate traffic conditions (and traffic impact locations) by way of a five-year traffic study update (amended to every two years in October 2015). This five-year update evaluates potential traffic impact locations and documents how development actually occurred over the past five years to determine how close the Vision Plan assumptions were to forecasting this condition. The update takes a "snapshot" of the development activity today and considers ambient regional growth to compare with the 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 mitigations and IBC fees accordingly within the umbrella of the adopted Vision Plan.

This IBC Vision Plan Five-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 1,794 from 2,038. This reduction represents 2,038 assumed theoretical density bonus units in 2010 less 244 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 2015, existing conditions with the updated Vision Plan assumptions, as well as future Interim Year (2020) and Buildout Year (post-2035) scenarios with and without the updated Vision Plan assumptions. A comparison of the impacted locations versus the impacted locations identified in the 2010 IBC Vision Plan Traffic Study is also performed.

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

- Existing Conditions (using current traffic counts)
- Existing Conditions with updated assumptions of Vision Plan Buildout
- 2020 Cumulative Baseline (existing land uses on the ground within IBC area; cumulative growth outside the IBC area)
- 2020 Cumulative Baseline plus updated Vision Plan assumptions anticipated to be constructed by 2020
- Post-2035 Cumulative Baseline (existing land uses on the ground within IBC area; cumulative growth outside the IBC area)
- Post-2035 Cumulative Baseline with updated assumptions of Vision Plan Buildout

Table ES-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)
2015 Existing	7,060	1,384	2,322	26,639	13,934	379	474
2015 With Update	16,795	1,690	2,653	34,286	12,339	549	1049
2020 Cumulative Baseline	7,060	1,384	2,322	26,639	13,934	379	474
2020 Cumulative With Update	16,671	1,405	2,535	27,750	13,240	883	1049
Post-2035 Cumulative Baseline	7,060	1,384	2,322	26,639	13,934	379	474
Post-2035 Cumulative Baseline With Update	16,795	1,690	2,653	34,286	12,339	549	1049

ES.1.2 Traffic Impacts & Fair Share

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. 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 will be presented in a supplemental nexus report. Under future forecast conditions there are a number of deficient intersections. **Table ES 1.2** demonstrates the deficiencies, impacts, and fair-shares under each future scenario.

Table ES 1.2 – Intersection/Arterial Segment Impacts/Cumulative Deficiencies

ID	INTERSECTION	JURISDICTION	IBC VISION WITH UPDATE (2020)		IBC VISION WITH UPDATE (POST-2035)		FAIR-SHARE		
			CUMULATIVE DEFICIENCY	IMPACT	CUMULATIVE DEFICIENCY	IMPACT	2020 WITH UPDATE*	POST-2035 WITH UPDATE*	EXPECTED SHARE (VISION PLAN)
85	MacArthur Boulevard at Birch Street	Newport Beach				X		5.6%	No Share
723	Main Street at Segerstrom Avenue	Santa Ana				X		40.3%	No Share
728	Halliday East at Alton Parkway	Santa Ana				X		7.2%	No Share
36	Red Hill Avenue at El Camino Real	Tustin		X			10.7%		No Share
445	Tustin Ranch Rd at Warner Ave N	Tustin				X		15.7%	No Share
93	Tustin Ranch Road at Bryan Avenue	Tustin	X		X		0.3%	9.9%	No Share
111	Franklin Avenue at Walnut Avenue	Tustin	X		X		3.9%	3.5%	No Share
749	Park Ave at A Street	Tustin			X			1.5%	No Share
98	Von Karman Avenue at Alton Pkwy	Irvine				X			100.0%
144	Jamboree Road at I-405 SB Ramps	Irvine				X			100.0%
145	Jamboree Road at Michelson Drive	Irvine				X			100.0%
188	Harvard Avenue at Michelson Drive	Irvine				X			100.0%
229	Culver Drive at Alton Parkway	Irvine				X			100.0%
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	Irvine				X			100.0%
234	Culver Drive at Michelson Drive	Irvine	X						No Share
135	Jamboree NB Ramps/Warner Ave	Irvine			X				100.0%
134	Loop Rd/Park Ave at Warner Ave	Irvine/Tustin	X		X				100.0%
ID	ARTERIAL SEGMENT	JURISDICTION	IBC VISION WITH UPDATE (2020)		IBC VISION WITH UPDATE (POST-2035)		FAIR-SHARE		
			CUMULATIVE DEFICIENCY	IMPACT	CUMULATIVE DEFICIENCY	IMPACT	2020 WITH UPDATE*	POST-2035 WITH UPDATE*	EXPECTED SHARE (VISION PLAN)
1326	Dyer Rd between SR-55 SB and SR-55 NB	Santa Ana		X		X	15.9%	21.3%	No Share

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

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 as well as all forecast cumulative deficiencies. Due to the above-mentioned agreements with adjacent cities and Caltrans (other than in the City of Costa Mesa), contribution towards improvements identified at locations where the update has an impact outside the City of Irvine are provided for reference only. Improvement strategies have utilized other studies in adjacent jurisdictions and have been vetted through site analyses to propose improvements that are feasible and reasonable. **Table ES 1.3** displays the mitigation strategies for each deficient intersection within the IBC study area.

Table ES.1.3– Improvement Strategies

INTERSECTION ID #	INTERSECTION NAME	JURISDICTION	IMPROVEMENT STRATEGY
2020 Impacts and Cumulative Deficiencies			
234	Culver Drive at Michelson Drive (cumulative deficiency)	Irvine	Improve EB to 2,2,0
134	Loop Road/Park Ave at Warner Avenue (cumulative deficiency)	Irvine/Tustin	Add 3rd EBT and NBR overlap
36	Red Hill Avenue at El Camino Real (update impact)	Tustin	Reconfigure SB to 1.5,2.5,0**
93	Tustin Ranch Road at Bryan Avenue (cumulative deficiency)	Tustin	Add 4th SBT**

INTERSECTION ID #	INTERSECTION NAME	JURISDICTION	IMPROVEMENT STRATEGY
111	Franklin Avenue at Walnut Avenue (cumulative deficiency)	Tustin	Add 3rd WBT**
1326*	Dyer Road between SR-55 SB and SR-55 NB (impact)	Santa Ana	Add 4th EBT**
P-2035 Impacts and Cumulative Deficiencies			
98	Von Karman Avenue at Alton Parkway (impact)	Irvine	Add 3rd NBT
135	Jamboree NB Ramps/Warner Avenue (cumulative deficiency)	Irvine	Restripe EB to 2,2,0
144	Jamboree Road at I-405 SB Ramps (impact)	Irvine	Improve EB to 2.5,0,2.5
145	Jamboree Road at Michelson Drive (impact)	Irvine	Add 3rd EBL, 3rd SBL, and WBT***
188	Harvard Avenue at Michelson Drive (impact)	Irvine	Improve SB to 2,2,0
229	Culver Drive at Alton Parkway (impact)	Irvine	Improve EB to 2,3,0
97	Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (impact)	Irvine	Add 3rd NBT and convert De Facto to Standard NBR
134	Loop Road/Park Ave at Warner Avenue (cumulative deficiency)	Irvine/Tustin	Add 3rd EBT and NBR overlap
85	MacArthur Boulevard at Birch Street (impact)	Newport Beach	Improve EB to 2 EBL and 2 EBT**
723	Main Street at Segerstrom Avenue (impact)	Santa Ana	Add 3rd NBT, De Facto NBR**
728	Halladay East at Alton Parkway (impact)	Santa Ana	Add 2nd EBT and 2nd WBT**
1326*	Dyer Road between SR-55 SB and SR-55 NB (impact)	Santa Ana	Add 4th WBT**
93	Tustin Ranch Road at Bryan Avenue (cumulative deficiency)	Tustin	Add 4th SBT**
111	Franklin Avenue at Walnut Avenue (cumulative deficiency)	Tustin	Add 3rd WBT**
445	Tustin Ranch Road at Warner Avenue North (impact)	Tustin	Improve NB to 0,2.5,1.5**
749	Park Ave at A Street (cumulative deficiency)	Tustin	Add 2nd SBL and 2nd WBL**

* Arterial Segment
** Improvement strategy provided for information and planning purposes only.
*** Alternative improvement strategy is implementation of the Jamboree/Michelson pedestrian bridge across Jamboree.

ES 1.4 Comparison of Impacts to 2010 Traffic Study

Table ES 1.4 shows the net overall result of fewer future impacts compared to the 2010 Vision Plan Study. The number of interim year forecast impacts reduce from 13 to 10. The number of Buildout year forecast impacts reduces from 41 to 22. Additional details are provided in **Chapter 8.**

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

	Interim Year		Buildout Year	
Facility Type	**2010 Study**	**2015 Update**	**2010 Study**	**2015 Update**
Arterial Segments	0	1	1	1
Intersections	4	1	15	10
Freeway Mainline	4	6	14	5
Freeway Ramps	5	2	11	6
Total	13	10	41	22

In the 2010 Traffic Study the Interim year was 2015 and Buildout year was Post-2030 whereas in the current update study, the Interim year is 2020 and the Buildout year is Post-2035.

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, and Tustin, 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, and Tustin.

In the City of Santa Ana, daily arterial volume-to-capacity ratio (V/C) analysis is used to assess deficiencies in the arterial network. An increase of 0.01 or more of the daily V/C ratio constitutes an impact when compared with the Baseline conditions. There were no impacted arterial segments in the interim year in the 2010 Traffic Study within the City of Santa Ana while one arterial segment is impacted in the 2015 Update in the Interim year:

- Dyer Road between SR-55 NB ramps and SR-55 SB ramps

In the Buildout year in the 2010 Study one arterial location was impacted:

- MacArthur Boulevard between Main Street and SR-55 SB in the City of Santa Ana

This MacArthur Boulevard widening no longer appears to be needed as forecast volumes drop from 51,000 ADT to 39,000 ADT in the 2015 update. In the Buildout conditions of the 2015 update one arterial location was impacted (also impacted in 2020):

- Dyer Road between SR-55 NB ramps and SR-55 SB ramps

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 traffic studies for the Interim year. In the 2010 study four intersections were impacted whereas in the 2015 Update only one intersection is impacted.

Table ES-1-5 – Intersection Impacts - Interim Year (2010 Study vs. 2015 Update)

ID	LOCATION	JURISDICTION	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
145	Jamboree Rd at Michelson Dr	Irvine	PM	x		
234	Culver Drive at Michelson Drive	Irvine	PM			x*
62	Campus Dr at Bristol Street NB	Newport Beach	PM	x		
93	Tustin Ranch Rd at El Camino Real	Tustin	AM	x		
134	Loop Rd/Park Ave at Warner Ave	Irvine/Tustin	PM	x		x*
36	Red Hill Ave at El Camino Real	Tustin	PM			x
* Irvine cumulative deficiency			Sum	4	0	1
			Total Impacts (2010 Study)	4	Total Impacts (2015 Update)	1

Table ES-1.6 shows that while 15 intersections were impacted in Buildout in the 2010 Study only 10 are impacted in the 2015 Update build-out condition. The following three locations were impacted in both studies:

- # 85 - MacArthur Boulevard at Birch Street in Newport Beach
- #145 - Jamboree Road at Michelson Drive in Irvine
- #723 - Main Street at Segerstrom Avenue in Santa Ana

Two of the 2010 Study impacted locations #135 Jamboree Road at Barranca Parkway and #141 Jamboree Road at Main Street have programmed improvements that are expected to be completed by 2020. As noted previously these improvements have been incorporated into analysis which results in a satisfactory level of service and no impacts under all scenarios studied in the 2015 Update.

Table ES-1.6 – Intersection Impacts - Buildout Year (2010 Study vs. 2015 Update)

INT ID	LOCATION	JURISDICTION	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
12	SR-55 Frontage Road SB at Baker Street	Costa Mesa	AM	x		
13	SR-55 Frontage Road NB at Baker Street	Costa Mesa	AM	x		
62	Campus Drive at Bristol Street NB	Newport Beach	PM	x		
85	MacArthur Boulevard at Birch Street	Newport Beach	PM(both)		x	
543	Bristol at Segerstrom	Santa Ana	PM	x		
723	Main Street at Segerstrom Avenue	Santa Ana	PM(both)		x	
728	Halladay East at Alton Parkway	Santa Ana	AM&PM			x
730	Grand Avenue at Warner Avenue	Santa Ana	PM	x		
754	Red Hill Avenue at Carnegie Avenue	Tustin/Santa Ana	PM	x		
24	Newport Avenue at Walnut Avenue	Tustin	AM	x		
93	Tustin Ranch Road at El Camino Real	Tustin	AM	x		
445	Tustin Ranch Road at Warner Avenue N	Tustin	PM			x
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	Irvine/Tustin	PM			x
98	Von Karman Avenue at Alton Parkway	Irvine	PM			x
134	Loop Road/Park Ave at Warner Avenue	Irvine/Tustin	PM	x		x**
135	Jamboree NB Ramps/Warner	Irvine	PM			x**
136	Jamboree Road at Barranca Parkway*	Irvine/Tustin	PM	x		
141	Jamboree Road at Main Street*	Irvine	PM	x		
144	Jamboree Road at I-405 SB Ramps	Irvine	AM			x
145	Jamboree Road at Michelson Drive	Irvine	PM(both)		x	
188	Harvard Avenue at Michelson Drive	Irvine	PM	x **		x
229	Culver Drive at Alton Parkway	Irvine	PM			x
232	Culver Drive at I-405 NB Ramps	Irvine	PM	x		
			Sum	12	3	7
			Total Impacts (2010 Study)	15	Total Impacts (2015 Update)	10

* Improvement currently programmed
** Irvine cumulative deficiency

The completion of the Tustin Ranch Road extension seems to have had an effect on the location of impacted intersections. Compared to the 2010 Study, traffic is drawn away from Red Hill Avenue and Jamboree Road onto Von Karman Avenue/Tustin Ranch Road. A noticeable progression of impacted and deficient intersections can be seen in the PM peak period as traffic heads north from the heart of the IBC using Von Karman Avenue that becomes Tustin Ranch Road and eventually accesses the Jamboree Road Expressway at the Warner Avenue Ramp. The progression of impacted/deficient intersections is:

- Von Karman Avenue at Alton Parkway (Irvine)
- Von Karman Avenue at Barranca Parkway (Irvine)

- Tustin Ranch Road at Warner Avenue North (Tustin)
- Loop Road/Park Avenue at Warner Avenue (Irvine/Tustin-Deficiency only)
- Jamboree Northbound Ramps at Warner Avenue (Irvine-Deficiency only)

ES.1.7 Freeway Mainline and Ramps

Table ES-1.7 compares the Interim Year impacted freeway mainline segments in both traffic studies. In the 2010 study four segments were impacted whereas in the 2015 Update six locations are impacted. Three of these locations all on I-405 between Jamboree Road and SR-55 are common in both studies.

Table ES-1.7 – Freeway Mainline Impacts - Interim Year (2010 Study vs. 2015 Update)

FREEWAY	SEGMENT	DIRECTION	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
I-405	Jamboree Road to MacArthur Boulevard	SB	PM	x		
I-405	Jamboree Road to MacArthur Boulevard	NB	AM		x	
I-405	MacArthur Boulevard to SR-55	NB	AM		x	
I-405	MacArthur Boulevard to SR-55	SB	PM		x	
I-5	North of SR-55	NB	AM			x
SR-55	Dyer Road to Edinger Avenue	NB	AM			x
SR-73	Campus Drive to SR-55	NB	AM			x
			Sum	1	3	3
			Total Impacts (2010 study)	4	Total Impacts (2015 Update)	6

Table ES-1.8 compares the Buildout year impacted freeway mainline segments in both traffic studies. In the 2010 study fourteen segments were impacted whereas in the 2015 Update only five locations are impacted. Two of these locations are common in both studies.

Table ES-1.8 – Freeway Mainline Impacts - Buildout Year (2010 Study vs. 2015 Update)

FREEWAY	SEGMENT	DIRECTION	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
I-405	Jamboree Road to MacArthur Boulevard	SB	PM	x		
I-5	Jamboree Road to Tustin Ranch Road	NB	AM	x		
I-5	Jamboree Road to Tustin Ranch Road	SB	AM&PM	x		
I-5	Newport Avenue to SR-55	NB	AM	x		
I-5	North of SR-55	SB	AM	x		
I-5	Red Hill Avenue to Newport Avenue	NB	AM	x		
I-5	Tustin Ranch Road to Red Hill Avenue	NB	AM	x		
I-5	Tustin Ranch Road to Red Hill Avenue	SB	AM&PM	x		
SR-55	I-405 to MacArthur Boulevard	NB	AM&PM	x		
SR-55	I-405 to MacArthur Boulevard	SB	AM&PM	x		
SR-55	MacArthur Boulevard to Dyer Road	NB	PM	x		
SR-55	MacArthur Boulevard to Dyer Road	SB	AM	x		
I-405	Jamboree Road to MacArthur Boulevard	NB	AM		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 St/Sycamore Ave to I-5	NB	PM			x
			Sum	12	2	3
			Total Impacts (2010 Study)	14	Total Impacts (2015 Update)	5

Table ES-1.9 compares the Interim year impacted freeway ramps in both traffic studies. In the 2010 study five ramps were impacted whereas in the 2015 Update only two locations are impacted. Both the 2015 Update ramps are on I-405 and were also impacts in the 2010 study.

Table ES-1.9 – Freeway Ramp Impacts - Interim Year (2010 Study vs. 2015 Update)

FREEWAY	LOCATION	RAMP	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
I-405	Jamboree Road	NB Off	AM	x		
SR-55	Victoria Street	NB Direct On	AM	x		
SR-73	MacArthur Boulevard	NB On	AM	x		
I-405	Jamboree Road	SB Off	PM		x	
I-405	Bristol Street	SB Loop On	PM		x	
			Sum	3	2	0
			Total Impacts (2010 Study)	5	Total Impacts (2015 Update)	2

Table ES-1.10 compares the Buildout year impacted freeway ramps in both traffic studies. In the 2010 study eleven ramps were impacted whereas in the 2015 Update only six ramps are impacted. Three of the ramps impacted in the 2015 Update ramps are on I-405 and were also impacts in the 2010 study.

Table ES-1.10 – Freeway Ramp Impacts - Buildout Year (2010 Study vs. 2015 Update)

FREEWAY	LOCATION	RAMP	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
I-405	Culver Drive	NB Off	AM	X		
I-405	MacArthur Boulevard	NB On	PM	X		
I-405	Jamboree Road	SB Off	AM/PM	X		
SR-55	Baker Street	NB Off	AM/PM	X		
SR-55	Baker Street	SB On	PM	X		
SR-55	MacArthur Boulevard	SB On Loop	PM	X		
SR-73	Campus Drive	NB On	PM	X		
SR-73	Jamboree Road	SB Off	AM/PM	X		
I-405	MacArthur Boulevard	NB Off	AM		X	
I-405	Bristol Street	SB Loop On	PM		X	
SR-55	Dyer Road	NB On Direct	PM		X	
I-405	Jamboree Road	NB Off	AM			X
SR-55	Dyer Road	NB Off	AM			X
SR-73	Campus Drive	SB Off	AM			X
			Sum	8	3	3
			Total Impacts (2010 Study)	11	Total Impacts (2015 Update)	6

ES.1.8 MPAH and General Plan Amendment

The results of this Five-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 (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 Pkwy and Michelson (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).

1.0 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 than 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 (amended to two years in October 2015). Essentially, this update takes a look at potential traffic impact locations and how development actually occurred to see how close the Vision Plan assumptions were to predicting this condition. This five-year update takes a "snapshot" of the development activity today and considers ambient regional growth to see what has resulted or changed from the 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 Traffic Study to fulfill the Zoning Ordinance Section 9-36-14.k requirements:

> *K. IBC Traffic Study Update. Every five years* (amended to two years in October 2015) *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 mitigation as needed. The study shall review both interim and buildout year scenarios.*

This traffic study update provides an assessment of existing conditions with and without the update and four future scenarios, interim-year 2020 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 ensure 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)
2015 Baseline	7,060	1,384	2,322	26,639	13,934	379	474
2015 With Update	16,795**	1,690	2,653	34,286	12,339	549	1049
2020 Cumulative Baseline	7,060	1,384	2,322	26,639	13,934	379	474
2020 Cumulative With Update	16,671	1,405	2,535	27,750	13,240	883	1049
Post-2035 Cumulative Baseline	7,060	1,384	2,322	26,639	13,934	379	474

SCENARIO	MULTI-FAMILY RESIDENTIAL (DU)	RETAIL MIX (TSF)	HOTEL (ROOM)	OFFICE MIX (TSF)	INDUSTRIAL MIX (TSF)	MINI-WAREHOUSE (TSF)	EXTENDED STAY HOTEL (ROOM)
Post-2035 Cumulative Baseline With Update	16,795**	1,690	2,653	34,286	12,339	549	1049
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 244 unit reduction in theoretical density bonus units due to additional development approved since 2010. See Section 2.2.5.

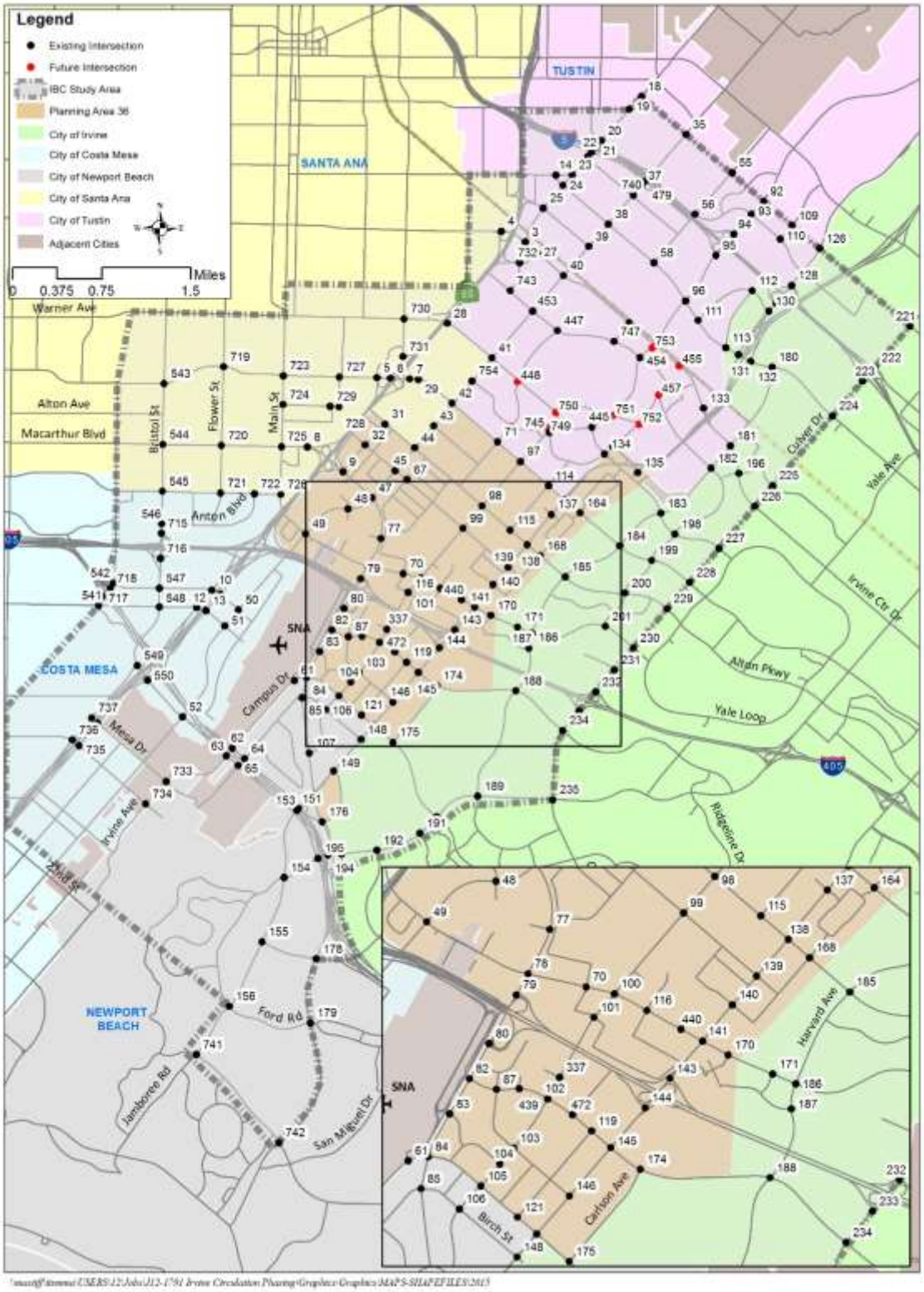
1.1 Study Area

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 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. To determine appropriate study area limits, a peak hour difference plot was developed between the Baseline and With Update model runs and the extent to which plan update related trips were originating and terminating formed the study area boundaries. The study area boundaries extend south of Ford Road within the City of Newport Beach to encompass the intersections at Jamboree Road and San Joaquin Hills Road and MacArthur Boulevard and San Joaquin Hills Road. These intersections, along with those along Bryan Avenue between Newport Avenue in the City of Tustin and Culver Drive in the City of Irvine were added to the IBC study area at the request of the Cities adjacent to the IBC. **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 Five-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 1,794 from 2,038. This reduction represents 1,732 existing, approved, or in process density bonus units, less 244 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 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 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 4 northbound and 4 southbound trains on the Orange County line and 2 northbound and 2 southbound trains on the Inland Empire-Orange County line.

- **Amtrak** – Irvine train station is served by the Pacific Surfliner service which operate 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 served by 4 OCTA bus routes and 2 *i*Shuttle routes while Irvine station is served by six OCTA bus routes and two *i*Shuttle routes. The *i*Shuttle is discussed in detail in **Section 1.6.5**.

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 54 miles of off-street bikeways and 301 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 City of Irvine iShuttle (The iShuttle) is a clean fuel, rubber tire shuttle bus 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; A & B. Route A connects the Tustin Metrolink Station to John Wayne Airport via Von Karman Avenue. Route B connects the Tustin Metrolink Station to the IBC via Jamboree Road and Michelson Drive. Metrolink and OCTA Pass holders ride the shuttle free. Other commuters are charged one dollar fares in the peak and 50 cents in the peak shoulders. 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 – *i*Shuttle Routes

Source: City of Irvine Website (9/2015)

1.6 Update Components

The key traffic study components can be summarized as follows:

- Analysis of existing, near-term (2020), 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) & Highway Capacity Manual (HCM) analysis for selected study area freeway segments and ramps
- Development of tables and figures to summarize and graphically depict circulation system performance under existing conditions and future conditions
- 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, 2020, and Post-2035 conditions for the City of Irvine's IBC Vision Area. The analysis will identify 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: Future Conditions—2020
- Chapter 5: Future Conditions—Post-2035
- Chapter 6: Future Improvements and Mitigations
- Chapter 7: Special Issues
- Chapter 8: Summary of Impacts and Comparison to 2010 Vision Plan Traffic Study
- Chapter 9: References
- Chapter 10: Glossary of Transportation Terms

2.0 METHODOLOGY

2.1 Traffic Analysis Methodology

The IBC Vision Plan adopted in 2010 established a cap of 15,000 dwelling units for the IBC area, which increased 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 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 (years 2020 and Post-2035) 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, the following analyses are performed:

- Daily arterial segment 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 for select segments that meet the criteria for Highway Capacity Manual (HCM) analysis using HCS software
- Freeway peak hour ramp V/C analysis and for select segments that meet the criteria for HCM analysis, using HCS software
- Assessment of bike and pedestrian activity within the IBC

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.

2.2 Traffic Forecast Methodology

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

The Irvine Transportation Analysis Model (ITAM), version 12-4, 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 and the results incorporated into the existing conditions analysis. Future forecast volumes from ITAM were post-processed using the ITAM post-processing module that was developed using acceptable industry standard techniques that use existing count volumes as the basis for development of future daily and peak hour forecast volumes. Consistent with standard practice and OCTAM

methodology, post-processing was applied to 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 procedure 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. Trip rates by socioeconomic data (SED) type are applied to calculate trip generation by trip purpose for each TAZ within the City. **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: Irvine Transportation Analysis Model, version 12-4

These seven trip purposes 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)
- Other-based Other (OBO)
- Non-home Based (NHB)
- Home-based School (HBSc)

Trip generation calculates trips by production and attraction (P/A) 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 presents the trip generation by time period for each study scenario within Planning Area 36. Detailed trip generation quantities by ITAM TAZ are included in **Appendix C**. AM Peak is represents peak hour of the period between 6AM and 9AM and the PM Peak Period is the peak hour between 3PM and 7PM.

Table 2.2 – Trip Generation Summary for Future Forecast Scenarios

TIME PERIOD	2020 CUMULATIVE BASELINE	2020 CUMULATIVE WITH UPDATE	POST-2035 CUMULATIVE BASELINE	POST-2035 CUMULATIVE WITH UPDATE
AM Out	12,172	17,401	12,297	18,980
AM In	29,501	31,389	29,593	36,325
PM Out	27,877	30,797	28,018	35,441
PM In	18,307	22,735	18,531	25,644
ADT	529,306	615,202	529,306	700,506

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 network travel. 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 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 night).

2.2.3 Mode Choice

Mode choice is the third step in traffic modeling. Person-trips are converted 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% to 10.2% of work trips.

2.2.4 Traffic Assignment

The fourth step of traffic modeling, traffic assignment, loads the vehicle trips estimated from preceding steps onto the coded transportation network. Trips in the O/D trip tables are assigned to ITAM roadway network for each time period using an equilibrium assignment. The trip tables in ITAM maintain two trip types for the purpose of assignment: drive alone and carpool.

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.) At the time of this IBC Vision Plan Five-Year Update traffic study, 14,940 DU of the 15,000 DU cap are now accounted for, as outlined in **Table 2.3**:

Table 2.3 – IBC Dwelling Unit Status as of July 2015

BASE UNITS	DENSITY BONUS UNITS	TOTAL UNITS	DESCRIPTION
6,676	384	7,060	Built/Existing
2,020	323	2,343	Under Construction
4,331	688	5,019	Approved (not yet built)
1,793	337	2,130	Remaining units (application in process - CUP or MP)
120	-	120	Pre-applications (not counted as formal application)
14,940	**1,732**	**16,672**	**Total**
60	*306*	*366*	*Remaining units*

In addition to the 14,940 base DUs that are now known, 1,732 density bonus units DU exist, are approved or are currently in-process/pre-application. Therefore, a total of 366 DUs remain unaccounted for from the 17,038 units assumed in the 2010 Vision Plan EIR, consisting of 60 base DUs and 306 density bonus DUs.

However, since the status and location of nearly all IBC DUs are known at this time, the figure of 2,038 density bonus DUs assumed in the 2010 Vision Plan EIR is no longer applicable. This total was based on a theoretical 35 percent (the maximum density bonus allowed by state law) of the approximately 6,000 new DUs added to the General Plan as part of the Vision Plan in 2010, creating the 15,000 unit cap). Therefore, the total density bonus DUs assumed in this traffic study update is reduced 243 units, from 306 to 63, representing 35 percent of the remaining 180 units under the 15,000 unit cap (This includes the 120 units under pre-application review that are not considered formal applications and the number of density bonus units for this project is not known at this time). To be conservative the equivalent of the 243 residential units that are no longer applicable are retained in the non-residential land uses.

The total DU count analyzed in this Vision Plan Update study is therefore 16,795 units (15,000 base units plus 1,732 current density bonus DUs and 63 additional theoretical density bonus DUs). The 123 remaining potential residential DUs are assumed in the traffic study to be located within the same geographical area in which existing zoning potential is identified. All DUs for which the status is known is outlined in **Table 2.3** (including 120 pre-application DUs) above are assumed to be completed by interim study year 2020. The remaining 60 unknown base DUs and 63 unknown density bonus DUs are assumed to be completed by build out study year post-2035. These assumptions represents the most conservative estimates of IBC development in the interim year 2020 and build-out analyses to identify the earliest point at which potential impacts might occur.

Using the methodology from the 2010 IBC Vision Plan Traffic Study and applying that methodology to updated on-the-ground conditions today, this Vision Plan Update analyzed 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-year condition (Year 2020) and the build-out condition (Post-2035). Specific land use assumptions are found in **Appendix D**.

2.3 Traffic Counts

Intersection and arterial count data was collected for all locations within the study area. 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 study. Counts provided by the City were collected between November 2014 and March 2015 while additional counts were taken between May 2015 and June 2015. In addition to typical vehicle counts at all locations, bike and pedestrian counts were collected at selected intersections within the IBC as shown in **Figure 2.1**.

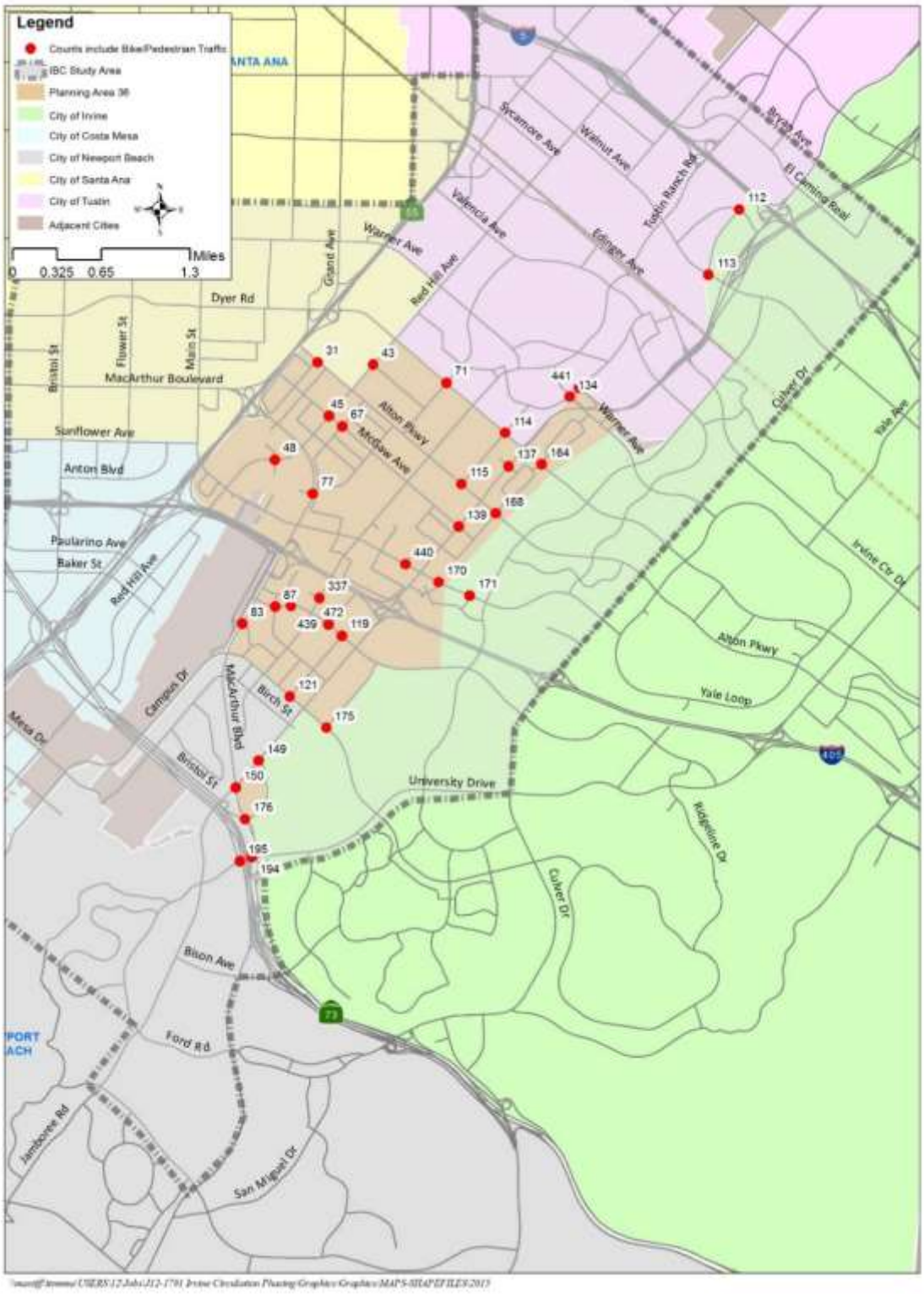
2.4 Performance Criteria

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 also use classifications for the LOS, V/C relationships and 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: plan related impacts and cumulative deficiencies. Plan impacts are determined using the definition of significant impacts from each city's traffic impact analysis protocol. The City of Irvine threshold for defining 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.

Figure 2.1 - Bicycle and Pedestrian Count Locations



Cumulative deficiencies are identified as those locations that fail in both the Existing/Future Baseline

and With Update conditions but do not have an impact as identified by the above noted criteria and therefore are not caused by the IBC Vision Plan. 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 Existing/Future Baseline scenarios. For the City of Newport Beach, a project impact is identified as an increase of 0.01 or more of the critical movement of a deficient intersection.

In prior consultation with the City of Irvine, it was agreed with Caltrans staff 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 deficient or near deficiency (LOS D/E cusp, or V/C=0.89) and calculating the difference in peak hour trips between the Existing/Future Baseline 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 the project adds more than 200 peak hour trips (mainline segments) or more than 30 peak hour trips (ramps) once beyond the D/E cusp, then the location has a project impact. Also, if the segment is at LOS D/E cusp or worse (>=0.89) without the project, and the project adds more than 200 peak hour trips (mainline segments) or more than 30 peak hour trips (ramps), then the location has a project impact.

2.5 Intersection Analysis

For existing and future (2020 and post-2035) conditions, levels of service at intersections was calculated through application of the ICU method. The methodology calculates the ratio of the sum of critical turning movement volumes to saturated flow rates and relates this to Level of Service as shown in **Table 2.4**.

Table 2.4 - 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 has been performed by running post-processed ITAM model outputs through a standalone program written for the City of Irvine. The program was applied to existing traffic counts or 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.
- 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 the IBC itself)

Additional detail on the ICU performance criteria is provided in **Table 2.5.**

Table 2.5 – 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 2020 and six intersections have ATMS allocated in Post-2035. No ATMS will be applied as mitigation to impacted intersections within the IBC.

2020 ATMS Applied Intersections

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

Post-2035 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 Pkwy
- 229 - Culver Drive at Alton Pkwy
- 235 - Culver Drive at University Drive

2.6 Arterial Analysis

The arterial roadway criteria involved 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 Count 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 in City of Irvine PA 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 2.6** shows the relationship between arterial V/C and LOS.

Table 2.6 – 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 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 was 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 was greater than a mile. In such situations, the peak hour lane capacity was 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 was based on forecast intersection approach and departure volumes of the upstream and downstream intersections. The peak hour link analysis was 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 was based on the ICU analysis as well as improvement needs of the downstream intersection. **Table 2.7** shows the capacities used by jurisdiction and roadway classification. The Divided Collector designation (2-lane divided highway) has been included at 18,000 daily capacity per new OCTA guidance.

Table 2.7 – 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	8 lane	72,000
		6 lane	54,000
	Primary Arterial	4 lane	32,000
	Secondary Arterial	4 lane	28,000
	Divided Collector	2 lane divided	18,000
	Commuter	2 lane	13,000
City of Santa Ana	Principal Arterial	8 lane	75,000
	Major Arterial	6 lane	56,300
	Primary Arterial	4 lane	37,500
	Secondary Arterial	4 lane	24,000
	Divided Collector	2 lane divided	18,000
	Collector/Commuter	2 lane	12,500
City of Tustin	Major Arterial	8 lane	75,000
		6 lane	56,300
	Primary Arterial	4 lane	37,500
	Secondary Arterial	4 lane	25,000
	Divided Collector	2 lane divided	18,000
	Commuter	2 lane	12,500
City of Costa Mesa	Major Arterial	8 lane	75,000
		6 lane	56,000
	Primary Arterial	4 lane	38,000
	Secondary Arterial	4 lane	25,000
	Divided Collector	2 lane divided	18,000
	Commuter	2 lane	12,500
City of Newport Beach	Principal Arterial	8 lane	68,000
	Augmented Arterial	6 lane	58,000*
	Primary Arterial	4 lane	40,000
	Secondary Arterial	4 lane	23,000
	Divided Collector	2 lane divided	18,000
	Commuter	2 lane	10,000
*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).			

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

- 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 (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 Pkwy and Michelson (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).

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 baseline assumptions.

The following arterial improvements remain part of the Post-2035 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.

The widening of Red Hill Avenue from four lanes to six lanes between MacArthur Boulevard and Main Street is also assumed in the Post-2035 Baseline since it is the one missing roadway widening in IBC that is needed to fulfill OCTA's Master Plan of Arterial Highways (MPAH).

Since 2010, the City of Tustin has widened Barranca Pkwy to a 7-lane divided roadway between Red Hill Avenue and Jamboree Road by adding a fourth westbound through lane; therefore this assumption is also assumed in the Post-2035 Baseline. All but two IBC Vision Plan intersection improvements previously identified in the 2010 Vision Plan approval have been removed for the purposes of reassessing transportation needs. The two intersection improvements expected to be constructed and assumed to be in-place by interim-year 2020 are:

- Jamboree Road & Barranca Parkway– Fifth northbound Jamboree through lane, conversion of the northbound free-right turn lane to a standard right turn lane and conversion of eastbound shared left-through lane to an exclusive third eastbound left-turn lane.
- Jamboree Road & Main Street – Fifth northbound and fifth southbound Jamboree through lane, provision of northbound and southbound standard right-turn lane for each direction, conversion of the westbound free-right-turn lane to a standard westbound right-turn lane, and conversion of the eastbound free-right turn lane to dual eastbound right-turn lanes.

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 was 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 was extracted and averaged over three days to obtain 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 were based on peak hour V/C ratios. The freeway mainline capacities applied in this analysis of 2,000 vehicles per lane were 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 2.8** presents the V/C ranges for freeway/tollway segments and their association with LOS.

Table 2.8 – 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: Highway Capacity Manual, 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 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 freeway analysis consists of utilizing HCS software (HCS 2010) and processes inputs of speed, peak hour factor, peak hour volume, and 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 2.9**.

Table 2.9 – Freeway Mainline Segment Density LOS

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

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 and H respectively.**

1. Freeway mainline segments and ramps were 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 was performed when:
    a. 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 Existing/Future Baseline 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 was performed for the With Update scenarios, for those links that meet the criteria above. Identification of significant impact for freeway facilities was based purely on peak-hour V/C ratios and is detailed in **Table 2.12**.

2.7.2 Freeway Ramps

For existing conditions 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. Where no intersection or PeMS data was available raw model volumes or historical counts were used.

Fur future conditions, locations 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. l 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 Update model runs. Where no post-processed intersection volumes of PeMS data was available raw model data was used.

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 2.10**.

Table 2.10 – 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 January 2011. 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 2.11** 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 G and H.**

1. Freeway ramps were 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 was performed when:
    a. 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.

Table 2.11 – Freeway Ramp Density LOS

LOS	FREEWAY RAMP DENSITY (PC/MI/LN)
A	0-10.0
B	10.0-20.0
C	20.0-28.0
D	28.0-35.0
E	>35.0
F	Exceeds HCM Limits

Source: Highway Capacity Manual, 2010

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**.

The freeway ramp capacities applied in this analysis and shown in **Table 2.12** 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 is performed to confirm (or otherwise) which on-ramps are metered versus unmetered in existing conditions.

Table 2.12 – 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). **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.

3.0 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 275 arterial segments, 228 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 Five-Year 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 7,060, and there are another 7,362 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 2015.

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)
2015	7,060	1,384	2,322	26,639	13,934	379	474

Source: City of Irvine, ITAM

3.3 Existing Daily Arterial Segment Analysis

Under existing conditions, traffic within the City and adjacent jurisdictions is generally heaviest in the north-south direction, with Jamboree Road and Culver Drive being the City's highest traveled corridors. In addition, other heavily traveled arterials include MacArthur Boulevard, University Drive, Main Street in Santa Ana, Edinger Avenue in the City of Tustin, MacArthur Boulevard in Newport Beach and Bristol Street in Costa Mesa. The heaviest traveled segment on these arterials is MacArthur Boulevard between Bison Avenue and Ford Road, which serves up to 75,900 vehicles per day (vpd) followed by Jamboree Road north of Michelson Drive with volumes of 72,100 vpd. Along the east-west direction, the main thoroughfares are Main Street and Barranca Parkway, where some of the heavily used segments carry on average between 23,000 and 35,000 vehicles daily. The following were some of the most heavily traveled arterial segments within the study area by vpd:

- **Jamboree Road (Irvine)**
  - Michelson Drive to I-405 southbound off-ramp (72,100)
  - Warner Avenue to Edinger Avenue (70,100)
  - Main Street to I-405 (68,700)

- I-5 NB Ramps to I-5 SB ramps (62,500)
- I-5 Kelvin Avenue to Main Street 61,800)
- Alton Parkway to McGaw Avenue (57,700)
- Warner Avenue to Barranca Parkway (57,100)

- **MacArthur Boulevard (Newport Beach)**
  - Bison to Ford (75,900)
  - University Drive to Bison Avenue (65,700)

- **Bristol Street (Costa Mesa)**
  - Anton Boulevard to I-405 NB Ramps (57,800)
  - I-405 NB Ramps to I-405 SB Ramps (56,800)

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 2.7** were utilized. As noted, LOS E or F indicates a deficient segment for all arterial segments outside PA 36 within the City of Irvine. PA 36 segments are considered deficient at LOS F as are Orange County's CMP segments.

Table 3.2 – Existing Daily Arterial LOS Summary

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATION	EXISTING CONDITIONS		
						VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	4D	14,556	0.38	A
2721	Baker St	Bear St to Bristol St		CM	4D	23,044	0.61	A
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	6D	28,071	0.74	C
1294	Baker St	SR 55 SB to SR 55 NB		CM	6D	22,175	0.58	A
1468	Baker St	SR 55 NB to Red Hill Ave		CM	6D	12,846	0.34	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	6D	4,857	0.27	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	29,683	0.53	A
2733	Bristol St	Segerstrom Ave to W Alton Ave		CM	6D	36,757	0.66	B
2737	Bristol St	W Alton Ave to MacArthur Blvd		CM	6D	39,515	0.71	B
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	39,465	0.71	B
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	41,188	0.74	C
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	8D	57,785	0.68	B
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	56,834	0.76	C
2745	Bristol St	I-405 SB Ramp to Paularino Ave		CM	6D	40,065	0.72	C
2732	Bristol St	Paularino Ave to Baker St		CM	6D	31,706	0.57	A
2730	Bristol St	Baker St to SR 55		CM	6D	23,641	0.42	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	16,951	0.30	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	16,652	0.44	A
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	2U	6,397	0.51	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	11,227	0.30	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	8,328	0.22	A
2760	Flower St	Sunflower Ave to Anton Blvd		CM	4D	5,653	0.15	A
2756	Main St	Sunflower Ave to SR-55		CM	4D	23,298	0.42	A
2785	Mesa Dr	Newport Blvd SB to Newport Blvd NB		CM	2U	6,128	0.49	A
2783	Mesa Dr	Newport Blvd NB to Santa Ana Ave		CM	2U	6,914	0.55	A
2779	Mesa Dr	Irvine Ave to Birch St		CM	2U	8,126	0.21	A
2742	Paularino Ave	Bear St to Bristol St		CM	2U	8,160	0.65	B
2746	Paularino Ave	Bristol St to SR-55 SB		CM	4D	18,635	0.49	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATION	EXISTING CONDITIONS		
						VOLUME	V/C	LOS
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	15,716	0.41	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	11,198	0.30	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	4,434	0.12	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	4D	20,605	0.54	A
1340	Red Hill Ave	Paularino Ave to Baker St		CM	4D	17,950	0.47	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	15,523	0.41	A
41	Santa Ana Ave	Mesa Dr to Bristol St		CM	4D	10,564	0.28	A
2769	University Dr	Santa Ana Ave to Irvine Ave		CM	2U	5,681	0.45	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	5,494	0.17	A
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	14,999	0.47	A
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	16,472	0.52	A
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	19,511	0.36	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	19,252	0.36	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	15,871	0.29	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	17,442	0.32	A
783	Alton Pkwy	San Marino to Culver Dr		Irv	6D	24,458	0.45	A
735	Barranca Pkwy	Pullman to Red Hill Ave		Irv	6D	30,120	0.56	A
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	7D	31,750	0.59	A
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	33,993	0.54	A
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	33,065	0.53	A
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	27,144	0.50	A
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	22,355	0.41	A
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	21,197	0.39	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	22,845	0.42	A
748	Barranca Pkwy	Santa Rosa to Culver Dr		Irv	6D	24,222	0.45	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	19,253	0.60	A
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	19,253	0.60	A
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	19,253	0.60	A
540	Bryan Ave	Rubicon to Culver		Irv	4D	19,253	0.60	A
869	Campus Dr	MacArthur Blvd to Martin	a	Irv	6D	13,198	0.24	A
870	Campus Dr	Martin to Von Karman Ave	a	Irv	4D	13,198	0.41	A
871	Campus Dr	Von Karman Ave to Teller Ave	a	Irv	4D	10,967	0.34	A
872	Campus Dr	Teller Ave to Jamboree Rd	a	Irv	4D	10,967	0.34	A
877	Campus Dr	Jamboree Rd to Carlson Ave	a	Irv	4D	18,066	0.57	A
879	Campus Dr	Carlson Ave to University		Irv	2U	18,066	1.39	**F**
166	Carlson Ave	Michelson Dr to Campus Dr	a	Irv	4D	6,008	0.19	A
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps		Irv	Maj5D+	51,629	0.82	D
213	Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr		Irv	6D	49,844	0.92	**E**
214	Culver Dr	Scottsdale Dr to Walnut Ave		Irv	6D	42,886	0.79	C
215	Culver Dr	Walnut Ave to Deerfield Ave		Irv	6D	40,955	0.76	C
216	Culver Dr	Deerfield Ave to Irvine Center Dr		Irv	Maj6D+	40,209	0.75	C
217	Culver Dr	Irvine Center Dr to Warner Ave		Irv	6D	42,340	0.78	C
218	Culver Dr	Warner Ave to Barranca Pkwy		Irv	6D	41,423	0.77	C
219	Culver Dr	Barranca Pkwy to Alton Pkwy		Irv	6D	47,027	0.87	D
220	Culver Dr	Alton Pkwy to Main St		Irv	6D	45,413	0.84	D
221	Culver Dr	Main St to San Leandro		Irv	6D	49,714	0.92	**E**
222	Culver Dr	San Leandro to I-405 NB On-Ramp		Irv	6D	49,714	0.92	**E**
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr		Irv	6D	50,618	0.94	**E**
225	Culver Dr	Michelson Dr to Sandburg Way		Irv	6D	37,338	0.69	B
226	Culver Dr	Sandburg Way to University Dr		Irv	6D	33,901	0.63	B
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	22,289	0.70	B
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,013	0.19	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	2U	8,370	0.64	B
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	2U	9,896	0.76	C
171	Harvard Ave	Deerfield Ave to Irvine Center Dr		Irv	3D	9,896	0.40	A
172	Harvard Ave	Irvine Center Dr to Paseo Westpark		Irv	4D	10,863	0.34	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	10,446	0.33	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	14,671	0.46	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	18,100	0.57	A
2829	Harvard Ave	San Juan to San Leon		Irv	4D	17,118	0.54	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATION	EXISTING CONDITIONS		
						VOLUME	V/C	LOS
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	18,016	0.56	A
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	21,539	0.67	B
180	Harvard Ave	San Marino to Main St		Irv	4D	21,789	0.68	B
181	Harvard Ave	Main St to Coronado		Irv	4D	22,315	0.70	B
182	Harvard Ave	Coronado to Michelson Dr		Irv	4D	23,220	0.73	C
183	Harvard Ave	Michelson Dr to University Dr		Irv	2U	17,252	1.33	**F**
675	Irvine Center Dr	Harvard Ave to Hearthstone	b	Irv	6D	22,303	0.41	A
676	Irvine Center Dr	Hearthstone to Culver Dr	b	Irv	6D	22,303	0.41	A
129	Jamboree Rd	Bryan Ave to El Camino	b	Irv	8D	48,517	0.67	B
130	Jamboree Rd	El Camino Real to I-5 NB On-Ramp	b	Irv	Maj7D+	48,517	0.77	C
958	Jamboree Rd	I-5 NB Ramps to I-5 SB Off-Ramp	b	Irv	8D	62,482	0.87	D
131	Jamboree Rd	I-5 SB Off-Ramp to Michelle Dr	b	Irv	8D	50,973	0.71	B
133	Jamboree Rd	Michelle Dr to Walnut Ave	b	Irv	5D	50,973	1.19	**F**
135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rds)	b	Irv	Exp8	56,379	0.32	A
136	Jamboree Rd	Edinger Ave to Warner Ave	b	Irv	Exp8	70,916	0.40	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	57,133	0.32	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	49,764	0.69	B
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	53,566	0.74	C
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	57,681	0.80	C
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	52,430	0.73	C
144	Jamboree Rd	Kelvin Ave to Main St	a,b	Irv	8D	61,834	0.86	D
145	Jamboree Rd	Main St to I-405 Off-Ramp	b	Irv	Maj8D+	68,703	0.95	E
148	Jamboree Rd	I-405 On-Ramp to Michelson Dr	a,b	Irv	Maj8D+	72,060	1.00	**F**
149	Jamboree Rd	Michelson Dr to Dupont Dr	a,b	Irv	7D	50,598	0.80	C
150	Jamboree Rd	Dupont Dr to Campus Dr	a,b	Irv	7D	41,949	0.67	B
151	Jamboree Rd	Campus Dr to Birch St	b	Irv	6D	39,801	0.74	C
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	39,505	0.63	B
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	6D	33,686	0.54	A
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	34,542	0.64	B
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	5D	36,081	0.57	A
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	22,329	0.35	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	22,329	0.35	A
60	MacArthur Blvd	Main St to I-405 NB Off-Ramp	a	Irv	Maj8D+	47,934	0.67	B
62	MacArthur Blvd	I-405 SB On-Ramp to Michelson Dr	a	Irv	Maj8D+	52,535	0.73	C
63	MacArthur Blvd	Michelson Dr to Douglass	a	Irv	8D	35,385	0.49	A
64	MacArthur Blvd	Douglas to Campus Dr		Irv	8D	35,385	0.49	A
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	39,687	0.74	C
917	MacArthur Blvd	Fairchild Rd to University Dr	b	Irv	6D	39,687	0.74	C
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	23,298	0.43	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	23,596	0.44	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	23,596	0.44	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+	31,631	0.50	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+	31,631	0.59	A
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	23,054	0.43	A
823	Main St	Siglo to Jamboree Rd	a	Irv	6D	23,054	0.43	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+	22,949	0.43	A
825	Main St	Veneto to Harvard Ave		Irv	6D	22,949	0.43	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	12,235	0.38	A
827	Main St	Paseo Westpark to Culver Dr		Irv	4D	12,235	0.38	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	6,177	0.19	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	8,422	0.26	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	7,839	0.25	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	2,328	0.07	A
840	Michelson Dr	MacArthur Blvd to Dupont Dr	a	Irv	5D	19,878	0.46	A
843	Michelson Dr	Bixby to Von Karman Ave	a	Irv	4D	11,779	0.37	A
844	Michelson Dr	Von Karman Ave to Obsidian	a	Irv	Prim4D+	19,044	0.60	A
845	Michelson Dr	Teller Ave to Jamboree Rd	a	Irv	Prim5	19,044	0.44	A
846	Michelson Dr	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+	20,314	0.38	A
847	Michelson Dr	Carlson Ave to Prince		Irv	Prim4D+	20,314	0.64	B
848	Michelson Dr	Riparian View to Harvard Ave		Irv	4D	20,314	0.64	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATION	EXISTING CONDITIONS		
						VOLUME	V/C	LOS
1346	Michelson Dr	Harvard Ave to Parkside Dr		Irv	4D	16,454	0.51	A
850	Michelson Dr	Parkside Dr to Culver Dr		Irv	4D	16,454	0.51	A
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	27,969	0.52	A
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	28,720	0.53	A
33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	29,470	0.55	A
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	37,729	0.70	B
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	4D	18,524	0.58	A
38	Red Hill Ave	Skypark to Main St	a	Irv	4D	15,253	0.48	A
189	University Dr	MacArthur Blvd to California Ave		Irv	4D	24,279	0.76	C
188	University Dr	California Ave to Mesa Rd		Irv	4D	29,790	0.93	**E**
187	University Dr	Mesa Rd to Campus Dr		Irv	4D	31,238	0.98	**E**
880	University Dr	Campus Dr to Harvard Ave		Irv	6D	25,975	0.48	A
881	University Dr	Harvard Ave to San Joaquin Hills Rd		Irv	6D	22,773	0.42	A
882	University Dr	San Joaquin Hills Rd to Culver Dr		Irv	6D	22,773	0.42	A
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	26,132	0.82	D
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	23,446	0.73	C
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	23,426	0.73	C
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	23,426	0.73	C
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+	24,789	0.78	C
107	Von Karman Ave	Quartz to Michelson Dr	a	Irv	Prim4D+	21,590	0.68	B
108	Von Karman Ave	Michelson Dr to Dupont Dr	a	Irv	4D	16,632	0.52	A
110	Von Karman Ave	Dupont Dr to Martin	a	Irv	4D	16,632	0.52	A
111	Von Karman Ave	Martin to Campus Dr	a	Irv	4D	16,632	0.52	A
594	Walnut Ave	Myford to Jamboree SB Off-Ramp		Irv	Prim4D+	19,344	0.60	A
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+	18,462	0.34	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+	18,462	0.43	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	16,875	0.53	A
597	Walnut Ave	Mall St to Culver Dr		Irv	4D	16,875	0.53	A
728	Warner Ave	Construction North to Harvard Ave		Irv	4D	12,526	0.39	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	9,009	0.28	A
732	Warner Ave	Santa Ynez to Culver Dr		Irv	4D	8,145	0.26	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	15,857	0.40	A
874	Birch St	E of MacArthur Blvd		NB	4D	8,715	0.22	A
69	Birch St	W of MacArthur Blvd		NB	4D	14,406	0.36	A
875	Birch St	E of Von Karman Ave		NB	4D	5,486	0.14	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	7,087	0.12	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	13,123	0.33	A
920	Bristol St SB	Red Hill Ave to Campus Dr		NB	3D	12,664	0.70	B
1310	Bristol St NB	Campus Dr to Red Hill Ave		NB	3D	13,303	0.46	A
1303	Bristol St SB	Campus Dr to Birch St		NB	3D	20,270	0.70	B
1305	Bristol St NB	Birch St to Campus Dr		NB	3D	22,717	0.78	C
1312	Bristol St SB	W of Jamboree Rd		NB	4D	33,384	0.84	D
1580	Bristol St NB	W of Jamboree Rd		NB	3D	15,630	0.54	A
66	Campus Dr	Bristol St NB to MacArthur Blvd		NB	6D	28,135	0.49	A
1778	Ford Rd	Jamboree Rd to MacArthur Blvd		NB	4D	9,520	0.24	A
1304	Irvine Ave	Bristol St NB to Bristol St SB		NB	6D	28,628	0.49	A
67	Irvine Ave	Bristol St SB to Mesa Dr		NB	4D	25,824	0.45	A
2768	Irvine Ave	South of University Dr		NB	4D	28,283	0.71	B
156	Jamboree Rd	South of MacArthur Blvd		NB	6D	32,408	0.56	A
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	6D	42,882	0.74	C
157	Jamboree Rd	South of Bristol St		NB	6D	50,576	0.74	C
159	Jamboree Rd	University Dr to Bison Ave		NB	6D	41,964	0.72	C
1777	Jamboree Rd	Bison Ave to Ford Rd		NB	6D	32,181	0.56	A
73	MacArthur Blvd	Campus Dr to Birch St		NB	8D	18,634	0.27	A
75	MacArthur Blvd	South of Birch St		NB	6D	18,634	0.32	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	18,634	0.32	A
953	MacArthur Blvd	University Dr to Bison Ave	b	NB	6D	65,695	1.13	**F**
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	75,856	1.12	**F**
2767	University Dr	E of Irvine Ave		NB	2U	3,586	0.36	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATION	EXISTING CONDITIONS		
						VOLUME	V/C	LOS
1774	University Dr	Jamboree Rd to MacArthur Blvd		NB	5D	11,047	0.23	A
112	Von Karman Ave	South of Campus Dr		NB	4D	11,633	0.29	A
113	Von Karman Ave	South of Birch St		NB	4D	9,968	0.25	A
2795	Dyer Rd	Main St to Halladay St		SA	6D	29,165	0.52	A
2799	Dyer Rd	Halladay St to SR-55 SB		SA	6D	35,997	0.64	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	49,579	0.88	D
734	Dyer Rd	SR-55 NB to Pullman St		SA	6D	46,396	0.82	D
2764	Grand Ave	Warner Ave to Hotel Terrace Dr		SA	6D	24,182	0.43	A
2806	Grand Ave	Hotel Terrace Dr to SR-55 NB		SA	6D	24,009	0.43	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	2U	3,156	0.25	A
2822	Halladay St	Alton Ave to McGaw Ave (Columbine)		SA	2U	1,705	0.14	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	33,000	0.59	A
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	38,000	0.68	B
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	27,875	0.50	A
2826	Main St	Alton Ave to McGaw Ave (Columbine)		SA	6D	26,662	0.47	A
2809	Main St	McGaw (Columbine) to MacArthur Blvd		SA	6D	27,812	0.49	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	22,389	0.40	A
2823	McGaw Ave	Main St to Halladay St		SA	4D	4,145	0.17	A
2736	Segerstrom Ave	Bristol St to Flower St		SA	4D	22,069	0.59	A
2771	Segerstrom Ave	Flower St to Main St		SA	4D	23,312	0.62	B
2763	Warner Ave	Grand Ave to SR-55		SA	6D	18,271	0.33	A
2761	Sunflower Ave	Bristol St to Flower St		SA/	6D	21,755	0.39	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/	6D	18,113	0.32	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/	6D	23,648	0.42	A
1198	Browning Ave	Walnut Ave to I-5		Tus	4U	4,970	0.40	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	15,930	0.64	B
535	Bryan Ave	Red Hill Ave to Browning		Tus	4U	16,143	0.43	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	16,119	0.43	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	18,028	0.48	A
44	Edinger Ave	W of Newport Ave	b	Tus	6D	37,786	0.67	B
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	25,781	0.46	A
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	19,693	0.35	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4U	13,307	0.36	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	2U	9,349	0.52	A
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4U	9,507	0.25	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	16,628	0.44	A
672	Irvine Center Dr	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	26,182	0.47	A
674	Irvine Center Dr	Jamboree Rd to Harvard Ave	b	Tus	6D	24,388	0.43	A
2777	Mitchell Ave	Newport Ave to Red Hill Ave		Tus	2U	6,781	0.54	A
2775	Mitchell Ave	Red Hill Ave to Browning Ave		Tus	2U	4,800	0.38	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	38,250	0.68	B
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	32,378	0.58	A
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	28,552	0.51	A
49	Newport Ave	North of Sycamore Ave		Tus	6D	9,888	0.18	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	17,418	0.31	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	5,513	0.44	A
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	5,263	0.42	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	37,599	0.67	B
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	34,222	0.61	A
21	Red Hill Ave	Nisson Rd to I-5 SB		Tus	6D	40,821	0.73	C
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	30,328	0.54	A
22	Red Hill Ave	Mitchell Ave to Walnut Ave		Tus	6D	26,871	0.48	A
23	Red Hill Ave	Walnut Ave to Sycamore Ave		Tus	6D	28,039	0.50	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	29,209	0.52	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	24,775	0.44	A
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	28,039	0.50	A
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	29,914	0.46	A
1363	Sycamore Ave	SR-55 NB to Newport Ave		Tus	4U	9,659	0.26	A
1920	Sycamore Ave	Newport Ave to Red Hill Ave		Tus	2U	8,551	0.68	B
85	Tustin Ranch Rd	North of I-5		Tus	6D	41,618	0.74	C

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATION	EXISTING CONDITIONS		
						VOLUME	V/C	LOS
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	35,315	0.63	B
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4U	6,222	0.17	A
587	Walnut Ave	E of Newport Ave		Tus	4U	17,520	0.70	B
589	Walnut Ave	E of Red Hill Ave		Tus	4D	16,500	0.44	A
590	Walnut Ave	W of Tustin Ranch Rd		Tus	4D	18,798	0.50	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	17,774	0.47	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	16,652	0.30	A

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

The arterial analysis indicates that the following 12 segments are deficient under the Existing Year 2015 daily conditions:

- 879 – Campus Drive from Carlson Avenue to University Drive (Irvine)
- 213 – Culver Drive from I-5 SB Off-Ramp 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)
- 183 – Harvard Avenue from Michelson Drive to University Drive (Irvine)
- 133 – Jamboree Road from Michelle Drive to Walnut Avenue (Irvine)
- 148 – Jamboree Road from I-405 Ramps to Michelson Drive (Irvine)
- 188 – University Drive from California Avenue to Mesa Road (Irvine)
- 187 – University Drive from Mesa Road to Campus Drive (Irvine)
- 953 – MacArthur Boulevard from University Drive to Bison Avenue (Newport Beach)*
- 1301 – MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*

*Deficient locations under 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.

Figure 3.1 – Existing Daily Arterial ADT

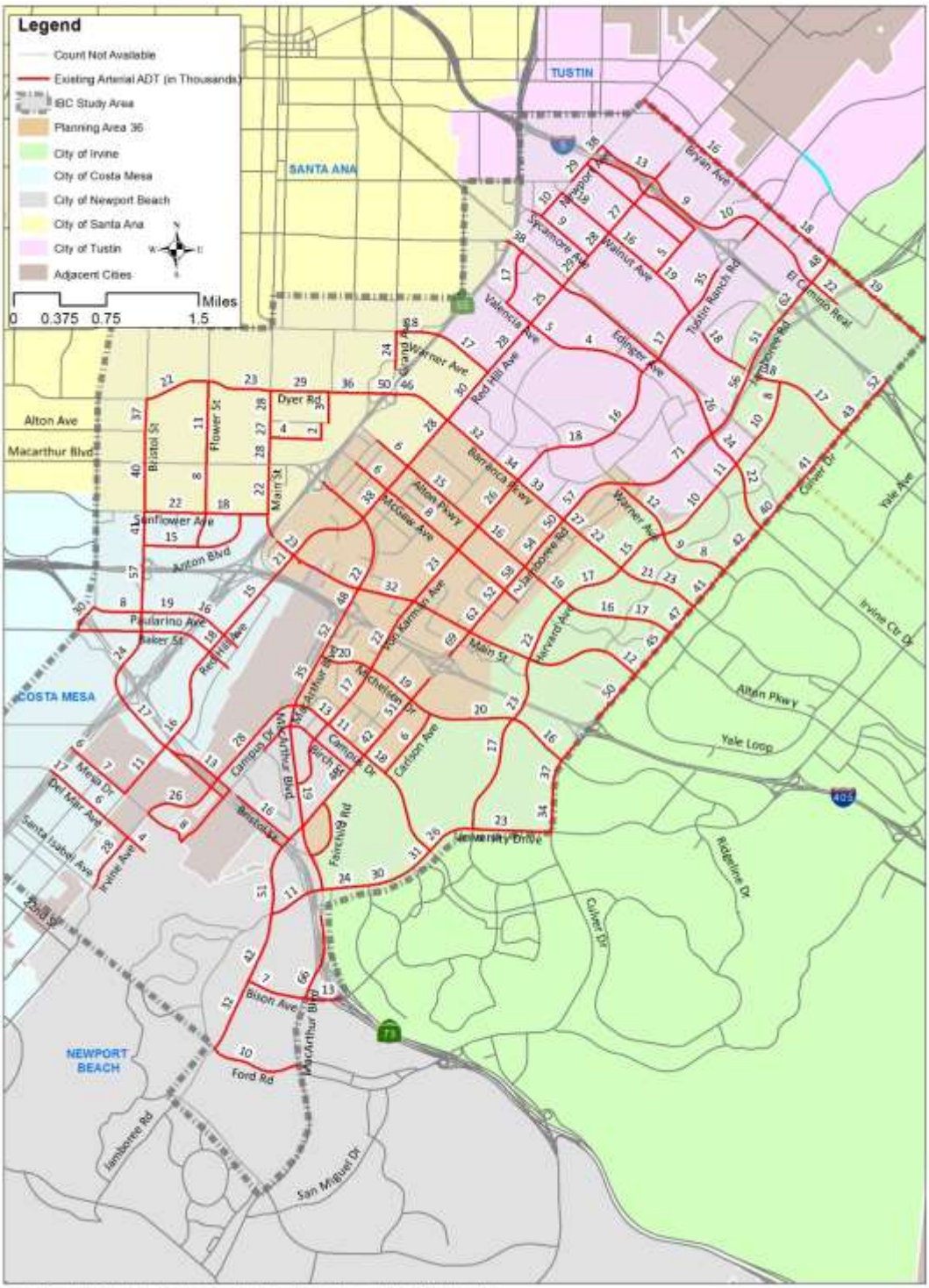
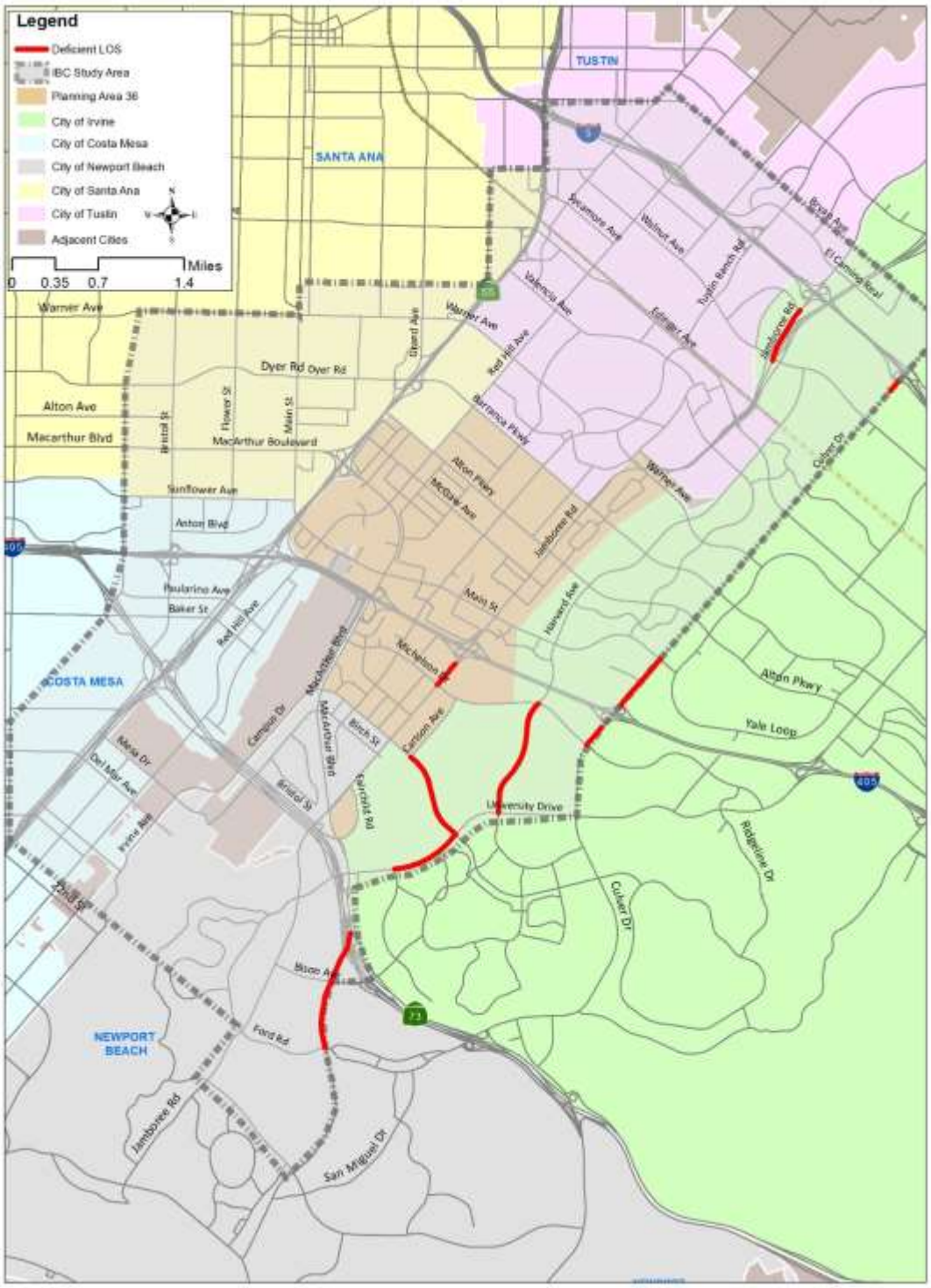


Figure 3.2 – Existing Arterial Daily Deficiencies



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 ten 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.

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	581	725	1,015	683	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,282	2,522	2,436	2,086	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	Main St to San Leandro	6D	1,253	2,583	2,600	1,741	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	San Leandro to I-405 NB On-Ramp	6D	1,359	2,590	2,794	1,807	Acceptable	Acceptable	Acceptable	Acceptable
Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	1,954	2,060	2,763	1,730	Acceptable	Acceptable	Acceptable	Acceptable
Harvard Ave	Michelson Dr to University Dr	2U	497	990	1,051	784	Acceptable	Acceptable	Acceptable	Acceptable
Jamboree Rd	Michelle Dr to Walnut Ave	5D	723	2,142	1,688	1,410	Acceptable	Acceptable	Acceptable	Acceptable
Jamboree Rd	I-405 On-Ramp to Michelson Dr	Maj8D+ 2AUX	2,256	3,180	3,368	2,654	Acceptable	Acceptable	Acceptable	Acceptable
University Dr	California Ave to Mesa Rd	4D	1,816	4,752	4,297	2,366	Acceptable	Acceptable	Acceptable	Acceptable
University Dr	Mesa Rd to Campus Dr	4D	1,319	1,884	1,365	1,497	Acceptable	Acceptable	Acceptable	Acceptable

There are no segments within the City of Irvine that fail under peak hour existing 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, and Tustin assess segment impacts at the intersection level. Improvements at the intersections that feed into deficient arterial segments should eliminate deficiencies. For segments in the City of Santa Ana, deficiencies are addressed in the daily condition. There are no arterial segments in Santa Ana that are deficient under existing conditions.

3.5 Existing Intersection Analysis

There are 228 intersections in the study area, 215 of which are existing locations and 13 future intersections that are expected to be built in the City of Tustin as a part of the Tustin Legacy development. The 215 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 Year 2015 intersection ICU and LOS and **Appendix E** presents detailed ICU worksheets for each intersection. For existing conditions, turning movement counts were collected between December 2014 and mid-June 2015 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 2.5**. For shared jurisdictions, the more conservative methodology was used.

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	0.73	C	0.62	B
11	SR-55 Frontage Rd NB at Paularino Ave		CM	0.56	A	0.67	B
12	SR-55 Frontage Rd SB at Baker St		CM	0.62	B	0.79	C
13	SR-55 Frontage Rd NB at Baker St		CM	0.67	B	0.73	C
50	Red Hill Ave at Paularino Ave		CM	0.54	A	0.62	B
51	Red Hill Ave at Baker St		CM	0.45	A	0.61	B
52	Red Hill Ave at Bristol St		CM	0.50	A	0.56	A
541	Bear at Baker St		CM	0.57	A	0.69	B
542	Bear at Paularino Ave		CM	0.39	A	0.63	B
545	Bristol at Sunflower		CM	0.56	A	0.72	C
546	Bristol at Anton		CM	0.35	A	0.53	A
547	Bristol at Paularino Ave		CM	0.47	A	0.73	C
548	Bristol at Baker St		CM	0.52	A	0.69	B
549	Newport Blvd SB at Bristol		CM	0.11	A	0.42	A
550	Newport Blvd NB at Bristol		CM	0.32	A	0.19	A
715	Bristol at I-405 NB Off Ramp		CM	0.43	A	0.69	B
716	Bristol at I-405 SB Ramps		CM	0.40	A	0.55	A
717	Bear at SR-73 SB Ramps		CM	0.40	A	0.50	A
720	Flower at MacArthur Blvd		CM	0.57	A	0.77	C
721	Flower at Sunflower		CM	0.37	A	0.47	A
722	Anton at Sunflower		CM	0.38	A	0.38	A
726	Main St at Sunflower		CM	0.52	A	0.63	B
735	Newport Blvd NB at Del mar		CM	0.78	C	0.42	A
736	Newport Blvd SB at Fair/Del Mar		CM	0.37	A	0.44	A
737	Newport Blvd NB at Mesa Rd		CM	0.38	A	0.37	A
738	Newport Blvd SB at Mesa Rd		CM	0.23	A	0.64	B
45	Red Hill Ave at McGaw Ave	a	Irv	0.41	A	0.67	B
47	Red Hill Ave at MacArthur Blvd	a	Irv	0.59	A	0.76	C
48	Red Hill Ave at Sky Park N	a	Irv	0.33	A	0.48	A
49	Red Hill Ave at Main St	a	Irv	0.61	B	0.82	D
67	Gillette Ave at McGaw Ave	a	Irv	0.22	A	0.37	A
70	Gillette Ave at Main Street	a	Irv	0.35	A	0.67	B
77	MacArthur Blvd at Sky Park East	a	Irv	0.32	A	0.46	A
78	MacArthur Blvd at Main St	a	Irv	0.60	A	0.73	C
79	MacArthur Blvd at I-405 NB Ramps	a	Irv	0.63	B	0.48	A
80	MacArthur Blvd at I-405 SB Ramps	a	Irv	0.60	A	0.72	C
82	MacArthur Blvd at Michelson Dr	a	Irv	0.64	B	0.83	D
83	MacArthur Blvd at Douglas Ave	a	Irv	0.34	A	0.40	A
87	Dupont Dr at Michelson Dr	a	Irv	0.39	A	0.38	A

ID	INTERSECTION	PA36/CMP/SANTA ANA	JURISDICTION	EXISTING CONDITIONS			
				AM		PM	
				ICU	LOS	ICU	LOS
98	Von Karman Ave at Alton Pkwy	a	Irv	0.79	C	0.89	D
99	Von Karman Ave at McGaw Ave	a	Irv	0.66	B	0.65	B
100	Von Karman Ave at Main St	a	Irv	0.68	B	0.76	C
101	Von Karman Ave at Morse Ave	a	Irv	0.59	A	0.63	B
102	Von Karman Ave at Michelson Dr	a	Irv	0.55	A	0.75	C
103	Von Karman Ave at Dupont Dr	a	Irv	0.42	A	0.53	A
104	Von Karman Ave at Martin	a	Irv	0.36	A	0.51	A
115	Millikan Ave at Alton Pkwy	a	Irv	0.38	A	0.55	A
116	Cartwright Rd at Main St	a	Irv	0.39	A	0.56	A
119	Teller Ave at Michelson Dr	a	Irv	0.42	A	0.46	A
128	Jamboree Rd at I-5 NB Ramps	b	Irv	0.77	C	0.73	C
129	Jamboree Rd at I-5 SB Ramps	b	Irv	0.69	B	0.61	B
130	Jamboree Rd at Michelle Dr		Irv	0.57	A	0.74	C
131	Jamboree Rd SB at Walnut Ave		Irv	0.49	A	0.46	A
132	Jamboree Rd NB at Walnut Ave		Irv	0.32	A	0.52	A
137	Jamboree Rd at Beckman Ave	a	Irv	0.60	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	0.59	A	0.68	B
140	Jamboree Rd at Kelvin Ave	a	Irv	0.59	A	0.59	A
141	Jamboree Rd at Main St	a	Irv	0.76	C	0.82	D
143	Jamboree Rd at I-405 NB Ramps	a,b	Irv	0.72	C	0.88	D
144	Jamboree Rd at I-405 SB Ramps	a,b	Irv	0.96	E	1.08	F
145	Jamboree Rd at Michelson Dr	a	Irv	0.72	C	0.82	D
146	Jamboree Rd at Dupont Rd	a	Irv	0.54	A	0.57	A
164	Construction S at Barranca Pkwy	a	Irv	0.31	A	0.49	A
168	Murphy Ave at Alton Pkwy	a	Irv	0.33	A	0.60	A
170	Union at Main St	a	Irv	0.36	A	0.62	B
171	Veneto at Main St		Irv	0.38	A	0.54	A
174	Carlson Ave at Michelson Dr		Irv	0.46	A	0.57	A
175	Carlson Ave at Campus Dr		Irv	0.37	A	0.67	B
180	Harvard Ave at Walnut Ave		Irv	0.40	A	0.47	A
183	Harvard Ave at Warner Ave		Irv	0.42	A	0.50	A
184	Harvard Ave at Barranca Pkwy		Irv	0.54	A	0.61	B
185	Harvard Ave at Alton Pkwy		Irv	0.62	B	0.66	B
186	Harvard Ave at Main St		Irv	0.57	A	0.73	C
187	Harvard Ave at Coronado		Irv	0.54	A	0.59	A
188	Harvard Ave Michelson Dr		Irv	0.68	B	0.82	D
189	Harvard Ave University Dr		Irv	0.72	C	0.73	C
190	University Dr at Campus Dr		Irv	0.75	C	0.73	C
191	Mesa Rd at University Dr		Irv	0.62	B	0.66	B
192	California Ave at University Dr		Irv	0.95	E	0.80	C
196	Hearthstone Blvd at Irvine Center Dr		Irv	0.41	A	0.41	A
198	Paseo Westpark at Warner Ave		Irv	0.35	A	0.28	A
199	Paseo Westpark at Barranca Pkwy		Irv	0.41	A	0.51	A
200	Paseo Westpark at Alton Pkwy		Irv	0.45	A	0.58	A
201	Paseo Westpark at Main St		Irv	0.53	A	0.51	A
221	Culver Dr at Bryan Ave		Irv	0.73	C	0.62	B
222	Culver Dr at Trabuco Rd		Irv	0.63	B	0.68	B
223	Culver Dr at I-5 SB Ramps		Irv	0.59	A	0.56	A
224	Culver Dr at Walnut Ave		Irv	0.63	B	0.69	B
225	Culver Dr at Deerfield Dr		Irv	0.71	C	0.68	B
226	Culver Dr at Irvine Center Dr		Irv	0.60	A	0.60	A
227	Culver Dr at Warner Ave		Irv	0.68	B	0.64	B
228	Culver Dr at Barranca Pkwy		Irv	0.66	B	0.71	C
229	Culver Dr at Alton Pkwy		Irv	0.69	B	0.75	C

ID	INTERSECTION	PA36/CMP/SANTA ANA	JURISDICTION	EXISTING CONDITIONS			
				AM		PM	
				ICU	LOS	ICU	LOS
230	Culver Dr at Main St		Irv	0.68	B	0.69	B
231	Culver Dr at San Leandro		Irv	0.72	C	0.59	A
232	Culver Dr at I-405 NB Ramps		Irv	0.55	A	0.76	C
233	Culver Dr at I-405 SB Ramps		Irv	0.63	B	0.68	B
234	Culver Dr at Michelson Dr		Irv	0.56	A	0.82	D
235	Culver Dr at University Dr		Irv	0.72	C	0.77	C
337	Von Karman Ave at Quartz	a	Irv	0.54	A	0.56	A
439	Bixby at Michelson Dr		Irv	0.40	A	0.47	A
440	Siglo at Main St		Irv	0.37	A	0.53	A
472	Obsidian at Michelson Dr	a	Irv	0.36	A	0.52	A
84	MacArthur Blvd at Campus Dr		Irv/NB	0.48	A	0.83	D
105	Von Karman Ave at Campus Dr		Irv/NB	0.55	A	0.72	C
121	Teller Ave at Campus Dr		Irv/NB	0.24	A	0.37	A
147	Jamboree Rd at Campus Dr		Irv/NB	0.62	B	0.62	B
149	Jamboree Rd at Fairchild Rd		Irv/NB	0.60	A	0.69	B
150	Jamboree Rd at MacArthur Blvd	b	Irv/NB	0.69	B	0.70	B
176	Fairchild Ave at MacArthur Blvd		Irv/NB	0.74	C	0.74	C
193	MacArthur Blvd NB at University Dr		Irv/NB	0.46	A	0.50	A
194	MacArthur Blvd SB at University Dr		Irv/NB	0.44	A	0.37	A
195	SR-73 SB Ramps at University Dr		Irv/NB	0.66	B	0.42	A
9	SR-55 NB Ramps at MacArthur Blvd		Irv/SA	0.79	C	0.58	A
31	Daimler St at Alton Pkwy		Irv/SA	0.24	A	0.32	A
43	Red Hill Ave at Deere Ave		Irv/SA	0.43	A	0.69	B
44	Red Hill Ave at Alton Pkwy		Irv/SA	0.47	A	0.83	D
42	Red Hill Ave at Barranca Pkwy/Dyer Rd		Irv/SA/Tus	0.52	A	0.66	B
71	Armstrong Ave at Barranca Pkwy		Irv/Tus	0.42	A	0.68	B
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy		Irv/Tus	0.77	C	0.86	D
112	Myford Rd at Michelle Dr		Irv/Tus	0.20	A	0.29	A
113	Myford Rd at Walnut Ave		Irv/Tus	0.32	A	0.41	A
114	Millikan Ave/District Way at Barranca Pkwy		Irv/Tus	0.39	A	0.54	A
126	Jamboree Rd at Bryan Ave		Irv/Tus	0.65	B	0.72	C
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	0.44	A	0.61	B
136	Jamboree Rd at Barranca Pkwy		Irv/Tus	0.63	B	1.12	F
181	Harvard Ave at Edinger Ave/Irvine Center Dr		Irv/Tus	0.40	A	0.55	A
182	Harvard Ave at Paseo Westpark/Moffett Dr		Irv/Tus	0.25	A	0.33	A
441	Loop Rd at Jamboree Rd SB Ramps		Irv/Tus	0.28	A	0.54	A
61	Campus Dr at Airport Way		NB	0.27	A	0.33	A
62	Campus Dr at Bristol St NB		NB	0.56	A	0.82	D
63	Campus Dr at Bristol St SB		NB	0.69	B	0.55	A
64	Birch St at Bristol St NB		NB	0.55	A	0.50	A
65	Birch St at Bristol St SB		NB	0.42	A	0.44	A
85	MacArthur Blvd at Birch St		NB	0.38	A	0.53	A
106	Von Karman Ave at Birch St		NB	0.34	A	0.38	A
107	Von Karman Ave at MacArthur Blvd		NB	0.34	A	0.53	A
148	Jamboree Rd at Birch St		NB	0.54	A	0.51	A
151	Jamboree Rd at Bristol St NB		NB	0.37	A	0.48	A
153	Jamboree Rd at Bristol St SB		NB	0.66	B	0.64	B
154	Jamboree Rd at Eastbluff Dr		NB	0.62	B	0.59	A
155	Jamboree Rd at Bison Ave		NB	0.46	A	0.48	A
156	Jamboree Rd at Ford Rd		NB	0.89	D	0.77	C
178	MacArthur Blvd at Bison Ave		NB	0.65	B	0.63	B
179	MacArthur Blvd at Ford Rd		NB	0.72	C	0.76	C
741	Jamboree at San Joaquin		NB	0.61	B	0.52	A
742	MacArthur at San Joaquin		NB	0.57	A	0.88	D

ID	INTERSECTION	PA36/CMP/SANTA ANA	JURISDICTION	EXISTING CONDITIONS			
				AM		PM	
				ICU	LOS	ICU	LOS
733	Irvine at Mesa Rd		NB/OC	0.67	B	0.98	E
734	Irvine at University/Del Mar		NB/OC	0.65	B	0.75	C
4	SR-55 SB Ramps at Edinger Ave	b	SA	0.56	A	0.57	A
5	Hotel Terrace Dr at Dyer Rd		SA	0.55	A	0.70	B
6	Grand Ave at Dyer Rd		SA	0.58	A	0.78	C
7	SR-55 NB Ramps at Dyer Rd		SA	0.60	A	0.57	A
8	SR-55 SB Ramps at MacArthur Blvd	c	SA	0.62	B	0.60	A
29	Pullman St at Barranca Pkwy		SA	0.47	A	0.67	B
543	Bristol at Segerstrom		SA	0.77	C	0.79	C
544	Bristol St at MacArthur Blvd		SA	0.68	B	0.79	C
718	Bear at SR-73 NB Ramps		SA	0.38	A	0.60	A
719	Flower at Segerstrom		SA	0.69	B	0.78	C
723	Main St at Segerstrom		SA	0.76	C	0.91	E
724	Main St at Alton Ave		SA	0.37	A	0.49	A
725	Main and MacArthur (w/o SR-55)	c	SA	0.63	B	0.74	C
727	Halladay at Dyer Rd		SA	0.56	A	0.69	B
728	Halladay E at Alton Pkwy		SA	0.17	A	0.27	A
729	Halladay W at Alton Pkwy		SA	0.18	A	0.25	A
730	Grand Ave at Warner		SA	0.45	A	0.63	B
731	SR-55 SB Ramps at Grand Ave		SA	0.50	A	0.44	A
3	Newport Ave at Edinger Ave		Tus	0.64	B	0.43	A
14	Walnut Ave at McFadden Ave		Tus	0.36	A	0.44	A
18	Newport Ave at Bryan Ave		Tus	0.62	B	0.91	E
19	Newport Ave at Main St		Tus	0.59	A	0.56	A
20	Newport Ave at El Camino Real		Tus	0.72	C	0.69	B
21	Newport Ave at I-5 NB Ramps		Tus	0.62	B	0.55	A
22	Newport Ave at I-5 SB Ramp/Nisson Rd		Tus	0.50	A	0.61	B
23	Newport Ave at McFadden St		Tus	0.53	A	0.48	A
24	Newport Ave at Walnut Ave		Tus	0.60	A	0.65	B
25	Newport Ave at Sycamore Ave		Tus	0.44	A	0.53	A
27	Del Amo Ave at Edinger Ave		Tus	0.31	A	0.38	A
35	Red Hill Ave at Bryan Ave		Tus	0.59	A	0.77	C
36	Red Hill Ave at El Camino Real		Tus	0.59	A	0.58	A
37	Red Hill Ave at Nisson Rd		Tus	0.59	A	0.68	B
38	Red Hill Ave at Walnut Ave		Tus	0.68	B	0.80	C
39	Red Hill Ave at Sycamore Ave		Tus	0.62	B	0.57	A
40	Red Hill Ave at Edinger Ave		Tus	0.60	A	0.77	C
55	Browning Ave at Bryan Ave		Tus	0.30	A	0.49	A
56	Browning Ave at El Camino Real		Tus	0.28	A	0.40	A
58	Browning Ave at Walnut Ave		Tus	0.40	A	0.55	A
92	Tustin Ranch Rd at Bryan Ave		Tus	0.64	B	0.73	C
93	Tustin Ranch Rd at El Camino Real		Tus	0.81	D	0.69	B
94	Tustin Ranch Rd at I-5 NB Ramps		Tus	0.60	A	0.57	A
95	Tustin Ranch Rd at I-5 SB Ramps		Tus	0.63	B	0.67	B
96	Tustin Ranch Rd at Walnut Ave		Tus	0.51	A	0.84	D
109	Myford Rd at Bryan Ave		Tus	0.34	A	0.51	A
110	Myford Rd at El Camino Real		Tus	0.24	A	0.47	A
111	Franklin Ave at Walnut Ave		Tus	0.43	A	0.73	C
133	Jamboree Rd at Edinger Ave	b	Tus	0.36	A	0.56	A
445	Tustin Ranch Rd at Warner Ave N		Tus	0.40	A	0.05	A
446	Tustin Ranch Rd at Warner Ave S		Tus	Not Analyzed Under Existing Conditions			
447	Armstrong Ave/Severyns Rd Valencia Ave		Tus	0.29	A	0.28	A
453	Red Hill Ave at Valencia Ave		Tus	0.41	A	0.55	A
454	Tustin Ranch Rd at Valencia Ave		Tus	0.29	A	0.28	A
455	East Connector/Jamboree Plaza at Edinger Ave		Tus	Not Analyzed Under Existing Conditions			

ID	INTERSECTION	PA36/CMP/SANTA ANA	JURISDICTION	EXISTING CONDITIONS			
				AM		PM	
				ICU	LOS	ICU	LOS
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	0.61	B	0.61	B
479	Red Hill Ave at I-5 SB Ramps		Tus	0.67	B	0.66	B
480	Tustin Ranch Rd/Connector at Edinger Ave		Tus	Not Analyzed Under Existing Conditions			
732	SR-55 NB Ramp at Newport Ave		Tus	0.53	A	0.58	A
739	Newport Ave at Mitchell Ave		Tus	0.55	A	0.55	A
740	Red Hill Ave at Mitchell Ave		Tus	0.53	A	0.58	A
743	Newport Ave at Valencia		Tus	0.19	A	0.35	A
745	Tustin Ranch Rd at Park Ave		Tus	0.52	A	0.57	A
746	Kensington Park Dr at Edinger Ave		Tus	0.32	A	0.38	A
747	Kensington Park Dr at Valencia Ave		Tus	0.24	A	0.26	A
748	Armstrong Ave at A St		Tus	Not Analyzed Under 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	0.50	A	0.54	A
41	Red Hill Ave at Warner Ave		Tus/SA	0.57	A	0.66	B
754	Red Hill Avenue at Carnegie Avenue		Tus/SA	0.40	A	0.68	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 Deficiency Acceptable						

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

- #144: Jamboree Road at I-405 SB Ramps (Irvine)—PM Peak Hour LOS F with a 1.08 V/C
- #192: California Avenue at University Drive (Irvine)—AM Peak Hour LOS E with a 0.95 V/C
- #136: Jamboree Road at Barranca Parkway (Irvine/Tustin)—PM Peak Hour LOS F with a 1.12 V/C
- #733: Irvine Avenue at Mesa Drive (Newport Beach/Orange County)—PM Peak Hour LOS E with a 0.98 V/C
- #723: Main Street at Segerstrom Avenue—PM Peak Hour LOS E with a 0.98 V/C
- #18: Newport Avenue at Bryan Avenue (Tustin)—PM 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**: Improvements.

