4.8 TRANSPORTATION/TRAFFIC

This section evaluates the potential for the General Aviation Improvement Program ("GAIP") to have adverse effects on transportation and traffic. Information in this section is based on the *General Aviation Improvement Program Traffic Impact Analysis* ("TIA") prepared for this Project by Austin Transportation Consulting ("ATC") (2018), which is provided as Appendix I to this Program EIR.

As discussed in Section 2.3.2, the thresholds pertaining to air traffic operations, design hazards due to incompatible uses, emergency access, and conflict with policies pertaining to alternative modes of transportation were focused out of this Program EIR at the time the Notice of Preparation was issued (refer to the Notice of Preparation ["NOP"]/Initial Study in Appendix A).

4.8.1 REGULATORY SETTING

State/Regional

Orange County Congestion Management Program

The Orange County Congestion Management Program ("CMP") was originally adopted in 1991 and updated most recently in November 2017. The goals of the Orange County CMP are to support regional mobility and air quality objectives by reducing traffic congestion, provide a mechanism for coordinating land use and development decisions that support the regional economy, and determine gas tax fund eligibility. To meet these goals, the CMP contains a number of policies designed to monitor and address system performance issues. The Orange County Transportation Authority ("OCTA") was designated as the Congestion Management Agency ("CMA") for the County. As a result, OCTA is responsible for the development, monitoring, and biennial updating of Orange County's CMP.

A key element of the CMP is the Land Use Impact Analysis Program, which requires local jurisdictions, in conjunction with approval of development projects, to analyze the potential impact of the approval on the CMP Highway System through the preparation of a CMP TIA. The CMP TIAs are designed to provide an improved basis for assessing the impacts of land use decisions on the regional transportation system, both within and outside the permitting jurisdiction, by providing a consistent format to identify impacts and mitigations and to evaluate mitigation costs. A CMP TIA has additional requirements and evaluations compared to a typical traffic study. A CMP TIA helps to determine appropriate mitigation measures and financial responsibilities for resolution of the ongoing CMP system impacts and for developing appropriate mitigations for future development projects.

General Plan Policies

The General Plans for the local jurisdictions contain policies on providing a balanced land use and transportation network. Many of these General Plans outline level of service ("LOS") standards. Where applicable, these standards have been incorporated into the thresholds of significance for determining if the GAIP would result in a significant traffic impact. As discussed in Section 4.8.2, Methodology, the thresholds used were developed in cooperation with the local jurisdictions surrounding the Airport (i.e., cities of Costa Mesa, Newport Beach, and Irvine).

However, the applicable General Plan would be the County of Orange General Plan since John Wayne Airport ("JWA" or "Airport") is an unincorporated area and the County is the lead agency for the GAIP. In addition, for informational disclosure purposes, the goals and policies applicable to JWA from the General Plans for the cities of Newport Beach, Irvine, and Costa Mesa have been addressed in Section 4.6, Land Use and Planning.

Senate Bill 743

The State Office of Planning and Research ("OPR") is currently developing revisions to the California Environmental Quality Act (CEQA) Guidelines under Senate Bill ("SB") 743. The revised CEQA Guidelines will establish new criteria for determining the significance of transportation impacts and will define alternative metrics to replace LOS. The legislation does not preclude the application of local general plan policies, zoning codes, conditions of approval, thresholds, or any other planning requirements related to level of service; rather, it identifies alternative performance metrics related to minimizing vehicle miles of travel ("VMT").

On August 6, 2014, OPR released the SB 743 guidelines in a document entitled *Updating Transportation Impacts Analysis in the CEQA Guidelines;* a revised proposal was released for public review on January 20, 2016. This was subsequently updated in November 2017. VMT is the proposed transportation metric for identifying impacts under CEQA, and the use of automobile delay described solely by LOS as the basis for impact significance will be replaced in Transit Priority Areas immediately once the guidelines go into effect. This is anticipated to occur in early 2018 after the draft guidelines are submitted to the Natural Resources Agency and go through the formal rulemaking process upon filing the guidelines with the Secretary of State. Outside of Transit Priority Areas, lead agencies may elect to be governed by the new guidelines once they go into effect or wait until they become mandatory.

As SB 743 guidelines have not yet been adopted, they are not required to be applied, and are not being applied, to the analysis for the GAIP. However, VMT data is provided for informational purposes.

4.8.2 METHODOLOGY

Traffic Study Area

The traffic study area for the GAIP was identified in cooperation with the local jurisdictions surrounding the Airport (i.e., cities of Costa Mesa, Newport Beach, and Irvine).[1] The analysis considers two study areas. The "primary study area" encompasses those intersections that are included in the peak hour impact analysis. The criteria for selecting this primary study area mirrors the significance criteria used for identifying Project impacts and includes those intersections that have a "measurable" change in traffic as defined by the performance criteria of the local jurisdiction (i.e., a peak hour ICU increase of more than 1.0 percent). The "secondary study area" is the area for which average daily traffic ("ADT") data is presented and includes the roadway system surrounding the Airport. Because of the specific intersection selection, the primary study area is more focused than the secondary study area.

[1] Section 7.0 (Table 7-2) provides a summary of the coordination efforts on the scope of the traffic analysis.

The primary study area encompasses intersections that are included in the peak-hour impact analysis. These intersections, which are shown in Exhibit 4.8-1, are listed below:

- State Route ("SR-") 55 Southbound ("SB") Ramps and Paularino Avenue
- SR-55 Northbound ("NB") Ramps and Paularino Avenue
- Red Hill Avenue and Paularino Avenue
- SR-55 SB Ramps and Baker Street
- SR-55 NB Ramps and Baker Street
- Red Hill Avenue and Baker Street

Baseline and Forecast Years

Pursuant to the requirements of the California Environmental Quality Act ("CEQA"), the analysis in this Program EIR evaluates the potential impacts associated with the "Existing Plus Project" scenario. For this hypothetical scenario, the GAIP traffic is added to the Baseline (2016) traffic.[2] The Baseline (2016) (i.e., Existing Conditions) Plus Project scenario does not account for future population growth projected in Orange County. For this scenario, the traffic forecasts that have been prepared for the 2026 GAIP general aviation activity is added to the Baseline (2016) traffic volumes. This is a hypothetical scenario because it assumes that the full build-out of the GAIP would be added to the Baseline traffic volumes all at once (i.e., now).

In addition, a future, long-range analysis is provided. This long-range analysis consists of the traffic associated with build-out of the GAIP (using the 2026 traffic volumes developed from the GAIP aviation forecasts) plus the cumulative growth from the surrounding cities. This long-range analysis (GAIP 2026 plus cumulative growth) is identified as the Future Scenario, which also serves as a cumulative analysis.[3] The development of the traffic forecasts is discussed below.