Figure 3.3 – Existing AM Peak Hour Intersection Deficiencies

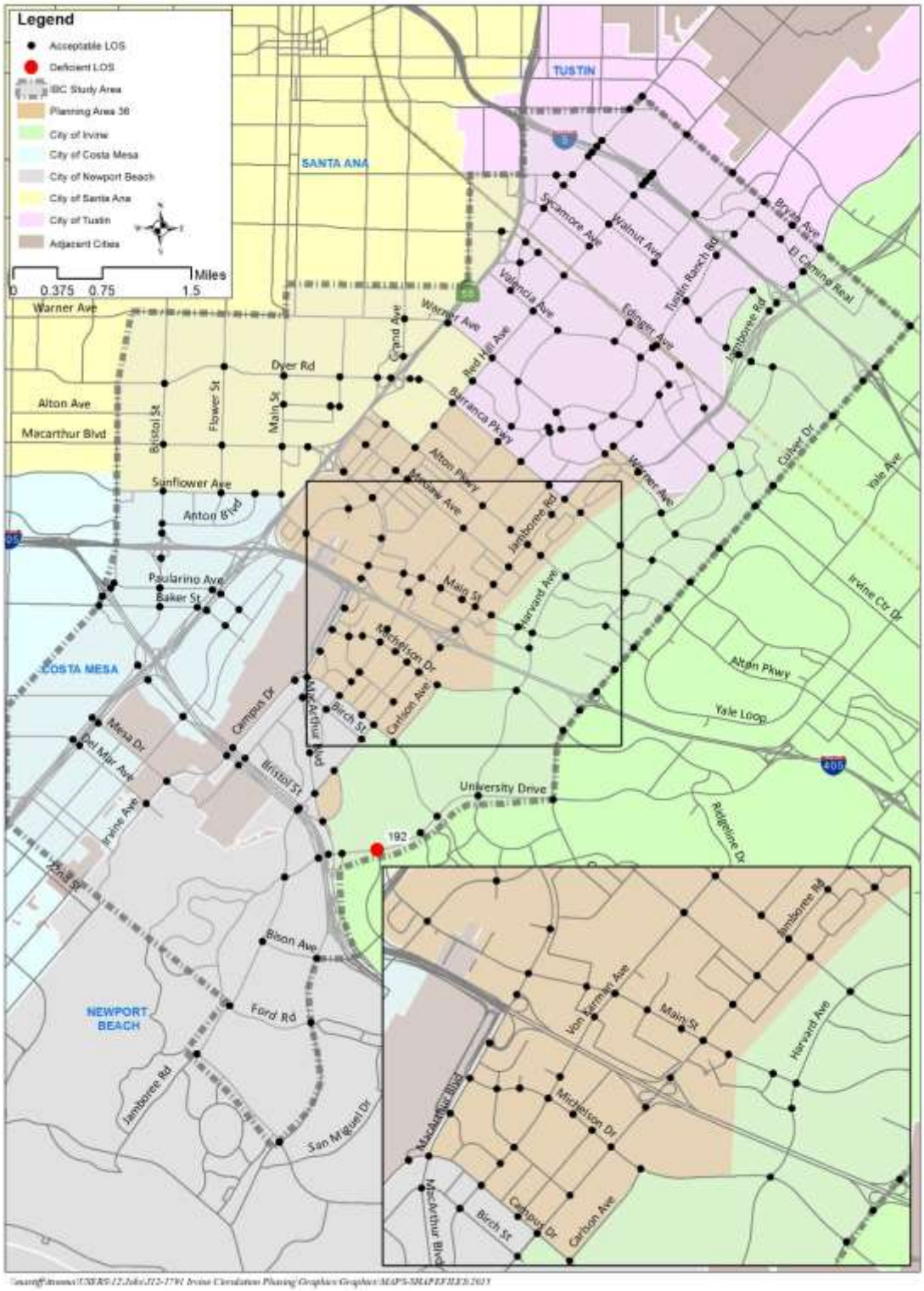
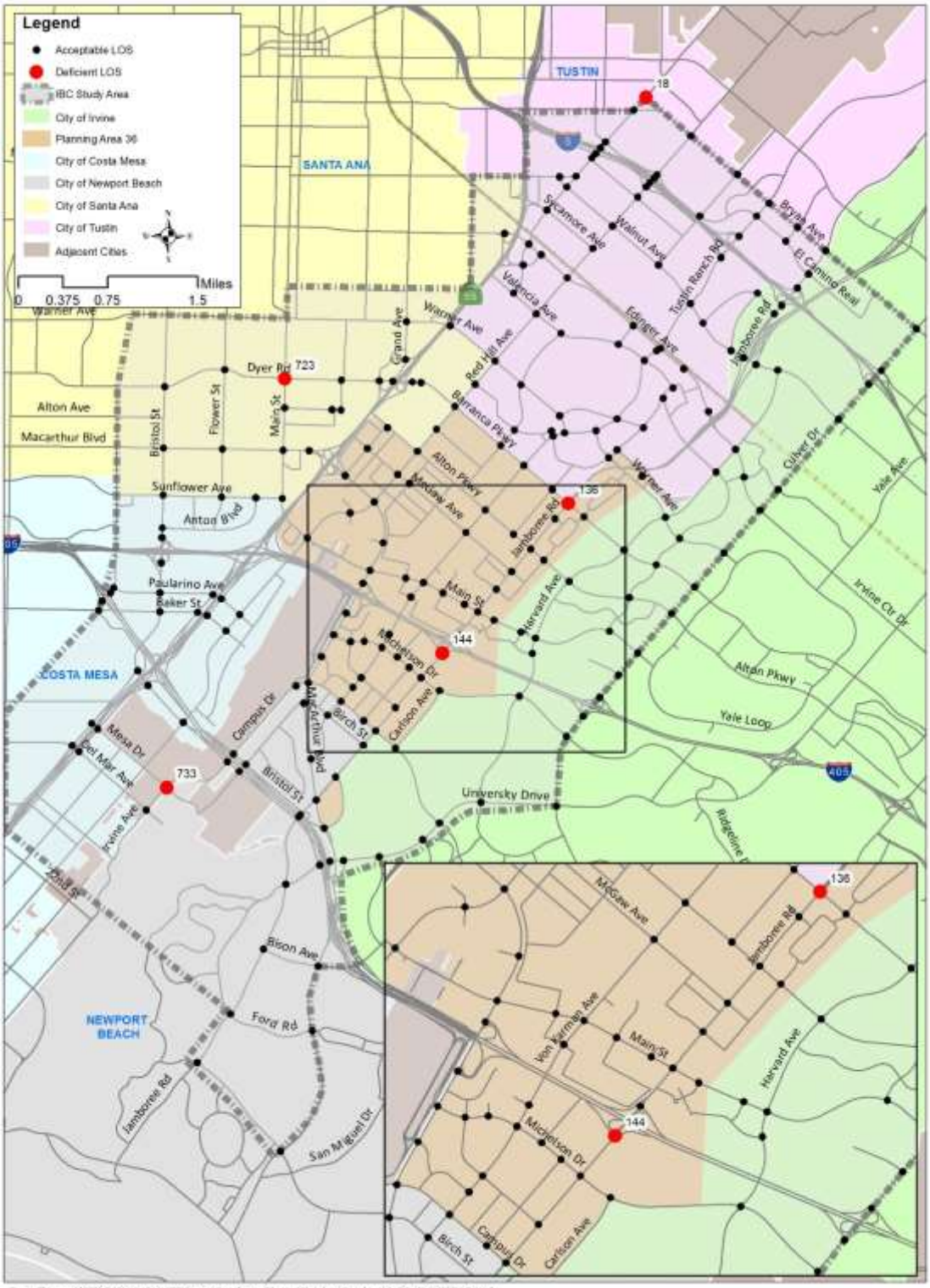


Figure 3.4 – Existing PM Peak Hour Intersection Deficiencies



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

PM Peak Hour:

- I-5 Southbound between Tustin Ranch Road and Jamboree Road
- I-5 Southbound between Red Hill Avenue and Tustin Ranch Road
- I-5 Southbound North of SR-55

- I-405 Southbound between Jamboree Road and Culver Drive
- SR-55 Southbound between I-405 and Baker Street
- SR-55 Northbound between I-405 and MacArthur Boulevard
- SR-55 Southbound between MacArthur Boulevard and I-405
- SR-55 Southbound between Edinger Avenue and Dyer Road
- SR-55 Southbound between McFadden Street/Sycamore Avenue and Edinger Avenue
- SR-73 Southbound between Birch Street and Jamboree Road
- SR-73 Northbound between Birch Street and Campus Drive
- SR-73 Southbound between Campus Drive and Birch Street
- SR-73 Southbound between SR-55 and Campus Drive
- SR-73 Northbound between SR-55 and Bear Street

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	8,230	0.82	D	5,968	0.6	C
		SB	5	10,000	7,880	0.79	D	8,125	0.81	D
	Jamboree Rd to Tustin Ranch Rd	NB	6	12,000	10,018	0.83	D	7,118	0.59	C
		SB	5	10,000	9,477	0.95	**E**	10,098	1.01	**F**
	Tustin Ranch Rd to Red Hill Ave	NB	5	10,000	10,665	1.07	**F**	7,721	0.77	D
		SB	5	10,000	9,688	0.97	**E**	10,402	1.04	**F**
	Red Hill Ave to Newport Ave	NB	5	10,000	9,489	0.95	**E**	7,108	0.71	C
		SB	6	12,000	9,263	0.77	D	10,213	0.85	D
	Newport Ave to SR-55	NB	6	12,000	10,888	0.91	**E**	8,304	0.69	C
		SB	4	8,000	6,267	0.78	D	6,524	0.82	D
	North of SR-55	NB	5	10,000	10,403	1.04	**F**	7,322	0.73	D
		SB	5	10,000	7,973	0.8	D	9,447	0.94	**E**
I-405	Culver Dr to Jamboree Rd	NB	5	10,000	10,512	1.05	**F**	7,461	0.75	D
		SB	4	8,000	7,651	0.96	E	7,542	0.94	E
	Jamboree Rd to MacArthur Blvd	NB	5	10,000	9,142	0.91	**E**	7,885	0.79	D
		SB	6	12,000	6,820	0.57	C	6,446	0.54	C
	MacArthur Blvd to SR-55	NB	6	12,000	9,232	0.77	D	9,160	0.76	D
		SB	6	12,000	11,343	0.95	**E**	9,121	0.76	D
	SR-55 to Bristol St	NB	4	8,000	5,128	0.64	C	4,583	0.57	C
		SB	4	8,000	7,251	0.91	**E**	5,931	0.74	D
	Bristol St to SR-73	NB	5	10,000	7,422	0.74	D	6,448	0.64	C
		SB	4	8,000	7,774	0.97	**E**	5,302	0.66	C
SR-55	South of Victoria St	NB	4	8,000	4,188	0.52	C	3,264	0.41	B
		SB	3	6,000	3,188	0.53	C	3,164	0.53	C
	Victoria St to Fair Dr	NB	4	8,000	4,299	0.54	C	3,124	0.39	B
		SB	3	6,000	2,991	0.5	B	3,637	0.61	C
	Fair Dr to SR-73	NB	4	8,000	7,776	0.97	**E**	4,342	0.54	C
		SB	4	8,000	4,371	0.55	C	6,114	0.76	D
	SR-73 to Baker St	NB	3	6,000	4,525	0.75	D	3,077	0.51	C
		SB	3	6,000	3,579	0.6	C	5,224	0.87	D
	Baker St to I-405	NB	3	6,000	5,265	0.88	D	2,609	0.43	B
		SB	3	6,000	5,704	0.95	**E**	6,593	1.10	**F**

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-405 to MacArthur Blvd	NB	4	8,000	9,415	1.18	**F**	7,901	0.99	**E**
		SB	4	8,000	7,381	0.92	**E**	7,517	0.94	**E**
	MacArthur Blvd to Dyer Rd	NB	4	8,000	5,782	0.72	D	5,828	0.73	D
		SB	4	8,000	8,106	1.01	**F**	6,917	0.86	D
	Dyer Rd to Edinger Ave	NB	4	8,000	7,385	0.92	**E**	5,812	0.73	D
		SB	4	8,000	9,949	1.24	**F**	8,455	1.06	**F**
	Edinger Ave to McFadden Street/Sycamore Ave	NB	6	12,000	8,588	0.72	D	6,891	0.57	C
		SB	4	8,000	8,563	1.07	**F**	7,397	0.92	**E**
	McFadden St/Sycamore Ave to I-5	NB	3	6,000	4,946	0.82	D	4,120	0.69	C
		SB	4	8,000	6,473	0.81	D	5,622	0.7	C
	North of I-5	NB	3	6,000	3,988	0.66	C	4,244	0.71	C
		SB	3	6,000	4,929	0.82	D	4,491	0.75	D
SR-73	MacArthur Blvd to University Dr	NB	3	6,000	4,429	0.74	D	2,950	0.49	B
		SB	3	6,000	2,862	0.48	B	4,317	0.72	D
	University Dr to Jamboree Rd	NB	3	6,000	6,447	1.07	**F**	5,008	0.83	D
		SB	3	6,000	4,160	0.69	C	4,788	0.8	D
	Jamboree Rd to Birch St	NB	4	8,000	6,119	0.76	D	6,024	0.75	D
		SB	3	6,000	5,110	0.85	D	5,507	0.92	**E**
	Birch St to Campus Dr	NB	3	6,000	6,119	1.02	**F**	6,024	1.00	**E**
		SB	3	6,000	6,894	1.15	**F**	6,472	1.08	**F**
	Campus Dr to SR-55	NB	4	8,000	6,160	0.77	D	6,051	0.76	D
		SB	4	8,000	7,414	0.93	**E**	8,572	1.07	**F**
	SR-55 to Bear St	NB	3	6,000	3,940	0.66	C	5,643	0.94	**E**
		SB	3	6,000	4,447	0.74	D	3,959	0.66	C
	Bear St to I-405	NB	3	6,000	3,706	0.62	C	4,384	0.73	D
		SB	2	4,000	2,980	0.74	D	2,695	0.67	C
SR-261	SR-261 South of El Camino Real	NB	2	4,000	273	0.07	A	2,294	0.57	C
		SB	2	4,000	2,731	0.68	C	331	0.08	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. Eleven of the 98 ramps in the study area are deficient in the AM peak and ten ramps are deficient in the PM peak. The following ramps are deficient under existing conditions:

AM Peak Hour:

- Northbound I-5 Off-Ramp to Jamboree Road
- Southbound I-405 Off-Ramp to Jamboree Road
- Southbound I-405 Off-Ramp to MacArthur Boulevard
- Northbound I-405 Off-Ramp to MacArthur Boulevard
- Northbound SR-55 Direct On-Ramp from Victoria Street
- Southbound SR-55 Off-Ramp to Paularino Avenue
- Northbound SR-55 On-Ramp from Paularino Avenue

- Southbound SR-73 Off-Ramp to MacArthur Boulevard
- Northbound SR-73 On-Ramp south of University Drive to MacArthur Boulevard
- Southbound SR-73 Off-Ramp to Jamboree Road
- Northbound SR-73 Off-Ramp to Birch Street

PM Peak Hour:

- Northbound I-405 Off-Ramp to Bristol Street
- Northbound SR-55 On-Ramp from Paularino Avenue
- Northbound SR-55 Direct On-Ramp from MacArthur Boulevard
- Northbound SR-55 On-Ramp from Edinger Avenue
- Northbound SR-73 On-Ramp from Bison Avenue
- Southbound SR-73 Off-Ramp to MacArthur Boulevard
- Northbound SR-73 On-Ramp south of University Drive to MacArthur Boulevard
- Northbound SR-73 On-Ramp from Jamboree Road
- Southbound SR-73 Off-Ramp to SR-73 at Bear
- Southbound SR-261 On-Ramp from Jamboree Road

Table 3.6 – Existing Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		EXISTING CONDITIONS					
					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	287	0.32	B	348	0.39	B
		SB On Loop	1	1,000	571	0.63	C	233	0.26	A
		SB Off	2	500	840	0.37	B	1,812	0.81	D
		NB On Loop	1	1,000	1,094	0.73	D	737	0.49	B
		NB On Direct	1	1,000	597	0.66	C	173	0.19	A
		NB Off	1	500	335	0.22	A	687	0.46	B
	Jamboree Road	SB On Direct	1	1,000	340	0.23	A	1,263	0.84	D
		SB On Loop	1	1,000	803	0.54	C	439	0.29	A
		SB Off	2	500	1,158	0.39	B	1,285	0.43	B
		NB On Loop	1	1,000	511	0.47	B	518	0.48	B
		NB On Direct	1	1,000	589	0.55	C	368	0.34	B
		NB Off	1	500	1,419	0.95	**E**	1,330	0.89	D
	Tustin Ranch Road	SB On	1	1,000	613	0.41	B	570	0.38	B
		NB On	2	1,000	1,088	0.60	C	970	0.54	C
		NB Off	1	500	441	0.29	A	367	0.24	A
		SB Off	2	500	1,068	0.47	B	1,017	0.45	B
	Red Hill Avenue	SB On	1	1,000	874	0.58	C	765	0.51	C
		NB On	1	1,000	803	0.54	C	714	0.48	B
		NB Off	1	500	570	0.38	B	805	0.54	C
		SB Off	1	500	449	0.30	A	576	0.38	B
	Newport Boulevard	SB Off	1	500	479	0.32	B	894	0.6	C
		NB On	1	1,000	930	0.62	C	843	0.56	C
I-405	Culver Drive	SB On Direct	1	1,000	370	0.25	A	852	0.57	C
		SB On Loop	1	1,000	382	0.42	B	323	0.36	B
		SB Off	2	500	1,067	0.36	B	1,503	0.5	B
		NB On Loop	1	1,000	740	0.49	B	291	0.19	A

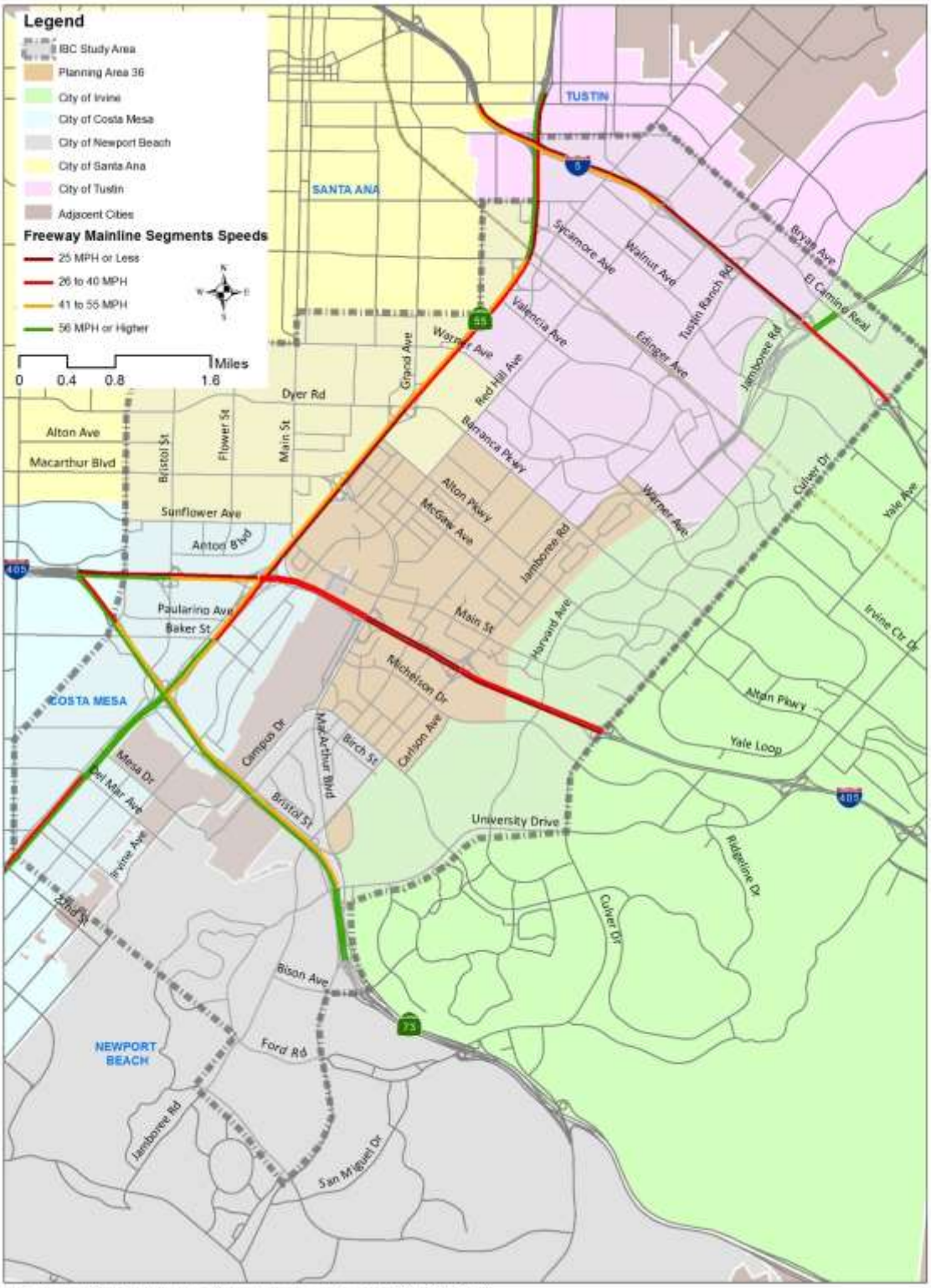
INTERCHANGE		RAMP TYPE	RAMP CAPACITY		EXISTING CONDITIONS					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
		NB On Direct	1	1,000	1,249	0.83	D	426	0.28	A
		NB Off	2	500	688	0.31	B	786	0.35	B
	Jamboree Road	SB On Direct	2	1,000	339	0.19	A	1,249	0.69	C
		SB On Loop	1	1,000	296	0.20	A	552	0.37	B
		SB Off	2	500	2,747	1.22	**F**	1,792	0.8	D
		NB On Loop	1	1,000	548	0.37	B	1,221	0.81	D
		NB On Direct	2	1,000	1,217	0.68	C	870	0.48	B
		NB Off	2	500	1,774	0.79	D	1,373	0.61	C
	MacArthur Boulevard	SB Direct On	2	1,000	665	0.37	B	1,184	0.66	C
		SB Off	2	500	2,287	1.02	**F**	1,027	0.46	B
		NB On	1	1,000	426	0.28	A	818	0.55	C
		NB Off	1	500	1,943	1.30	**F**	680	0.45	B
	Bristol Street	SB Loop On	1	1,000	980	0.65	C	1,023	0.68	C
		SB Off	2	500	994	0.44	B	945	0.42	B
		NB On Loop	1	1,000	158	0.18	A	227	0.25	A
		NB On Direct	1	1,000	301	0.20	A	723	0.48	B
		NB Off	1	500	1,001	0.67	C	1,576	1.05	**F**
SR-55	Victoria Street	SB Direct On	1	1,000	105	0.12	A	110	0.12	A
		SB Off	2	500	1,355	0.60	C	1,409	0.63	C
		NB Direct On	1	1,000	1,428	0.95	**E**	1,090	0.73	D
		NB Off	1	500	79	0.05	A	60	0.04	A
	Fair Drive	SB Direct On	1	1,000	214	0.24	A	222	0.25	A
		SB Off	2	500	1,093	0.49	B	1,137	0.51	C
		NB Direct On	1	1,000	1,163	0.78	D	888	0.59	C
		NB Off	1	500	238	0.16	A	182	0.12	A
	Baker Street	SB On	1	1,000	509	0.34	B	1,101	0.73	D
		SB Off	1	500	814	0.54	C	1,000	0.67	C
		NB Off	1	500	1,084	0.72	D	911	0.61	C
	Paularino Avenue	SB Off	1	500	1,396	0.93	**E**	1,090	0.73	D
		NB On	1	1,000	1,193	1.33	**F**	1,101	1.22	**F**
	MacArthur Boulevard	SB On Direct	1	1,000	869	0.58	C	834	0.56	C
		SB On Loop	1	1,000	147	0.16	A	647	0.72	D
		SB Off	2	500	1,726	0.77	D	994	0.44	B
		NB On Loop	1	1,000	744	0.50	B	620	0.41	B
		NB On Direct	1	1,000	219	0.24	A	927	1.03	**F**
		NB Off	2	500	1,555	0.69	C	1,035	0.46	B
	Dyer Road	SB On	1	1,000	793	0.53	C	998	0.67	C
		SB Off Loop	1	500	781	0.52	C	511	0.34	B
		SB Off to Grand	1	500	735	0.49	B	495	0.33	B
		NB On Direct	1	1,000	292	0.19	A	874	0.58	C
		NB On Loop	1	1,000	638	0.71	C	682	0.76	D
		NB Off	1	500	1,223	0.82	D	281	0.19	A
	Edinger Avenue	SB On	1	1,000	689	0.46	B	739	0.49	B
		SB Off	1	500	1,118	0.75	D	578	0.39	B
		NB On	1	1,000	915	0.61	C	1,463	0.98	**E**
		NB Off	1	500	502	0.33	B	101	0.07	A
	McFadden Avenue	SB On	1	1,000	802	0.53	C	363	0.24	A
		SB Off	2	500	835	0.37	B	961	0.43	B
		NB On	1	1,000	647	0.43	B	776	0.52	C

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		EXISTING CONDITIONS					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
		NB Off	1	500	212	0.14	A	160	0.11	A
SR-73	Bison Avenue	SB On	1	1,000	83	0.06	A	369	0.25	A
		SB Off	1	500	880	0.59	C	605	0.4	B
		NB On	1	1,000	705	0.78	D	891	0.99	**E**
	MacArthur Boulevard	SB On	1	1,000	103	0.07	A	1,277	0.85	D
		SB Off	1	500	1,640	1.09	**F**	1,612	1.07	**F**
		NB On s/o University Dr	1	1,000	1,681	1.87	**F**	1,789	1.99	**F**
		NB On n/o University Dr	1	1,000	451	0.30	A	773	0.52	C
	University Drive	SB Off	1	500	973	0.65	C	616	0.41	B
	Jamboree Road	SB On	2	500	1,784	0.79	D	965	0.43	B
		SB Off	1	1,000	1,048	1.16	**F**	597	0.66	C
		NB On	1	500	722	0.48	B	1,950	1.3	**F**
	Birch Street	NB Off	2	500	2,091	0.93	**E**	1,114	0.5	B
	Campus Drive	SB Off	1	1,000	872	0.58	C	1,984	0.72	D
		NB On	1	1,000	780	0.52	C	720	0.48	B
	SR-73 at Bear	SB On	1	500	313	0.21	A	289	0.19	A
		SB Off	1	500	628	0.42	B	1,461	0.97	**E**
		NB Off	1	1,000	249	0.17	A	472	0.31	B
		NB On	2	1,000	1,870	0.62	C	1,077	0.36	B
SR-261	Jamboree Road	SB On	2	250	816	0.36	B	2,168	0.96	**E**
		NB Off	1	1,000	81	0.05	A	362	0.24	A
	Walnut Avenue	NB On	1	500	1,030	0.69	C	503	0.34	B
		SB Off	1	1,000	83	0.06	A	369	0.25	A

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

Figure 3.5 – Existing Freeway AM Peak Hour Speeds

Figure 3.6 – Existing Freeway PM Peak Hour Speeds



3.8 Existing With Update Conditions

An evaluation of existing conditions with the update scenario overlaid was performed as part of the Five-Year Update. 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 re**presents land use quantities by type and by IBC TAZ as well as a land use summary by individual project. Land use quantities for 2015 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)
2015 Existing	7,060	1,384	2,322	26,639	13,934	379	474
2015 With Update	16,795	1,690	2,653	34,286	12,339	549.371	1049
Percent Growth (2015 With Update vs. 2015 Existing)	138%	22%	14%	29%	-11%	45%	121%

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

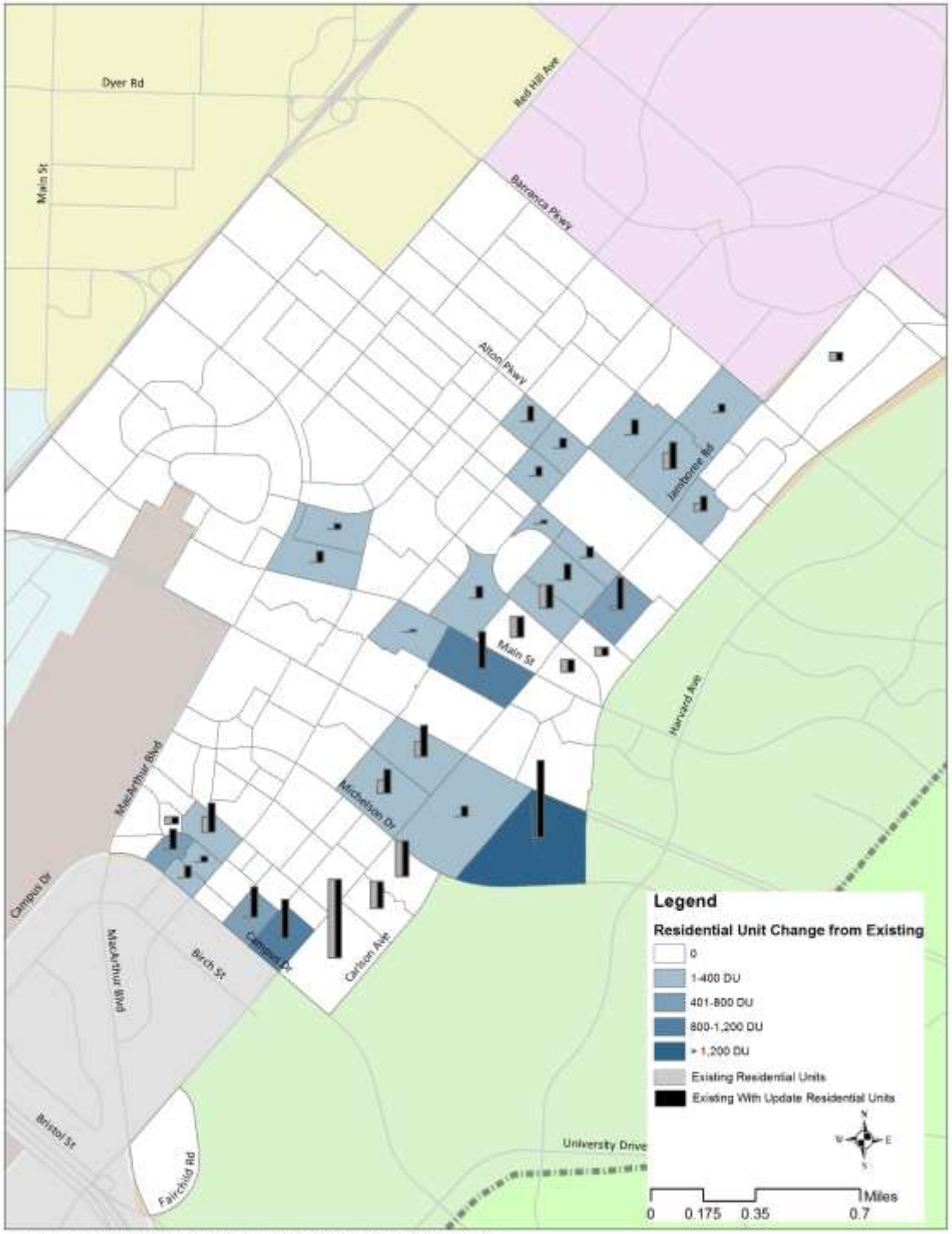


Figure 3.8 – Land Use Comparison between IBC Vision Plan Update and Existing Conditions (Office Mix)

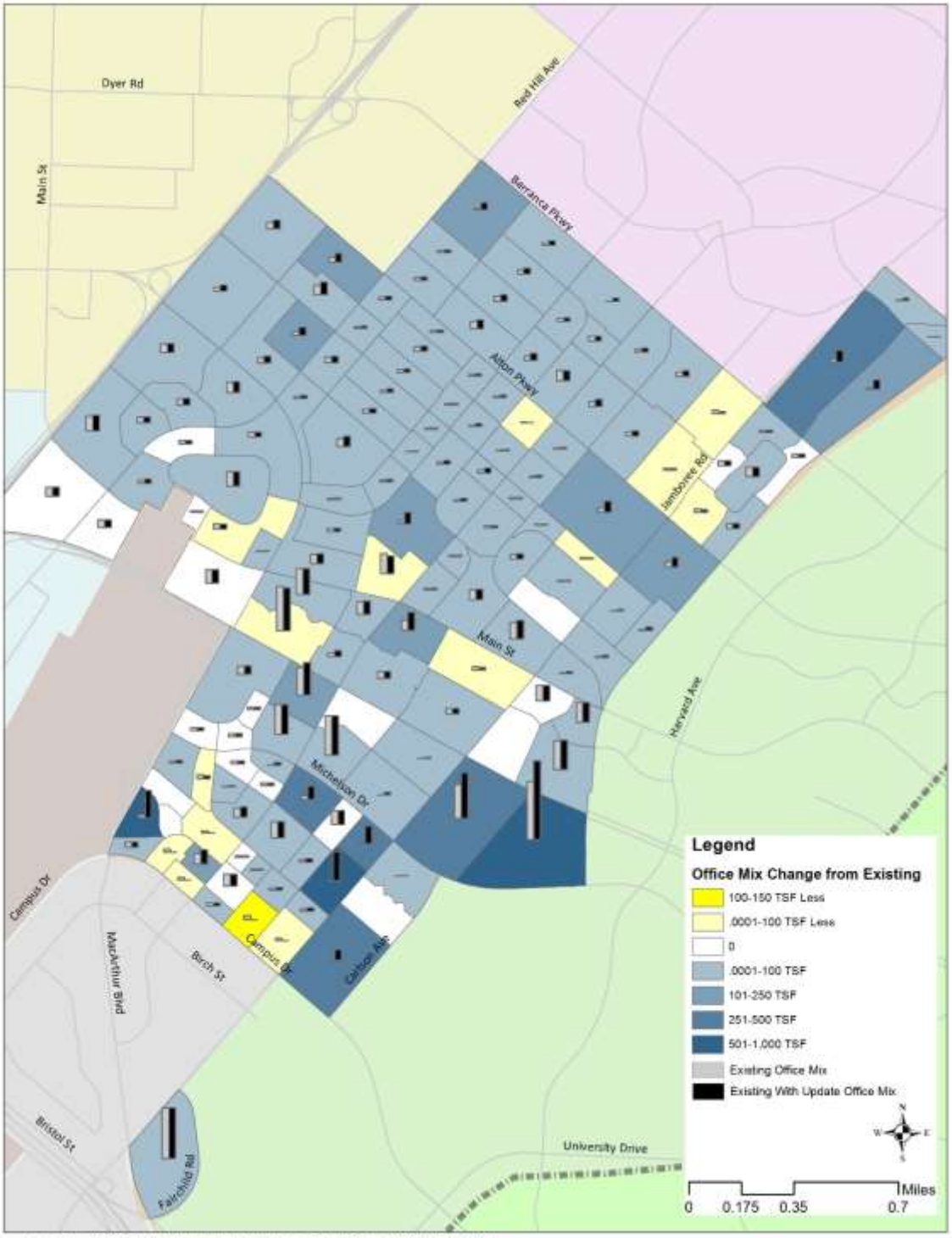


Figure 3.9 – Land Use Comparison between IBC Vision Plan Update and Existing (Industrial Mix)

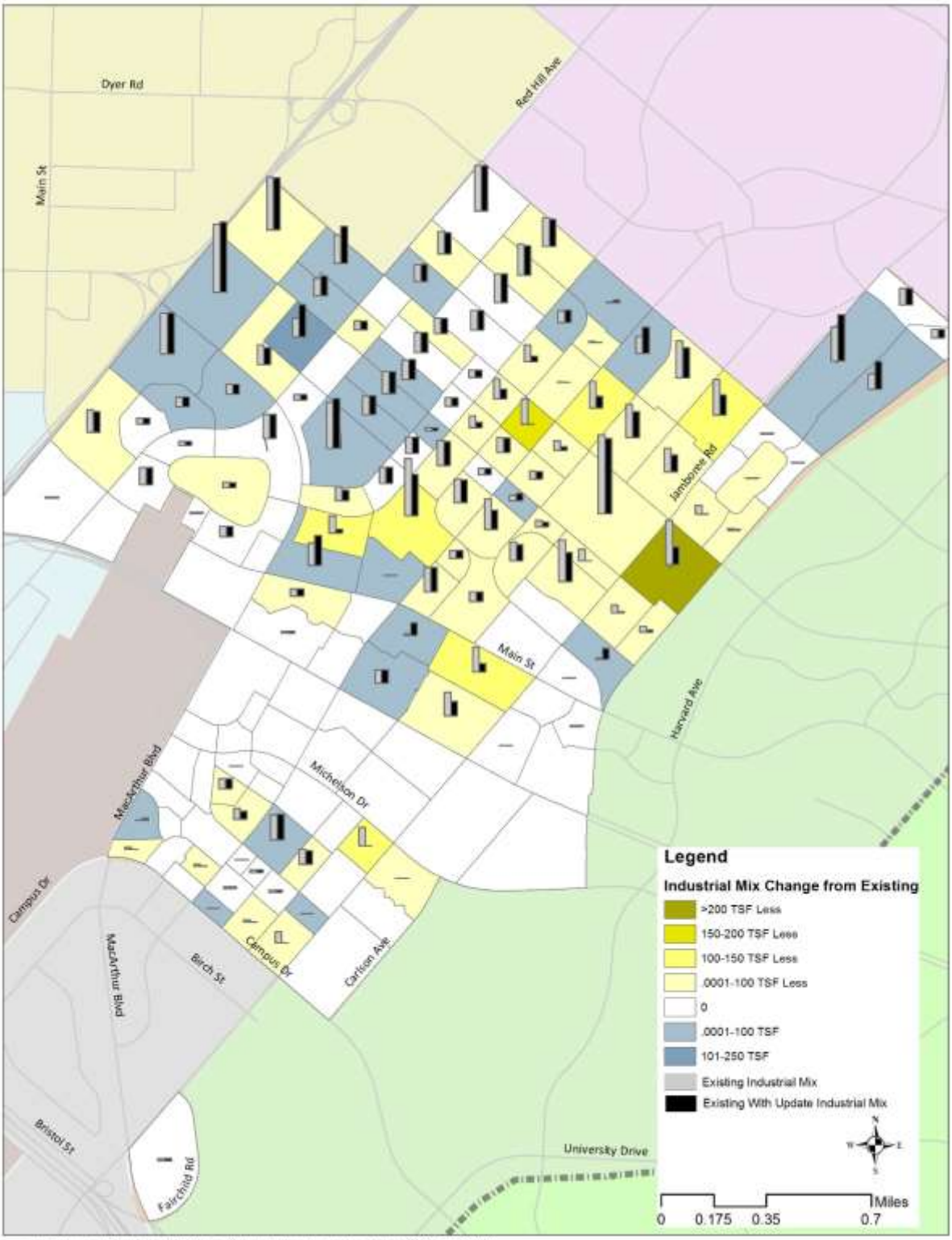


Figure 3.10 – Land Use Comparison between IBC Vision Plan Update and Existing (Commercial)

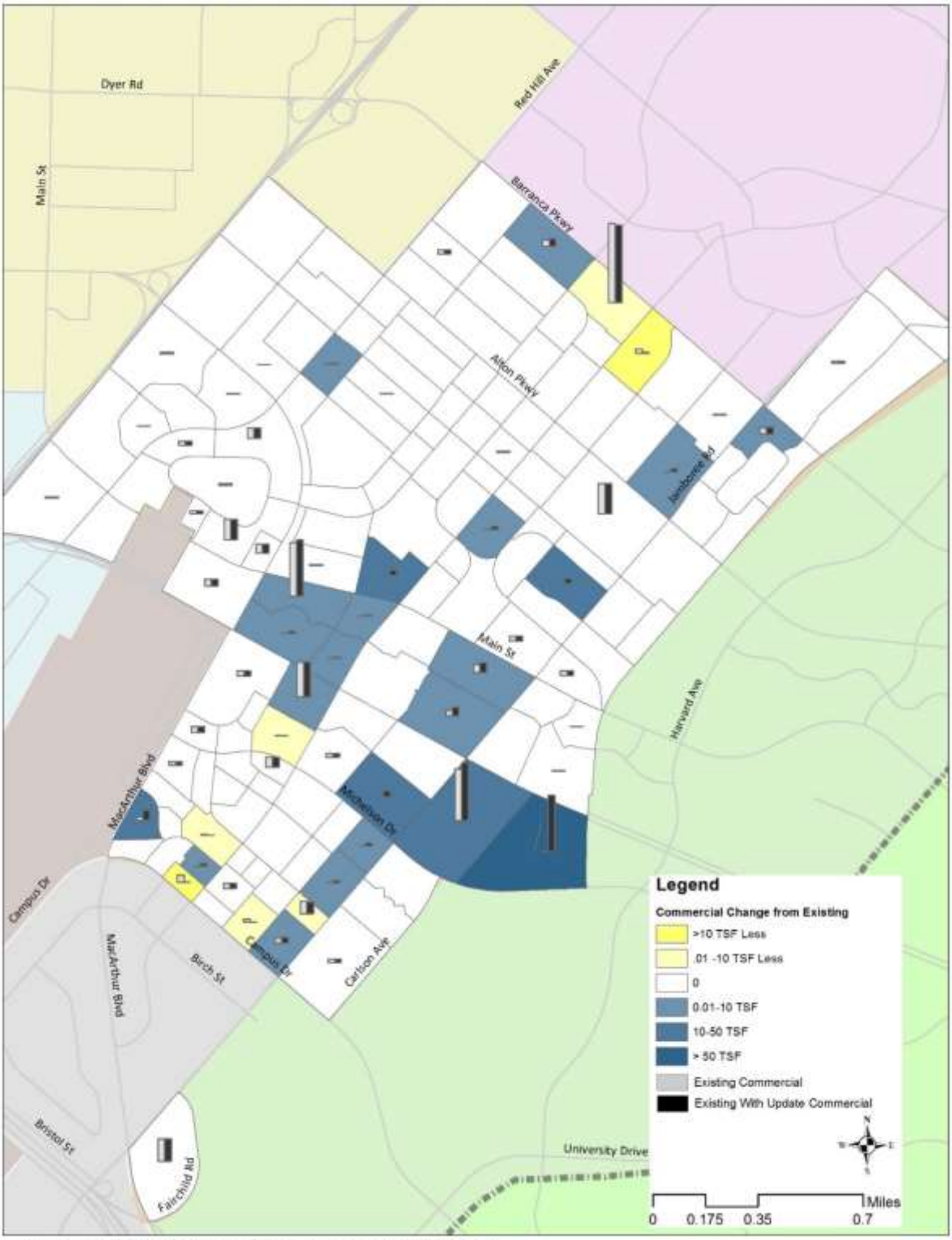


Figure 3.11 – Land Use Comparison between IBC Vision Plan Update and Existing (Hotel)

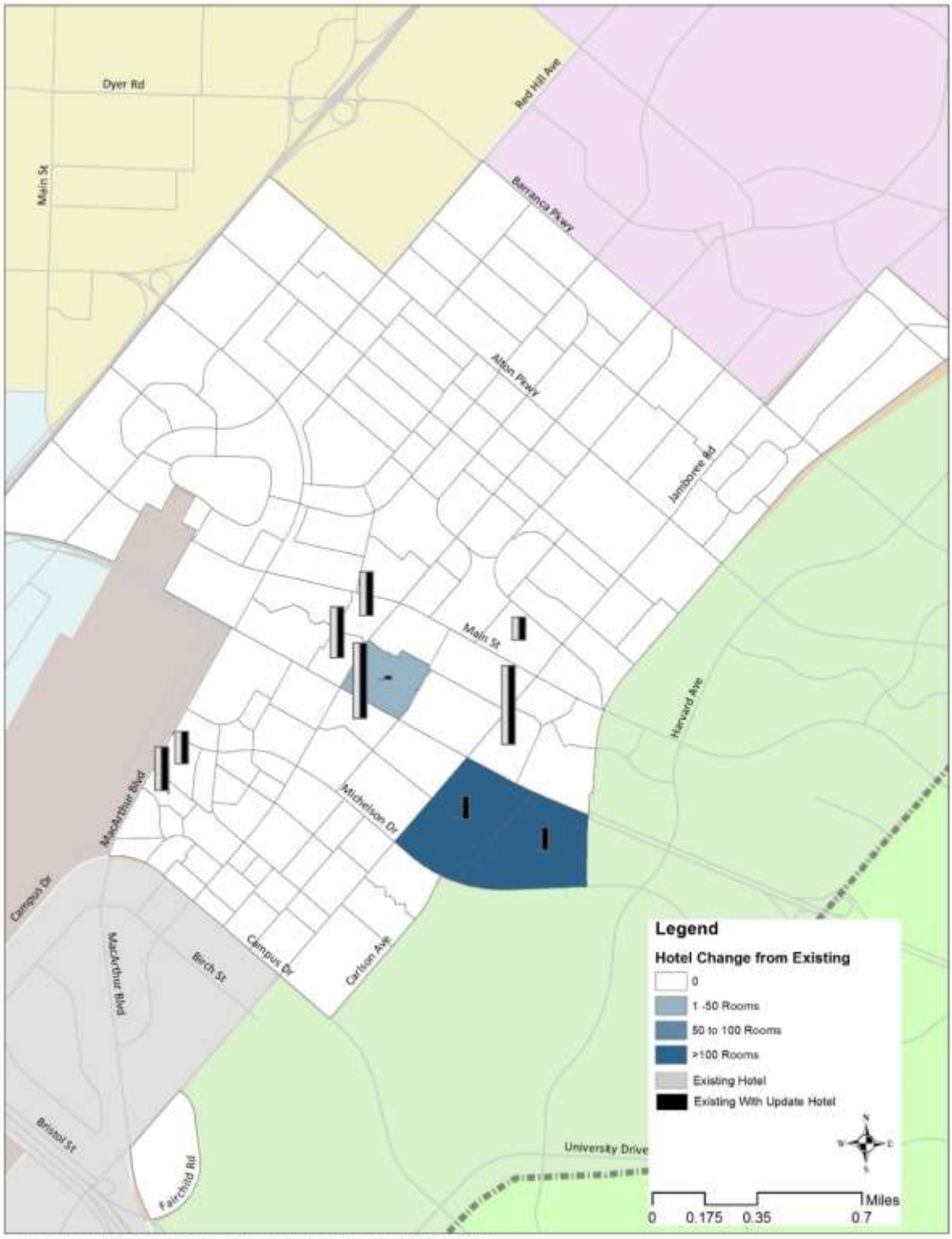


Figure 3.12 – Land Use Comparison between IBC Vision Plan Update and Existing (Mini-Warehouse)

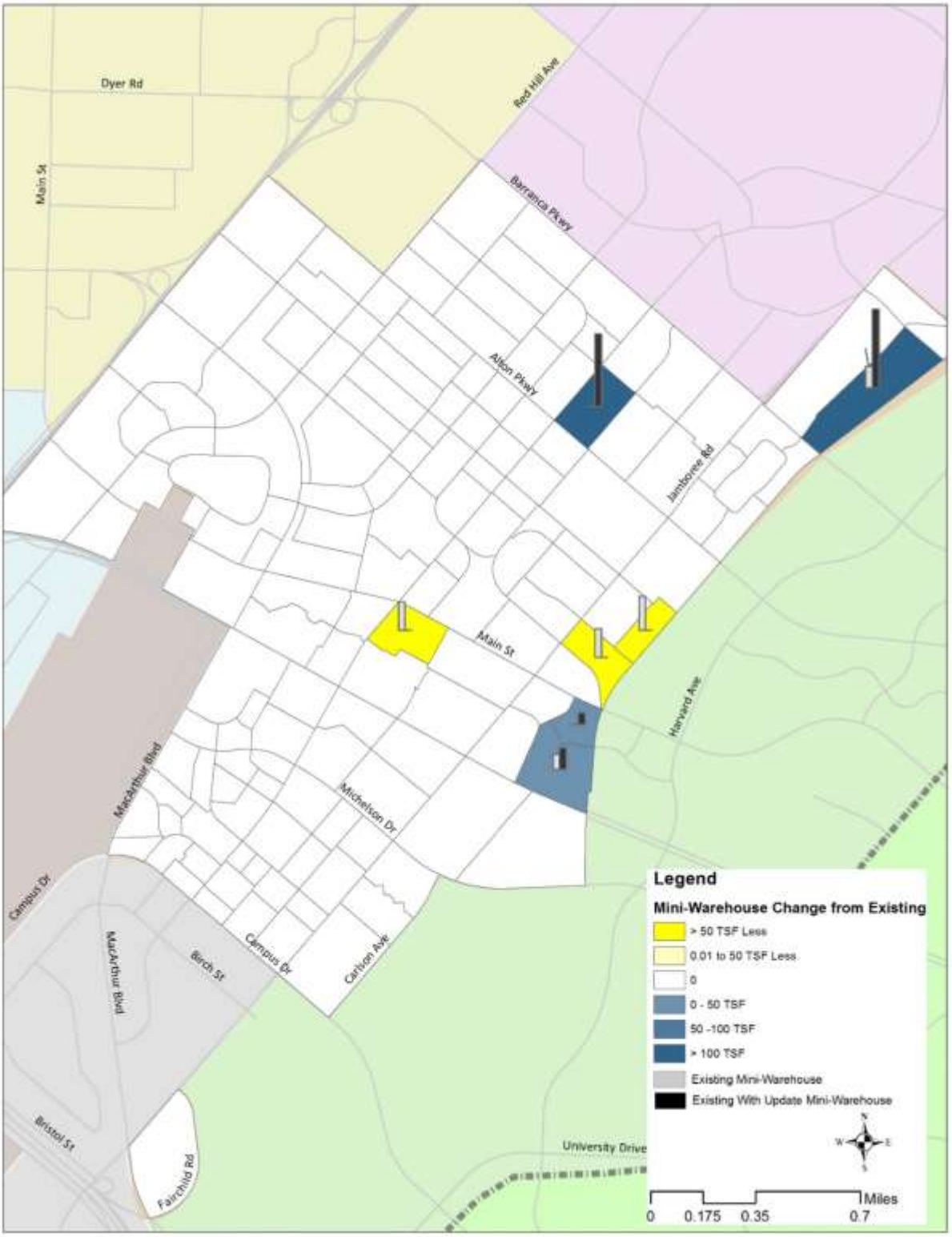
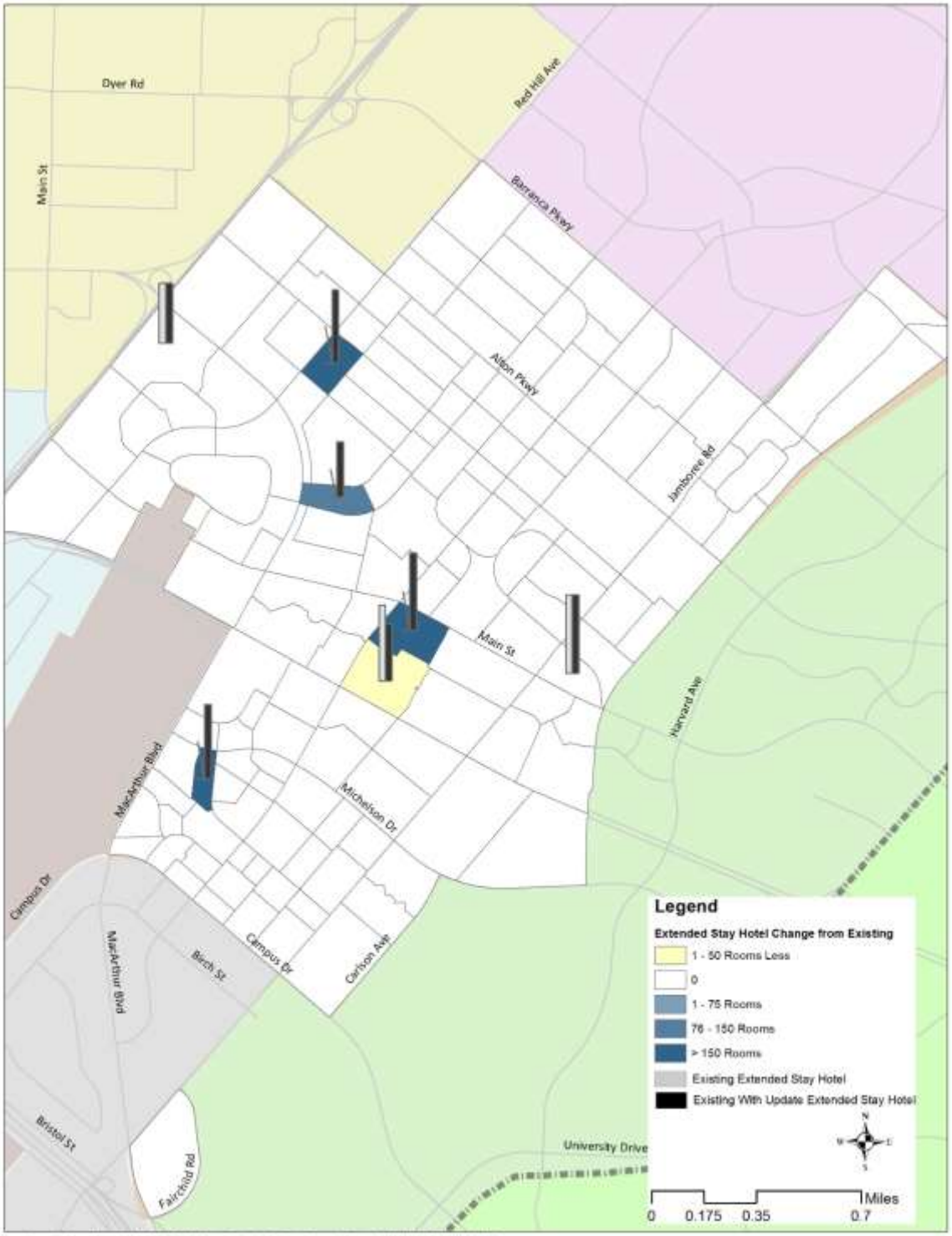


Figure 3.13 – Land Use Comparison between IBC Vision Plan Update and Existing (Extended Stay Hotel)



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.

Table 3.8 – Existing With Update Daily Arterial LOS

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATION	EXISTING CONDITIONS			EXISTING CONDITIONS WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	4D	14,556	0.38	A	14,556	0.38	A
2721	Baker St	Bear St to Bristol St		CM	4D	23,044	0.61	A	23,344	0.61	B
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	6D	28,071	0.74	C	28,571	0.75	C
1294	Baker St	SR 55 SB to SR 55 NB		CM	6D	22,175	0.58	A	22,675	0.60	A
1468	Baker St	SR 55 NB to Red Hill Ave		CM	6D	12,846	0.34	A	13,346	0.35	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	6D	4,857	0.27	A	4,857	0.27	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	29,683	0.53	A	29,683	0.53	A
2733	Bristol St	Segerstrom Ave to West Alton Ave		CM	6D	36,757	0.66	B	37,357	0.67	B
2737	Bristol St	West Alton Ave to MacArthur Blvd		CM	6D	39,515	0.71	B	40,215	0.72	C
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	39,465	0.71	B	39,865	0.71	C
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	41,188	0.74	C	41,588	0.74	C
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	8D	57,785	0.68	B	58,085	0.69	B
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	56,834	0.76	C	57,034	0.76	C
2745	Bristol St	I-405 SB Ramp to Paularino Ave		CM	6D	40,065	0.72	C	40,265	0.72	C
2732	Bristol St	Paularino Ave to Baker St		CM	6D	31,706	0.57	A	32,006	0.57	A
2730	Bristol St	Baker St to SR 55		CM	6D	23,641	0.42	A	23,941	0.43	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	16,951	0.30	A	17,651	0.32	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	16,652	0.44	A	17,052	0.45	A
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	2U	6,397	0.51	A	6,597	0.53	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	11,227	0.30	A	11,427	0.30	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	8,328	0.22	A	8,428	0.22	A
2760	Flower St	Sunflower Ave to Anton Blvd		CM	4D	5,653	0.15	A	5,653	0.15	A
2756	Main St	Sunflower Ave to SR-55		CM	4D	23,298	0.42	A	24,998	0.45	A
2785	Mesa Dr	Newport Blvd SB to Newport Blvd NB		CM	2U	6,128	0.49	A	6,228	0.50	A
2783	Mesa Dr	Newport Blvd NB to Santa Ana Ave		CM	2U	6,914	0.55	A	7,014	0.56	A
2779	Mesa Dr	Irvine Ave to Birch St		CM	2U	8,126	0.21	A	8,326	0.22	A
2742	Paularino Ave	Bear St to Bristol St		CM	2U	8,160	0.65	B	8,160	0.65	B
2746	Paularino Ave	Bristol St to SR-55 SB		CM	4D	18,635	0.49	A	18,635	0.49	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	15,716	0.41	A	15,816	0.42	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	11,198	0.30	A	11,198	0.30	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	4,434	0.12	A	4,434	0.12	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	4D	20,605	0.54	A	21,805	0.57	A
1340	Red Hill Ave	Paularino Ave to Baker St		CM	4D	17,950	0.47	A	18,650	0.49	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	15,523	0.41	A	15,723	0.41	A
41	Santa Ana Ave	Mesa Dr to Bristol St		CM	4D	10,564	0.28	A	10,664	0.28	A
2769	University Dr	Santa Ana Ave to Irvine Ave		CM	2U	5,681	0.45	A	5,981	0.48	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	5,494	0.17	A	6,994	0.22	A
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	14,999	0.47	A	16,499	0.52	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATION	EXISTING CONDITIONS			EXISTING CONDITIONS WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
778	Alton Pkwy	Von Karman Ave to Jamboree Road	a	Irv	4D	16,472	0.52	A	17,872	0.56	A
779	Alton Pkwy	Jamboree Road to Murphy Ave	a	Irv	6D	19,511	0.36	A	20,711	0.38	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	19,252	0.36	A	20,952	0.39	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	15,871	0.29	A	17,271	0.32	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	17,442	0.32	A	18,742	0.35	A
783	Alton Pkwy	San Marino to Culver Dr		Irv	6D	24,458	0.45	A	25,658	0.48	A
735	Barranca Pkwy (Dyer Rd)	Pullman to Red Hill Ave		Irv	6D	30,120	0.56	A	32,220	0.60	A
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	7D	31,750	0.59	A	34,150	0.63	B
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	33,993	0.54	A	36,593	0.58	A
740	Barranca Pkwy	Von Karman Ave to Jamboree Road	a	Irv	7D	33,065	0.53	A	35,565	0.57	A
743	Barranca Pkwy	Jamboree Road to Construction Circle	a	Irv	6D	27,144	0.50	A	29,444	0.55	A
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	22,355	0.41	A	23,755	0.44	A
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	21,197	0.39	A	22,197	0.41	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	22,845	0.42	A	23,845	0.44	A
748	Barranca Pkwy	Santa Rosa to Culver Dr		Irv	6D	24,222	0.45	A	25,122	0.47	A
538	Bryan Ave	Jamboree Road to Marketplace		Irv	4D	19,253	0.60	A	19,353	0.61	A
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	19,253	0.60	A	19,353	0.61	A
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	19,253	0.60	A	19,353	0.61	A
540	Bryan Ave	Rubicon to Culver		Irv	4D	19,253	0.60	A	19,353	0.61	A
869	Campus Dr	MacArthur Blvd to Martin	a	Irv	6D	13,198	0.24	A	15,798	0.29	A
870	Campus Dr	Martin to Von Karman Ave	a	Irv	4D	13,198	0.41	A	15,598	0.49	A
871	Campus Dr	Von Karman Ave to Teller Ave	a	Irv	4D	10,967	0.34	A	13,367	0.42	A
872	Campus Dr	Teller Ave to Jamboree Road	a	Irv	4D	10,967	0.34	A	12,567	0.39	A
877	Campus Dr	Jamboree Road to Carlson Ave	a	Irv	4D	18,066	0.57	A	19,666	0.62	B
879	Campus Dr	Carlson Ave to University		Irv	2U	18,066	1.39	**F**	18,566	1.43	**F**
166	Carlson Ave	Michelson Dr to Campus Dr	a	Irv	4D	6,008	0.19	A	6,908	0.22	A
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps		Irv	Maj5D+ 1AUX	51,629	0.82	D	52,129	0.83	D
213	Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr		Irv	6D	49,844	0.92	**E**	50,844	0.94	**E**
214	Culver Dr	Scottsdale Dr to Walnut Ave		Irv	6D	42,886	0.79	C	43,986	0.82	D
215	Culver Dr	Walnut Ave to Deerfield Ave		Irv	6D	40,955	0.76	C	41,955	0.78	C
216	Culver Dr	Deerfield Ave to Irvine Center Dr		Irv	Maj6D+ 1AUX	40,209	0.75	C	41,309	0.77	C
217	Culver Dr	Irvine Center Dr to Warner Ave		Irv	6D	42,340	0.78	C	43,840	0.81	D
218	Culver Dr	Warner Ave to Barranca Pkwy		Irv	6D	41,423	0.77	C	42,523	0.79	C
219	Culver Dr	Barranca Pkwy to Alton Pkwy		Irv	6D	47,027	0.87	D	48,327	0.90	D
220	Culver Dr	Alton Pkwy to Main St		Irv	6D	45,413	0.84	D	46,913	0.87	D
221	Culver Dr	Main St to San Leandro		Irv	6D	49,714	0.92	**E**	50,914	0.94	**E**
222	Culver Dr	San Leandro to I-405 NB On-Ramp		Irv	6D	49,714	0.92	**E**	51,014	0.95	**E**
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr		Irv	6D	50,618	0.94	**E**	53,418	0.99	**E**
225	Culver Dr	Michelson Dr to Sandburg Way		Irv	6D	37,338	0.69	B	37,538	0.70	B
226	Culver Dr	Sandburg Way to University Dr		Irv	6D	33,901	0.63	B	34,201	0.63	B
1206	El Camino Real	Jamboree Road to Alliance		Irv	4D	22,289	0.70	B	22,389	0.70	B
169	Fairchild Road	MacArthur Blvd to Jamboree Road		Irv	4D	6,013	0.19	A	6,013	0.19	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	2U	8,370	0.64	B	8,470	0.65	B
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	2U	9,896	0.76	C	10,196	0.78	C
171	Harvard Ave	Deerfield Ave to Irvine Center Dr		Irv	3D	9,896	0.40	A	10,196	0.41	A
172	Harvard Ave	Irvine Center Dr to Paseo Westpark		Irv	4D	10,863	0.34	A	11,663	0.36	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	10,446	0.33	A	11,246	0.35	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	14,671	0.46	A	15,571	0.49	A

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177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	18,100	0.57	A	19,400	0.61	A
2829	Harvard Ave	San Juan to San Leon		Irv	4D	17,118	0.54	A	18,418	0.58	A
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	18,016	0.56	A	19,416	0.61	A
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	21,539	0.67	B	23,239	0.73	C
180	Harvard Ave	San Marino to Main St		Irv	4D	21,789	0.68	B	23,689	0.74	C
181	Harvard Ave	Main St to Coronado		Irv	4D	22,315	0.70	B	24,315	0.76	C
182	Harvard Ave	Coronado to Michelson Dr		Irv	4D	23,220	0.73	C	25,820	0.81	C
183	Harvard Ave	Michelson Dr to University Dr		Irv	2U	17,252	1.33	**F**	18,152	1.40	**F**
675	Irvine Center Dr	Harvard Ave to Hearthstone	b	Irv	6D	22,303	0.41	A	22,603	0.42	A
676	Irvine Center Dr	Hearthstone to Culver Dr	b	Irv	6D	22,303	0.41	A	22,503	0.42	A
129	Jamboree Road	Bryan Ave to El Camino	b	Irv	8D	48,517	0.67	B	48,917	0.68	B
130	Jamboree Road	El Camino Real to I-5 NB On-Ramp	b	Irv	Maj7D+ 1AUX	48,517	0.77	C	49,017	0.78	C
958	Jamboree Road	I-5 NB Ramps to I-5 SB Off-Ramp	b	Irv	8D	62,482	0.87	D	63,582	0.88	D
131	Jamboree Road	I-5 SB Off-Ramp to Michelle Dr	b	Irv	8D	50,973	0.71	B	52,773	0.73	C
133	Jamboree Road	Michelle Dr to Walnut Ave	b	Irv	5D	50,973	1.19	**F**	53,073	1.23	**F**
135	Jamboree Road	Walnut Ave to Edinger Ave (& Frontage Roads)	b	Irv	Exp8	56,379	0.32	A	60,379	0.34	A
136	Jamboree Road	Edinger Ave to Warner Ave	b	Irv	Exp8	70,916	0.40	A	75,816	0.42	A
137	Jamboree Road	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	57,133	0.32	A	61,433	0.34	A
138	Jamboree Road	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	49,764	0.69	B	54,664	0.76	C
1503	Jamboree Road	Beckman Ave to Alton Pkwy	a,b	Irv	8D	53,566	0.74	C	58,466	0.81	D
140	Jamboree Road	Alton Pkwy to McGaw Ave	a,b	Irv	8D	57,681	0.80	C	62,781	0.87	D
142	Jamboree Road	McGaw Ave to Kelvin Ave	a,b	Irv	8D	52,430	0.73	C	57,430	0.80	C
144	Jamboree Road	Kelvin Ave to Main St	a,b	Irv	8D	61,834	0.86	D	70,334	0.98	E
145	Jamboree Road	Main St to I-405 Off-Ramp	b	Irv	Maj8D+ 2AUX	68,703	0.95	E	77,003	1.07	**F**
148	Jamboree Road	I-405 On-Ramp to Michelson Dr	a,b	Irv	Maj8D+ 2AUX	72,060	1.00	**F**	84,960	1.18	**F**
149	Jamboree Road	Michelson Dr to Dupont Dr	a,b	Irv	7D	50,598	0.80	C	56,498	0.90	D
150	Jamboree Road	Dupont Dr to Campus Dr	a,b	Irv	7D	41,949	0.67	B	44,449	0.71	B
151	Jamboree Road	Campus Dr to Birch St	b	Irv	6D	39,801	0.74	C	42,501	0.79	C
152	Jamboree Road	Birch St to Fairchild Road	b	Irv	7D	39,505	0.63	B	42,305	0.67	B
154	Jamboree Road	Fairchild Road to Koll Center	b	Irv	6D	33,686	0.54	A	36,286	0.58	A
155	Jamboree Road	Koll Center to MacArthur Blvd	a,b	Irv	6D	34,542	0.64	B	37,242	0.69	B
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	5D	36,081	0.57	A	41,581	0.66	B
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	22,329	0.35	A	25,929	0.41	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	22,329	0.35	A	26,429	0.42	A
60	MacArthur Blvd	Main St to I-405 NB Off-Ramp	a	Irv	Maj8D+ 2AUX	47,934	0.67	B	53,434	0.74	C
62	MacArthur Blvd	I-405 SB On-Ramp to Michelson Dr	a	Irv	Maj8D+ 1AUX	52,535	0.73	C	59,835	0.83	D
63	MacArthur Blvd	Michelson Dr to Douglass	a	Irv	8D	35,385	0.49	A	40,685	0.57	A
64	MacArthur Blvd	Douglas to Campus Dr		Irv	8D	35,385	0.49	A	37,085	0.52	A
916	MacArthur Blvd	Jamboree Road to Fairchild Road	a,b	Irv	6D	39,687	0.74	C	41,487	0.77	C
917	MacArthur Blvd	Fairchild Road to University Dr	b	Irv	6D	39,687	0.74	C	41,587	0.77	C
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	23,298	0.43	A	24,698	0.46	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	23,596	0.44	A	25,396	0.47	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	23,596	0.44	A	25,296	0.47	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	31,631	0.50	A	34,831	0.55	A

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821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	31,631	0.59	A	36,231	0.67	B
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	23,054	0.43	A	26,154	0.48	A
823	Main St	Siglo to Jamboree Road	a	Irv	6D	23,054	0.43	A	26,854	0.50	A
824	Main St	Jamboree Road to Union	a	Irv	Maj6D+ 1AUX	22,949	0.43	A	24,549	0.46	A
825	Main St	Veneto to Harvard Ave		Irv	6D	22,949	0.43	A	24,549	0.46	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	12,235	0.38	A	13,035	0.41	A
827	Main St	Paseo Westpark to Culver Dr		Irv	4D	12,235	0.38	A	12,935	0.40	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	6,177	0.19	A	8,377	0.26	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	8,422	0.26	A	10,422	0.33	A
810	McGaw Ave	Von Karman Ave to Jamboree Road	a	Irv	4D	7,839	0.25	A	7,839	0.25	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	2,328	0.07	A	4,728	0.15	A
840	Michelson Dr	MacArthur Blvd to Dupont Dr	a	Irv	5D	19,878	0.46	A	23,178	0.54	A
843	Michelson Dr	Bixby to Von Karman Ave	a	Irv	4D	11,779	0.37	A	14,379	0.45	A
844	Michelson Dr	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	19,044	0.60	A	22,644	0.71	B
845	Michelson Dr	Teller Ave to Jamboree Rd	a	Irv	Prim5	19,044	0.44	A	24,344	0.57	A
846	Michelson Dr	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+ 2AUX	20,314	0.38	A	26,314	0.49	A
847	Michelson Dr	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	20,314	0.64	B	28,014	0.88	D
848	Michelson Dr	Riparian View to Harvard Ave		Irv	4D	20,314	0.64	B	25,714	0.80	C
1346	Michelson Dr	Harvard Ave to Parkside Dr		Irv	4D	16,454	0.51	A	19,254	0.60	A
850	Michelson Dr	Parkside Dr to Culver Dr		Irv	4D	16,454	0.51	A	19,254	0.60	A
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	27,969	0.52	A	31,769	0.59	A
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	28,720	0.53	A	32,320	0.60	A
33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	29,470	0.55	A	32,970	0.61	B
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	37,729	0.70	B	44,029	0.82	D
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	4D	18,524	0.58	A	19,924	0.62	B
38	Red Hill Ave	Skypark to Main St	a	Irv	4D	15,253	0.48	A	16,253	0.51	A
189	University Dr	MacArthur Blvd to California Ave		Irv	4D	24,279	0.76	C	24,679	0.77	C
188	University Dr	California Ave to Mesa Rd		Irv	4D	29,790	0.93	**E**	30,490	0.95	**E**
187	University Dr	Mesa Rd to Campus Dr		Irv	4D	31,238	0.98	**E**	31,838	1.00	**E**
880	University Dr	Campus Dr to Harvard Ave		Irv	6D	25,975	0.48	A	26,475	0.49	A
881	University Dr	Harvard Ave to San Joaquin Hills Rd		Irv	6D	22,773	0.42	A	23,173	0.43	A
882	University Dr	San Joaquin Hills Rd to Culver Dr		Irv	6D	22,773	0.42	A	23,173	0.43	A
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	26,132	0.82	D	28,632	0.90	D
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	23,446	0.73	C	26,246	0.82	D
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	23,426	0.73	C	26,026	0.81	D
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	23,426	0.73	C	26,226	0.82	D
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	24,789	0.78	C	29,289	0.92	E
107	Von Karman Ave	Quartz to Michelson Dr	a	Irv	Prim4D+ 1AUX	21,590	0.68	B	25,590	0.80	C
108	Von Karman Ave	Michelson Dr to Dupont Dr	a	Irv	4D	16,632	0.52	A	19,032	0.60	A
110	Von Karman Ave	Dupont Dr to Martin	a	Irv	4D	16,632	0.52	A	19,132	0.60	A
111	Von Karman Ave	Martin to Campus Dr	a	Irv	4D	16,632	0.52	A	18,032	0.56	A
594	Walnut Ave	Myford to Jamboree SB Off-Ramp		Irv	Prim4D+ 1AUX	19,344	0.60	A	19,644	0.61	B
593	Walnut Ave	Jamboree Rd to Peters Cyn		Irv	Maj6D+ 1AUX	18,462	0.34	A	18,762	0.35	A

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595	Walnut Ave	Peters Cyn to Harvard Ave		Irv	Prim5D+ 1AUX	18,462	0.43	A	18,662	0.43	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	16,875	0.53	A	17,075	0.53	A
597	Walnut Ave	Mall St to Culver Dr		Irv	4D	16,875	0.53	A	16,975	0.53	A
728	Warner Ave	Construction North to Harvard Ave		Irv	4D	12,526	0.39	A	12,826	0.40	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	9,009	0.28	A	9,309	0.29	A
732	Warner Ave	Santa Ynez to Culver Dr		Irv	4D	8,145	0.26	A	8,545	0.27	A
1223	Birch St	Mesa Dr to Bristol St SB		NB	4D	11,100	0.28	A	11,400	0.29	A
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	15,857	0.40	A	15,957	0.40	A
874	Birch St	East of MacArthur Blvd		NB	4D	8,715	0.22	A	10,315	0.26	A
69	Birch St	West of MacArthur Blvd		NB	4D	14,406	0.36	A	15,606	0.39	A
875	Birch St	East of Von Karman Ave		NB	4D	5,486	0.14	A	7,186	0.18	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	7,087	0.12	A	7,087	0.12	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	13,123	0.33	A	13,123	0.33	A
920	Bristol St SB	Red Hill Ave to Campus Dr		NB	3D	12,664	0.70	B	12,964	0.72	C
1310	Bristol St NB	Campus Dr to Red Hill Ave		NB	3D	13,303	0.46	A	14,003	0.48	A
1303	Bristol St SB	Campus Dr to Birch St		NB	3D	20,270	0.70	B	20,270	0.70	B
1305	Bristol St NB	Birch St to Campus Dr		NB	3D	22,717	0.78	C	23,017	0.79	C
1312	Bristol St SB	West of Jamboree Rd		NB	4D	33,384	0.84	D	33,384	0.84	D
1580	Bristol St NB	West of Jamboree Rd		NB	3D	15,630	0.54	A	15,830	0.55	A
66	Campus Dr	Bristol St NB to MacArthur Blvd		NB	6D	28,135	0.49	A	31,435	0.54	A
1778	Ford Rd	Jamboree Rd to MacArthur Blvd		NB	4D	9,520	0.24	A	9,620	0.24	A
1304	Irvine Ave	Bristol St NB to Bristol St SB		NB	6D	28,628	0.49	A	30,728	0.53	A
67	Irvine Ave	Bristol St SB to Mesa Dr		NB	4D	25,824	0.45	A	26,624	0.46	A
2768	Irvine Ave	South of University Dr		NB	4D	28,283	0.71	B	28,783	0.72	C
156	Jamboree Rd	South of MacArthur Blvd		NB	6D	32,408	0.56	A	34,508	0.60	A
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	6D	42,882	0.74	C	44,582	0.77	C
157	Jamboree Rd	South of Bristol St		NB	6D	50,576	0.74	C	51,476	0.76	C
159	Jamboree Rd	University Dr to Bison Ave		NB	6D	41,964	0.72	C	42,664	0.74	C
1777	Jamboree Rd	Bison Ave to Ford Rd		NB	6D	32,181	0.56	A	32,481	0.56	A
73	MacArthur Blvd	Campus Dr to Birch St		NB	8D	18,634	0.27	A	19,334	0.28	A
75	MacArthur Blvd	South of Birch St		NB	6D	18,634	0.32	A	19,434	0.34	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	18,634	0.32	A	19,834	0.34	A
953	MacArthur Blvd	University Dr to Bison Ave	b	NB	6D	65,695	1.13	**F**	66,795	1.15	**F**
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	75,856	1.12	**F**	76,656	1.13	**F**
2767	University Dr	East of Irvine Ave		NB	2U	3,586	0.36	A	3,586	0.36	A
1774	University Dr	Jamboree Rd to MacArthur Blvd		NB	5D	11,047	0.23	A	11,047	0.23	A
112	Von Karman Ave	South of Campus Dr		NB	4D	11,633	0.29	A	12,433	0.31	A
113	Von Karman Ave	South of Birch St		NB	4D	9,968	0.25	A	10,968	0.27	A
2795	Dyer Rd	Main St to Halladay St		SA	6D	29,165	0.52	A	29,765	0.53	A
2799	Dyer Rd	Halladay St to SR-55 SB		SA	6D	35,997	0.64	B	36,697	0.65	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	49,579	0.88	D	51,579	0.92	**E**
734	Dyer Rd	SR-55 NB to Pullman St		SA	6D	46,396	0.82	D	48,796	0.87	D
2764	Grand Ave	Warner Ave to Hotel Terrace Dr		SA	6D	24,182	0.43	A	25,382	0.45	A
2806	Grand Ave	Hotel Terrace Dr to SR-55 NB		SA	6D	24,009	0.43	A	25,409	0.45	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	2U	3,156	0.25	A	3,256	0.26	A
2822	Halladay St	Alton Ave to McGaw Ave (Columbine)		SA	2U	1,705	0.14	A	1,805	0.14	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	33,000	0.59	A	34,200	0.61	A
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	38,000	0.68	B	39,300	0.70	B
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	27,875	0.50	A	28,575	0.51	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATION	EXISTING CONDITIONS			EXISTING CONDITIONS WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
2826	Main St	Alton Ave to McGaw Ave (Columbine)		SA	6D	26,662	0.47	A	27,362	0.49	A
2809	Main St	McGaw (Columbine) to MacArthur Blvd		SA	6D	27,812	0.49	A	28,412	0.51	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	22,389	0.40	A	22,789	0.41	A
2823	McGaw Ave (Alton)	Main St to Halladay St		SA	4D	4,145	0.17	A	4,145	0.17	A
2736	Segerstrom Ave	Bristol St to Flower St		SA	4D	22,069	0.59	A	22,469	0.60	A
2771	Segerstrom Ave	Flower St to Main St		SA	4D	23,312	0.62	B	23,812	0.64	B
2763	Warner Ave	Grand Ave to SR-55		SA	6D	18,271	0.33	A	19,071	0.34	A
2761	Sunflower Ave	Bristol St to Flower St		SA/CM	6D	21,755	0.39	A	22,755	0.41	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/CM	6D	18,113	0.32	A	19,213	0.34	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/CM	6D	23,648	0.42	A	25,048	0.45	A
1198	Browning Ave	Walnut Ave to I-5		Tus	4U	4,970	0.40	A	5,070	0.41	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	15,930	0.64	B	16,030	0.64	B
535	Bryan Ave	Red Hill Ave to Browning		Tus	4U	16,143	0.43	A	16,343	0.44	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	16,119	0.43	A	16,419	0.44	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	18,028	0.48	A	18,228	0.49	A
44	Edinger Ave	West of Newport Ave	b	Tus	6D	37,786	0.67	B	73,986	1.31	**F**
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	25,781	0.46	A	49,081	0.87	D
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	19,693	0.35	A	20,193	0.36	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4U	13,307	0.36	A	13,507	0.36	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	2U	9,349	0.52	A	9,449	0.53	A
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4U	9,507	0.25	A	9,607	0.26	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	16,628	0.44	A	16,628	0.44	A
672	Irvine Center Dr (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	26,182	0.47	A	26,682	0.47	A
674	Irvine Center Dr	Jamboree Rd to Harvard Ave	b	Tus	6D	24,388	0.43	A	25,088	0.45	A
2777	Mitchell Ave	Newport Ave to Red Hill Ave		Tus	2U	6,781	0.54	A	6,881	0.55	A
2775	Mitchell Ave	Red Hill Ave to Browning Ave		Tus	2U	4,800	0.38	A	4,800	0.38	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	38,250	0.68	B	38,650	0.69	B
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	32,378	0.58	A	32,878	0.58	A
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	28,552	0.51	A	28,852	0.51	A
49	Newport Ave	North of Sycamore Ave		Tus	6D	9,888	0.18	A	9,888	0.18	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	17,418	0.31	A	23,618	0.42	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	5,513	0.44	A	5,513	0.44	A
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	5,263	0.42	A	5,263	0.42	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	37,599	0.67	B	37,999	0.68	B
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	34,222	0.61	A	34,822	0.62	B
21	Red Hill Ave	Nisson Rd to I-5 SB		Tus	6D	40,821	0.73	C	41,421	0.74	C
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	30,328	0.54	A	30,828	0.55	A
22	Red Hill Ave	Mitchell Ave to Walnut Ave		Tus	6D	26,871	0.48	A	27,671	0.49	A
23	Red Hill Ave	Walnut Ave to Sycamore Ave		Tus	6D	28,039	0.50	A	28,839	0.51	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	29,209	0.52	A	30,209	0.54	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	24,775	0.44	A	25,875	0.46	A
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	28,039	0.50	A	29,839	0.53	A
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	29,914	0.46	A	32,314	0.49	A
1363	Sycamore Ave	SR-55 NB to Newport Ave		Tus	4U	9,659	0.26	A	9,659	0.26	A
1920	Sycamore Ave	Newport Ave to Red Hill Ave		Tus	2U	8,551	0.68	B	8,651	0.69	B
85	Tustin Ranch Rd	North of I-5		Tus	6D	41,618	0.74	C	41,718	0.74	C
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	35,315	0.63	B	36,415	0.65	B
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4U	6,222	0.17	A	6,922	0.19	A
587	Walnut Ave	East of Newport Ave		Tus	4U	17,520	0.70	B	17,620	0.71	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATION	EXISTING CONDITIONS			EXISTING CONDITIONS WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
589	Walnut Ave	East of Red Hill Ave		Tus	4D	16,500	0.44	A	16,800	0.45	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	18,798	0.50	A	19,198	0.51	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	17,774	0.47	A	18,074	0.48	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	16,652	0.30	A	17,752	0.32	A

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

The arterial analysis indicates that the following 15 segments are potentially deficient when the build-out trips are added to the existing traffic volumes:

- 879 – Campus Drive from Carlson Avenue to University Drive (Irvine)
- 213 – Culver Drive from I-5 SB Off-Ramp 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 On-Ramp to Michelson Drive (Irvine)
- 183 – Harvard Avenue from Michelson Drive to University Drive (Irvine)
- 133 – Jamboree Road from Michelle Drive to Walnut Avenue (Irvine)
- 145 – Jamboree Road from Main Street to I-405 NB Ramps (Irvine)
- 148 – Jamboree Road from I-405 SB Ramps to Michelson Drive (Irvine)
- 188 – University Drive from California Avenue to Mesa Road (Irvine)
- 187 – University Drive from Mesa Road to Campus Drive (Irvine)
- 953 – MacArthur Boulevard from University Drive to Bison Avenue (Newport Beach)*
- 1301 – MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*
- 1326 – Dyer Road from SR-55 SB to SR-55 NB (Santa Ana)**
- 44 – Edinger Avenue West of Newport Avenue (Tustin)*

*Deficient locations under daily conditions—no further analysis required.
** Denotes impact in Existing With Update.

Figure 3.14 and **Figure 3.15** present the Existing With Update ADT and deficient segments for study area arterials.

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 11 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.

Table 3.9 – Existing With Update Peak Hour Link Analysis

ID	ARTERIAL	SEGMENT LIMITS	EXISTING VOLUME WITH UPDATE					AM		PM	
			FACILITY TYPE	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	585	752	1,037	681	Acceptable	Acceptable	Acceptable	Acceptable
213	Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,312	2,599	2,486	2,136	Acceptable	Acceptable	Acceptable	Acceptable
221	Culver Dr	Main St to San Leandro	6D	1,423	2,790	2,707	1,777	Acceptable	Acceptable	Acceptable	Acceptable
222	Culver Dr	San Leandro to I-405 NB On-Ramp	6D	1,516	3,018	2,846	1,832	Acceptable	Acceptable	Acceptable	Acceptable
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	2,205	2,398	2,796	1,860	Acceptable	Acceptable	Acceptable	Acceptable
183	Harvard Ave	Michelson Dr to University Dr	2U	508	1,007	1,090	807	Acceptable	Acceptable	Acceptable	Acceptable
133	Jamboree Rd	Michelle Dr to Walnut Ave	5D	746	2,236	1,719	1,479	Acceptable	Acceptable	Acceptable	Acceptable
145	Jamboree Rd	Main St to I-405 Off-Ramp	Maj8D+ 2AUX	2,571	3,480	3,681	2,913	Acceptable	Acceptable	Acceptable	Acceptable
148	Jamboree Rd	I-405 On-Ramp to Michelson Dr	Maj8D+ 2AUX	2,330	5,447	4,985	3,003	Acceptable	Acceptable	Acceptable	Acceptable
188	University Dr	California Ave to Mesa Rd	4D	1,390	1,931	2,057	1,538	Acceptable	Acceptable	Acceptable	Acceptable
187	University Dr	Mesa Rd to Campus Dr	4D	970	1,455	1,425	1,098	Acceptable	Acceptable	Acceptable	Acceptable

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, and Tustin assess segment impacts at the intersection level. Improvements at the intersections that feed into deficient arterial segments should eliminate deficiencies. For segments in the City of Santa Ana, deficiencies are addressed in the daily condition. One arterial segment in Santa Ana that is deficient under Existing With Update conditions: Dyer Road between SR-55 SB ramps and NB ramps, though based on City of Santa Ana criteria no additional analysis is required.

Figure 3.14 – Existing With Update Daily Arterial ADT

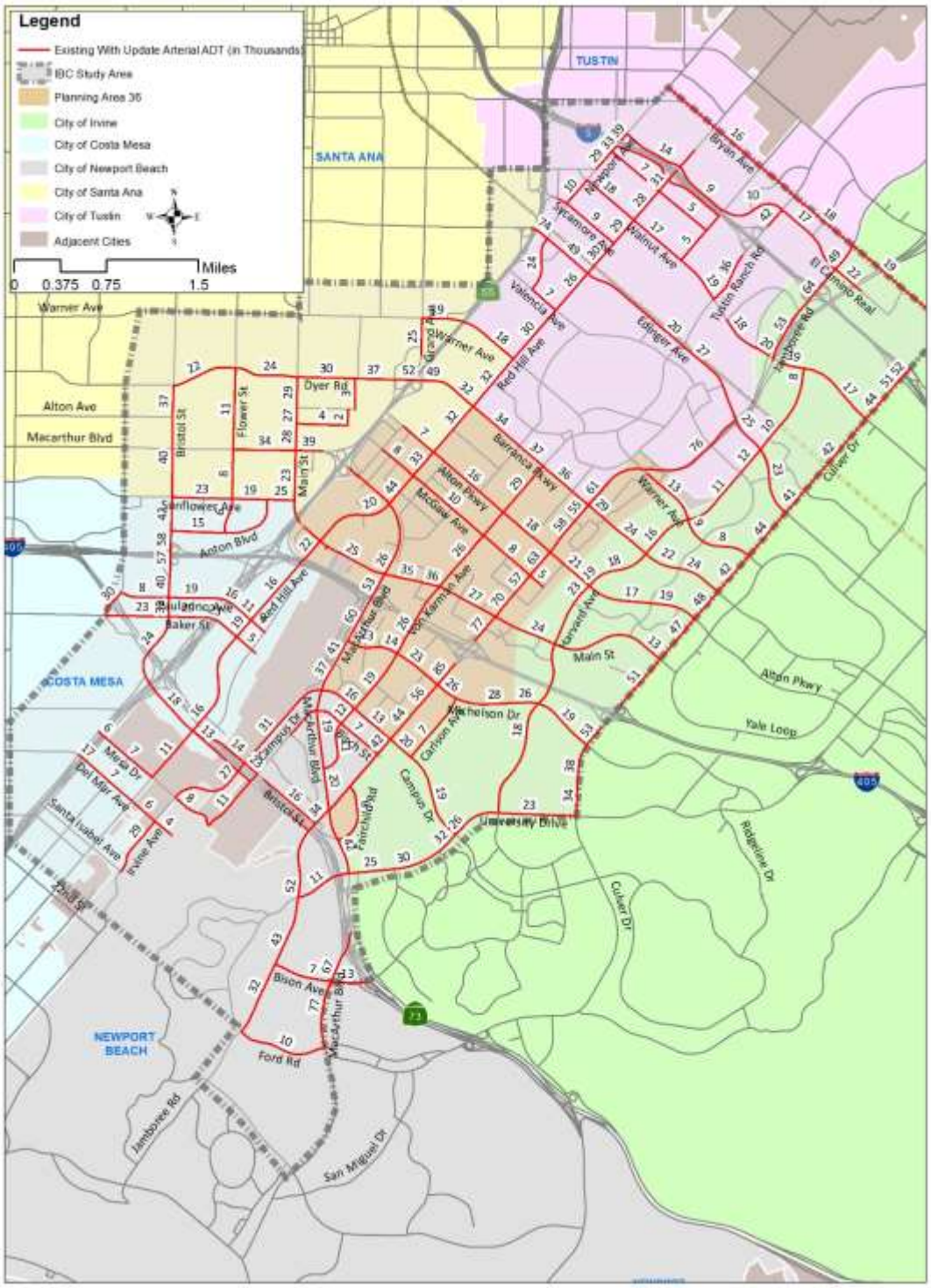
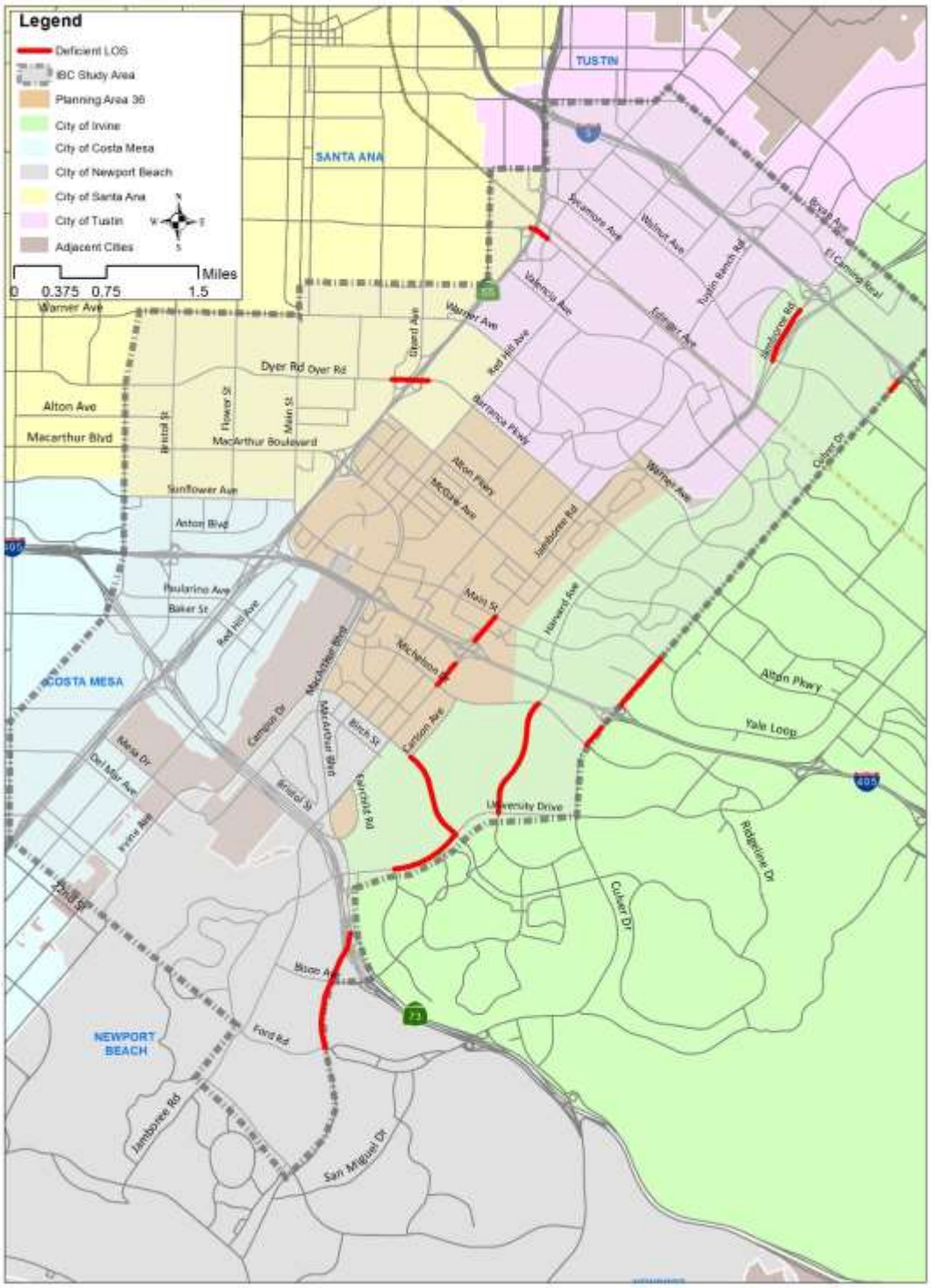


Figure 3.15 – Existing With Update Daily Arterial Deficiencies



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 seven 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 SB Ramps (Irvine)*—AM peak hour LOS F with a 1.15, PM peak hour LOS F with a 1.18
- #192: California Avenue at University Drive (Irvine)*—AM peak hour LOS E with a 0.97
- #97: Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (Irvine/Tustin)*—PM peak hour LOS E with a 0.92
- #136: Jamboree Road at Barranca Parkway (Irvine/Tustin)*—PM peak hour LOS F with a 1.17
- #733: Irvine Avenue at Mesa Road (Irvine)—PM peak hour LOS E with a 0.99
- #723: Main Street at Segerstrom Street (Santa Ana)*—PM peak hour LOS E with a 0.93
- #18: Newport Avenue at Bryan Avenue (Tustin)—PM peak hour LOS E with a 0.91

*Denotes theoretical 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 CONDITIONS WITH UPDATE			
				AM		PM		AM		PM	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
10	SR-55 Frontage Rd SB at Paularino Ave		CM	0.73	C	0.62	B	0.73	C	0.63	B
11	SR-55 Frontage Rd NB at Paularino Ave		CM	0.56	A	0.67	B	0.57	A	0.68	B
12	SR-55 Frontage Rd SB at Baker St		CM	0.62	B	0.79	C	0.64	B	0.80	C
13	SR-55 Frontage Rd NB at Baker St		CM	0.67	B	0.73	C	0.68	B	0.75	C
50	Red Hill Ave at Paularino Ave		CM	0.54	A	0.62	B	0.58	A	0.64	B
51	Red Hill Ave at Baker St		CM	0.45	A	0.61	B	0.47	A	0.63	B
52	Red Hill Ave at Bristol St		CM	0.50	A	0.56	A	0.52	A	0.56	A
541	Bear at Baker St		CM	0.57	A	0.69	B	0.57	A	0.70	B
542	Bear at Paularino Ave		CM	0.39	A	0.63	B	0.39	A	0.64	B
545	Bristol at Sunflower		CM	0.56	A	0.72	C	0.58	A	0.74	C
546	Bristol at Anton		CM	0.35	A	0.53	A	0.37	A	0.53	A
547	Bristol at Paularino Ave		CM	0.47	A	0.73	C	0.49	A	0.73	C
548	Bristol at Baker St		CM	0.52	A	0.69	B	0.54	A	0.70	B
549	Newport Blvd SB at Bristol		CM	0.11	A	0.42	A	0.12	A	0.44	A
550	Newport Blvd NB at Bristol		CM	0.32	A	0.19	A	0.32	A	0.19	A
715	Bristol at I-405 NB Off Ramp		CM	0.43	A	0.69	B	0.44	A	0.69	B
716	Bristol at I-405 SB Ramps		CM	0.40	A	0.55	A	0.40	A	0.55	A
717	Bear at SR-73 SB Ramps		CM	0.40	A	0.50	A	0.41	A	0.51	A
720	Flower at MacArthur Blvd		CM	0.57	A	0.77	C	0.60	A	0.79	C
721	Flower at Sunflower		CM	0.37	A	0.47	A	0.39	A	0.48	A

ID	INTERSECTION	PA36/CMP/SANTA ANA	JURISDICTION	EXISTING CONDITIONS				EXISTING CONDITIONS WITH UPDATE			
				AM		PM		AM		PM	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
722	Anton at Sunflower		CM	0.38	A	0.38	A	0.40	A	0.38	A
726	Main St at Sunflower		CM	0.52	A	0.63	B	0.56	A	0.66	B
735	Newport Blvd NB at Del mar		CM	0.78	C	0.42	A	0.80	C	0.43	A
736	Newport Blvd SB at Fair/Del Mar		CM	0.37	A	0.44	A	0.38	A	0.44	A
737	Newport Blvd NB at Mesa Rd		CM	0.38	A	0.37	A	0.39	A	0.38	A
738	Newport Blvd SB at Mesa Rd		CM	0.23	A	0.64	B	0.23	A	0.65	B
45	Red Hill Ave at McGaw Ave	a	Irv	0.41	A	0.67	B	0.49	A	0.77	C
47	Red Hill Ave at MacArthur Blvd	a	Irv	0.59	A	0.76	C	0.72	C	0.85	D
48	Red Hill Ave at Sky Park North	a	Irv	0.33	A	0.48	A	0.36	A	0.50	A
49	Red Hill Ave at Main St	a	Irv	0.61	B	0.82	D	0.65	B	0.86	D
67	Gillette Ave at McGaw Ave	a	Irv	0.22	A	0.37	A	0.32	A	0.43	A
70	Gillette Ave at Main Street	a	Irv	0.35	A	0.67	B	0.38	A	0.72	C
77	MacArthur Blvd at Sky Park East	a	Irv	0.32	A	0.46	A	0.35	A	0.49	A
78	MacArthur Blvd at Main St	a	Irv	0.60	A	0.73	C	0.68	B	0.80	C
79	MacArthur Blvd at I-405 NB Ramps	a	Irv	0.63	B	0.48	A	0.68	B	0.53	A
80	MacArthur Blvd at I-405 SB Ramps	a	Irv	0.60	A	0.72	C	0.71	C	0.80	C
82	MacArthur Blvd at Michelson Dr	a	Irv	0.64	B	0.83	D	0.73	C	0.97	E
83	MacArthur Blvd at Douglas Ave	a	Irv	0.34	A	0.40	A	0.48	A	0.60	A
87	Dupont Dr at Michelson Dr	a	Irv	0.39	A	0.38	A	0.50	A	0.48	A
98	Von Karman Ave at Alton Pkwy	a	Irv	0.79	C	0.89	D	0.85	D	0.93	E
99	Von Karman Ave at McGaw Ave	a	Irv	0.66	B	0.65	B	0.81	D	0.78	C
100	Von Karman Ave at Main St	a	Irv	0.68	B	0.76	C	0.74	C	0.80	C
101	Von Karman Ave at Morse Ave	a	Irv	0.59	A	0.63	B	0.65	B	0.71	C
102	Von Karman Ave at Michelson Dr	a	Irv	0.55	A	0.75	C	0.64	B	0.86	D
103	Von Karman Ave at Dupont Dr	a	Irv	0.42	A	0.53	A	0.59	A	0.65	B
104	Von Karman Ave at Martin	a	Irv	0.36	A	0.51	A	0.41	A	0.60	A
115	Millikan Ave at Alton Pkwy	a	Irv	0.38	A	0.55	A	0.42	A	0.56	A
116	Cartwright Rd at Main St	a	Irv	0.39	A	0.56	A	0.49	A	0.64	B
119	Teller Ave at Michelson Dr	a	Irv	0.42	A	0.46	A	0.51	A	0.51	A
128	Jamboree Rd at I-5 NB Ramps	b	Irv	0.77	C	0.73	C	0.78	C	0.73	C
129	Jamboree Rd at I-5 SB Ramps	b	Irv	0.69	B	0.61	B	0.71	C	0.61	B
130	Jamboree Rd at Michelle Dr		Irv	0.57	A	0.74	C	0.59	A	0.75	C
131	Jamboree Rd SB at Walnut Ave		Irv	0.49	A	0.46	A	0.52	A	0.50	A
132	Jamboree Rd NB at Walnut Ave		Irv	0.32	A	0.52	A	0.34	A	0.54	A
137	Jamboree Rd at Beckman Ave	a	Irv	0.60	A	0.68	B	0.63	B	0.75	C
138	Jamboree Rd at Alton Pkwy	a	Irv	0.66	B	0.80	C	0.70	B	0.86	D
139	Jamboree Rd at McGaw Ave	a	Irv	0.59	A	0.68	B	0.70	B	0.75	C
140	Jamboree Rd at Kelvin Ave	a	Irv	0.59	A	0.59	A	0.76	C	0.72	C
141	Jamboree Rd at Main St	a	Irv	0.76	C	0.82	D	0.83	D	0.89	D
143	Jamboree Rd at I-405 NB Ramps	a,b	Irv	0.72	C	0.88	D	0.77	C	0.96	E
144	Jamboree Rd at I-405 SB Ramps	a,b*	Irv	0.96	E	1.08	F	1.15	F	1.18	F
145	Jamboree Rd at Michelson Dr	a	Irv	0.72	C	0.82	D	0.90	D	0.98	E
146	Jamboree Rd at Dupont Rd	a	Irv	0.54	A	0.57	A	0.75	C	0.73	C
164	Construction South at Barranca Pkwy	a	Irv	0.31	A	0.49	A	0.38	A	0.57	A
168	Murphy Ave at Alton Pkwy	a	Irv	0.33	A	0.60	A	0.38	A	0.68	B
170	Union at Main St	a	Irv	0.36	A	0.62	B	0.40	A	0.64	B
171	Veneto at Main St		Irv	0.38	A	0.54	A	0.40	A	0.56	A
174	Carlson Ave at Michelson Dr		Irv	0.46	A	0.57	A	0.64	B	0.76	C
175	Carlson Ave at Campus Dr		Irv	0.37	A	0.67	B	0.42	A	0.68	B
180	Harvard Ave at Walnut Ave		Irv	0.40	A	0.47	A	0.40	A	0.48	A
183	Harvard Ave at Warner Ave		Irv	0.42	A	0.50	A	0.45	A	0.52	A
184	Harvard Ave at Barranca Pkwy		Irv	0.54	A	0.61	B	0.60	A	0.64	B
185	Harvard Ave at Alton Pkwy		Irv	0.62	B	0.66	B	0.65	B	0.68	B
186	Harvard Ave at Main St		Irv	0.57	A	0.73	C	0.64	B	0.77	C

ID	INTERSECTION	PA36/CMP/SANTA ANA	JURISDICTION	EXISTING CONDITIONS				EXISTING CONDITIONS WITH UPDATE			
				AM		PM		AM		PM	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
187	Harvard Ave at Coronado		Irv	0.54	A	0.59	A	0.60	A	0.62	B
188	Harvard Ave Michelson Dr		Irv	0.68	B	0.82	D	0.80	C	0.86	D
189	Harvard Ave University Dr		Irv	0.72	C	0.73	C	0.72	C	0.75	C
190	University Dr at Campus Dr		Irv	0.80	C	0.78	C	0.83	D	0.79	C
191	Mesa Rd at University Dr		Irv	0.62	B	0.66	B	0.63	B	0.66	B
192	California Ave at University Dr	*	Irv	0.95	E	0.80	C	0.97	E	0.81	D
196	Hearthstone Blvd at Irvine Center Dr		Irv	0.41	A	0.41	A	0.41	A	0.42	A
198	Paseo Westpark at Warner Ave		Irv	0.35	A	0.28	A	0.38	A	0.29	A
199	Paseo Westpark at Barranca Pkwy		Irv	0.41	A	0.51	A	0.42	A	0.51	A
200	Paseo Westpark at Alton Pkwy		Irv	0.45	A	0.58	A	0.47	A	0.60	A
201	Paseo Westpark at Main St		Irv	0.53	A	0.51	A	0.56	A	0.54	A
221	Culver Dr at Bryan Ave		Irv	0.73	C	0.62	B	0.73	C	0.62	B
222	Culver Dr at Trabuco Rd		Irv	0.63	B	0.68	B	0.64	B	0.68	B
223	Culver Dr at I-5 SB Ramps		Irv	0.59	A	0.56	A	0.61	B	0.56	A
224	Culver Dr at Walnut Ave		Irv	0.68	B	0.74	C	0.69	B	0.75	C
225	Culver Dr at Deerfield Dr		Irv	0.71	C	0.68	B	0.74	C	0.69	B
226	Culver Dr at Irvine Center Dr		Irv	0.65	B	0.65	B	0.67	B	0.65	B
227	Culver Dr at Warner Ave		Irv	0.68	B	0.64	B	0.69	B	0.68	B
228	Culver Dr at Barranca Pkwy		Irv	0.71	C	0.76	C	0.74	C	0.79	C
229	Culver Dr at Alton Pkwy		Irv	0.74	C	0.80	C	0.78	C	0.83	D
230	Culver Dr at Main St		Irv	0.68	B	0.69	B	0.69	B	0.71	C
231	Culver Dr at San Leandro		Irv	0.72	C	0.59	A	0.74	C	0.60	A
232	Culver Dr at I-405 NB Ramps		Irv	0.55	A	0.76	C	0.58	A	0.76	C
233	Culver Dr at I-405 SB Ramps		Irv	0.63	B	0.68	B	0.65	B	0.70	B
234	Culver Dr at Michelson Dr		Irv	0.56	A	0.82	D	0.65	B	0.83	D
235	Culver Dr at University Dr		Irv	0.72	C	0.77	C	0.74	C	0.79	C
337	Von Karman Ave at Quartz	a	Irv	0.54	A	0.56	A	0.58	A	0.64	B
439	Bixby at Michelson Dr		Irv	0.40	A	0.47	A	0.50	A	0.57	A
440	Siglo at Main St		Irv	0.37	A	0.53	A	0.42	A	0.59	A
472	Obsidian at Michelson Dr	a	Irv	0.36	A	0.52	A	0.41	A	0.61	B
84	MacArthur Blvd at Campus Dr		Irv/NB	0.48	A	0.83	D	0.53	A	0.88	D
105	Von Karman Ave at Campus Dr		Irv/NB	0.55	A	0.72	C	0.69	B	0.79	C
121	Teller Ave at Campus Dr		Irv/NB	0.24	A	0.37	A	0.44	A	0.46	A
147	Jamboree Rd at Campus Dr		Irv/NB	0.62	B	0.62	B	0.64	B	0.70	B
149	Jamboree Rd at Fairchild Rd		Irv/NB	0.60	A	0.69	B	0.63	B	0.71	C
150	Jamboree Rd at MacArthur Blvd	b	Irv/NB	0.69	B	0.70	B	0.70	B	0.73	C
176	Fairchild Ave at MacArthur Blvd		Irv/NB	0.74	C	0.74	C	0.75	C	0.77	C
193	MacArthur Blvd NB at University Dr		Irv/NB	0.46	A	0.50	A	0.48	A	0.52	A
194	MacArthur Blvd SB at University Dr		Irv/NB	0.44	A	0.37	A	0.45	A	0.38	A
195	SR-73 SB Ramps at University Dr		Irv/NB	0.66	B	0.42	A	0.69	B	0.43	A
9	SR-55 NB Ramps at MacArthur Blvd		Irv/SA	0.79	C	0.58	A	0.84	D	0.60	A
31	Daimler St at Alton Pkwy		Irv/SA	0.24	A	0.32	A	0.28	A	0.35	A
43	Red Hill Ave at Deere Ave		Irv/SA	0.43	A	0.69	B	0.48	A	0.76	C
44	Red Hill Ave at Alton Pkwy		Irv/SA	0.47	A	0.83	D	0.60	A	0.89	D
42	Red Hill Ave at Barranca Pkwy/Dyer Rd		Irv/SA/Tus	0.52	A	0.66	B	0.60	A	0.69	B
71	Armstrong Ave at Barranca Pkwy		Irv/Tus	0.42	A	0.68	B	0.46	A	0.72	C
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	*	Irv/Tus	0.77	C	0.86	D	0.79	C	0.92	E
112	Myford Rd at Michelle Dr		Irv/Tus	0.20	A	0.29	A	0.20	A	0.28	A
113	Myford Rd at Walnut Ave		Irv/Tus	0.32	A	0.41	A	0.33	A	0.41	A
114	Millikan Ave/District Way at Barranca Pkwy		Irv/Tus	0.39	A	0.54	A	0.48	A	0.56	A
126	Jamboree Rd at Bryan Ave		Irv/Tus	0.65	B	0.72	C	0.66	B	0.72	C
127	Jamboree Rd at El Camino Real		Irv/Tus	0.70	B	0.73	C	0.70	B	0.73	C
134	Loop Rd/Park Ave at Warner Ave		Irv/Tus	0.44	A	0.61	B	0.46	A	0.64	B
136	Jamboree Rd at Barranca Pkwy	*	Irv/Tus	0.63	B	1.12	F	0.68	B	1.17	F

ID	INTERSECTION	PA36/CMP/SANTA ANA	JURISDICTION	EXISTING CONDITIONS				EXISTING CONDITIONS WITH UPDATE			
				AM		PM		AM		PM	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
181	Harvard Ave at Edinger Ave/Irvine Center Dr		Irv/Tus	0.40	A	0.55	A	0.42	A	0.54	A
182	Harvard Ave at Paseo Westpark/Moffett Dr.		Irv/Tus	0.25	A	0.33	A	0.28	A	0.36	A
441	Loop Rd at Jamboree Rd SB Ramps		Irv/Tus	0.28	A	0.54	A	0.28	A	0.54	A
61	Campus Dr at Airport Way		NB	0.27	A	0.33	A	0.39	A	0.53	A
62	Campus Dr at Bristol St NB		NB	0.56	A	0.82	D	0.62	B	0.87	D
63	Campus Dr at Bristol St SB		NB	0.69	B	0.55	A	0.73	C	0.57	A
64	Birch St at Bristol St NB		NB	0.55	A	0.50	A	0.57	A	0.52	A
65	Birch St at Bristol St SB		NB	0.42	A	0.44	A	0.42	A	0.46	A
85	MacArthur Blvd at Birch St		NB	0.38	A	0.53	A	0.46	A	0.58	A
106	Von Karman Ave at Birch St		NB	0.34	A	0.38	A	0.38	A	0.42	A
107	Von Karman Ave at MacArthur Blvd		NB	0.34	A	0.53	A	0.34	A	0.57	A
148	Jamboree Rd at Birch St		NB	0.54	A	0.51	A	0.53	A	0.54	A
151	Jamboree Rd at Bristol St NB		NB	0.37	A	0.48	A	0.38	A	0.49	A
153	Jamboree Rd at Bristol St SB		NB	0.66	B	0.64	B	0.68	B	0.64	B
154	Jamboree Rd at Eastbluff Dr		NB	0.62	B	0.59	A	0.63	B	0.61	B
155	Jamboree Rd at Bison Ave		NB	0.46	A	0.48	A	0.47	A	0.47	A
156	Jamboree Rd at Ford Rd		NB	0.89	D	0.77	C	0.88	D	0.76	C
178	MacArthur Blvd at Bison Ave		NB	0.65	B	0.63	B	0.64	B	0.63	B
179	MacArthur Blvd at Ford Rd		NB	0.72	C	0.76	C	0.72	C	0.77	C
741	Jamboree at San Joaquin		NB	0.61	B	0.52	A	0.61	B	0.53	A
742	MacArthur at San Joaquin		NB	0.57	A	0.88	D	0.57	A	0.89	D
733	Irvine at Mesa Rd		NB/OC	0.67	B	0.98	E	0.69	B	0.99	E
734	Irvine at University/Del Mar		NB/OC	0.65	B	0.75	C	0.67	B	0.75	C
4	SR-55 SB Ramps at Edinger Ave	b	SA	0.56	A	0.57	A	0.58	A	0.58	A
5	Hotel Terrace Dr at Dyer Rd		SA	0.55	A	0.70	B	0.56	A	0.71	C
6	Grand Ave at Dyer Rd		SA	0.58	A	0.78	C	0.62	B	0.80	C
7	SR-55 NB Ramps at Dyer Rd		SA	0.60	A	0.57	A	0.64	B	0.58	A
8	SR-55 SB Ramps at MacArthur Blvd	c	SA	0.62	B	0.60	A	0.62	B	0.60	A
29	Pullman St at Barranca Pkwy		SA	0.47	A	0.67	B	0.53	A	0.71	C
543	Bristol at Segerstrom		SA	0.77	C	0.79	C	0.79	C	0.81	D
544	Bristol St at MacArthur Blvd		SA	0.68	B	0.79	C	0.71	C	0.82	D
718	Bear at SR-73 NB Ramps		SA	0.38	A	0.60	A	0.38	A	0.59	A
719	Flower at Segerstrom		SA	0.69	B	0.78	C	0.70	B	0.79	C
723	Main St at Segerstrom		SA	0.76	C	0.91	E	0.77	C	0.93	E
724	Main St at Alton Ave		SA	0.37	A	0.49	A	0.39	A	0.50	A
725	Main and MacArthur (w/o SR-55)	c	SA	0.63	B	0.74	C	0.66	B	0.77	C
727	Halladay at Dyer Rd		SA	0.56	A	0.69	B	0.58	A	0.70	B
728	Halladay E at Alton Pkwy		SA	0.17	A	0.27	A	0.19	A	0.27	A
729	Halladay W at Alton Pkwy		SA	0.18	A	0.25	A	0.19	A	0.27	A
730	Grand Ave at Warner		SA	0.45	A	0.63	B	0.49	A	0.66	B
731	SR-55 SB Ramps at Grand Ave		SA	0.50	A	0.44	A	0.52	A	0.47	A
3	Newport Ave at Edinger Ave		Tus	0.64	B	0.43	A	0.68	B	0.44	A
14	Walnut Ave at McFadden Ave		Tus	0.36	A	0.44	A	0.37	A	0.44	A
18	Newport Ave at Bryan Ave		Tus	0.62	B	0.91	E	0.63	B	0.91	E
19	Newport Ave at Main St		Tus	0.59	A	0.56	A	0.60	A	0.56	A
20	Newport Ave at El Camino Real		Tus	0.72	C	0.69	B	0.73	C	0.71	C
21	Newport Ave at I-5 NB Ramps		Tus	0.62	B	0.55	A	0.63	B	0.55	A
22	Newport Ave at I-5 SB Ramp/Nisson Rd		Tus	0.50	A	0.61	B	0.51	A	0.62	B
23	Newport Ave at McFadden St		Tus	0.53	A	0.48	A	0.55	A	0.48	A
24	Newport Ave at Walnut Ave		Tus	0.60	A	0.65	B	0.61	B	0.66	B
25	Newport Ave at Sycamore Ave		Tus	0.44	A	0.53	A	0.46	A	0.54	A
27	Del Amo Ave at Edinger Ave		Tus	0.31	A	0.38	A	0.32	A	0.38	A
35	Red Hill Ave at Bryan Ave		Tus	0.59	A	0.77	C	0.60	A	0.77	C
36	Red Hill Ave at El Camino Real		Tus	0.59	A	0.58	A	0.61	B	0.58	A

ID	INTERSECTION	PA36/CMP/SANTA ANA	JURISDICTION	EXISTING CONDITIONS				EXISTING CONDITIONS WITH UPDATE			
				AM		PM		AM		PM	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
37	Red Hill Ave at Nisson Rd		Tus	0.59	A	0.68	B	0.60	A	0.68	B
38	Red Hill Ave at Walnut Ave		Tus	0.68	B	0.80	C	0.69	B	0.82	D
39	Red Hill Ave at Sycamore Ave		Tus	0.62	B	0.57	A	0.64	B	0.58	A
40	Red Hill Ave at Edinger Ave		Tus	0.60	A	0.77	C	0.63	B	0.80	C
55	Browning Ave at Bryan Ave		Tus	0.30	A	0.49	A	0.31	A	0.49	A
56	Browning Ave at El Camino Real		Tus	0.28	A	0.40	A	0.28	A	0.40	A
58	Browning Ave at Walnut Ave		Tus	0.40	A	0.55	A	0.42	A	0.56	A
92	Tustin Ranch Rd at Bryan Ave		Tus	0.64	B	0.73	C	0.65	B	0.74	C
93	Tustin Ranch Rd at El Camino Real		Tus	0.81	D	0.69	B	0.81	D	0.70	B
94	Tustin Ranch Rd at I-5 NB Ramps		Tus	0.60	A	0.57	A	0.60	A	0.57	A
95	Tustin Ranch Rd at I-5 SB Ramps		Tus	0.63	B	0.67	B	0.65	B	0.69	B
96	Tustin Ranch Rd at Walnut Ave		Tus	0.51	A	0.84	D	0.55	A	0.85	D
109	Myford Rd at Bryan Ave		Tus	0.34	A	0.51	A	0.34	A	0.51	A
110	Myford Rd at El Camino Real		Tus	0.24	A	0.47	A	0.24	A	0.47	A
111	Franklin Ave at Walnut Ave		Tus	0.43	A	0.73	C	0.44	A	0.74	C
133	Jamboree Rd at Edinger Ave	b	Tus	0.36	A	0.56	A	0.39	A	0.57	A
135	Jamboree Rd NB Ramps at Warner Ave		Tus	0.40	A	0.05	A	0.40	A	0.08	A
445	Tustin Ranch Rd at Warner Ave North		Tus	0.53	A	0.48	A	0.55	A	0.48	A
446	Tustin Ranch Rd at Warner Ave South		Tus	Not analyzed under existing conditions							
447	Armstrong Ave/Severyns Rd Valencia Ave		Tus	0.29	A	0.28	A	0.29	A	0.28	A
453	Red Hill Ave at Valencia Ave		Tus	0.62	B	0.64	B	0.65	B	0.67	B
454	Tustin Ranch Rd at Valencia Ave		Tus	0.41	A	0.55	A	0.45	A	0.57	A
455	East Connector/Jamboree Plaza at Edinger Ave		Tus	Not analyzed under existing conditions							
456	North Loop Rd at Valencia Ave		Tus								
457	North Loop Rd at Moffett Dr		Tus								
478	Red Hill Ave at I-5 NB Ramps		Tus	0.61	B	0.61	B	0.61	B	0.61	B
479	Red Hill Ave at I-5 SB Ramps		Tus	0.67	B	0.66	B	0.67	B	0.65	B
480	Tustin Ranch Rd/Connector at Edinger Ave		Tus	Not analyzed under existing conditions							
732	SR-55 NB Ramp at Newport Ave		Tus	0.53	A	0.58	A	0.53	A	0.57	A
739	Newport Ave at Mitchell Ave		Tus	0.55	A	0.55	A	0.56	A	0.55	A
740	Red Hill Ave at Mitchell Ave		Tus	0.53	A	0.58	A	0.53	A	0.59	A
743	Newport Ave at Valencia		Tus	0.19	A	0.35	A	0.19	A	0.35	A
745	Tustin Ranch Rd at Park Ave		Tus	0.52	A	0.57	A	0.54	A	0.60	A
746	Kensington Park Dr at Edinger Ave		Tus	0.32	A	0.38	A	0.34	A	0.40	A
747	Kensington Park Dr at Valencia Ave		Tus	0.24	A	0.26	A	0.24	A	0.27	A
748	Armstrong Ave at A St		Tus	Not analyzed under 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 North Loop Rd		Tus								
753	Tustin Ranch Rd at Edinger Ave Connector		Tus								
28	Pullman St at Warner Ave		Tus/SA	0.50	A	0.54	A	0.53	A	0.57	A
41	Red Hill Ave at Warner Ave		Tus/SA	0.57	A	0.66	B	0.66	B	0.68	B
754	Red Hill Ave at Carnegie Ave		Tus/SA	0.40	A	0.68	A	0.47	A	0.73	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 Deficiency Acceptable										
*	Denotes theoretical impact in Existing With Update										

Figure 3.16 – Existing With Update Intersection AM Peak Hour Deficiencies

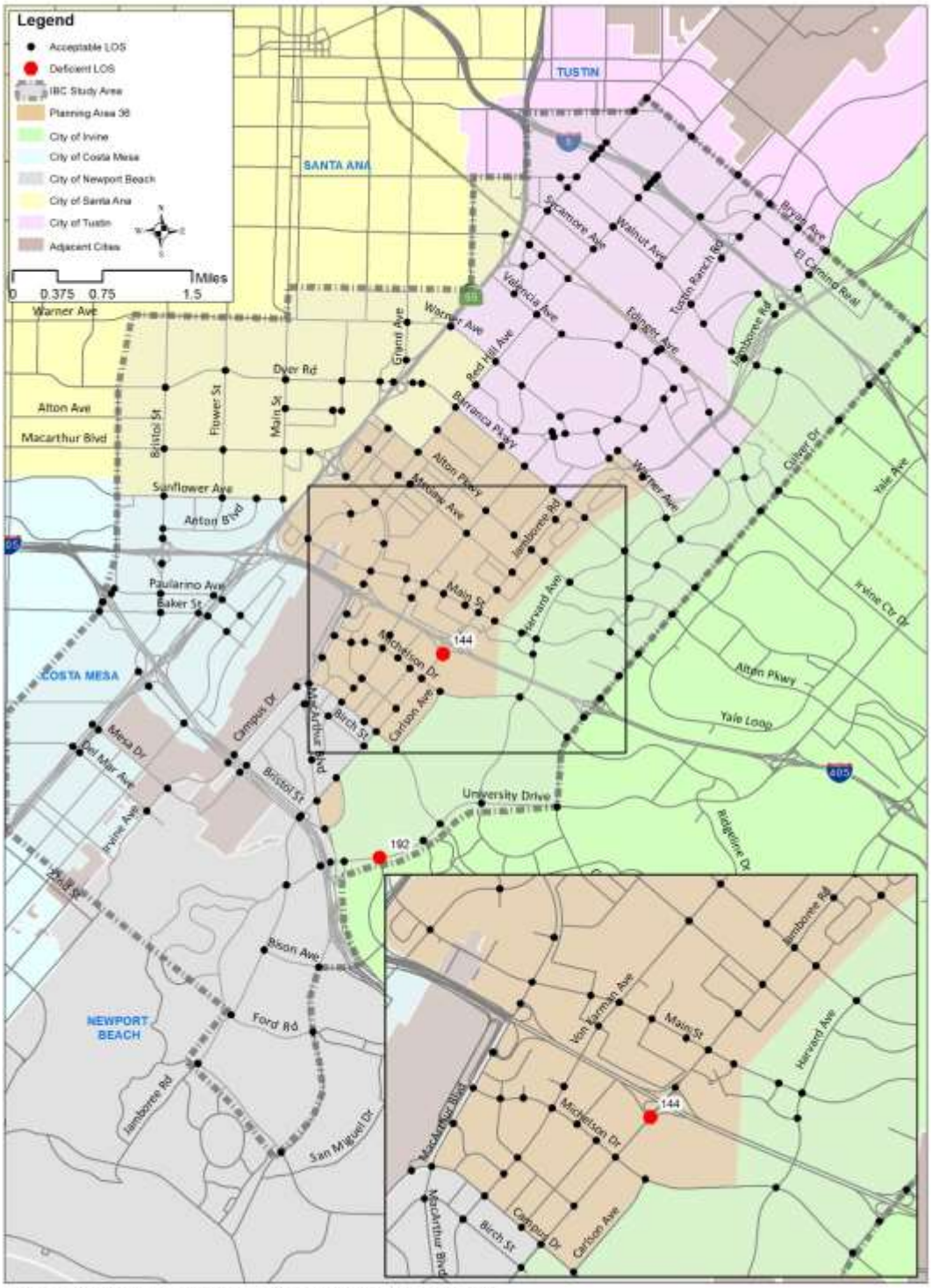
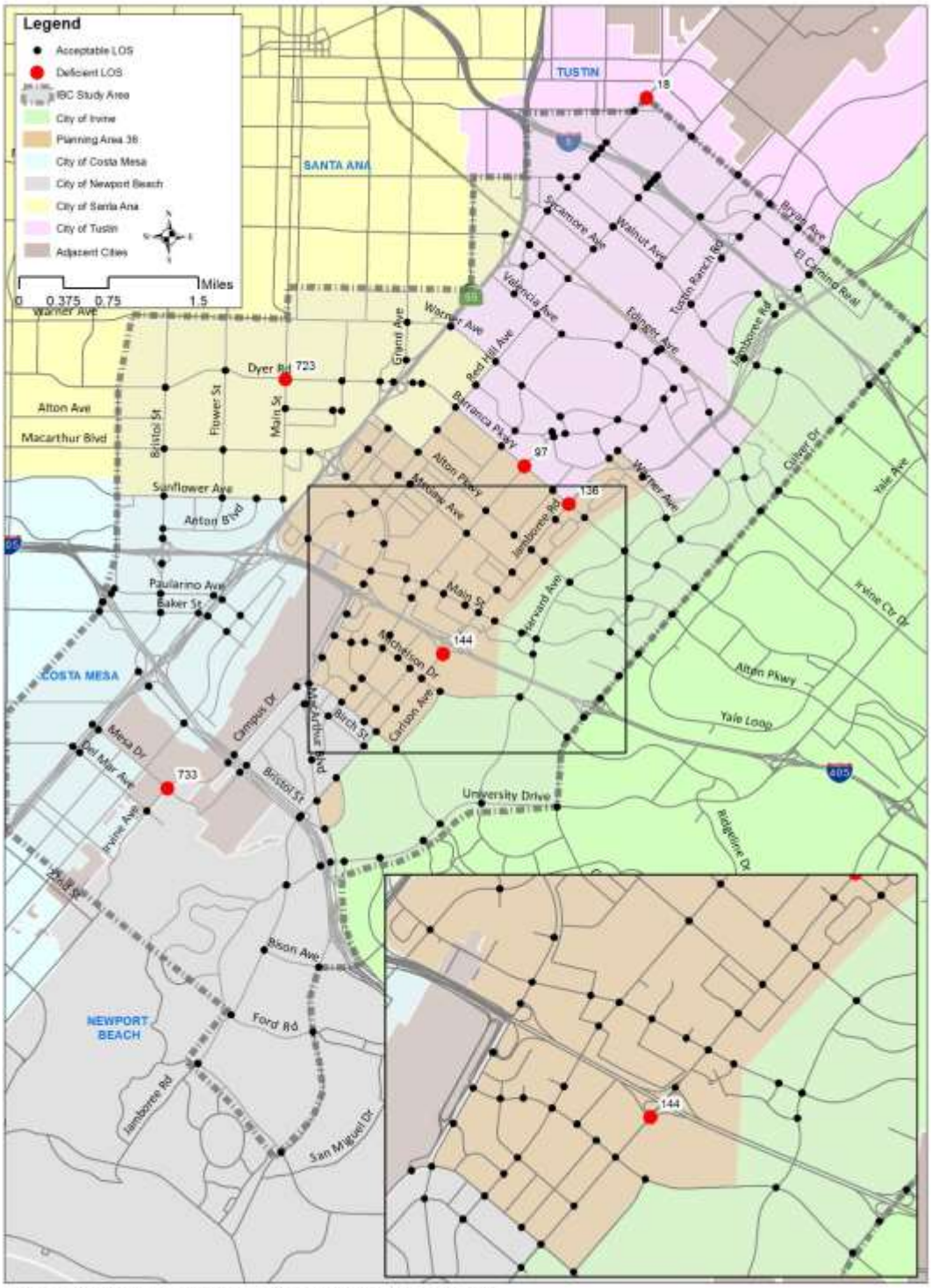


Figure 3.17– Existing With Update Intersection PM Peak Hour Deficiencies



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 2012 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, 24 of the 60 freeway mainline segments are deficient and in the PM peak 14 segments are deficient. The following freeway segments are forecast to operate at a deficient LOS under the Existing With Update scenario:

AM Peak Hour:

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

PM Peak Hour:

- I-5 Southbound between Tustin Ranch Road and Jamboree Road
- I-5 Southbound between Red Hill Avenue and Tustin Ranch Road
- I-5 Southbound North of SR-55
- I-405 Southbound between Jamboree Road and Culver Drive
- SR-55 Southbound between I-405 and Baker Street

- SR-55 Northbound between I-405 and MacArthur Boulevard
- SR-55 Southbound between MacArthur Boulevard and I-405
- SR-55 Southbound between Edinger Avenue and Dyer Road
- SR-55 Southbound between McFadden Street/Sycamore Avenue and Edinger Avenue
- SR-73 Southbound between Birch Street and Jamboree Road
- SR-73 Northbound between Birch Street and Campus Drive
- SR-73 Southbound between Campus Drive and Birch Street
- SR-73 Southbound between SR-55 and Campus Drive
- SR-73 Northbound between SR-55 and Bear Street

*Denotes theoretical impact in Existing With Update

The analysis demonstrates that no additional mainline segments become deficient under the Existing With Update V/C analysis.

Table 3.11 – Existing With Update Peak Hour Freeway Mainline LOS

LOCATION		FREEWAY LANES			EXISTING CONDITIONS						EXISTING CONDITIONS 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	LOS
I-5	Culver Dr to Jamboree Rd	NB	5	10,000	8,230	0.82	D	5,968	0.60	C	8,370	0.84	D			6,084	0.61	C		
		SB	5	10,000	7,880	0.79	D	8,125	0.81	D	8,031	0.80	D			8,052	0.81	D		
	Jamboree Rd to Tustin Ranch Rd	NB	6	12,000	10,018	0.83	D	7,118	0.59	C	10,131	0.84	D			7,274	0.61	C		
		SB	5	10,000	9,477	0.95	**E**	10,098	1.01	**F**	9,651	0.97	**E**			10,081	1.01	**F**		
	Tustin Ranch Rd to Red Hill Ave	NB	5	10,000	10,665	1.07	**F**	7,721	0.77	D	10,762	1.08	**F**			7,797	0.78	D		
		SB	5	10,000	9,688	0.97	**E**	10,402	1.04	**F**	9,921	0.99	**E**	35.8	**E**	10,390	1.04	**F**		
	Red Hill Ave to Newport Ave	NB	5	10,000	9,489	0.95	**E**	7,108	0.71	C	9,573	0.96	**E**			7,186	0.72	D		
		SB	6	12,000	9,263	0.77	D	10,213	0.85	D	9,474	0.79	D			10,158	0.85	D		
	Newport Ave to SR-55	NB	6	12,000	10,888	0.91	**E**	8,304	0.69	C	10,997	0.92	**E**			8,443	0.70	C		
		SB	4	8,000	6,267	0.78	D	6,524	0.82	D	6,423	0.8	D			6,497	0.81	D		
	North of SR-55	NB	5	10,000	10,403	1.04	**F**	7,322	0.73	D	10,529	1.05	**F**			7,425	0.74	D		
		SB	5	10,000	7,973	0.80	D	9,447	0.94	**E**	8,179	0.82	D			9,431	0.94	**E**		
I-405	Culver Dr to Jamboree Rd	NB	5	10,000	10,512	1.05	**F**	7,461	0.75	D	10,631	1.06	**F**			7,438	0.74	D		
		SB	4	8,000	7,651	0.96	**E**	7,542	0.94	**E**	7,571	0.95	**E**			7,680	0.96	**E**		
	Jamboree Rd to MacArthur Blvd	NB	5	10,000	9,142	0.91	**E**	7,885	0.79	D	9,334	0.93	**E**			8,012	0.80	D		
		SB	6	12,000	6,820	0.57	C	6,446	0.54	C	7,014	0.58	C			6,761	0.56	C		
	MacArthur Blvd to SR-55	NB	6	12,000	9,232	0.77	D	9,160	0.76	D	9,454	0.79	D			9,480	0.79	D		
		SB	6	12,000	11,343	0.95	**E**	9,121	0.76	D	11,595	0.97	**E**	34.2	D	9,394	0.78	D		
	SR-55 to Bristol St	NB	4	8,000	5,128	0.64	C	4,583	0.57	C	5,315	0.66	C			4,794	0.60	C		
		SB	4	8,000	7,251	0.91	**E**	5,931	0.74	D	7,412	0.93	**E**			6,078	0.76	D		
	Bristol St to SR-73	NB	5	10,000	7,422	0.74	D	6,448	0.64	C	7,590	0.76	D			6,690	0.67	C		
		SB	4	8,000	7,774	0.97	**E**	5,302	0.66	C	7,878	0.98	**E**			5,394	0.67	C		
SR-55	South of Victoria St	NB	4	8,000	4,188	0.52	C	3,264	0.41	B	4,279	0.53	C			3,263	0.41	B		
		SB	3	6,000	3,188	0.53	C	3,164	0.53	C	3,193	0.53	C			3,185	0.53	C		

LOCATION		FREEWAY LANES			EXISTING CONDITIONS						EXISTING CONDITIONS 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	LOS
	Victoria St to Fair Dr	NB	4	8,000	4,299	0.54	C	3,124	0.39	B	4,308	0.54	C			3,124	0.39	B		
		SB	3	6,000	2,991	0.50	B	3,637	0.61	C	3,008	0.50	B			3,691	0.62	C		
	Fair Dr to SR-73	NB	4	8,000	7,776	0.97	**E**	4,342	0.54	C	7,805	0.98	**E**			4,349	0.54	C		
		SB	4	8,000	4,371	0.55	C	6,114	0.76	D	4,395	0.55	C			6,170	0.77	D		
	SR-73 to Baker St	NB	3	6,000	4,525	0.75	D	3,077	0.51	C	4,551	0.76	D			3,110	0.52	C		
		SB	3	6,000	3,579	0.60	C	5,224	0.87	D	3,617	0.60	C			5,267	0.88	D		
	Baker St to I-405	NB	3	6,000	5,265	0.88	D	2,609	0.43	B	5,290	0.88	D			2,643	0.44	B		
		SB	3	6,000	5,704	0.95	**E**	6,593	1.10	**F**	5,741	0.96	**E**			6,636	1.11	**F**		
	I-405 to MacArthur Blvd	NB	4	8,000	9,415	1.18	**F**	7,901	0.99	**E**	9,603	1.20	**F**			8,083	1.01	**F**		
		SB	4	8,000	7,381	0.92	**E**	7,517	0.94	**E**	7,521	0.94	**E**			7,687	0.96	**E**		
	MacArthur Blvd to Dyer Rd	NB	4	8,000	5,782	0.72	D	5,828	0.73	D	5,949	0.74	D			6,007	0.75	D		
		SB	4	8,000	8,106	1.01	**F**	6,917	0.86	D	8,270	1.03	**F**			7,024	0.88	D		
	Dyer Rd to Edinger Ave	NB	4	8,000	7,385	0.92	**E**	5,812	0.73	D	7,540	0.94	**E**			6,006	0.75	D		
		SB	4	8,000	9,949	1.24	**F**	8,455	1.06	**F**	10,164	1.27	**F**	*		8,536	1.07	F		
	Edinger Ave to McFadden St/ Sycamore Ave	NB	6	12,000	8,588	0.72	D	6,891	0.57	C	8,743	0.73	D			7,093	0.59	C		
		SB	4	8,000	8,563	1.07	**F**	7,397	0.92	**E**	8,798	1.10	**F**	*		7,489	0.94	**E**		
	McFadden St/Sycamore Ave to I-5	NB	3	6,000	4,946	0.82	D	4,120	0.69	C	5,077	0.85	D			4,333	0.72	D		
		SB	4	8,000	6,473	0.81	D	5,622	0.70	C	6,612	0.83	D			5,743	0.72	D		
	North of I-5	NB	3	6,000	3,988	0.66	C	4,244	0.71	C	3,990	0.66	C			4,419	0.74	D		
		SB	3	6,000	4,929	0.82	D	4,491	0.75	D	5,035	0.84	D			4,566	0.76	D		
SR-73	MacArthur Blvd to University Dr	NB	3	6,000	4,429	0.74	D	2,950	0.49	B	4,461	0.74	D			2,982	0.5	B		
		SB	3	6,000	2,862	0.48	B	4,317	0.72	D	2,981	0.50	B			4,320	0.72	D		
	University Dr to Jamboree Rd	NB	3	6,000	6,447	1.07	**F**	5,008	0.83	D	6,479	1.08	**F**			5,041	0.84	D		
		SB	3	6,000	4,160	0.69	C	4,788	0.80	D	4,270	0.71	C			4,786	0.80	D		
	Jamboree Rd to Birch St	NB	4	8,000	6,119	0.76	D	6,024	0.75	D	6,198	0.77	D			6,050	0.76	D		
		SB	3	6,000	5,110	0.85	D	5,507	0.92	**E**	5,240	0.87	D			5,518	0.92	**E**		
	Birch St to Campus Dr	NB	3	6,000	6,119	1.02	**F**	6,024	1.00	**E**	6,173	1.03	**F**			6,059	1.01	**F**		
		SB	3	6,000	6,894	1.15	**F**	6,472	1.08	**F**	7,025	1.17	**F**			6,469	1.08	**F**		
	Campus Dr to SR-55	NB	4	8,000	6,160	0.77	D	6,051	0.76	D	6,293	0.79	D			6,181	0.77	D		
		SB	4	8,000	7,414	0.93	**E**	8,572	1.07	**F**	7,606	0.95	**E**			8,657	1.08	**F**		
	SR-55 to Bear St	NB	3	6,000	3,940	0.66	C	5,643	0.94	**E**	3,975	0.66	C			5,670	0.95	**E**		
		SB	3	6,000	4,447	0.74	D	3,959	0.66	C	4,527	0.75	D			3,988	0.66	C		
	Bear St to I-405	NB	3	6,000	3,706	0.62	C	4,384	0.73	D	3,742	0.62	C			4,386	0.73	D		
		SB	2	4,000	2,980	0.74	D	2,695	0.67	C	3,048	0.76	D			2,712	0.68	C		
SR-261	SR-261 South of El Camino Real	NB	2	4,000	273	0.07	A	2,294	0.57	C	327	0.08	A			2,415	0.60	C		
		SB	2	4,000	2,731	0.68	C	331	0.08	A	2,837	0.71	C			394	0.10	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

Similar to the mainline analysis the Existing With Update scenario is determined by adding the delta between the ITAM Traffic Model 2008 Existing and Existing With Update model forecasts to the existing counts from PeMS. **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 11 of the 98 ramps are forecast to operate at a deficient LOS while in the PM peak 13 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:

- Northbound I-5 Off-Ramp to Jamboree Road
- Southbound I-405 Off-Ramp to Jamboree Road*
- Southbound I-405 Off-Ramp to MacArthur Boulevard*
- Northbound I-405 Off-Ramp to MacArthur Boulevard*
- Northbound SR-55 Direct On-Ramp from Victoria Street
- Southbound SR-55 Off-Ramp to Paularino Avenue
- Northbound SR-55 On-Ramp from Paularino Avenue
- Southbound SR-73 Off-Ramp to MacArthur Boulevard
- Northbound SR-73 On-Ramp s/o University Drive to MacArthur Boulevard
  Northbound SR-73 On-Ramp from Jamboree Road
- Southbound SR-73 Off-Ramp to Campus Drive*

PM Peak Hour:

- Southbound I-405 Off-Ramp to Jamboree Road*
- Northbound I-405 Loop On-Ramp from Jamboree Road*
- Northbound I-405 Off-Ramp to Bristol Street
- Northbound SR-55 Direct On-Ramp from Victoria Street
- Northbound SR-55 On-Ramp from Paularino Avenue
- Northbound SR-55 Direct On-Ramp from MacArthur Boulevard*
- Northbound SR-55 On-Ramp from Edinger Avenue
- Northbound SR-73 On-Ramp from Bison Avenue
- Southbound SR-73 Off-Ramp to MacArthur Boulevard
- Northbound SR-73 On-Ramp s/o University Drive to MacArthur Boulevard
- Northbound SR-73 Off-Ramp to Birch Street
- Northbound SR-73 Off-Ramp to SR-73 at Bear
- Northbound SR-261 Northbound Off-Ramp to Jamboree Road*

.

*Denotes theoretical impact in Existing With Update

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				
			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	287	0.32	B	348	0.39	B	282	0.31	B			354	0.39	B		
		SB On Loop	1	1,000	571	0.63	C	233	0.26	A	556	0.62	C			230	0.26	A		
		SB Off	2	500	840	0.37	B	1,812	0.81	D	849	0.38	B			1,827	0.81	D		
		NB On Loop	1	1,000	1,094	0.73	D	737	0.49	B	1,100	0.73	D			756	0.50	B		
		NB On Direct	1	1,000	597	0.66	C	173	0.19	A	588	0.65	C			166	0.18	A		
		NB Off	1	500	335	0.22	A	687	0.46	B	333	0.22	A			683	0.46	B		
	Jamboree Rd	SB On Direct	1	1,000	340	0.23	A	1,263	0.84	D	339	0.23	A			1,280	0.85	D		
		SB On Loop	1	1,000	803	0.54	C	439	0.29	A	800	0.53	C			433	0.29	A		
		SB Off	2	500	1,158	0.39	B	1,285	0.43	B	1,178	0.39	B			1,313	0.44	B		
		NB On Loop	1	1,000	511	0.47	B	518	0.48	B	532	0.49	B			534	0.49	B		
		NB On Direct	1	1,000	589	0.55	C	368	0.34	B	593	0.55	C			383	0.36	B		
		NB Off	1	500	1,419	0.95	**E**	1,330	0.89	D	1,421	0.95	**E**			1,330	0.89	D		
	Tustin Ranch Rd	SB On	1	1,000	613	0.41	B	570	0.38	B	611	0.41	B			570	0.38	B		
		NB On	2	1,000	1,088	0.60	C	970	0.54	C	1,076	0.60	C			995	0.55	C		
		NB Off	1	500	441	0.29	A	367	0.24	A	438	0.29	A			356	0.24	A		
		SB Off	2	500	1,068	0.47	B	1,017	0.45	B	1,124	0.50	B			1,022	0.45	B		
	Red Hill Ave	SB On	1	1,000	874	0.58	C	765	0.51	C	875	0.58	C			778	0.52	C		
		NB On	1	1,000	803	0.54	C	714	0.48	B	798	0.53	C			712	0.47	B		
		NB Off	1	500	570	0.38	B	805	0.54	C	579	0.39	B			801	0.53	C		
		SB Off	1	500	449	0.30	A	576	0.38	B	442	0.29	A			571	0.38	B		
	Newport Blvd	SB Off	1	500	479	0.32	B	894	0.60	C	476	0.32	B			885	0.59	C		
		NB On	1	1,000	930	0.62	C	843	0.56	C	916	0.61	C			843	0.56	C		
I-405	Culver Dr	SB On Direct	1	1,000	370	0.25	A	852	0.57	C	469	0.31	B			898	0.60	C		
		SB On Loop	1	1,000	382	0.42	B	323	0.36	B	391	0.43	B			345	0.38	B		
		SB Off	2	500	1,067	0.36	B	1,503	0.50	B	1,060	0.35	B			1,560	0.52	C		
		NB On Loop	1	1,000	740	0.49	B	291	0.19	A	803	0.54	C			303	0.20	A		
		NB On Direct	1	1,000	1,249	0.83	D	426	0.28	A	1,270	0.85	D			431	0.29	A		
		NB Off	2	500	688	0.31	B	786	0.35	B	752	0.33	B			845	0.38	B		
	Jamboree Rd	SB On Direct	2	1,000	339	0.19	A	1,249	0.69	C	481	0.27	A			1,380	0.77	D		
		SB On Loop	1	1,000	296	0.20	A	552	0.37	B	383	0.26	A			591	0.39	B		
		SB Off	2	500	2,747	1.22	**F**	1,792	0.80	D	3,264	1.45	**F**	*		2,199	0.98	**E**	16.4[1]	B
		NB On Loop	1	1,000	548	0.37	B	1,221	0.81	D	655	0.44	B			1,458	0.97	**E**	29.3	D
		NB On Direct	2	1,000	1,217	0.68	C	870	0.48	B	1,291	0.72	D			911	0.51	C		
		NB Off	2	500	1,774	0.79	D	1,373	0.61	C	1,921	0.85	D			1,501	0.67	C		
	MacArthur Blvd	SB Direct On	2	1,000	665	0.37	B	1,184	0.66	C	714	0.40	B			1,300	0.72	D		
		SB Off	2	500	2,287	1.02	**F**	1,027	0.46	B	2,480	1.10	**F**	*		1,097	0.49	B		
		NB On	1	1,000	426	0.28	A	818	0.55	C	551	0.37	B			1,083	0.72	D		
		NB Off	1	500	1,943	1.30	**F**	680	0.45	B	2,072	1.38	**F**	*		767	0.51	C		
	Bristol St	SB Loop On	1	1,000	980	0.65	C	1,023	0.68	C	999	0.67	C			1,053	0.70	C		
		SB Off	2	500	994	0.44	B	945	0.42	B	968	0.43	B			924	0.41	B		
		NB On Loop	1	1,000	158	0.18	A	227	0.25	A	149	0.17	A			224	0.25	A		
		NB On Direct	1	1,000	301	0.20	A	723	0.48	B	297	0.20	A			731	0.49	B		
		NB Off	1	500	1,001	0.67	C	1,576	1.05	**F**	1,010	0.67	C			1,583	1.06	**F**		
SR-55	Victoria St	SB Direct On	1	1,000	105	0.12	A	110	0.12	A	105	0.12	A			110	0.12	A		
		SB Off	2	500	1,355	0.60	C	1,409	0.63	C	1,367	0.61	C			1,442	0.64	C		
		NB Direct On	1	1,000	1,428	0.95	**E**	1,090	0.73	D	1,346	0.90	**E**			1,091	0.73	D		
		NB Off	1	500	79	0.05	A	60	0.04	A	79	0.05	A			60	0.04	A		
	Fair Dr	SB Direct On	1	1,000	214	0.24	A	222	0.25	A	214	0.24	A			222	0.25	A		
		SB Off	2	500	1,093	0.49	B	1,137	0.51	C	1,099	0.49	B			1,139	0.51	C		
		NB Direct On	1	1,000	1,163	0.78	D	888	0.59	C	1,180	0.79	D			894	0.60	C		
		NB Off	1	500	238	0.16	A	182	0.12	A	235	0.16	A			182	0.12	A		

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		EXISTING CONDITIONS						EXISTING CONDITIONS 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
	Baker St	SB On	1	1,000	509	0.34	B	1,101	0.73	D	509	0.34	B			1,111	0.74	D		
		SB Off	1	500	814	0.54	C	1,000	0.67	C	803	0.54	C			1,028	0.69	C		
		NB Off	1	500	1,084	0.72	D	911	0.61	C	1,089	0.73	D			927	0.62	C		
	Paularino Ave	SB Off	1	500	1,396	0.93	**E**	1,090	0.73	D	1,395	0.93	**E**			1,111	0.74	D		
		NB On	1	1,000	1,193	1.33	**F**	1,101	1.22	**F**	1,195	1.33	**F**			1,094	1.22	**F**		
	MacArthur Blvd	SB On Direct	1	1,000	869	0.58	C	834	0.56	C	845	0.56	C			840	0.56	C		
		SB On Loop	1	1,000	147	0.16	A	647	0.72	D	170	0.19	A			708	0.79	D		
		SB Off	2	500	1,726	0.77	D	994	0.44	B	1,743	0.77	D			1,015	0.45	B		
		NB On Loop	1	1,000	744	0.50	B	620	0.41	B	732	0.49	B			606	0.40	B		
		NB On Direct	1	1,000	219	0.24	A	927	1.03	**F**	312	0.35	B			965	1.07	**F**	*	
		NB Off	2	500	1,555	0.69	C	1,035	0.46	B	1,646	0.73	D			1,087	0.48	B		
SR-55 Continued	Dyer Rd	SB On	1	1,000	793	0.53	C	998	0.67	C	791	0.53	C			1,019	0.68	C		
		SB Off Loop	1	500	781	0.52	C	511	0.34	B	787	0.52	C			523	0.35	B		
		SB Off to Grand	1	500	735	0.49	B	495	0.33	B	731	0.49	B			487	0.32	B		
		NB On Direct	1	1,000	292	0.19	A	874	0.58	C	347	0.23	A			886	0.59	C		
		NB On Loop	1	1,000	638	0.71	C	682	0.76	D	629	0.70	C			670	0.74	D		
		NB Off	1	500	1,223	0.82	D	281	0.19	A	1,270	0.85	D			289	0.19	A		
	Edinger Ave	SB On	1	1,000	689	0.46	B	739	0.49	B	702	0.47	B			744	0.50	B		
		SB Off	1	500	1,118	0.75	D	578	0.39	B	1,150	0.77	D			592	0.39	B		
		NB On	1	1,000	915	0.61	C	1,463	0.98	**E**	944	0.63	C			1,493	1.00	**E**		
		NB Off	1	500	502	0.33	B	101	0.07	A	532	0.35	B			122	0.08	A		
	McFadden Ave	SB On	1	1,000	802	0.53	C	363	0.24	A	831	0.55	C			362	0.24	A		
		SB Off	2	500	835	0.37	B	961	0.43	B	833	0.37	B			962	0.43	B		
		NB On	1	1,000	647	0.43	B	776	0.52	C	626	0.42	B			791	0.53	C		
		NB Off	1	500	212	0.14	A	160	0.11	A	216	0.14	A			164	0.11	A		
SR-73	Bison Ave	SB On	1	1,000	83	0.06	A	369	0.25	A	82	0.05	A			360	0.24	A		
		SB Off	1	500	880	0.59	C	605	0.40	B	888	0.59	C			613	0.41	B		
		NB On	1	1,000	705	0.78	D	891	0.99	**E**	721	0.80	D			895	0.99	**E**		
	MacArthur Blvd	SB On	1	1,000	103	0.07	A	1,277	0.85	D	115	0.08	A			1,341	0.89	D		
		SB Off	1	500	1,640	1.09	**F**	1,612	1.07	**F**	1,628	1.09	**F**			1,617	1.08	**F**		
		NB On s/o University Dr	1	1,000	1,681	1.87	**F**	1,789	1.99	**F**	1,683	1.87	**F**			1,797	2.00	**F**		
		NB On n/o University Dr	1	1,000	451	0.30	A	773	0.52	C	503	0.34	B			785	0.52	C		
	University Dr	SB Off	1	500	973	0.65	C	616	0.41	B	993	0.66	C			628	0.42	B		
	Jamboree Rd	SB On	1	1,000	863	0.58	C	1,115	0.74	D	872	0.58	C			1,119	0.75	D		
		SB Off	2	500	1,784	0.79	D	965	0.43	B	1,784	0.79	D			951	0.42	B		
		NB On	1	1,000	1,048	1.16	**F**	597	0.66	C	1,043	1.16	**F**			578	0.64	C		
	Birch St	NB Off	1	500	722	0.48	B	1,950	1.30	**F**	747	0.50	B			1,942	1.29	**F**		
	Campus Dr	SB Off	2	500	2,091	0.93	**E**	1,114	0.50	B	2,152	0.96	**E**	24.9	C	1,202	0.53	C		
		NB On	1	1,000	872	0.58	C	1,984	0.72	D	951	0.63	C			2,079	0.79	D		
	SR-73 at Bear	SB On	1	1,000	780	0.52	C	720	0.48	B	785	0.52	C			723	0.48	B		
		SB Off	1	500	313	0.21	A	289	0.19	A	305	0.20	A			279	0.19	A		
		NB Off	1	500	628	0.42	B	1,461	0.97	**E**	627	0.42	B			1,471	0.98	**E**		
		NB On	1	1,000	249	0.17	A	472	0.31	B	248	0.17	A			457	0.30	A		
SR-261	Jamboree Rd	SB On	2	1,000	1,870	0.62	C	1,077	0.36	B	1,956	0.65	C			1,181	0.39	B		
		NB Off	2	250	816	0.36	B	2,168	0.96	**E**	906	0.40	B			2,282	1.01	**F**	*	
	Walnut Ave	NB On	1	1,000	81	0.05	A	362	0.24	A	119	0.08	A			389	0.26	A		
		SB Off	1	500	1,030	0.69	C	503	0.34	B	1,060	0.71	C			507	0.34	B		

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.

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 intersections, in the Existing With Update condition there is one additional intersection In the AM peak hour (#144 Jamboree Road at I-405 SB Ramps in the City of Irvine) and one additional intersection in the PM peak hour (#97 Von Karman Avenue/Tustin Ranch Road at Barranca Parkway in the Cities of Irvine and Tustin) that operate deficiently. For arterial segments, three additional segments fail under daily conditions (Jamboree Road from Main Street to I-405 NB Ramps in the City of Irvine, Dyer Road from SR-55 SB to SR-55 NB in the City of Santa Ana, and Edinger Avenue west of Newport Avenue in the City of Tustin). For freeway mainlines no additional segments and two additional ramps become deficient under the With Update scenario in the PM peak hour. Impacts and improvement strategies are discussed in **Chapter 6**.

4.0 2020 FUTURE CONDITIONS

4.1 Introduction

The City of Irvine's traffic model, the Irvine Traffic Analysis Model (ITAM) Version 12.4 was used to forecast the traffic data for the various horizon years and scenarios evaluated within the study area. In addition, key intersections from the surrounding cities, which are within the study area, were coded into the model to provide an appropriate assessment of the potential impacts of the proposed General Plan Amendment and Zoning Code to surrounding jurisdictions. The following 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 2020 conditions.

As part of the IBC Vision plan, the 1,793 known pending residential units currently in process and an associated 337 density bonus units would be expected to be completed by 2020. The remaining 60 units under the existing General Plan cap and associated 306 potential density bonus units (or non-residential equivalent thereof) are expected to be completed by Vision Plan buildout or the Post-2035 timeframe. Each proposed scenario evaluates impacts to the circulation system based on the land use assumptions. For the interim year 2020 scenarios, only those circulation improvements that are 100% funded and expected to be constructed by 2020 have been assumed in the baseline. Unfunded or partially funded improvements in the IBC are not included in the traffic study. The assumed 2020 circulation system is consistent for both of the 2020 scenarios.

4.2 2020 Cumulative Baseline

Under the 2020 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 2020 circulation system is consistent for both the Baseline and With Update scenarios. In Year 2020, 275 arterial segments, 224 intersections, 60 freeway mainline segments, and 98 freeway ramps were analyzed as part of the IBC Vision Plan Five-Year Traffic Study Update. The 2020 Cumulative Baseline scenario analyzes the effects on the circulation system of future forecast growth in the study area, without the proposed update.

Table 4.1 – 2020 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)
2015 Baseline	7,060	1,384	2,322	26,639	13,934	379	474
2015 With Update	16,795	1,690	2,653	34,286	12,339	549	1049
2020 Cumulative Baseline	7,060	1,384	2,322	26,639	13,934	379	474
Percent Growth (2020 Baseline vs. 2015 Baseline)	0%	0%	0%	0%	0%	0%	0%

Source: City of Irvine

Table 4.2 – 2020 Cumulative Baseline Trip Generation

SCENARIO	AM-OUT	AM-IN	PM-OUT	PM-IN	ADT
2015 Baseline	12,209	29,499	27,867	18,342	529,306
2015 With Update	18,089	36,120	35,014	24,855	700,506
2020 Baseline	12,172	29,501	27,877	18,307	529,306
Percent Growth (2020 Baseline vs. 2015 Baseline)	-0.3%	0.0%	0.0%	-0.2%	0.0%

Source: ITAM

4.3 2020 Cumulative Baseline Land Use and Trip Generation

The 2020 Baseline scenario assumes existing on-the-ground land uses within the IBC area and estimated 2020 land use growth outside the IBC area. **Table 4.1** displays the 2020 Cumulative Baseline land use assumed in the model for the IBC. **Table 4.2** displays the Trip Generation table from ITAM for the 2020 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 2020, without the plan update. Following the Baseline analysis, impacts can be determined through a comparison with the With Update scenario.

4.4 2020 Cumulative Baseline Daily Arterial Segment Analysis

Under the 2020 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 2020 Cumulative Baseline and With Update scenarios is provided under 2020 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 – 2020 Cumulative Baseline Daily Arterial LOS

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	YEAR 2020 ARTERIAL SEGMENT CLASSIFICATIONS	2020 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	4D	15,200	0.40	A
2721	Baker St	Bear St to Bristol St		CM	4D	23,900	0.63	B
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	4D	29,100	0.77	C
1294	Baker St	SR 55 SB to SR 55 NB		CM	4D	22,500	0.59	A
1468	Baker St	SR 55 NB to Red Hill Ave		CM	4D	13,100	0.35	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	2D	4,900	0.27	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	29,900	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	40,300	0.72	C

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	YEAR 2020 ARTERIAL SEGMENT CLASSIFICATIONS	2020 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	39,900	0.71	C
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	41,900	0.75	C
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	9D+1 AUX	59,400	0.70	B
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	59,900	0.80	C
2745	Bristol St	I-405 SB Ramps to Paularino Ave		CM	6D	42,800	0.76	C
2732	Bristol St	Paularino Ave to Baker St		CM	6D	34,400	0.61	B
2730	Bristol St	Baker St to SR 55		CM	6D	26,000	0.46	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	18,500	0.33	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	17,700	0.47	A
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	2U	7,000	0.56	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	11,400	0.30	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	8,400	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	24,700	0.44	A
2785	Mesa Dr	Newport Blvd SB to Newport Blvd NB		CM	2U	6,400	0.51	A
2783	Mesa Dr	Newport Blvd NB to Santa Ana Ave		CM	2U	7,300	0.58	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	18,800	0.50	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	15,800	0.42	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	11,300	0.30	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	4,400	0.12	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	4D	22,100	0.58	A
1340	Red Hill Ave	Paularino Ave to Baker St		CM	4D	19,100	0.50	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	16,300	0.43	A
41	Santa Ana Ave	Mesa Dr to Bristol St		CM	4D	11,300	0.30	A
2769	University Dr	Santa Ana Ave to Irvine Ave		CM	2U	6,700	0.54	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	6,500	0.20	A
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	15,600	0.49	A
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	17,200	0.54	A
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	20,300	0.38	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	20,000	0.37	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	17,100	0.32	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	18,900	0.35	A
783	Alton Pkwy	San Marino to Culver Dr		Irv	6D	26,200	0.49	A
735	Barranca Pkwy (Dyer Rd)	Pullman to Red Hill Ave		Irv	6D	31,300	0.58	A
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	6D	31,800	0.59	A
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	34,600	0.55	A
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	35,500	0.56	A
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	30,200	0.56	A
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	25,200	0.47	A
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	23,800	0.44	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	25,600	0.47	A
748	Barranca Pkwy	Santa Rosa to Culver Dr		Irv	6D	27,000	0.50	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	21,700	0.68	B
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	22,000	0.69	B
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	21,500	0.67	B
540	Bryan Ave	Rubicon to Culver		Irv	4D	22,600	0.71	B
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	14,500	0.45	A
871	Campus Dr	Von Karman Ave to Teller Ave	a	Irv	4D	11,600	0.36	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	YEAR 2020 ARTERIAL SEGMENT CLASSIFICATIONS	2020 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
872	Campus Dr	Teller Ave to Jamboree Rd	a	Irv	4D	11,400	0.36	A
877	Campus Dr	Jamboree Rd to Carlson Ave	a	Irv	4D	19,600	0.61	B
879	Campus Dr	Carlson Ave to University		Irv	2U	18,700	1.44	**F**
166	Carlson Ave	Michelson Dr to Campus Dr	a	Irv	4D	8,600	0.27	A
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps		Irv	7D	61,600	0.98	**E**
213	Culver Dr	I-5 SB Ramps to Scottsdale Dr		Irv	6D	53,800	1.00	**E**
214	Culver Dr	Scottsdale Dr to Walnut Ave		Irv	6D	46,600	0.86	D
215	Culver Dr	Walnut Ave to Deerfield Ave		Irv	6D	43,000	0.80	C
216	Culver Dr	Deerfield Ave to Irvine Center Dr		Irv	Maj6D+ 1AUX	42,900	0.79	C
217	Culver Dr	Irvine Center Dr to Warner Ave		Irv	6D	45,100	0.84	D
218	Culver Dr	Warner Ave to Barranca Pkwy		Irv	6D	43,500	0.81	C
219	Culver Dr	Barranca Pkwy to Alton Pkwy		Irv	6D	49,500	0.92	**E**
220	Culver Dr	Alton Pkwy to Main St		Irv	6D	47,600	0.88	D
221	Culver Dr	Main St to San Leandro		Irv	6D	50,700	0.94	**E**
222	Culver Dr	San Leandro to I-405 NB On-Ramp		Irv	6D	50,500	0.94	**E**
224	Culver Dr	I-405 SB Ramps to Michelson Dr		Irv	6D	53,200	0.99	**E**
225	Culver Dr	Michelson Dr to Sandburg Way		Irv	6D	39,400	0.73	C
226	Culver Dr	Sandburg Way to University Dr		Irv	6D	35,900	0.67	B
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	22,400	0.70	B
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,200	0.19	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	2U	8,400	0.65	B
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	2U	9,900	0.76	C
171	Harvard Ave	Deerfield Ave to Irvine Center Dr		Irv	3D	9,900	0.40	A
172	Harvard Ave	Irvine Center Dr to Paseo Westpark		Irv	4D	11,000	0.34	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	10,500	0.33	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	14,700	0.46	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	18,700	0.58	A
2829	Harvard Ave	San Juan to San Leon		Irv	4D	17,600	0.55	A
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	18,500	0.58	A
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	22,300	0.70	B
180	Harvard Ave	San Marino to Main St		Irv	4D	22,400	0.70	B
181	Harvard Ave	Main St to Coronado		Irv	4D	23,000	0.72	C
182	Harvard Ave	Coronado to Michelson Dr		Irv	4D	23,800	0.74	C
183	Harvard Ave	Michelson Dr to University Dr		Irv	2U	17,600	1.35	**F**
675	Irvine Center Dr	Harvard Ave to Hearthstone	b	Irv	6D	25,900	0.48	A
676	Irvine Center Dr	Hearthstone to Culver Dr	b	Irv	6D	26,100	0.48	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	48,500	0.77	C
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 Dr	b	Irv	8D	51,400	0.71	C
133	Jamboree Rd	Michelle Dr to Walnut Ave	b	Irv	5D	51,400	1.20	**F**
135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rd)	b	Irv	Exp8	59,000	0.33	A
136	Jamboree Rd	Edinger Ave to Warner Ave	b	Irv	Exp8	74,200	0.42	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	62,200	0.35	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	52,700	0.73	C
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	56,300	0.78	C
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	60,800	0.84	D
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	54,900	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	69,800	0.97	E
148	Jamboree Rd	I-405 SB Ramps to Michelson Dr	a,b	Irv	Maj8D+ 2AUX	76,500	1.06	**F**

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	YEAR 2020 ARTERIAL SEGMENT CLASSIFICATIONS	2020 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
149	Jamboree Rd	Michelson Dr to Dupont Dr	a,b	Irv	7D	53,600	0.85	D
150	Jamboree Rd	Dupont Dr to Campus Dr	a,b	Irv	7D	45,200	0.72	C
151	Jamboree Rd	Campus Dr to Birch St	b	Irv	6D	44,800	0.83	D
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	44,600	0.71	B
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	7D	37,100	0.59	A
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	37,700	0.70	B
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	7D	37,900	0.60	A
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	24,000	0.38	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	24,000	0.38	A
60	MacArthur Blvd	Main St to I-405 NB Ramps	a	Irv	Maj8D+ 2AUX	51,100	0.71	C
62	MacArthur Blvd	I-405 SB Ramps to Michelson Dr	a	Irv	Maj8D+ 1AUX	56,800	0.79	C
63	MacArthur Blvd	Michelson Dr to Douglass	a	Irv	8D	38,800	0.54	A
64	MacArthur Blvd	Douglas to Campus Dr		Irv	8D	38,700	0.54	A
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	45,800	0.85	D
917	MacArthur Blvd	Fairchild Rd to University Dr	b	Irv	6D	42,500	0.79	C
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	24,600	0.46	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	24,900	0.46	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	25,000	0.46	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	32,100	0.51	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	32,800	0.61	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	23,900	0.44	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+ 1AUX	23,300	0.43	A
825	Main St	Veneto to Harvard Ave		Irv	6D	23,800	0.44	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	13,200	0.41	A
827	Main St	Paseo Westpark to Culver Dr		Irv	4D	13,000	0.41	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	7,000	0.22	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	8,600	0.27	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	7,800	0.24	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	2,000	0.06	A
840	Michelson Dr	MacArthur Blvd to Dupont Dr	a	Irv	5D	20,200	0.47	A
843	Michelson Dr	Bixby to Von Karman Ave	a	Irv	4D	12,300	0.38	A
844	Michelson Dr	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	19,800	0.62	B
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	22,300	0.41	A
847	Michelson Dr	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	21,100	0.66	B
848	Michelson Dr	Riparian View to Harvard Ave		Irv	4D	21,700	0.68	B
1346	Michelson Dr	Harvard Ave to Parkside Dr		Irv	4D	17,300	0.54	A
850	Michelson Dr	Parkside Dr to Culver Dr		Irv	4D	17,200	0.54	A
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	28,300	0.52	A
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	29,700	0.55	A
33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	31,300	0.58	A
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	39,700	0.74	C
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	4D	20,100	0.63	B
38	Red Hill Ave	Skypark to Main St	a	Irv	4D	16,500	0.52	A
189	University Dr	MacArthur Blvd to California Ave		Irv	4D	26,600	0.83	D
188	University Dr	California Ave to Mesa Rd		Irv	4D	32,300	1.01	**F**
187	University Dr	Mesa Rd to Campus Dr		Irv	4D	34,000	1.06	**F**
880	University Dr	Campus Dr to Harvard Ave		Irv	6D	29,100	0.54	A
881	University Dr	Harvard Ave to San Joaquin Hills Rd		Irv	6D	26,400	0.49	A
882	University Dr	San Joaquin Hills Rd to Culver Dr		Irv	6D	26,300	0.49	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	YEAR 2020 ARTERIAL SEGMENT CLASSIFICATIONS	2020 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	27,400	0.86	D
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	24,600	0.77	C
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	24,700	0.77	C
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	24,400	0.76	C
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	25,800	0.81	C
107	Von Karman Ave	Quartz to Michelson Dr	a	Irv	Prim4D+ 1AUX	22,500	0.70	B
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	16,600	0.52	A
111	Von Karman Ave	Martin to Campus Dr	a	Irv	4D	16,800	0.53	A
594	Walnut Ave	Myford to Jamboree SB Ramp		Irv	Prim4D+ 1AUX	21,100	0.66	B
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+ 1AUX	19,900	0.37	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+ 1AUX	20,000	0.47	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	18,500	0.58	A
597	Walnut Ave	Mall St to Culver Dr		Irv	4D	18,600	0.58	A
728	Warner Ave	Construction North to Harvard Ave		Irv	4D	15,800	0.49	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	11,400	0.36	A
732	Warner Ave	Santa Ynez to Culver Dr		Irv	4D	10,500	0.33	A
1223	Birch St	Mesa Dr to Bristol St SB		NB	4D	13,700	0.34	A
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	15,900	0.40	A
874	Birch St	East of MacArthur Blvd		NB	4D	8,700	0.22	A
69	Birch St	West of MacArthur Blvd		NB	4D	14,400	0.36	A
875	Birch St	East of Von Karman Ave		NB	4D	5,500	0.14	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	7,400	0.13	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	13,600	0.34	A
920	Bristol St SB	Red Hill Ave to Campus Dr		NB	2D	13,800	0.77	C
1310	Bristol St NB	Campus Dr to Red Hill Ave		NB	3D	13,600	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	38,400	0.96	**E**
1580	Bristol St NB	West of Jamboree Rd		NB	3D	17,800	0.61	B
66	Campus Dr	Bristol St NB to MacArthur Blvd		NB	6D	29,700	0.51	A
1778	Ford Rd	Jamboree Rd to MacArthur Blvd		NB	4D	10,700	0.27	A
1304	Irvine Ave	Bristol St NB to Bristol St SB		NB	6D	33,900	0.58	A
67	Irvine Ave	Bristol St SB to Mesa Dr		NB	6D	33,000	0.57	A
2768	Irvine Ave	South of University Dr		NB	4D	30,400	0.76	C
156	Jamboree Rd	South of MacArthur Blvd		NB	6D	38,900	0.67	B
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	6D	49,000	0.85	D
157	Jamboree Rd	South of Bristol St		NB	8D	55,400	0.82	D
159	Jamboree Rd	University Dr to Bison Ave		NB	6D	45,800	0.79	C
1777	Jamboree Rd	Bison Ave to Ford Rd		NB	6D	34,200	0.59	A
73	MacArthur Blvd	Campus Dr to Birch St		NB	8D	20,200	0.30	A
75	MacArthur Blvd	South of Birch St		NB	6D	23,000	0.40	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	22,100	0.38	A
953	MacArthur Blvd	University Dr to Bison Ave	b	NB	6D	69,300	1.20	**F**
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	78,200	1.15	**F**
2767	University Dr	East of Irvine Ave		NB	2U	4,500	0.45	A
1774	University Dr	Jamboree Rd to MacArthur Blvd		NB	5D	13,100	0.27	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	10,500	0.26	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	36,700	0.65	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	YEAR 2020 ARTERIAL SEGMENT CLASSIFICATIONS	2020 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	50,200	0.89	D
734	Dyer Rd	SR-55 NB to Pullman St		SA	6D	47,400	0.84	D
2764	Grand Ave	Warner Ave to Hotel Terrace Dr		SA	6D	24,200	0.43	A
2806	Grand Ave	Hotel Terrace Dr to SR-55 NB		SA	6D	24,000	0.43	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	2U	3,500	0.28	A
2822	Halladay St	Alton Ave to McGaw Ave(Columbine)		SA	2U	1,900	0.15	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	34,700	0.62	B
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	39,500	0.70	B
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	28,400	0.50	A
2826	Main St	Alton Ave to McGaw Ave(Columbine)		SA	6D	27,200	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	0.41	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	22,900	0.61	B
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	27,200	0.48	A
2761	Sunflower Ave	Bristol St to Flower St		SA/CM	6D	22,600	0.40	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/CM	6D	18,500	0.33	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/CM	6D	24,700	0.44	A
1198	Browning Ave	Walnut Ave to I-5		Tus	2U	5,300	0.42	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	17,000	0.68	B
535	Bryan Ave	Red Hill Ave to Browning		Tus	4D	17,200	0.46	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	17,400	0.46	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	20,100	0.54	A
44	Edinger Ave	West of Newport Ave	b	Tus	6D	41,100	0.73	C
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	28,600	0.51	A
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	22,800	0.41	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4D	13,300	0.36	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	2D	10,800	0.60	A
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4D	10,400	0.28	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	17,400	0.46	A
672	Irvine Center Dr (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	28,100	0.50	A
674	Irvine Center Dr	Jamboree Rd to Harvard Ave	b	Tus	6D	27,200	0.48	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	5,000	0.40	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	43,200	0.77	C
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	37,800	0.67	B
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	34,100	0.61	A
49	Newport Ave	North of Sycamore Ave		Tus	6D	18,300	0.33	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	23,400	0.42	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	4,900	0.39	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	38,300	0.68	B
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	35,500	0.63	B
21	Red Hill Ave	Nisson Rd to I-5 SB Ramps		Tus	6D	40,800	0.73	C
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	30,300	0.54	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	25,100	0.45	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	24,700	0.44	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	24,800	0.44	A
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	28,600	0.51	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	YEAR 2020 ARTERIAL SEGMENT CLASSIFICATIONS	2020 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	29,900	0.46	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	9,700	0.78	C
85	Tustin Ranch Rd	North of I-5		Tus	6D	44,100	0.78	C
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	36,500	0.65	B
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4D	6,300	0.17	A
587	Walnut Ave	East of Newport Ave		Tus	4U	17,800	0.71	C
589	Walnut Ave	East of Red Hill Ave		Tus	4D	17,400	0.46	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	19,800	0.53	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	20,000	0.53	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	26,600	0.47	A

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

Table 4.3 indicates that fifteen segments are deficient under the 2020 Cumulative Baseline daily conditions, with twelve 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 Year 2020 Cumulative Baseline conditions include:

- 879—Campus Drive from Carlson Avenue to University Drive (Irvine)
- 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)
- 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)
- 183—Harvard Avenue from Michelson Drive to University Drive (Irvine)
- 133—Jamboree Road from Michelle Drive to Walnut Avenue (Irvine)
- 148—Jamboree Road from I-405 SB Ramps to Michelson Drive (Irvine)
- 188—University Drive from California Avenue to Mesa Road (Irvine)
- 187—University Drive from Mesa Road to Campus Drive (Irvine)
- 1312—Bristol Street SB West of Jamboree Road (Newport Beach)*
- 953—MacArthur Boulevard from University Drive to Bison Avenue (Newport Beach)*
- 1301—MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*

*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 2020 Cumulative Baseline scenario. Deficient segments in the City of Irvine are evaluated under Peak Hour conditions in the following section.

4.5 2020 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 – 2020 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	636	752	1,067	841	Acceptable	Acceptable	Acceptable	Acceptable
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps	7D	1,608	3,195	3,381	1,880	Acceptable	Acceptable	Acceptable	Acceptable
213	Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,338	2,770	2,461	2,220	Acceptable	Acceptable	Acceptable	Acceptable
219	Culver Drive	Barranca Parkway to Alton Parkway	6D	1,245	2,529	2,419	1,712	Acceptable	Acceptable	Acceptable	Acceptable
221	Culver Dr	Main Street to San Leandro	6D	1,382	2,612	2,612	1,798	Acceptable	Acceptable	Acceptable	Acceptable
222	Culver Dr	San Leandro to I-405 NB On-Ramp	6D	1,480	2,627	2,799	1,871	Acceptable	Acceptable	Acceptable	Acceptable
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	2,072	2,253	2,778	1,810	Acceptable	Acceptable	Acceptable	Acceptable
183	Harvard Ave	Michelson Dr to University Dr	2U	395	846	1,071	756	Acceptable	Acceptable	Acceptable	Acceptable
133	Jamboree Rd	Michelle Dr to Walnut Ave	5D	816	2,360	1,545	1,572	Acceptable	Acceptable	Acceptable	Acceptable
148	Jamboree Road	I-405 On-Ramp to Michelson Drive	Maj8D+ 2AUX	2,212	4,715	3,902	2,795	Acceptable	Acceptable	Acceptable	Acceptable
188	University Dr	California Ave to Mesa Rd	4D	1,157	752	1,818	841	Acceptable	Acceptable	Acceptable	Acceptable
187	University Dr	Mesa Rd to Campus Dr	4D	877	752	1,557	841	Acceptable	Acceptable	Acceptable	Acceptable

Figure 4.1 – 2020 Cumulative Baseline Daily Arterial ADT

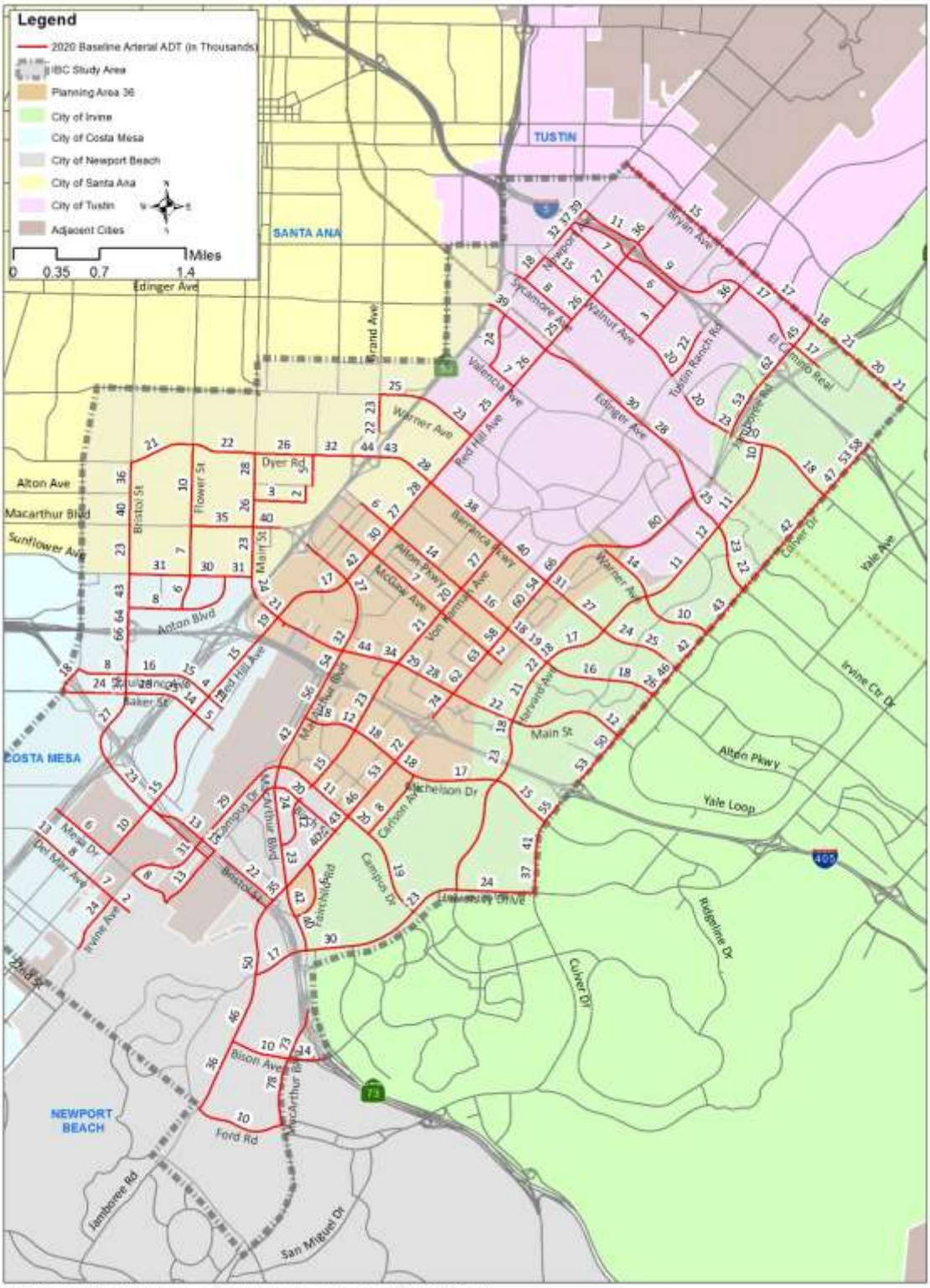
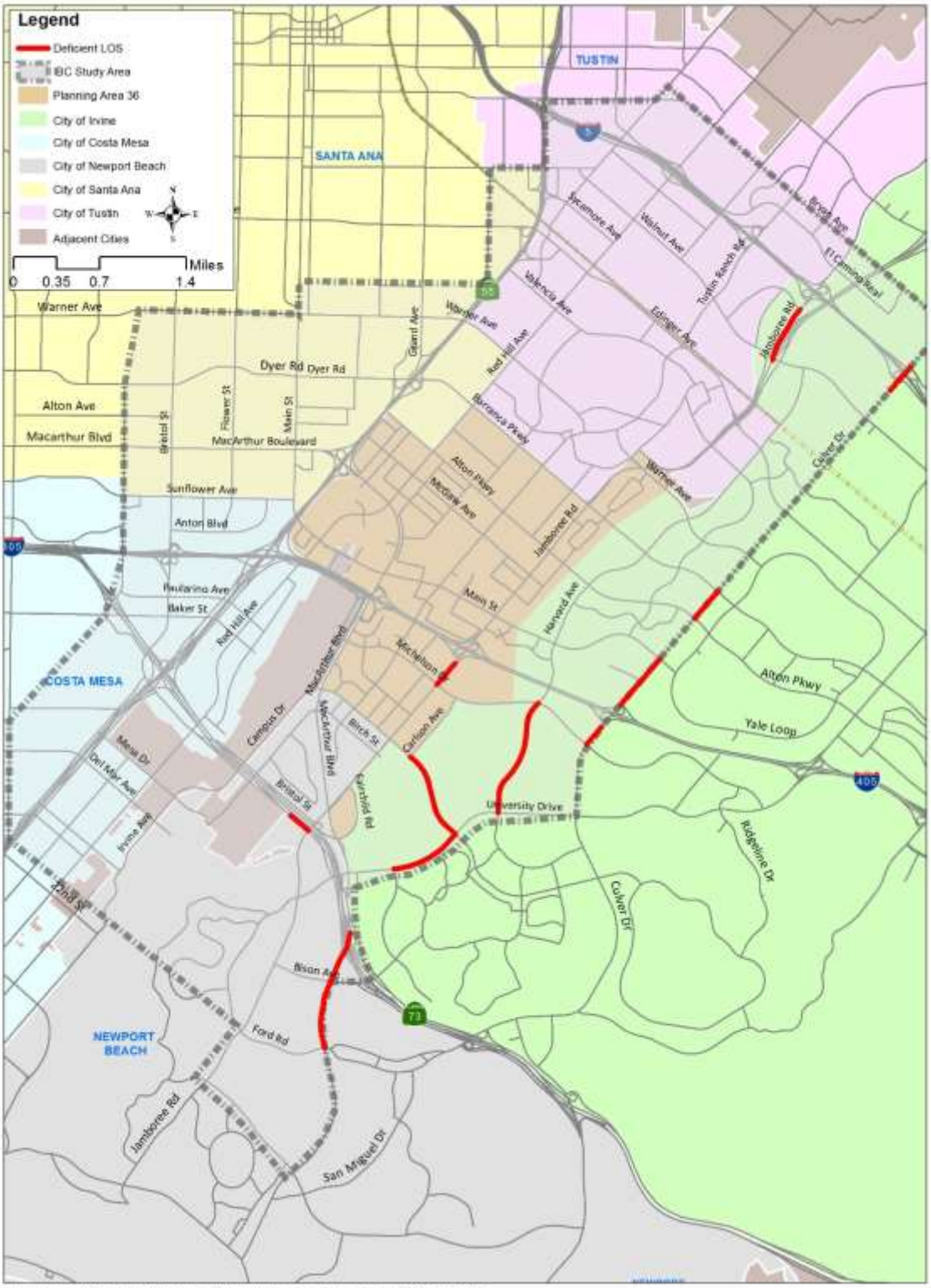

Legend
2020 Baseline Arterial ADT (in Thousands)
IBC Study Area
Planning Area 36
City of Irvine
City of Costa Mesa
City of Newport Beach
City of Santa Ana
City of Tustin
Adjacent Cities
Miles
0 0.35 0.7 1.4
TUSTIN
SANTA ANA
COSTA MESA
NEWPORT BEACH
Edinger Ave
Alton Ave
Macarthur Blvd
Sunflower Ave
Dyer Rd
Main St
Alton Blvd
Bristol St
Flower St
Red Hill Ave
Baker St
Warner Ave
Valencia Ave
Walnut Ave
Sycamore Ave
Bryan Ave
Tustin Ranch Rd
El Camino Real
Culver Dr
Yale Ave
Irvine Ctr Dr
Alton Pkwy
Yale Loop
Michelson Dr
Campus Dr
Jamboree Rd
Ridgeline Dr
Bison Ave
Ford Rd
San Miguel Dr
Irvine Ave
Del Mar Ave
Mesa Dr
Brand Ave
Barranca Pkwy
Von Karman Ave
McGaw Ave
Harvard Ave
Jeffrey Rd
Fairchild Rd
Campus Dr
Carson Ave
Jamboree Rd
Culver Dr
Bristol St
Macarthur Blvd
Tustin Ranch Rd
Jeffrey Rd
Irvine Ave
Del Mar Ave
Mesa Dr
Bison Ave
Ford Rd
Jamboree Rd
San Miguel Dr
Alton Pkwy
Yale Loop
Ridgeline Dr
Culver Dr
Irvine Ctr Dr
Yale Ave
Culver Dr
Jeffrey Rd
Fairchild Rd
Campus Dr
Carson Ave
Michelson Dr
Main St
Alton Blvd
Red Hill Ave
Baker St
Bristol St
Flower St
Main St
Alton Ave
Macarthur Blvd
Sunflower Ave
Edinger Ave
Brand Ave
Warner Ave
Valencia Ave
Red Hill Ave
Barranca Pkwy
Alton Pkwy
McGaw Ave
Von Karman Ave
Harvard Ave
Walnut Ave
Sycamore Ave
Bryan Ave
Tustin Ranch Rd
El Camino Real
Jeffrey Rd
Culver Dr
Yale Ave
Irvine Ctr Dr
Alton Pkwy
Yale Loop
Michelson Dr
Campus Dr
Carson Ave

Figure 4.2 – 2020 Cumulative Baseline Daily Arterial Deficiencies



4.6 2020 Cumulative Baseline Peak Hour Intersection Analysis

Using the turning movement volumes from each intersection within the study area assumed to be built by 2020, ICU analysis was developed for every intersection within the study area. These intersections are evaluated under all future scenarios. The intersection analysis includes both a reporting of intersection ICU and the corresponding LOS. **Table 4.5** displays the ICU analysis for the 2020 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 2020 alternative are available in **Appendix E**.

Table 4.5 – 2020 Cumulative Baseline Peak Hour Intersection LOS

ID	INTERSECTION	PA 36/CMPSANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (2020)	JURISDICTION	2020 CUMULATIVE BASELINE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
10	SR-55 Frontage Rd SB at Paularino Ave			CM	0.75	C	0.61	B
11	SR-55 Frontage Rd NB at Paularino Ave			CM	0.57	A	0.72	C
12	SR-55 Frontage Rd SB at Baker St			CM	0.64	B	0.69	B
13	SR-55 Frontage Rd NB at Baker St			CM	0.77	C	0.76	C
50	Red Hill Ave at Paularino Ave			CM	0.45	A	0.66	B
51	Red Hill Ave at Baker St			CM	0.47	A	0.71	C
52	Red Hill Ave at Bristol St			CM	0.38	A	0.46	A
541	Bear at Baker St			CM	0.58	A	0.72	C
542	Bear at Paularino Ave			CM	0.39	A	0.56	A
545	Bristol at Sunflower			CM	0.58	A	0.72	C
546	Bristol at Anton			CM	0.31	A	0.61	B
547	Bristol at Paularino Ave			CM	0.56	A	0.78	C
548	Bristol at Baker St			CM	0.53	A	0.64	B
549	Newport Blvd SB at Bristol			CM	0.25	A	0.51	A
550	Newport Blvd NB at Bristol			CM	0.29	A	0.41	A
715	Bristol at I-405 NB Off Ramp			CM	0.45	A	0.65	B
716	Bristol at I-405 SB Ramps			CM	0.46	A	0.62	B
717	Bear at SR-73 SB Ramps			CM	0.51	A	0.80	C
720	Flower at MacArthur Blvd			CM	0.50	A	0.77	C
721	Flower at Sunflower			CM	0.27	A	0.43	A
722	Anton at Sunflower			CM	0.39	A	0.37	A
726	Main St at Sunflower			CM	0.43	A	0.73	C
735	Newport Blvd NB at Del mar			CM	0.75	C	0.47	A
736	Newport Blvd SB at Fair/Del Mar			CM	0.30	A	0.42	A
737	Newport Blvd NB at Mesa Rd			CM	0.24	A	0.33	A
738	Newport Blvd SB at Mesa Rd			CM	0.20	A	0.55	A
32	Daimler St at McGaw Ave			Irv	0.18	A	0.17	A
45	Red Hill Ave at McGaw Ave	a		Irv	0.50	A	0.69	B
47	Red Hill Ave at MacArthur Blvd	a		Irv	0.68	B	0.78	C
48	Red Hill Ave at Sky Park N	a		Irv	0.43	A	0.58	A
49	Red Hill Ave at Main St	a		Irv	0.65	B	0.74	C
67	Gillette Ave at McGaw Ave	a		Irv	0.26	A	0.38	A
70	Gillette Ave at Main Street	a		Irv	0.40	A	0.68	B
77	MacArthur Blvd at Sky Park East	a		Irv	0.28	A	0.43	A
78	MacArthur Blvd at Main St	a		Irv	0.59	A	0.74	C

ID	INTERSECTION	PA 36/CMPSANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (2020)	JURISDICTION	2020 CUMULATIVE BASELINE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
79	MacArthur Blvd at I-405 NB Ramps	a		Irv	0.69	B	0.63	B
80	MacArthur Blvd at I-405 SB Ramps	a		Irv	0.58	A	0.71	C
82	MacArthur Blvd at Michelson Dr	a		Irv	0.61	B	0.81	D
83	MacArthur Blvd at Douglas Ave	a		Irv	0.41	A	0.39	A
87	Dupont Dr at Michelson Dr	a		Irv	0.37	A	0.40	A
98	Von Karman Ave at Alton Pkwy	a		Irv	0.82	D	0.89	D
99	Von Karman Ave at McGaw Ave	a		Irv	0.63	B	0.72	C
100	Von Karman Ave at Main St	a		Irv	0.66	B	0.85	D
101	Von Karman Ave at Morse Ave	a		Irv	0.52	A	0.67	B
102	Von Karman Ave at Michelson Dr	a		Irv	0.51	A	0.70	B
103	Von Karman Ave at Dupont Dr	a		Irv	0.41	A	0.40	A
104	Von Karman Ave at Martin	a		Irv	0.35	A	0.42	A
115	Millikan Ave at Alton Pkwy	a		Irv	0.37	A	0.64	B
116	Cartwright Rd at Main St	a		Irv	0.38	A	0.59	A
119	Teller Ave at Michelson Dr	a		Irv	0.39	A	0.49	A
128	Jamboree Rd at I-5 NB Ramps	b		Irv	0.70	B	0.73	C
129	Jamboree Rd at I-5 SB Ramps	b		Irv	0.69	B	0.58	A
130	Jamboree Rd at Michelle Dr			Irv	0.69	B	0.64	B
131	Jamboree Rd SB at Walnut Ave			Irv	0.50	A	0.48	A
132	Jamboree Rd NB at Walnut Ave			Irv	0.39	A	0.59	A
135	Jamboree Rd NB Ramps at Warner Ave			Irv	0.45	A	0.86	D
137	Jamboree Rd at Beckman Ave	a		Irv	0.69	B	0.79	C
138	Jamboree Rd at Alton Pkwy	a		Irv	0.78	C	0.86	D
139	Jamboree Rd at McGaw Ave	a		Irv	0.68	B	0.69	B
140	Jamboree Rd at Kelvin Ave	a		Irv	0.64	B	0.62	B
141	Jamboree Rd at Main St	a		Irv	0.70	B	0.79	C
143	Jamboree Rd at I-405 NB Ramps	a,b		Irv	0.72	C	0.79	C
144	Jamboree Rd at I-405 SB Ramps	a,b		Irv	0.96	E	0.88	D
145	Jamboree Rd at Michelson Dr	a		Irv	0.77	C	0.93	E
146	Jamboree Rd at Dupont Rd	a		Irv	0.58	A	0.65	B
164	Construction S at Barranca Pkwy	a		Irv	0.38	A	0.52	A
168	Murphy Ave at Alton Pkwy	a		Irv	0.35	A	0.57	A
170	Union at Main St	a		Irv	0.37	A	0.63	B
171	Veneto at Main St			Irv	0.36	A	0.55	A
174	Carlson Ave at Michelson Dr			Irv	0.58	A	0.68	B
175	Carlson Ave at Campus Dr			Irv	0.42	A	0.64	B
180	Harvard Ave at Walnut Ave			Irv	0.47	A	0.53	A
183	Harvard Ave at Warner Ave			Irv	0.53	A	0.59	A
184	Harvard Ave at Barranca Pkwy			Irv	0.62	B	0.66	B
185	Harvard Ave at Alton Pkwy			Irv	0.63	B	0.73	C
186	Harvard Ave at Main St			Irv	0.55	A	0.68	B
187	Harvard Ave at Coronado			Irv	0.53	A	0.56	A
188	Harvard Ave Michelson Dr			Irv	0.63	B	0.85	D
189	Harvard Ave University Dr			Irv	0.67	B	0.71	C
190	University Dr at Campus Dr		√	Irv	0.76	C	0.8	C
191	Mesa Rd at University Dr			Irv	0.61	B	0.70	B
192	California Ave at University Dr			Irv	0.64	B	0.81	D
196	Hearthstone Blvd at Irvine Center Dr			Irv	0.48	A	0.52	A
198	Paseo Westpark at Warner Ave			Irv	0.37	A	0.32	A
199	Paseo Westpark at Barranca Pkwy			Irv	0.43	A	0.52	A

ID	INTERSECTION	PA 36/CMPSANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (2020)	JURISDICTION	2020 CUMULATIVE BASELINE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
200	Paseo Westpark at Alton Pkwy			Irv	0.46	A	0.57	A
201	Paseo Westpark at Main St			Irv	0.54	A	0.67	B
221	Culver Dr at Bryan Ave			Irv	0.81	D	0.68	B
222	Culver Dr at Trabuco Rd			Irv	0.78	C	0.74	C
223	Culver Dr at I-5 SB Ramps			Irv	0.64	B	0.61	B
224	Culver Dr at Walnut Ave		√	Irv	0.70	B	0.79	C
225	Culver Dr at Deerfield Dr			Irv	0.81	D	0.70	B
226	Culver Dr at Irvine Center Dr		√	Irv	0.66	B	0.65	B
227	Culver Dr at Warner Ave			Irv	0.71	C	0.64	B
228	Culver Dr at Barranca Pkwy		√	Irv	0.75	C	0.77	C
229	Culver Dr at Alton Pkwy		√	Irv	0.78	C	0.82	D
230	Culver Dr at Main St			Irv	0.67	B	0.67	B
231	Culver Dr at San Leandro			Irv	0.66	B	0.59	A
232	Culver Dr at I-405 NB Ramps			Irv	0.55	A	0.73	C
233	Culver Dr at I-405 SB Ramps			Irv	0.58	A	0.70	B
234	Culver Dr at Michelson Dr			Irv	0.62	B	0.91	E
235	Culver Dr at University Dr		√	Irv	0.67	B	0.76	C
337	Von Karman Ave at Quartz	a		Irv	0.48	A	0.52	A
439	Bixby at Michelson Dr			Irv	0.38	A	0.50	A
440	Siglo at Main St			Irv	0.41	A	0.59	A
472	Obsidian at Michelson Dr	a		Irv	0.37	A	0.57	A
84	MacArthur Blvd at Campus Dr			Irv/NB	0.57	A	0.77	C
105	Von Karman Ave at Campus Dr			Irv/NB	0.53	A	0.64	B
121	Teller Ave at Campus Dr			Irv/NB	0.29	A	0.39	A
147	Jamboree Rd at Campus Dr			Irv/NB	0.63	B	0.72	C
149	Jamboree Rd at Fairchild Rd			Irv/NB	0.64	B	0.71	C
150	Jamboree Rd at MacArthur Blvd	b		Irv/NB	0.59	A	0.73	C
176	Fairchild Ave at MacArthur Blvd			Irv/NB	0.73	C	0.68	B
193	MacArthur Blvd NB at University Dr			Irv/NB	0.44	A	0.45	A
194	MacArthur Blvd SB at University Dr			Irv/NB	0.45	A	0.38	A
195	SR-73 SB Ramps at University Dr			Irv/NB	0.51	A	0.46	A
9	SR-55 NB Ramps at MacArthur Blvd			Irv/SA	0.75	C	0.64	B
31	Daimler St at Alton Pkwy			Irv/SA	0.21	A	0.36	A
43	Red Hill Ave at Deere Ave			Irv/SA	0.46	A	0.68	B
44	Red Hill Ave at Alton Pkwy			Irv/SA	0.54	A	0.78	C
42	Red Hill Ave at Barranca Pkwy/Dyer Rd			Irv/SA/Tus	0.53	A	0.73	C
71	Armstrong Ave at Barranca Pkwy			Irv/Tus	0.41	A	0.57	A
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy			Irv/Tus	0.71	C	0.84	D
112	Myford Rd at Michelle Dr			Irv/Tus	0.18	A	0.37	A
113	Myford Rd at Walnut Ave			Irv/Tus	0.43	A	0.48	A
114	Millikan Ave/District Way at Barranca Pkwy			Irv/Tus	0.48	A	0.63	B
126	Jamboree Rd at Bryan Ave			Irv/Tus	0.67	B	0.70	B
127	Jamboree Rd at El Camino Real			Irv/Tus	0.61	B	0.68	B
134	Loop Rd/Park Ave at Warner Ave			Irv/Tus	0.77	C	0.96	E
136	Jamboree Rd at Barranca Pkwy			Irv/Tus	0.77	C	0.89	D
181	Harvard Ave at Edinger Ave/Irvine Center Dr			Irv/Tus	0.49	A	0.58	A
182	Harvard Ave at Paseo Westpark/Moffett Dr.			Irv/Tus	0.31	A	0.40	A
441	Loop Rd at Jamboree Rd SB Ramps			Irv/Tus	0.17	A	0.13	A
61	Campus Dr at Airport Way			NB	0.40	A	0.65	B
62	Campus Dr at Bristol St NB			NB	0.61	B	0.90	D

ID	INTERSECTION	PA 36/CMPSANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (2020)	JURISDICTION	2020 CUMULATIVE BASELINE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
63	Campus Dr at Bristol St SB			NB	0.74	C	0.57	A
64	Birch St at Bristol St NB			NB	0.62	B	0.56	A
65	Birch St at Bristol St SB			NB	0.39	A	0.48	A
85	MacArthur Blvd at Birch St			NB	0.69	B	0.80	C
106	Von Karman Ave at Birch St			NB	0.34	A	0.43	A
107	Von Karman Ave at MacArthur Blvd			NB	0.39	A	0.53	A
148	Jamboree Rd at Birch St			NB	0.55	A	0.58	A
151	Jamboree Rd at Bristol St NB			NB	0.46	A	0.51	A
153	Jamboree Rd at Bristol St SB			NB	0.68	B	0.72	C
154	Jamboree Rd at Eastbluff Dr			NB	0.77	C	0.70	B
155	Jamboree Rd at Bison Ave			NB	0.54	A	0.57	A
156	Jamboree Rd at Ford Rd			NB	0.80	C	0.85	D
178	MacArthur Blvd at Bison Ave			NB	0.67	B	0.68	B
179	MacArthur Blvd at Ford Rd			NB	0.76	C	0.79	C
741	Jamboree at San Joaquin			NB	0.65	B	0.64	B
742	MacArthur at San Joaquin			NB	0.70	B	0.84	D
733	Irvine at Mesa Rd			NB/OC	0.57	A	0.83	D
734	Irvine at University/Del Mar			NB/OC	0.57	A	0.74	C
4	SR-55 SB Ramps at Edinger Ave	b		SA	0.52	A	0.58	A
5	Hotel Terrace Dr at Dyer Rd			SA	0.50	A	0.62	B
6	Grand Ave at Dyer Rd			SA	0.63	B	0.83	D
7	SR-55 NB Ramps at Dyer Rd			SA	0.71	C	0.80	C
8	SR-55 SB Ramps at MacArthur Blvd	c		SA	0.59	A	0.62	B
29	Pullman St at Barranca Pkwy			SA	0.51	A	0.76	C
543	Bristol at Segerstrom			SA	0.65	B	0.77	C
544	Bristol St at MacArthur Blvd			SA	0.62	B	0.80	C
718	Bear at SR-73 NB Ramps			SA	0.36	A	0.65	B
719	Flower at Segerstrom			SA	0.64	B	0.67	B
723	Main St at Segerstrom			SA	0.64	B	0.71	C
724	Main St at Alton Ave			SA	0.30	A	0.41	A
725	Main and MacArthur (w/o SR-55)	c		SA	0.61	B	0.62	B
727	Halladay at Dyer Rd			SA	0.55	A	0.60	A
728	Halladay E at Alton Pkwy			SA	0.24	A	0.30	A
729	Halladay W at Alton Pkwy			SA	0.23	A	0.26	A
730	Grand Ave at Warner			SA	0.67	B	0.78	C
731	SR-55 SB Ramps at Grand Ave			SA	0.52	A	0.46	A
3	Newport Ave at Edinger Ave			Tus	0.71	C	0.61	B
14	Walnut Ave at McFadden Ave			Tus	0.39	A	0.50	A
18	Newport Ave at Bryan Ave			Tus	0.46	A	0.57	A
19	Newport Ave at Main St			Tus	0.36	A	0.59	A
20	Newport Ave at El Camino Real			Tus	0.68	B	0.69	B
21	Newport Ave at I-5 NB Ramps			Tus	0.61	B	0.56	A
22	Newport Ave at I-5 SB Ramp/Nisson Rd			Tus	0.58	A	0.70	B
23	Newport Ave at McFadden St			Tus	0.62	B	0.51	A
24	Newport Ave at Walnut Ave			Tus	0.76	C	0.75	C
25	Newport Ave at Sycamore Ave			Tus	0.61	B	0.65	B
27	Del Amo Ave at Edinger Ave			Tus	0.35	A	0.33	A
35	Red Hill Ave at Bryan Ave			Tus	0.65	B	0.63	B
36	Red Hill Ave at El Camino Real			Tus	0.59	A	0.91	E
37	Red Hill Ave at Nisson Rd			Tus	0.63	B	0.66	B

ID	INTERSECTION	PA 36/CMPSANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (2020)	JURISDICTION	2020 CUMULATIVE BASELINE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
38	Red Hill Ave at Walnut Ave			Tus	0.63	B	0.81	D
39	Red Hill Ave at Sycamore Ave			Tus	0.55	A	0.57	A
40	Red Hill Ave at Edinger Ave			Tus	0.65	B	0.63	B
55	Browning Ave at Bryan Ave			Tus	0.39	A	0.58	A
56	Browning Ave at El Camino Real			Tus	0.34	A	0.50	A
58	Browning Ave at Walnut Ave			Tus	0.45	A	0.53	A
92	Tustin Ranch Rd at Bryan Ave			Tus	0.66	B	0.71	C
93	Tustin Ranch Rd at El Camino Real			Tus	0.93	E	0.75	C
94	Tustin Ranch Rd at I-5 NB Ramps			Tus	0.58	A	0.47	A
95	Tustin Ranch Rd at I-5 SB Ramps			Tus	0.68	B	0.49	A
96	Tustin Ranch Rd at Walnut Ave			Tus	0.41	A	0.71	C
109	Myford Rd at Bryan Ave			Tus	0.45	A	0.42	A
110	Myford Rd at El Camino Real			Tus	0.26	A	0.42	A
111	Franklin Ave at Walnut Ave			Tus	0.47	A	0.91	E
133	Jamboree Rd at Edinger Ave	b		Tus	0.38	A	0.60	A
445	Tustin Ranch Rd at Warner Ave N			Tus	0.49	A	0.63	B
446	Tustin Ranch Rd at Warner Ave S			Tus	0.55	A	0.44	A
447	Armstrong Ave/Severyns Rd Valencia Ave			Tus	0.54	A	0.46	A
448	Armstrong Ave at Warner Ave			Tus	0.31	A	0.31	A
453	Red Hill Ave at Valencia Ave			Tus	0.48	A	0.51	A
454	Tustin Ranch Rd at Valencia Ave			Tus	0.30	A	0.42	A
455	East Connector/Jamboree Plaza at Edinger Ave			Tus	Not analyzed in 2020 conditions			
456	N Loop Rd at Valencia Ave			Tus				
457	N Loop Rd at Moffett Dr			Tus	0.06	A	0.07	A
478	Red Hill Ave at I-5 NB Ramps			Tus	0.75	C	0.61	B
479	Red Hill Ave at I-5 SB Ramps			Tus	0.80	C	0.77	C
480	Tustin Ranch Rd/Connector at Edinger Ave			Tus	0.10	A	0.09	A
732	SR-55 NB Ramp at Newport Ave			Tus	0.35	A	0.82	D
739	Newport Ave at Mitchell Ave			Tus	0.61	B	0.66	B
740	Red Hill Ave at Mitchell Ave			Tus	0.58	A	0.54	A
743	Newport Ave at Valencia			Tus	0.30	A	0.42	A
745	Tustin Ranch Rd at Park Ave			Tus	0.46	A	0.54	A
746	Kensington Park Dr at Edinger Ave			Tus	0.34	A	0.40	A
747	Kensington Park Dr at Valencia Ave			Tus	0.18	A	0.20	A
748	Armstrong Ave at A St			Tus	0.12	A	0.11	A
749	Park Ave at A St			Tus	Not analyzed in 2020 conditions			
750	Legacy Rd at Warner Ave			Tus	0.28	A	0.27	A
751	Tustin Ranch Rd at Legacy Rd			Tus	0.39	A	0.31	A
752	Legacy Rd at N Loop Rd			Tus	0.14	A	0.12	A
753	Tustin Ranch Rd at Edinger Ave Connector			Tus	0.38	A	0.31	A
28	Pullman St at Warner Ave			Tus/SA	0.39	A	0.47	A
41	Red Hill Ave at Warner Ave			Tus/SA	0.69	B	0.70	B
754	Red Hill Ave at Carnegie Ave			Tus/SA	0.37	A	0.54	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 acceptable							
√	ATMS credit-Reduction of 0.05 applied to ICU							

For the intersections that are deficient, further discussion of specific impacts or cumulative deficiencies and improvements are addressed in **Chapter 6**. The following intersections are deficient in the 2020 Cumulative Baseline scenario:

- #234: Culver Drive at Michelson Drive (Irvine) – PM Peak Hour LOS E with a 0.91 V/C
- #134: Loop Road/Park Avenue at Warner Avenue (Irvine/Tustin) – PM Peak Hour LOS E with a 0.96 V/C
- #36: Red Hill Avenue at El Camino Real (Tustin) – PM Peak Hour LOS E with a 0.91 V/C
- #93: Tustin Ranch Road at El Camino Real (Tustin) – AM Peak Hour LOS E with a 0.93 V/C
- #111: Franklin Avenue at Walnut Avenue (Tustin) – PM Peak Hour LOS E with a 0.91 V/C

Figure 4.3 – 2020 Cumulative Baseline AM Peak Hour Intersection Deficiencies

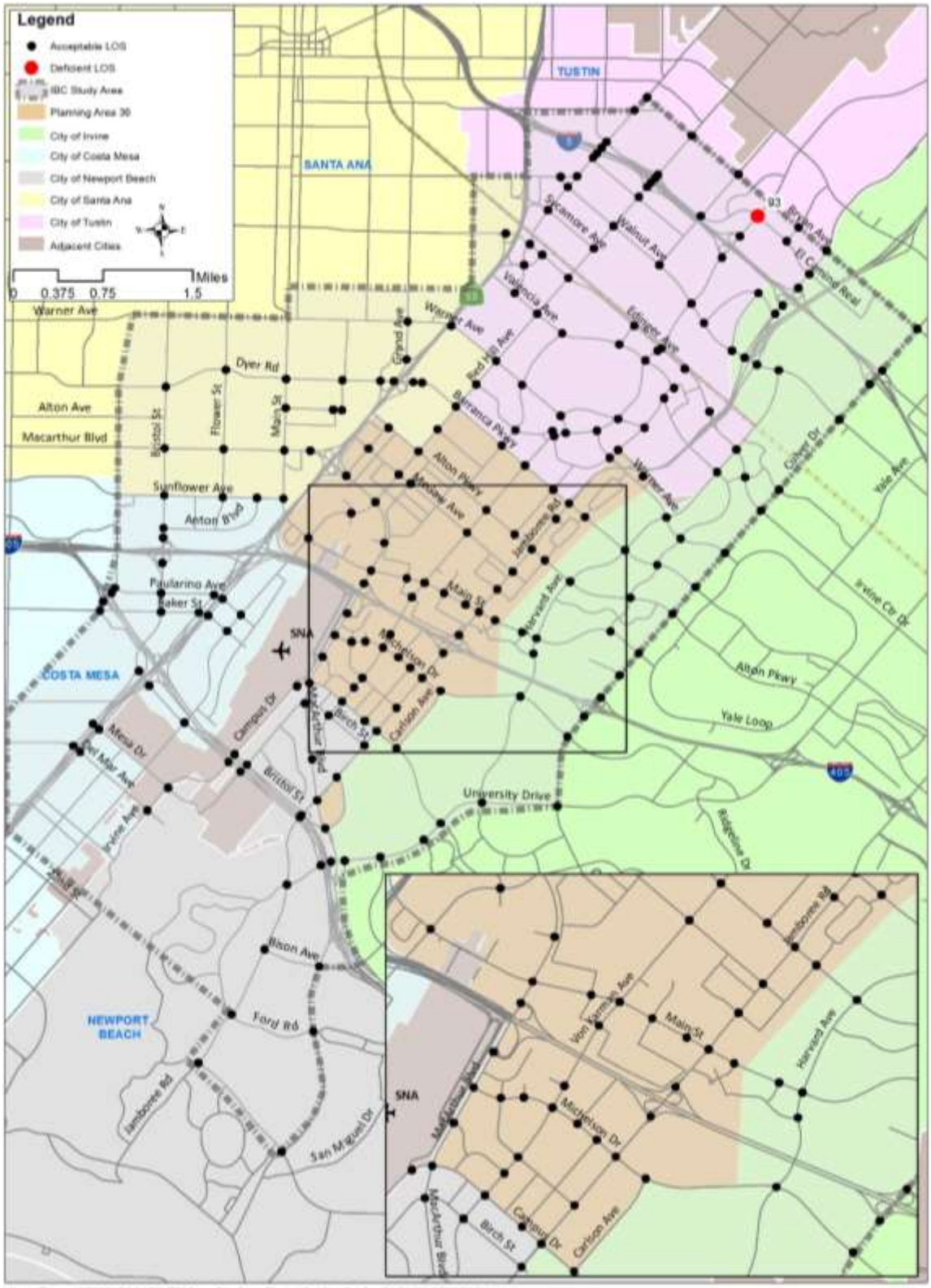
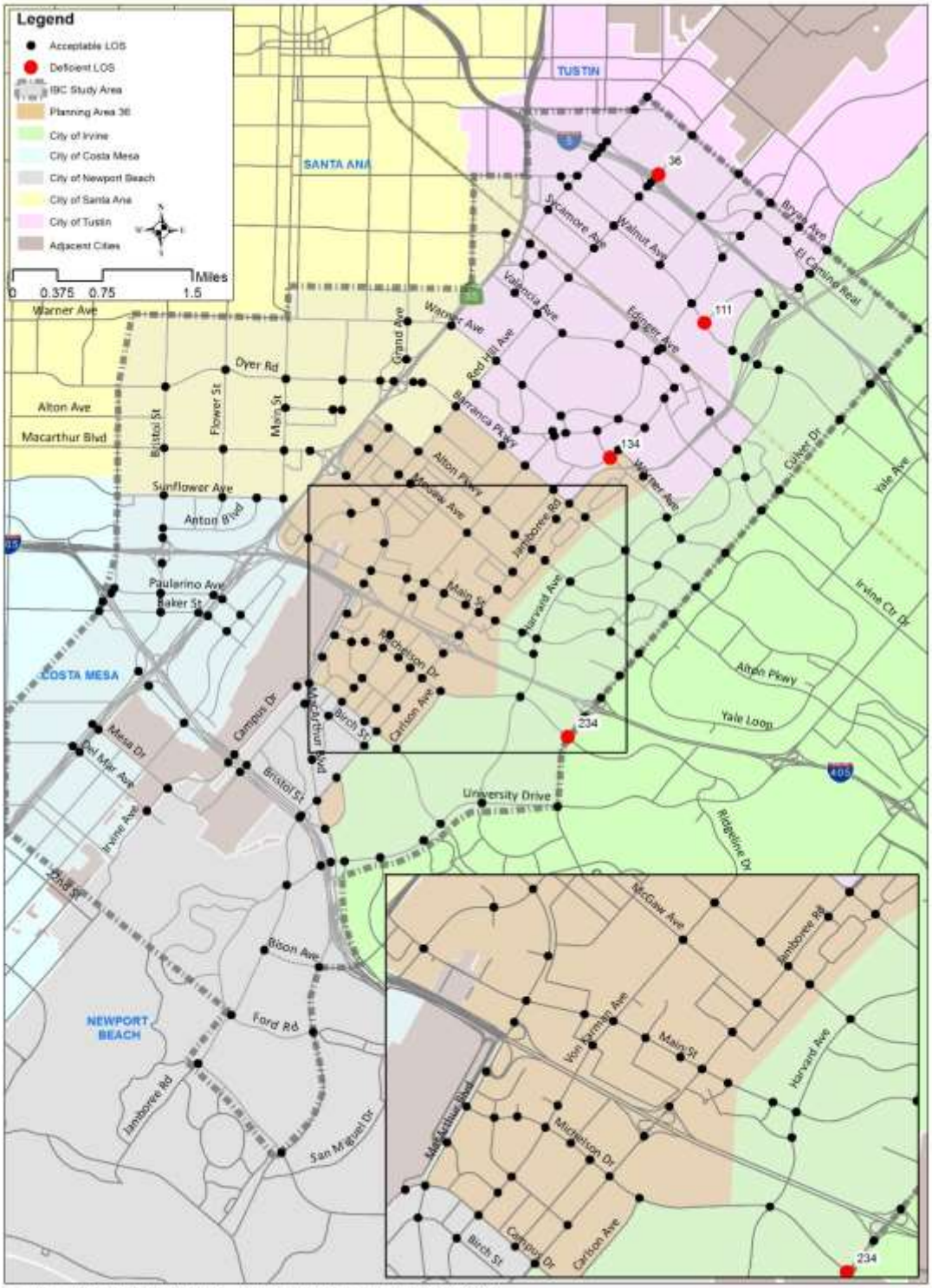


Figure 4.4 – 2020 Cumulative Baseline PM Peak Hour Intersection Deficiencies



4.7 2020 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 anticipated between the existing conditions and Year 2020.

Using the methodology prescribed by the Orange County Congestion Management Plan (CMP), **Table 4.6** shows deficient freeway mainline segments under the 2020 Cumulative Baseline scenario. In the AM peak 37 out of 60 freeway segments operate at a deficient LOS and in the PM peak 24 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
- I-5 Northbound between Jamboree Road and Tustin Ranch Road
- I-5 Southbound between Tustin Ranch Road and Jamboree Road
- I-5 Northbound between Tustin Ranch Road and Red Hill Avenue
- I-5 Southbound between Red Hill Avenue and Tustin Ranch Road
- I-5 Northbound between Red Hill Avenue and Newport Avenue
- I-5 Southbound between Newport Avenue and Red Hill Avenue
- I-5 Northbound between Newport Avenue and SR-55
- I-5 Southbound between SR-55 and Newport Avenue
- I-5 Northbound North of SR-55
- I-5 Southbound North of SR-55
- I-405 Northbound between Culver Drive and Jamboree Road
- I-405 Southbound between Jamboree Road and Culver Drive
- I-405 Northbound between Jamboree Road and MacArthur Boulevard
- I-405 Northbound between MacArthur Boulevard and SR-55
- I-405 Southbound between SR-55 and MacArthur Boulevard
- SR-55 Northbound between I-405 and MacArthur Boulevard
- SR-55 Southbound between MacArthur Boulevard and I-405
- SR-55 Southbound between Dyer Road and MacArthur Boulevard
- SR-55 Northbound between Dyer Road and Edinger Avenue
- SR-55 Southbound between Edinger Avenue and Dyer Road
- SR-55 Southbound between McFadden Street/Sycamore Avenue and Edinger Avenue
- SR-55 Southbound between I-5 and McFadden Street/Sycamore Avenue
- SR-55 Northbound North of I-5
- SR-55 Southbound North of I-5
- SR-73 Northbound between MacArthur Boulevard and University Drive
- SR-73 Northbound between University Drive and Jamboree Road
- SR-73 Northbound between Jamboree Road and Birch Street
- SR-73 Southbound between Birch Street and Jamboree Road
- SR-73 Northbound between Birch Street and Campus Drive
- SR-73 Northbound between Campus Drive and SR-55
- SR-73 Southbound between SR-55 and Campus Drive

- SR-73 Northbound between SR-55 and Bear Street
- SR-73 Southbound between Bear Street and SR-55
- SR-73 Northbound between Bear Street and I-405
- SR-73 Southbound between I-405 and Bear Street
- SR-261 Southbound South of El Camino Real

PM Peak Hour:

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

Table 4.6 – 2020 Cumulative Baseline Freeway Peak Hour Mainline LOS

LOCATION		FREEWAY LANES			2020 BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
		DIRECTION	LANES	CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	Culver Dr to Jamboree Road	NB	6	12,000	12,305	1.03	**F**	10,108	0.84	D
		SB	6	12,000	10,523	0.88	D	10,925	0.91	**E**
	Jamboree Road to Tustin Ranch Road	NB	6	12,000	12,275	1.02	**F**	10,244	0.85	D
		SB	6	12,000	10,782	0.9	**E**	10,843	0.9	**E**
	Tustin Ranch Road to Red Hill Avenue	NB	6	12,000	12,717	1.06	**F**	10,634	0.89	D
		SB	6	12,000	11,544	0.96	**E**	11,547	0.96	**E**
	Red Hill Avenue to Newport Avenue	NB	5	10,000	12,323	1.23	**F**	10,163	1.02	**F**
		SB	6	12,000	10,976	0.91	**E**	10,958	0.91	**E**

LOCATION		FREEWAY LANES			2020 BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
		DIRECTION	LANES	CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS
	Newport Avenue to SR-55	NB	6	12,000	13,291	1.11	**F**	10,815	0.9	**E**
		SB	4	8,000	7,687	0.96	**E**	7,801	0.98	**E**
	N of SR-55	NB	5	10,000	11,976	1.2	**F**	10,264	1.03	**F**
		SB	5	10,000	10,080	1.01	**F**	9,768	0.98	**E**
I-405	Culver Dr to Jamboree Road	NB	5	10,000	11,562	1.16	**F**	8,489	0.85	D
		SB	4	8,000	8,620	1.08	**F**	10,402	1.3	**F**
	Jamboree Road to MacArthur Boulevard	NB	6	12,000	11,804	0.98	**E**	9,829	0.82	D
		SB	7	14,000	10,573	0.76	D	10,752	0.77	D
	MacArthur Boulevard to SR-55	NB	6	12,000	11,121	0.93	**E**	10,265	0.86	D
		SB	6	12,000	11,394	0.95	**E**	10,585	0.88	D
	SR-55 to Bristol Street	NB	4	8,000	5,936	0.74	D	5,805	0.73	D
		SB	5	10,000	8,930	0.89	D	7,483	0.75	D
	Bristol Street to SR-73	NB	5	10,000	6,931	0.69	C	7,273	0.73	D
		SB	5	10,000	8,820	0.88	D	6,690	0.67	C
SR-55	S of Victoria Street	NB	4	8,000	2,150	0.27	A	1,752	0.22	A
		SB	3	6,000	2,573	0.43	B	2,732	0.46	B
	Victoria Street to Fair Dr	NB	4	8,000	4,789	0.6	C	3,320	0.41	B
		SB	3	6,000	3,786	0.63	C	4,464	0.74	D
	Fair Dr to SR-73	NB	4	8,000	6,489	0.81	D	4,747	0.59	C
		SB	4	8,000	4,820	0.6	C	5,389	0.67	C
	SR-73 to Baker Street	NB	4	8,000	6,014	0.75	D	5,104	0.64	C
		SB	4	8,000	5,936	0.74	D	5,781	0.72	D
	Baker Street to I-405	NB	4	8,000	6,014	0.75	D	5,104	0.64	C
		SB	4	8,000	5,936	0.74	D	5,781	0.72	D
	I-405 to MacArthur Boulevard	NB	4	8,000	7,921	0.99	**E**	7,473	0.93	**E**
		SB	4	8,000	8,450	1.06	**F**	7,660	0.96	**E**
	MacArthur Boulevard to Dyer Road	NB	4	8,000	7,120	0.89	D	7,420	0.93	**E**
		SB	4	8,000	8,113	1.01	**F**	6,689	0.84	D
	Dyer Road to Edinger Avenue	NB	4	8,000	7,211	0.9	**E**	8,146	1.02	**F**
		SB	4	8,000	8,399	1.05	**F**	6,344	0.79	D
	Edinger Avenue to McFadden Street/Sycamore Avenue	NB	5	10,000	7,665	0.77	D	8,605	0.86	D
		SB	4	8,000	9,234	1.15	**F**	6,969	0.87	D
	McFadden Street/Sycamore Avenue to I-5	NB	5	10,000	8,414	0.84	D	9,030	0.9	**E**
		SB	5	10,000	9,122	0.91	**E**	7,259	0.73	D
	N of I-5	NB	3	6,000	5,780	0.96	**E**	6,330	1.05	**F**
		SB	3	6,000	6,633	1.11	**F**	5,252	0.88	D
SR-73	MacArthur Boulevard to University Dr	NB	3	6,000	7,047	1.17	**F**	4,990	0.83	D
		SB	4	8,000	4,886	0.61	C	6,071	0.76	D
	University Dr to Jamboree Road	NB	3	6,000	7,047	1.17	**F**	4,990	0.83	D
		SB	3	6,000	4,396	0.73	D	5,373	0.9	**E**
	Jamboree Road to Birch Street	NB	4	8,000	8,949	1.12	**F**	7,252	0.91	**E**
		SB	3	6,000	5,456	0.91	**E**	6,233	1.04	**F**
	Birch Street to Campus Dr	NB	4	8,000	7,546	0.94	**E**	6,517	0.81	D
		SB	4	8,000	6,992	0.87	D	7,027	0.88	D
	Campus Dr to SR-55	NB	4	8,000	8,417	1.05	**F**	8,480	1.06	**F**
		SB	4	8,000	8,919	1.11	**F**	8,048	1.01	**F**
	SR-55 to Bear Street	NB	3	6,000	6,176	1.03	**F**	5,942	0.99	**E**
		SB	3	6,000	5,805	0.97	**E**	5,314	0.89	D
	Bear Street to I-405	NB	3	6,000	5,601	0.93	**E**	5,541	0.92	**E**
		SB	3	6,000	5,677	0.95	**E**	4,875	0.81	D
SR-	SR-261 S of El Camino Real	NB	2	4,000	1,105	0.28	A	3,221	0.81	D
		SB	2	4,000	3,632	0.91	**E**	1,450	0.36	B

4.8 2020 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.

Table 4.7 – 2020 Cumulative Baseline Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		2020 BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	Culver Dr	SB On Direct	1	1,000	290	0.32	B	459	0.51	C
		SB On Loop	1	1,000	650	0.72	D	340	0.38	B
		SB Off	2	500	968	0.43	B	1,931	0.86	D
		NB On Loop	1	1,000	1,090	0.73	D	672	0.45	B
		NB On Direct	1	1,000	636	0.71	C	210	0.23	A
		NB Off	1	500	361	0.24	A	774	0.52	C
	Jamboree Road	SB On Direct	1	1,000	301	0.20	A	944	0.63	C
		SB On Loop	1	1,000	853	0.57	C	512	0.34	B
		SB Off	2	500	1,359	0.45	B	1,320	0.44	B
		NB On Loop	1	1,000	600	0.56	C	560	0.52	C
		NB On Direct	1	1,000	600	0.56	C	480	0.44	B
		NB Off	1	500	1,371	0.91	**E**	1,420	0.95	**E**
	Tustin Ranch Road	SB On	1	1,000	707	0.47	B	443	0.3	A
		NB On	2	1,000	440	0.24	A	1,120	0.62	C
		NB Off	1	500	320	0.21	A	550	0.37	B
		SB Off	2	500	1,560	0.69	C	1,081	0.48	B
	Red Hill Avenue	SB On	1	1,000	1,025	0.68	C	780	0.52	C
		NB On	1	1,000	1,030	0.69	C	809	0.54	C
		NB Off	1	500	595	0.40	B	799	0.53	C
		SB Off	1	500	690	0.46	B	758	0.51	C
	Newport Boulevard	SB Off	1	500	787	0.52	C	1,031	0.69	C
		NB On	1	1,000	660	0.44	B	740	0.49	B
I-405	Culver Dr	SB On Direct	1	1,000	350	0.23	A	815	0.54	C
		SB On Loop	1	1,000	380	0.42	B	362	0.4	B
		SB Off	2	500	833	0.28	A	1,670	0.56	C
		NB On Loop	1	1,000	790	0.53	C	320	0.21	A
		NB On Direct	1	1,000	1,060	0.71	C	510	0.34	B
		NB Off	2	500	784	0.35	B	772	0.34	B
	Jamboree Road	SB On Direct	2	1,000	615	0.34	B	1,170	0.65	C
		SB On Loop	1	1,000	202	0.13	A	710	0.47	B
		SB Off	2	500	2,510	1.12	**F**	1,696	0.75	D
		NB On Loop	1	1,000	510	0.34	B	740	0.49	B
		NB On Direct	2	1,000	1,140	0.63	C	1,000	0.56	C
		NB Off	2	500	2,073	0.92	**E**	1,041	0.46	B
	MacArthur Boulevard	SB Direct On	2	1,000	563	0.31	B	1,070	0.59	C
		SB Off	2	500	1,940	0.86	D	1,042	0.46	B
		NB On	1	1,000	520	0.35	B	1,610	1.07	**F**
		NB Off	1	500	1,987	1.32	**F**	935	0.62	C
	Bristol Street	SB Loop On	1	1,000	1,030	0.69	C	1,410	0.94	**E**

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		2020 BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
		SB Off	2	500	1,214	0.54	C	839	0.37	B
		NB On Loop	1	1,000	548	0.61	C	335	0.37	B
		NB On Direct	1	1,000	616	0.41	B	1,051	0.7	C
		NB Off	1	500	734	0.49	B	1,327	0.88	D
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 Dr	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	430	0.29	A	913	0.61	C
		SB Off	1	500	910	0.61	C	980	0.65	C
		NB Off	1	500	1,011	0.67	C	1,080	0.72	D
	Paularino Avenue	SB Off	1	500	1,406	0.94	**E**	981	0.65	C
		NB On	1	1,000	1,225	1.36	**F**	1,289	1.43	**F**
	MacArthur Boulevard	SB On Direct	1	1,000	700	0.47	B	950	0.63	C
		SB On Loop	1	1,000	140	0.16	A	660	0.73	D
		SB Off	2	500	1,930	0.86	D	1,124	0.5	B
		NB On Loop	1	1,000	730	0.49	B	1,079	0.72	D
		NB On Direct	1	1,000	185	0.21	A	787	0.87	D
		NB Off	2	500	1,714	0.76	D	1,306	0.58	C
	Dyer Road	SB On	1	1,000	960	0.64	C	1,186	0.79	D
		SB Off Loop	1	500	522	0.35	B	300	0.2	A
		SB Off to Grand	1	500	721	0.48	B	580	0.39	B
		NB On Direct	1	1,000	422	0.28	A	1,242	0.83	D
		NB On Loop	1	1,000	563	0.63	C	1,042	1.16	**F**
		NB Off	1	500	1,490	0.99	**E**	289	0.19	A
	Edinger Avenue	SB On	1	1,000	641	0.43	B	650	0.43	B
		SB Off	1	500	900	0.60	C	612	0.41	B
		NB On	1	1,000	330	0.22	A	1,530	1.02	**F**
		NB Off	1	500	775	0.52	C	375	0.25	A
	McFadden Avenue	SB On	1	1,000	394	0.26	A	224	0.15	A
		SB Off	2	500	570	0.25	A	751	0.33	B
		NB On	1	1,000	1,208	0.81	D	932	0.62	C
		NB Off	1	500	459	0.31	B	506	0.34	B
SR-73	Bison Avenue	SB On	1	1,000	190	0.13	A	390	0.26	A
		SB Off	1	500	844	0.56	C	403	0.27	A
		NB On	1	1,000	250	0.28	A	950	1.06	**F**
	MacArthur Boulevard	SB On	1	1,000	177	0.12	A	763	0.51	C
		SB Off	1	500	1,262	0.84	D	1,056	0.7	C
		NB On s/o University Dr	1	1,000	846	0.56	C	840	0.56	C
		NB On n/o University Dr	1	1,000	460	0.31	B	726	0.48	B
	University Dr	SB Off	1	500	679	0.45	B	751	0.5	B
	Jamboree Road	SB On	1	1,000	491	0.33	B	698	0.47	B
		SB Off	2	500	1,535	0.68	C	795	0.35	B
		NB On	1	1,000	1,442	1.60	**F**	1,537	1.71	**F**
	Birch Street	NB Off	1	500	1,403	0.94	**E**	734	0.49	B
	Campus Dr	SB Off	2	500	1,927	0.86	D	1,021	0.45	B
		NB On	1	1,000	871	0.58	C	1,963	0.61	C
	SR-73 at Bear	SB On	1	1,000	970	0.65	C	1,224	0.82	D
		SB Off	1	500	280	0.19	A	420	0.28	A
		NB Off	1	500	640	0.43	B	1,297	0.86	D

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		2020 BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
		NB On	1	1,000	220	0.15	A	620	0.41	B
SR-261	Jamboree Road	SB On	2	1,000	1,155	0.38	B	911	0.3	A
		NB Off	2	250	536	0.24	A	872	0.39	B
	Walnut Avenue	NB On	1	1,000	442	0.29	A	863	0.58	C
		SB Off	1	500	930	0.62	C	452	0.3	A

Ten of the 98 ramps in the study area are forecast to be deficient in the AM peak. In the PM peak eight ramps are forecast to be deficient. In the 2020 Cumulative Baseline scenario, the following are forecast to be deficient during the AM or PM peak hour:

AM Peak Hour:

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

PM Peak Hour:

- Northbound I-5 Off-Ramp to Jamboree Road
- Northbound I-405 On-Ramp from MacArthur Boulevard
- Southbound I-405 Loop On-Ramp from Bristol Street
- Northbound SR-55 On-Ramp from Paularino Avenue
- Northbound SR-55 Loop On-Ramp from Dyer Road
- Northbound SR-55 On-Ramp from Edinger Avenue
- Northbound SR-73 On-Ramp from Bison Avenue
- Northbound SR-73 On-Ramp from Jamboree Road

Figure 4.5 and **Figure 4.6** graphically depict the 2020 Cumulative Baseline freeway and ramp deficiencies.

Figure 4.5 – 2020 Cumulative Baseline Freeway AM Peak Hour Deficiencies

Figure 4.6 – 2020 Cumulative Baseline Freeway PM Peak Hour Deficiencies

4.9 2020 Cumulative Baseline With Update

As with the Cumulative Baseline scenario, the 2020 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 2020 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 in Year 2020.

4.10 2020 Cumulative Baseline With Update Land Use and Trip Generation

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 2020 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 2020 Cumulative With Update scenario and compares the total number of trips between the 2020 Cumulative With Update and Baseline scenarios. **Figure 4.7** through **Figure 4.13** graphically display the differences in land use quantities between 2020 With Update and Baseline conditions by traffic analysis zone (TAZ) for each land use type. It should be noted that the reason the 2015 (Existing) With Update land use is greater than the 2020 With Update is that the 2015 (Existing) With Update is a theoretical scenario that assumes full buildout of the Vision Plan while 2020 assumes a certain proportion of the ultimate buildout to be in place by 2020. **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 – 2020 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)
2015 Baseline	7,060	1,384	2,322	26,639	13,934	379	474
2015 With Update	16,795	1,690	2,653	34,286	12,339	549.371	1049
2020 Cumulative Baseline	7,060	1,384	2,322	26,639	13,934	379	474
2020 Cumulative With Update	16,671	1,405	2,535	27,750	13,240	883	1049
Percent Growth (2020 With Update vs. 2015 Baseline)	136%	2%	9%	4%	-5%	133%	121%
Percent Growth (2020 With Update vs. 2015 With Update)	-1%	-17%	-4%	-19%	7%	61%	0%

Source: City of Irvine

Table 4.9 – 2020 Cumulative With Update Trip Generation

SCENARIO	AM-OUT	AM-IN	PM-OUT	PM-IN	ADT
2015 Baseline	12,209	29,499	27,867	18,342	529,306
2015 With Update	18,089	36,120	35,014	24,855	700,506
2020 Baseline	12,172	29,501	27,877	18,307	529,306
2020 With Update	17,401	31,389	30,797	22,735	615,202
Percent Growth (2020 With Update vs. 2020 Baseline)	43.0%	6.4%	10.5%	24.2%	16.2%

Source: ITAM

Figure 4.7 – Land Use Comparison between 2020 IBC Vision Plan Update and 2020 Baseline (Residential Units)

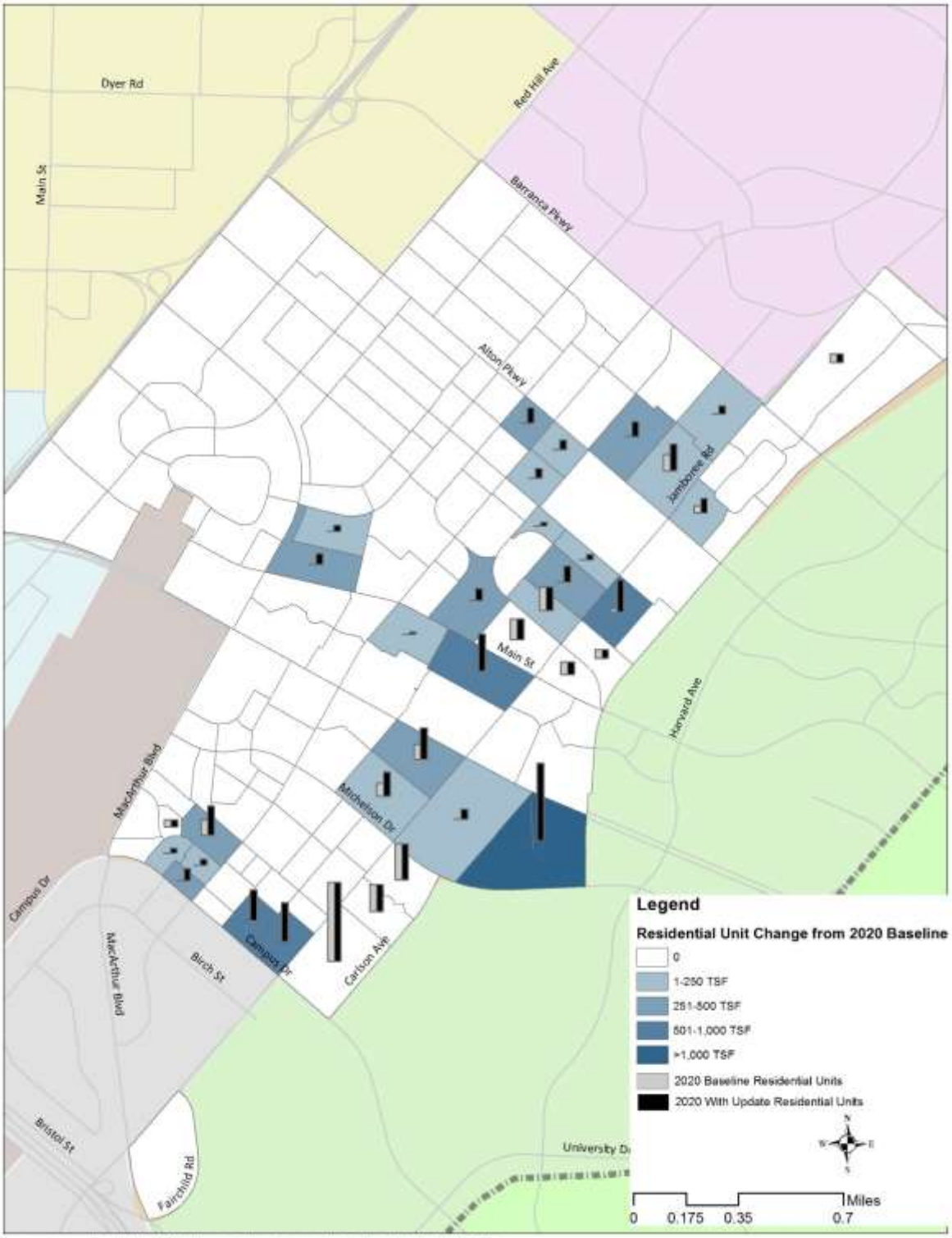


Figure 4.8 – Land Use Comparison between 2020 IBC Vision Plan Update and 2020 (Office Mix)

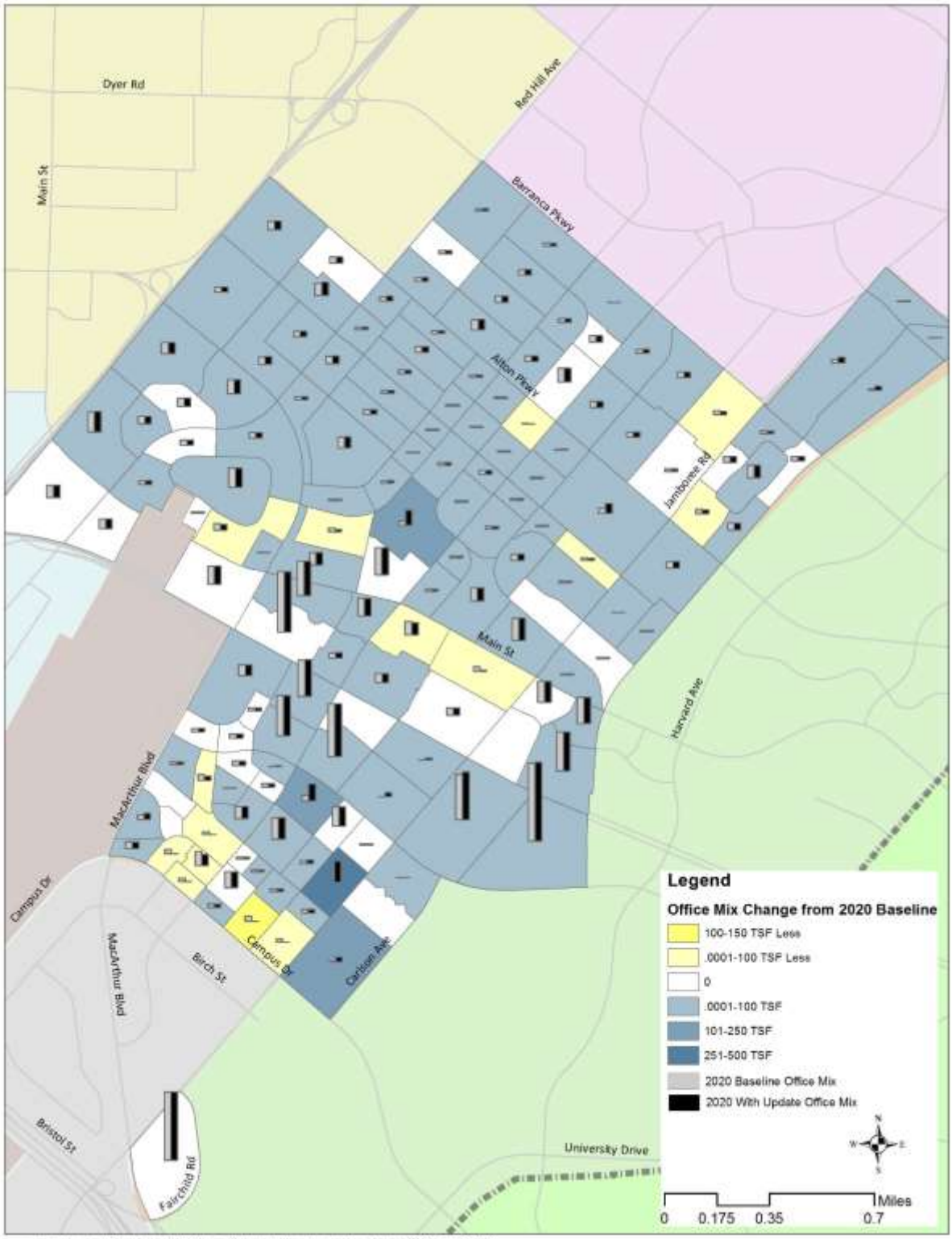


Figure 4.9 – Land Use Comparison between 2020 IBC Vision Plan Update and 2020 (Industrial Mix)

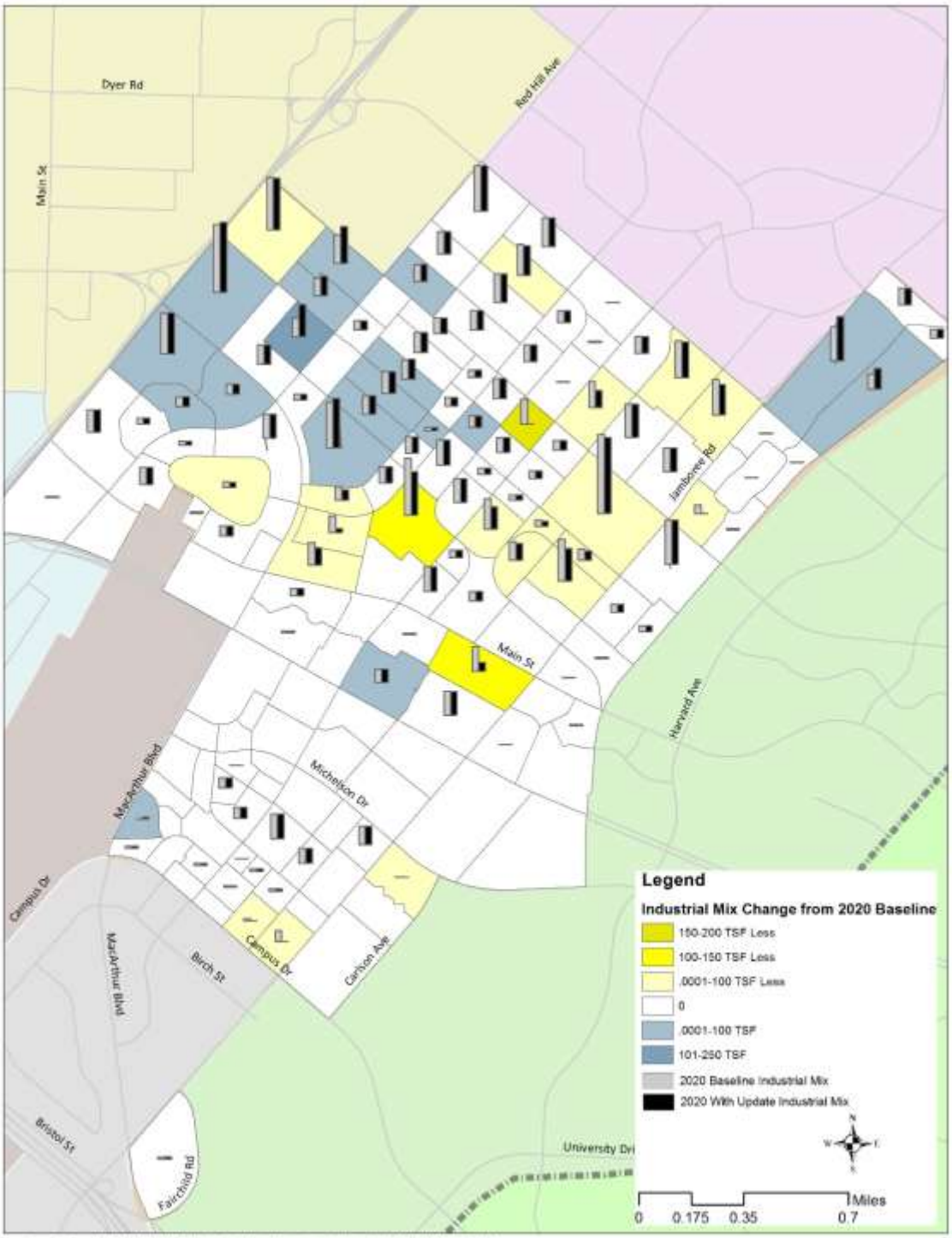


Figure 4.10 – Land Use Comparison between 2020 IBC Vision Plan Update and 2020 Baseline (Commercial)

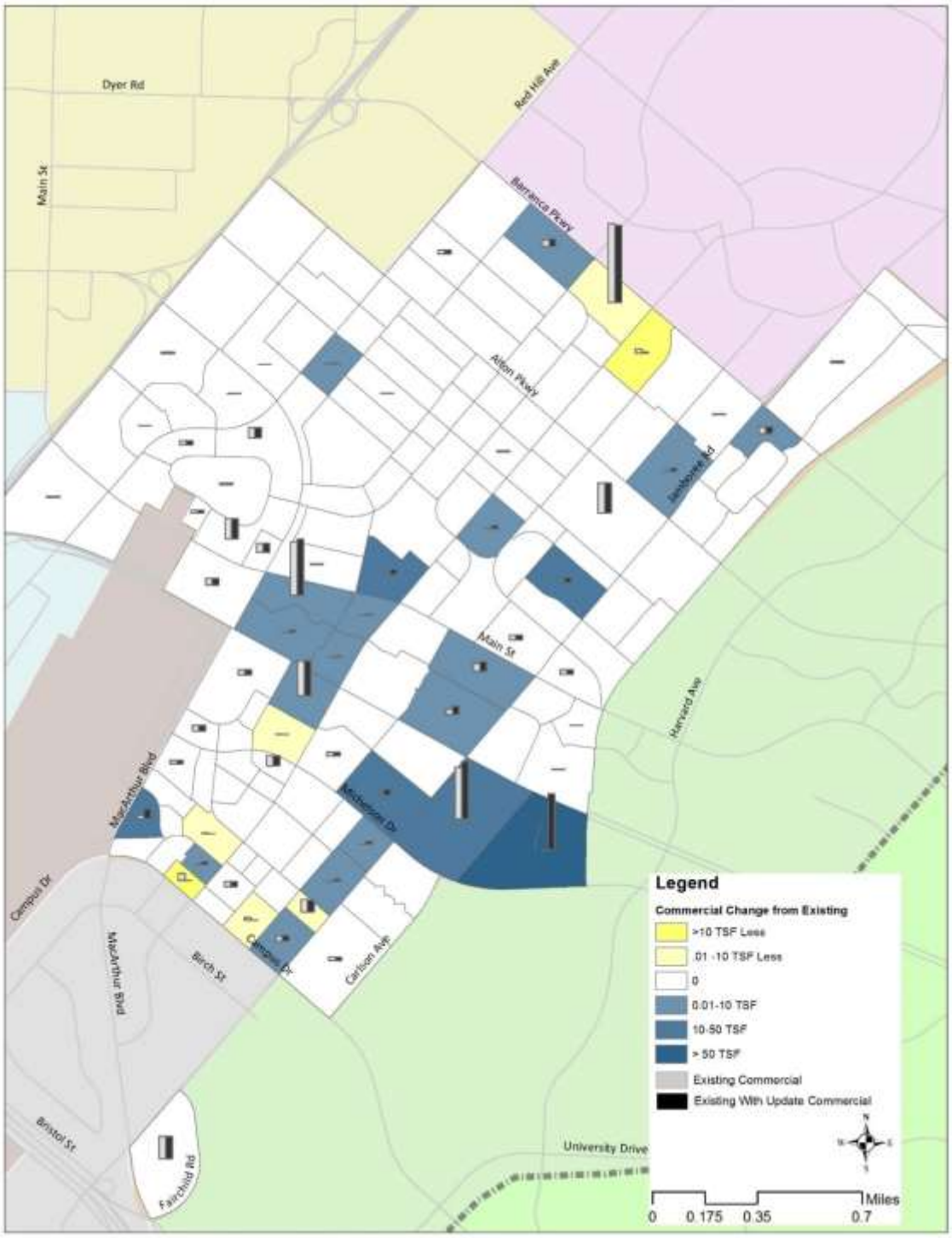


Figure 4.11 – Land Use Comparison between 2020 IBC Vision Plan Update and 2020 Baseline (Hotel)

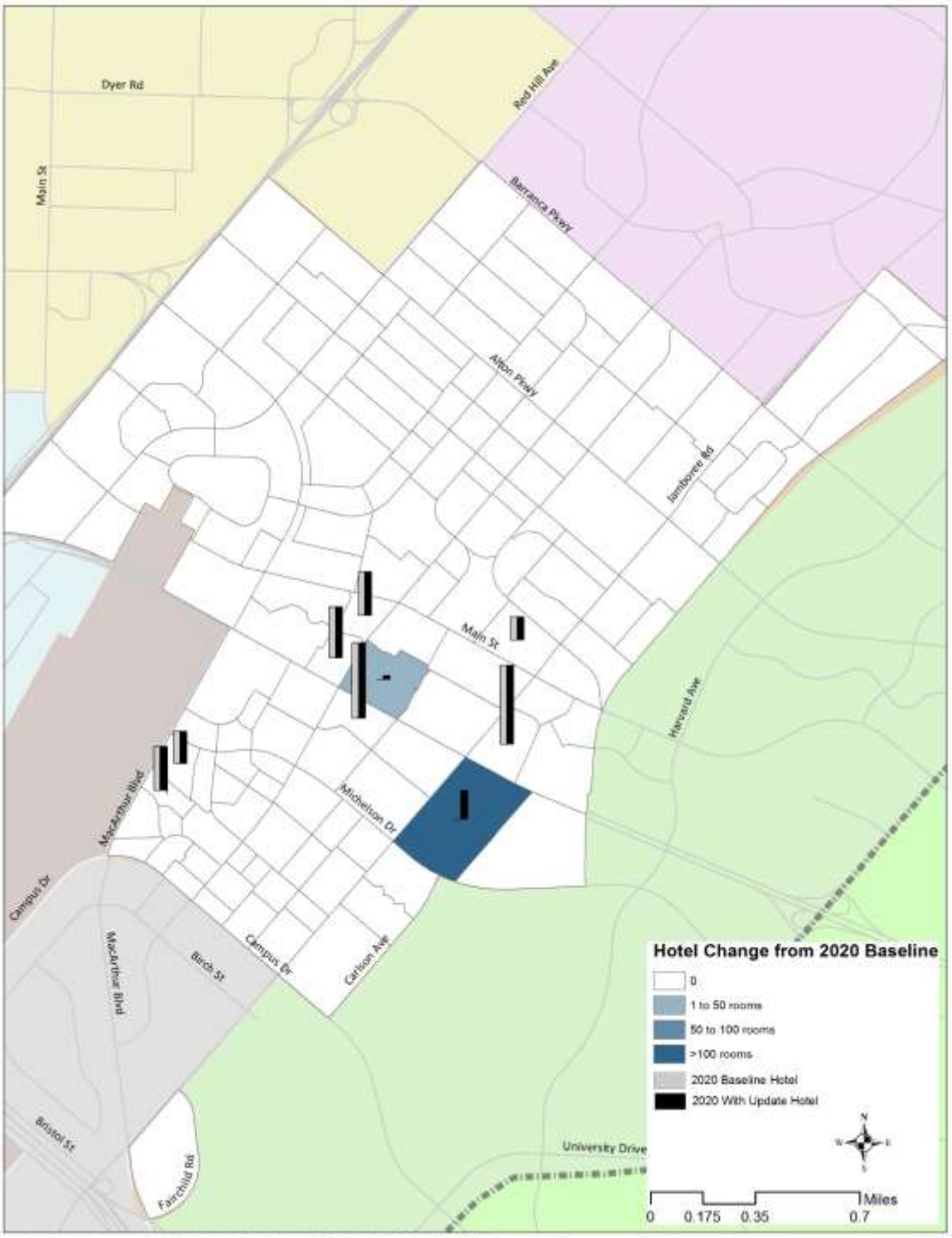


Figure 4.12 – Land Use Comparison between 2020 IBC Vision Plan Update and 2020 Baseline (Mini-Warehouse)

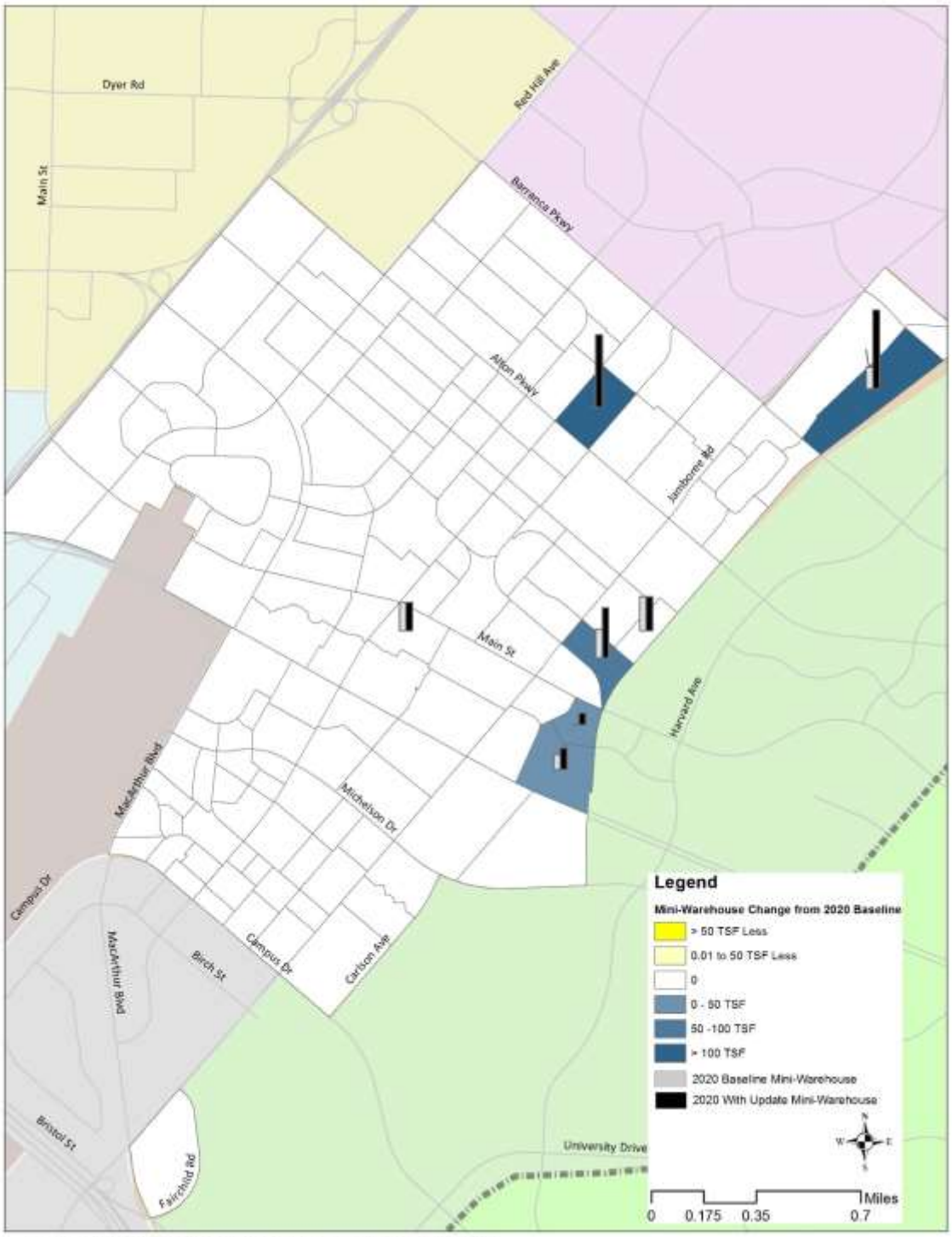
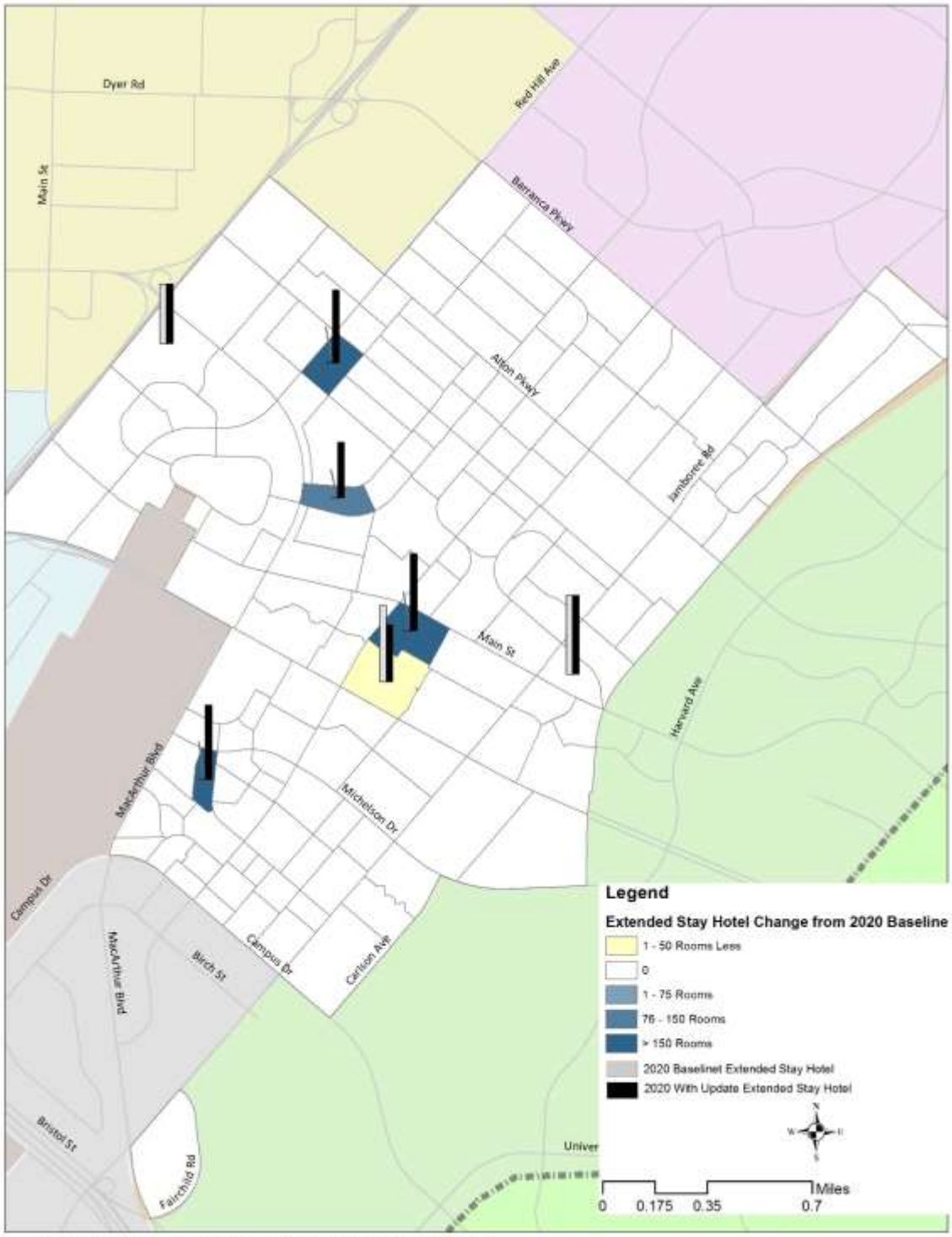


Figure 4.13 – Land Use Comparison between 2020 IBC Vision Plan Update and 2020 Baseline (Extended-stay Hotel)



4.11 2020 Cumulative Baseline With Update Daily Arterial Segment Analysis

The 2020 Cumulative With Update traffic patterns generally remain consistent with existing conditions and the 2020 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 seventeen arterial segments that are forecast to be deficient under the 2020 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 2020 Cumulative Baseline is one additional deficiency, arterial segment #148: Jamboree Road from I-405 SB Ramps to Michelson Dr in the City of Irvine. Deficient segments under daily Year 2020 Cumulative With Update conditions are:

- 879—Campus Drive from Carlson Avenue to University Drive (Irvine)
- 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)
- 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)
- 183—Harvard Avenue from Michelson Dr to University Drive (Irvine)
- 133—Jamboree Road from Michelle Dr to Walnut Avenue (Irvine)
- 145—Jamboree Road from Main Street to I-405 NB Ramps (Irvine)
- 148—Jamboree Road from I-405 SB Ramps to Michelson Drive (Irvine)
- 188—University Drive from California Avenue to Mesa Road (Irvine)
- 187—University Drive from Mesa Road to Campus Drive (Irvine)
- 1312—Bristol Street SB West of Jamboree Road (Newport Beach)*
- 953—MacArthur Boulevard from University Dr to Bison Avenue (Newport Beach)*
- 1301—MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*
- 1326—Dyer Road from SR-55 SB to SR-55 NB (Santa Ana)**

*Deficient locations under daily conditions—no peak hour link analysis required.
**Impact location within the City of Santa Ana

Figure 4.14 and **Figure 4.15** display the arterial ADT and deficient segments for the 2020 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. For Santa Ana, deficient segments under daily conditions are typically improved to operate at an acceptable LOS. Impacts and improvements are discussed in **Chapter 6**.

Table 4.10 – 2020 Cumulative With Update Daily Arterial LOS

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	YEAR 2015 ARTERIAL SEGMENT CLASSIFICATIONS	2020 CUMULATIVE BASELINE			2020 CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	4D	15,200	0.40	A	15,100	0.40	A
2721	Baker St	Bear St to Bristol St		CM	4D	23,900	0.63	B	24,000	0.63	B
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	4D	29,100	0.77	C	29,200	0.77	C
1294	Baker St	SR 55 SB to SR 55 NB		CM	4D	22,500	0.59	A	22,500	0.59	A
1468	Baker St	SR 55 NB to Red Hill Ave		CM	4D	13,100	0.35	A	13,100	0.35	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	2D	4,900	0.27	A	4,900	0.27	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	29,900	0.53	A	29,900	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	40,300	0.72	C	40,400	0.72	C
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	39,900	0.71	C	39,900	0.71	C
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	41,900	0.75	C	42,000	0.75	C
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	9D+1 AUX	59,400	0.70	B	59,500	0.70	B
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	59,900	0.80	C	59,900	0.80	C
2745	Bristol St	I-405 SB Ramps to Paularino Ave		CM	6D	42,800	0.76	C	42,600	0.76	C
2732	Bristol St	Paularino Ave to Baker St		CM	6D	34,400	0.61	B	34,300	0.61	B
2730	Bristol St	Baker St to SR 55		CM	6D	26,000	0.46	A	26,300	0.47	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	18,500	0.33	A	18,800	0.34	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	17,700	0.47	A	17,900	0.47	A
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	2U	7,000	0.56	A	7,100	0.57	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	11,400	0.30	A	11,500	0.30	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	8,400	0.22	A	8,400	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	24,700	0.44	A	26,200	0.47	A
2785	Mesa Dr	Newport Blvd SB to Newport Blvd NB		CM	2U	6,400	0.51	A	6,500	0.52	A
2783	Mesa Dr	Newport Blvd NB to Santa Ana Ave		CM	2U	7,300	0.58	A	7,300	0.58	A
2779	Mesa Dr	Irvine Ave to Birch St		CM	4D	8,100	0.21	A	8,100	0.21	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	18,800	0.50	A	18,600	0.49	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	15,800	0.42	A	15,700	0.41	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	11,300	0.30	A	11,300	0.30	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	4,400	0.12	A	4,400	0.12	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	4D	22,100	0.58	A	23,100	0.61	A
1340	Red Hill Ave	Paularino Ave to Baker St		CM	4D	19,100	0.50	A	19,700	0.52	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	16,300	0.43	A	16,500	0.43	A
41	Santa Ana Ave	Mesa Dr to Bristol St		CM	4D	11,300	0.30	A	11,300	0.30	A
2769	University Dr	Santa Ana Ave to Irvine Ave		CM	2U	6,700	0.54	A	6,800	0.54	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	6,500	0.20	A	6,800	0.21	A
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	15,600	0.49	A	16,300	0.51	A
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	17,200	0.54	A	18,000	0.56	A
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	20,300	0.38	A	21,100	0.39	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	20,000	0.37	A	21,200	0.39	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	17,100	0.32	A	18,100	0.34	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	18,900	0.35	A	19,800	0.37	A
783	Alton Pkwy	San Marino to Culver Dr		Irv	6D	26,200	0.49	A	27,000	0.50	A
735	Barranca Pkwy (Dyer Rd)	Pullman to Red Hill Ave		Irv	6D	31,300	0.58	A	32,500	0.60	A
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	6D	31,800	0.59	A	32,600	0.60	A
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	34,600	0.55	A	36,400	0.58	A
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	35,500	0.56	A	37,200	0.59	A
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	30,200	0.56	A	31,200	0.58	A

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744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	25,200	0.47	A	25,900	0.48	A
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	23,800	0.44	A	24,200	0.45	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	25,600	0.47	A	26,100	0.48	A
748	Barranca Pkwy	Santa Rosa to Culver Dr		Irv	6D	27,000	0.50	A	27,500	0.51	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	21,700	0.68	B	21,900	0.68	B
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	22,000	0.69	B	22,000	0.69	B
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	21,500	0.67	B	21,600	0.68	B
540	Bryan Ave	Rubicon to Culver		Irv	4D	22,600	0.71	B	22,600	0.71	B
869	Campus Dr	MacArthur Blvd to Martin	a	Irv	6U	13,900	0.26	A	15,700	0.29	A
870	Campus Dr	Martin to Von Karman Ave	a	Irv	4D	14,500	0.45	A	16,100	0.50	A
871	Campus Dr	Von Karman Ave to Teller Ave	a	Irv	4D	11,600	0.36	A	13,000	0.41	A
872	Campus Dr	Teller Ave to Jamboree Rd	a	Irv	4D	11,400	0.36	A	12,300	0.38	A
877	Campus Dr	Jamboree Rd to Carlson Ave	a	Irv	4D	19,600	0.61	B	20,100	0.63	B
879	Campus Dr	Carlson Ave to University		Irv	2U	18,700	1.44	**F**	18,900	1.45	**F**
166	Carlson Ave	Michelson Dr to Campus Dr	a	Irv	4D	8,600	0.27	A	9,100	0.28	A
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps		Irv	7D	61,600	0.98	**E**	61,800	0.98	**E**
213	Culver Dr	I-5 SB Ramps to Scottsdale Dr		Irv	6D	53,800	1.00	**E**	54,100	1.00	**F**
214	Culver Dr	Scottsdale Dr to Walnut Ave		Irv	6D	46,600	0.86	D	47,000	0.87	D
215	Culver Dr	Walnut Ave to Deerfield Ave		Irv	6D	43,000	0.80	C	43,300	0.80	C
216	Culver Dr	Deerfield Ave to Irvine Center Dr		Irv	Maj6D+ 1AUX	42,900	0.79	C	43,200	0.80	C
217	Culver Dr	Irvine Center Dr to Warner Ave		Irv	6D	45,100	0.84	D	45,600	0.84	D
218	Culver Dr	Warner Ave to Barranca Pkwy		Irv	6D	43,500	0.81	C	43,900	0.81	D
219	Culver Dr	Barranca Pkwy to Alton Pkwy		Irv	6D	49,500	0.92	**E**	50,200	0.93	**E**
220	Culver Dr	Alton Pkwy to Main St		Irv	6D	47,600	0.88	D	48,300	0.89	D
221	Culver Dr	Main St to San Leandro		Irv	6D	50,700	0.94	**E**	51,200	0.95	**E**
222	Culver Dr	San Leandro to I-405 NB On-Ramp		Irv	6D	50,500	0.94	**E**	51,100	0.95	**E**
224	Culver Dr	I-405 SB Ramps to Michelson Dr		Irv	6D	53,200	0.99	**E**	54,300	1.01	**F**
225	Culver Dr	Michelson Dr to Sandburg Way		Irv	6D	39,400	0.73	C	39,600	0.73	C
226	Culver Dr	Sandburg Way to University Dr		Irv	6D	35,900	0.67	B	36,100	0.67	B
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	22,400	0.70	B	22,400	0.70	B
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,200	0.19	A	6,200	0.19	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	2U	8,400	0.65	B	8,500	0.65	B
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	2U	9,900	0.76	C	9,900	0.76	C
171	Harvard Ave	Deerfield Ave to Irvine Center Dr		Irv	3D	9,900	0.40	A	9,900	0.40	A
172	Harvard Ave	Irvine Center Dr to Paseo Westpark		Irv	4D	11,000	0.34	A	11,200	0.35	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	10,500	0.33	A	10,600	0.33	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	14,700	0.46	A	14,900	0.47	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	18,700	0.58	A	19,000	0.59	A
2829	Harvard Ave	San Juan to San Leon		Irv	4D	17,600	0.55	A	17,900	0.56	A
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	18,500	0.58	A	18,800	0.59	A
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	22,300	0.70	B	23,100	0.72	C
180	Harvard Ave	San Marino to Main St		Irv	4D	22,400	0.70	B	23,200	0.73	C
181	Harvard Ave	Main St to Coronado		Irv	4D	23,000	0.72	C	24,000	0.75	C
182	Harvard Ave	Coronado to Michelson Dr		Irv	4D	23,800	0.74	C	25,000	0.78	C
183	Harvard Ave	Michelson Dr to University Dr		Irv	2U	17,600	1.35	**F**	18,000	1.39	**F**
675	Irvine Center Dr	Harvard Ave to Hearthstone	b	Irv	6D	25,900	0.48	A	26,100	0.48	A
676	Irvine Center Dr	Hearthstone to Culver Dr	b	Irv	6D	26,100	0.48	A	26,300	0.49	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	48,500	0.77	C	48,500	0.77	C

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958	Jamboree Rd	I-5 NB Ramps to I-5 SB Ramps	b	Irv	8D	62,500	0.87	D	62,500	0.87	D
131	Jamboree Rd	I-5 SB Ramps to Michelle Dr	b	Irv	8D	51,400	0.71	C	52,300	0.73	C
133	Jamboree Rd	Michelle Dr to Walnut Ave	b	Irv	5D	51,400	1.20	**F**	52,600	1.22	**F**
135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rd)	b	Irv	Exp8	59,000	0.33	A	60,700	0.34	A
136	Jamboree Rd	Edinger Ave to Warner Ave	b	Irv	Exp8	74,200	0.42	A	76,300	0.43	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	62,200	0.35	A	64,200	0.36	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	52,700	0.73	C	54,900	0.76	C
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	56,300	0.78	C	58,900	0.82	D
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	60,800	0.84	D	63,900	0.89	D
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	54,900	0.76	C	57,200	0.79	C
144	Jamboree Rd	Kelvin Ave to Main St	a,b	Irv	8D	64,200	0.89	D	69,200	0.96	E
145	Jamboree Rd	Main St to I-405 NB Ramps	b	Irv	Maj8D+ 2AUX	69,800	0.97	E	75,400	1.05	**F**
148	Jamboree Rd	I-405 SB Ramps to Michelson Dr	a,b	Irv	Maj8D+ 2AUX	76,500	1.06	**F**	82,500	1.15	**F**
149	Jamboree Rd	Michelson Dr to Dupont Dr	a,b	Irv	7D	53,600	0.85	D	57,400	0.91	E
150	Jamboree Rd	Dupont Dr to Campus Dr	a,b	Irv	7D	45,200	0.72	C	47,100	0.75	C
151	Jamboree Rd	Campus Dr to Birch St	b	Irv	6D	44,800	0.83	D	46,300	0.86	D
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	44,600	0.71	B	46,600	0.74	C
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	7D	37,100	0.59	A	38,800	0.62	B
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	37,700	0.70	B	39,300	0.73	C
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	7D	37,900	0.60	A	40,500	0.64	B
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	24,000	0.38	A	25,500	0.41	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	24,000	0.38	A	25,400	0.40	A
60	MacArthur Blvd	Main St to I-405 NB Ramps	a	Irv	Maj8D+ 2AUX	51,100	0.71	C	53,900	0.75	C
62	MacArthur Blvd	I-405 SB Ramps to Michelson Dr	a	Irv	Maj8D+ 1AUX	56,800	0.79	C	60,200	0.84	D
63	MacArthur Blvd	Michelson Dr to Douglass	a	Irv	8D	38,800	0.54	A	40,400	0.56	A
64	MacArthur Blvd	Douglas to Campus Dr		Irv	8D	38,700	0.54	A	39,800	0.55	A
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	45,800	0.85	D	46,500	0.86	D
917	MacArthur Blvd	Fairchild Rd to University Dr	b	Irv	6D	42,500	0.79	C	43,100	0.80	C
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	24,600	0.46	A	25,900	0.48	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	24,900	0.46	A	26,600	0.49	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	25,000	0.46	A	26,600	0.49	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	32,100	0.51	A	33,900	0.54	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	32,800	0.61	A	36,500	0.68	B
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	24,100	0.45	A	27,000	0.50	A
823	Main St	Siglo to Jamboree Rd	a	Irv	6D	23,900	0.44	A	27,000	0.50	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+ 1AUX	23,300	0.43	A	24,000	0.44	A
825	Main St	Veneto to Harvard Ave		Irv	6D	23,800	0.44	A	24,400	0.45	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	13,200	0.41	A	13,500	0.42	A
827	Main St	Paseo Westpark to Culver Dr		Irv	4D	13,000	0.41	A	13,200	0.41	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	7,000	0.22	A	7,700	0.24	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	8,600	0.27	A	10,000	0.31	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	7,800	0.24	A	7,800	0.24	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	2,000	0.06	A	3,900	0.12	A
840	Michelson Dr	MacArthur Blvd to Dupont Dr	a	Irv	5D	20,200	0.47	A	22,000	0.51	A
843	Michelson Dr	Bixby to Von Karman Ave	a	Irv	4D	12,300	0.38	A	13,900	0.43	A

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844	Michelson Dr	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	19,800	0.62	B	21,800	0.68	B
845	Michelson Dr	Teller Ave to Jamboree Rd	a	Irv	5D	19,000	0.44	A	20,300	0.47	A
846	Michelson Dr	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+ 2AUX	22,300	0.41	A	25,900	0.48	A
847	Michelson Dr	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	21,100	0.66	B	25,600	0.80	C
848	Michelson Dr	Riparian View to Harvard Ave		Irv	4D	21,700	0.68	B	23,900	0.75	C
1346	Michelson Dr	Harvard Ave to Parkside Dr		Irv	4D	17,300	0.54	A	18,300	0.57	A
850	Michelson Dr	Parkside Dr to Culver Dr		Irv	4D	17,200	0.54	A	18,400	0.58	A
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	28,300	0.52	A	29,900	0.55	A
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	29,700	0.55	A	31,200	0.58	A
33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	31,300	0.58	A	33,400	0.62	B
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	39,700	0.74	C	42,400	0.79	C
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	4D	20,100	0.63	B	21,200	0.66	B
38	Red Hill Ave	Skypark to Main St	a	Irv	4D	16,500	0.52	A	17,200	0.54	A
189	University Dr	MacArthur Blvd to California Ave		Irv	4D	26,600	0.83	D	26,900	0.84	D
188	University Dr	California Ave to Mesa Rd		Irv	4D	32,300	1.01	**F**	32,800	1.03	**F**
187	University Dr	Mesa Rd to Campus Dr		Irv	4D	34,000	1.06	**F**	34,400	1.08	**F**
880	University Dr	Campus Dr to Harvard Ave		Irv	6D	29,100	0.54	A	29,400	0.54	A
881	University Dr	Harvard Ave to San Joaquin Hills Rd		Irv	6D	26,400	0.49	A	26,500	0.49	A
882	University Dr	San Joaquin Hills Rd to Culver Dr		Irv	6D	26,300	0.49	A	26,500	0.49	A
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	27,400	0.86	D	28,700	0.90	D
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	24,600	0.77	C	26,800	0.84	D
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	24,700	0.77	C	26,500	0.83	D
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	24,400	0.76	C	26,300	0.82	D
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	25,800	0.81	C	27,700	0.87	D
107	Von Karman Ave	Quartz to Michelson Dr	a	Irv	Prim4D+ 1AUX	22,500	0.70	B	24,300	0.76	C
108	Von Karman Ave	Michelson Dr to Dupont Dr	a	Irv	4D	16,900	0.53	A	18,300	0.57	A
110	Von Karman Ave	Dupont Dr to Martin	a	Irv	4D	16,600	0.52	A	17,600	0.55	A
111	Von Karman Ave	Martin to Campus Dr	a	Irv	4D	16,800	0.53	A	17,700	0.55	A
594	Walnut Ave	Myford to Jamboree SB Ramp		Irv	Prim4D+ 1AUX	21,100	0.66	B	21,300	0.67	B
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+ 1AUX	19,900	0.37	A	20,100	0.37	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+ 1AUX	20,000	0.47	A	20,200	0.47	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	18,500	0.58	A	18,700	0.58	A
597	Walnut Ave	Mall St to Culver Dr		Irv	4D	18,600	0.58	A	18,700	0.58	A
728	Warner Ave	Construction N to Harvard Ave		Irv	4D	15,800	0.49	A	16,100	0.50	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	11,400	0.36	A	11,600	0.36	A
732	Warner Ave	Santa Ynez to Culver Dr		Irv	4D	10,500	0.33	A	10,700	0.33	A
1223	Birch St	Mesa Dr to Bristol St SB		NB	4D	13,700	0.34	A	13,900	0.35	A
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	15,900	0.40	A	15,900	0.40	A
874	Birch St	East of MacArthur Blvd		NB	4D	8,700	0.22	A	9,500	0.24	A
69	Birch St	West of MacArthur Blvd		NB	4D	14,400	0.36	A	15,100	0.38	A
875	Birch St	East of Von Karman Ave		NB	4D	5,500	0.14	A	5,700	0.14	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	7,400	0.13	A	7,400	0.13	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	13,600	0.34	A	13,700	0.34	A
920	Bristol St SB	Red Hill Ave to Campus Dr		NB	2D	13,800	0.77	C	14,100	0.78	C
1310	Bristol St NB	Campus Dr to Red Hill Ave		NB	3D	13,600	0.47	A	13,900	0.48	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	YEAR 2015 ARTERIAL SEGMENT CLASSIFICATIONS	2020 CUMULATIVE BASELINE			2020 CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
1303	Bristol St SB	Campus Dr to Birch St		NB	3D	20,300	0.70	B	20,300	0.70	B
1305	Bristol St NB	Birch St to Campus Dr		NB	3D	22,700	0.78	C	22,700	0.78	C
1312	Bristol St SB	West of Jamboree Rd		NB	4D	38,400	0.96	**E**	38,300	0.96	**E**
1580	Bristol St NB	West of Jamboree Rd		NB	3D	17,800	0.61	B	18,100	0.62	B
66	Campus Dr	Bristol St NB to MacArthur Blvd		NB	6D	29,700	0.51	A	31,200	0.54	A
1778	Ford Rd	Jamboree Rd to MacArthur Blvd		NB	4D	10,700	0.27	A	10,700	0.27	A
1304	Irvine Ave	Bristol St NB to Bristol St SB		NB	6D	33,900	0.58	A	35,000	0.60	A
67	Irvine Ave	Bristol St SB to Mesa Dr		NB	6D	33,000	0.57	A	33,300	0.57	A
2768	Irvine Ave	S of University Dr		NB	4D	30,400	0.76	C	30,600	0.77	C
156	Jamboree Rd	S of MacArthur Blvd		NB	6D	38,900	0.67	B	40,300	0.70	B
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	6D	49,000	0.85	D	49,800	0.86	D
157	Jamboree Rd	S of Bristol St		NB	8D	55,400	0.82	D	56,100	0.83	D
159	Jamboree Rd	University Dr to Bison Ave		NB	6D	45,800	0.79	C	46,300	0.80	C
1777	Jamboree Rd	Bison Ave to Ford Rd		NB	6D	34,200	0.59	A	34,600	0.60	A
73	MacArthur Blvd	Campus Dr to Birch St		NB	8D	20,200	0.30	A	20,700	0.30	A
75	MacArthur Blvd	S of Birch St		NB	6D	23,000	0.40	A	23,300	0.40	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	22,100	0.38	A	22,500	0.39	A
953	MacArthur Blvd	University Dr to Bison Ave	b	NB	6D	69,300	1.20	**F**	69,700	1.20	**F**
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	78,200	1.15	**F**	78,500	1.15	**F**
2767	University Dr	East of Irvine Ave		NB	2U	4,500	0.45	A	4,400	0.44	A
1774	University Dr	Jamboree Rd to MacArthur Blvd		NB	5D	13,100	0.27	A	13,200	0.27	A
112	Von Karman Ave	S of Campus Dr		NB	4D	11,600	0.29	A	11,900	0.30	A
113	Von Karman Ave	S of Birch St		NB	4D	10,500	0.26	A	11,000	0.28	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	36,700	0.65	B	37,200	0.66	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	50,200	0.89	D	51,500	0.92	**E**
734	Dyer Rd	SR-55 NB to Pullman St		SA	6D	47,400	0.84	D	48,800	0.87	D
2764	Grand Ave	Warner Ave to Hotel Terrace Dr		SA	6D	24,200	0.43	A	24,700	0.44	A
2806	Grand Ave	Hotel Terrace Dr to SR-55 NB		SA	6D	24,000	0.43	A	24,300	0.43	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	2U	3,500	0.28	A	3,600	0.29	A
2822	Halladay St	Alton Ave to McGaw Ave(Columbine)		SA	2U	1,900	0.15	A	2,000	0.16	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	34,700	0.62	B	35,100	0.62	B
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	39,500	0.70	B	40,300	0.72	C
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	28,400	0.50	A	28,500	0.51	A
2826	Main St	Alton Ave to McGaw Ave(Columbine)		SA	6D	27,200	0.48	A	27,300	0.49	A
2809	Main St	McGaw(Columbine) to MacArthur Blvd		SA	6D	28,500	0.51	A	28,700	0.51	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	22,800	0.41	A	23,000	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	22,900	0.61	B	23,100	0.62	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	27,200	0.48	A	27,700	0.49	A
2761	Sunflower Ave	Bristol St to Flower St		SA/CM	6D	22,600	0.40	A	23,500	0.42	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/CM	6D	18,500	0.33	A	19,400	0.35	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/CM	6D	24,700	0.44	A	25,900	0.46	A
1198	Browning Ave	Walnut Ave to I-5		Tus	2U	5,300	0.42	A	5,300	0.42	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	17,000	0.68	B	17,100	0.68	B
535	Bryan Ave	Red Hill Ave to Browning		Tus	4D	17,200	0.46	A	17,300	0.46	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	17,400	0.46	A	17,500	0.47	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	20,100	0.54	A	20,300	0.54	A
44	Edinger Ave	West of Newport Ave	b	Tus	6D	41,100	0.73	C	41,300	0.73	C
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	28,600	0.51	A	28,800	0.51	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	YEAR 2015 ARTERIAL SEGMENT CLASSIFICATIONS	2020 CUMULATIVE BASELINE			2020 CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	22,800	0.41	A	23,200	0.41	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4D	13,300	0.36	A	13,400	0.36	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	2D	10,800	0.60	A	11,000	0.61	B
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4D	10,400	0.28	A	10,500	0.28	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	17,400	0.46	A	17,500	0.47	A
672	Irvine Center Dr (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	28,100	0.50	A	28,500	0.51	A
674	Irvine Center Dr	Jamboree Rd to Harvard Ave	b	Tus	6D	27,200	0.48	A	27,600	0.49	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	5,000	0.40	A	5,000	0.40	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	43,200	0.77	C	43,300	0.77	C
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	37,800	0.67	B	38,000	0.68	B
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	34,100	0.61	A	34,200	0.61	A
49	Newport Ave	N of Sycamore Ave		Tus	6D	18,300	0.33	A	18,300	0.33	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	23,400	0.42	A	23,100	0.41	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	4,900	0.39	A	4,900	0.39	A
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	5,700	0.46	A	5,700	0.46	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	38,300	0.68	B	38,500	0.68	B
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	35,500	0.63	B	35,600	0.63	B
21	Red Hill Ave	Nisson Rd to I-5 SB Ramps		Tus	6D	40,800	0.73	C	40,800	0.73	C
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	30,300	0.54	A	30,300	0.54	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	25,100	0.45	A	28,000	0.50	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	24,700	0.44	A	24,700	0.44	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	24,800	0.44	A	24,800	0.44	A
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	28,600	0.51	A	29,200	0.52	A
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	29,900	0.46	A	29,900	0.46	A
1363	Sycamore Ave	SR-55 NB to Newport Ave		Tus	4D	9,700	0.26	A	9,800	0.26	A
1920	Sycamore Ave	Newport Ave to Red Hill Ave		Tus	2U	9,700	0.78	C	9,800	0.78	C
85	Tustin Ranch Rd	N of I-5		Tus	6D	44,100	0.78	C	44,100	0.78	C
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	36,500	0.65	B	36,700	0.65	B
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4D	6,300	0.17	A	6,400	0.17	A
587	Walnut Ave	East of Newport Ave		Tus	4U	17,800	0.71	C	18,000	0.72	C
589	Walnut Ave	East of Red Hill Ave		Tus	4D	17,400	0.46	A	17,500	0.47	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	19,800	0.53	A	19,900	0.53	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	20,000	0.53	A	20,100	0.54	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	26,600	0.47	A	27,400	0.49	A

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

Figure 4.14 – 2020 Cumulative With Update Daily Arterial ADT

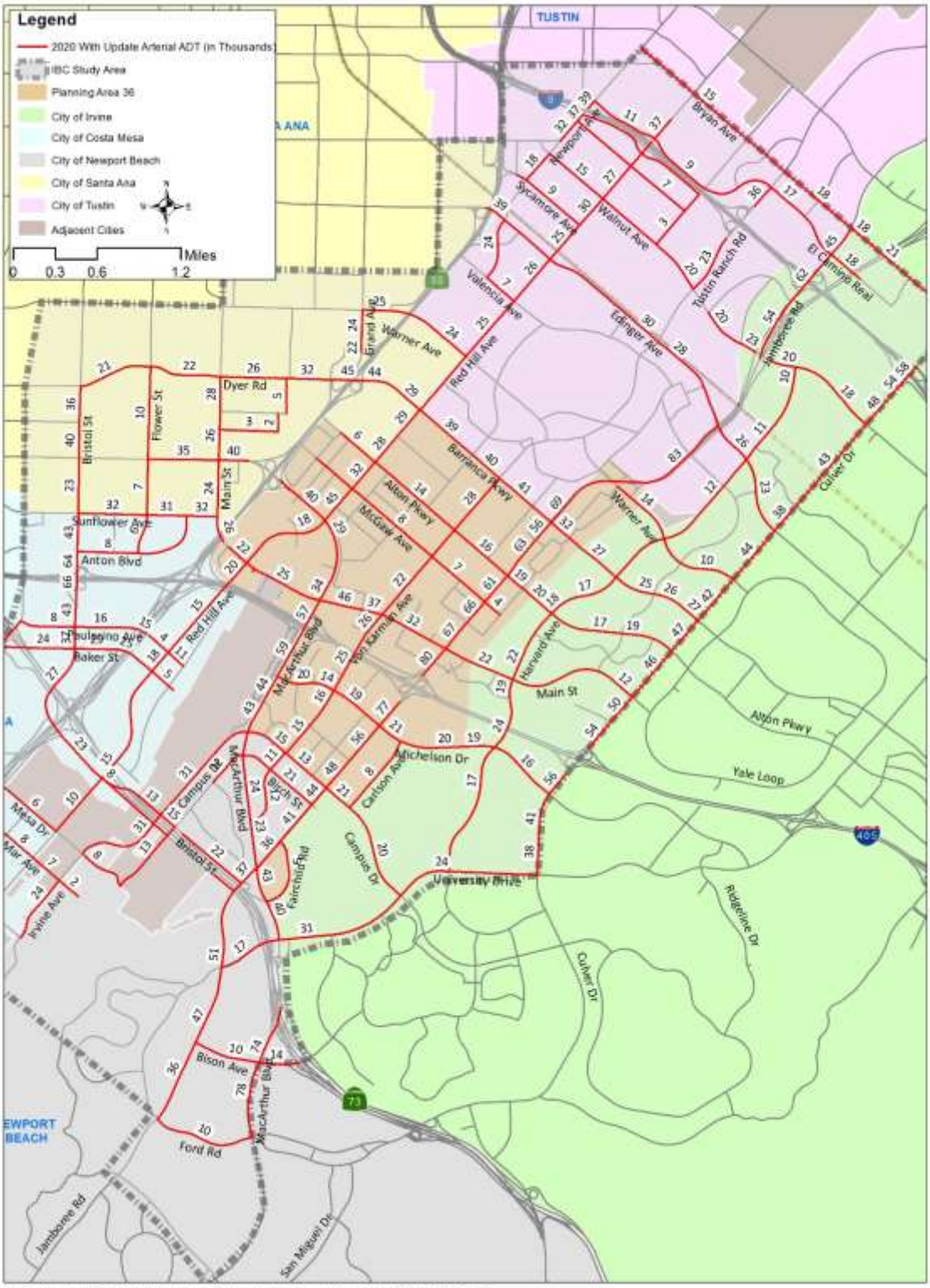
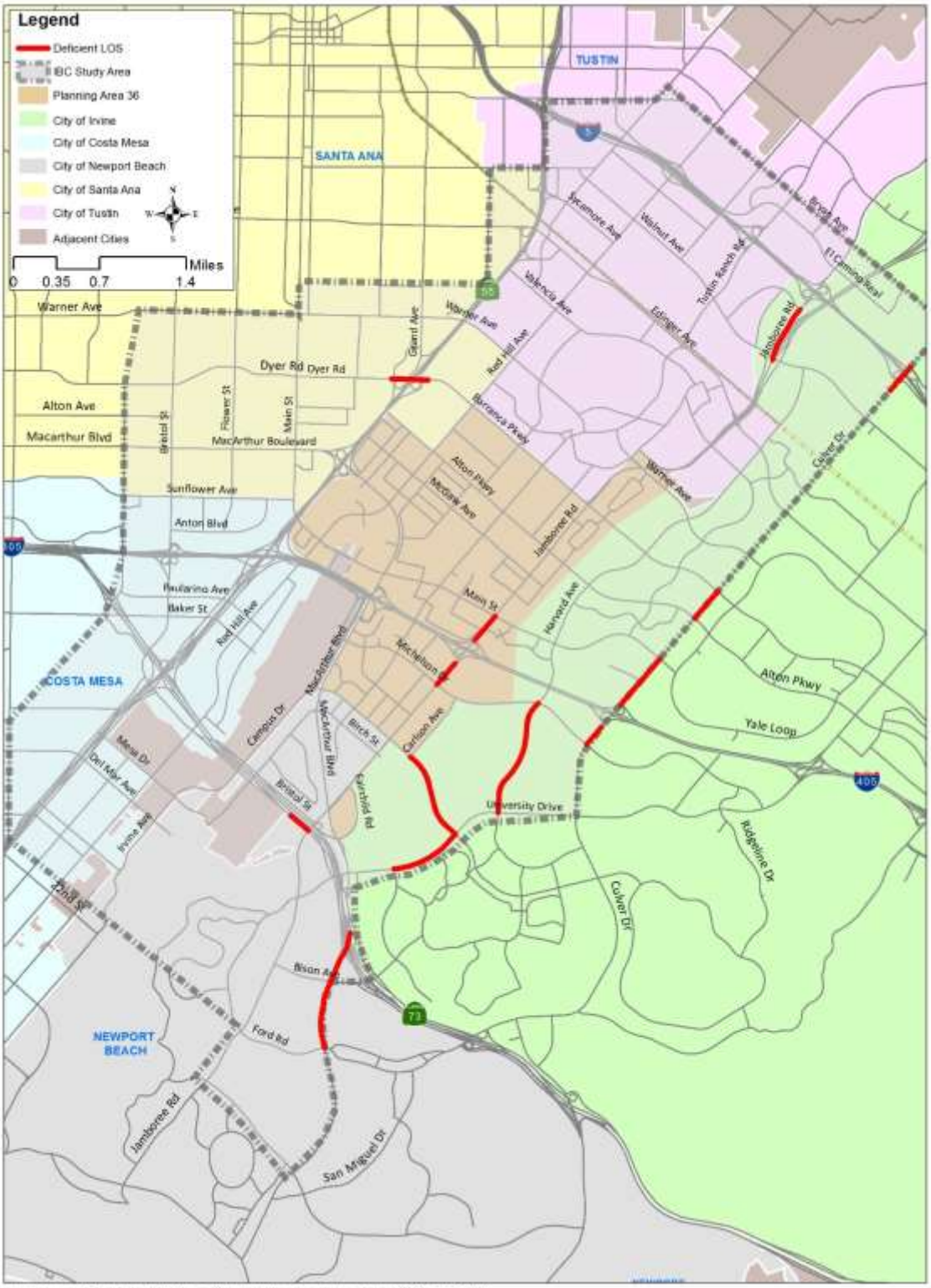


Figure 4.15 – 2020 Cumulative With Update Daily Arterial Deficiencies



4.12 2020 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 – 2020 Cumulative With Update Peak Hour Link Analysis

ID	ARTERIAL	SEGMENT LIMITS	FACILITY TYPE	2020 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	2U	651	702	1,062	842	Acceptable	Acceptable	Acceptable	Acceptable
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps	7D	1,644	3,189	3,371	1,891	Acceptable	Acceptable	Acceptable	Acceptable
213	Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,390	2,745	2,450	2,250	Acceptable	Acceptable	Acceptable	Acceptable
219	Culver Dr	Barranca Parkway to Alton Pkwy	6D	1,312	2,511	2,430	1,803	Acceptable	Acceptable	Acceptable	Acceptable
221	Culver Dr	Main St to San Leandro	6D	1,401	2,616	2,635	1,845	Acceptable	Acceptable	Acceptable	Acceptable
222	Culver Dr	San Leandro to I-405 NB On-Ramp	6D	1,499	2,636	2,825	1,919	Acceptable	Acceptable	Acceptable	Acceptable
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	2,142	2,263	2,808	1,867	Acceptable	Acceptable	Acceptable	Acceptable
183	Harvard Ave	Michelson Dr to University Dr	2U	395	875	1,101	760	Acceptable	Acceptable	Acceptable	Acceptable
133	Jamboree Rd	Michelle Dr to Walnut Avenue	5D	852	2,322	1,546	1,611	Acceptable	Acceptable	Acceptable	Acceptable
145	Jamboree Rd	Main Street to I-405 Off-Ramp	Maj8D+ 2AUX	2,757	3,551	3,551	3,095	Acceptable	Acceptable	Acceptable	Acceptable
148	Jamboree Rd	I-405 On-Ramp to Michelson Dr	Maj8D+ 2AUX	2,610	4,843	4,119	3,220	Acceptable	Acceptable	Acceptable	Acceptable
189	University Dr	MacArthur Blvd to California Ave	4D	1,456	702	1,192	842	Acceptable	Acceptable	Acceptable	Acceptable
188	University Dr	California Ave to Mesa Rd	4D	1,184	702	1,839	842	Acceptable	Acceptable	Acceptable	Acceptable
187	University Dr	Mesa Rd to Campus Dr	4D	901	702	1,575	842	Acceptable	Acceptable	Acceptable	Acceptable

4.13 2020 Cumulative Baseline With Update Peak Hour Intersection Analysis

Using the turning movement volumes from each intersection assumed to be built by 2020, 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 2020 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 2020 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 (34 intersections in the AM peak and 17 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 an 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 an impact. For deficient intersections within the City of Newport Beach, an increase of 0.01 of a critical movement constitutes an impact. The 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**. Five intersections are deficient in the 2020 Cumulative With Update scenario, including one location in Irvine, three in Tustin, and one shared location between Tustin and Irvine. Of the five intersections, only one is impacted by the update: #36 – Red Hill Avenue at El Camino Real (ICU increase of 0.01) in Tustin. The deficient intersections include the following:

- #234: Culver Dr at Michelson Dr (Irvine)—PM Peak Hour LOS E with a 0.91 V/C
- #134: Loop Rd/Park Ave at Warner Ave (Irvine/Tustin)—PM Peak Hour LOS E 0.96 with a V/C
- #36: Red Hill Ave at El Camino Real (Tustin)*—PM Peak Hour LOS E with a 0.92 V/C
- #93: Tustin Ranch Rd at El Camino Real (Tustin)—AM Peak Hour LOS E with a 0.93 V/C
- #111: Franklin Ave at Walnut Ave (Tustin)—PM Peak Hour LOS E with a 0.91 V/C

*Denotes impact in 2020

When compared to the Baseline scenario, there are no additional deficiencies. 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**.

4.14 2020 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 2020 Cumulative With Update conditions and compares mainline segment performance to 2020 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.

Table 4.12 – 2020 Cumulative With Update Peak Hour Intersection LOS

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (2015)	JURISDICTION	2020 CUMULATIVE BASELINE				2020 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	0.75	C	0.61	B	0.75	C	0.60	A
11	SR-55 Frontage Rd NB at Paularino Ave			CM	0.57	A	0.72	C	0.56	A	0.70	B
12	SR-55 Frontage Rd SB at Baker St			CM	0.64	B	0.69	B	0.63	B	0.68	B
13	SR-55 Frontage Rd NB at Baker St			CM	0.77	C	0.76	C	0.76	C	0.77	C
50	Red Hill Ave at Paularino Ave			CM	0.45	A	0.66	B	0.46	A	0.68	B
51	Red Hill Ave at Baker St			CM	0.47	A	0.71	C	0.48	A	0.73	C
52	Red Hill Ave at Bristol St			CM	0.38	A	0.46	A	0.40	A	0.46	A
541	Bear at Baker St			CM	0.58	A	0.72	C	0.58	A	0.72	C
542	Bear at Paularino Ave			CM	0.39	A	0.56	A	0.39	A	0.56	A
545	Bristol at Sunflower			CM	0.58	A	0.72	C	0.58	A	0.73	C
546	Bristol at Anton			CM	0.31	A	0.61	B	0.32	A	0.61	B
547	Bristol at Paularino Ave			CM	0.56	A	0.78	C	0.58	A	0.79	C
548	Bristol at Baker St			CM	0.53	A	0.64	B	0.54	A	0.64	B
549	Newport Blvd SB at Bristol			CM	0.25	A	0.51	A	0.25	A	0.51	A
550	Newport Blvd NB at Bristol			CM	0.29	A	0.41	A	0.31	A	0.41	A
715	Bristol at I-405 NB Off Ramp			CM	0.45	A	0.65	B	0.45	A	0.66	B
716	Bristol at I-405 SB Ramps			CM	0.46	A	0.62	B	0.45	A	0.63	B
717	Bear at SR-73 SB Ramps			CM	0.51	A	0.80	C	0.51	A	0.80	C
720	Flower at MacArthur Blvd			CM	0.50	A	0.77	C	0.52	A	0.77	C

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (2015)	JURISDICTION	2020 CUMULATIVE BASELINE				2020 CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
721	Flower at Sunflower			CM	0.27	A	0.43	A	0.28	A	0.43	A
722	Anton at Sunflower			CM	0.39	A	0.37	A	0.41	A	0.38	A
726	Main St at Sunflower			CM	0.43	A	0.73	C	0.46	A	0.73	C
735	Newport Blvd NB at Del mar			CM	0.75	C	0.47	A	0.75	C	0.48	A
736	Newport Blvd SB at Fair/Del Mar			CM	0.30	A	0.42	A	0.29	A	0.41	A
737	Newport Blvd NB at Mesa Rd			CM	0.24	A	0.33	A	0.26	A	0.33	A
738	Newport Blvd SB at Mesa Rd			CM	0.20	A	0.55	A	0.21	A	0.54	A
32	Daimler St at McGaw Ave			Irv	0.18	A	0.17	A	0.20	A	0.17	A
45	Red Hill Ave at McGaw Ave	a		Irv	0.50	A	0.69	B	0.52	A	0.72	C
47	Red Hill Ave at MacArthur Blvd	a		Irv	0.68	B	0.78	C	0.72	C	0.83	D
48	Red Hill Ave at Sky Park N	a		Irv	0.43	A	0.58	A	0.44	A	0.60	A
49	Red Hill Ave at Main St	a		Irv	0.65	B	0.74	C	0.66	B	0.74	C
67	Gillette Ave at McGaw Ave	a		Irv	0.26	A	0.38	A	0.34	A	0.44	A
70	Gillette Ave at Main Street	a		Irv	0.40	A	0.68	B	0.48	A	0.73	C
77	MacArthur Blvd at Sky Park East	a		Irv	0.28	A	0.43	A	0.33	A	0.44	A
78	MacArthur Blvd at Main St	a		Irv	0.59	A	0.74	C	0.61	B	0.80	C
79	MacArthur Blvd at I-405 NB Ramps	a		Irv	0.69	B	0.63	B	0.74	C	0.65	B
80	MacArthur Blvd at I-405 SB Ramps	a		Irv	0.58	A	0.71	C	0.62	B	0.74	C
82	MacArthur Blvd at Michelson Dr	a		Irv	0.61	B	0.81	D	0.67	B	0.86	D
83	MacArthur Blvd at Douglas Ave	a		Irv	0.41	A	0.39	A	0.47	A	0.42	A
87	Dupont Dr at Michelson Dr	a		Irv	0.37	A	0.40	A	0.43	A	0.45	A
98	Von Karman Ave at Alton Pkwy	a		Irv	0.82	D	0.89	D	0.83	D	0.91	E
99	Von Karman Ave at McGaw Ave	a		Irv	0.63	B	0.72	C	0.70	B	0.78	C
100	Von Karman Ave at Main St	a		Irv	0.66	B	0.85	D	0.72	C	0.90	D
101	Von Karman Ave at Morse Ave	a		Irv	0.52	A	0.67	B	0.54	A	0.68	B
102	Von Karman Ave at Michelson Dr	a		Irv	0.51	A	0.70	B	0.55	A	0.75	C
103	Von Karman Ave at Dupont Dr	a		Irv	0.41	A	0.40	A	0.49	A	0.47	A
104	Von Karman Ave at Martin	a		Irv	0.35	A	0.42	A	0.38	A	0.46	A
115	Millikan Ave at Alton Pkwy	a		Irv	0.37	A	0.64	B	0.40	A	0.67	B
116	Cartwright Rd at Main St	a		Irv	0.38	A	0.59	A	0.47	A	0.63	B
119	Teller Ave at Michelson Dr	a		Irv	0.39	A	0.49	A	0.51	A	0.56	A
128	Jamboree Rd at I-5 NB Ramps	b		Irv	0.70	B	0.73	C	0.69	B	0.73	C
129	Jamboree Rd at I-5 SB Ramps	b		Irv	0.69	B	0.58	A	0.69	B	0.58	A
130	Jamboree Rd at Michelle Dr			Irv	0.69	B	0.64	B	0.69	B	0.64	B
131	Jamboree Rd SB at Walnut Ave			Irv	0.50	A	0.48	A	0.50	A	0.50	A
132	Jamboree Rd NB at Walnut Ave			Irv	0.39	A	0.59	A	0.39	A	0.56	A
135	Jamboree Rd NB Ramps at Warner Ave			Irv	0.45	A	0.86	D	0.45	A	0.87	D
137	Jamboree Rd at Beckman Ave	a		Irv	0.69	B	0.79	C	0.71	C	0.81	D
138	Jamboree Rd at Alton Pkwy	a		Irv	0.78	C	0.86	D	0.78	C	0.87	D
139	Jamboree Rd at McGaw Ave	a		Irv	0.68	B	0.69	B	0.72	C	0.71	C
140	Jamboree Rd at Kelvin Ave	a		Irv	0.64	B	0.62	B	0.76	C	0.65	B
141	Jamboree Rd at Main St	a		Irv	0.70	B	0.79	C	0.75	C	0.83	D
143	Jamboree Rd at I-405 NB Ramps	a,b		Irv	0.72	C	0.79	C	0.76	C	0.83	D
144	Jamboree Rd at I-405 SB Ramps	a,b		Irv	0.96	E	0.88	D	0.99	E	0.92	E
145	Jamboree Rd at Michelson Dr	a		Irv	0.77	C	0.93	E	0.86	D	1.00	E
146	Jamboree Rd at Dupont Rd	a		Irv	0.58	A	0.65	B	0.63	B	0.68	B
164	Construction S at Barranca Pkwy	a		Irv	0.38	A	0.52	A	0.43	A	0.56	A
168	Murphy Ave at Alton Pkwy	a		Irv	0.35	A	0.57	A	0.37	A	0.63	B
170	Union at Main St	a		Irv	0.37	A	0.63	B	0.37	A	0.64	B
171	Veneto at Main St			Irv	0.36	A	0.55	A	0.36	A	0.56	A
174	Carlson Ave at Michelson Dr			Irv	0.58	A	0.68	B	0.71	C	0.79	C
175	Carlson Ave at Campus Dr			Irv	0.42	A	0.64	B	0.43	A	0.64	B
180	Harvard Ave at Walnut Ave			Irv	0.47	A	0.53	A	0.48	A	0.53	A
183	Harvard Ave at Warner Ave			Irv	0.53	A	0.59	A	0.52	A	0.58	A

ID	INTERSECTION	PA 36/CMP/ SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (2015)	JURISDICTION	2020 CUMULATIVE BASELINE				2020 CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
184	Harvard Ave at Barranca Pkwy			Irv	0.62	B	0.66	B	0.63	B	0.66	B
185	Harvard Ave at Alton Pkwy			Irv	0.63	B	0.73	C	0.62	B	0.73	C
186	Harvard Ave at Main St			Irv	0.55	A	0.68	B	0.56	A	0.69	B
187	Harvard Ave at Coronado			Irv	0.53	A	0.56	A	0.54	A	0.56	A
188	Harvard Ave Michelson Dr			Irv	0.63	B	0.85	D	0.60	A	0.85	D
189	Harvard Ave University Dr			Irv	0.67	B	0.71	C	0.67	B	0.71	C
190	University Dr at Campus Dr		√	Irv	0.76	C	0.8	C	0.78	C	0.80	C
191	Mesa Rd at University Dr			Irv	0.61	B	0.70	B	0.63	B	0.72	C
192	California Ave at University Dr			Irv	0.64	B	0.81	D	0.65	B	0.82	D
196	Hearthstone Blvd at Irvine Center Dr			Irv	0.48	A	0.52	A	0.48	A	0.53	A
198	Paseo Westpark at Warner Ave			Irv	0.37	A	0.32	A	0.37	A	0.32	A
199	Paseo Westpark at Barranca Pkwy			Irv	0.43	A	0.52	A	0.43	A	0.53	A
200	Paseo Westpark at Alton Pkwy			Irv	0.46	A	0.57	A	0.47	A	0.58	A
201	Paseo Westpark at Main St			Irv	0.54	A	0.67	B	0.52	A	0.67	B
221	Culver Dr at Bryan Ave			Irv	0.81	D	0.68	B	0.81	D	0.68	B
222	Culver Dr at Trabuco Rd			Irv	0.78	C	0.74	C	0.78	C	0.74	C
223	Culver Dr at I-5 SB Ramps			Irv	0.64	B	0.61	B	0.63	B	0.61	B
224	Culver Dr at Walnut Ave		√	Irv	0.70	B	0.79	C	0.70	C	0.79	C
225	Culver Dr at Deerfield Dr			Irv	0.81	D	0.70	B	0.79	C	0.70	B
226	Culver Dr at Irvine Center Dr		√	Irv	0.66	B	0.65	B	0.67	B	0.65	B
227	Culver Dr at Warner Ave			Irv	0.71	C	0.64	B	0.70	B	0.63	B
228	Culver Dr at Barranca Pkwy		√	Irv	0.75	C	0.77	C	0.76	C	0.78	C
229	Culver Dr at Alton Pkwy		√	Irv	0.78	C	0.82	D	0.77	C	0.88	D
230	Culver Dr at Main St			Irv	0.67	B	0.67	B	0.67	B	0.63	B
231	Culver Dr at San Leandro			Irv	0.66	B	0.59	A	0.66	B	0.60	A
232	Culver Dr at I-405 NB Ramps			Irv	0.55	A	0.73	C	0.55	A	0.74	C
233	Culver Dr at I-405 SB Ramps			Irv	0.58	A	0.70	B	0.58	A	0.71	C
234	Culver Dr at Michelson Dr			Irv	0.62	B	0.91	E	0.66	B	0.91	E
235	Culver Dr at University Dr		√	Irv	0.67	B	0.76	C	0.69	B	0.76	C
337	Von Karman Ave at Quartz	a		Irv	0.48	A	0.52	A	0.49	A	0.55	A
439	Bixby at Michelson Dr			Irv	0.38	A	0.50	A	0.41	A	0.53	A
440	Siglo at Main St			Irv	0.41	A	0.59	A	0.42	A	0.61	B
472	Obsidian at Michelson Dr	a		Irv	0.37	A	0.57	A	0.42	A	0.65	B
84	MacArthur Blvd at Campus Dr			Irv/NB	0.57	A	0.77	C	0.63	B	0.80	C
105	Von Karman Ave at Campus Dr			Irv/NB	0.53	A	0.64	B	0.58	A	0.66	B
121	Teller Ave at Campus Dr			Irv/NB	0.29	A	0.39	A	0.38	A	0.42	A
147	Jamboree Rd at Campus Dr			Irv/NB	0.63	B	0.72	C	0.65	B	0.71	C
149	Jamboree Rd at Fairchild Rd			Irv/NB	0.64	B	0.71	C	0.65	B	0.74	C
150	Jamboree Rd at MacArthur Blvd	b		Irv/NB	0.59	A	0.73	C	0.59	A	0.74	C
176	Fairchild Ave at MacArthur Blvd			Irv/NB	0.73	C	0.68	B	0.72	C	0.68	B
193	MacArthur Blvd NB at University Dr			Irv/NB	0.44	A	0.45	A	0.44	A	0.45	A
194	MacArthur Blvd SB at University Dr			Irv/NB	0.45	A	0.38	A	0.46	A	0.37	A
195	SR-73 SB Ramps at University Dr			Irv/NB	0.51	A	0.46	A	0.51	A	0.47	A
9	SR-55 NB Ramps at MacArthur Blvd			Irv/SA	0.75	C	0.64	B	0.74	C	0.67	B
31	Daimler St at Alton Pkwy			Irv/SA	0.21	A	0.36	A	0.22	A	0.36	A
43	Red Hill Ave at Deere Ave			Irv/SA	0.46	A	0.68	B	0.47	A	0.69	B
44	Red Hill Ave at Alton Pkwy			Irv/SA	0.54	A	0.78	C	0.56	A	0.81	D
42	Red Hill Ave at Barranca Pkwy/Dyer Rd			Irv/SA/Tus	0.53	A	0.73	C	0.54	A	0.73	C
71	Armstrong Ave at Barranca Pkwy			Irv/Tus	0.41	A	0.57	A	0.44	A	0.60	A
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy			Irv/Tus	0.71	C	0.84	D	0.72	C	0.87	D
112	Myford Rd at Michelle Dr			Irv/Tus	0.18	A	0.37	A	0.18	A	0.37	A
113	Myford Rd at Walnut Ave			Irv/Tus	0.43	A	0.48	A	0.43	A	0.48	A
114	Millikan Ave/District Way at Barranca Pkwy			Irv/Tus	0.48	A	0.63	B	0.56	A	0.64	B
126	Jamboree Rd at Bryan Ave			Irv/Tus	0.67	B	0.70	B	0.67	B	0.70	B

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					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
127	Jamboree Rd at El Camino Real			Irv/Tus	0.61	B	0.68	B	0.61	B	0.68	B
134	Loop Rd/Park Ave at Warner Ave			Irv/Tus	0.77	C	0.96	E	0.79	C	0.96	E
136	Jamboree Rd at Barranca Pkwy			Irv/Tus	0.77	C	0.89	D	0.80	C	0.89	D
181	Harvard Ave at Edinger Ave/Irvine Center Dr			Irv/Tus	0.49	A	0.58	A	0.50	A	0.59	A
182	Harvard Ave at Paseo Westpark/Moffett Dr.			Irv/Tus	0.31	A	0.40	A	0.30	A	0.42	A
441	Loop Rd at Jamboree Rd SB Ramps			Irv/Tus	0.17	A	0.13	A	0.17	A	0.13	A
61	Campus Dr at Airport Way			NB	0.40	A	0.65	B	0.47	A	0.67	B
62	Campus Dr at Bristol St NB			NB	0.61	B	0.90	D	0.62	B	0.90	D
63	Campus Dr at Bristol St SB			NB	0.74	C	0.57	A	0.74	C	0.58	A
64	Birch St at Bristol St NB			NB	0.62	B	0.56	A	0.63	B	0.56	A
65	Birch St at Bristol St SB			NB	0.39	A	0.48	A	0.40	A	0.48	A
85	MacArthur Blvd at Birch St			NB	0.69	B	0.80	C	0.73	C	0.80	C
106	Von Karman Ave at Birch St			NB	0.34	A	0.43	A	0.39	A	0.43	A
107	Von Karman Ave at MacArthur Blvd			NB	0.39	A	0.53	A	0.40	A	0.54	A
148	Jamboree Rd at Birch St			NB	0.55	A	0.58	A	0.59	A	0.59	A
151	Jamboree Rd at Bristol St NB			NB	0.46	A	0.51	A	0.48	A	0.52	A
153	Jamboree Rd at Bristol St SB			NB	0.68	B	0.72	C	0.67	B	0.72	C
154	Jamboree Rd at Eastbluff Dr			NB	0.77	C	0.70	B	0.78	C	0.72	C
155	Jamboree Rd at Bison Ave			NB	0.54	A	0.57	A	0.53	A	0.57	A
156	Jamboree Rd at Ford Rd			NB	0.80	C	0.85	D	0.81	D	0.85	D
178	MacArthur Blvd at Bison Ave			NB	0.67	B	0.68	B	0.66	B	0.69	B
179	MacArthur Blvd at Ford Rd			NB	0.76	C	0.79	C	0.78	C	0.79	C
741	Jamboree at San Joaquin			NB	0.65	B	0.64	B	0.65	B	0.64	B
742	MacArthur at San Joaquin			NB	0.70	B	0.84	D	0.71	C	0.85	D
733	Irvine at Mesa Rd			NB/OC	0.57	A	0.83	D	0.56	A	0.84	D
734	Irvine at University/Del Mar			NB/OC	0.57	A	0.74	C	0.57	A	0.74	C
4	SR-55 SB Ramps at Edinger Ave	b		SA	0.52	A	0.58	A	0.53	A	0.59	A
5	Hotel Terrace Dr at Dyer Rd			SA	0.50	A	0.62	B	0.51	A	0.63	B
6	Grand Ave at Dyer Rd			SA	0.63	B	0.83	D	0.66	B	0.85	D
7	SR-55 NB Ramps at Dyer Rd			SA	0.71	C	0.80	C	0.71	C	0.79	C
8	SR-55 SB Ramps at MacArthur Blvd	c		SA	0.59	A	0.62	B	0.61	B	0.61	B
29	Pullman St at Barranca Pkwy			SA	0.51	A	0.76	C	0.56	A	0.77	C
543	Bristol at Segerstrom			SA	0.65	B	0.77	C	0.64	B	0.78	C
544	Bristol St at MacArthur Blvd			SA	0.62	B	0.80	C	0.61	B	0.81	D
718	Bear at SR-73 NB Ramps			SA	0.36	A	0.65	B	0.36	A	0.65	B
719	Flower at Segerstrom			SA	0.64	B	0.67	B	0.65	B	0.67	B
723	Main St at Segerstrom			SA	0.64	B	0.71	C	0.63	B	0.71	C
724	Main St at Alton Ave			SA	0.30	A	0.41	A	0.30	A	0.41	A
725	Main and MacArthur (w/o SR-55)	c		SA	0.61	B	0.62	B	0.62	B	0.62	B
727	Halladay at Dyer Rd			SA	0.55	A	0.60	A	0.56	A	0.61	B
728	Halladay E at Alton Pkwy			SA	0.24	A	0.30	A	0.25	A	0.31	A
729	Halladay W at Alton Pkwy			SA	0.23	A	0.26	A	0.26	A	0.26	A
730	Grand Ave at Warner			SA	0.67	B	0.78	C	0.69	B	0.81	D
731	SR-55 SB Ramps at Grand Ave			SA	0.52	A	0.46	A	0.55	A	0.46	A
3	Newport Ave at Edinger Ave			Tus	0.71	C	0.61	B	0.69	B	0.61	B
14	Walnut Ave at McFadden Ave			Tus	0.39	A	0.50	A	0.40	A	0.50	A
18	Newport Ave at Bryan Ave			Tus	0.46	A	0.57	A	0.44	A	0.58	A
19	Newport Ave at Main St			Tus	0.36	A	0.59	A	0.34	A	0.59	A
20	Newport Ave at El Camino Real			Tus	0.68	B	0.69	B	0.68	B	0.70	B
21	Newport Ave at I-5 NB Ramps			Tus	0.61	B	0.56	A	0.61	B	0.57	A
22	Newport Ave at I-5 SB Ramp/Nisson Rd			Tus	0.58	A	0.70	B	0.58	A	0.71	C
23	Newport Ave at McFadden St			Tus	0.62	B	0.51	A	0.63	B	0.51	A
24	Newport Ave at Walnut Ave			Tus	0.76	C	0.75	C	0.77	C	0.75	C
25	Newport Ave at Sycamore Ave			Tus	0.61	B	0.65	B	0.63	B	0.64	B

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					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
27	Del Amo Ave at Edinger Ave			Tus	0.35	A	0.33	A	0.36	A	0.35	A
35	Red Hill Ave at Bryan Ave			Tus	0.65	B	0.63	B	0.65	B	0.63	B
36	Red Hill Ave at El Camino Real	*		Tus	0.59	A	0.91	E	0.60	A	0.92	E
37	Red Hill Ave at Nisson Rd			Tus	0.63	B	0.66	B	0.64	B	0.67	B
38	Red Hill Ave at Walnut Ave			Tus	0.63	B	0.81	D	0.67	B	0.79	C
39	Red Hill Ave at Sycamore Ave			Tus	0.55	A	0.57	A	0.55	A	0.57	A
40	Red Hill Ave at Edinger Ave			Tus	0.65	B	0.63	B	0.65	B	0.64	B
55	Browning Ave at Bryan Ave			Tus	0.39	A	0.58	A	0.39	A	0.59	A
56	Browning Ave at El Camino Real			Tus	0.34	A	0.50	A	0.37	A	0.50	A
58	Browning Ave at Walnut Ave			Tus	0.45	A	0.53	A	0.46	A	0.53	A
92	Tustin Ranch Rd at Bryan Ave			Tus	0.66	B	0.71	C	0.66	B	0.71	C
93	Tustin Ranch Rd at El Camino Real			Tus	0.93	E	0.75	C	0.93	E	0.76	C
94	Tustin Ranch Rd at I-5 NB Ramps			Tus	0.58	A	0.47	A	0.57	A	0.48	A
95	Tustin Ranch Rd at I-5 SB Ramps			Tus	0.68	B	0.49	A	0.68	B	0.49	A
96	Tustin Ranch Rd at Walnut Ave			Tus	0.41	A	0.71	C	0.41	A	0.71	C
109	Myford Rd at Bryan Ave			Tus	0.45	A	0.42	A	0.46	A	0.42	A
110	Myford Rd at El Camino Real			Tus	0.26	A	0.42	A	0.26	A	0.42	A
111	Franklin Ave at Walnut Ave			Tus	0.47	A	0.91	E	0.47	A	0.91	E
133	Jamboree Rd at Edinger Ave	b		Tus	0.38	A	0.60	A	0.38	A	0.61	B
445	Tustin Ranch Rd at Warner Ave N			Tus	0.49	A	0.63	B	0.48	A	0.65	B
446	Tustin Ranch Rd at Warner Ave S			Tus	0.55	A	0.44	A	0.58	A	0.43	A
447	Armstrong Ave/Severyns Rd Valencia Ave			Tus	0.54	A	0.46	A	0.56	A	0.47	A
448	Armstrong Ave at Warner Ave			Tus	0.31	A	0.31	A	0.33	A	0.32	A
453	Red Hill Ave at Valencia Ave			Tus	0.48	A	0.51	A	0.48	A	0.51	A
454	Tustin Ranch Rd at Valencia Ave			Tus	0.30	A	0.42	A	0.31	A	0.42	A
455	E Connector/Jamboree Plaza at Edinger Ave			Tus	Not analyzed in 2020 conditions							
456	N Loop Rd at Valencia Ave			Tus								
457	N Loop Rd at Moffett Dr			Tus	0.06	A	0.07	A	0.06	A	0.07	A
478	Red Hill Ave at I-5 NB Ramps			Tus	0.75	C	0.61	B	0.76	C	0.61	B
479	Red Hill Ave at I-5 SB Ramps			Tus	0.80	C	0.77	C	0.80	C	0.78	C
480	Tustin Ranch Rd/Connector at Edinger Ave			Tus	0.10	A	0.09	A	0.11	A	0.10	A
732	SR-55 NB Ramp at Newport Ave			Tus	0.35	A	0.82	D	0.33	A	0.81	D
739	Newport Ave at Mitchell Ave			Tus	0.61	B	0.66	B	0.62	B	0.66	B
740	Red Hill Ave at Mitchell Ave			Tus	0.58	A	0.54	A	0.58	A	0.54	A
743	Newport Ave at Valencia			Tus	0.30	A	0.42	A	0.29	A	0.43	A
745	Tustin Ranch Rd at Park Ave			Tus	0.46	A	0.54	A	0.47	A	0.57	A
746	Kensington Park Dr at Edinger Ave			Tus	0.34	A	0.40	A	0.35	A	0.42	A
747	Kensington Park Dr at Valencia Ave			Tus	0.18	A	0.20	A	0.18	A	0.20	A
748	Armstrong Ave at A St			Tus	0.12	A	0.11	A	0.11	A	0.11	A
749	Park Ave at A St			Tus	Not analyzed in 2020 conditions							
750	Legacy Rd at Warner Ave			Tus	0.28	A	0.27	A	0.30	A	0.28	A
751	Tustin Ranch Rd at Legacy Rd			Tus	0.39	A	0.31	A	0.38	A	0.31	A
752	Legacy Rd at N Loop Rd			Tus	0.14	A	0.12	A	0.15	A	0.13	A
753	Tustin Ranch Rd at Edinger Ave Connector			Tus	0.38	A	0.31	A	0.37	A	0.31	A
28	Pullman St at Warner Ave			Tus/SA	0.39	A	0.47	A	0.40	A	0.49	A
41	Red Hill Ave at Warner Ave			Tus/SA	0.69	B	0.70	B	0.72	C	0.71	C
754	Red Hill Ave at Carnegie Ave			Tus/SA	0.37	A	0.54	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 acceptable
√	ATMS credit-Reduction of 0.05 applied to ICU
*****	Impact

Figure 4.16 – 2020 Cumulative With Update AM Peak Hour Intersection Deficiencies

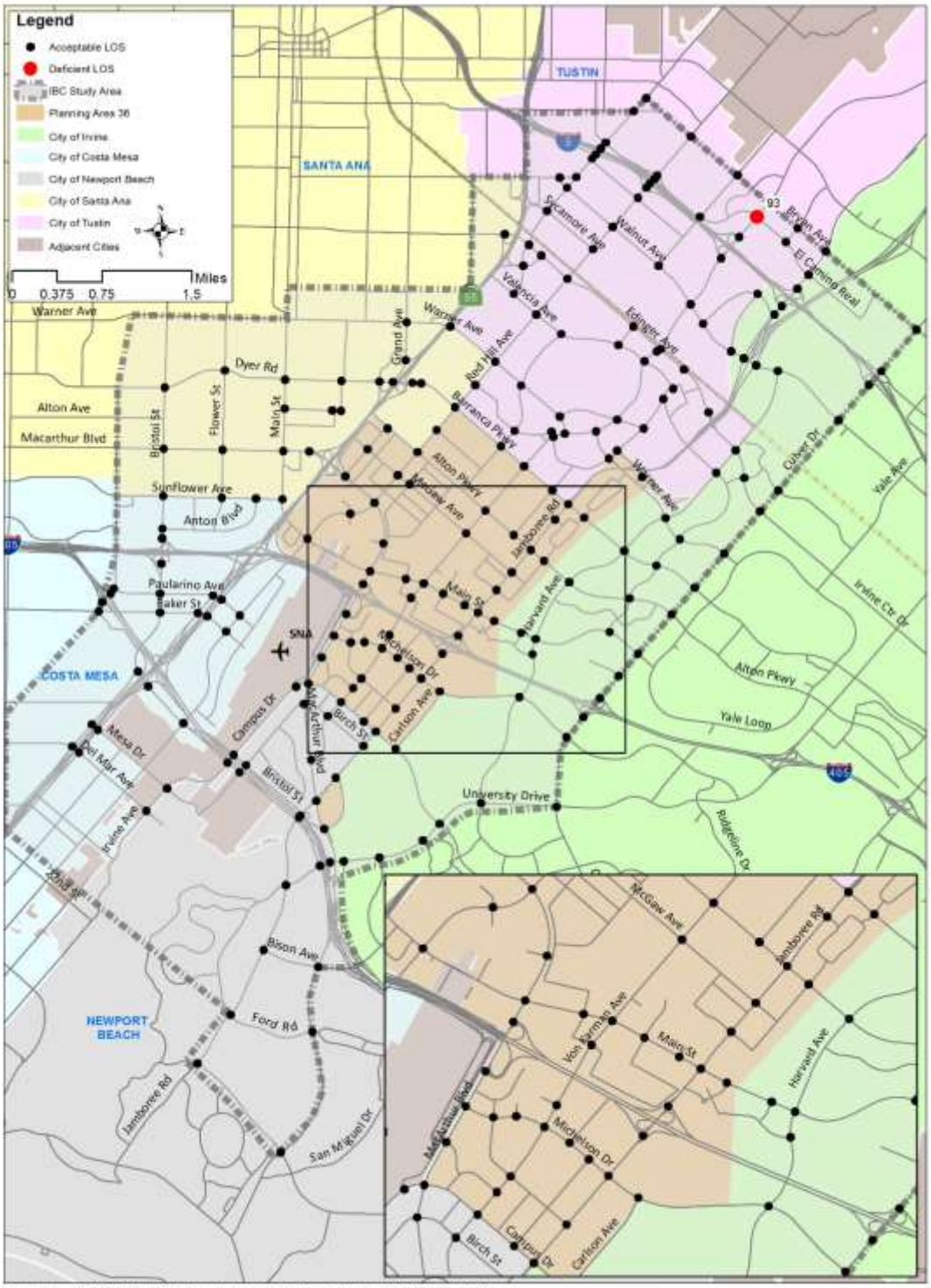


Figure 4.17 – 2020 Cumulative With Update PM Peak Hour Intersection Deficiencies

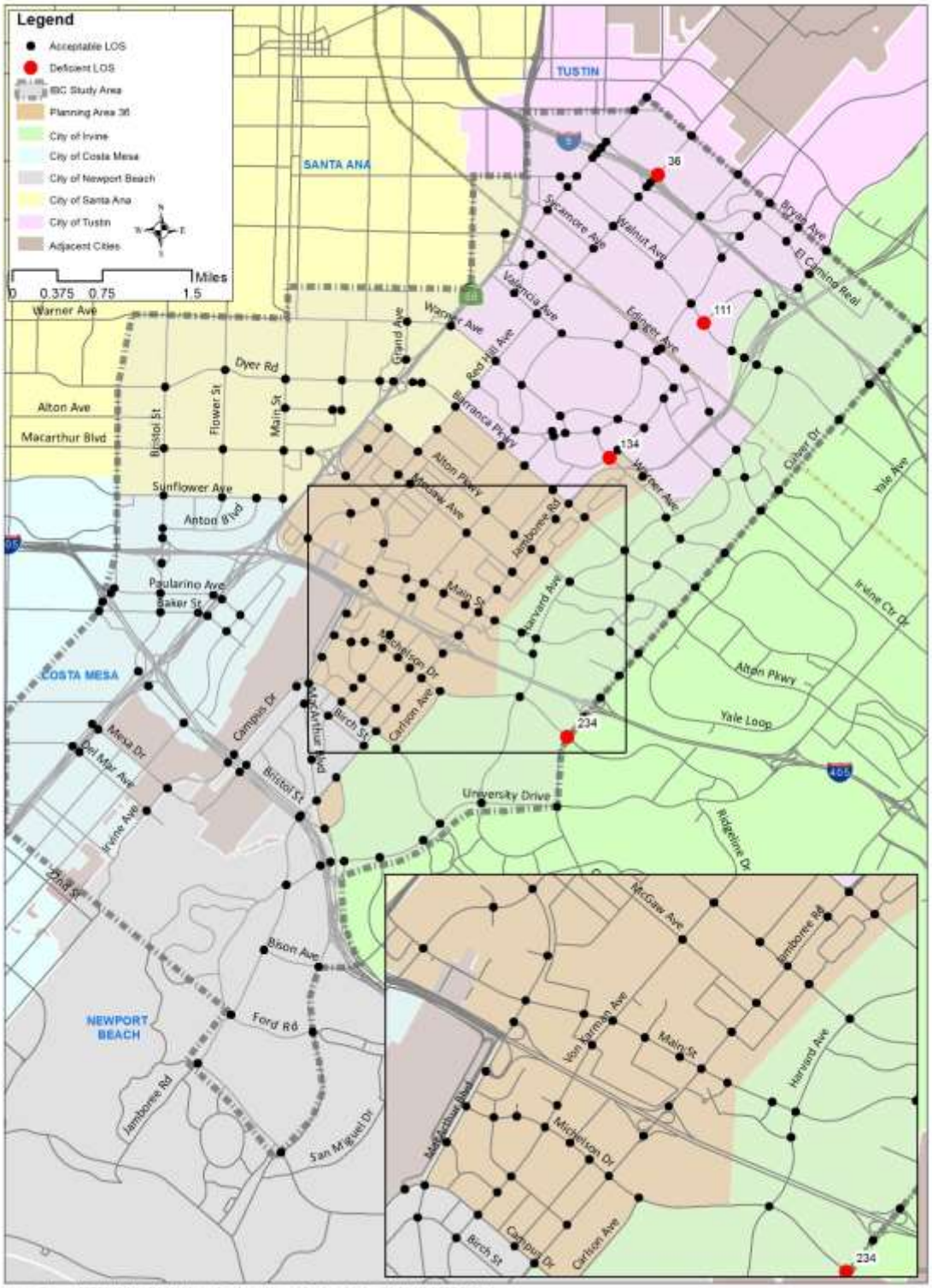


Table 4.13 – 2020 Cumulative With Update Freeway Peak Hour Mainline LOS

LOCATION		FREEWAY LANES			YEAR 2020 CUMULATIVE BASELINE						YEAR 2020 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	12,305	1.03	F	10,108	0.84	D	12,436	1.04	F			10,157	0.85	D		
		SB	6	12,000	10,523	0.88	D	10,925	0.91	E	10,544	0.88	D			11,029	0.92	E		
	Jamboree Rd to Tustin Ranch Rd	NB	6	12,000	12,275	1.02	F	10,244	0.85	D	12,449	1.04	F			10,320	0.86	D		
		SB	6	12,000	10,782	0.90	E	10,843	0.90	E	10,817	0.90	E			10,947	0.91	E		
	Tustin Ranch Rd to Red Hill Ave	NB	6	12,000	12,717	1.06	F	10,634	0.89	D	12,873	1.07	F			10,655	0.89	D		
		SB	6	12,000	11,544	0.96	E	11,547	0.96	E	11,560	0.96	E			11,662	0.97	E		
	Red Hill Ave to Newport Ave	NB	5	10,000	12,323	1.23	F	10,163	1.02	F	12,468	1.25	F			10,172	1.02	F		
		SB	6	12,000	10,976	0.91	E	10,958	0.91	E	10,919	0.91	E			11,091	0.92	E		
	Newport Ave to SR-55	NB	6	12,000	13,291	1.11	F	10,815	0.90	E	13,425	1.12	F			10,872	0.91	E		
		SB	4	8,000	7,687	0.96	E	7,801	0.98	E	7,726	0.97	E			7,900	0.99	E		
	N of SR-55	NB	5	10,000	11,976	1.20	F	10,264	1.03	F	12,195	1.22	F	*		10,170	1.02	F		
		SB	5	10,000	10,080	1.01	F	9,768	0.98	E	10,101	1.01	F			9,939	0.99	E		
I-405	Culver Dr to Jamboree Rd	NB	5	10,000	11,562	1.16	F	8,489	0.85	D	11,634	1.16	F			8,533	0.85	D		
		SB	4	8,000	8,620	1.08	F	10,402	1.30	F	8,634	1.08	F			10,412	1.30	F		
	Jamboree Rd to MacArthur Blvd	NB	6	12,000	11,804	0.98	E	9,829	0.82	D	12,041	1.00	E	36.6	E	9,811	0.82	D		
		SB	7	14,000	10,573	0.76	D	10,752	0.77	D	10,431	0.75	D			11,062	0.79	D		
	MacArthur Blvd to SR-55	NB	6	12,000	11,121	0.93	E	10,265	0.86	D	11,428	0.95	E	33.4	D	10,275	0.86	D		
		SB	6	12,000	11,394	0.95	E	10,585	0.88	D	11,283	0.94	E			10,915	0.91	E	31.0	D
	SR-55 to Bristol St	NB	4	8,000	5,936	0.74	D	5,805	0.73	D	6,162	0.77	D			5,780	0.72	D		
		SB	5	10,000	8,930	0.89	D	7,483	0.75	D	8,828	0.88	D			7,701	0.77	D		
	Bristol St to SR-73	NB	5	10,000	6,931	0.69	C	7,273	0.73	D	7,167	0.72	D			7,210	0.72	D		
		SB	5	10,000	8,820	0.88	D	6,690	0.67	C	8,669	0.87	D			6,800	0.68	C		
SR-55	South of Victoria St.	NB	4	8,000	2,150	0.27	A	1,752	0.22	A	2,242	0.28	A			1,815	0.23	A		
		SB	3	6,000	2,573	0.43	B	2,732	0.46	B	2,585	0.43	B			2,736	0.46	B		
	Victoria St to Fair Dr	NB	4	8,000	4,789	0.60	C	3,320	0.41	B	4,732	0.59	C			3,332	0.42	B		
		SB	3	6,000	3,786	0.63	C	4,464	0.74	D	3,807	0.63	C			4,450	0.74	D		
	Fair Dr to SR-73	NB	4	8,000	6,489	0.81	D	4,747	0.59	C	6,425	0.80	D			4,769	0.60	C		
		SB	4	8,000	4,820	0.60	C	5,389	0.67	C	4,854	0.61	C			5,366	0.67	C		
	SR-73 to Baker St	NB	4	8,000	6,014	0.75	D	5,104	0.64	C	6,005	0.75	D			5,135	0.64	C		
		SB	4	8,000	5,936	0.74	D	5,781	0.72	D	5,960	0.75	D			5,787	0.72	D		
	Baker Street to I-405	NB	4	8,000	6,014	0.75	D	5,104	0.64	C	6,005	0.75	D			5,135	0.64	C		
		SB	4	8,000	5,936	0.74	D	5,781	0.72	D	5,960	0.75	D			5,787	0.72	D		
	I-405 to MacArthur Blvd	NB	4	8,000	7,921	0.99	E	7,473	0.93	E	8,048	1.01	F			7,538	0.94	E		
		SB	4	8,000	8,450	1.06	F	7,660	0.96	E	8,430	1.05	F			7,786	0.97	E		
	MacArthur Blvd to Dyer Rd	NB	4	8,000	7,120	0.89	D	7,420	0.93	E	7,308	0.91	E			7,458	0.93	E		
		SB	4	8,000	8,113	1.01	F	6,689	0.84	D	8,101	1.01	F			6,822	0.85	D		
	Dyer Rd to Edinger Ave	NB	4	8,000	7,211	0.90	E	8,146	1.02	F	7,431	0.93	E	32.1	D	8,129	1.02	F		
		SB	4	8,000	8,399	1.05	F	6,344	0.79	D	8,365	1.05	F			6,425	0.80	D		
	Edinger Ave to McFadden St/Sycamore Ave	NB	5	10,000	7,665	0.77	D	8,605	0.86	D	7,922	0.79	D			8,602	0.86	D		
		SB	4	8,000	9,234	1.15	F	6,969	0.87	D	9,168	1.15	F			7,064	0.88	D		
	McFadden Street/Sycamore Avenue to I-5	NB	5	10,000	8,414	0.84	D	9,030	0.90	E	8,700	0.87	D			9,014	0.90	E		
		SB	5	10,000	9,122	0.91	E	7,259	0.73	D	9,062	0.91	E			7,380	0.74	D		
	North of I-5	NB	3	6,000	5,780	0.96	E	6,330	1.05	F	5,950	0.99	E			6,377	1.06	F		
		SB	3	6,000	6,633	1.11	F	5,252	0.88	D	6,567	1.09	F			5,343	0.89	D		
SR-73	MacArthur Blvd to University Dr	NB	3	6,000	7,047	1.17	F	4,990	0.83	D	7,059	1.18	F			5,054	0.84	D		
		SB	4	8,000	4,886	0.61	C	6,071	0.76	D	4,980	0.62	C			6,112	0.76	D		
	University Dr to Jamboree Rd	NB	3	6,000	7,047	1.17	F	4,990	0.83	D	7,059	1.18	F			5,054	0.84	D		
		SB	3	6,000	4,396	0.73	D	5,373	0.90	E	4,476	0.75	D			5,413	0.90	E		
	Jamboree Rd to Birch St	NB	4	8,000	8,949	1.12	F	7,252	0.91	E	9,058	1.13	F			7,306	0.91	E		
		SB	3	6,000	5,456	0.91	E	6,233	1.04	F	5,522	0.92	E			6,302	1.05	F		
	Birch St to Campus Dr	NB	4	8,000	7,546	0.94	E	6,517	0.81	D	7,682	0.96	E			6,579	0.82	D		
		SB	4	8,000	6,992	0.87	D	7,027	0.88	D	7,054	0.88	D			7,108	0.89	D		
	Campus Dr to SR-55	NB	4	8,000	8,417	1.05	F	8,480	1.06	F	8,639	1.08	F	*		8,543	1.07	F		
		SB	4	8,000	8,919	1.11	F	8,048	1.01	F	8,933	1.12	F			8,154	1.02	F		

LOCATION		FREEWAY LANES			YEAR 2020 CUMULATIVE BASELINE						YEAR 2020 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-55 to Bear St	NB	3	6,000	6,176	1.03	**F**	5,942	0.99	**E**	6,306	1.05	**F**			5,966	0.99	**E**		
		SB	3	6,000	5,805	0.97	**E**	5,314	0.89	D	5,807	0.97	**E**			5,372	0.90	**E**		
	Bear St to I-405	NB	3	6,000	5,601	0.93	**E**	5,541	0.92	**E**	5,716	0.95	**E**			5,566	0.93	**E**		
		SB	3	6,000	5,677	0.95	**E**	4,875	0.81	D	5,682	0.95	**E**			4,916	0.82	D		
SR-261	SR-261 South of El Camino Real	NB	2	4,000	1,105	0.28	A	3,221	0.81	D	1,172	0.29	A			3,197	0.80	D		
		SB	2	4,000	3,632	0.91	**E**	1,450	0.36	B	3,593	0.90	**E**			1,510	0.38	B		

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

The following segments are forecast to be deficient in 2020. In the AM peak 38 out of 60 freeway segments operate at a deficient LOS and in the PM peak 26 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, three additional segments become deficient under the 2020 With Update conditions.

AM Peak Hour:

- SR-55 Northbound between MacArthur Boulevard and Dyer Road

PM Peak Hour:

- I-405 Southbound between SR-55 and MacArthur Boulevard
- SR-73 Southbound between Bear Street and SR-55

The deficient segments are:

AM Peak Hour:

- I-5 Northbound between Culver Drive and Jamboree Road
- I-5 Northbound between Jamboree Road and Tustin Ranch Road
- I-5 Southbound between Tustin Ranch Road and Jamboree Road
- I-5 Northbound between Tustin Ranch Road and Red Hill Avenue
- I-5 Southbound between Red Hill Avenue and Tustin Ranch Road
- I-5 Northbound between Red Hill Avenue and Newport Avenue
- I-5 Southbound between Newport Avenue and Red Hill Avenue
- I-5 Northbound between Newport Avenue and SR-55
- I-5 Southbound between SR-55 and Newport Avenue
- I-5 Northbound North of SR-55*
- I-5 Southbound North of SR-55
- I-405 Northbound between Culver Drive and Jamboree Road
- I-405 Southbound between Jamboree Road and Culver Drive
- I-405 Northbound between Jamboree Road and MacArthur Boulevard*
- I-405 Northbound between MacArthur Boulevard and SR-55*
- I-405 Southbound between SR-55 and MacArthur Boulevard
- SR-55 Northbound between I-405 and MacArthur Boulevard
- SR-55 Southbound between MacArthur Boulevard and I-405

- SR-55 Northbound between MacArthur Boulevard and Dyer Road
- SR-55 Southbound between Dyer Road and MacArthur Boulevard
- SR-55 Northbound between Dyer Road and Edinger Avenue*
- SR-55 Southbound between Edinger Avenue and Dyer Road
- SR-55 Southbound between McFadden Street/Sycamore Avenue and Edinger Avenue
- SR-55 Southbound between I-5 and McFadden Street/Sycamore Avenue
- SR-55 Northbound North of I-5
- SR-55 Southbound North of I-5
- SR-73 Northbound between MacArthur Boulevard and University Drive
- SR-73 Northbound between University Drive and Jamboree Road
- SR-73 Northbound between Jamboree Road and Birch Street
- SR-73 Southbound between Birch Street and Jamboree Road
- SR-73 Northbound between Birch Street and Campus Drive
- SR-73 Northbound between Campus Drive and SR-55*
- SR-73 Southbound between SR-55 and Campus Drive
- SR-73 Northbound between SR-55 and Bear Street
- SR-73 Southbound between Bear Street and SR-55
- SR-73 Northbound between Bear Street and I-405
- SR-73 Southbound between I-405 and Bear Street
- SR-261 Southbound South of El Camino Real

PM Peak Hour:

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

- SR-73 Southbound between SR-55 and Campus Drive
- SR-73 Northbound between SR-55 and Bear Street
- SR-73 Southbound between Bear Street and SR-55
- SR-73 Northbound between Bear Street and I-405

*Denotes freeway segment impacts.

4.15 2020 Cumulative Baseline With Update Peak Hour Freeway Ramp Analysis

The ramp analysis methodology for 2020 Cumulative With Update is consistent with that applied for 2020 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 2020 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. Ten of the 98 ramps in the study area are forecast to be deficient in the AM peak. In the PM peak nine 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:

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

PM Peak Hour:

- Northbound I-5 Off-Ramp to Jamboree
- Southbound I-405 Off-Ramp to Jamboree Road*
- Northbound I-405 On-Ramp from MacArthur Boulevard
- Southbound I-405 Loop On-Ramp from Bristol Street*
- Northbound SR-55 On-Ramp from Paularino Avenue
- Northbound SR-55 Loop On-Ramp from Dyer Road
- Northbound SR-55 On-Ramp from Edinger Avenue
- Northbound SR-73 On-Ramp from Bison Avenue
- Northbound SR-73 On-Ramp from Jamboree Road

*Denotes freeway ramp impacts.

Figure 4.18 and **Figure 4.19** graphically depict the 2020 Cumulative With Update freeway and ramp deficiencies.

Table 4.14 – 2020 Cumulative With Update Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		2020 CUMULATIVE BASELINE						2020 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	459	0.51	C	301	0.33	B			300	0.33	B		
		SB On Loop	1	1,000	650	0.72	D	340	0.38	B	661	0.73	D			340	0.38	B		
		SB Off	2	500	968	0.43	B	1,931	0.86	D	967	0.43	B			1,951	0.87	D		
		NB On Loop	1	1,000	1,090	0.73	D	672	0.45	B	1,100	0.73	D			662	0.44	B		
		NB On Direct	1	1,000	636	0.71	C	210	0.23	A	638	0.71	C			210	0.23	A		
		NB Off	1	500	361	0.24	A	774	0.52	C	360	0.24	A			775	0.52	C		
	Jamboree Rd	SB On Direct	1	1,000	301	0.20	A	944	0.63	C	302	0.20	A			940	0.63	C		
		SB On Loop	1	1,000	853	0.57	C	512	0.34	B	855	0.57	C			510	0.34	B		
		SB Off	2	500	1,359	0.45	B	1,320	0.44	B	1,361	0.45	B			1,324	0.44	B		
		NB On Loop	1	1,000	600	0.56	C	560	0.52	C	620	0.57	C			560	0.52	C		
		NB On Direct	1	1,000	600	0.56	C	480	0.44	B	600	0.56	C			480	0.44	B		
		NB Off	1	500	1,371	0.91	**E**	1,420	0.95	**E**	1,344	0.90	**E**			1,426	0.95	**E**		
	Tustin Ranch Rd	SB On	1	1,000	707	0.47	B	443	0.30	A	704	0.47	B			443	0.30	A		
		NB On	2	1,000	440	0.24	A	1,120	0.62	C	461	0.26	A			1,120	0.62	C		
		NB Off	1	500	320	0.21	A	550	0.37	B	320	0.21	A			553	0.37	B		
		SB Off	2	500	1,560	0.69	C	1,081	0.48	B	1,560	0.69	C			1,081	0.48	B		
	Red Hill Ave	SB On	1	1,000	1,025	0.68	C	780	0.52	C	1,020	0.68	C			790	0.53	C		
		NB On	1	1,000	1,030	0.69	C	809	0.54	C	1,030	0.69	C			801	0.53	C		
		NB Off	1	500	595	0.40	B	799	0.53	C	615	0.41	B			803	0.54	C		
		SB Off	1	500	690	0.46	B	758	0.51	C	680	0.45	B			757	0.5	B		
	Newport Blvd	SB Off	1	500	787	0.52	C	1,031	0.69	C	786	0.52	C			1,060	0.71	C		
		NB On	1	1,000	660	0.44	B	740	0.49	B	650	0.43	B			740	0.49	B		
I-405	Culver Dr	SB On Direct	1	1,000	350	0.23	A	815	0.54	C	420	0.28	A			810	0.54	C		
		SB On Loop	1	1,000	380	0.42	B	362	0.40	B	380	0.42	B			370	0.41	B		
		SB Off	2	500	833	0.28	A	1,670	0.56	C	835	0.28	A			1,673	0.56	C		
		NB On Loop	1	1,000	790	0.53	C	320	0.21	A	840	0.56	C			340	0.23	A		
		NB On Direct	1	1,000	1,060	0.71	C	510	0.34	B	1,060	0.71	C			510	0.34	B		
		NB Off	2	500	784	0.35	B	772	0.34	B	782	0.35	B			791	0.35	B		
	Jamboree Rd	SB On Direct	2	1,000	615	0.34	B	1,170	0.65	C	710	0.39	B			1,200	0.67	C		
		SB On Loop	1	1,000	202	0.13	A	710	0.47	B	370	0.25	A			710	0.47	B		
		SB Off	2	500	2,510	1.12	**F**	1,696	0.75	D	2,533	1.13	**F**			2,019	0.90	**E**	20.6[1]	C
		NB On Loop	1	1,000	510	0.34	B	740	0.49	B	630	0.42	B			810	0.54	C		
		NB On Direct	2	1,000	1,140	0.63	C	1,000	0.56	C	1,140	0.63	C			1,000	0.56	C		
		NB Off	2	500	2,073	0.92	**E**	1,041	0.46	B	2,080	0.92	**E**			1,207	0.54	C		
	MacArthur Blvd	SB Direct On	2	1,000	563	0.31	B	1,070	0.59	C	601	0.33	B			1,110	0.62	C		
		SB Off	2	500	1,940	0.86	D	1,042	0.46	B	1,941	0.86	D			1,083	0.48	B		
		NB On	1	1,000	520	0.35	B	1,610	1.07	**F**	621	0.41	B			1,610	1.07	**F**		
		NB Off	1	500	1,987	1.32	**F**	935	0.62	C	2,010	1.34	**F**			965	0.64	C		
	Bristol St	SB Loop On	1	1,000	1,030	0.69	C	1,410	0.94	**E**	1,022	0.68	C			1,450	0.97	**E**	27.9	C
		SB Off	2	500	1,214	0.54	C	839	0.37	B	1,211	0.54	C			839	0.37	B		
		NB On Loop	1	1,000	548	0.61	C	335	0.37	B	566	0.63	C			333	0.37	B		
		NB On Direct	1	1,000	616	0.41	B	1,051	0.70	C	610	0.41	B			1,034	0.69	C		
		NB Off	1	500	734	0.49	B	1,327	0.88	D	735	0.49	B			1,327	0.88	D		
SR-55	Victoria St	SB Direct On	1	1,000	111	0.12	A	115	0.13	A	111	0.12	A			115	0.13	A		
		SB Off	2	500	1,423	0.63	C	1,480	0.66	C	1,436	0.64	C			1,514	0.67	C		
		NB Direct On	1	1,000	1,499	1.00	**E**	1,144	0.76	D	1,413	0.94	**E**			1,145	0.76	D		
		NB Off	1	500	83	0.06	A	63	0.04	A	83	0.06	A			63	0.04	A		
	Fair Dr	SB Direct On	1	1,000	224	0.25	A	233	0.26	A	224	0.25	A			233	0.26	A		
		SB Off	2	500	1,148	0.51	C	1,194	0.53	C	1,154	0.51	C			1,196	0.53	C		
		NB Direct On	1	1,000	1,221	0.81	D	932	0.62	C	1,239	0.83	D			939	0.63	C		
		NB Off	1	500	250	0.17	A	191	0.13	A	247	0.16	A			191	0.13	A		
	Baker St	SB On	1	1,000	430	0.29	A	913	0.61	C	430	0.29	A			912	0.61	C		

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		2020 CUMULATIVE BASELINE						2020 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
		SB Off	1	500	910	0.61	C	980	0.65	C	914	0.61	C			981	0.65	C		
		NB Off	1	500	1,011	0.67	C	1,080	0.72	D	1,020	0.68	C			1,084	0.72	D		
	Paularino Ave	SB Off	1	500	1,406	0.94	**E**	981	0.65	C	1,413	0.94	**E**			990	0.66	C		
		NB On	1	1,000	1,225	1.36	**F**	1,289	1.43	**F**	1,215	1.35	**F**			1,290	1.43	**F**		
	MacArthur Blvd	SB On Direct	1	1,000	700	0.47	B	950	0.63	C	701	0.47	B			950	0.63	C		
		SB On Loop	1	1,000	140	0.16	A	660	0.73	D	140	0.16	A			660	0.73	D		
		SB Off	2	500	1,930	0.86	D	1,124	0.50	B	1,889	0.84	D			1,132	0.50	B		
		NB On Loop	1	1,000	730	0.49	B	1,079	0.72	D	730	0.49	B			1,039	0.69	C		
		NB On Direct	1	1,000	185	0.21	A	787	0.87	D	225	0.25	A			761	0.85	D		
		NB Off	2	500	1,714	0.76	D	1,306	0.58	C	1,724	0.77	D			1,289	0.57	C		
SR-55 Continued	Dyer Rd	SB On	1	1,000	960	0.64	C	1,186	0.79	D	963	0.64	C			1,200	0.80	D		
		SB Off Loop	1	500	522	0.35	B	300	0.20	A	510	0.34	B			291	0.19	A		
		SB Off to Grand	1	500	721	0.48	B	580	0.39	B	720	0.48	B			570	0.38	B		
		NB On Direct	1	1,000	422	0.28	A	1,242	0.83	D	473	0.32	B			1,232	0.82	D		
		NB On Loop	1	1,000	563	0.63	C	1,042	1.16	**F**	553	0.61	C			1,032	1.15	**F**		
		NB Off	1	500	1,490	0.99	**E**	289	0.19	A	1,491	0.99	**E**			289	0.19	A		
	Edinger Ave	SB On	1	1,000	641	0.43	B	650	0.43	B	660	0.44	B			649	0.43	B		
		SB Off	1	500	900	0.60	C	612	0.41	B	899	0.60	C			620	0.41	B		
		NB On	1	1,000	330	0.22	A	1,530	1.02	**F**	363	0.24	A			1,530	1.02	**F**		
		NB Off	1	500	775	0.52	C	375	0.25	A	757	0.50	B			368	0.25	A		
	McFadden Ave	SB On	1	1,000	394	0.26	A	224	0.15	A	419	0.28	A			223	0.15	A		
		SB Off	2	500	570	0.25	A	751	0.33	B	568	0.25	A			759	0.34	B		
		NB On	1	1,000	1,208	0.81	D	932	0.62	C	1,245	0.83	D			930	0.62	C		
		NB Off	1	500	459	0.31	B	506	0.34	B	466	0.31	B			518	0.35	B		
SR-73	Bison Ave	SB On	1	1,000	190	0.13	A	390	0.26	A	165	0.11	A			370	0.25	A		
		SB Off	1	500	844	0.56	C	403	0.27	A	709	0.47	B			409	0.27	A		
		NB On	1	1,000	250	0.28	A	950	1.06	**F**	475	0.53	C			950	1.06	**F**		
	MacArthur Blvd	SB On	1	1,000	177	0.12	A	763	0.51	C	197	0.13	A			771	0.51	C		
		SB Off	1	500	1,262	0.84	D	1,056	0.70	C	1,258	0.84	D			1,075	0.72	D		
		NB On s/o University Dr	1	1,000	846	0.56	C	840	0.56	C	843	0.56	C			844	0.56	C		
		NB On n/o University Dr	1	1,000	460	0.31	B	726	0.48	B	544	0.36	B			737	0.49	B		
	University Dr	SB Off	1	500	679	0.45	B	751	0.50	B	678	0.45	B			778	0.52	C		
	Jamboree Rd	SB On	1	1,000	491	0.33	B	698	0.47	B	504	0.34	B			699	0.47	B		
		SB Off	2	500	1,535	0.68	C	795	0.35	B	1,532	0.68	C			806	0.36	B		
		NB On	1	1,000	1,442	1.60	**F**	1,537	1.71	**F**	1,456	1.62	**F**			1,515	1.68	**F**		
	Birch St	NB Off	1	500	1,403	0.94	**E**	734	0.49	B	1,376	0.92	**E**			728	0.49	B		
	Campus Dr	SB Off	2	500	1,927	0.86	D	1,021	0.45	B	1,879	0.84	D			1,046	0.46	B		
		NB On	1	1,000	871	0.58	C	1,963	0.61	C	957	0.64	C			1,964	0.62	C		
	SR-73 at Bear	SB On	1	1,000	970	0.65	C	1,224	0.82	D	975	0.65	C			1,236	0.82	D		
		SB Off	1	500	280	0.19	A	420	0.28	A	279	0.19	A			420	0.28	A		
		NB Off	1	500	640	0.43	B	1,297	0.86	D	651	0.43	B			1,293	0.86	D		
		NB On	1	1,000	220	0.15	A	620	0.41	B	220	0.15	A			620	0.41	B		
SR-261	Jamboree Rd	SB On	2	1,000	1,155	0.38	B	911	0.30	A	1,156	0.39	B			929	0.31	B		
		NB Off	2	250	536	0.24	A	872	0.39	B	574	0.26	A			825	0.37	B		
	Walnut Ave	NB On	1	1,000	442	0.29	A	863	0.58	C	443	0.30	A			874	0.58	C		
		SB Off	1	500	930	0.62	C	452	0.30	A	911	0.61	C			459	0.31	B		

Note:

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

[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.

Figure 4.18 – 2020 Cumulative With Update Freeway AM Peak Hour Deficiencies

Figure 4.19 – 2020 Cumulative With Update Freeway PM Peak Hour Deficiencies

5.0 POST-2035 FUTURE CONDITIONS

5.1 Introduction

As with the 2020 scenarios, ITAM was used to forecast the traffic activity for the study area in the Post-2035 buildout scenario. The following describes the change in trips generated within the study area as a result of the updated Vision Plan land use assumptions. An assessment of deficiencies within the study area circulation system was performed to determine the appropriate improvements recommended for implementation of the IBC Vision Plan. As part of the IBC Vision plan, the 1,793 known pending residential units currently in process and an associated 337 density bonus units would be expected to be completed by 2020. The remaining 60 units under the existing General Plan cap and associated 306 potential density bonus units are expected to be completed by Vision Plan buildout or the Post-2035 timeframe.

5.2 Post-2035 Cumulative Baseline

The Post-2035 Cumulative Baseline impact analysis uses the existing land use conditions within the IBC area as a baseline for comparison to the buildout of the IBC Vision Plan land uses. Buildout circulation improvements consistent with the City of Irvine's General Plan are assumed in the Post-2035 Cumulative Baseline scenario, including improvements identified in the 2010 IBC Vision Plan at two intersections within the IBC (at Jamboree & Barranca and Jamboree & Main), slated to be constructed before 2020. Additionally, buildout circulation improvements consistent with the adjacent cities' General Plans as well as OCTA's buildout of arterial and freeway networks are also assumed in the Post-2035 Cumulative Baseline scenario.

5.3 Post-2035 Cumulative Baseline Land Use and Trip Generation

Table 5.1 identifies the Post-2035 Cumulative Baseline land uses assumed in the IBC area. For each of the scenarios, the model uses socioeconomic trip generation of the future land uses to forecast the vehicle trips for the buildout Post-2035 horizon. **Table 5.2** displays the Trip Generation from ITAM for the Post-2035 Cumulative Baseline scenario. Similar to previous scenarios, **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 5.1 – Post-2035 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)
2015 Baseline	7,060	1,384	2,322	26,639	13,934	379	474
2015 With Update	16,795	1,690	2,653	34,286	12,339	549	1049
2020 Cumulative Baseline	7,060	1,384	2,322	26,639	13,934	379	474
2020 Cumulative With Update	16,671	1,405	2,535	27,750	13,240	883	1049
Post-2035 Cumulative Baseline	7,060	1,384	2,322	26,639	13,934	379	474
Percent Growth (Post-2035 Baseline vs 2020 Baseline)	0%	0%	0%	0%	0%	0%	0%
Percent Growth (Post-2035 Baseline vs 2015 Baseline)	0%	0%	0%	0%	0%	0%	0%

Source: City of Irvine

Table 5.2 – Post-2035 Cumulative Baseline Trip Generation

SCENARIO	AM-OUT	AM-IN	PM-OUT	PM-IN	ADT
2015 Existing	12,209	29,499	27,867	18,342	529,306
2015 With Update	18,089	36,120	35,014	24,855	700,506
2020 Baseline	12,172	29,501	27,877	18,307	529,306
2020 With Update	17,401	31,389	30,797	22,735	615,202
Post-2035 Baseline	12,297	29,593	28,018	18,531	529,306
Percent Growth (Post-2035 Baseline vs. 2020 Baseline)	1.0%	0.3%	0.5%	1.2%	0.0%
Percent Growth (Post-2035 Baseline vs. 2015 Existing)	0.7%	0.3%	0.5%	1.0%	0.0%

Source: ITAM

5.4 Post-2035 Cumulative Baseline Daily Arterial Segment Analysis

The Post-2035 arterial 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 Post-2035 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 Post-2035 Baseline since it is the one missing roadway widening in IBC that is needed to fulfill OCTA's Master Plan of Arterial Highways (MPAH).

Table 5.3 presents study area roadway segment analysis, including information on jurisdiction, daily forecast volume, classification type, V/C ratio and LOS for each segment. Deficient segments within the City of Irvine under daily conditions are analyzed for peak hour performance. A comparison between the 2020 Cumulative Baseline and With Update scenarios is provided under 2020 Cumulative With Update conditions analysis. Generally only those segments where a theoretical impact is identified are evaluated further with 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. Alternative methodologies for adjacent cities within the study area were conducted as requested by those adjacent cities.

Figure 5.1 and **Figure 5.2** display the arterial ADT and LOS for the Post-2035 Cumulative Baseline scenario. Deficient segments in the City of Irvine are evaluated under Peak Hour conditions in the following section. For arterial segments in Costa Mesa, Newport Beach, and Tustin, arterial daily LOS impacts are addressed at the intersections. Santa Ana identifies significant plan update impacts based on the arterial daily LOS analysis.

Table 5.3 – Post-2035 Cumulative Baseline Daily Arterial LOS

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	6D	23,600	0.44	A
2721	Baker St	Bear St to Bristol St		CM	6D	29,100	0.52	A
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	6D	33,100	0.59	A
1294	Baker St	SR 55 SB to SR 55 NB		CM	6D	24,900	0.45	A
1468	Baker St	SR 55 NB to Red Hill Ave		CM	6D	14,100	0.25	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	31,300	0.56	A
2733	Bristol St	Segerstrom Ave to West Alton Ave		CM	6D	40,700	0.73	C
2737	Bristol St	West Alton Ave to MacArthur Blvd		CM	6D	45,400	0.81	D
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	45,100	0.81	C
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	49,100	0.88	D
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	9D+1 AUX	66,900	0.79	C
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	66,500	0.89	D
2745	Bristol St	I-405 SB Ramps to Paularino Ave		CM	6D	45,200	0.81	C
2732	Bristol St	Paularino Ave to Baker St		CM	6D	37,400	0.67	B
2730	Bristol St	Baker St to SR 55		CM	6D	27,400	0.49	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	20,300	0.36	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	24,100	0.63	B
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	4D	13,000	0.34	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	13,000	0.34	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	9,500	0.25	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	23,800	0.43	A
2785	Mesa Dr	Newport Blvd SB to Newport Blvd NB		CM	2U	6,100	0.49	A
2783	Mesa Dr	Newport Blvd NB to Santa Ana Ave		CM	2U	6,900	0.55	A
2779	Mesa Dr	Irvine Ave to Birch St		CM	4D	12,700	0.33	A
2742	Paularino Ave	Bear St to Bristol St		CM	4D	9,300	0.25	A
2746	Paularino Ave	Bristol St to SR-55 SB		CM	4D	19,200	0.51	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	16,300	0.43	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	11,600	0.31	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	4,500	0.12	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	18,700	0.49	A
40	Red Hill Ave	Baker St to Bristol St		CM	4D	17,000	0.45	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	4D	11,700	0.31	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	26,900	0.84	D
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	19,900	0.62	B
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	22,200	0.69	B
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	24,900	0.46	A
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	23,700	0.44	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	18,700	0.35	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	20,000	0.37	A
783	Alton Pkwy	San Marino to Culver Dr		Irv	6D	27,300	0.51	A
735	Barranca Pkwy (Dyer Rd)	Pullman to Red Hill Ave		Irv	6D	37,500	0.69	B
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	7D	38,100	0.61	A
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	35,100	0.56	A
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	40,300	0.64	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	35,000	0.65	B
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	29,400	0.54	A
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	28,500	0.53	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	31,300	0.58	A
748	Barranca Pkwy	Santa Rosa to Culver Dr		Irv	6D	31,100	0.58	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	24,300	0.76	C
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	24,400	0.76	C
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	23,300	0.73	C
540	Bryan Ave	Rubicon to Culver		Irv	4D	26,400	0.83	D
869	Campus Dr	MacArthur Blvd to Martin	a	Irv	6U	15,100	0.28	A
870	Campus Dr	Martin to Von Karman Ave	a	Irv	4D	16,100	0.50	A
871	Campus Dr	Von Karman Ave to Teller Ave	a	Irv	4D	14,200	0.44	A
872	Campus Dr	Teller Ave to Jamboree Rd	a	Irv	4D	13,900	0.43	A
877	Campus Dr	Jamboree Rd to Carlson Ave	a	Irv	4D	25,100	0.78	C
879	Campus Dr	Carlson Ave to University		Irv	4D	29,700	0.93	**E**
166	Carlson Ave	Michelson Dr to Campus Dr	a	Irv	4D	9,100	0.28	A
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps		Irv	7D	62,500	0.99	**E**
213	Culver Dr	I-5 SB Ramps to Scottsdale Dr		Irv	6D	58,900	1.09	**F**
214	Culver Dr	Scottsdale Dr to Walnut Ave		Irv	6D	51,800	0.96	**E**
215	Culver Dr	Walnut Ave to Deerfield Ave		Irv	6D	48,900	0.91	D
216	Culver Dr	Deerfield Ave to Irvine Center Dr		Irv	Maj6D+ 1AUX	46,000	0.85	D
217	Culver Dr	Irvine Center Dr to Warner Ave		Irv	6D	48,800	0.90	D
218	Culver Dr	Warner Ave to Barranca Pkwy		Irv	6D	46,300	0.86	D
219	Culver Dr	Barranca Pkwy to Alton Pkwy		Irv	6D	54,900	1.02	**F**
220	Culver Dr	Alton Pkwy to Main St		Irv	6D	52,000	0.96	**E**
221	Culver Dr	Main St to San Leandro		Irv	6D	52,400	0.97	**E**
222	Culver Dr	San Leandro to I-405 NB Ramps		Irv	6D	53,500	0.99	**E**
224	Culver Dr	I-405 SB Ramps to Michelson Dr		Irv	6D	56,600	1.05	**F**
225	Culver Dr	Michelson Dr to Sandburg Way		Irv	6D	43,800	0.81	D
226	Culver Dr	Sandburg Way to University Dr		Irv	6D	40,100	0.74	C
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	24,300	0.76	C
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,700	0.21	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	4U	10,800	0.39	A
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	4U	12,300	0.44	A
171	Harvard Ave	Deerfield Ave to Irvine Center Dr		Irv	4U	12,500	0.45	A
172	Harvard Ave	Irvine Center Dr to Paseo Westpark		Irv	4D	10,900	0.34	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	13,400	0.42	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	15,700	0.49	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	18,900	0.59	A
2829	Harvard Ave	San Juan to San Leon		Irv	4D	17,400	0.54	A
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	18,300	0.57	A
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	25,000	0.78	C
180	Harvard Ave	San Marino to Main St		Irv	4D	25,000	0.78	C
181	Harvard Ave	Main St to Coronado		Irv	4D	25,200	0.79	C
182	Harvard Ave	Coronado to Michelson Dr		Irv	4D	26,300	0.82	D
183	Harvard Ave	Michelson Dr to University Dr		Irv	2U	20,600	1.59	**F**
675	Irvine Center Dr	Harvard Ave to Hearthstone	b	Irv	6D	31,500	0.58	A
676	Irvine Center Dr	Hearthstone to Culver Dr	b	Irv	6D	35,200	0.65	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
129	Jamboree Rd	Bryan Ave to El Camino	b	Irv	8D	43,700	0.61	A
130	Jamboree Rd	El Camino Real to I-5 NB Ramps	b	Irv	Maj7D+ 1AUX	48,500	0.77	C
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 Dr	b	Irv	8D	53,700	0.75	C
133	Jamboree Rd	Michelle Dr to Walnut Ave	b	Irv	5D	55,900	1.30	**F**
135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rds)	b	Irv	Exp8	75,400	0.42	A
136	Jamboree Rd	Edinger Ave to Warner Ave	b	Irv	Exp8	77,900	0.44	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	63,700	0.36	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	52,900	0.74	C
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	57,900	0.80	C
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	61,000	0.85	D
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	56,800	0.79	C
144	Jamboree Rd	Kelvin Ave to Main St	a,b	Irv	8D	66,100	0.92	E
145	Jamboree Rd	Main St to I-405 NB Ramps	b	Irv	Maj8D+ 2AUX	71,100	0.99	E
148	Jamboree Rd	I-405 SB Ramps to Michelson Dr	a,b	Irv	Maj8D+ 2AUX	77,500	1.08	**F**
149	Jamboree Rd	Michelson Dr to Dupont Dr	a,b	Irv	7D	56,600	0.90	D
150	Jamboree Rd	Dupont Dr to Campus Dr	a,b	Irv	7D	48,400	0.77	C
151	Jamboree Rd	Campus Dr to Birch St	b	Irv	6D	46,700	0.87	D
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	45,400	0.72	C
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	7D	38,600	0.61	B
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	38,700	0.72	C
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	7D	33,000	0.52	A
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	24,600	0.39	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	24,400	0.39	A
60	MacArthur Blvd	Main St to I-405 NB Ramps	a	Irv	Maj8D+ 2AUX	53,600	0.74	C
62	MacArthur Blvd	I-405 SB Ramps to Michelson Dr	a	Irv	Maj8D+ 1AUX	59,200	0.82	D
63	MacArthur Blvd	Michelson Dr to Douglass	a	Irv	8D	42,000	0.58	A
64	MacArthur Blvd	Douglas to Campus Dr		Irv	8D	42,600	0.59	A
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	52,700	0.98	E
917	MacArthur Blvd	Fairchild Rd to University Dr	b	Irv	6D	50,600	0.94	E
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	24,300	0.45	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	23,900	0.44	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	24,200	0.45	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	31,600	0.50	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	32,700	0.61	A
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	24,400	0.45	A
823	Main St	Siglo to Jamboree Rd	a	Irv	6D	23,100	0.43	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+ 1AUX	22,900	0.42	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 Dr		Irv	4D	12,200	0.38	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	7,800	0.24	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	10,200	0.32	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	7,800	0.24	A
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	2,300	0.07	A
840	Michelson Dr	MacArthur Blvd to Dupont Dr	a	Irv	5D	20,400	0.47	A
843	Michelson Dr	Bixby to Von Karman Ave	a	Irv	4D	13,600	0.43	A
844	Michelson Dr	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	22,500	0.70	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
845	Michelson Dr	Teller Ave to Jamboree Rd	a	Irv	5D	20,300	0.47	A
846	Michelson Dr	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+ 2AUX	22,800	0.42	A
847	Michelson Dr	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	21,200	0.66	B
848	Michelson Dr	Riparian View to Harvard Ave		Irv	4D	20,400	0.64	B
1346	Michelson Dr	Harvard Ave to Parkside Dr		Irv	4D	17,700	0.55	A
850	Michelson Dr	Parkside Dr to Culver Dr		Irv	4D	17,600	0.55	A
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	29,800	0.55	A
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	31,500	0.58	A
33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	33,200	0.62	B
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	39,300	0.73	C
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	6D	20,500	0.38	A
38	Red Hill Ave	Skypark to Main St	a	Irv	6D	16,400	0.30	A
189	University Dr	MacArthur Blvd to California Ave		Irv	6D	37,000	0.69	B
188	University Dr	California Ave to Mesa Rd		Irv	6D	37,500	0.69	B
187	University Dr	Mesa Rd to Campus Dr		Irv	6D	39,800	0.74	C
880	University Dr	Campus Dr to Harvard Ave		Irv	6D	34,600	0.64	B
881	University Dr	Harvard Ave to San Joaquin Hills Rd		Irv	6D	34,300	0.64	B
882	University Dr	San Joaquin Hills Rd to Culver Dr		Irv	6D	33,900	0.63	B
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	39,600	1.24	**F**
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	32,400	1.01	**F**
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	29,400	0.92	E
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	29,300	0.92	E
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	29,900	0.93	E
107	Von Karman Ave	Quartz to Michelson Dr	a	Irv	Prim4D+ 1AUX	29,800	0.93	E
108	Von Karman Ave	Michelson Dr to Dupont Dr	a	Irv	4D	21,200	0.66	B
110	Von Karman Ave	Dupont Dr to Martin	a	Irv	4D	19,900	0.62	B
111	Von Karman Ave	Martin to Campus Dr	a	Irv	4D	20,100	0.63	B
594	Walnut Ave	Myford to Jamboree SB Ramp		Irv	Prim4D+ 1AUX	23,800	0.74	C
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+ 1AUX	21,900	0.41	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+ 1AUX	21,700	0.51	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	19,700	0.62	B
597	Walnut Ave	Mall St to Culver Dr		Irv	4D	20,200	0.63	B
728	Warner Ave	Construction North to Harvard Ave		Irv	4D	19,100	0.60	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	14,400	0.45	A
732	Warner Ave	Santa Ynez to Culver Dr		Irv	4D	13,900	0.43	A
1223	Birch St	Mesa Dr to Bristol St SB		NB	4D	27,400	0.69	B
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	23,200	0.58	A
874	Birch St	East of MacArthur Blvd		NB	4D	11,700	0.29	A
69	Birch St	West of MacArthur Blvd		NB	4D	18,100	0.45	A
875	Birch St	East of Von Karman Ave		NB	4D	6,300	0.16	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	7,200	0.12	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	14,600	0.37	A
920	Bristol St SB	Red Hill Ave to Campus Dr		NB	2D	15,400	0.86	D
1310	Bristol St NB	Campus Dr to Red Hill Ave		NB	3D	14,500	0.50	A
1303	Bristol St SB	Campus Dr to Birch St		NB	3D	23,600	0.81	D
1305	Bristol St NB	Birch St to Campus Dr		NB	3D	26,400	0.91	**E**
1312	Bristol St SB	West of Jamboree Rd		NB	4D	38,600	0.97	**E**
1580	Bristol St NB	West of Jamboree Rd		NB	3D	17,000	0.59	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
66	Campus Dr	Bristol St NB to MacArthur Blvd		NB	6D	31,600	0.55	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	31,200	0.54	A
67	Irvine Ave	Bristol St SB to Mesa Dr		NB	6D	27,500	0.47	A
2768	Irvine Ave	South of University Dr		NB	4D	31,400	0.79	C
156	Jamboree Rd	South of MacArthur Blvd		NB	6D	34,600	0.60	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	42,800	0.63	B
159	Jamboree Rd	University Dr 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 Dr to Birch St		NB	8D	21,800	0.32	A
75	MacArthur Blvd	South of Birch St		NB	6D	23,700	0.41	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	22,800	0.39	A
953	MacArthur Blvd	University Dr to Bison Ave	b	NB	6D	72,200	1.25	**F**
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	79,200	1.17	**F**
2767	University Dr	East of Irvine Ave		NB	2U	5,400	0.54	A
1774	University Dr	Jamboree Rd to MacArthur Blvd		NB	5D	15,900	0.32	A
112	Von Karman Ave	South of Campus Dr		NB	4D	13,300	0.33	A
113	Von Karman Ave	South of Birch St		NB	4D	11,900	0.30	A
2795	Dyer Rd	Main St to Halladay St		SA	6D	32,700	0.58	A
2799	Dyer Rd	Halladay St to SR-55 SB		SA	6D	36,000	0.64	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	49,600	0.88	D
734	Dyer Rd	SR-55 NB to Pullman St		SA	8D	52,200	0.70	B
2764	Grand Ave	Warner Ave to Hotel Terrace Dr		SA	6D	24,200	0.43	A
2806	Grand Ave	Hotel Terrace Dr to SR-55 NB		SA	6D	21,500	0.38	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	4D	8,800	0.24	A
2822	Halladay St	Alton Ave to McGaw Ave(Columbine)		SA	2U	3,500	0.28	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	42,100	0.75	C
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	38,000	0.68	B
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	31,400	0.56	A
2826	Main St	Alton Ave to McGaw Ave(Columbine)		SA	6D	27,000	0.48	A
2809	Main St	McGaw(Columbine) to MacArthur Blvd		SA	6D	28,200	0.50	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	22,400	0.40	A
2823	Alton Ave	Main St to Halladay St		SA	4U	11,000	0.46	A
2160	Alton Avenue	Halladay Street to Daimler Street		SA	4U	26,700	0.71	C
2736	Segerstrom Ave	Bristol St to Flower St		SA	4D	27,300	0.73	C
2771	Segerstrom Ave	Flower St to Main St		SA	4D	28,000	0.75	C
2763	Warner Ave	Grand Ave to SR-55		SA	6D	42,600	0.76	C
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	25,900	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	19,100	0.76	C
535	Bryan Ave	Red Hill Ave to Browning		Tus	4D	18,300	0.49	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	18,600	0.50	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	23,200	0.62	B
44	Edinger Ave	West of Newport Ave	b	Tus	6D	53,600	0.95	E
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	34,800	0.62	B

ID	ARTERIAL	SEGMENT LIMITS	PA 36 /CMP	JURISDICTION	ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE		
						VOLUME	V/C	LOS
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	28,000	0.50	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4D	14,700	0.39	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	10,800	0.29	A
1205	El Camino Real	Tustin Ranch Rd to Jamboree Rd		Tus	4D	19,400	0.52	A
672	Irvine Center Dr (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	31,000	0.55	A
674	Irvine Center Dr	Jamboree Rd to Harvard Ave	b	Tus	6D	29,300	0.52	A
2777	Mitchell Ave	Newport Ave to Red Hill Ave		Tus	2U	7,500	0.60	A
2775	Mitchell Ave	Red Hill Ave to Browning Ave		Tus	2U	6,200	0.50	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	46,100	0.82	D
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	42,200	0.75	C
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	38,800	0.69	B
49	Newport Ave	North of Sycamore Ave		Tus	6D	23,100	0.41	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	6D	29,800	0.53	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	5,900	0.47	A
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	6,900	0.55	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	38,600	0.69	B
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	35,400	0.63	B
21	Red Hill Ave	Nisson Rd to I-5 SB Ramps		Tus	6D	41,400	0.74	C
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	30,300	0.54	A
22	Red Hill Ave	Mitchell Ave to Walnut Ave		Tus	6D	28,600	0.51	A
23	Red Hill Ave	Walnut Ave to Sycamore Ave		Tus	6D	28,700	0.51	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	30,900	0.55	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	32,900	0.58	A
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	32,800	0.58	A
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	33,700	0.51	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	4D	10,300	0.28	A
85	Tustin Ranch Rd	North of I-5		Tus	6D	44,300	0.79	C
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	43,200	0.77	C
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4D	10,000	0.27	A
587	Walnut Ave	East of Newport Ave		Tus	4U	23,500	0.94	**E**
589	Walnut Ave	East of Red Hill Ave		Tus	4D	19,600	0.52	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	22,400	0.60	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	22,300	0.60	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	41,800	0.74	C

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

Table 5.3 indicates that the following nineteen segments are deficient under the Post-2035 Baseline daily conditions: fourteen in Irvine, four in Newport Beach and one in Tustin. 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. Deficient segments under daily Post-2035 Cumulative Baseline conditions include the following:

- 879—Campus Drive from Carlson Avenue to University Drive (Irvine)
- 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)
- 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)
- 183—Harvard Avenue from Michelson Drive to University Drive (Irvine)
- 133—Jamboree Road from Michelle Drive to Walnut Avenue (Irvine)
- 148—Jamboree Road from I-405 SB Ramps to Michelson Drive (Irvine)
- 98—Von Karman Avenue from Barranca Parkway to Alton Parkway (Irvine)
- 100—Von Karman Avenue from Alton Parkway to McGaw Avenue (Irvine)
- 1305—Bristol Street NB from Birch Street to Campus Drive (Newport Beach)*
- 1312—Bristol Street SB West of Jamboree Road (Newport Beach)*
- 953— MacArthur Boulevard from University Drive to Bison Avenue (Newport Beach)*
- 1301—MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*
- 587—Walnut Avenue East of Newport Avenue (Tustin)*

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

5.5 Post-2035 Cumulative Baseline Peak Hour Link Analysis

Peak hour directional traffic volumes were obtained from forecast peak hour 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 arterial segments that are deficient within the City of Irvine under daily conditions operate at an acceptable LOS in both peak hours.

Figure 5.1 – Post-2035 Cumulative Baseline Daily Arterial ADT

Figure 5.2 – Post-2035 Cumulative Baseline Daily Arterial Deficiencies

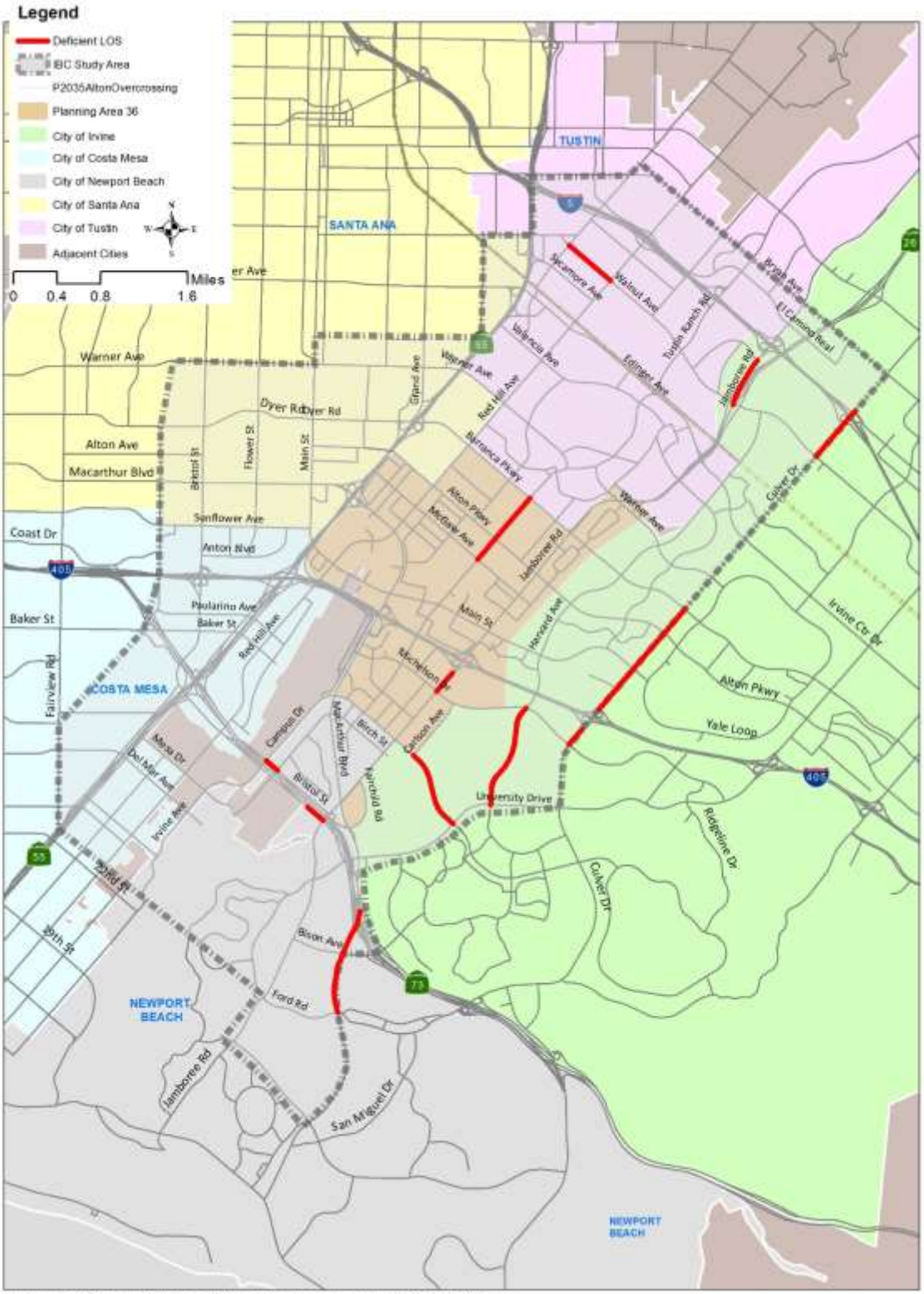


Table 5.4 – Post-2035 Cumulative Baseline Peak Hour Link Analysis

ID	ARTERIAL	SEGMENT LIMITS	FACILITY TYPE	VOLUMES				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	1,251	1,378	1,648	1,529	Acceptable	Acceptable	Acceptable	Acceptable
726	Campus Dr	I-5 NB Ramps to I-5 SB Ramps	7D	1,529	3,313	3,310	2,123	Acceptable	Acceptable	Acceptable	Acceptable
213	Campus Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,503	3,024	2,828	2,529	Acceptable	Acceptable	Acceptable	Acceptable
214	Campus Dr	Scottsdale Dri to Walnut Ave	6D	1,470	2,613	2,814	2,228	Acceptable	Acceptable	Acceptable	Acceptable
219	Culver Dr	Barranca Pkwy to Alton Pkwy	6D	1,436	2,480	2,610	1,905	Acceptable	Acceptable	Acceptable	Acceptable
220	Culver Dr	Alton Pkwy to Main St	6D	1,508	2,382	2,760	1,825	Acceptable	Acceptable	Acceptable	Acceptable
221	Culver Dr	Main St to San Leandro	6D	1,461	2,581	2,721	1,815	Acceptable	Acceptable	Acceptable	Acceptable
222	Culver Dr	San Leandro to I-405 NB On-Ramp	6D	1,570	2,639	3,019	1,889	Acceptable	Acceptable	Acceptable	Acceptable
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	2,001	2,557	2,762	2,165	Acceptable	Acceptable	Acceptable	Acceptable
183	Harvard Ave	Michelson Dr to University Dr	2U	441	934	1,190	891	Acceptable	Acceptable	Acceptable	Acceptable
133	Harvard Ave	Michelle Dr to Walnut Ave	5D	888	2,514	1,608	1,800	Acceptable	Acceptable	Acceptable	Acceptable
148	Jamboree Rd	I-405 On-Ramp to Michelson Dr	Maj8D+ 2AUX	2,319	4,713	3,804	3,008	Acceptable	Acceptable	Acceptable	Acceptable
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	4D	878	1,830	1,914	1,241	Acceptable	Acceptable	Acceptable	Acceptable
100	Von Karman Ave	Alton Pkwy to McGaw Ave	4D	838	1,730	1,870	979	Acceptable	Acceptable	Acceptable	Acceptable

5.6 Post-2035 Cumulative Baseline Peak Hour Intersection Analysis

ICU analysis was developed for every intersection within the study area for the Post-2035 Cumulative Baseline scenario. The intersection analysis includes both a reporting of intersection ICU and the corresponding LOS and is displayed in **Table 5.5**. For shared jurisdictions, the more conservative methodology was utilized. Intersection improvements in each jurisdiction are consistent with that Cities' General Plan buildout assumptions. Within the IBC, all intersection improvements identified in the 2010 IBC Vision Plan study were removed to determine the need, except the two intersections where improvements will be constructed before 2020: Jamboree Road & Main Street and Jamboree Road & Barranca Parkway. There are a nine deficient intersections under Post-2035 Baseline conditions compared to three deficiencies in the 2020 Baseline conditions largely due to increased development throughout the region.

Figure 5.3 and **Figure 5.4** graphically present the AM and PM peak hour intersection ICU for deficient intersections for the Post-2035 Cumulative Baseline scenario. **Appendix E** presents detailed ICU worksheets for study intersections.

Table 5.5 – Post-2035 Cumulative Baseline Peak Hour Intersection LOS

ID	INTERSECTION	PA 36/CMP/SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (POST-2035)	JURISDICTION	POST-2035 CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
10	SR-55 Frontage Road SB at Paularino Avenue			CM	0.82	D	0.71	C
11	SR-55 Frontage Road NB at Paularino Avenue			CM	0.67	B	0.66	B
12	SR-55 Frontage Road SB at Baker Street			CM	0.83	D	0.77	C
13	SR-55 Frontage Road NB at Baker Street			CM	0.78	C	0.71	C
50	Red Hill Avenue at Paularino Avenue			CM	0.53	A	0.67	B
51	Red Hill Avenue at Baker Street			CM	0.56	A	0.74	C
52	Red Hill Avenue at Bristol Street			CM	0.52	A	0.48	A
541	Bear at Baker Street			CM	0.75	C	0.74	C
542	Bear at Paularino Avenue			CM	0.40	A	0.65	B
545	Bristol at Sunflower			CM	0.62	B	0.76	C
546	Bristol at Anton			CM	0.45	A	0.75	C
547	Bristol at Paularino Avenue			CM	0.50	A	0.88	D
548	Bristol at Baker Street			CM	0.54	A	0.62	B
549	Newport Boulevard SB at Bristol			CM	0.27	A	0.57	A
550	Newport Boulevard NB at Bristol			CM	0.34	A	0.42	A
715	Bristol at I-405 NB Off Ramp			CM	0.51	A	0.72	C
716	Bristol at I-405 SB Ramps			CM	0.48	A	0.66	B
717	Bear at SR-73 SB Ramps			CM	0.53	A	0.81	D
720	Flower at MacArthur Boulevard			CM	0.75	C	0.82	D
721	Flower at Sunflower			CM	0.31	A	0.50	A
722	Anton at Sunflower			CM	0.33	A	0.35	A
726	Main Street at Sunflower			CM	0.42	A	0.79	C
735	Newport Boulevard NB at Del mar			CM	0.65	B	0.51	A
736	Newport Boulevard SB at Fair/Del Mar			CM	0.39	A	0.56	A
737	Newport Boulevard NB at Mesa Road			CM	0.29	A	0.30	A
738	Newport Boulevard SB at Mesa Road			CM	0.20	A	0.59	A
32	Daimler Street at McGaw Avenue			Irv	0.30	A	0.22	A
45	Red Hill Avenue at McGaw Avenue	a		Irv	0.46	A	0.72	C
47	Red Hill Avenue at MacArthur Boulevard	a		Irv	0.72	C	0.77	C
48	Red Hill Avenue at Sky Park North	a		Irv	0.38	A	0.48	A
49	Red Hill Avenue at Main Street	a		Irv	0.71	C	0.76	C
67	Gillette Avenue at McGaw Avenue	a		Irv	0.34	A	0.45	A
70	Gillette Avenue at Main Street	a		Irv	0.36	A	0.70	B
77	MacArthur Boulevard at Sky Park East	a		Irv	0.29	A	0.43	A
78	MacArthur Boulevard at Main Street	a		Irv	0.58	A	0.80	C
79	MacArthur Boulevard at I-405 NB Ramps	a		Irv	0.68	B	0.64	B
80	MacArthur Boulevard at I-405 SB Ramps	a		Irv	0.61	B	0.72	C
82	MacArthur Boulevard at Michelson Drive	a		Irv	0.65	B	0.79	C
83	MacArthur Boulevard at Douglas Avenue	a		Irv	0.45	A	0.40	A
87	Dupont Drive at Michelson Drive	a		Irv	0.36	A	0.40	A
98	Von Karman Avenue at Alton Parkway	a		Irv	0.89	D	1.03	F
99	Von Karman Avenue at McGaw Avenue	a		Irv	0.66	B	0.78	C
100	Von Karman Avenue at Main Street	a		Irv	0.67	B	0.88	D
101	Von Karman Avenue at Morse Avenue	a		Irv	0.54	A	0.65	B
102	Von Karman Avenue at Michelson Drive	a		Irv	0.67	B	0.86	D
103	Von Karman Avenue at Dupont Drive	a		Irv	0.49	A	0.50	A
104	Von Karman Avenue at Martin	a		Irv	0.40	A	0.46	A
115	Millikan Avenue at Alton Parkway	a		Irv	0.44	A	0.74	C

ID	INTERSECTION	PA 36/CMP/SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (POST-2035)	JURISDICTION	POST-2035 CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
116	Cartwright Road at Main Street	a		Irv	0.36	A	0.57	A
119	Teller Avenue at Michelson Drive	a		Irv	0.43	A	0.49	A
128	Jamboree Road at I-5 NB Ramps	b		Irv	0.74	C	0.75	C
129	Jamboree Road at I-5 SB Ramps	b		Irv	0.70	B	0.58	A
130	Jamboree Road at Michelle Drive			Irv	0.78	C	0.65	B
131	Jamboree Road SB at Walnut Avenue			Irv	0.58	A	0.64	B
132	Jamboree Road NB at Walnut Avenue			Irv	0.48	A	0.61	B
135	Jamboree Road NB Ramps at Warner Avenue			Irv	0.55	A	1.07	F
137	Jamboree Road at Beckman Avenue	a		Irv	0.73	C	0.80	C
138	Jamboree Road at Alton Parkway	a		Irv	0.80	C	0.87	D
139	Jamboree Road at McGaw Avenue	a		Irv	0.68	B	0.66	B
140	Jamboree Road at Kelvin Avenue	a		Irv	0.63	B	0.59	A
141	Jamboree Road at Main Street	a		Irv	0.67	B	0.79	C
143	Jamboree Road at I-405 NB Ramps	a,b		Irv	0.70	B	0.83	D
144	Jamboree Road at I-405 SB Ramps	a,b		Irv	0.97	E	0.88	D
145	Jamboree Road at Michelson Drive	a		Irv	0.82	D	0.93	E
146	Jamboree Road at Dupont Road	a		Irv	0.60	A	0.71	C
164	Construction South at Barranca Parkway	a		Irv	0.42	A	0.61	B
168	Murphy Avenue at Alton Parkway	a		Irv	0.38	A	0.61	B
170	Union at Main Street	a		Irv	0.36	A	0.61	B
171	Veneto at Main Street			Irv	0.34	A	0.53	A
174	Carlson Avenue at Michelson Drive			Irv	0.59	A	0.71	C
175	Carlson Avenue at Campus Drive			Irv	0.61	B	0.71	C
180	Harvard Avenue at Walnut Avenue			Irv	0.50	A	0.59	A
183	Harvard Avenue at Warner Avenue			Irv	0.56	A	0.71	C
184	Harvard Avenue at Barranca Parkway			Irv	0.63	B	0.70	B
185	Harvard Avenue at Alton Parkway			Irv	0.66	B	0.71	C
186	Harvard Avenue at Main Street			Irv	0.55	A	0.69	B
187	Harvard Avenue at Coronado			Irv	0.53	A	0.58	A
188	Harvard Avenue at Michelson Drive			Irv	0.61	B	0.89	D
189	Harvard Avenue University Drive			Irv	0.76	C	0.84	D
190	University Drive at Campus Drive		√	Irv	0.69	B	0.85	D
191	Mesa Road at University Drive			Irv	0.46	A	0.57	A
192	California Avenue at University Drive			Irv	0.90	D	0.75	C
196	Hearthstone Boulevard at Irvine Center Drive			Irv	0.69	B	0.72	C
198	Paseo Westpark at Warner Avenue			Irv	0.42	A	0.40	A
199	Paseo Westpark at Barranca Parkway			Irv	0.45	A	0.58	A
200	Paseo Westpark at Alton Parkway			Irv	0.48	A	0.63	B
201	Paseo Westpark at Main Street			Irv	0.51	A	0.70	B
221	Culver Drive at Bryan Avenue			Irv	0.80	C	0.74	C
222	Culver Drive at Trabuco Road			Irv	0.81	D	0.76	C
223	Culver Drive at I-5 SB Ramps			Irv	0.69	B	0.62	B
224	Culver Drive at Walnut Avenue		√	Irv	0.75	C	0.89	D
225	Culver Drive at Deerfield Drive			Irv	0.86	D	0.85	D
226	Culver Drive at Irvine Center Drive		√	Irv	0.71	C	0.75	C
227	Culver Drive at Warner Avenue			Irv	0.74	C	0.70	B
228	Culver Drive at Barranca Parkway		√	Irv	0.73	C	0.81	D
229	Culver Drive at Alton Parkway		√	Irv	0.76	C	0.89	D
230	Culver Drive at Main Street			Irv	0.67	B	0.72	C
231	Culver Drive at San Leandro			Irv	0.70	B	0.62	B
232	Culver Drive at I-405 NB Ramps			Irv	0.65	B	0.88	D

ID	INTERSECTION	PA 36/CMP/SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (POST-2035)	JURISDICTION	POST-2035 CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
233	Culver Drive at I-405 SB Ramps			Irv	0.63	B	0.73	C
234	Culver Drive at Michelson Drive			Irv	0.63	B	0.81	D
235	Culver Drive at University Drive		√	Irv	0.79	C	0.85	D
337	Von Karman Avenue at Quartz	a		Irv	0.64	B	0.70	B
439	Bixby at Michelson Drive			Irv	0.33	A	0.51	A
440	Siglo at Main Street			Irv	0.39	A	0.57	A
472	Obsidian at Michelson Drive	a		Irv	0.41	A	0.58	A
84	MacArthur Boulevard at Campus Drive			Irv/NB	0.65	B	0.61	B
105	Von Karman Avenue at Campus Drive			Irv/NB	0.65	B	0.75	C
121	Teller Avenue at Campus Drive			Irv/NB	0.34	A	0.50	A
147	Jamboree Road at Campus Drive			Irv/NB	0.68	B	0.83	D
149	Jamboree Road at Fairchild Road			Irv/NB	0.67	B	0.73	C
150	Jamboree Road at MacArthur Boulevard	b		Irv/NB	0.63	B	0.74	C
176	Fairchild Avenue at MacArthur Boulevard			Irv/NB	0.74	C	0.76	C
193	MacArthur Boulevard NB at University Drive			Irv/NB	0.67	B	0.70	B
194	MacArthur Boulevard SB at University Drive			Irv/NB	0.74	C	0.64	B
195	SR-73 SB Ramps at University Drive			Irv/NB	0.62	B	0.58	A
9	SR-55 NB Ramps at MacArthur Boulevard			Irv/SA	0.76	C	0.63	B
31	Daimler Street at Alton Parkway			Irv/SA	0.61	B	0.69	B
43	Red Hill Avenue at Deere Avenue			Irv/SA	0.47	A	0.72	C
44	Red Hill Avenue at Alton Parkway			Irv/SA	0.75	C	0.82	D
42	Red Hill Avenue at Barranca Parkway/Dyer Road			Irv/SA/Tus	0.59	A	0.78	C
71	Armstrong Ave at Barranca Parkway			Irv/Tus	0.53	A	0.64	B
97	Von Karman Avenue/Tustin Ranch Road at Barranca			Irv/Tus	0.73	C	1.03	F
112	Myford Road at Michelle Drive			Irv/Tus	0.30	A	0.41	A
113	Myford Road at Walnut Avenue			Irv/Tus	0.50	A	0.53	A
114	Millikan Avenue/District Way at Barranca Parkway			Irv/Tus	0.55	A	0.65	B
126	Jamboree Road at Bryan Avenue			Irv/Tus	0.66	B	0.73	C
127	Jamboree Road at El Camino Real			Irv/Tus	0.65	B	0.74	C
134	Loop Road/Park Ave at Warner Avenue			Irv/Tus	0.47	A	1.12	F
136	Jamboree Road at Barranca Parkway			Irv/Tus	0.80	C	0.93	E
181	Harvard Avenue at Edinger Avenue/Irvine Center Dr			Irv/Tus	0.56	A	0.72	C
182	Harvard Avenue at Paseo Westpark/Moffett Dr.			Irv/Tus	0.43	A	0.49	A
441	Loop Road at Jamboree Road SB Ramps			Irv/Tus	0.20	A	0.17	A
61	Campus Drive at Airport Way			NB	0.39	A	0.71	C
62	Campus Drive at Bristol Street NB			NB	0.63	B	0.85	D
63	Campus Drive at Bristol Street SB			NB	0.83	D	0.69	B
64	Birch Street at Bristol Street NB			NB	0.70	B	0.73	C
65	Birch Street at Bristol Street SB			NB	0.67	B	0.64	B
85	MacArthur Boulevard at Birch Street			NB	0.81	D	0.91	E
106	Von Karman Avenue at Birch Street			NB	0.42	A	0.51	A
107	Von Karman Avenue at MacArthur Boulevard			NB	0.45	A	0.55	A
148	Jamboree Road at Birch Street			NB	0.55	A	0.58	A
151	Jamboree Road at Bristol Street NB			NB	0.44	A	0.55	A
153	Jamboree Road at Bristol Street SB			NB	0.65	B	0.65	B
154	Jamboree Road at Eastbluff Drive			NB	0.79	C	0.67	B
155	Jamboree Road at Bison Avenue			NB	0.51	A	0.59	A
156	Jamboree Road at Ford Road			NB	0.74	C	0.83	D
178	MacArthur Boulevard at Bison Avenue			NB	0.69	B	0.73	C
179	MacArthur Boulevard at Ford Road			NB	0.68	B	0.72	C
741	Jamboree at San Joaquin			NB	0.59	A	0.60	A

ID	INTERSECTION	PA 36/CMP/SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (POST-2035)	JURISDICTION	POST-2035 CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
742	MacArthur at San Joaquin			NB	0.62	B	0.68	B
733	Irvine at Mesa Road			NB/OC	0.58	A	0.72	C
734	Irvine at University/Del Mar			NB/OC	0.57	A	0.67	B
4	SR-55 SB Ramps at Edinger Avenue	b		SA	0.71	C	0.68	B
5	Hotel Terrace Drive at Dyer Road			SA	0.53	A	0.68	B
6	Grand Avenue at Dyer Road			SA	0.49	A	0.63	B
7	SR-55 NB Ramps at Dyer Road			SA	0.82	D	0.60	A
8	SR-55 SB Ramps at MacArthur Boulevard	c		SA	0.57	A	0.59	A
29	Pullman Street at Barranca Parkway			SA	0.56	A	0.84	D
543	Bristol at Segerstrom			SA	0.68	B	0.78	C
544	Bristol Street at MacArthur Boulevard			SA	0.68	B	0.88	D
718	Bear at SR-73 NB Ramps			SA	0.35	A	0.63	B
719	Flower at Segerstrom			SA	0.83	D	0.83	D
723	Main Street at Segerstrom			SA	0.76	C	0.88	D
724	Main Street at Alton Avenue			SA	0.58	A	0.64	B
725	Main and MacArthur (w/o SR-55)	c		SA	0.60	A	0.67	B
727	Halladay at Dyer Road			SA	0.81	D	0.78	C
728	Halladay E at Alton Parkway			SA	1.07	F	0.84	D
729	Halladay W at Alton Parkway			SA	0.79	C	0.70	B
730	Grand Avenue at Warner			SA	0.81	D	0.86	D
731	SR-55 SB Ramps at Grand Avenue			SA	0.57	A	0.50	A
3	Newport Avenue at Edinger Avenue			Tus	0.79	C	0.68	B
14	Walnut Avenue at McFadden Avenue			Tus	0.43	A	0.58	A
18	Newport Avenue at Bryan Avenue			Tus	0.49	A	0.63	B
19	Newport Avenue at Main Street			Tus	0.47	A	0.74	C
20	Newport Avenue at El Camino Real			Tus	0.68	B	0.73	C
21	Newport Avenue at I-5 NB Ramps			Tus	0.67	B	0.60	A
22	Newport Avenue at I-5 SB Ramp/Nisson Road			Tus	0.56	A	0.75	C
23	Newport Avenue at McFadden Street			Tus	0.68	B	0.55	A
24	Newport Avenue at Walnut Avenue			Tus	0.83	D	0.88	D
25	Newport Avenue at Sycamore Avenue			Tus	0.66	B	0.60	A
27	Del Amo Avenue at Edinger Avenue			Tus	0.40	A	0.40	A
35	Red Hill Avenue at Bryan Avenue			Tus	0.62	B	0.62	B
36	Red Hill Avenue at El Camino Real			Tus	0.62	B	0.85	D
37	Red Hill Avenue at Nisson Road			Tus	0.64	B	0.69	B
38	Red Hill Avenue at Walnut Avenue			Tus	0.75	C	0.85	D
39	Red Hill Avenue at Sycamore Avenue			Tus	0.63	B	0.59	A
40	Red Hill Avenue at Edinger Avenue			Tus	0.73	C	0.75	C
55	Browning Avenue at Bryan Avenue			Tus	0.47	A	0.63	B
56	Browning Avenue at El Camino Real			Tus	0.35	A	0.43	A
58	Browning Avenue at Walnut Avenue			Tus	0.51	A	0.58	A
92	Tustin Ranch Road at Bryan Avenue			Tus	0.71	C	0.74	C
93	Tustin Ranch Road at El Camino Real			Tus	0.94	E	0.78	C
94	Tustin Ranch Road at I-5 NB Ramps			Tus	0.60	A	0.52	A
95	Tustin Ranch Road at I-5 SB Ramps			Tus	0.71	C	0.48	A
96	Tustin Ranch Road at Walnut Avenue			Tus	0.51	A	0.77	C
109	Myford Road at Bryan Avenue			Tus	0.54	A	0.52	A
110	Myford Road at El Camino Real			Tus	0.43	A	0.58	A
111	Franklin Avenue at Walnut Avenue			Tus	0.55	A	0.99	E
133	Jamboree Road at Edinger Avenue	b		Tus	0.41	A	0.65	B
445	Tustin Ranch Road at Warner Avenue North			Tus	0.55	A	0.89	D

ID	INTERSECTION	PA 36/CMP/SANTA ANA	PRE-ESTABLISHED ATMS LOCATIONS (POST-2035)	JURISDICTION	POST-2035 CUMULATIVE BASELINE			
					AM		PM	
					ICU	LOS	ICU	LOS
446	Tustin Ranch Road at Warner Avenue South			Tus	0.52	A	0.59	A
447	Armstrong Avenue/Severyns Rd Valencia Avenue			Tus	0.63	B	0.53	A
448	Armstrong Avenue at Warner Avenue			Tus	0.70	B	0.63	B
453	Red Hill Avenue at Valencia Avenue			Tus	0.63	B	0.62	B
454	Tustin Ranch Road at Valencia Avenue			Tus	0.47	A	0.54	A
455	East Connector/Jamboree Plaza at Edinger Avenue			Tus	0.41	A	0.47	A
456	North Loop Road at Valencia Avenue			Tus	0.17	A	0.13	A
457	North Loop Road at Moffett Drive			Tus	0.37	A	0.37	A
478	Red Hill Avenue at I-5 NB Ramps			Tus	0.77	C	0.66	B
479	Red Hill Avenue at I-5 SB Ramps			Tus	0.77	C	0.80	C
480	Tustin Ranch Road/Connector at Edinger Avenue			Tus	0.16	A	0.16	A
732	SR-55 NB Ramp at Newport Avenue			Tus	0.54	A	0.83	D
739	Newport Avenue at Mitchell Avenue			Tus	0.69	B	0.71	C
740	Red Hill Avenue at Mitchell Avenue			Tus	0.64	B	0.63	B
743	Newport Avenue at Valencia			Tus	0.41	A	0.55	A
745	Tustin Ranch Road at Park Avenue			Tus	0.64	B	0.75	C
746	Kensington Park Drive at Edinger Avenue			Tus	0.39	A	0.52	A
747	Kensington Park Drive at Valencia Avenue			Tus	0.25	A	0.29	A
748	Armstrong Avenue at A Street			Tus	0.34	A	0.42	A
749	Park Avenue at A Street			Tus	0.75	C	1.00	E
750	Legacy Road at Warner Avenue			Tus	0.44	A	0.59	A
751	Tustin Ranch Road at Legacy Road			Tus	0.60	A	0.71	C
752	Legacy Road at North Loop Road			Tus	0.15	A	0.14	A
753	Tustin Ranch Road at Edinger Avenue Connector			Tus	0.44	A	0.40	A
28	Pullman Street at Warner Avenue			Tus/SA	0.57	A	0.61	B
41	Red Hill Avenue at Warner Avenue			Tus/SA	0.74	C	0.76	C
754	Red Hill Avenue at Carnegie Avenue			Tus/SA	0.39	A	0.45	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 acceptable							
√	ATMS credit-Reduction of 0.05 applied to ICU							

Figure 5.3 – Post-2035 Cumulative Baseline AM Peak Hour Intersection Deficiencies

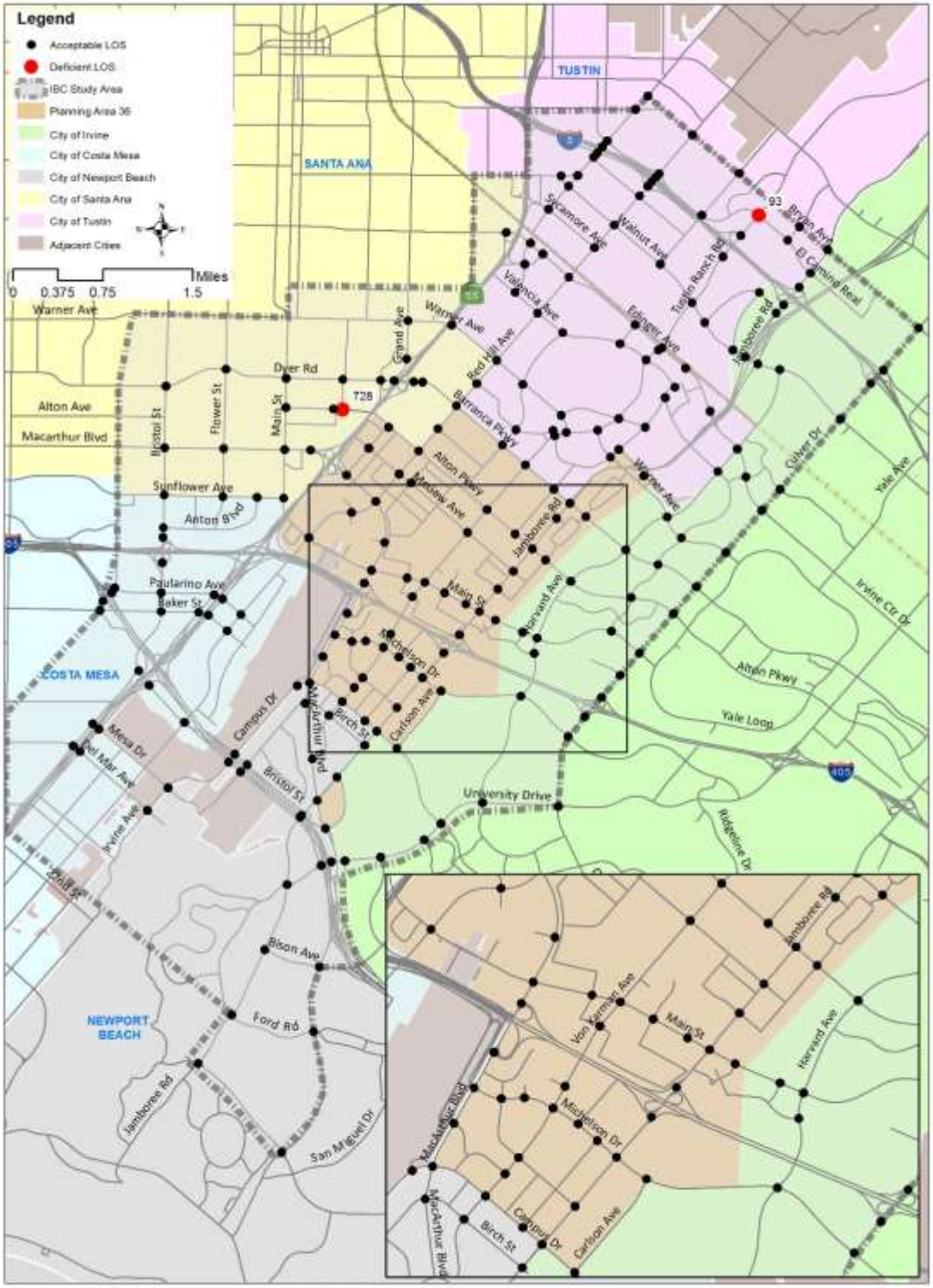
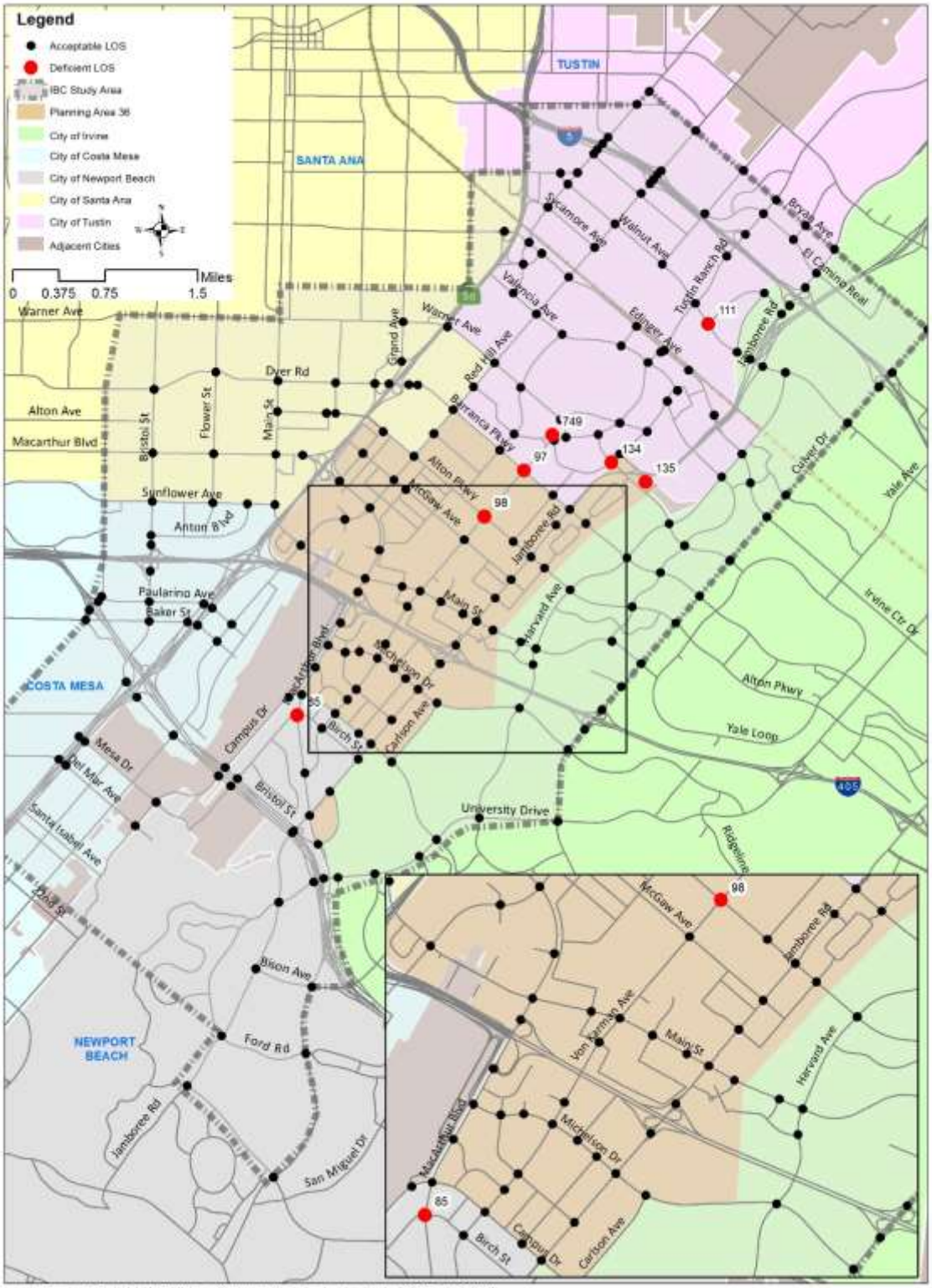


Figure 5.4 – Post-2035 Cumulative Baseline PM Peak Hour Intersection Deficiencies



Based on the Post-2035 Cumulative Baseline intersection ICU analysis, the following nine intersections within the study area are forecast to operate at a deficient LOS:

- #98: Von Karman Avenue at Alton Parkway (Irvine)—PM Peak Hour LOS F with a 1.03 V/C
- #135: Jamboree Road NB Ramps at Warner Avenue (Irvine)—PM Peak Hour LOS F with a 1.07 V/C
- #97: Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (Irvine/Tustin)—PM Peak Hour LOS F with a 1.03 V/C
- #134: Loop Road/Park Avenue at Warner Avenue (Irvine/Tustin)—PM Peak Hour LOS F with a 1.12 V/C
- #85: MacArthur Boulevard at Birch Street (Newport Beach)—PM Peak Hour LOS E with a 0.91 V/C
- #728: Halladay E at Alton Parkway (Santa Ana)—AM Peak Hour LOS F with a 1.07 V/C
- #93: Tustin Ranch Road at El Camino Road (Tustin)—AM Peak Hour LOS E with a 0.94 V/C
- #111: Franklin Avenue at Walnut Avenue (Tustin)—PM Peak Hour LOS E with a 0.99 V/C
- #749: Park Avenue at A Street (Tustin)—PM Peak Hour LOS E with a 1.00 V/C

5.7 Post-2035 Cumulative Baseline Peak Hour Freeway Mainline Analysis

Freeway improvements are assumed in the Post-2035 baseline that were not assumed in 2020, consistent with information pertaining to buildout assumptions received by the Orange County Transportation Authority (OCTA) and the Department of Transportation (Caltrans). The peak hour volumes for Post-2035 Cumulative Baseline are presented in **Table 5.6**.

When compared to the 2020 scenarios, there are some locations with improvements in mainline performance, mostly due to increased lane capacity assumed in the Post-2035 buildout conditions on SR-73 and SR-55. In the AM peak 33 out of 60 freeway segments operate at a deficient LOS and in the PM peak 24 out of 60 operate at a deficient LOS. In total, 36 segments are deficient in either one or both of the peaks. The deficient segments are:

AM Peak Hour:

- I-5 Northbound between Culver Drive and Jamboree Road
- I-5 Southbound between Jamboree Road and Culver Drive
- I-5 Northbound between Jamboree Road and Tustin Ranch Road
- I-5 Southbound between Tustin Ranch Road and Jamboree Road
- I-5 Northbound between Tustin Ranch Road and Red Hill Avenue
- I-5 Southbound between Red Hill Avenue and Tustin Ranch Road
- I-5 Northbound between Red Hill Avenue and Newport Avenue
- I-5 Southbound between Newport Avenue and Red Hill Avenue
- I-5 Northbound between Newport Avenue and SR-55
- I-5 Northbound North of SR-55
- I-5 Southbound North of SR-55
- I-405 Northbound between Culver Drive and Jamboree Road
- I-405 Southbound between Jamboree Road and Culver Drive
- I-405 Northbound between Jamboree Road and MacArthur Boulevard
- I-405 Northbound between MacArthur Boulevard and SR-55
- I-405 Southbound between SR-55 and MacArthur Boulevard

- I-405 Southbound between Bristol Street and SR-55
- I-405 Southbound between SR-73 and Bristol Street
- SR-55 Northbound between Fair Drive and SR-73
- SR-55 Northbound between SR-73 and Baker Street
- SR-55 Northbound between Baker Street and I-405
- SR-55 Southbound between Dyer Road and MacArthur Boulevard
- SR-55 Southbound between Edinger Avenue and Dyer Road
- SR-55 Southbound between McFadden Street/Sycamore Avenue and Edinger Avenue
- SR-55 Northbound between McFadden Street/Sycamore Avenue and I-5
- SR-55 Southbound between I-5 and McFadden Street/Sycamore Avenue
- SR-73 Northbound between MacArthur Boulevard and University Drive
- SR-73 Northbound between University Drive and Jamboree Road
- SR-73 Northbound between Jamboree Road and Birch Street
- SR-73 Northbound between Birch Street and Campus Drive
- SR-73 Southbound between Campus Drive and Birch Street
- SR-73 Northbound between Campus Drive and SR-55
- SR-73 Southbound between SR-55 and Campus Drive

PM Peak Hour:

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

Table 5.6 – Post-2035 Cumulative Baseline Freeway Peak Hour Mainline LOS

LOCATION		FREEWAY LANES			POST-2035 BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
		DIRECTION	LANES	CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	Culver Dr to Jamboree Road	NB	6	12,000	13,827	1.15	**F**	11,652	0.97	**E**
		SB	6	12,000	12,180	1.02	**F**	12,459	1.04	**F**
	Jamboree Road to Tustin Ranch Road	NB	6	12,000	13,623	1.14	**F**	11,550	0.96	**E**
		SB	6	12,000	12,365	1.03	**F**	12,040	1	**E**
	Tustin Ranch Road to Red Hill Avenue	NB	6	12,000	13,834	1.15	**F**	11,766	0.98	**E**
		SB	6	12,000	12,826	1.07	**F**	12,402	1.03	**F**
	Red Hill Avenue to Newport Avenue	NB	6	12,000	13,241	1.1	**F**	11,243	0.94	**E**
		SB	6	12,000	12,274	1.02	**F**	11,705	0.98	**E**
	Newport Avenue to SR-55	NB	6	12,000	13,735	1.14	**F**	11,859	0.99	**E**
		SB	6	12,000	9,248	0.77	D	8,926	0.74	D
	N of SR-55	NB	5	10,000	11,434	1.14	**F**	10,008	1	**E**
		SB	5	10,000	9,840	0.98	**E**	9,137	0.91	**E**
I-405	Culver Dr to Jamboree Road	NB	6	12,000	13,355	1.11	**F**	10,587	0.88	D
		SB	5	10,000	10,498	1.05	F	11,860	1.19	F
	Jamboree Road to MacArthur Boulevard	NB	6	12,000	13,008	1.08	**F**	11,375	0.95	**E**
		SB	7	14,000	12,126	0.87	D	11,782	0.84	D
	MacArthur Boulevard to SR-55	NB	6	12,000	12,300	1.02	**F**	12,063	1.01	**F**
		SB	6	12,000	13,269	1.11	**F**	11,599	0.97	**E**
	SR-55 to Bristol Street	NB	5	10,000	6,158	0.62	C	6,479	0.65	C
		SB	5	10,000	9,784	0.98	**E**	7,867	0.79	D
	Bristol Street to SR-73	NB	5	10,000	7,083	0.71	C	7,987	0.8	D
		SB	5	10,000	9,603	0.96	**E**	6,695	0.67	C
SR-55	S of Victoria Street	NB	3	6,000	4,298	0.72	D	3,176	0.53	C
		SB	3	6,000	2,875	0.48	B	3,317	0.55	C
	Victoria Street to Fair Dr	NB	4	8,000	6,710	0.84	D	4,578	0.57	C
		SB	4	8,000	4,534	0.57	C	5,677	0.71	C
	Fair Dr to SR-73	NB	4	8,000	8,169	1.02	**F**	5,891	0.74	D
		SB	4	8,000	5,389	0.67	C	6,612	0.83	D
	SR-73 to Baker Street	NB	4	8,000	7,486	0.94	**E**	5,738	0.72	D
		SB	4	8,000	6,276	0.78	D	6,916	0.86	D
	Baker Street to I-405	NB	4	8,000	7,486	0.94	**E**	5,738	0.72	D
		SB	4	8,000	6,276	0.78	D	6,916	0.86	D
	I-405 to MacArthur Boulevard	NB	6	12,000	9,718	0.81	D	8,424	0.7	C
		SB	6	12,000	9,387	0.78	D	9,074	0.76	D
	MacArthur Boulevard to Dyer Road	NB	5	10,000	8,637	0.86	D	8,731	0.87	D
		SB	5	10,000	9,469	0.95	**E**	8,155	0.82	D
	Dyer Road to Edinger Avenue	NB	5	10,000	8,609	0.86	D	9,553	0.96	**E**
		SB	4	8,000	9,771	1.22	**F**	7,820	0.98	**E**
	Edinger Avenue to McFadden Street/Sycamore Avenue	NB	5	10,000	8,754	0.88	D	9,674	0.97	**E**
		SB	5	10,000	10,477	1.05	**F**	8,266	0.83	D
	McFadden Street/Sycamore Avenue to I-5	NB	5	10,000	9,489	0.95	**E**	10,241	1.02	**F**
		SB	5	10,000	9,992	1	**E**	8,141	0.81	D
	N of I-5	NB	5	10,000	6,508	0.65	C	7,205	0.72	D
		SB	5	10,000	7,589	0.76	D	6,002	0.6	C
SR-73	MacArthur Boulevard to University Dr	NB	4	8,000	8,595	1.07	**F**	6,634	0.83	D
		SB	4	8,000	6,909	0.86	D	7,698	0.96	**E**
	University Dr to Jamboree Road	NB	4	8,000	7,566	0.95	**E**	5,662	0.71	C
		SB	4	8,000	5,305	0.66	C	6,085	0.76	D
	Jamboree Road to Birch Street	NB	4	8,000	9,930	1.24	**F**	8,208	1.03	**F**
		SB	4	8,000	6,534	0.82	D	7,151	0.89	D

LOCATION		FREEWAY LANES			POST-2035 BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
		DIRECTION	LANES	CAPACITY	VOLUME	V/C	LOS	VOLUME	V/C	LOS
	Birch Street to Campus Dr	NB	4	8,000	8,128	1.02	**F**	7,136	0.89	D
		SB	4	8,000	7,895	0.99	**E**	7,750	0.97	**E**
	Campus Dr to SR-55	NB	4	8,000	9,019	1.13	**F**	9,280	1.16	**F**
		SB	4	8,000	9,958	1.24	**F**	8,842	1.11	**F**
	SR-55 to Bear Street	NB	4	8,000	6,737	0.84	D	6,881	0.86	D
		SB	4	8,000	6,801	0.85	D	5,898	0.74	D
	Bear Street to I-405	NB	4	8,000	5,706	0.71	C	5,814	0.73	D
		SB	4	8,000	6,109	0.76	D	5,145	0.64	C
SR-261	SR-261 S of El Camino Real	NB	4	8,000	931	0.12	A	2,957	0.37	B
		SB	2	4,000	3,284	0.82	D	1,220	0.31	B

5.8 Post-2035 Cumulative Baseline Peak Hour Freeway Ramp Analysis

The ramp LOS is based on the V/C ratio which takes into account the ramp capacity and metering. **Table 5.7** displays the V/C ratios and levels of service for the freeway ramps within the study area. For interchanges where there are multiple ramps, the ramps are differentiated by either a loop or direct on/off ramp.

Table 5.7 – Post-2035 Cumulative Baseline Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		POST-2035 BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
I-5	**Culver Dr**	SB On Direct	1	1,000	364	0.40	B	459	0.51	C
		SB On Loop	1	1,000	644	0.72	D	357	0.40	B
		SB Off	2	500	912	0.41	B	1,750	0.78	D
		NB On Loop	1	1,000	870	0.58	C	520	0.35	B
		NB On Direct	1	1,000	617	0.69	C	206	0.23	A
		NB Off	1	500	431	0.29	A	782	0.52	C
	Jamboree Road	SB On Direct	1	1,000	333	0.22	A	1,020	0.68	C
		SB On Loop	1	1,000	848	0.57	C	510	0.34	B
		SB Off	2	500	1,360	0.45	B	1,337	0.45	B
		NB On Loop	1	1,000	590	0.55	C	540	0.50	B
		NB On Direct	1	1,000	600	0.56	C	480	0.44	B
		NB Off	1	500	1,530	1.02	**F**	1,536	1.02	**F**
	Tustin Ranch Road	SB On	1	1,000	812	0.54	C	598	0.40	B
		NB On	2	1,000	370	0.21	A	1,120	0.62	C
		NB Off	1	500	534	0.36	B	650	0.43	B
		SB Off	2	500	1,560	0.69	C	1,080	0.48	B
	Red Hill Avenue	SB On	1	1,000	995	0.66	C	880	0.59	C
		NB On	1	1,000	1,038	0.69	C	856	0.57	C
		NB Off	1	500	810	0.54	C	890	0.59	C
		SB Off	1	500	709	0.47	B	718	0.48	B
	Newport Boulevard	SB Off	1	500	946	0.63	C	1,121	0.75	D

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		POST-2035 BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
		NB On	1	1,000	630	0.42	B	740	0.49	B
I-405	Culver Dr	SB On Direct	1	1,000	477	0.32	B	1,005	0.67	C
		SB On Loop	1	1,000	396	0.44	B	392	0.44	B
		SB Off	2	500	825	0.28	A	1,673	0.56	C
		NB On Loop	1	1,000	790	0.53	C	322	0.21	A
		NB On Direct	1	1,000	1,060	0.71	C	513	0.34	B
		NB Off	2	500	1,239	0.55	C	1,393	0.62	C
	Jamboree Road	SB On Direct	2	1,000	707	0.39	B	1,270	0.71	C
		SB On Loop	1	1,000	236	0.16	A	730	0.49	B
		SB Off	2	500	2,510	1.12	**F**	1,694	0.75	D
		NB On Loop	1	1,000	514	0.34	B	730	0.49	B
		NB On Direct	2	1,000	1,149	0.64	C	1,000	0.56	C
		NB Off	2	500	2,350	1.04	**F**	1,306	0.58	C
	MacArthur Boulevard	SB Direct On	2	1,000	667	0.37	B	1,077	0.60	C
		SB Off	2	500	1,941	0.86	D	1,034	0.46	B
		NB On	1	1,000	520	0.35	B	1,610	1.07	**F**
		NB Off	1	500	1,981	1.32	**F**	984	0.66	C
	Bristol Street	SB Loop On	1	1,000	1,069	0.71	C	1,577	1.05	**F**
		SB Off	2	500	1,211	0.54	C	839	0.37	B
		NB On Loop	1	1,000	587	0.65	C	334	0.37	B
		NB On Direct	1	1,000	636	0.42	B	1,091	0.73	D
		NB Off	1	500	742	0.49	B	1,378	0.92	**E**
SR-55	Victoria Street	SB Direct On	1	1,000	500	0.56	C	480	0.53	C
		SB Off	2	500	1,159	0.52	C	1,574	0.70	C
		NB Direct On	1	1,000	1,247	0.83	D	824	0.55	C
		NB Off	1	500	665	0.44	B	563	0.38	B
	Fair Dr	SB Direct On	1	1,000	241	0.27	A	269	0.30	A
		SB Off	2	500	1,097	0.49	B	1,204	0.54	C
		NB Direct On	1	1,000	1,640	1.09	**F**	1,422	0.95	**E**
		NB Off	1	500	181	0.12	A	108	0.07	A
	Baker Street	SB On	1	1,000	443	0.30	A	890	0.59	C
		SB Off	1	500	1,010	0.67	C	1,190	0.79	D
		NB Off	1	500	998	0.67	C	1,130	0.75	D
	Paularino Avenue	SB Off	1	500	1,640	1.09	**F**	1,330	0.89	D
		NB On	1	1,000	1,471	1.63	**F**	1,350	1.50	**F**
	MacArthur Boulevard	SB On Direct	1	1,000	770	0.51	C	980	0.65	C
		SB On Loop	1	1,000	160	0.18	A	720	0.80	D
		SB Off	2	500	1,908	0.85	D	1,083	0.48	B
		NB On Loop	1	1,000	730	0.49	B	1,027	0.68	C
		NB On Direct	1	1,000	120	0.13	A	685	0.76	D
		NB Off	2	500	1,747	0.78	D	1,374	0.61	C
	Dyer Road	SB On	1	1,000	1,070	0.71	C	1,414	0.94	**E**
		SB Off Loop	1	500	581	0.39	B	340	0.23	A
		SB Off to Grand	1	500	811	0.54	C	573	0.38	B
		NB On Direct	1	1,000	660	0.44	B	1,690	1.13	**F**
		NB On Loop	1	1,000	550	0.61	C	1,020	1.13	**F**
		NB Off	1	500	1,746	1.16	**F**	419	0.28	A
	Edinger Avenue	SB On	1	1,000	860	0.57	C	790	0.53	C
		SB Off	1	500	912	0.61	C	571	0.38	B
		NB On	1	1,000	320	0.21	A	1,530	1.02	**F**
		NB Off	1	500	992	0.66	C	570	0.38	B

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		POST-2035 BASELINE					
					AM PEAK HOUR			PM PEAK HOUR		
			NUMBER OF LANES	RAMP LENGTH	VOLUME	V/C	LOS	VOLUME	V/C	LOS
	McFadden Avenue	SB On	1	1,000	589	0.39	B	405	0.27	A
		SB Off	2	500	597	0.27	A	719	0.32	B
		NB On	1	1,000	1,256	0.84	D	1,127	0.75	D
		NB Off	1	500	521	0.35	B	560	0.37	B
SR-73	Bison Avenue	SB On	1	1,000	190	0.13	A	360	0.24	A
		SB Off	1	500	967	0.64	C	479	0.32	B
		NB On	1	1,000	415	0.46	B	1,040	1.16	**F**
	MacArthur Boulevard	SB On	1	1,000	187	0.12	A	802	0.53	C
		SB Off	1	500	1,208	0.81	D	1,017	0.68	C
		NB On s/o University Dr	1	1,000	806	0.54	C	826	0.55	C
		NB On n/o University Dr	1	1,000	1,013	0.68	C	1,277	0.85	D
	University Dr	SB Off	1	500	827	0.55	C	958	0.64	C
	Jamboree Road	SB On	1	1,000	473	0.32	B	666	0.44	B
		SB Off	2	500	1,361	0.61	C	599	0.27	A
		NB On	1	1,000	1,351	1.50	**F**	1,268	1.41	**F**
	Birch Street	NB Off	1	500	1,802	1.20	**F**	1,072	0.71	C
	Campus Dr	SB Off	2	500	2,063	0.92	**E**	1,092	0.49	B
		NB On	1	1,000	891	0.59	C	2,144	0.66	C
	SR-73 at Bear	SB On	1	1,000	1,030	0.69	C	1,234	0.82	D
		SB Off	1	500	370	0.25	A	440	0.29	A
		NB Off	1	500	742	0.49	B	1,402	0.93	**E**
		NB On	1	1,000	240	0.16	A	682	0.45	B
SR-261	Jamboree Road	SB On	2	1,000	1,217	0.41	B	985	0.33	B
		NB Off	2	250	557	0.25	A	934	0.41	B
	Walnut Avenue	NB On	1	1,000	381	0.25	A	809	0.54	C
		SB Off	1	500	857	0.57	C	410	0.27	A

When compared to the 2020 Baseline scenario, there is one ramp that improves to become non-deficient under Post-2035 conditions:

- SR-55 Northbound Direct On-Ramp from Victoria Street.

There are six additional deficiencies:

- I-405 Northbound Off-Ramp to Bristol Street,
- SR-55 Northbound Direct On-Ramp from Fair Drive,
- SR-55 Southbound On-Ramp from Dyer Road,
- SR-55 Northbound Direct On-Ramp from Dyer Road,
- SR-73 Southbound Off-Ramp to Campus Drive,
- SR-73 Northbound Off-Ramp to SR-73 at Bear.

Eleven of the 98 ramps in the study area are forecast to be deficient in the AM peak. In the PM peak thirteen ramps are forecast to be deficient. In total twenty of the ramps are deficient in one or both of the peak hours. The deficient ramps are:

AM Peak Hour:

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

PM Peak Hour:

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

*Deficient in both AM and PM

Figure 5.5 and **Figure 5.6** graphically depict the Post-2035 Cumulative Baseline freeway and ramp deficiencies.

Figure 5.5 – Post-2035 Cumulative Baseline Freeway AM Peak Hour Deficiencies

Figure 5.6 – Post-2035 Cumulative Baseline Freeway PM Peak Hour Deficiencies

5.9 Post-2035 Cumulative Baseline With Update

The Post-2035 Cumulative With Update impact analysis evaluates the buildout of the proposed IBC Vision Plan update within the study area. The circulation network for the Post-2035 Cumulative With Update analysis is identical to that of the Post-2035 Cumulative Baseline condition. The analysis assesses circulation system impacts associated with the full implementation of the proposed IBC Vision Plan land uses.

5.10 Post-2035 Cumulative Baseline With Update Land Use and Trip Generation

The land use setting for Post-2035 Cumulative With Update incorporates the land use changes for Post-2035 that will result from the full implementation of the IBC Vision Plan. **Table 5.8** provides a comparison of land use assumptions between the Post-2035 Cumulative Baseline and With Update conditions as well as a comparison to 2020 and Existing conditions within the IBC area. **Table 5.9** provides the ITAM trip generation for the Post-2035 Cumulative With Update scenario along with a comparison to 2020 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 **Figure 5.13** present land use comparisons for Post-2035 Cumulative Baseline and With Update scenarios.

Table 5.8 – Post-2035 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)
2015 Baseline	7,060	1,384	2,322	26,639	13,934	379	474
2015 With Update	16,795	1,690	2,653	34,286	12,339	549.371	1049
2020 Cumulative Baseline	7,060	1,384	2,322	26,639	13,934	379	474
2020 Cumulative With Update	16,671	1,405	2,535	27,750	13,240	883	1049
Post-2035 Cumulative Baseline	7,060	1,384	2,322	26,639	13,934	379	474
Post-2035 Cumulative Baseline With Update	16,795	1,690	2,653	34,286	12,339	549	1049
Percent Growth (Post-2035 With Update vs Post-2035 Baseline)	138%	22%	14%	29%	-11%	45%	121%
Percent Growth (Post-2035 With Update vs 2020 With Update)	1%	20%	5%	24%	-7%	-38%	0%
Percent Growth (Post-2035 With Update vs 2015 With Update)	0%	0%	0%	0%	0%	0%	0%

Source: City of Irvine

Table 5.9 – Post-2035 Cumulative With Update Trip Generation

SCENARIO	AM-OUT	AM-IN	PM-OUT	PM-IN	ADT
2015 Baseline	12,209	29,499	27,867	18,342	529,306
2015 With Update	18,089	36,120	35,014	24,855	700,506
2020 Baseline	12,172	29,501	27,877	18,307	529,306
2020 With Update	17,401	31,389	30,797	22,735	615,202
Post-2035 Baseline	12,297	29,593	28,018	18,531	529,306
Post-2035 With Update	18,980	36,325	35,441	25,644	700,506
Percent Growth (Post-2035 With Update vs. Post-2035 Baseline)	54.3%	22.7%	26.5%	38.4%	32.3%
Percent Growth (Post-2035 With Update vs. 2020 With Update)	9.1%	15.7%	15.1%	12.8%	13.9%

Percent Growth (Post-2035 With Update vs. 2015 With Update)	4.9%	0.6%	1.2%	3.2%	0.0%

Source: ITAM

Figure 5.7 – Land Use Comparison between Post-2035 IBC Vision Plan With Update and Baseline (Residential Units)

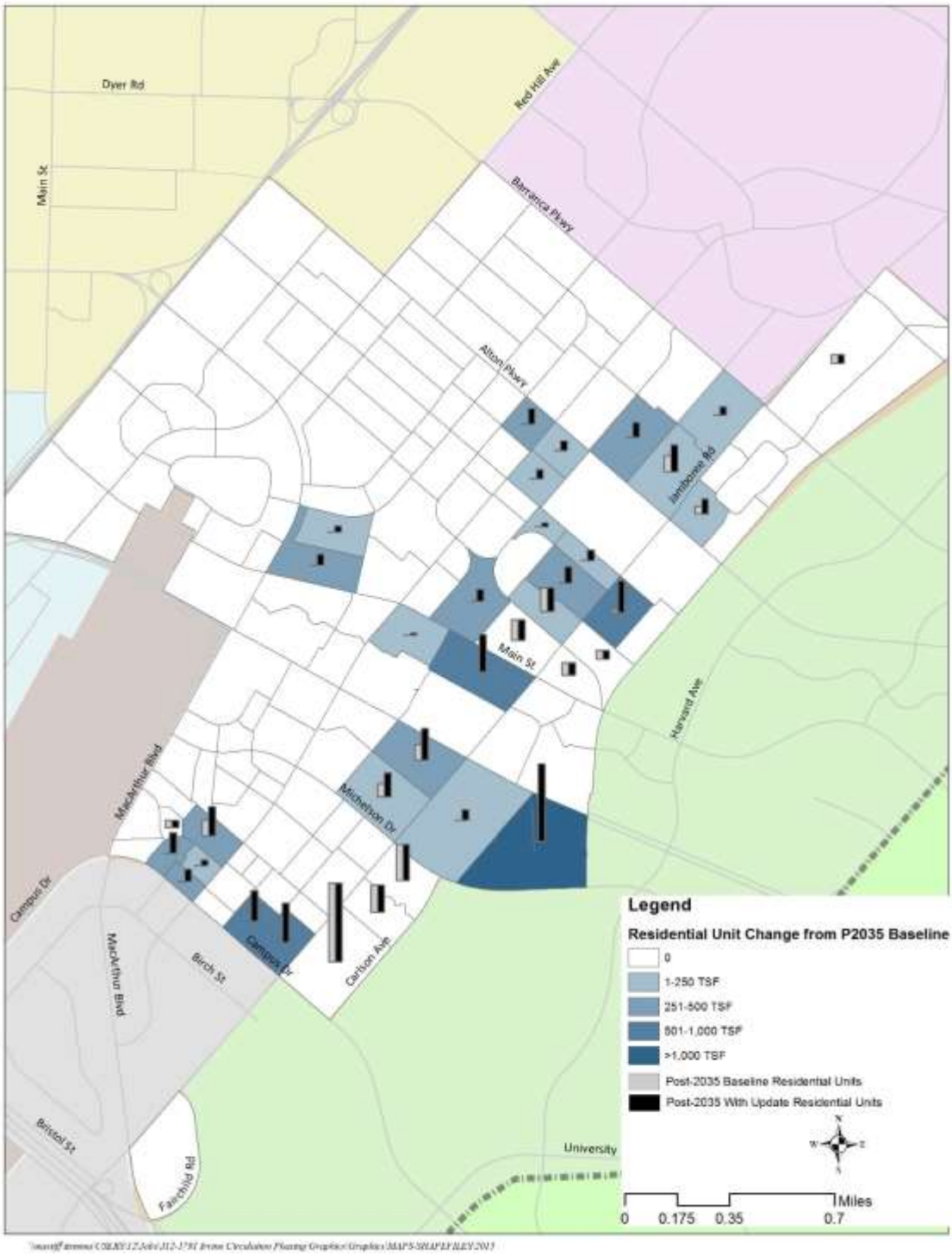


Figure 5.8 – Land Use Comparison between Post-2035 IBC Vision Plan With Update and Baseline (Office Mix)

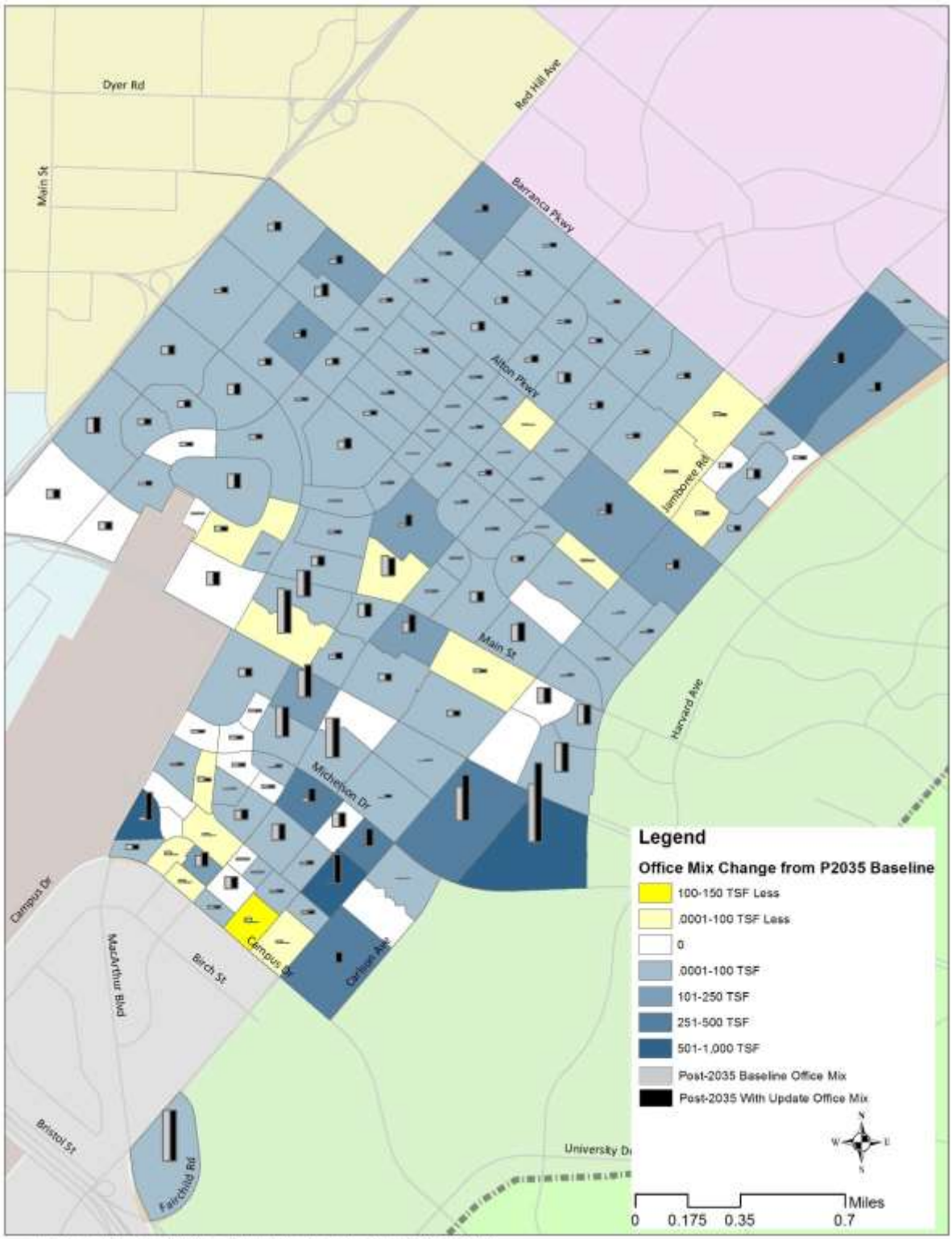


Figure 5.9 – Land Use Comparison between Post-2035 IBC Vision Plan With Update and Baseline (Industrial Mix)

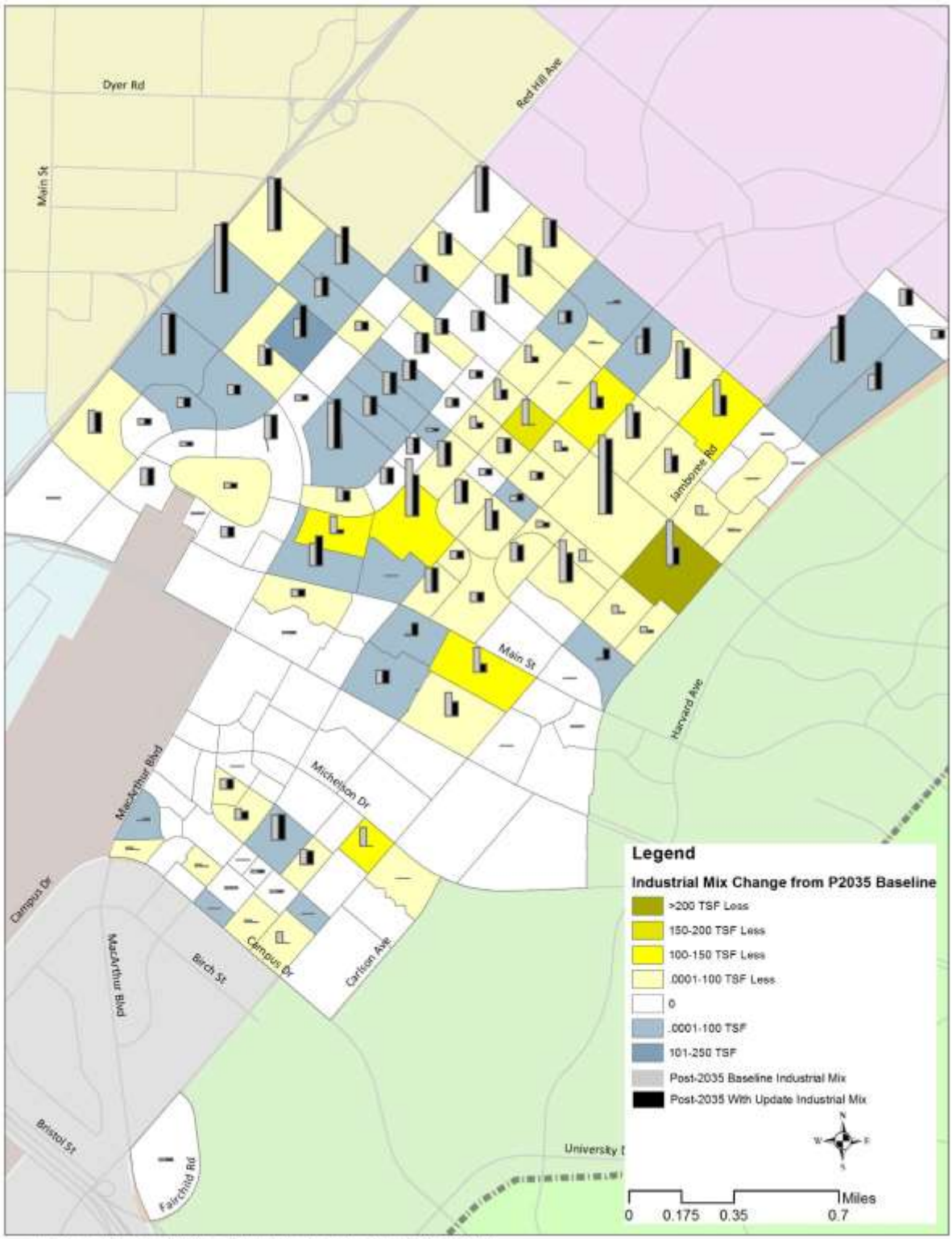


Figure 5.10 – Land Use Comparison between Post-2035 IBC Vision Plan With Update and Baseline (Commercial)

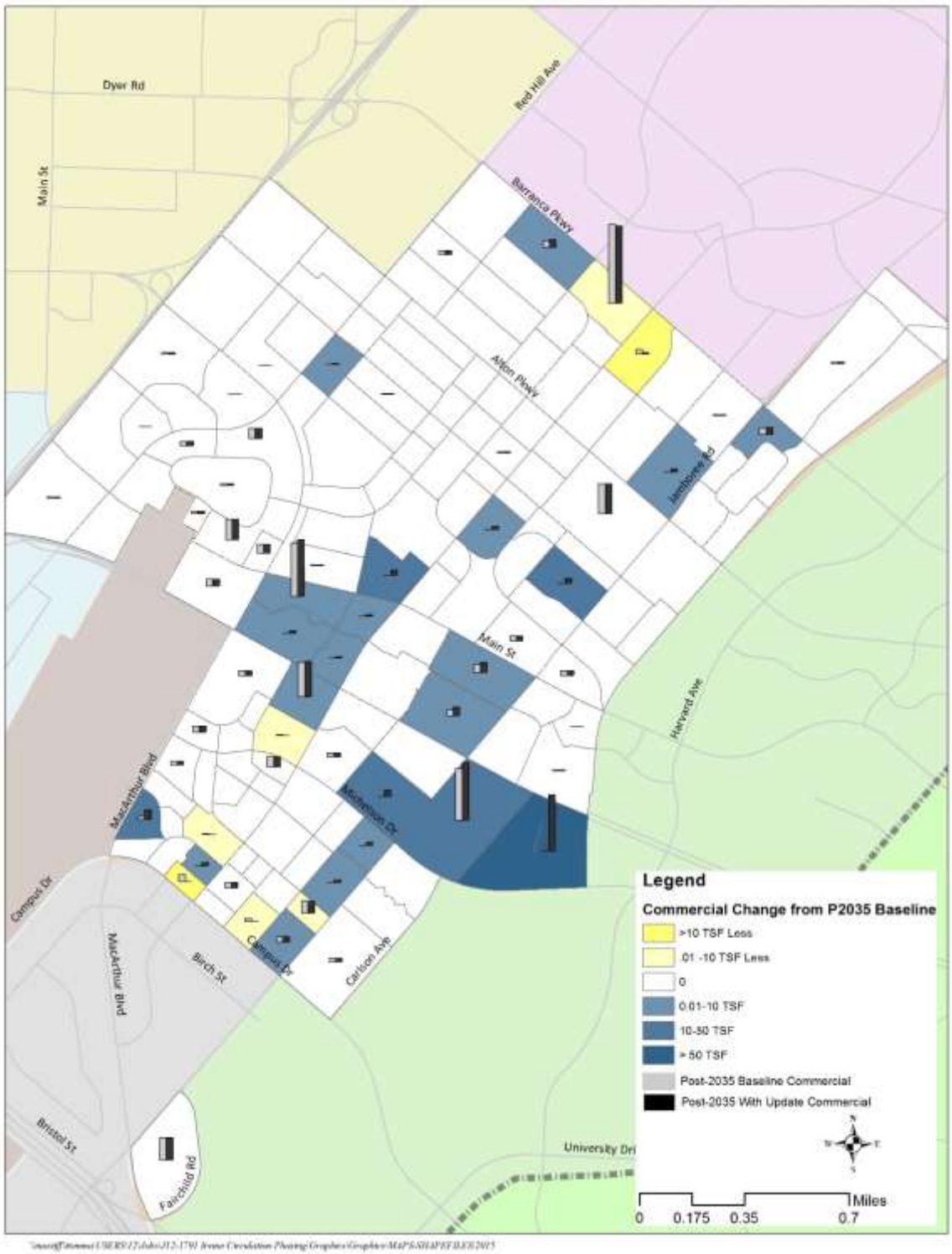


Figure 5.11 – Land Use Comparison between Post-2035 IBC Vision Plan With Update and Baseline (Hotel)

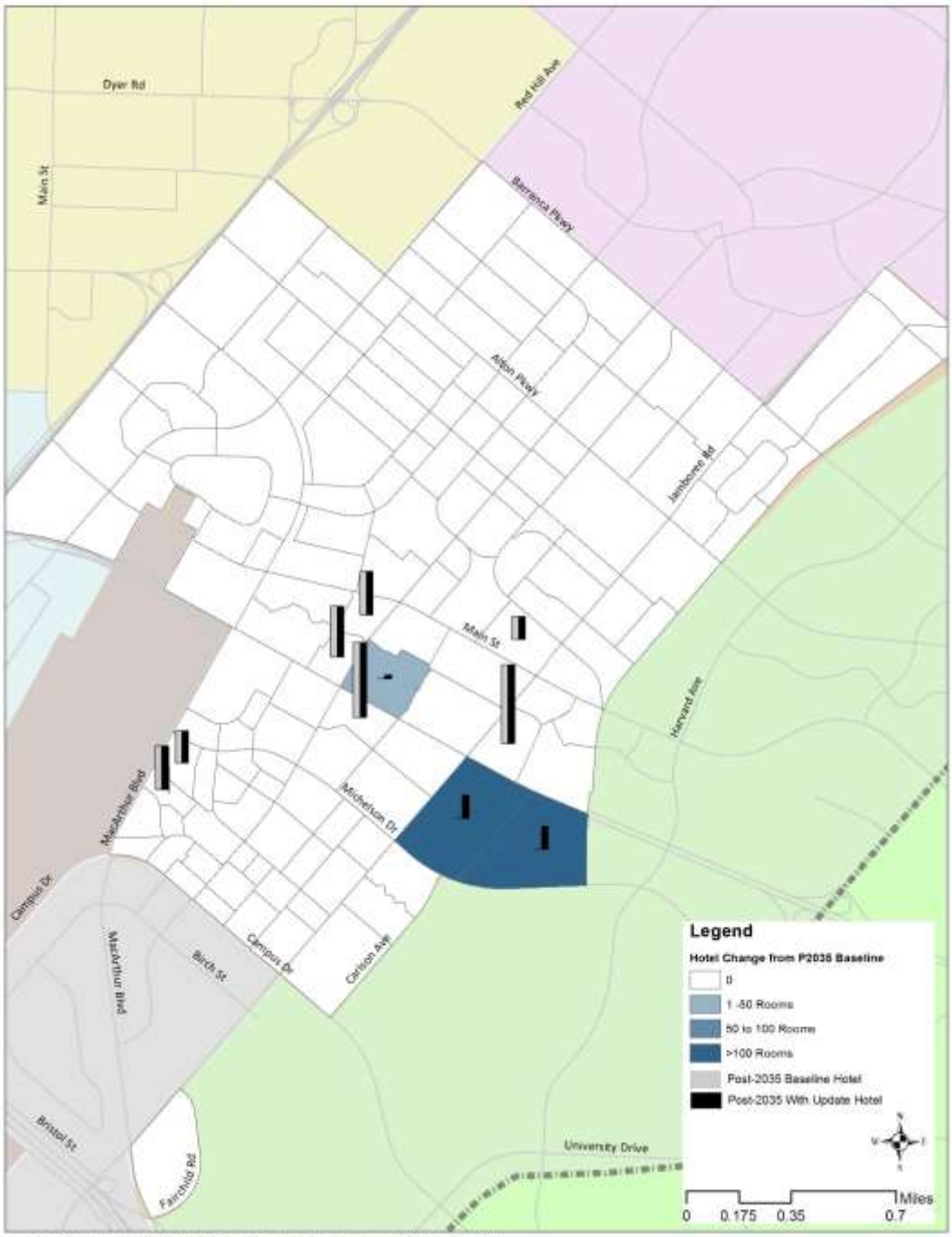


Figure 5.12– Land Use Comparison between Post-2035 IBC Vision Plan With Update and Baseline (Mini-Warehouse)

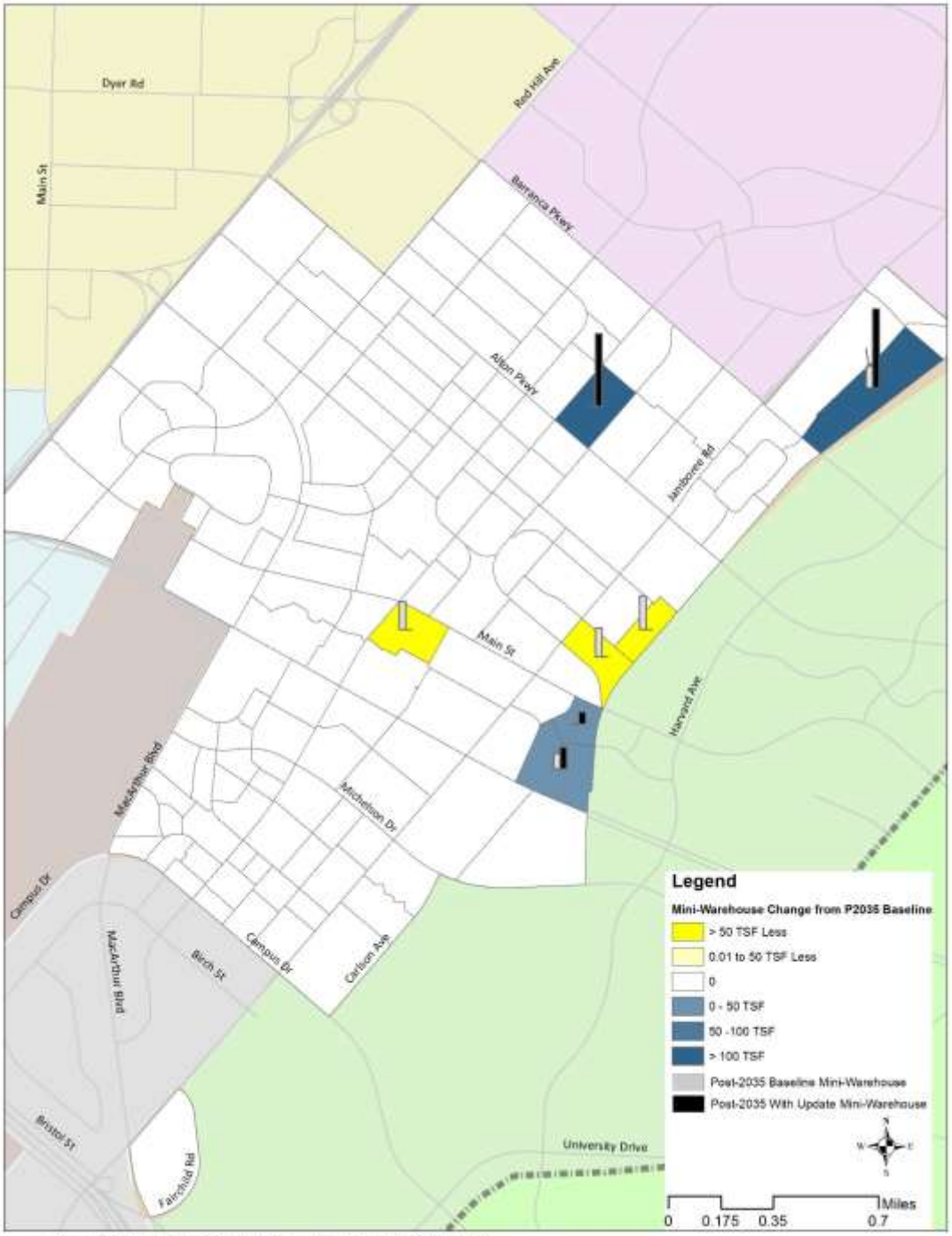
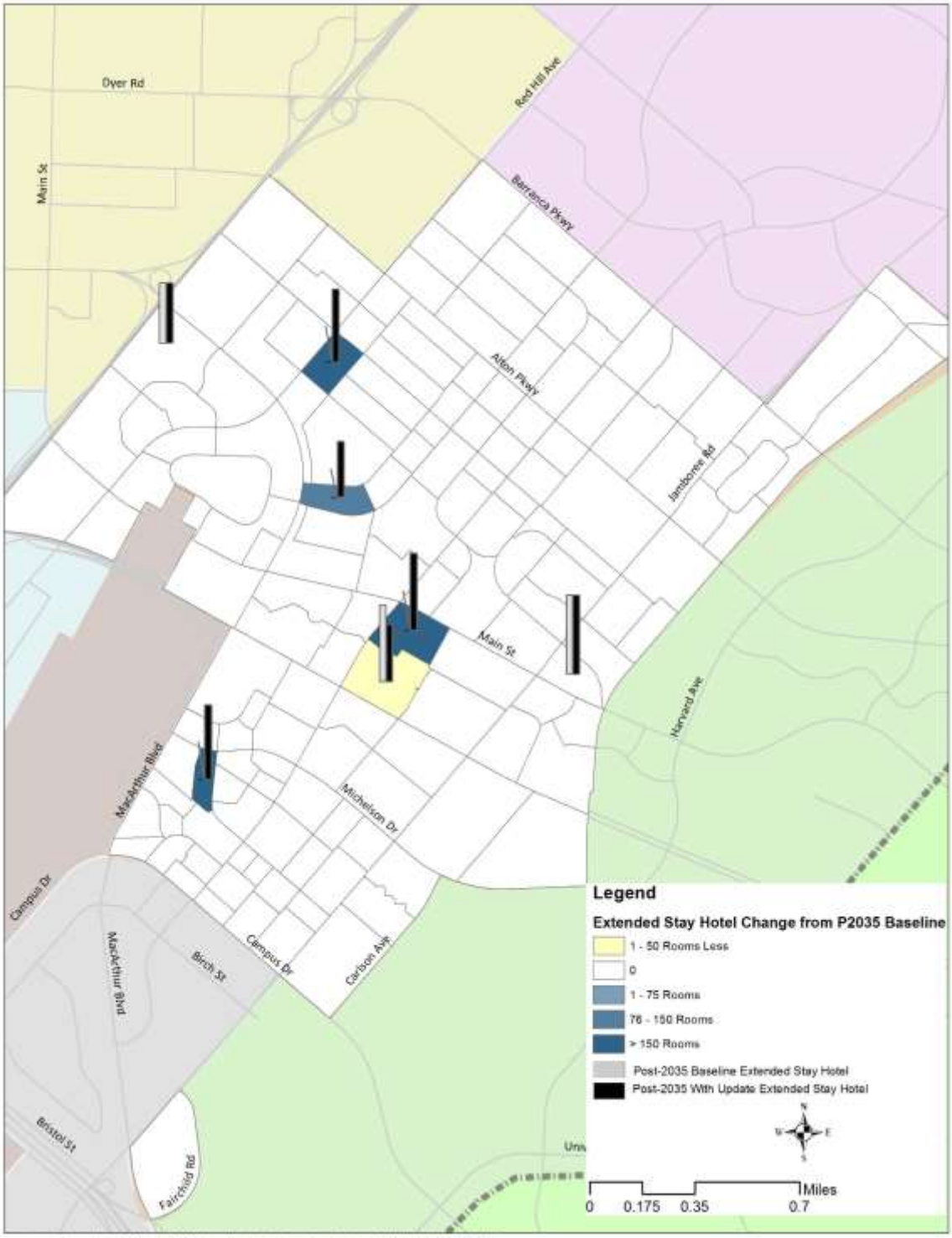


Figure 5.13– Land Use Comparison between Post-2035 IBC Vision Plan With Update and Baseline (Extended-stay Hotel)



5.11 Post-2035 Cumulative Baseline With Update Daily Arterial Segment Analysis

Under the Post-2035 Cumulative With Update scenario, traffic within the City shows some growth related to future development of the study area as a whole. Post-2035 arterial traffic conditions were analyzed based on the forecast volumes and future lane configurations. **Table 5.10** presents the study area roadway segments with the jurisdiction, daily future forecast volume, classification type, V/C ratio and LOS for each segment identified. Deficient segments were further analyzed for peak hour performance within the City of Irvine. Alternative methodologies were used on roadways located in adjacent cities. The Post-2035 Cumulative With Update scenario is compared to the Post-2035 Cumulative Baseline scenarios to identify impacts.

Table 5.10 indicates that thirty segments are deficient under the Post-2035 Cumulative With Update daily conditions: One segment located within Santa Ana, twenty-four segments in Irvine, four segments in Newport Beach and one in Tustin. Compared to the Post-2035 Baseline scenario, there are twelve additional segments that become deficient under daily conditions in the With Update scenario, all located within the City of Irvine. As noted above, LOS E indicates a deficient segment for arterial segments outside Planning Area (PA) 36 within the City of Irvine. PA 36 (IBC area) segments are considered deficient at LOS F. Deficient segments under Post-2035 Cumulative With Update conditions include the following:

- 879—Campus Drive from Carlson Avenue to University Drive (Irvine)
- 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)
- 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)
- 183—Harvard Avenue from Michelson Drive to University Drive (Irvine)
- 133—Jamboree Road from Michelle Drive to Walnut Avenue (Irvine)
- 144—Jamboree Road from Kelvin Avenue to Main Street (Irvine)
- 145—Jamboree Road from Main Street to I-405 NB Ramps (Irvine)
- 148—Jamboree Road from I-405 SB Ramps to Michelson Drive (Irvine)
- 149—Jamboree Road from Michelson Drive to Dupont Drive (Irvine)
- 847—Michelson Drive from Carlson Avenue to Prince (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)
- 104— Von Karman Avenue from Main Street to Morse Avenue (Irvine)
- 98—Von Karman Avenue from Barranca Parkway to Alton Parkway (Irvine)
- 107—Von Karman Avenue from Quartz to Michelson Drive (Irvine)
- 1305—Bristol Street NB from Birch Street to Campus Drive (Newport Beach)*

- 1312—Bristol Street SB West of Jamboree Road (Newport Beach)*
- 953— MacArthur Boulevard from University Drive to Bison Avenue (Newport Beach)*
- 1301—MacArthur Boulevard from Bison Avenue to Ford Road (Newport Beach)*
- 1326—Dyer Road from SR-55 SB to SR-55 NB (Santa Ana)**
- 587—Walnut Avenue East of Newport Avenue (Tustin)*

*Deficient locations under daily conditions—no peak hour link analysis required.
** Impacted location within the City of Santa Ana.

Table 5.10 – Post-2035 Cumulative With Update Daily Arterial LOS

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	POST-2035 ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE			POST-2035 CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
2725	Anton Blvd	Bristol St to Sunflower Ave		CM	6D	23,600	0.44	A	23,600	0.44	A
2721	Baker St	Bear St to Bristol St		CM	6D	29,100	0.52	A	29,000	0.52	A
2729	Baker St	Bristol St to SR 55 SB Ramps		CM	6D	33,100	0.59	A	33,000	0.59	A
1294	Baker St	SR 55 SB to SR 55 NB		CM	6D	24,900	0.45	A	25,000	0.45	A
1468	Baker St	SR 55 NB to Red Hill Ave		CM	6D	14,100	0.25	A	14,400	0.26	A
1469	Baker St	Red Hill Ave to Airway Ave		CM	6D	4,900	0.09	A	4,900	0.09	A
2723	Bear St	Paularino Ave to Baker St		CM	6D	31,300	0.56	A	31,300	0.56	A
2733	Bristol St	Segerstrom Ave to West Alton Ave		CM	6D	40,700	0.73	C	41,400	0.74	C
2737	Bristol St	West Alton Ave to MacArthur Blvd		CM	6D	45,400	0.81	D	46,000	0.82	D
2738	Bristol St	MacArthur Blvd to Sunflower Ave		CM	6D	45,100	0.81	C	45,500	0.81	D
2727	Bristol St	Sunflower Ave to Anton Blvd		CM	6D	49,100	0.88	D	49,400	0.88	D
2728	Bristol St	Anton Blvd to I-405 NB Ramps		CM	8D	66,900	0.79	C	67,200	0.80	C
2751	Bristol St	I-405 NB Ramps to I-405 SB Ramps		CM	8D	66,500	0.89	D	66,900	0.89	D
2745	Bristol St	I-405 SB Ramp to Paularino Ave		CM	8D	45,200	0.81	C	45,400	0.81	D
2732	Bristol St	Paularino Ave to Baker St		CM	6D	37,400	0.67	B	37,800	0.68	B
2730	Bristol St	Baker St to SR 55		CM	6D	27,400	0.49	A	27,900	0.50	A
1888	Bristol St	SR-55 to Red Hill Ave		CM	6D	20,300	0.36	A	20,900	0.37	A
2793	Del Mar Ave	Newport Blvd SB to Newport Blvd NB		CM	4D	24,100	0.63	B	24,400	0.64	B
2791	Del Mar Ave	Newport Blvd to Santa Ana Ave		CM	4D	13,000	0.34	A	13,300	0.35	A
2772	Flower St	Segerstrom Ave to MacArthur Blvd		CM	4D	13,000	0.34	A	13,400	0.35	A
2804	Flower St	MacArthur Blvd to Sunflower Ave		CM	4D	9,500	0.25	A	9,700	0.26	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	23,800	0.43	A	26,200	0.47	A
2785	Mesa Dr	Newport Blvd SB to Newport Blvd NB		CM	2U	6,100	0.49	A	6,100	0.49	A
2783	Mesa Dr	Newport Blvd NB to Santa Ana Ave		CM	2U	6,900	0.55	A	6,900	0.55	A
2779	Mesa Dr	Irvine Ave to Birch St		CM	4D	12,700	0.33	A	13,000	0.34	A
2742	Paularino Ave	Bear St to Bristol St		CM	2U	9,300	0.25	A	9,200	0.24	A
2746	Paularino Ave	Bristol St to SR-55 SB		CM	4D	19,200	0.51	A	19,200	0.51	A
1291	Paularino Ave	SR-55 SB to SR-55 NB		CM	4D	16,300	0.43	A	16,300	0.43	A
1344	Paularino Ave	SR-55 NB to Red Hill Ave		CM	4D	11,600	0.31	A	11,700	0.31	A
1342	Paularino Ave	Red Hill Ave to Airway Ave		CM	4D	4,500	0.12	A	4,500	0.12	A
39	Red Hill Ave	Main St to Paularino Ave	a	CM	6D	20,600	0.54	A	20,800	0.55	A
1340	Red Hill Ave	Paularino Ave to Baker St		CM	6D	18,700	0.49	A	19,500	0.51	A
40	Red Hill Ave	Baker St to Bristol St		CM	6D	17,000	0.45	A	17,300	0.46	A
41	Santa Ana Ave	Mesa Dr to Bristol St		CM	4D	10,600	0.28	A	10,700	0.28	A
2769	University Dr	Santa Ana Ave to Irvine Ave		CM	2U	11,700	0.31	A	12,300	0.32	A
770	Alton Pkwy	Daimler St to Red Hill Ave	a	Irv	4D	26,900	0.84	D	29,400	0.92	E
776	Alton Pkwy	Red Hill Ave to Von Karman Ave	a	Irv	4D	19,900	0.62	B	21,600	0.68	B
778	Alton Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	4D	22,200	0.69	B	23,500	0.73	C
779	Alton Pkwy	Jamboree Rd to Murphy Ave	a	Irv	6D	24,900	0.46	A	26,300	0.49	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	POST-2035 ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE			POST-2035 CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
780	Alton Pkwy	Murphy Ave to Harvard Ave		Irv	6D	23,700	0.44	A	25,600	0.47	A
781	Alton Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	18,700	0.35	A	19,900	0.37	A
1378	Alton Pkwy	Paseo Westpark to San Marino		Irv	6D	20,000	0.37	A	21,100	0.39	A
783	Alton Pkwy	San Marino to Culver Dr		Irv	6D	27,300	0.51	A	28,300	0.52	A
735	Barranca Pkwy (Dyer)	Pullman to Red Hill Ave		Irv	6D	37,500	0.69	B	40,100	0.74	C
736	Barranca Pkwy	Red Hill Ave to Armstrong	a	Irv	7D	38,100	0.61	A	40,200	0.64	B
739	Barranca Pkwy	Armstrong to Von Karman Ave	a	Irv	7D	35,100	0.56	A	37,800	0.60	A
740	Barranca Pkwy	Von Karman Ave to Jamboree Rd	a	Irv	7D	40,300	0.64	B	43,100	0.68	B
743	Barranca Pkwy	Jamboree Rd to Construction Circle	a	Irv	6D	35,000	0.65	B	37,700	0.70	B
744	Barranca Pkwy	Construction Circle to Harvard Ave	a	Irv	6D	29,400	0.54	A	31,100	0.58	A
745	Barranca Pkwy	Harvard Ave to Paseo Westpark		Irv	6D	28,500	0.53	A	29,700	0.55	A
747	Barranca Pkwy	Paseo Westpark to Santa Rosa		Irv	6D	31,300	0.58	A	32,500	0.60	A
748	Barranca Pkwy	Santa Rosa to Culver Dr		Irv	6D	31,100	0.58	A	32,300	0.60	A
538	Bryan Ave	Jamboree Rd to Marketplace		Irv	4D	24,300	0.76	C	24,400	0.76	C
1812	Bryan Ave	Marketplace to El Camino Real		Irv	4D	24,400	0.76	C	24,600	0.77	C
539	Bryan Ave	El Camino Real to Rubicon		Irv	4D	23,300	0.73	C	23,200	0.73	C
540	Bryan Ave	Rubicon to Culver		Irv	4D	26,400	0.83	D	26,600	0.83	D
869	Campus Dr	MacArthur Blvd to Martin	a	Irv	6D	15,100	0.28	A	17,500	0.32	A
870	Campus Dr	Martin to Von Karman Ave	a	Irv	4D	16,100	0.50	A	18,300	0.57	A
871	Campus Dr	Von Karman Ave to Teller Ave	a	Irv	4D	14,200	0.44	A	16,100	0.50	A
872	Campus Dr	Teller Ave to Jamboree Rd	a	Irv	4D	13,900	0.43	A	15,200	0.48	A
877	Campus Dr	Jamboree Rd to Carlson Ave	a	Irv	4D	25,100	0.78	C	26,500	0.83	D
879	Campus Dr	Carlson Ave to University		Irv	4U	29,700	0.93	**E**	30,500	0.95	**E**
166	Carlson Ave	Michelson Dr to Campus Dr	a	Irv	4D	9,100	0.28	A	10,400	0.33	A
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps		Irv	Maj5D+ 1AUX	62,500	0.99	**E**	63,000	1.00	**E**
213	Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr		Irv	6D	58,900	1.09	**F**	59,500	1.10	**F**
214	Culver Dr	Scottsdale Dr to Walnut Ave		Irv	6D	51,800	0.96	**E**	52,600	0.97	**E**
215	Culver Dr	Walnut Ave to Deerfield Ave		Irv	6D	48,900	0.91	D	49,600	0.92	**E**
216	Culver Dr	Deerfield Ave to Irvine Center Dr		Irv	Maj6D+ 1AUX	46,000	0.85	D	46,800	0.87	D
217	Culver Dr	Irvine Center Dr to Warner Ave		Irv	6D	48,800	0.90	D	49,900	0.92	**E**
218	Culver Dr	Warner Ave to Barranca Pkwy		Irv	6D	46,300	0.86	D	47,200	0.87	D
219	Culver Dr	Barranca Pkwy to Alton Pkwy		Irv	6D	54,900	1.02	**F**	56,300	1.04	**F**
220	Culver Dr	Alton Pkwy to Main St		Irv	6D	52,000	0.96	**E**	53,800	1.00	**E**
221	Culver Dr	Main St to San Leandro		Irv	6D	52,400	0.97	**E**	53,700	0.99	**E**
222	Culver Dr	San Leandro to I-405 NB On-Ramp		Irv	6D	53,500	0.99	**E**	54,700	1.01	**F**
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr		Irv	6D	56,600	1.05	**F**	59,200	1.10	**F**
225	Culver Dr	Michelson Dr to Sandburg Way		Irv	6D	43,800	0.81	D	44,100	0.82	D
226	Culver Dr	Sandburg Way to University Dr		Irv	6D	40,100	0.74	C	40,400	0.75	C
1206	El Camino Real	Jamboree Rd to Alliance		Irv	4D	24,300	0.76	C	24,300	0.76	C
169	Fairchild Rd	MacArthur Blvd to Jamboree Rd		Irv	4D	6,700	0.21	A	7,000	0.22	A
170	Harvard Ave	Walnut Ave to Poplar St		Irv	4U	10,800	0.39	A	11,000	0.39	A
3040	Harvard Ave	Poplar St to Deerfield Ave		Irv	4U	12,300	0.44	A	12,500	0.45	A
171	Harvard Ave	Deerfield Ave to Irvine Center Dr		Irv	4U	12,500	0.45	A	12,600	0.45	A
172	Harvard Ave	Irvine Center Dr to Paseo Westpark		Irv	4D	10,900	0.34	A	11,500	0.36	A
174	Harvard Ave	Paseo Westpark to Warner Ave		Irv	4D	13,400	0.42	A	14,100	0.44	A
175	Harvard Ave	Warner to Barranca Pkwy		Irv	4D	15,700	0.49	A	16,600	0.52	A
177	Harvard Ave	Barranca Pkwy to San Juan		Irv	4D	18,900	0.59	A	20,200	0.63	B
2829	Harvard Ave	San Juan to San Leon		Irv	4D	17,400	0.54	A	18,800	0.59	A
178	Harvard Ave	San Leon to Alton Pkwy		Irv	4D	18,300	0.57	A	19,800	0.62	B
179	Harvard Ave	Alton Pkwy to San Marino		Irv	4D	25,000	0.78	C	26,600	0.83	D
180	Harvard Ave	San Marino to Main St		Irv	4D	25,000	0.78	C	26,700	0.83	D
181	Harvard Ave	Main St to Coronado		Irv	4D	25,200	0.79	C	27,200	0.85	D
182	Harvard Ave	Coronado to Michelson Dr		Irv	4D	26,300	0.82	D	28,600	0.89	D

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	POST-2035 ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE			POST-2035 CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
183	Harvard Ave	Michelson Dr to University Dr		Irv	2U	20,600	1.59	**F**	21,700	1.67	**F**
675	Irvine Center Dr	Harvard Ave to Hearthstone	b	Irv	6D	31,500	0.58	A	32,000	0.59	A
676	Irvine Center Dr	Hearthstone to Culver Dr	b	Irv	6D	35,200	0.65	B	35,700	0.66	B
129	Jamboree Rd	Bryan Ave to El Camino	b	Irv	8D	43,700	0.61	A	48,500	0.67	B
130	Jamboree Rd	El Camino Real to I-5 NB On-Ramp	b	Irv	Maj7D+ 1AUX	48,500	0.77	C	48,500	0.77	C
958	Jamboree Rd	I-5 NB Ramps to I-5 SB Off-Ramp	b	Irv	8D	62,500	0.87	D	62,500	0.87	D
131	Jamboree Rd	I-5 SB Off-Ramp to Michelle Dr	b	Irv	8D	53,700	0.75	C	55,000	0.76	C
133	Jamboree Rd	Michelle Dr to Walnut Ave	b	Irv	5D	55,900	1.30	**F**	57,500	1.34	**F**
135	Jamboree Rd	Walnut Ave to Edinger Ave (& Frontage Rds)	b	Irv	Exp8	75,400	0.42	A	78,300	0.44	A
136	Jamboree Rd	Edinger Ave to Warner Ave	b	Irv	Exp8	77,900	0.44	A	81,400	0.46	A
137	Jamboree Rd	Warner Ave to Barranca Pkwy	a,b	Irv	Exp8	63,700	0.36	A	67,100	0.38	A
138	Jamboree Rd	Barranca Pkwy to Beckman Ave	a,b	Irv	8D	52,900	0.74	C	57,100	0.79	C
1503	Jamboree Rd	Beckman Ave to Alton Pkwy	a,b	Irv	8D	57,900	0.80	C	62,000	0.86	D
140	Jamboree Rd	Alton Pkwy to McGaw Ave	a,b	Irv	8D	61,000	0.85	D	66,300	0.92	E
142	Jamboree Rd	McGaw Ave to Kelvin Ave	a,b	Irv	8D	56,800	0.79	C	61,400	0.85	D
144	Jamboree Rd	Kelvin Ave to Main St	a,b	Irv	8D	66,100	0.92	E	74,300	1.03	**F**
145	Jamboree Rd	Main St to I-405 Off-Ramp	b	Irv	Maj8D+ 2AUX	71,100	0.99	E	80,000	1.11	**F**
148	Jamboree Rd	I-405 On-Ramp to Michelson Dr	a,b	Irv	Maj8D+ 2AUX	77,500	1.08	**F**	91,600	1.27	**F**
149	Jamboree Rd	Michelson Dr to Dupont Dr	a,b	Irv	7D	56,600	0.90	D	65,500	1.04	**F**
150	Jamboree Rd	Dupont Dr to Campus Dr	a,b	Irv	8D	48,400	0.77	C	51,200	0.81	D
151	Jamboree Rd	Campus Dr to Birch St	b	Irv	6D	46,700	0.87	D	50,600	0.94	E
152	Jamboree Rd	Birch St to Fairchild Rd	b	Irv	7D	45,400	0.72	C	49,600	0.79	C
154	Jamboree Rd	Fairchild Rd to Koll Center	b	Irv	6D	38,600	0.61	B	41,900	0.67	B
155	Jamboree Rd	Koll Center to MacArthur Blvd	a,b	Irv	6D	38,700	0.72	C	42,000	0.78	C
814	MacArthur Blvd	Fitch to Red Hill Ave	a	Irv	5D	33,000	0.52	A	38,100	0.61	A
815	MacArthur Blvd	Red Hill Ave to Skypark Blvd	a	Irv	7D	24,600	0.39	A	27,600	0.44	A
1524	MacArthur Blvd	Skypark Blvd to Main St	a	Irv	7D	24,400	0.39	A	27,300	0.43	A
60	MacArthur Blvd	Main St to I-405 NB Off-Ramp	a	Irv	Maj8D+ 2AUX	53,600	0.74	C	59,400	0.83	D
62	MacArthur Blvd	I-405 SB On-Ramp to Michelson Dr	a	Irv	Maj8D+ 1AUX	59,200	0.82	D	67,300	0.94	E
63	MacArthur Blvd	Michelson Dr to Douglass	a	Irv	8D	42,000	0.58	A	46,900	0.65	B
64	MacArthur Blvd	Douglass to Campus Dr		Irv	8D	42,600	0.59	A	44,400	0.62	B
916	MacArthur Blvd	Jamboree Rd to Fairchild Rd	a,b	Irv	6D	52,700	0.98	E	54,200	1.00	**E**
917	MacArthur Blvd	Fairchild Rd to University Dr	b	Irv	6D	50,600	0.94	E	52,200	0.97	E
817	Main St	McDurmott to Red Hill Ave	a	Irv	6D	24,300	0.45	A	26,700	0.49	A
818	Main St	Red Hill Ave to Executive Park	a	Irv	6D	23,900	0.44	A	26,500	0.49	A
819	Main St	Executive Park to MacArthur Blvd	a	Irv	6D	24,200	0.45	A	26,600	0.49	A
820	Main St	MacArthur Blvd to Mercantile	a	Irv	Maj7D+ 1AUX	31,600	0.50	A	34,600	0.55	A
821	Main St	Gillette Ave to Von Karman Ave	a	Irv	Maj6D+ 1AUX	32,700	0.61	A	38,500	0.71	C
822	Main St	Von Karman Ave to Cartwright	a	Irv	6D	24,400	0.45	A	28,900	0.54	A
823	Main St	Siglo to Jamboree Rd	a	Irv	6D	23,100	0.43	A	27,400	0.51	A
824	Main St	Jamboree Rd to Union	a	Irv	Maj6D+ 1AUX	22,900	0.42	A	24,600	0.46	A
825	Main St	Veneto to Harvard Ave		Irv	6D	22,900	0.42	A	24,700	0.46	A
826	Main St	Harvard Ave to San Mateo		Irv	4D	12,200	0.38	A	13,300	0.42	A
827	Main St	Paseo Westpark to Culver Dr		Irv	4D	12,200	0.38	A	13,200	0.41	A
1507	McGaw Ave	Daimler St to Red Hill Ave	a	Irv	4D	7,800	0.24	A	9,900	0.31	A
808	McGaw Ave	Red Hill Ave to Von Karman Ave	a	Irv	4D	10,200	0.32	A	12,700	0.40	A
810	McGaw Ave	Von Karman Ave to Jamboree Rd	a	Irv	4D	7,800	0.24	A	7,800	0.24	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	POST-2035 ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE			POST-2035 CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
1449	McGaw Ave	Jamboree Rd to Murphy Ave		Irv	4D	2,300	0.07	A	4,600	0.14	A
840	Michelson Dr	MacArthur Blvd to Dupont Dr	a	Irv	5D	20,400	0.47	A	23,900	0.56	A
843	Michelson Dr	Bixby to Von Karman Ave	a	Irv	4D	13,600	0.43	A	16,100	0.50	A
844	Michelson Dr	Von Karman Ave to Obsidian	a	Irv	Prim4D+ 1AUX	22,500	0.70	B	27,200	0.85	D
845	Michelson Dr	Teller Ave to Jamboree Rd	a	Irv	Prim5	20,300	0.47	A	23,300	0.54	A
846	Michelson Dr	Jamboree Rd to Carlson Ave	a	Irv	Prim4D+ 2AUX	22,800	0.42	A	30,000	0.56	A
847	Michelson Dr	Carlson Ave to Prince		Irv	Prim4D+ 1AUX	21,200	0.66	B	30,600	0.96	**E**
848	Michelson Dr	Riparian View to Harvard Ave		Irv	4D	20,400	0.64	B	26,600	0.83	D
1346	Michelson Dr	Harvard Ave to Parkside Dr		Irv	4D	17,700	0.55	A	20,500	0.64	B
850	Michelson Dr	Parkside Dr to Culver Dr		Irv	4D	17,600	0.55	A	20,400	0.64	B
31	Red Hill Ave	Dyer/Barranca Pkwy to Deere Ave	a	Irv	6D	29,800	0.55	A	33,400	0.62	B
32	Red Hill Ave	Deere Ave to Alton Pkwy	a	Irv	6D	31,500	0.58	A	35,300	0.65	B
33	Red Hill Ave	Alton Pkwy to McGaw Ave	a	Irv	6D	33,200	0.62	B	37,200	0.69	B
36	Red Hill Ave	McGaw Ave to MacArthur Blvd	a	Irv	6D	39,300	0.73	C	44,600	0.83	D
37	Red Hill Ave	MacArthur Blvd to Skypark	a	Irv	6D	20,500	0.38	A	22,200	0.41	A
38	Red Hill Ave	Skypark to Main St	a	Irv	6D	16,400	0.30	A	17,600	0.33	A
189	University Dr	MacArthur Blvd to California Ave		Irv	6D	37,000	0.69	B	37,500	0.69	B
188	University Dr	California Ave to Mesa Rd		Irv	6D	37,500	0.69	B	38,200	0.71	B
187	University Dr	Mesa Rd to Campus Dr		Irv	6D	39,800	0.74	C	40,500	0.75	C
880	University Dr	Campus Dr to Harvard Ave		Irv	6D	34,600	0.64	B	35,300	0.65	B
881	University Dr	Harvard Ave to San Joaquin Hills Rd		Irv	6D	34,300	0.64	B	34,900	0.65	B
882	University Dr	San Joaquin Hills Rd to Culver Dr		Irv	6D	33,900	0.63	B	34,400	0.64	B
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	a	Irv	4D	39,600	1.24	**F**	41,800	1.31	**F**
100	Von Karman Ave	Alton Pkwy to McGaw Ave	a	Irv	4D	32,400	1.01	**F**	36,200	1.13	**F**
102	Von Karman Ave	McGaw Ave to Anchor	a	Irv	4D	29,400	0.92	E	32,500	1.02	**F**
103	Von Karman Ave	Anchor to Main St	a	Irv	4D	29,300	0.92	E	32,500	1.02	**F**
104	Von Karman Ave	Main St to Morse Ave	a	Irv	Prim4D+ 1AUX	29,900	0.93	E	34,300	1.07	**F**
107	Von Karman Ave	Quartz to Michelson Dr	a	Irv	Prim4D+ 1AUX	29,800	0.93	E	34,200	1.07	**F**
108	Von Karman Ave	Michelson Dr to Dupont Dr	a	Irv	4D	21,200	0.66	B	24,000	0.75	C
110	Von Karman Ave	Dupont Dr to Martin	a	Irv	4D	19,900	0.62	B	22,500	0.70	B
111	Von Karman Ave	Martin to Campus Dr	a	Irv	4D	20,100	0.63	B	21,600	0.68	B
594	Walnut Ave	Myford to Jamboree SB Off-Ramp		Irv	Prim4D+ 1AUX	23,800	0.74	C	24,000	0.75	C
593	Walnut Ave	Jamboree Rd to Peters Canyon		Irv	Maj6D+ 1AUX	21,900	0.41	A	22,200	0.41	A
595	Walnut Ave	Peters Canyon to Harvard Ave		Irv	Prim5D+ 1AUX	21,700	0.51	A	21,900	0.51	A
596	Walnut Ave	Harvard Ave to Mall St		Irv	4D	19,700	0.62	B	19,800	0.62	B
597	Walnut Ave	Mall St to Culver Dr		Irv	4D	20,200	0.63	B	20,300	0.63	B
728	Warner Ave	Construction North to Harvard Ave		Irv	4D	19,100	0.60	A	19,400	0.61	A
729	Warner Ave	Harvard Ave to Paseo Westpark		Irv	4D	14,400	0.45	A	14,700	0.46	A
732	Warner Ave	Santa Ynez to Culver Dr		Irv	4D	13,900	0.43	A	14,200	0.44	A
1223	Birch St	Mesa Dr to Bristol St SB		NB	4D	27,400	0.69	B	28,000	0.70	B
1314	Birch St	Bristol St SB to Bristol St NB		NB	4D	23,200	0.58	A	23,500	0.59	A
874	Birch St	East of MacArthur Blvd		NB	4D	11,700	0.29	A	13,000	0.33	A
69	Birch St	West of MacArthur Blvd		NB	4D	18,100	0.45	A	19,400	0.49	A
875	Birch St	East of Von Karman Ave		NB	4D	6,300	0.16	A	7,300	0.18	A
1705	Bison Ave	Jamboree Rd to MacArthur Blvd		NB	6D	7,200	0.12	A	7,200	0.12	A
1773	Bison Ave	MacArthur Blvd to SR-73		NB	4D	14,600	0.37	A	14,500	0.36	A
920	Bristol St SB	Red Hill Ave to Campus Dr		NB	3D	15,400	0.86	D	15,900	0.88	D
1310	Bristol St NB	Campus Dr to Red Hill Ave		NB	3D	14,500	0.50	A	15,200	0.52	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	POST-2035 ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE			POST-2035 CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
1303	Bristol St SB	Campus Dr to Birch St		NB	3D	23,600	0.81	D	23,400	0.81	C
1305	Bristol St NB	Birch St to Campus Dr		NB	3D	26,400	0.91	**E**	27,000	0.93	**E**
1312	Bristol St SB	West of Jamboree Rd		NB	4D	38,600	0.97	**E**	38,700	0.97	**E**
1580	Bristol St NB	West of Jamboree Rd		NB	3D	17,000	0.59	A	17,800	0.61	B
66	Campus Dr	Bristol St NB to MacArthur Blvd		NB	6D	31,600	0.55	A	34,200	0.59	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	31,200	0.54	A	33,600	0.58	A
67	Irvine Ave	Bristol St SB to Mesa Dr		NB	6D	27,500	0.47	A	28,500	0.49	A
2768	Irvine Ave	South of University Dr		NB	4D	31,400	0.79	C	32,000	0.80	C
156	Jamboree Rd	South of MacArthur Blvd		NB	8D	34,600	0.60	A	37,500	0.65	B
1856	Jamboree Rd	Bristol St SB to Bristol St NB		NB	8D	42,900	0.74	C	42,900	0.74	C
157	Jamboree Rd	South of Bristol St		NB	6D	42,800	0.63	B	43,700	0.64	B
159	Jamboree Rd	University Dr 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 Dr to Birch St		NB	8D	21,800	0.32	A	22,500	0.33	A
75	MacArthur Blvd	South of Birch St		NB	6D	23,700	0.41	A	24,400	0.42	A
914	MacArthur Blvd	Von Karman Ave to Jamboree Rd		NB	6D	22,800	0.39	A	23,900	0.41	A
953	MacArthur Blvd	University Dr to Bison Ave	b	NB	6D	72,200	1.25	**F**	73,000	1.26	**F**
1301	MacArthur Blvd	Bison Ave to Ford Rd	b	NB	8D	79,200	1.17	**F**	79,900	1.18	**F**
2767	University Dr	East of Irvine Ave		NB	2U	5,400	0.54	A	5,400	0.54	A
1774	University Dr	Jamboree Rd to MacArthur Blvd		NB	5D	15,900	0.32	A	15,700	0.32	A
112	Von Karman Ave	South of Campus Dr		NB	4D	13,300	0.33	A	14,100	0.35	A
113	Von Karman Ave	South of Birch St		NB	4D	11,900	0.30	A	12,700	0.32	A
2795	Dyer Rd	Main St to Halladay St		SA	6D	32,700	0.58	A	33,500	0.60	A
2799	Dyer Rd	Halladay St to SR-55 SB		SA	6D	36,000	0.64	B	36,400	0.65	B
1326	Dyer Rd	SR-55 SB to SR-55 NB		SA	6D	49,600	0.88	D	51,300	0.91	**E**
734	Dyer Rd	SR-55 NB to Pullman St		SA	6D	52,200	0.70	B	55,000	0.73	C
2764	Grand Ave	Warner Ave to Hotel Terrace Dr		SA	6D	24,200	0.43	A	24,200	0.43	A
2806	Grand Ave	Hotel Terrace Dr to SR-55 NB		SA	6D	21,500	0.38	A	24,000	0.43	A
2800	Halladay St	Dyer Rd to Alton Ave		SA	2U	8,800	0.24	A	9,500	0.25	A
2822	Halladay St	Alton Ave to McGaw Ave(Columbine)		SA	2U	3,500	0.28	A	3,700	0.30	A
2805	MacArthur Blvd	Flower St to Main St		SA	6D	42,100	0.75	C	43,400	0.77	C
1884	MacArthur Blvd	Main St to SR-55 SB		SA	6D	38,000	0.68	B	39,200	0.70	B
2796	Main St	Segerstrom Ave to Alton Ave		SA	6D	31,400	0.56	A	33,000	0.59	A
2826	Main St	Alton Ave to McGaw Ave(Columbine)		SA	6D	27,000	0.48	A	27,300	0.49	A
2809	Main St	McGaw(Columbine) to MacArthur Blvd		SA	6D	28,200	0.50	A	29,000	0.52	A
2811	Main St	MacArthur Blvd to Sunflower Ave		SA	6D	22,400	0.40	A	22,400	0.40	A
2823	Alton Ave	Main St to Halladay St		SA	4D	11,000	0.46	A	11,600	0.48	A
2160	Alton Avenue	Halladay Street to Daimler Street		SA	4U	26,700	0.71	C	28,900	0.77	C
2736	Segerstrom Ave	Bristol St to Flower St		SA	6D	27,300	0.73	C	27,900	0.74	C
2771	Segerstrom Ave	Flower St to Main St		SA	6D	28,000	0.75	C	28,700	0.77	C
2763	Warner Ave	Grand Ave to SR-55		SA	6D	42,600	0.76	C	43,300	0.77	C
2761	Sunflower Ave	Bristol St to Flower St		SA/CM	6D	21,800	0.39	A	21,800	0.39	A
2759	Sunflower Ave	Flower St to Anton Blvd		SA/CM	6D	19,600	0.35	A	20,800	0.37	A
2757	Sunflower Ave	Anton Blvd to Main St		SA/CM	6D	25,900	0.46	A	27,700	0.50	A
1198	Browning Ave	Walnut Ave to I-5		Tus	4U	6,500	0.52	A	6,500	0.52	A
534	Bryan Ave	Newport Blvd to Red Hill Ave		Tus	4U	19,100	0.76	C	19,200	0.77	C
535	Bryan Ave	Red Hill Ave to Browning		Tus	4U	18,300	0.49	A	18,400	0.49	A
536	Bryan Ave	Browning Ave to Tustin Ranch Rd		Tus	4D	18,600	0.50	A	18,700	0.50	A
537	Bryan Ave	Tustin Ranch Rd to Jamboree Rd		Tus	4D	23,200	0.62	B	23,300	0.62	B
44	Edinger Ave	West of Newport Ave	b	Tus	6D	53,600	0.95	E	54,300	0.96	E
663	Edinger Ave	Newport Ave to Red Hill Ave	b	Tus	6D	34,800	0.62	B	35,200	0.63	B
665	Edinger Ave	Red Hill Ave and Tustin Ranch Rd	b	Tus	6D	28,000	0.50	A	28,500	0.51	A
1202	El Camino Real	Newport Ave to Red Hill Ave		Tus	4U	14,700	0.39	A	14,800	0.40	A
938	El Camino Real	Red Hill Ave to Browning Ave		Tus	4U	9,300	0.25	A	9,400	0.25	A

ID	ARTERIAL	SEGMENT LIMITS	PA 36/CMP	JURISDICTION	POST-2035 ARTERIAL SEGMENT CLASSIFICATIONS	POST-2035 CUMULATIVE BASELINE			POST-2035 CUMULATIVE WITH UPDATE		
						VOLUME	V/C	LOS	VOLUME	V/C	LOS
1740	El Camino Real	Browning Ave to Tustin Ranch Rd		Tus	4U	10,800	0.29	A	10,900	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 Dr (Edinger)	Tustin Ranch Rd to Jamboree Rd	b	Tus	6D	31,000	0.55	A	31,700	0.56	A
674	Irvine Center Dr	Jamboree Rd to Harvard Ave	b	Tus	6D	29,300	0.52	A	30,200	0.54	A
2777	Mitchell Ave	Newport Ave to Red Hill Ave		Tus	2U	7,500	0.60	A	7,500	0.60	A
2775	Mitchell Ave	Red Hill Ave to Browning Ave		Tus	2U	6,200	0.50	A	6,200	0.50	A
6	Newport Ave	El Camino Real to I-5		Tus	6D	46,100	0.82	D	46,600	0.83	D
7	Newport Ave	I-5 to Mitchell Ave		Tus	6D	42,200	0.75	C	42,800	0.76	C
48	Newport Ave	Mitchell Ave to McFadden Ave		Tus	6D	38,800	0.69	B	39,400	0.70	B
49	Newport Ave	North of Sycamore Ave		Tus	6D	23,100	0.41	A	23,600	0.42	A
1585	Newport Ave	Valencia Ave to Edinger Ave		Tus	4U	29,800	0.53	A	30,400	0.54	A
1351	Nisson Rd	Newport Ave to Red Hill Ave		Tus	2U	5,900	0.47	A	6,000	0.48	A
939	Nisson Rd	Red Hill Ave to Browning Ave		Tus	2U	6,900	0.55	A	7,000	0.56	A
1355	Red Hill Ave	I-5 NB Ramps to El Camino Real		Tus	6D	38,600	0.69	B	38,900	0.69	B
1354	Red Hill Ave	I-5 SB Ramps to I-5 NB Ramps		Tus	6D	35,400	0.63	B	35,800	0.64	B
21	Red Hill Ave	Nisson Rd to I-5 SB		Tus	6D	41,400	0.74	C	42,000	0.75	C
1353	Red Hill Ave	Nisson Rd to Mitchell Ave		Tus	6D	30,300	0.54	A	30,600	0.54	A
22	Red Hill Ave	Mitchell Ave to Walnut Ave		Tus	6D	28,600	0.51	A	29,300	0.52	A
23	Red Hill Ave	Walnut Ave to Sycamore Ave		Tus	6D	28,700	0.51	A	29,100	0.52	A
24	Red Hill Ave	Sycamore Ave to Edinger Ave		Tus	6D	30,900	0.55	A	31,900	0.57	A
25	Red Hill Ave	Edinger Ave to Valencia Ave		Tus	6D	32,900	0.58	A	33,900	0.60	A
26	Red Hill Ave	Valencia Ave to Warner Ave		Tus	6D	32,800	0.58	A	34,600	0.62	B
30	Red Hill Ave	Warner Ave to Barranca Pkwy/Dyer		Tus	7D	33,700	0.51	A	35,600	0.54	A
1363	Sycamore Ave	SR-55 NB to Newport Ave		Tus	4U	9,700	0.26	A	9,700	0.26	A
1920	Sycamore Ave	Newport Ave to Red Hill Ave		Tus	4U	10,300	0.28	A	10,300	0.28	A
85	Tustin Ranch Rd	North of I-5		Tus	6D	44,300	0.79	C	44,300	0.79	C
86	Tustin Ranch Rd	I-5 to Walnut Ave		Tus	6D	43,200	0.77	C	43,800	0.78	C
2173	Valencia Ave	Newport Ave to Red Hill Ave		Tus	4U	10,000	0.27	A	10,300	0.28	A
587	Walnut Ave	East of Newport Ave		Tus	4U	23,500	0.94	**E**	23,900	0.96	**E**
589	Walnut Ave	East of Red Hill Ave		Tus	4D	19,600	0.52	A	19,700	0.53	A
590	Walnut Ave	West of Tustin Ranch Rd		Tus	4D	22,400	0.60	A	22,600	0.60	A
1366	Walnut Ave	Franklin Ave to Myford Rd		Tus	4D	22,300	0.60	A	22,500	0.60	A
1478	Warner Ave	SR-55 to Red Hill Ave		Tus	6D	41,800	0.74	C	42,800	0.76	C

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

Figure 5.14 and **Figure 5.15** present the arterial ADT and LOS for the Post-2035 Cumulative With Update scenario. Deficient segments in the City of Irvine are evaluated under peak hour conditions to determine impacts in the following section. For arterial segments in Costa Mesa, Newport Beach and Tustin, arterial daily LOS impacts are addressed at the adjacent intersections.

5.12 Post-2035 Cumulative Baseline With Update Peak Hour Link Analysis

Table 5.11 presents the results of the peak hour link analysis for deficient arterial segments located within the City of Irvine. All arterial segments that are deficient under daily conditions operate at an acceptable LOS in both peak hours. Since all segments operate at an acceptable peak hour LOS there are no impacts resulting from the peak hour link analysis.

Figure 5.14 – Post-2035 Cumulative With Update Daily Arterial ADT

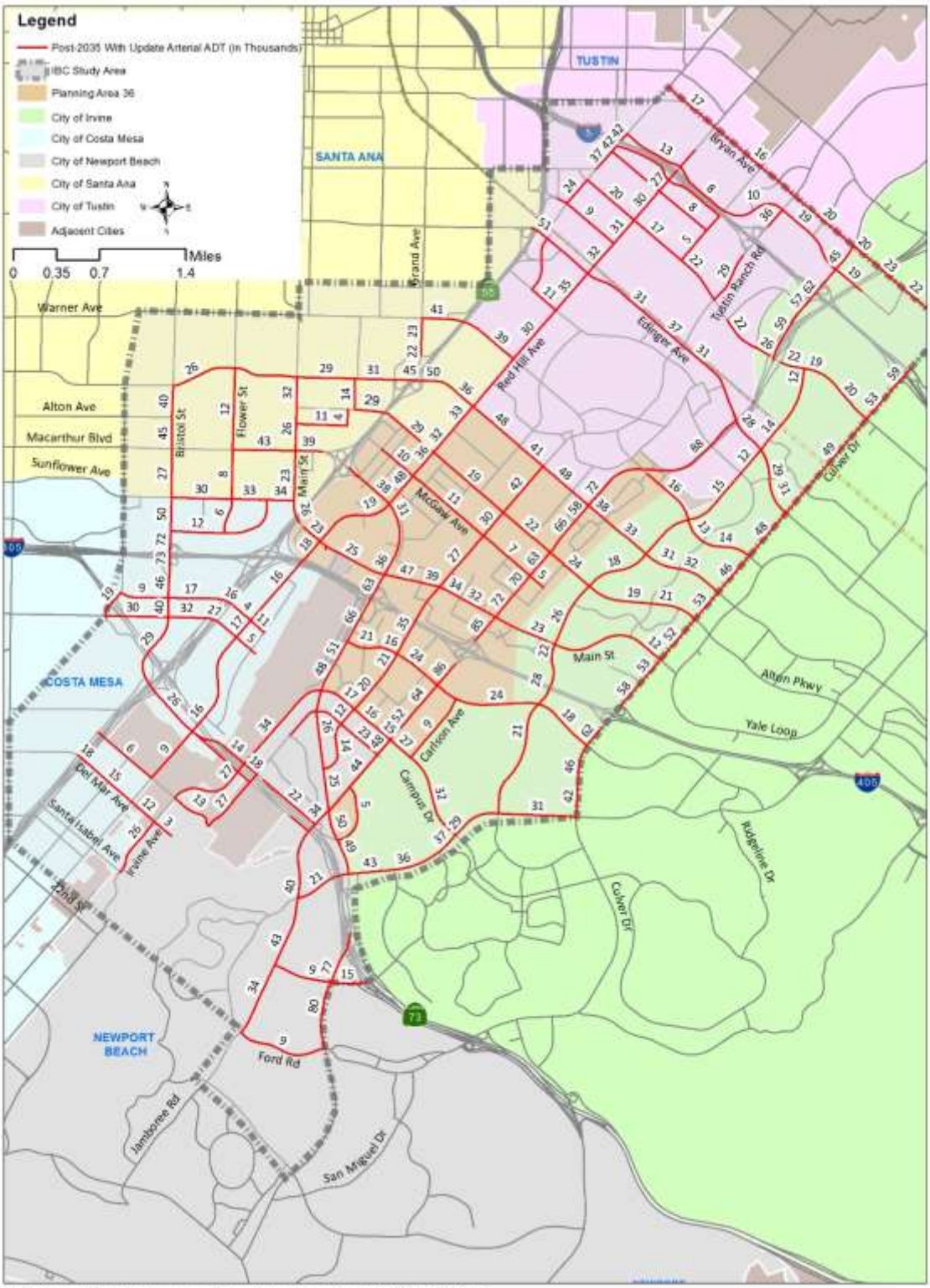


Figure 5.15 – Post-2035 Cumulative With Update Daily Arterial Deficiencies

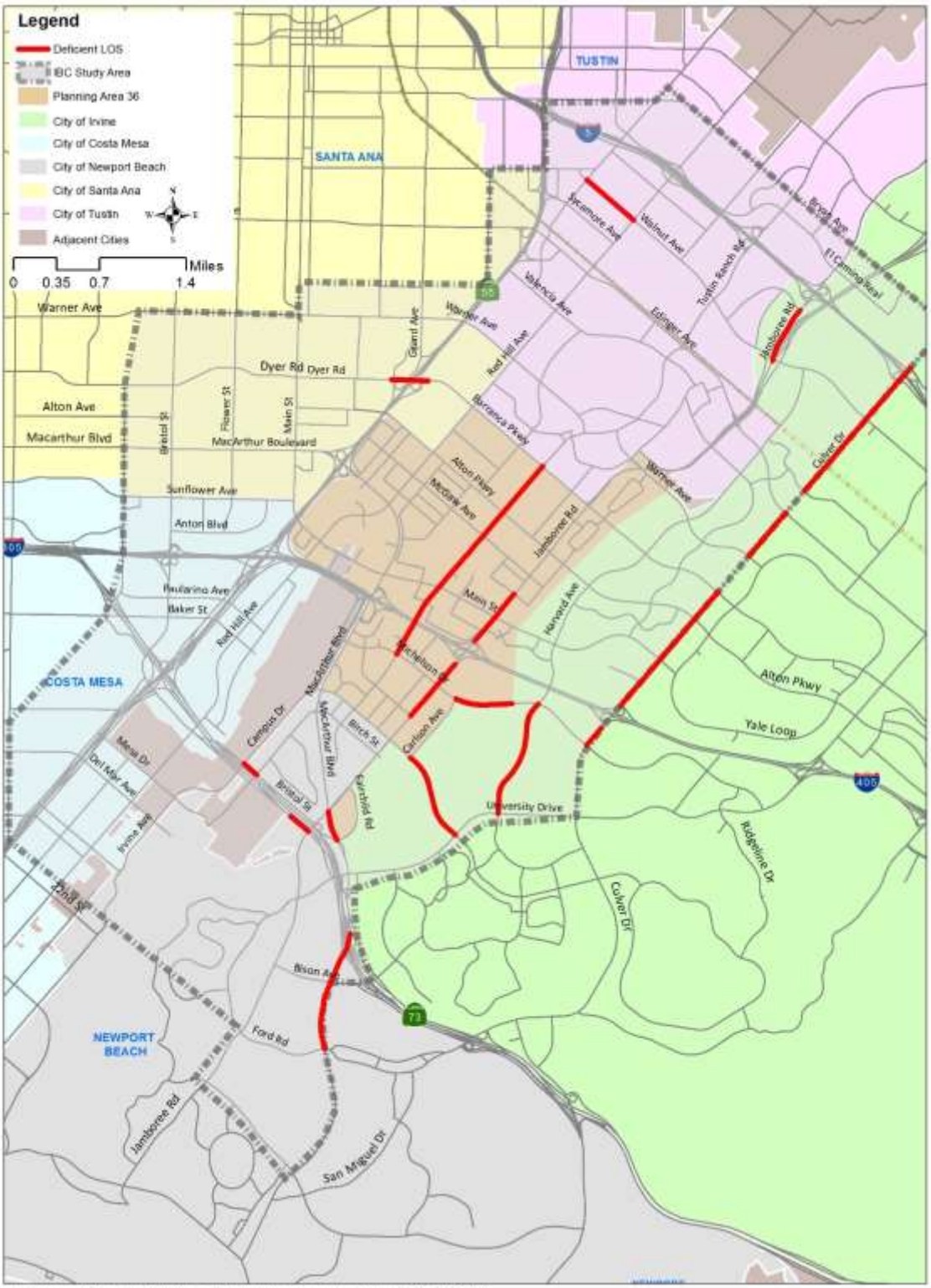


Table 5.11 – Post-2035 Cumulative With Update Peak Hour Link Analysis

ID	ARTERIAL	SEGMENT LIMITS	FACILITY TYPE	VOLUMES				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	1,258	1,398	1,711	1,559	Acceptable	Acceptable	Acceptable	Acceptable
726	Culver Dr	I-5 NB Ramps to I-5 SB Ramps	7D	1,571	3,334	3,323	2,139	Acceptable	Acceptable	Acceptable	Acceptable
213	Culver Dr	I-5 SB Off-Ramp to Scottsdale Dr	6D	1,551	3,059	2,866	2,565	Acceptable	Acceptable	Acceptable	Acceptable
214	Culver Dr	Scottsdale Dr to Walnut Ave	6D	1,512	2,660	2,859	2,285	Acceptable	Acceptable	Acceptable	Acceptable
215	Culver Drive	Walnut Avenue to Deerfield Ave	6D	1,370	2,666	2,574	2,062	Acceptable	Acceptable	Acceptable	Acceptable
217	Culver Drive	Irvine Center Dr to Warner Ave	6D	1,361	2,589	2,580	1,993	Acceptable	Acceptable	Acceptable	Acceptable
219	Culver Dr	Barranca Pkwy to Alton Pkwy	6D	1,515	2,517	2,696	1,971	Acceptable	Acceptable	Acceptable	Acceptable
220	Culver Dr	Alton Pkwy to Main St	6D	1,600	2,416	2,834	1,899	Acceptable	Acceptable	Acceptable	Acceptable
221	Culver Dr	Main St to San Leandro	6D	1,503	2,581	2,776	1,893	Acceptable	Acceptable	Acceptable	Acceptable
222	Culver Dr	San Leandro to I-405 NB On-Ramp	6D	1,610	2,633	3,082	1,976	Acceptable	Acceptable	Acceptable	Acceptable
224	Culver Dr	I-405 SB On-Ramp to Michelson Dr	6D	2,060	2,632	2,782	2,324	Acceptable	Acceptable	Acceptable	Acceptable
183	Harvard Ave	Michelson Dr to University Dr	2U	466	989	1,245	921	Acceptable	Acceptable	Acceptable	Acceptable
133	Jamboree Rd	Michelle Dr to Walnut Ave	5D	923	2,563	1,625	1,853	Acceptable	Acceptable	Acceptable	Acceptable
144	Jamboree Road	Kelvin Avenue to Main Street	8D	2,198	3,481	3,790	2,500	Acceptable	Acceptable	Acceptable	Acceptable
145	Jamboree Rd	Main St to I-405 Off-Ramp	Maj8D+ 2AUX	2,992	2,899	3,591	2,791	Acceptable	Acceptable	Acceptable	Acceptable
148	Jamboree Rd	I-405 On-Ramp to Michelson Dr	Maj8D+ 2AUX	2,856	5,043	4,393	3,670	Acceptable	Acceptable	Acceptable	Acceptable
149	Jamboree Rd	Michelson Dr to Dupont Dr	7D	2,296	2,702	2,877	2,704	Acceptable	Acceptable	Acceptable	Acceptable
847	Michelson Drive	Carlson Avenue to Prince	Prim4D+ 1AUX	1,183	1,419	1,843	1,216	Acceptable	Acceptable	Acceptable	Acceptable
98	Von Karman Ave	Barranca Pkwy to Alton Pkwy	4D	1,003	1,831	1,919	1,319	Acceptable	Acceptable	Acceptable	Acceptable
100	Von Karman Ave	Alton Parkway to McGaw Avenue	4D	958	1,778	1,914	1,105	Acceptable	Acceptable	Acceptable	Acceptable
102	Von Karman Ave	McGaw Avenue to Anchor	4D	890	1,570	1,844	970	Acceptable	Acceptable	Acceptable	Acceptable
103	Von Karman Ave	Anchor to Main Street	4D	1,071	1,469	1,880	1,161	Acceptable	Acceptable	Acceptable	Acceptable
104	Von Karman Ave	Main Street to Morse Avenue	Prim4D+ 1AUX	1,155	1,811	1,940	1,323	Acceptable	Acceptable	Acceptable	Acceptable
107	Von Karman Ave	Quartz to Michelson Dr	Prim4D+ 1AUX	1,549	1,789	2,152	1,380	Acceptable	Acceptable	Acceptable	Acceptable

5.13 Post-2035 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 the Post-2035 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 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 Post-2035 Cumulative With Update scenario. **Appendix E** presents detailed intersection ICU analysis worksheets.

Table 5.12 – Post-2035 Cumulative With Update Peak Hour Intersection LOS

ID	INTERSECTION	PA 36/CMP INTERSECTION	PRE-ESTABLISHED ATMS LOCATIONS	JURISDICTION	POST-2035 CUMULATIVE BASELINE				POST-2035 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	0.82	D	0.71	C	0.82	D	0.72	C
11	SR-55 Frontage Rd NB at Paularino Ave			CM	0.67	B	0.66	B	0.67	B	0.66	B
12	SR-55 Frontage Rd SB at Baker St			CM	0.83	D	0.77	C	0.84	D	0.78	C
13	SR-55 Frontage Rd NB at Baker St			CM	0.78	C	0.71	C	0.80	C	0.71	C
50	Red Hill Ave at Paularino Ave			CM	0.53	A	0.67	B	0.56	A	0.68	B
51	Red Hill Ave at Baker St			CM	0.56	A	0.74	C	0.57	A	0.75	C
52	Red Hill Ave at Bristol St			CM	0.52	A	0.48	A	0.53	A	0.49	A
541	Bear at Baker St			CM	0.75	C	0.74	C	0.76	C	0.75	C
542	Bear at Paularino Ave			CM	0.40	A	0.65	B	0.40	A	0.66	B
545	Bristol at Sunflower			CM	0.62	B	0.76	C	0.64	B	0.76	C
546	Bristol at Anton			CM	0.45	A	0.75	C	0.46	A	0.75	C
547	Bristol at Paularino Ave			CM	0.50	A	0.88	D	0.51	A	0.89	D
548	Bristol at Baker St			CM	0.54	A	0.62	B	0.55	A	0.62	B
549	Newport Blvd SB at Bristol			CM	0.27	A	0.57	A	0.27	A	0.57	A
550	Newport Blvd NB at Bristol			CM	0.34	A	0.42	A	0.36	A	0.43	A
715	Bristol at I-405 NB Off Ramp			CM	0.51	A	0.72	C	0.52	A	0.72	C
716	Bristol at I-405 SB Ramps			CM	0.48	A	0.66	B	0.50	A	0.67	B
717	Bear at SR-73 SB Ramps			CM	0.53	A	0.81	D	0.54	A	0.81	D
720	Flower at MacArthur Blvd			CM	0.75	C	0.82	D	0.80	C	0.85	D
721	Flower at Sunflower			CM	0.31	A	0.50	A	0.32	A	0.51	A
722	Anton at Sunflower			CM	0.33	A	0.35	A	0.35	A	0.36	A
726	Main St at Sunflower			CM	0.42	A	0.79	C	0.45	A	0.81	D
735	Newport Blvd NB at Del mar			CM	0.65	B	0.51	A	0.66	B	0.51	A
736	Newport Blvd SB at Fair/Del Mar			CM	0.39	A	0.56	A	0.41	A	0.57	A
737	Newport Blvd NB at Mesa Rd			CM	0.29	A	0.30	A	0.30	A	0.32	A
738	Newport Blvd SB at Mesa Rd			CM	0.20	A	0.59	A	0.21	A	0.59	A
32	Daimler St at McGaw Ave			Irv	0.30	A	0.22	A	0.32	A	0.28	A
45	Red Hill Ave at McGaw Ave	a		Irv	0.46	A	0.72	C	0.53	A	0.82	D
47	Red Hill Ave at MacArthur Blvd	a		Irv	0.72	C	0.77	C	0.78	C	0.86	D
48	Red Hill Ave at Sky Park N	a		Irv	0.38	A	0.48	A	0.38	A	0.51	A
49	Red Hill Ave at Main St	a		Irv	0.71	C	0.76	C	0.75	C	0.80	C
67	Gillette Ave at McGaw Ave	a		Irv	0.34	A	0.45	A	0.44	A	0.53	A
70	Gillette Ave at Main Street	a		Irv	0.36	A	0.70	B	0.46	A	0.75	C
77	MacArthur Blvd at Sky Park East	a		Irv	0.29	A	0.43	A	0.35	A	0.46	A
78	MacArthur Blvd at Main St	a		Irv	0.58	A	0.80	C	0.65	B	0.91	E
79	MacArthur Blvd at I-405 NB Ramps	a		Irv	0.68	B	0.64	B	0.74	C	0.70	B
80	MacArthur Blvd at I-405 SB Ramps	a		Irv	0.61	B	0.72	C	0.67	B	0.79	C
82	MacArthur Blvd at Michelson Dr	a		Irv	0.65	B	0.79	C	0.75	C	0.90	D
83	MacArthur Blvd at Douglas Ave	a		Irv	0.45	A	0.40	A	0.58	A	0.60	A
87	Dupont Dr at Michelson Dr	a		Irv	0.36	A	0.40	A	0.46	A	0.50	A
98	Von Karman Ave at Alton Pkwy	a*		Irv	0.89	D	1.03	F	0.93	E	1.06	F
99	Von Karman Ave at McGaw Ave	a		Irv	0.66	B	0.78	C	0.76	C	0.83	D
100	Von Karman Ave at Main St	a		Irv	0.67	B	0.88	D	0.75	C	0.95	E
101	Von Karman Ave at Morse Ave	a		Irv	0.54	A	0.65	B	0.59	A	0.73	C
102	Von Karman Ave at Michelson Dr	a		Irv	0.67	B	0.86	D	0.78	C	0.96	E
103	Von Karman Ave at Dupont Dr	a		Irv	0.49	A	0.50	A	0.60	A	0.61	B
104	Von Karman Ave at Martin	a		Irv	0.40	A	0.46	A	0.43	A	0.53	A

ID	INTERSECTION	PA 36/CMP INTERSECTION	PRE-ESTABLISHED ATMS LOCATIONS	JURISDICTION	POST-2035 CUMULATIVE BASELINE				POST-2035 CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
115	Millikan Ave at Alton Pkwy	a		Irv	0.44	A	0.74	C	0.47	A	0.76	C
116	Cartwright Rd at Main St	a		Irv	0.36	A	0.57	A	0.49	A	0.66	B
119	Teller Ave at Michelson Dr	a		Irv	0.43	A	0.49	A	0.55	A	0.57	A
128	Jamboree Rd at I-5 NB Ramps	b		Irv	0.74	C	0.75	C	0.74	C	0.75	C
129	Jamboree Rd at I-5 SB Ramps	b		Irv	0.70	B	0.58	A	0.72	C	0.57	A
130	Jamboree Rd at Michelle Dr			Irv	0.78	C	0.65	B	0.78	C	0.65	B
131	Jamboree Rd SB at Walnut Ave			Irv	0.58	A	0.64	B	0.58	A	0.67	B
132	Jamboree Rd NB at Walnut Ave			Irv	0.48	A	0.61	B	0.52	A	0.62	B
135	Jamboree Rd NB Ramps at Warner Ave			Irv	0.55	A	1.07	F	0.56	A	1.08	F
137	Jamboree Rd at Beckman Ave	a		Irv	0.73	C	0.80	C	0.75	C	0.83	D
138	Jamboree Rd at Alton Pkwy	a		Irv	0.80	C	0.87	D	0.82	D	0.91	E
139	Jamboree Rd at McGaw Ave	a		Irv	0.68	B	0.66	B	0.76	C	0.73	C
140	Jamboree Rd at Kelvin Ave	a		Irv	0.63	B	0.59	A	0.75	C	0.69	B
141	Jamboree Rd at Main St	a		Irv	0.67	B	0.79	C	0.73	C	0.84	D
143	Jamboree Rd at I-405 NB Ramps	a,b		Irv	0.70	B	0.83	D	0.83	D	0.90	D
144	Jamboree Rd at I-405 SB Ramps	a,b*		Irv	0.97	E	0.88	D	1.03	F	0.89	D
145	Jamboree Rd at Michelson Dr	a*		Irv	0.82	D	0.93	E	0.98	E	1.09	F
146	Jamboree Rd at Dupont Rd	a		Irv	0.60	A	0.71	C	0.65	B	0.80	C
164	Construction S at Barranca Pkwy	a		Irv	0.42	A	0.61	B	0.54	A	0.68	B
168	Murphy Ave at Alton Pkwy	a		Irv	0.38	A	0.61	B	0.42	A	0.72	C
170	Union at Main St	a		Irv	0.36	A	0.61	B	0.36	A	0.65	B
171	Veneto at Main St			Irv	0.34	A	0.53	A	0.35	A	0.56	A
174	Carlson Ave at Michelson Dr			Irv	0.59	A	0.71	C	0.76	C	0.90	D
175	Carlson Ave at Campus Dr			Irv	0.61	B	0.71	C	0.65	B	0.79	C
180	Harvard Ave at Walnut Ave			Irv	0.50	A	0.59	A	0.51	A	0.59	A
183	Harvard Ave at Warner Ave			Irv	0.56	A	0.71	C	0.57	A	0.73	C
184	Harvard Ave at Barranca Pkwy			Irv	0.63	B	0.70	B	0.65	B	0.71	C
185	Harvard Ave at Alton Pkwy			Irv	0.66	B	0.71	C	0.69	B	0.72	C
186	Harvard Ave at Main St			Irv	0.55	A	0.69	B	0.59	A	0.71	C
187	Harvard Ave at Coronado			Irv	0.53	A	0.58	A	0.58	A	0.61	B
188	Harvard Ave Michelson Dr	*		Irv	0.61	B	0.89	D	0.64	B	0.92	E
189	Harvard Ave University Dr			Irv	0.76	C	0.84	D	0.79	C	0.86	D
190	University Dr at Campus Dr		√	Irv	0.69	B	0.85	D	0.7	B	0.87	D
191	Mesa Rd at University Dr			Irv	0.46	A	0.57	A	0.47	A	0.58	A
192	California Ave at University Dr			Irv	0.90	D	0.75	C	0.90	D	0.77	C
196	Hearthstone Blvd at Irvine Center Dr			Irv	0.69	B	0.72	C	0.70	B	0.72	C
198	Paseo Westpark at Warner Ave			Irv	0.42	A	0.40	A	0.43	A	0.42	A
199	Paseo Westpark at Barranca Pkwy			Irv	0.45	A	0.58	A	0.46	A	0.60	A
200	Paseo Westpark at Alton Pkwy			Irv	0.48	A	0.63	B	0.48	A	0.66	B
201	Paseo Westpark at Main St			Irv	0.51	A	0.70	B	0.53	A	0.73	C
221	Culver Dr at Bryan Ave			Irv	0.80	C	0.74	C	0.82	D	0.74	C
222	Culver Dr at Trabuco Rd			Irv	0.81	D	0.76	C	0.82	D	0.76	C
223	Culver Dr at I-5 SB Ramps			Irv	0.69	B	0.62	B	0.70	B	0.63	B
224	Culver Dr at Walnut Ave		√	Irv	0.75	C	0.89	D	0.76	C	0.9	D
225	Culver Dr at Deerfield Dr			Irv	0.86	D	0.85	D	0.88	D	0.86	D
226	Culver Dr at Irvine Center Dr		√	Irv	0.71	C	0.75	C	0.73	C	0.75	C
227	Culver Dr at Warner Ave			Irv	0.74	C	0.70	B	0.76	C	0.72	C
228	Culver Dr at Barranca Pkwy		√	Irv	0.73	C	0.81	D	0.76	C	0.83	D
229	Culver Dr at Alton Pkwy	*	√	Irv	0.76	C	0.89	D	0.77	C	0.91	E
230	Culver Dr at Main St			Irv	0.67	B	0.72	C	0.66	B	0.74	C

ID	INTERSECTION	PA 36/CMP INTERSECTION	PRE-ESTABLISHED ATMS LOCATIONS	JURISDICTION	POST-2035 CUMULATIVE BASELINE				POST-2035 CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
231	Culver Dr at San Leandro			Irv	0.70	B	0.62	B	0.70	B	0.64	B
232	Culver Dr at I-405 NB Ramps			Irv	0.65	B	0.88	D	0.67	B	0.90	D
233	Culver Dr at I-405 SB Ramps			Irv	0.63	B	0.73	C	0.65	B	0.76	C
234	Culver Dr at Michelson Dr			Irv	0.63	B	0.81	D	0.67	B	0.87	D
235	Culver Dr at University Dr		√	Irv	0.79	C	0.85	D	0.81	D	0.87	D
337	Von Karman Ave at Quartz	a		Irv	0.64	B	0.70	B	0.69	B	0.79	C
439	Bixby at Michelson Dr			Irv	0.33	A	0.51	A	0.42	A	0.58	A
440	Siglo at Main St			Irv	0.39	A	0.57	A	0.42	A	0.61	B
472	Obsidian at Michelson Dr	a		Irv	0.41	A	0.58	A	0.49	A	0.71	C
84	MacArthur Blvd at Campus Dr			Irv/NB	0.65	B	0.61	B	0.73	C	0.66	B
105	Von Karman Ave at Campus Dr			Irv/NB	0.65	B	0.75	C	0.72	C	0.78	C
121	Teller Ave at Campus Dr			Irv/NB	0.34	A	0.50	A	0.43	A	0.54	A
147	Jamboree Rd at Campus Dr			Irv/NB	0.68	B	0.83	D	0.78	C	0.86	D
149	Jamboree Rd at Fairchild Rd			Irv/NB	0.67	B	0.73	C	0.74	C	0.77	C
150	Jamboree Rd at MacArthur Blvd	b		Irv/NB	0.63	B	0.74	C	0.66	B	0.77	C
176	Fairchild Ave at MacArthur Blvd			Irv/NB	0.74	C	0.76	C	0.78	C	0.80	C
193	MacArthur Blvd NB at University Dr			Irv/NB	0.67	B	0.70	B	0.67	B	0.72	C
194	MacArthur Blvd SB at University Dr			Irv/NB	0.74	C	0.64	B	0.76	C	0.65	B
195	SR-73 SB Ramps at University Dr			Irv/NB	0.62	B	0.58	A	0.62	B	0.58	A
9	SR-55 NB Ramps at MacArthur Blvd			Irv/SA	0.76	C	0.63	B	0.77	C	0.64	B
31	Daimler St at Alton Pkwy			Irv/SA	0.61	B	0.69	B	0.65	B	0.72	C
43	Red Hill Ave at Deere Ave			Irv/SA	0.47	A	0.72	C	0.49	A	0.78	C
44	Red Hill Ave at Alton Pkwy			Irv/SA	0.75	C	0.82	D	0.78	C	0.87	D
42	Red Hill Ave at Barranca Pkwy/Dyer Rd			Irv/SA/	0.59	A	0.78	C	0.65	B	0.78	C
71	Armstrong Ave at Barranca Pkwy			Irv/Tus	0.53	A	0.64	B	0.57	A	0.67	B
97	Von Karman Ave/Tustin Ranch Rd at	*		Irv/Tus	0.73	C	1.03	F	0.74	C	1.06	F
112	Myford Rd at Michelle Dr			Irv/Tus	0.30	A	0.41	A	0.29	A	0.41	A
113	Myford Rd at Walnut Ave			Irv/Tus	0.50	A	0.53	A	0.50	A	0.55	A
114	Millikan Ave/District Way at Barranca			Irv/Tus	0.55	A	0.65	B	0.64	B	0.69	B
126	Jamboree Rd at Bryan Ave			Irv/Tus	0.66	B	0.73	C	0.71	C	0.73	C
127	Jamboree Rd at El Camino Real			Irv/Tus	0.65	B	0.74	C	0.64	B	0.74	C
134	Loop Rd/Park Ave at Warner Ave			Irv/Tus	0.47	A	1.12	F	0.50	A	1.11	F
136	Jamboree Rd at Barranca Pkwy			Irv/Tus	0.80	C	0.93	E	0.82	D	0.96	E
181	Harvard Ave at Edinger Ave/Irvine Center			Irv/Tus	0.56	A	0.72	C	0.56	A	0.73	C
182	Harvard Ave at Paseo Westpark/Moffett			Irv/Tus	0.43	A	0.49	A	0.43	A	0.50	A
441	Loop Rd at Jamboree Rd SB Ramps			Irv/Tus	0.20	A	0.17	A	0.20	A	0.17	A
61	Campus Dr at Airport Way			NB	0.39	A	0.71	C	0.47	A	0.73	C
62	Campus Dr at Bristol St NB			NB	0.63	B	0.85	D	0.68	B	0.88	D
63	Campus Dr at Bristol St SB			NB	0.83	D	0.69	B	0.88	D	0.68	B
64	Birch St at Bristol St NB			NB	0.70	B	0.73	C	0.72	C	0.76	C
65	Birch St at Bristol St SB			NB	0.67	B	0.64	B	0.70	B	0.65	B
85	MacArthur Blvd at Birch St	*		NB	0.81	D	0.91	E	0.83	D	0.94	E
106	Von Karman Ave at Birch St			NB	0.42	A	0.51	A	0.43	A	0.55	A
107	Von Karman Ave at MacArthur Blvd			NB	0.45	A	0.55	A	0.47	A	0.58	A
148	Jamboree Rd at Birch St			NB	0.55	A	0.58	A	0.60	A	0.63	B
151	Jamboree Rd at Bristol St NB			NB	0.44	A	0.55	A	0.47	A	0.58	A
153	Jamboree Rd at Bristol St SB			NB	0.65	B	0.65	B	0.67	B	0.66	B
154	Jamboree Rd at Eastbluff Dr			NB	0.79	C	0.67	B	0.80	C	0.68	B
155	Jamboree Rd at Bison Ave			NB	0.51	A	0.59	A	0.51	A	0.58	A
156	Jamboree Rd at Ford Rd			NB	0.74	C	0.83	D	0.74	C	0.84	D

ID	INTERSECTION	PA 36/CMP INTERSECTION	PRE-ESTABLISHED ATMS LOCATIONS	JURISDICTION	POST-2035 CUMULATIVE BASELINE				POST-2035 CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
178	MacArthur Blvd at Bison Ave			NB	0.69	B	0.73	C	0.69	B	0.73	C
179	MacArthur Blvd at Ford Rd			NB	0.68	B	0.72	C	0.68	B	0.72	C
741	Jamboree at San Joaquin			NB	0.59	A	0.60	A	0.61	B	0.60	A
742	MacArthur at San Joaquin			NB	0.62	B	0.68	B	0.62	B	0.69	B
733	Irvine at Mesa Rd			NB/OC	0.58	A	0.72	C	0.60	A	0.73	C
734	Irvine at University/Del Mar			NB/OC	0.57	A	0.67	B	0.60	A	0.69	B
4	SR-55 SB Ramps at Edinger Ave	b		SA	0.71	C	0.68	B	0.71	C	0.69	B
5	Hotel Terrace Dr at Dyer Rd			SA	0.53	A	0.68	B	0.54	A	0.68	B
6	Grand Ave at Dyer Rd			SA	0.49	A	0.63	B	0.54	A	0.64	B
7	SR-55 NB Ramps at Dyer Rd			SA	0.82	D	0.60	A	0.86	D	0.63	B
8	SR-55 SB Ramps at MacArthur Blvd	c		SA	0.57	A	0.59	A	0.60	A	0.62	B
29	Pullman St at Barranca Pkwy			SA	0.56	A	0.84	D	0.61	B	0.90	D
543	Bristol at Segerstrom			SA	0.68	B	0.78	C	0.69	B	0.77	C
544	Bristol St at MacArthur Blvd			SA	0.68	B	0.88	D	0.70	B	0.89	D
718	Bear at SR-73 NB Ramps			SA	0.35	A	0.63	B	0.35	A	0.64	B
719	Flower at Segerstrom			SA	0.83	D	0.83	D	0.86	D	0.84	D
723	Main St at Segerstrom	*		SA	0.76	C	0.88	D	0.81	D	0.91	E
724	Main St at Alton Ave			SA	0.58	A	0.64	B	0.61	B	0.68	B
725	Main and MacArthur (w/o SR-55)	c		SA	0.60	A	0.67	B	0.62	B	0.69	B
727	Halladay at Dyer Rd			SA	0.81	D	0.78	C	0.81	D	0.80	C
728	Halladay E at Alton Pkwy	*		SA	1.07	F	0.84	D	1.12	F	0.91	E
729	Halladay W at Alton Pkwy			SA	0.79	C	0.70	B	0.84	D	0.75	C
730	Grand Ave at Warner			SA	0.81	D	0.86	D	0.85	D	0.89	D
731	SR-55 SB Ramps at Grand Ave			SA	0.57	A	0.50	A	0.59	A	0.45	A
3	Newport Ave at Edinger Ave			Tus	0.79	C	0.68	B	0.80	C	0.69	B
14	Walnut Ave at McFadden Ave			Tus	0.43	A	0.58	A	0.45	A	0.59	A
18	Newport Ave at Bryan Ave			Tus	0.49	A	0.63	B	0.50	A	0.63	B
19	Newport Ave at Main St			Tus	0.47	A	0.74	C	0.51	A	0.75	C
20	Newport Ave at El Camino Real			Tus	0.68	B	0.73	C	0.70	B	0.74	C
21	Newport Ave at I-5 NB Ramps			Tus	0.67	B	0.60	A	0.69	B	0.60	A
22	Newport Ave at I-5 SB Ramp/Nisson Rd			Tus	0.56	A	0.75	C	0.57	A	0.76	C
23	Newport Ave at McFadden St			Tus	0.68	B	0.55	A	0.69	B	0.57	A
24	Newport Ave at Walnut Ave			Tus	0.83	D	0.88	D	0.85	D	0.90	D
25	Newport Ave at Sycamore Ave			Tus	0.66	B	0.60	A	0.67	B	0.60	A
27	Del Amo Ave at Edinger Ave			Tus	0.40	A	0.40	A	0.42	A	0.41	A
35	Red Hill Ave at Bryan Ave			Tus	0.62	B	0.62	B	0.61	B	0.63	B
36	Red Hill Ave at El Camino Real			Tus	0.62	B	0.85	D	0.63	B	0.87	D
37	Red Hill Ave at Nisson Rd			Tus	0.64	B	0.69	B	0.65	B	0.72	C
38	Red Hill Ave at Walnut Ave			Tus	0.75	C	0.85	D	0.74	C	0.88	D
39	Red Hill Ave at Sycamore Ave			Tus	0.63	B	0.59	A	0.63	B	0.60	A
40	Red Hill Ave at Edinger Ave			Tus	0.73	C	0.75	C	0.73	C	0.77	C
55	Browning Ave at Bryan Ave			Tus	0.47	A	0.63	B	0.48	A	0.63	B
56	Browning Ave at El Camino Real			Tus	0.35	A	0.43	A	0.35	A	0.43	A
58	Browning Ave at Walnut Ave			Tus	0.51	A	0.58	A	0.52	A	0.58	A
92	Tustin Ranch Rd at Bryan Ave			Tus	0.71	C	0.74	C	0.71	C	0.75	C
93	Tustin Ranch Rd at El Camino Real			Tus	0.94	E	0.78	C	0.94	E	0.78	C
94	Tustin Ranch Rd at I-5 NB Ramps			Tus	0.60	A	0.52	A	0.61	B	0.52	A
95	Tustin Ranch Rd at I-5 SB Ramps			Tus	0.71	C	0.48	A	0.72	C	0.48	A
96	Tustin Ranch Rd at Walnut Ave			Tus	0.51	A	0.77	C	0.53	A	0.78	C
109	Myford Rd at Bryan Ave			Tus	0.54	A	0.52	A	0.54	A	0.53	A

ID	INTERSECTION	PA 36/CMP INTERSECTION	PRE-ESTABLISHED ATMS LOCATIONS	JURISDICTION	POST-2035 CUMULATIVE BASELINE				POST-2035 CUMULATIVE WITH UPDATE			
					AM		PM		AM		PM	
					ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
110	Myford Rd at El Camino Real			Tus	0.43	A	0.58	A	0.44	A	0.58	A
111	Franklin Ave at Walnut Ave			Tus	0.55	A	0.99	E	0.56	A	0.99	E
133	Jamboree Rd at Edinger Ave	b		Tus	0.41	A	0.65	B	0.42	A	0.67	B
445	Tustin Ranch Rd at Warner Ave N	*		Tus	0.55	A	0.89	D	0.56	A	0.92	E
446	Tustin Ranch Rd at Warner Ave S			Tus	0.52	A	0.59	A	0.54	A	0.60	A
447	Armstrong Ave/Severyns Rd Valencia Ave			Tus	0.63	B	0.53	A	0.64	B	0.53	A
448	Armstrong Ave at Warner Ave			Tus	0.70	B	0.63	B	0.69	B	0.63	B
453	Red Hill Ave at Valencia Ave			Tus	0.63	B	0.62	B	0.65	B	0.62	B
454	Tustin Ranch Rd at Valencia Ave			Tus	0.47	A	0.54	A	0.47	A	0.55	A
455	East Connector/Jamboree Plaza at Edinger			Tus	0.41	A	0.47	A	0.42	A	0.47	A
456	N Loop Rd at Valencia Ave			Tus	0.17	A	0.13	A	0.17	A	0.13	A
457	N Loop Rd at Moffett Dr			Tus	0.37	A	0.37	A	0.37	A	0.38	A
478	Red Hill Ave at I-5 NB Ramps			Tus	0.77	C	0.66	B	0.78	C	0.66	B
479	Red Hill Ave at I-5 SB Ramps			Tus	0.77	C	0.80	C	0.76	C	0.84	D
480	Tustin Ranch Rd/Connector at Edinger Ave			Tus	0.16	A	0.16	A	0.17	A	0.17	A
732	SR-55 NB Ramp at Newport Ave			Tus	0.54	A	0.83	D	0.56	A	0.83	D
739	Newport Ave at Mitchell Ave			Tus	0.69	B	0.71	C	0.71	C	0.72	C
740	Red Hill Ave at Mitchell Ave			Tus	0.64	B	0.63	B	0.64	B	0.63	B
743	Newport Ave at Valencia			Tus	0.41	A	0.55	A	0.42	A	0.57	A
745	Tustin Ranch Rd at Park Ave			Tus	0.64	B	0.75	C	0.65	B	0.81	D
746	Kensington Park Dr at Edinger Ave			Tus	0.39	A	0.52	A	0.40	A	0.53	A
747	Kensington Park Dr at Valencia Ave			Tus	0.25	A	0.29	A	0.25	A	0.30	A
748	Armstrong Ave at A St			Tus	0.34	A	0.42	A	0.34	A	0.45	A
749	Park Ave at A St			Tus	0.75	C	1.00	E	0.76	C	1.00	E
750	Legacy Rd at Warner Ave			Tus	0.44	A	0.59	A	0.44	A	0.58	A
751	Tustin Ranch Rd at Legacy Rd			Tus	0.60	A	0.71	C	0.64	B	0.71	C
752	Legacy Rd at N Loop Rd			Tus	0.15	A	0.14	A	0.15	A	0.16	A
753	Tustin Ranch Rd at Edinger Ave Connector			Tus	0.44	A	0.40	A	0.46	A	0.41	A
28	Pullman St at Warner Ave			Tus/SA	0.57	A	0.61	B	0.57	A	0.62	B
41	Red Hill Ave at Warner Ave			Tus/SA	0.74	C	0.76	C	0.76	C	0.78	C
754	Red Hill Ave at Carnegie Ave			Tus/SA	0.39	A	0.45	A	0.39	A	0.46	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 acceptable
√	ATMS credit-Reduction of 0.05 applied to ICU
*****	Impact

Figure 5.16 – Post-2035 Cumulative With Update AM Peak Hour Intersection Deficiencies

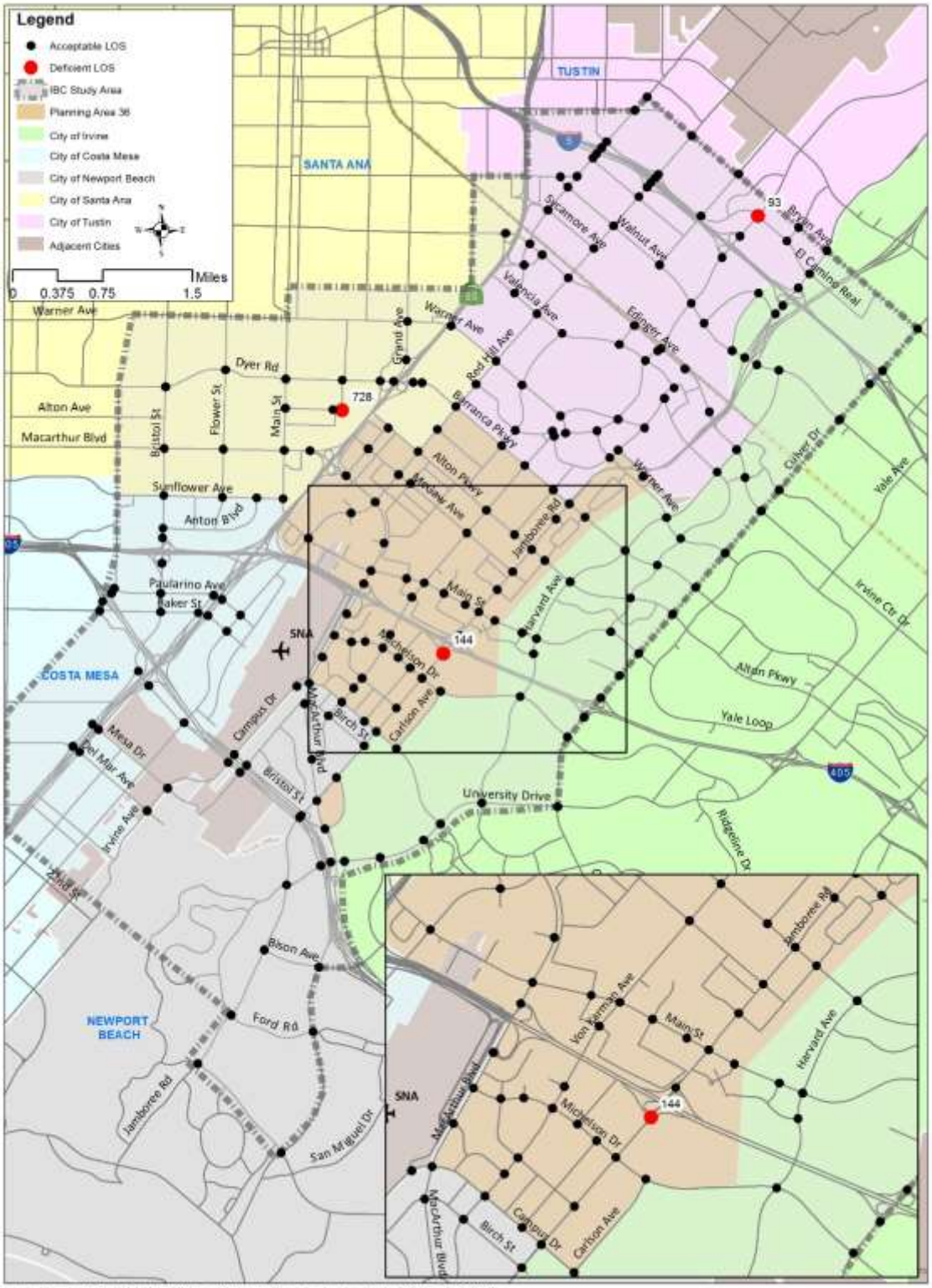
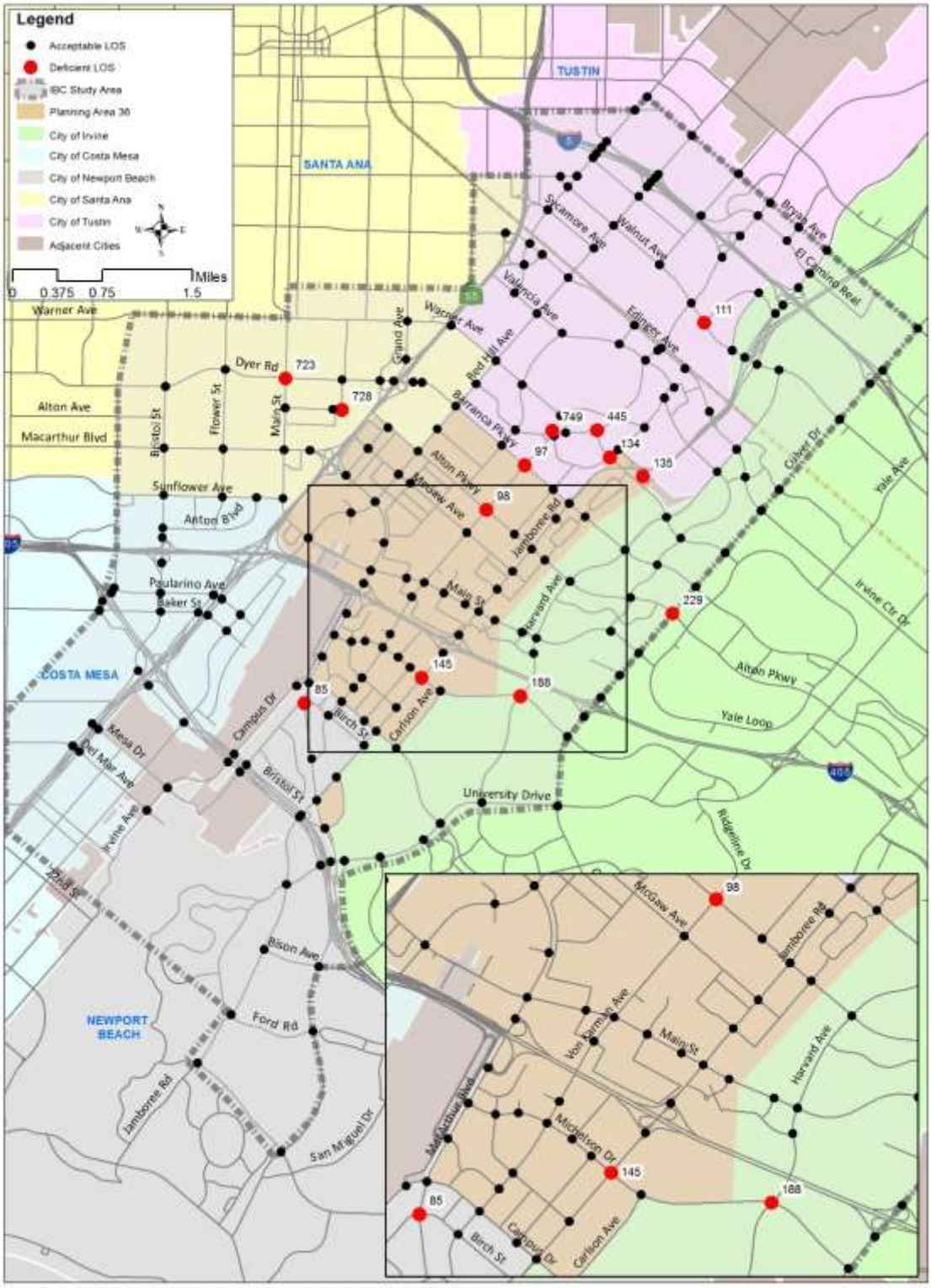


Figure 5.17 – Post-2035 Cumulative With Update PM Peak Hour Intersection Deficiencies



There are fifteen intersection deficiencies so compared to the Baseline scenario, there are six additional intersections that become deficient in the With Update scenario: #144: Jamboree Road at I-405 SB Ramps, #145: Jamboree Road at Michelson Drive, #188: Harvard Avenue at Michelson Drive, #229: Culver Drive at Alton Parkway, #723: Main Street at Segerstrom, and #445: Tustin Ranch Road at Warner Avenue North. Further discussion of specific impacts, mitigation, and fair-share cost analysis is addressed in **Chapter 6**. Based on the Post-2035 Cumulative With Update intersection ICU analysis, the following intersections within the study area are forecast to operate at a deficient LOS:

- #98: Von Karman Avenue at Alton Parkway (Irvine)*—PM Peak Hour LOS F with a 1.06 V/C
- #135: Jamboree Road NB Ramps at Warner Avenue (Irvine)—PM Peak Hour LOS F with a 1.08 V/C
- #144: Jamboree Road at I-405 SB Ramps (Irvine)*—AM Peak Hour LOS F with a 1.03 V/C
- #145: Jamboree Road at Michelson Drive (Irvine)*—PM Peak Hour LOS F with a 1.09 V/C
- #188: Harvard Avenue at Michelson Drive (Irvine)*—PM Peak Hour LOS E with a 0.92 V/C
- #229: Culver Drive at Alton Parkway (Irvine)*—PM Peak Hour LOS E with a 0.91 V/C
- #97: Von Karman Avenue/Tustin Ranch Road at Barranca Parkway (Irvine/Tustin)*—PM Peak Hour LOS F with a 1.06 V/C
- #134: Loop Road/Park Ave at Warner Ave (Irvine/Tustin)—PM Peak Hour LOS F with a 1.11 V/C
- #85: MacArthur Blvd at Birch Street (Newport Beach)*—PM Peak Hour LOS E with a 0.94 V/C
- #723: Main Street at Segerstrom (Santa Ana)*—PM Peak Hour LOS E with a 0.91 V/C
- #728: Halladay E at Alton Parkway (Santa Ana)*—AM Peak Hour LOS F with a 1.12 V/C, PM Peak Hour LOS E with a 0.91 V/C
- #93: Tustin Ranch Road at El Camino Real (Tustin)—AM Peak Hour LOS E with a 0.94 V/C
- #111: Franklin Avenue at Walnut Avenue (Tustin)—PM Peak Hour LOS E with a 0.99 V/C
- #445: Tustin Ranch Road at Warner Avenue North (Tustin)*—PM Peak Hour LOS E with a 0.92 V/C
- #749: Park Avenue at A Street (Tustin)—PM Peak Hour LOS E with a 1.00 V/C

*Denotes impact in Post-2035

5.14 Post-2035 Cumulative Baseline With Update Peak Hour Freeway Mainline Analysis

The freeway mainline volumes, densities, and levels of service reflect the future potential deficiencies of each freeway segment. The Post-2035 Cumulative Baseline and With Update peak hour forecast volumes are presented in **Table 5.13**. **Appendix G** presents detailed HCS worksheets for freeway mainline analysis.

Table 5.13 – Post-2035 Cumulative With Update Freeway Peak Hour Mainline LOS

LOCATION		FREEWAY LANES			POST-2035 CUMULATIVE BASELINE						POST 2035 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	13,827	1.15	F	11,652	0.97	E	13,958	1.16	F			11,672	0.97	E		
		SB	6	12,000	12,180	1.02	F	12,459	1.04	F	12,241	1.02	F			12,464	1.04	F		
	Jamboree Rd to Tustin Ranch Rd	NB	6	12,000	13,623	1.14	F	11,550	0.96	E	13,683	1.14	F			11,631	0.97	E		
		SB	6	12,000	12,365	1.03	F	12,040	1.00	E	12,392	1.03	F			12,096	1.01	F		
	Tustin Ranch Rd to Red Hill Ave	NB	6	12,000	13,834	1.15	F	11,766	0.98	E	13,890	1.16	F			11,825	0.99	E		
		SB	6	12,000	12,826	1.07	F	12,402	1.03	F	12,920	1.08	F			12,478	1.04	F		
	Red Hill Ave to Newport Ave	NB	6	12,000	13,241	1.10	F	11,243	0.94	E	13,271	1.11	F			11,288	0.94	E		
		SB	6	12,000	12,274	1.02	F	11,705	0.98	E	12,365	1.03	F			11,782	0.98	E		
	Newport Ave to SR-55	NB	6	12,000	13,735	1.14	F	11,859	0.99	E	13,861	1.16	F			11,826	0.99	E		
		SB	6	12,000	9,248	0.77	D	8,926	0.74	D	9,427	0.79	D			9,010	0.75	D		
	N of SR-55	NB	5	10,000	11,434	1.14	F	10,008	1.00	E	11,474	1.15	F			10,028	1.00	E		
		SB	5	10,000	9,840	0.98	E	9,137	0.91	E	9,940	0.99	E			9,239	0.92	E		
I-405	Culver Dr to Jamboree Rd	NB	6	12,000	13,355	1.11	F	10,587	0.88	D	13,526	1.13	F			10,588	0.88	D		
		SB	5	10,000	10,498	1.05	F	11,860	1.19	F	10,637	1.06	F			11,896	1.19	F		
	Jamboree Rd to MacArthur Blvd	NB	6	12,000	13,008	1.08	F	11,375	0.95	E	13,272	1.11	F	*		11,496	0.96	E		
		SB	7	14,000	12,126	0.87	D	11,782	0.84	D	12,375	0.88	D			12,062	0.86	D		
	MacArthur Blvd to SR-55	NB	6	12,000	12,300	1.02	F	12,063	1.01	F	12,517	1.04	F	*		12,315	1.03	F	*	
		SB	6	12,000	13,269	1.11	F	11,599	0.97	E	13,525	1.13	F	*		11,807	0.98	E	35.3	E
	SR-55 to Bristol St	NB	5	10,000	6,158	0.62	C	6,479	0.65	C	6,275	0.63	C			6,627	0.66	C		
		SB	5	10,000	9,784	0.98	E	7,867	0.79	D	9,979	1.00	E			7,982	0.80	D		
	Bristol St to SR-73	NB	5	10,000	7,083	0.71	C	7,987	0.80	D	7,208	0.72	D			8,098	0.81	D		
		SB	5	10,000	9,603	0.96	E	6,695	0.67	C	9,758	0.98	E			6,781	0.68	C		
SR-55	South of Victoria St	NB	3	6,000	4,298	0.72	D	3,176	0.53	C	4,269	0.71	C			3,197	0.53	C		
		SB	3	6,000	2,875	0.48	B	3,317	0.55	C	2,911	0.49	B			3,331	0.56	C		
	Victoria St to Fair Dr	NB	4	8,000	6,710	0.84	D	4,578	0.57	C	6,719	0.84	D			4,593	0.57	C		
		SB	4	8,000	4,534	0.57	C	5,677	0.71	C	4,574	0.57	C			5,673	0.71	C		
	Fair Dr to SR-73	NB	4	8,000	8,169	1.02	F	5,891	0.74	D	8,143	1.02	F			5,910	0.74	D		
		SB	4	8,000	5,389	0.67	C	6,612	0.83	D	5,421	0.68	C			6,632	0.83	D		
	SR-73 to Baker St	NB	4	8,000	7,486	0.94	E	5,738	0.72	D	7,490	0.94	E			5,868	0.73	D		
		SB	4	8,000	6,276	0.78	D	6,916	0.86	D	6,339	0.79	D			7,007	0.88	D		
	Baker Street to I-405	NB	4	8,000	7,486	0.94	E	5,738	0.72	D	7,490	0.94	E			5,868	0.73	D		
		SB	4	8,000	6,276	0.78	D	6,916	0.86	D	6,339	0.79	D			7,007	0.88	D		
	I-405 to MacArthur Blvd	NB	6	12,000	9,718	0.81	D	8,424	0.70	C	9,940	0.83	D			8,653	0.72	D		
		SB	6	12,000	9,387	0.78	D	9,074	0.76	D	9,519	0.79	D			9,254	0.77	D		
	MacArthur Blvd to Dyer Rd	NB	5	10,000	8,637	0.86	D	8,731	0.87	D	8,842	0.88	D			8,834	0.88	D		
		SB	5	10,000	9,469	0.95	E	8,155	0.82	D	9,602	0.96	E			8,344	0.83	D		
	Dyer Rd to Edinger Ave	NB	5	10,000	8,609	0.86	D	9,553	0.96	E	8,866	0.89	D			9,778	0.98	E	34.9	D
		SB	4	8,000	9,771	1.22	F	7,820	0.98	E	9,877	1.23	F			7,943	0.99	E		
	Edinger Ave to McFadden St/ Sycamore Ave	NB	5	10,000	8,754	0.88	D	9,674	0.97	E	8,935	0.89	D			9,865	0.99	E		
		SB	5	10,000	10,477	1.05	F	8,266	0.83	D	10,546	1.05	F			8,379	0.84	D		
	McFadden St/Sycamore Ave to I-5	NB	5	10,000	9,489	0.95	E	10,241	1.02	F	9,648	0.96	E			10,442	1.04	F	*	
		SB	5	10,000	9,992	1.00	E	8,141	0.81	D	10,017	1.00	E			8,256	0.83	D		
	North of I-5	NB	5	10,000	6,508	0.65	C	7,205	0.72	D	6,661	0.67	C			7,343	0.73	D		
		SB	5	10,000	7,589	0.76	D	6,002	0.60	C	7,665	0.77	D			6,052	0.61	C		
SR-73	MacArthur Blvd to University Dr	NB	4	8,000	8,595	1.07	F	6,634	0.83	D	8,632	1.08	F			6,718	0.84	D		
		SB	4	8,000	6,909	0.86	D	7,698	0.96	E	6,942	0.87	D			7,726	0.97	E		
	University Dr to Jamboree Rd	NB	4	8,000	7,566	0.95	E	5,662	0.71	C	7,581	0.95	E			5,724	0.72	D		
		SB	4	8,000	5,305	0.66	C	6,085	0.76	D	5,320	0.67	C			6,095	0.76	D		

LOCATION		FREEWAY LANES			POST-2035 CUMULATIVE BASELINE						POST 2035 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
	Jamboree Rd to Birch St	NB	4	8,000	9,930	1.24	**F**	8,208	1.03	**F**	9,951	1.24	**F**			8,302	1.04	**F**		
		SB	4	8,000	6,534	0.82	D	7,151	0.89	D	6,554	0.82	D			7,172	0.90	**E**		
	Birch St to Campus Dr	NB	4	8,000	8,128	1.02	**F**	7,136	0.89	D	8,160	1.02	**F**			7,224	0.90	**E**		
		SB	4	8,000	7,895	0.99	**E**	7,750	0.97	**E**	7,939	0.99	**E**			7,822	0.98	**E**		
	Campus Dr to SR-55	NB	4	8,000	9,019	1.13	**F**	9,280	1.16	**F**	9,202	1.15	**F**			9,477	1.18	**F**		
		SB	4	8,000	9,958	1.24	**F**	8,842	1.11	**F**	10,048	1.26	**F**			8,982	1.12	**F**		
	SR-55 to Bear St	NB	4	8,000	6,737	0.84	D	6,881	0.86	D	6,811	0.85	D			6,931	0.87	D		
		SB	4	8,000	6,801	0.85	D	5,898	0.74	D	6,812	0.85	D			5,950	0.74	D		
	Bear St to I-405	NB	4	8,000	5,706	0.71	C	5,814	0.73	D	5,759	0.72	D			5,881	0.74	D		
		SB	4	8,000	6,109	0.76	D	5,145	0.64	C	6,109	0.76	D			5,177	0.65	C		
SR-261	SR-261 South of El Camino Real	NB	4	8,000	931	0.12	A	2,957	0.37	B	989	0.12	A			3,046	0.38	B		
		SB	2	4,000	3,284	0.82	D	1,220	0.31	B	3,383	0.85	D			1,261	0.32	B		

Note: *Study update related impacts. No HCM Analysis required for LOS F locations With Update impacts

In the AM peak 33 out of 60 freeway segments operate at a deficient LOS and in the PM peak 26 out of 60 operate at a deficient LOS. In total 36 of the segments are deficient in one or both peak hours. When compared to the Post-2035 Baseline scenario, there are two additional deficiencies under PM peak hour conditions.

- SR-73 Southbound between Birch Street and Jamboree Road
- SR-73 Northbound between Birch Street and Campus Drive

The deficient segments are:

AM Peak Hour:

- I-5 Northbound between Culver Drive and Jamboree Road
- I-5 Southbound between Jamboree Road and Culver Drive
- I-5 Northbound between Jamboree Road and Tustin Ranch Road
- I-5 Southbound between Tustin Ranch Road and Jamboree Road
- I-5 Northbound between Tustin Ranch Road and Red Hill Avenue
- I-5 Southbound between Red Hill Avenue and Tustin Ranch Road
- I-5 Northbound between Red Hill Avenue and Newport Avenue
- I-5 Southbound between Newport Avenue and Red Hill Avenue
- I-5 Northbound between Newport Avenue and SR-55
- I-5 Northbound North of SR-55
- I-5 Southbound North of SR-55
- I-405 Northbound between Culver Drive and Jamboree Road
- I-405 Southbound between Jamboree Road and Culver Drive
- I-405 Northbound between Jamboree Road and MacArthur Boulevard*
- I-405 Northbound between MacArthur Boulevard and SR-55*
- I-405 Southbound between SR-55 and MacArthur Boulevard*
- I-405 Southbound between Bristol Street and SR-55

- I-405 Southbound between SR-73 and Bristol Street
- SR-55 Northbound between Fair Drive and SR-73
- SR-55 Northbound between SR-73 and Baker Street
- SR-55 Northbound between Baker Street and I-405
- SR-55 Southbound between Dyer Road and MacArthur Boulevard
- SR-55 Southbound between Edinger Avenue and Dyer Road
- SR-55 Southbound between McFadden Street/Sycamore Avenue and Edinger Avenue
- SR-55 Northbound between McFadden Street/Sycamore Avenue and I-5
- SR-55 Southbound between I-5 and McFadden Street/Sycamore Avenue
- SR-73 Northbound between MacArthur Boulevard and University Drive
- SR-73 Northbound between University Drive and Jamboree Road
- SR-73 Northbound between Jamboree Road and Birch Street
- SR-73 Northbound between Birch Street and Campus Drive
- SR-73 Southbound between Campus Drive and Birch Street
- SR-73 Northbound between Campus Drive and SR-55
- SR-73 Southbound between SR-55 and Campus Drive

PM Peak Hour:

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

*Denotes Impact in Post-2035

5.15 Post-2035 Cumulative Baseline With Update Peak Hour Freeway Ramp Analysis

The methodology for determining the deficiencies on freeway ramps is consistent with that used for previously studied scenarios. For the Post-2035 Cumulative With Update scenario, freeway ramp deficiencies are identified in **Table 5.14**. **Appendix H** presents detailed HCS worksheets for freeway ramp analysis. No additional ramps become deficient compared to the Post-2035 Baseline scenario. Eleven of the 98 ramps in the study area are forecast to be deficient in the AM peak. In the PM peak fourteen ramps are forecast to be deficient. Impacted locations and improvement strategies are discussed in **Chapter 6**. The deficient ramps are:

AM Peak Hour:

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

PM Peak Hour:

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

*Denotes impact locations.

Figure 5.18 and **Figure 5.19** graphically depict the Post-2035 Cumulative With Update freeway and ramp deficiencies.

Table 5.14 – Post-2035 Cumulative With Update Peak Hour Freeway Ramp LOS

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		POST-2035 CUMULATIVE BASELINE						POST-2035 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	364	0.40	B	459	0.51	C	364	0.40	B			468	0.52	C		
		SB On Loop	1	1,000	644	0.72	D	357	0.40	B	645	0.72	D			356	0.40	B		
		SB Off	2	500	912	0.41	B	1,750	0.78	D	911	0.40	B			1,749	0.78	D		
		NB On Loop	1	1,000	870	0.58	C	520	0.35	B	883	0.59	C			530	0.35	B		
		NB On Direct	1	1,000	617	0.69	C	206	0.23	A	615	0.68	C			206	0.23	A		
		NB Off	1	500	431	0.29	A	782	0.52	C	429	0.29	A			769	0.51	C		
	Jamboree Rd	SB On Direct	1	1,000	333	0.22	A	1,020	0.68	C	344	0.23	A			1,030	0.69	C		
		SB On Loop	1	1,000	848	0.57	C	510	0.34	B	850	0.57	C			510	0.34	B		
		SB Off	2	500	1,360	0.45	B	1,337	0.45	B	1,360	0.45	B			1,346	0.45	B		
		NB On Loop	1	1,000	590	0.55	C	540	0.5	B	620	0.57	C			540	0.5	B		
		NB On Direct	1	1,000	600	0.56	C	480	0.44	B	600	0.56	C			480	0.44	B		
		NB Off	1	500	1,530	1.02	**F**	1,536	1.02	**F**	1,534	1.02	**F**			1,538	1.03	**F**		
	Tustin Ranch Rd	SB On	1	1,000	812	0.54	C	598	0.4	B	801	0.53	C			600	0.40	B		
		NB On	2	1,000	370	0.21	A	1,120	0.62	C	370	0.21	A			1,120	0.62	C		
		NB Off	1	500	534	0.36	B	650	0.43	B	538	0.36	B			658	0.44	B		
		SB Off	2	500	1,560	0.69	C	1,080	0.48	B	1,560	0.69	C			1,080	0.48	B		
	Red Hill Ave	SB On	1	1,000	995	0.66	C	880	0.59	C	990	0.66	C			930	0.62	C		
		NB On	1	1,000	1,038	0.69	C	856	0.57	C	1,030	0.69	C			853	0.57	C		
		NB Off	1	500	810	0.54	C	890	0.59	C	830	0.55	C			890	0.59	C		
		SB Off	1	500	709	0.47	B	718	0.48	B	680	0.45	B			716	0.48	B		
	Newport Blvd	SB Off	1	500	946	0.63	C	1,121	0.75	D	952	0.63	C			1,122	0.75	D		
		NB On	1	1,000	630	0.42	B	740	0.49	B	630	0.42	B			740	0.49	B		
I-405	Culver Dr	SB On Direct	1	1,000	477	0.32	B	1,005	0.67	C	525	0.35	B			1,061	0.71	C		
		SB On Loop	1	1,000	396	0.44	B	392	0.44	B	404	0.45	B			414	0.46	B		
		SB Off	2	500	825	0.28	A	1,673	0.56	C	823	0.27	A			1,675	0.56	C		
		NB On Loop	1	1,000	790	0.53	C	322	0.21	A	790	0.53	C			320	0.21	A		
		NB On Direct	1	1,000	1,060	0.71	C	513	0.34	B	1,060	0.71	C			510	0.34	B		
		NB Off	2	500	1,239	0.55	C	1,393	0.62	C	1,311	0.58	C			1,474	0.66	C		
	Jamboree Rd	SB On Direct	2	1,000	707	0.39	B	1,270	0.71	C	868	0.48	B			1,411	0.78	D		
		SB On Loop	1	1,000	236	0.16	A	730	0.49	B	327	0.22	A			751	0.50	B		
		SB Off	2	500	2,510	1.12	**F**	1,694	0.75	D	2,509	1.12	**F**			1,893	0.84	D		
		NB On Loop	1	1,000	514	0.34	B	730	0.49	B	520	0.35	B			730	0.49	B		
		NB On Direct	2	1,000	1,149	0.64	C	1,000	0.56	C	1,140	0.63	C			1,000	0.56	C		
		NB Off	2	500	2,350	1.04	**F**	1,306	0.58	C	2,531	1.12	**F**	*		1,491	0.66	C		
	MacArthur Blvd	SB Direct On	2	1,000	667	0.37	B	1,077	0.60	C	699	0.39	B			1,180	0.66	C		
		SB Off	2	500	1,941	0.86	D	1,034	0.46	B	1,942	0.86	D			1,056	0.47	B		
		NB On	1	1,000	520	0.35	B	1,610	1.07	**F**	530	0.35	B			1,610	1.07	**F**		
		NB Off	1	500	1,981	1.32	**F**	984	0.66	C	2,111	1.41	**F**	*		1,034	0.69	C		
	Bristol St	SB Loop On	1	1,000	1,069	0.71	C	1,577	1.05	**F**	1,080	0.72	D			1,613	1.08	**F**	*	
		SB Off	2	500	1,211	0.54	C	839	0.37	B	1,213	0.54	C			839	0.37	B		
		NB On Loop	1	1,000	587	0.65	C	334	0.37	B	585	0.65	C			329	0.37	B		
		NB On Direct	1	1,000	636	0.42	B	1,091	0.73	D	634	0.42	B			1,075	0.72	D		
		NB Off	1	500	742	0.49	B	1,378	0.92	**E**	742	0.49	B			1,374	0.92	**E**		
SR-55	Victoria St	SB Direct On	1	1,000	500	0.56	C	480	0.53	C	490	0.54	C			487	0.54	C		
		SB Off	2	500	1,159	0.52	C	1,574	0.70	C	1,174	0.52	C			1,556	0.69	C		
		NB Direct On	1	1,000	1,247	0.83	D	824	0.55	C	1,257	0.84	D			816	0.54	C		
		NB Off	1	500	665	0.44	B	563	0.38	B	688	0.46	B			570	0.38	B		
	Fair Dr	SB Direct On	1	1,000	241	0.27	A	269	0.30	A	239	0.27	A			264	0.29	A		
		SB Off	2	500	1,097	0.49	B	1,204	0.54	C	1,085	0.48	B			1,223	0.54	C		
		NB Direct On	1	1,000	1,640	1.09	**F**	1,422	0.95	**E**	1,625	1.08	**F**			1,423	0.95	**E**		
		NB Off	1	500	181	0.12	A	108	0.07	A	201	0.13	A			106	0.07	A		

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		POST-2035 CUMULATIVE BASELINE						POST-2035 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
	Baker St	SB On	1	1,000	443	0.30	A	890	0.59	C	450	0.30	A			890	0.59	C		
		SB Off	1	500	1,010	0.67	C	1,190	0.79	D	1,010	0.67	C			1,220	0.81	D		
		NB Off	1	500	998	0.67	C	1,130	0.75	D	1,035	0.69	C			1,154	0.77	D		
	Paularino Ave	SB Off	1	500	1,640	1.09	**F**	1,330	0.89	D	1,640	1.09	**F**			1,360	0.91	**E**		
		NB On	1	1,000	1,471	1.63	**F**	1,350	1.50	**F**	1,501	1.67	**F**			1,350	1.50	**F**		
	MacArthur Blvd	SB On Direct	1	1,000	770	0.51	C	980	0.65	C	773	0.52	C			970	0.65	C		
		SB On Loop	1	1,000	160	0.18	A	720	0.8	D	181	0.20	A			770	0.86	D		
		SB Off	2	500	1,908	0.85	D	1,083	0.48	B	1,907	0.85	D			1,098	0.49	B		
		NB On Loop	1	1,000	730	0.49	B	1,027	0.68	C	730	0.49	B			1,019	0.68	C		
		NB On Direct	1	1,000	120	0.13	A	685	0.76	D	165	0.18	A			680	0.76	D		
		NB Off	2	500	1,747	0.78	D	1,374	0.61	C	1,851	0.82	D			1,435	0.64	C		
	Dyer Rd	SB On	1	1,000	1,070	0.71	C	1,414	0.94	E	1,080	0.72	D			1,425	0.95	**E**		
		SB Off Loop	1	500	581	0.39	B	340	0.23	A	550	0.37	B			340	0.23	A		
		SB Off to Grand	1	500	811	0.54	C	573	0.38	B	841	0.56	C			570	0.38	B		
		NB On Direct	1	1,000	660	0.44	B	1,690	1.13	**F**	730	0.49	B			1,790	1.19	**F**	*	
		NB On Loop	1	1,000	550	0.61	C	1,020	1.13	**F**	550	0.61	C			1,020	1.13	**F**		
		NB Off	1	500	1,746	1.16	**F**	419	0.28	A	1,794	1.20	**F**	*		438	0.29	A		
	Edinger Ave	SB On	1	1,000	860	0.57	C	790	0.53	C	881	0.59	C			800	0.53	C		
		SB Off	1	500	912	0.61	C	571	0.38	B	900	0.60	C			572	0.38	B		
		NB On	1	1,000	320	0.21	A	1,530	1.02	**F**	316	0.21	A			1,530	1.02	**F**		
		NB Off	1	500	992	0.66	C	570	0.38	B	1,026	0.68	C			626	0.42	B		
	McFadden Ave	SB On	1	1,000	589	0.39	B	405	0.27	A	587	0.39	B			440	0.29	A		
		SB Off	2	500	597	0.27	A	719	0.32	B	591	0.26	A			721	0.32	B		
		NB On	1	1,000	1,256	0.84	D	1,127	0.75	D	1,233	0.82	D			1,137	0.76	D		
		NB Off	1	500	521	0.35	B	560	0.37	B	520	0.35	B			559	0.37	B		
SR-73	Bison Ave	SB On	1	1,000	190	0.13	A	360	0.24	A	180	0.12	A			360	0.24	A		
		SB Off	1	500	967	0.64	C	479	0.32	B	972	0.65	C			497	0.33	B		
		NB On	1	1,000	415	0.46	B	1,040	1.16	**F**	435	0.48	B			1,050	1.17	**F**		
	MacArthur Blvd	SB On	1	1,000	187	0.12	A	802	0.53	C	208	0.14	A			853	0.57	C		
		SB Off	1	500	1,208	0.81	D	1,017	0.68	C	1,205	0.80	D			1,030	0.69	C		
		NB On s/o University Dr	1	1,000	806	0.54	C	826	0.55	C	800	0.53	C			834	0.56	C		
		NB On n/o University Dr	1	1,000	1,013	0.68	C	1,277	0.85	D	1,039	0.69	C			1,307	0.87	D		
	University Dr	SB Off	1	500	827	0.55	C	958	0.64	C	838	0.56	C			967	0.64	C		
	Jamboree Rd	SB On	1	1,000	473	0.32	B	666	0.44	B	478	0.32	B			675	0.45	B		
		SB Off	2	500	1,361	0.61	C	599	0.27	A	1,385	0.62	C			650	0.29	A		
		NB On	1	1,000	1,351	1.50	**F**	1,268	1.41	**F**	1,332	1.48	**F**			1,272	1.41	**F**		
	Birch St	NB Off	1	500	1,802	1.20	**F**	1,072	0.71	C	1,792	1.19	**F**			1,079	0.72	D		
	Campus Dr	SB Off	2	500	2,063	0.92	**E**	1,092	0.49	B	2,109	0.94	**E**	40.3	**F**	1,160	0.52	C		
		NB On	1	1,000	891	0.59	C	2,144	0.66	C	1,043	0.70	C			2,253	0.71	C		
	SR-73 at Bear	SB On	1	1,000	1,030	0.69	C	1,234	0.82	D	1,034	0.69	C			1,244	0.83	D		
		SB Off	1	500	370	0.25	A	440	0.29	A	369	0.25	A			440	0.29	A		
		NB Off	1	500	742	0.49	B	1,402	0.93	**E**	752	0.50	B			1,403	0.94	**E**		
		NB On	1	1,000	240	0.16	A	682	0.45	B	232	0.15	A			682	0.45	B		
SR-261	Jamboree Rd	SB On	2	1,000	1,217	0.41	B	985	0.33	B	1,240	0.41	B			1,070	0.36	B		
		NB Off	2	250	557	0.25	A	934	0.41	B	639	0.28	A			955	0.42	B		
	Walnut Ave	NB On	1	1,000	381	0.25	A	809	0.54	C	388	0.26	A			836	0.56	C		
		SB Off	1	500	857	0.57	C	410	0.27	A	861	0.57	C			409	0.27	A		

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

Figure 5.18– Post-2035 Cumulative With Update Freeway AM Peak Hour Deficiencies

Figure 5.19 – Post-2035 Cumulative With Update Freeway PM Peak Hour Deficiencies

6.0 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 Five-Year Update only identifies improvements for relevant impacts and cumulative deficiencies. 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 point for comparison with the 2010 study (if needed for reference purposes only), 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 have been documented to operate deficiently in both the Baseline and With Update conditions but do not have an impact as identified by the criteria.

For impacts that are located in adjacent jurisdictions, where the intersection is deficient under Baseline conditions and performance further deteriorates under the updated assumptions, a fair-share contribution towards an improvement cost that achieves acceptable performance or existing performance is provided for reference and comparison purposes. 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. For locations outside the City of Irvine, the

fair-shares range from 1.5% for an improvement in Tustin to 40.3% for an improvement in Santa Ana. 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			
POST-2035 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**		
POST-2035 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 2020 and Post-2035 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 Post-2030 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 impacted locations for arterials, intersections, freeway mainline and ramps. Improvement strategies for each are discussed in turn.

Table 6.2 - Comparison of Number of Impacted Locations between 2020 and Post-2035 With Update

JURISDICTION	2020	POST-2035
Arterial Segments	1	1
Intersections	1	10
Freeway Mainline	6	5
Freeway Ramps	2	6
Total	10	22

Arterials

There is one arterial segment that is impacted in both 2020 and Post-2035 conditions.

- Dyer Road from SR-55 SB Ramps to NB ramps (Santa Ana)

Based on City of Santa Ana criteria this location is impacted at the daily level; however, the City of Santa Ana does not perform peak hour analysis. This location is a short 1,100 foot segment with an underpass of the SR-55 that includes center columns. This Dyer Road segment is bounded by the freeway ramp signalized intersections with left-turn pockets for entry to the freeway, making it an a-typical arterial segment. Any widening is most likely infeasible at this location and may not be needed in practice since the segment capacity is effectively metered by the two adjacent ramp intersections, neither of which are deficient in either 2020 of Post-2035. Therefore no improvements are proposed at this location.

Theoretical improvement could entail widening for a fourth eastbound through lane. Other options that could be explored may focus on Transportation Demand Management measures to reduce the segment peak hour volume. Such measures could consider implementation of the City of Santa Ana designated Class 2 bike lanes as a Class 4 by converting the north sidewalk to a protected bike lane. An alternative future improvement may consider conversion of the large Caltrans right-of-way bounded by the SR-55 southbound off-ramp and Dyer Road to a park-n-ride, since Caltrans is actively planning for more park-n-ride locations. Access to this Caltrans parcel could be provided via a new south leg to the Dyer Road/Grand Avenue signalized intersection, and approximately 150 parking spaces could be provided for IBC employees' connection via new ITAM shuttle route(s) to reduce the number of eastbound Dyer Road vehicles.

Intersection Improvements

Under 2020 and Post-2035 conditions 17 intersections are forecast to operate at a deficient LOS. Of the 17 deficient intersections, an impact is forecast for 11 of the deficient intersections. The remaining six deficient intersections are cumulative deficiencies outside the City of Irvine, for which existing Agreements preclude participation.

The development of improvements for intersections began with identification of any measures that were recommended as part of the 2010 IBC Vision Plan traffic study. These mitigation measures were then applied to determine whether they result in intersection 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 to be achieved 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
- How far to extend a through 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

Deficient intersections within the IBC study area fall under two categories of impact – impact and cumulative deficiency. Impacts are determined using the definition of significant impacts 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 those intersections, a fair-share is computed for informational purposes. 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.

Where applicable, feasible improvements identified in the 1992 IBC Rezone EIR and the 2010 IBC Vision Plan that have yet to be implemented were recommended as improvements where appropriate. Additionally, traffic studies and other planning documents were sourced in adjacent jurisdictions to develop improvement strategies for intersection deficiencies.

Table 6.3 identifies updated impacts and cumulative deficiencies by jurisdiction for the Interim-Year 2020 and Build-out Year Post-2035 scenarios studied. Impacts identified under the existing scenarios are not included as impacts because they are considered theoretical impacts. .

Table 6.3 –Updated Intersections and Arterial Segment Impacts and Cumulative Intersection Deficiencies

ID	LOCATION	JURSDICTION	IMPACT	CUMULATIVE DEFICIENCY
85	MacArthur Blvd at Birch St	Newport	Post-2035	
723	Main St at Dyer/Segerstrom Ave	Santa Ana	Post-2035	
728	Halladay East at Alton Pkwy	Santa Ana	Post-2035	
1326	Dyer Rd between SR-55 NB ramps and SR-55 SB ramps*	Santa Ana	Post-2035	
36	Red Hill Ave at El Camino Real	Tustin	2020	
93	Tustin Ranch Rd at El Camino Real	Tustin		2020 and Post-2035
111	Franklin Ave at Walnut Ave	Tustin		2020 and Post-2035
445	Tustin Ranch/Warner North	Tustin	Post-2035	
749	Park Ave/A St	Tustin		Post-2035
97	Von Karman Ave/Tustin Ranch Rd at Barranca Parkway	Irvine/Tustin	Post-2035	
98	Von Karman Ave at Alton Pkwy	Irvine	Post-2035	
134	Loop Road/Park Ave at Warner Ave	Irvine/Tustin		2020 and Post-2035
135	Jamboree NB Ramps/Warner	Irvine		Post-2035

ID	LOCATION	JURSDICTION	IMPACT	CUMULATIVE DEFICIENCY
144	Jamboree Rd at I-405 SB Ramps	Irvine	Post-2035	
145	Jamboree Rd at Michelson Dr	Irvine	Post-2035	
188	Harvard Ave at Michelson Dr	Irvine	Post-2035	
229	Culver Dr at Alton Pkwy	Irvine	Post-2035	
234	Culver Dr at Michelson Dr	Irvine		2020
	Total Number of Impacted Locations		**12**	**6**
*Note: Arterial segment impact				

Source: ITAM, City of Irvine, ICU analysis

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. The accompanying tables identify whether the improvements are required for 2020 conditions or should be implemented for all future conditions. If an intersection impact occurs only in 2020 and subsequent improvements result in acceptable LOS under buildout conditions, the impact is considered temporary.

6.3.1 Irvine

Nine intersections within the City of Irvine are forecast to operate deficiently under future conditions and will require mitigation to achieve an acceptable LOS. **Table 6.4** presents the mitigation strategy for deficient City of Irvine intersections before and after the mitigation measures are applied. For the nine City of Irvine intersections, including three shared location between Irvine and Tustin, seven have plan update related significant impacts and two have cumulative deficiencies. The following intersections 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 Post-2035 scenario. Because of the high Von Karman volume on the north through movement, the recommended improvement is to add a 3rd northbound through lane. 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***
  This freeway ramp intersection with Jamboree Road is forecast to have a plan update related significant impact under AM peak hour conditions in the Post-2035 scenario. The recommended improvements include adding a fifth off ramp lane and striping it for shared left-right turns. This intersection improvement is consistent with previously identified Caltrans ramp improvement in the 2010/2011 Nexus Fee Study, and would return the intersection to an acceptable LOS.

Table 6.4 – City of Irvine Intersection Improvements

ID	INTERSECTION	2020 CUMULATIVE WITH UPDATE				2020 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				POST-2035 CUMULATIVE WITH UPDATE				POST-2035 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				IMPROVEMENT STRATEGY	FAIR-SHARE
		AM		PM		AM		PM		AM		PM		AM		PM			
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS		
98	Von Karman Ave at Alton Pkwy	0.82	D	0.89	D	0.83	D	0.91	E	0.93	E	1.06	F	0.93	E	0.98	E	Add 3rd NBT	100%
144	Jamboree Rd at I-405 SB Ramps	0.96	E	0.88	D	0.99	E	0.92	E	1.03	F	0.89	D	0.88	D	0.82	D	Improve EB to 2.5,0,2.5	100%
145	Jamboree Rd at Michelson Dr	0.77	C	0.93	E	0.86	D	1.00	E	0.98	E	1.09	F	0.79	C	0.99	E	Add 3rd EBL, 3rd SBL, and WBT	100%
188	Harvard Ave at Michelson Dr	0.63	B	0.85	D	0.60	A	0.85	D	0.64	B	0.92	E	0.77	C	0.84	D	Improve SB to 2,2,0	100%
229	Culver Dr at Alton Pkwy	0.78	C	0.82	D	0.77	C	0.83	D	0.77	C	0.91	E	0.77	C	0.87	D	Improve EB to 2,3,0	100%
97	Von Karman Ave/ Tustin Ranch Rd at Barranca Pkwy	0.71	C	0.84	D	0.72	C	0.87	D	0.74	C	1.06	F	0.74	C	0.92	E	Add 3rd NBT and convert De Facto to Standard NBR	100%
234	Culver Dr at Michelson Dr	0.66	B	0.91	E	0.66	B	0.85	D	0.63	B	0.81	D	0.67	B	0.87	D	Improve EB to 2,2,0	100%

ID	INTERSECTION	2020 CUMULATIVE WITH UPDATE				2020 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				POST-2035 CUMULATIVE WITH UPDATE				POST-2035 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				IMPROVEMENT STRATEGY	FAIR-SHARE
		AM		PM		AM		PM		AM		PM		AM		PM			
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS		
135	Jamboree NB Ramps at Warner Ave	0.45	A	0.86	D	0.45	A	0.87	D	0.56	A	1.08	F	0.45	A	0.68	B	Restripe EB to 2,2,0	100%
134	Loop Rd/Park Ave at Warner Ave	0.79	C	0.96	E	0.78	C	0.80	C	0.50	A	1.11	F	0.44	A	0.90	D	Add 3rd EBT and NBR overlap	100%

- ***Intersection #145: Jamboree Road and Michelson Drive***
  This intersection is impacted under the Post-2035 With Update scenario, with a forecast ICU of 1.09 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 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) triple eastbound and southbound left turns are contrary to City standards due to safety and operational concerns associated with the vehicles turning within appropriate receiving lanes; 2) the addition of a 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 Maguire Properties (Park Place) located on the northeast corner of Jamboree and Michelson.

  In recognition of the approximate 400 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 may preclude the implementation of the additional westbound through lane, which would fall in the footprint of the future bridge support. This pedestrian crossing may also improve signal operations and ICU levels at this intersection.

- ***Intersection #188: Harvard Avenue and Michelson Drive***
  The intersection is forecast to have an impact under PM peak hour conditions in the Post-2035 With Update scenario. The forecast ICU is 0.92 in the PM peak hour. The recommended improvement involves the addition of a second southbound left turn lane on Harvard, which

would need to be shadowed on the northbound approach. It would return the intersection to an acceptable LOS, and appears to be physically feasible with widening to either the east or west.

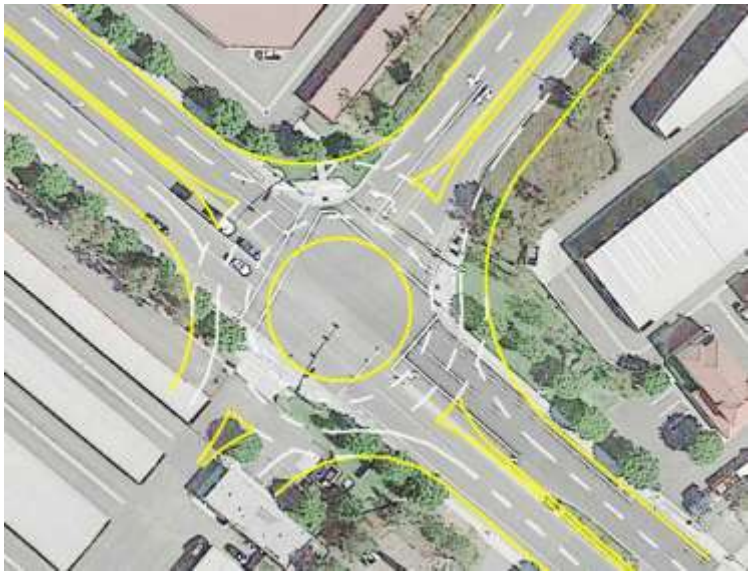
- ***Intersection #229: Culver Drive and Alton Parkway***
  The intersection is forecast to have an impact under PM peak hour conditions in the Post-2035 With Update scenario, with a forecast ICU is 0.91. The recommended improvement involves repurposing the eastbound Alton exclusive right turn lane into a 3rd eastbound through lane to reduce the ICU in the PM peak hour. This improvement would return the intersection to an acceptable LOS and appears to be physically feasible.

- ***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 an impact under PM peak hour in the Post-2035 scenario. Because of the high volume on the north through movement, recommended improvements include a 3rd northbound through lane and conversion of the northbound defacto right-turn to a dedicated right-turn lane on Von Karman Avenue. With this improvement, the intersection returns to an acceptable LOS and the mitigation appears to be physically feasible.

- ***Intersection #234: Culver Drive at Michelson Drive***
  The intersection at Culver Drive at Michelson Drive is forecast to be deficient under PM peak hour conditions in the 2020 scenario. Improving through capacity for the eastbound approach by converting the eastbound right turn lane to a shared through right lane would bring the intersection back to an acceptable LOS. This improvement appears to be physically feasible. Note that this location with existing lane configuration is no longer deficient in Post-2035. Additionally, relatively high eastbound right-turn volumes in excess of 250 vehicles per hour are forecast. Finally, there is no increase in ICU between baseline and updated assumptions; therefore the improvement at this intersection is not recommended at this time.

- ***Intersection #135: Jamboree Road NB Ramps and Warner Avenue***
  The intersection at Jamboree Road northbound Ramps and Warner Avenue is forecast to be deficient under PM peak hour conditions in the Post-2035 scenario. Because of the high volume on the eastbound left movement from Warner Avenue onto the Jamboree Road northbound on-ramp, the recommended improvement is a second eastbound left turn lane and an additional receiving lane along the Jamboree on ramp. The proposed improvement would return the intersection to an acceptable LOS and the mitigation appears to be physically feasible, although right-of-way will need to be acquired. As an option it is suggested that an alternative treatment be considered for a modern roundabout. These are circular intersections that move traffic counterclockwise around a central island. The first few modern roundabouts were able to solve awkward intersections, such as the current alignment of a minor driveway serving the self-storage across from the freeway ramp. With planters and monuments, they are attractive and help create a sense of place at this City entryway. They also calm oncoming traffic, which combined with far fewer conflict points, and have helped them prove to be very safe intersections for both vehicles and pedestrians. Because traffic roundabouts are calmer and safer than conventional intersections, the U.S. Department of Transportation's Federal Highway Administration describes them as a proven safety counter-measure. An example is shown in **Figure 6.2**.

Figure 6.2 – Roundabout Example at Jamboree NB Ramps and Warner Avenue



- ***Intersection #134: Loop Road/Park Avenue at Warner Avenue***
  This intersection is a shared location between the cities of Irvine and Tustin. ICU analysis indicates that the intersection of Loop Road/Park Avenue and Warner Avenue is forecast to be deficient under PM peak hour conditions in both the 2020 and Post-2035 scenarios, with the eastbound through traffic accounting for more than twice the critical volume of any other movement. Improving capacity on the eastbound Warner Avenue through approach to add a third eastbound through lane, in part by reallocating the pavement now devoted to an eastbound separate right-turn-only lane that would serve only 14 peak hour vehicles, is proposed. In addition, a northbound right-turn overlap would bring the intersection back to an acceptable LOS under all forecast scenarios. This improvement appears to be physically feasible.

6.3.2 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. Therefore, the recommended improvements to bring the deficient intersection back to an acceptable LOS are provided for information and future planning purposes. Table 6.5 identifies improvements and fair-shares if agreements were not in-place. The following intersection would require improvements to achieve an acceptable LOS for information and planning purposes:

- ***Intersection #85: MacArthur Boulevard and Birch Street***
  This intersection is deficient under future scenarios with an impact under the Post-2035 scenario. The recommended improvement would improve the eastbound approach to two eastbound left-turn lanes and two eastbound through lanes. 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 6.5 – City of Newport Beach Intersection Improvement

ID	INTERSECTION	2020 CUMULATIVE WITH UPDATE				2020 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				POST-2035 CUMULATIVE WITH UPDATE				POST-2035 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				IMPROVEMENT STRATEGY	FAIR-SHARE
		AM		PM		AM		PM		AM		PM		AM		PM			
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS		
85	MacArthur Blvd at Birch St	0.69	B	0.80		C	0.73	C	0.80	C	0.83	D	0.94	E	0.75	C	0.90	D	Improve EB to 2 EBL & 2 EBT	5.6%

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

6.3.3 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, the recommended improvements to bring the deficient intersection back to an acceptable LOS are provided to the City of Santa Ana for information and future planning purposes. **Table 6.6** identifies recommended intersection improvements and fairshares within the City of Santa Ana if the agreement with Santa Ana was not in-place. The following intersections would require improvements to achieve an acceptable LOS for information and planning purposes:

- ***Intersection #723 Main Street and Dyer Road (Segerstrom)***
  This intersection is deficient and has a plan update impact under the Post-2030 scenario. The critical movement is the northbound through movement. Recommended improvements include the addition of a third northbound through lane and a defacto northbound right-turn lane. Implementation of these improvements results in acceptable operations under all scenarios. The mitigation appears to be physically feasible, and would require removal of approximately 10 on-street parking spaces along the northbound departure. These improvements are provided for information and future planning purposes.

- ***Intersection #728 Halladay East at Alton Parkway***
  This intersection is deficient and has a plan update impact under the Post-2035 scenario. Because of the high volume on the eastbound and westbound through movements with the Alton overcrossing of SR55, recommended improvements are to add a 2nd through lane for both the east and westbound. The improvement would bring the deficient intersection back to an acceptable LOS and the mitigation appears to be consistent with the proposed Alton/SR-55 Overcrossing. These improvements are provided for information and future planning purposes.

Table 6.6 – City of Santa Ana Intersection Improvements

ID	INTERSECTION	2020 CUMULATIVE WITH UPDATE				2020 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				POST-2035 CUMULATIVE WITH UPDATE				POST-2035 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				IMPROVEMENT STRATEGY	FAIR-SHARE
		AM		PM		AM		PM		AM		PM		AM		PM			
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS		
723	Main St at Segerstrom Ave	0.64	B	0.71	C	0.63	B	0.71	C	0.81	D	0.91	E	0.82	D	0.78	C	Add 3rd NBT, De Facto NBR	40.3%
728	Halladay E at Alton Pkwy	0.24	A	0.30	A	0.25	A	0.31	A	1.12	F	0.91	E	0.78	C	0.65	B	Add 2nd EBT and 2nd WBT	7.2%

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

- ***Dyer Road between SR-55 Northbound Ramps and SR-55 Southbound ramps***
  This segment is forecast to be marginally deficient between the ramps in both interim-year 2020 and build-out Post-2035; a reduction of 124 (Post 2035) to 327 (2020) forecast daily vehicles could eliminate the need to widen in one direction to bring the segment back to acceptable LOS. If widening is planned it is recommended that the widening occur in the Eastbound direction to address heavy AM peak hour volumes in the area. Other possible non-widening mitigation strategies could be considered to reduce the number of daily vehicles traveling this segment (reductions of 124 daily vehicles by Post 2035, and 327 daily vehicles by 2020). These may include the addition of a park and ride lot on the southeast corner of the Dyer Road/Southbound SR-55 intersection and/or the upgrade of the current Class II Bike lane along Dyer Road and Grand Avenue in the City of Santa Ana. Such projects would reduce the number of daily vehicle trips by shifting vehicle trips to bicycle trips and/or by consolidating vehicle trips into carpools, vanpools, and/or *i*Shuttles.

Table 6.7 – City of Santa Ana Arterial Improvement

ID	ARTERIAL SEGEMENT	2020 CUMULATIVE WITH UPDATE		2020 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT		POST-2035 CUMULATIVE WITH UPDATE		POST-2035 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT		IMPROVEMENT STRATEGY	FAIR-SHARE
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS		
1326	Dyer Road between SR-55 SB to SR NB	0.92	**E**	0.79	C	0.91	**E**	0.79	C	Add 4th EBT	21.3%

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

6.3.4 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, the recommended improvements discussed below that bring the deficient intersections back to an acceptable LOS are provided to the City of Tustin for information and future planning purposes. Table 6.8 identifies improvements and fairshares if the agreement was not in-place. The following intersections would require improvements to achieve an acceptable LOS for information and planning purposes:

Table 6.8 identifies improvements for intersections within the City of Tustin.

- ***Intersection #36: Red Hill Avenue at El Camino Real***
  This intersection is impacted under the 2020 scenario. The southbound left turn movement is the critical movement. The proposed improvement reconfigures the southbound approach to one left turn lane, one shared through left, two through lanes, and no right turn lane would return this intersection to an acceptable LOS. These improvements are provided for information and future planning purposes.

- ***Intersection #93: Tustin Ranch Road and El Camino Real***
  This intersection has a cumulative deficiency under both the 2020 and Post-2035 Cumulative scenarios. Because of heavy traffic on the southbound through movement, the addition of a fourth southbound through lane would return this intersection to an acceptable LOS under all future scenarios. The recommended improvement appears to be physically feasible. These improvements are provided for information and future planning purposes.

- ***Intersection #111: Franklin Avenue and Walnut Avenue***
  This intersection has a cumulative deficiency under both the 2020 and Post-2035 scenarios. The critical movement at this intersection is the westbound through movement, with heavy volume and limited capacity. Improving capacity on this approach to add a third westbound through lane would bring the intersection back to an acceptable LOS under all forecast scenarios. These improvements are provided for information and future planning purposes.

- ***Intersection #445: Tustin Ranch Road and Warner Avenue North***
  This intersection is impacted under the Post-2035 scenario. Because of heavy traffic on the northbound right movement, restriping the northbound through to a shared thru-right lane would return this intersection to an acceptable LOS. These improvements are provided for information and future planning purposes.

- ***Intersection #749: Park Avenue at A Street***
  This intersection has a cumulative deficiency under the Post-2035 scenarios. The critical movements at this intersection are the southbound and westbound left movements. The additional 2nd southbound and westbound left turn lanes would return this intersection to an acceptable LOS. These improvements are provided for information and future planning purposes.

Table 6.8 – City of Tustin Intersection Improvements

ID	INTERSECTION	2020 CUMULATIVE WITH UPDATE				2020 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				POST-2035 CUMULATIVE WITH UPDATE				POST-2035 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				IMPROVEMENT STRATEGY	FAIR-SHARE
		AM		PM		AM		PM		AM		PM		AM		PM			
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS		
36	Red Hill Ave at El Camino Real	0.60	A	0.92	E	0.60	A	0.88	D	0.62	B	0.85	D	0.63	B	0.87	D	Reconfigure SB to 1.5,2.5,0	No Share
445	Tustin Ranch Rd at Warner Ave N	0.49	A	0.63	B	0.48	A	0.65	B	0.56	A	0.92	E	0.56	A	0.70	B	Improve NB to 0,2.5,1.5	15.7%
93	Tustin Ranch Rd at Bryan Ave	0.93	E	0.76	C	0.83	D	0.76	C	0.94	E	0.78	C	0.86	D	0.78	C	Add 4th SBT	9.9%
111	Franklin Ave at Walnut Ave	0.47	A	0.91	E	0.45	A	0.77	C	0.56	A	0.99	E	0.53	A	0.84	D	Add 3rd WBT	3.9%

ID	INTERSECTION	2020 CUMULATIVE WITH UPDATE				2020 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				POST-2035 CUMULATIVE WITH UPDATE				POST-2035 CUMULATIVE WITH UPDATE AFTER IMPROVEMENT				IMPROVEMENT STRATEGY	FAIR-SHARE
		AM		PM		AM		PM		AM		PM		AM		PM			
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS		
749	Park Ave at A St	Not analyzed in 2020 conditions								0.76	C	1.00	E	0.54	A	0.71	C	Add 2nd SBL and 2nd WBL	1.5%

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

6.4 Existing Conditions With Update Impacts

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 improvements are considered for information and future planning purposes. **Table 6.9** identifies mitigation for all deficient intersections under the 2015 Existing Conditions With Update scenario. Detailed ICU worksheets demonstrating the improvement and ICU worksheets are included in **Appendix J**.

Table 6.9 – 2015 Existing Conditions With Update Intersection Mitigation

ID	INTERSECTION	EXISTING CONDITIONS WITH UPDATE				EXISTING CONDTIONS WITH UPDATE AFTER IMPROVEMENT				IMPROVEMENT STRATEGY (EXISTING CONDITIONS WITH UPDATE)
		AM		PM		AM		PM		
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	
144	Jamboree Rd at I-405 SB Ramps	1.15	F	1.18	F	0.94	E	0.86	D	Add 4th NBT, Improve EB to 3,0,3
97	Von Karman Ave/ Tustin Ranch Rd at Barranca Pkwy	0.79	C	0.92	E	0.79	C	0.81	D	Add 3rd NBT and convert De Facto to Standard NBR
18	Newport Ave at Bryan Ave	0.63	B	0.91	E	0.67	B	0.71	C	Convert EBR to eastbound shared thru-right, convert WBR to shared thru-right

Although the impact identification under this scenario is a theoretical exercise, for the purposes of analysis, recommended improvements have been highlighted for future planning efforts. There are no fair-shares associated with these improvements nor are there any obligations to implement them. The Existing With Update scenario is a theoretical exercise to determine what would happen if all build-out trips are applied to the existing circulation system. Two of the three intersections that have an impact identified under the 2015 Existing Conditions With Update scenario are also deficient in 2020 or Post-2035, and the improvement recommended or elements of the improvement below, applies to future deficiencies.

- ***Intersection #144: Jamboree Road at I-405 SB Ramps***
  This Irvine intersection is impacted under the Existing With Update and the Post-2035 scenarios. The recommended improvements are different than recommended for Post-2035. Whereas the improvement needed for true build-out conditions (Post-2035 With Update) is an eastbound approach of 2.5, 0, 2.5, the Existing With Update theoretical scenario would require an eastbound approach of 3, 0, 3 plus an additional forth northbound through lane. The application of those improvements would improve the intersection to an acceptable LOS in 2015.

- ***Intersection #97: Von Karman Avenue/Tustin Ranch Road at Barranca Parkway***
  This shared location between the Cities of Tustin and Irvine is impacted under the Existing With Update and the Post-2035 scenarios. Recommended improvements are the same for Post-2035 scenarios as well Existing With Update. The application of those improvements would bring the intersection to an acceptable LOS.

- ***Intersection #18: Newport Avenue at Bryan Avenue***
  This Tustin intersection is deficient under the 2015 Existing With Update scenario. The recommended improvement involves a conversion of the eastbound right to a shared through right and a conversion of the westbound right to a shared through right. This improvement would return the intersection to an acceptable LOS.

6.5 Freeway Mainline and Ramp Improvement

The City of Irvine has an agreement with Caltrans 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.

6.5.1 Freeway Mainlines

As identified in **Chapters 4 and 5**, there are 36 freeway mainline deficiencies under the 2020 and Post-2035 future scenarios. For the IBC Post-2035 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 2020 six mainline segments are impacted.

- I-405 NB b/w Jamboree Road & MacArthur Blvd (AM)*
- I-405 NB b/w MacArthur Blvd and SR-55 (AM)*
- I-405 SB b/w SR-55 and MacArthur Blvd*
- SR-55 NB b/w Dyer Road and Edinger (AM)*
- SR-73 NB b/w Campus Drive and SR-55 (AM)
- I-405 SB b/w SR-55 and MacArthur Blvd (PM)

*Also an impact in Post-2035

Four of the six locations are also impacted in Post-2035. 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 project of I-405 between SR-73 and SR-22 that will involve additional mainline and HOV/HOT lanes. These improvements are reflected in the Post-2035 ITAM network but not the 2020 network. Since these programmed mainline improvements will affect traffic patterns considerably the two locations impacted in 2020 only are considered to be interim only, so no fair-share analysis of 2020 conditions has been performed. **Table 6.10**

identifies the five impacted freeway mainline segments under Post-2035 conditions, with fairshares identified for information only since the agreement is in-place.

Table 6.10 – Freeway Mainline Plan update Impacts and Fair-Share

LOCATION		DIRECTION	POST-2035 LANES		POST-2035 CUMULATIVE BASELINE						POST-2035 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-405	Jamboree Rd to MacArthur Blvd	NB	6	12,000	13,008	1.08	**F**	11,375	0.95	**E**	13,272	1.11	**F**	11,496	0.96	**E**	264	121	*	2.0%
I-405	MacArthur Blvd to SR-55	NB	6	12,000	12,300	1.02	**F**	12,063	1.01	**F**	12,517	1.04	**F**	12,315	1.03	**F**	217	252	*	2.0%
I-405	MacArthur Blvd to SR-55	SB	6	12,000	13,269	1.11	**F**	11,599	0.97	**E**	13,525	1.13	**F**	11,807	0.98	**E**	255	209	*	1.9%
SR-55	Dyer Rd to Edinger Ave	NB	5	10,000	8,609	0.86	D	9,553	0.96	**E**	8,866	0.89	D	9,778	0.98	**E**	256	225	*	2.3%
SR-55	McFadden St/Sycamore Ave to I-5	NB	5	10,000	9,489	0.95	**E**	10,241	1.02	**F**	9,648	0.96	**E**	10,442	1.04	**F**	160	201	*	1.9%

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

6.5.2 Freeway Ramps

As identified in **Chapters 4 and 5**, there are 20 freeway ramp which are deficient under the 2020 and Post-2035 future scenarios. For the IBC Post-2035 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 6.11** identifies the impacted freeway ramps and fairshares under the Post-2035 Cumulative With Update conditions for information and future planning purposes since the agreement between the City and Caltrans is in-place.

Table 6.11 – Freeway Ramp Plan update Impacts and Fair-Share

INTERCHANGE		RAMP TYPE	RAMP CAPACITY		POST-2035 CUMULATIVE BASELINE						POST-2035 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	2,350	1.04	**F**	1,306	0.58	C	2,531	1.12	**F**	1,491	0.66	C	181	185	*	7.2%
I-405	MacArthur Boulevard	NB Off	1	500	1,981	1.32	**F**	984	0.66	C	2,111	1.41	**F**	1,034	0.69	C	130	50	*	6.2%
I-405	Bristol Street	SB Loop On	1	1,000	1,069	0.71	C	1,577	1.05	**F**	1,080	0.72	D	1,613	1.08	**F**	11	36	*	2.2%
SR-55	Dyer Road	NB On Direct	1	1,000	660	0.44	B	1,690	1.13	**F**	730	0.49	B	1,790	1.19	**F**	70	100	*	5.6%
SR-55	Dyer Road	NB Off	1	500	1,746	1.16	**F**	419	0.28	A	1,794	1.20	**F**	438	0.29	A	48	19	*	2.7%
SR-73	Campus Drive	SB Off	2	500	2,063	0.92	**E**	1,092	0.49	B	2,109	0.94	**E**	1,160	0.52	C	46	68	*	2.2%

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

7.0 SPECIAL ISSUES

7.1 Signal Warrants

To determine whether installation of a traffic control signal is justified at any of the four studied unsignalized intersections within IBC study area, analyses were completed for existing counts, 2020 Cumulative model, and Post-2035 Cumulative model 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, 2020 With Update and Post-2035 With Update Conditions. Signal warrant analysis worksheets are included in **Appendix L**.

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
1001	Armstrong Ave at McGaw Ave	No Data	No	**YES**	No	Not Applicable (No established school crossing across Major Street)	**YES**	**YES**	No	Not Applicable (No Grade Crossing on Minor Street)
1002	Carlson Ave at Buena Vista		No	No	No		No	No	No	
1003	Gillette Ave at Alton Pkwy		No	**YES**	No		No	No	No	
1004	Teller Ave at Dupont Dr		No	No	No		No	No	No	

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

Table 7.2 – Signal Warrant Analysis Summary for 2020 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
1001	Armstrong Ave at McGaw Ave	No Data	No	**YES**	No	Not Applicable (No established school crossing across Major Street)	**YES**	No Data	No	Not Applicable (No Grade Crossing on Minor Street)
1002	Carlson Ave at Buena Vista		No	No	No		No		No	
1003	Gillette Ave at Alton Pkwy		No	**YES**	No		No		No	
1004	Teller Ave at Dupont Dr		No	No	No		No		No	

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

Table 7.3 – Signal Warrant Analysis Summary for Post-2035 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
1001	Armstrong Ave at McGaw Ave	No Data	No	**YES**	No	Not Applicable (No established school crossing across Major Street)	**YES**	No Data	No	Not Applicable (No Grade Crossing on Minor Street)
1002	Carlson Ave at Buena Vista		No	No	No		No		No	
1003	Gillette Ave at Alton Pkwy		No	**YES**	No		No		No	
1004	Teller Ave at Dupont Dr		No	**YES**	No		No		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, the following unsignalized intersection are warranted for a signal:

- McGaw Avenue at Armstrong Avenue: "Peak Hour Warrant" (Warrant 3), "Coordinated Signal System Warrant" (Warrant 6), and "Crash Experience" (Warrant 7) are satisfied
- Alton Parkway at Gillette Avenue: "Peak Hour Warrant" (Warrant 3) is satisfied

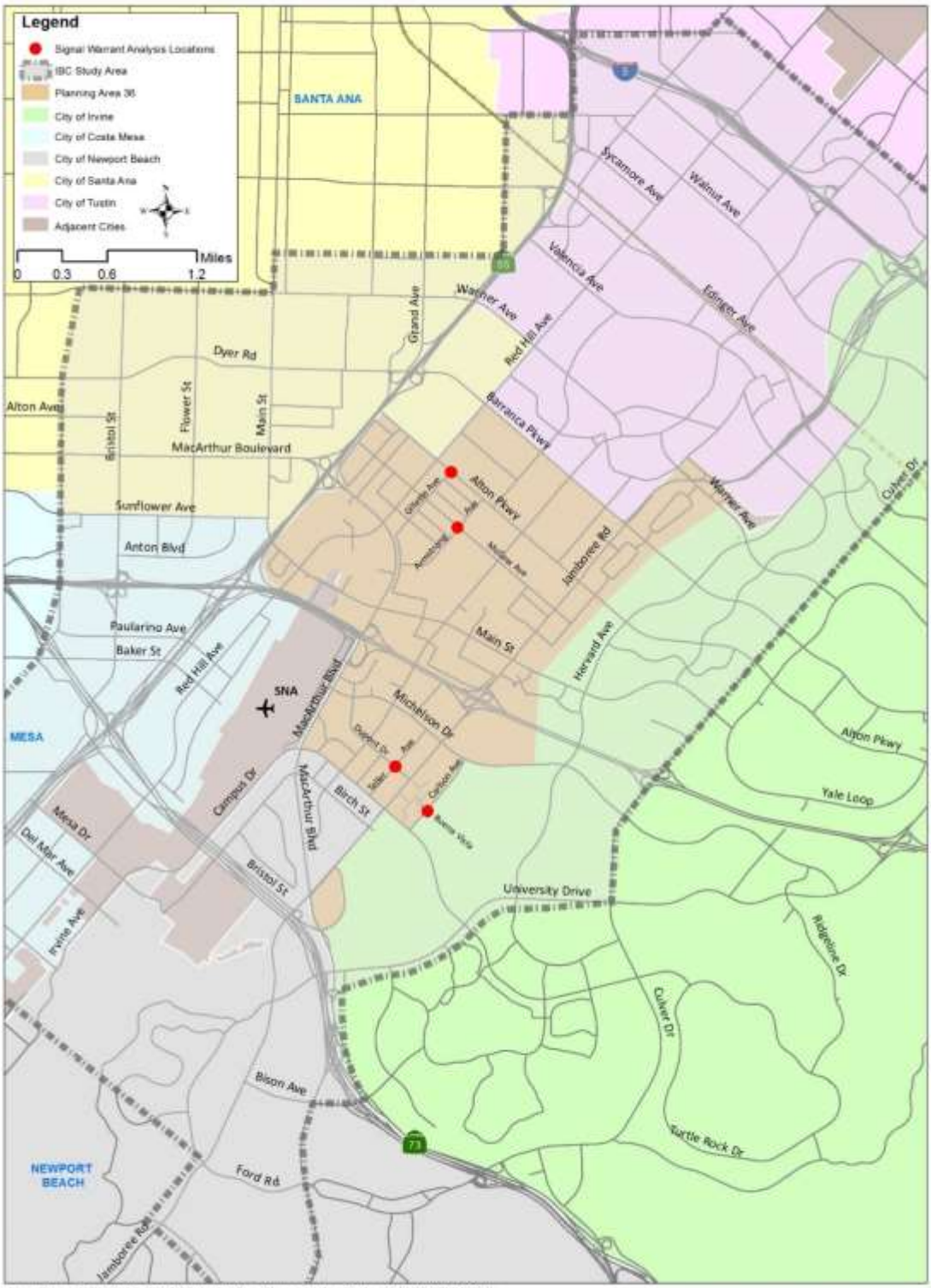
In 2020 With Update Conditions, the following two unsignalized intersections are warranted for a signal:

- McGaw Avenue at Armstrong Avenue: "Peak Hour Warrant" (Warrant 3) and "Coordinated Signal System Warrant" (Warrant 6) are projected to be satisfied
- Alton Parkway at Gillette Avenue: "Peak Hour Warrant" (Warrant 3) is projected to be satisfied

For Post-2035 With Update Conditions, the following three unsignalized intersections are warranted for a signal:

- McGaw Avenue at Armstrong Avenue: "Peak Hour Warrant" (Warrant 3) and "Coordinated Signal System Warrant" (Warrant 6) are projected to be satisfied
- Alton Parkway at Gillette Avenue: "Peak Hour Warrant" (Warrant 3) is projected to be satisfied
- Dupont Drive at Teller Avenue: "Peak Hour Warrant" (Warrant 3) is projected to be satisfied

Figure 7.1 – Signal Warrant Analysis Locations



8.0 SUMMARY OF IMPACTS AND COMPARISON TO 2010 VISION PLAN TRAFFIC STUDY

This 2015 Five-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 and Year 2015 Conditions that influence the traffic conditions and the number and location of impacts.

Table 8.1 shows the net overall result of fewer future impacts compared to the 2010 Vision Plan Study which the following tables illustrate. Since Existing With Update impacts are theoretical, these are not compared to the 2010 Vision Plan Traffic Study. The interim year forecast impacts reduce from 13 to 10. The Buildout year forecast impacts reduce from 41 to 22.

Table 8.1 - Comparison of Number of Impacted Locations between 2010 IBC Traffic Study and 2015 Update

	Interim Year		Buildout Year	
Facility Type	2010 Study	2015 Update	2010 Study	2015 Update
Arterial Segments	0	1	1	1
Intersections	4	1	15	10
Freeway Mainline	4	6	14	5
Freeway Ramps	5	2	11	6
Total	13	10	41	22

In the 2010 Traffic Study the Interim year was 2015 and Buildout year was Post-2030 whereas in the current update, the Interim year is 2020 and the Buildout year is Post-2035.

The 2010 traffic study was conducted during a time period when the City (and the region, in general) was experiencing a recession that affected many businesses and developments in Orange County and the IBC area in particular. Within the IBC there were a number of financial services and other business that suffered high levels of job losses or folded completely causing a steep rise in office and industrial building vacancies. Since 2010 there has been a slow but steady economic recovery and many of these vacancies have since been filled. Also since 2010 a large number of residential projects have been delivered within the IBC. Other significant new land use changes occurred within the Tustin Legacy development as well as land use changes outside the City of Irvine that may contribute to shifts in regional travel patterns.

Changes in roadway network also affect travel patterns. The major change in the roadway network affecting traffic patterns was the opening in January 2014 of 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. This new connection has influenced travel patterns and affected traffic on Von Karman Avenue as well as along parallel roadways of Red Hill Avenue and Jamboree Road. Other new connections outside the IBC that may have influenced IBC study area traffic patterns (albeit modestly) include the Alton Parkway Extension between Irvine Boulevard and Portola Parkway and the Lake Forest Extension from Bake Parkway to SR-133, which were completed in 2012 and 2013 respectively.

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. 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 2015 traffic compared to 2010. A comparison of historical ADT counts suggest daily traffic has increased roughly 7% within the City of Irvine since 2010. In terms of deficient intersections four locations are deficient in the current Update existing conditions whereas only one intersection was deficient in the 2010 Study's existing condition.

Changes in future assumptions contribute to differences in future traffic conditions. Current ITAM forecasts were based on OCTAM version 3.2 which uses OCP 2006 projections while the current ITAM is based on OCTAM 3.4 and uses OCP 2010 forecasts. There are significant differences in both network coding and 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. 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.

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, and Tustin, 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, and Tustin.

In the City of Santa Ana, daily arterial volume-to-capacity ratio (V/C) analysis is used to assess deficiencies in the arterial network. An increase of 0.01 or more of the daily V/C ratio constitutes an impact when compared with the Baseline conditions. There were no impacted arterial segments in the interim year in the 2010 Traffic Study within the City of Santa Ana while one arterial segment is impacted in the 2015 Update in the Interim year:

- Dyer Road between SR-55 NB ramps and SR-55 SB ramps

In the Buildout year in the 2010 Study one arterial location was impacted:

- MacArthur Boulevard between Main Street and SR-55 SB in the City of Santa Ana

This MacArthur Boulevard widening no longer appears to be needed as forecast volumes drop from 51,000 ADT to 39,000 ADT in the 2015 update. In the Buildout conditions of the 2015 update one arterial location was impacted (also impacted in 2020):

- Dyer Road between SR-55 NB ramps and SR-55 SB ramps

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. No expected shares for cost of improvements are identified outside the City of Irvine based on the agreements in-place with the affected adjacent cities.

Table 8.2 – Intersection/Arterial Segment Impacts/Cumulative Deficiencies

ID	INTERSECTION	JURISDICTION	IBC VISION WITH UPDATE (2020)		IBC VISION WITH UPDATE (POST-2035)		FAIR-SHARE		
			CUMULATIVE DEFICIENCY	IMPACT	CUMULATIVE DEFICIENCY	IMPACT	2020 WITH UPDATE	POST-2035 WITH UPDATE	EXPECTED SHARE (VISION PLAN)
85	MacArthur Blvd at Birch St	NB				X		5.6%	No Share
723	Main St at Segerstrom Ave	SA				X		40.3%	No Share
728	Halladay E at Alton Pkwy	SA				X		7.2%	No Share
36	Red Hill Ave at El Camino Real	Tus		X			10.7%		No Share
445	Tustin Ranch Rd at Warner Ave	Tus				X		15.7%	No Share
93	Tustin Ranch Rd at Bryan Ave	Tus	X		X		0.3%	9.9%	No Share
111	Franklin Ave at Walnut Ave	Tus	X		X		3.9%	3.5%	No Share
749	Park Ave at A St	Tus			X			1.5%	No Share
98	Von Karman Avenue at Alton Pkwy	Irv				X			100.0%
144	Jamboree Rd at I-405 SB Ramps	Irv				X			100.0%
145	Jamboree Rd at Michelson Dr	Irv				X			100.0%
188	Harvard Ave at Michelson Dr	Irv				X			100.0%
229	Culver Dr at Alton Pkwy	Irv				X			100.0%
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	Irv				X			100.0%
234	Culver Dr at Michelson Dr	Irv	X						No Share
135	Jamboree NB Ramps/Warner Ave	Irv			X				100.0%
134	Loop Rd/Park Ave at Warner Ave	Irv/Tus	X		X				100.0%
ID	ARTERIAL SEGMENT	JURISDICTION	IBC VISION WITH UPDATE(2020)		IBC VISION WITH UPDATE (POST-2035)		FAIR-SHARE		
			CUMULATIVE DEFICIENCY	IMPACT	CUMULATIVE DEFICIENCY	IMPACT	2020 WITH UPDATE	POST-2035 WITH UPDATE	EXPECTED SHARE (VISION PLAN)
1326	Dyer Road between SR-55 SB and SR-55 NB	SA		X		X	15.9%	21.3%	No Share

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

Table 8.3 compares the impacted intersections in both traffic studies for the Interim year. In the 2010 study four intersections were impacted whereas in the 2015 Update only one intersection is impacted.

Table 8.3 – Intersection Impacts - Interim Year (2010 Study vs. 2015 Update)

ID	LOCATION	JURISDICTION	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
145	Jamboree Rd at Michelson Dr	Irvine	PM	x		
234	Culver Drive at Michelson Drive	Irvine	PM			x*
62	Campus Dr at Bristol Street NB	Newport Beach	PM	x		
93	Tustin Ranch Rd at El Camino Real	Tustin	AM	x		
134	Loop Rd/Park Ave at Warner Ave	Irvine/Tustin	PM	x		x*
36	Red Hill Ave at El Camino Real	Tustin	PM			x
* Irvine cumulative deficiency			Sum	4	0	1
			Total Impacts (2010 Study)	4	Total Impacts (2015 Update)	1

Table 8.4 shows that while 15 intersections were impacted in Buildout in the 2010 Study only 10 are impacted in the 2015 Update build-out condition. The following three locations were impacted in both studies:

- # 85 - MacArthur Boulevard at Birch Street in Newport Beach
- #145 - Jamboree Road at Michelson Drive in Irvine
- #723 - Main Street at Segerstrom Avenue in Santa Ana

Two of the 2010 Study impacted locations #135 Jamboree Road at Barranca Parkway and #141 Jamboree Road at Main Street have programmed improvements that are expected to be completed by 2020. As noted previously these improvements have been incorporated into analysis which results in a satisfactory level of service and no impacts under all scenarios studied in the 2015 Update.

Table 8.4 – Intersection Impacts - Buildout Year (2010 Study vs. 2015 Update)

INT ID	LOCATION	JURISDICTION	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
12	SR-55 Frontage Road SB at Baker Street	Costa Mesa	AM	x		
13	SR-55 Frontage Road NB at Baker Street	Costa Mesa	AM	x		
62	Campus Drive at Bristol Street NB	Newport Beach	PM	x		
85	MacArthur Boulevard at Birch Street	Newport Beach	PM(both)		x	
543	Bristol at Segerstrom	Santa Ana	PM	x		
723	Main Street at Segerstrom Avenue	Santa Ana	PM(both)		x	
728	Halladay East at Alton Parkway	Santa Ana	AM&PM			x
730	Grand Avenue at Warner Avenue	Santa Ana	PM	x		
754	Red Hill Avenue at Carnegie Avenue	Tustin/Santa Ana	PM	x		
24	Newport Avenue at Walnut Avenue	Tustin	AM	x		
93	Tustin Ranch Road at El Camino Real	Tustin	AM	x		
445	Tustin Ranch Road at Warner Avenue N	Tustin	PM			x
97	Von Karman Ave/Tustin Ranch Rd at Barranca Pkwy	Irvine/Tustin	PM			x
98	Von Karman Avenue at Alton Parkway	Irvine	PM			x
134	Loop Road/Park Ave at Warner Avenue	Irvine/Tustin	PM	x		x**
135	Jamboree NB Ramps/Warner	Irvine	PM			x**
136	Jamboree Road at Barranca Parkway*	Irvine/Tustin	PM	x		
141	Jamboree Road at Main Street*	Irvine	PM	x		
144	Jamboree Road at I-405 SB Ramps	Irvine	AM			x
145	Jamboree Road at Michelson Drive	Irvine	PM(both)		x	
188	Harvard Avenue at Michelson Drive	Irvine	PM	x **		x

INT ID	LOCATION	JURISDICTION	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
229	Culver Drive at Alton Parkway	Irvine	PM			x
232	Culver Drive at I-405 NB Ramps	Irvine	PM	x		
			Sum	12	3	7
			Total Impacts (2010 Study)	15	Total Impacts (2015 Update)	10

* Improvement currently programmed
** Irvine cumulative deficiency

The completion of the Tustin Ranch Road extension seems to have had an effect on the location of impacted intersections. Compared to the 2010 Study, traffic is drawn away from Red Hill Avenue and Jamboree Road onto Von Karman Avenue/Tustin Ranch Road. A noticeable progression of impacted and deficient intersections can be seen in the PM peak period as traffic heads north from the heart of the IBC using Von Karman Avenue that becomes Tustin Ranch Road and eventually accesses the Jamboree Road Expressway at the Warner Avenue Ramp. The progression of impacted/deficient intersections is:

- Von Karman Avenue at Alton Parkway (Irvine)
- Von Karman Avenue at Barranca Parkway (Irvine)
- Tustin Ranch Road at Warner Avenue North (Tustin)
- Loop Road/Park Avenue at Warner Avenue (Irvine/Tustin-Deficiency only)
- Jamboree Northbound Ramps at Warner Avenue (Irvine-Deficiency only)

8.3 Freeway Mainline and Ramps

Table 8.5 compares the Interim Year impacted freeway mainline segments in both traffic studies. In the 2010 study four segments were impacted whereas in the 2015 Update six locations are impacted. Three of these locations all on I-405 between Jamboree Road and SR-55 are common in both studies.

Table 8.5 – Freeway Mainline Impacts - Interim Year (2010 Study vs. 2015 Update)

FREEWAY	SEGMENT	DIRECTION	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
I-405	Jamboree Road to MacArthur Boulevard	SB	PM	x		
I-405	Jamboree Road to MacArthur Boulevard	NB	AM		x	
I-405	MacArthur Boulevard to SR-55	NB	AM		x	
I-405	MacArthur Boulevard to SR-55	SB	PM		x	
I-5	North of SR-55	NB	AM			x
SR-55	Dyer Road to Edinger Avenue	NB	AM			x
SR-73	Campus Drive to SR-55	NB	AM			x
			Sum	1	3	3
			Total Impacts (2010 Study)	4	Total Impacts (2015 Update)	6

Table 8.6 compares the Buildout year impacted freeway mainline segments in both traffic studies. In the 2010 study fourteen segments were impacted whereas in the 2015 Update only five locations are impacted. Two of these locations are common in both studies.

Table 8.6 – Freeway Mainline Impacts - Buildout Year (2010 Study vs. 2015 Update)

FREEWAY	SEGMENT	DIRECTION	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
I-405	Jamboree Road to MacArthur Boulevard	SB	PM	x		
I-5	Jamboree Road to Tustin Ranch Road	NB	AM	x		
I-5	Jamboree Road to Tustin Ranch Road	SB	AM&PM	x		
I-5	Newport Avenue to SR-55	NB	AM	x		
I-5	North of SR-55	SB	AM	x		
I-5	Red Hill Avenue to Newport Avenue	NB	AM	x		
I-5	Tustin Ranch Road to Red Hill Avenue	NB	AM	x		
I-5	Tustin Ranch Road to Red Hill Avenue	SB	AM&PM	x		
SR-55	I-405 to MacArthur Boulevard	NB	AM&PM	x		
SR-55	I-405 to MacArthur Boulevard	SB	AM&PM	x		
SR-55	MacArthur Boulevard to Dyer Road	NB	PM	x		
SR-55	MacArthur Boulevard to Dyer Road	SB	AM	x		
I-405	Jamboree Road to MacArthur Boulevard	NB	AM		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 St/Sycamore Ave to I-5	NB	PM			x
			Sum	12	2	3
			Total Impacts (2010 Study)	14	Total Impacts (2015 Update)	5

Table 8.7 compares the Interim year impacted freeway ramps in both traffic studies. In the 2010 study five ramps were impacted whereas in the 2015 Update only two locations are impacted. Both the 2015 Update ramps are on I-405 and were also impacts in the 2010 study.

Table 8.7 – Freeway Ramp Impacts - Interim Year (2010 Study vs. 2015 Update)

FREEWAY	LOCATION	RAMP	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
I-405	Jamboree Road	NB Off	AM	x		
SR-55	Victoria Street	NB Direct On	AM	x		
SR-73	MacArthur Boulevard	NB On	AM	x		
I-405	Jamboree Road	SB Off	PM		x	
I-405	Bristol Street	SB Loop On	PM		x	
			Sum	3	2	0
			Total Impacts (2010 Study)	5	Total Impacts (2015 Update)	2

Table 8.8 compares the Buildout year impacted freeway ramps in both traffic studies. In the 2010 study eleven ramps were impacted whereas in the 2015 Update only six ramps are impacted. Three of the ramps impacted in the 2015 Update ramps are on I-405 and were also impacts in the 2010 study.

Table 8.8 – Freeway Ramp Impacts - Buildout Year (2010 Study vs. 2015 Update)

FREEWAY	LOCATION	RAMP	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
I-405	Culver Drive	NB Off	AM	X		
I-405	MacArthur Boulevard	NB On	PM	X		
I-405	Jamboree Road	SB Off	AM/PM	X		

FREEWAY	LOCATION	RAMP	PERIOD	2010 STUDY ONLY	2010 STUDY & 2015 UPDATE	2015 UPDATE ONLY
SR-55	Baker Street	NB Off	AM/PM	X		
SR-55	Baker Street	SB On	PM	X		
SR-55	MacArthur Boulevard	SB On Loop	PM	X		
SR-73	Campus Drive	NB On	PM	X		
SR-73	Jamboree Road	SB Off	AM/PM	X		
I-405	MacArthur Boulevard	NB Off	AM		X	
I-405	Bristol Street	SB Loop On	PM		X	
SR-55	Dyer Road	NB On Direct	PM		X	
I-405	Jamboree Road	NB Off	AM			X
SR-55	Dyer Road	NB Off	AM			X
SR-73	Campus Drive	SB Off	AM			X
			Sum	8	3	3
			Total Impacts (2010 Study)	11	Total Impacts (2015 Update)	6

9.0 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
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- Draft 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

10.0 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. If 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.

11.0 APPENDICES

11.1 Appendix A: Settlement Agreements with Adjacent Jurisdicitions

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 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: Signal Warrant Analysis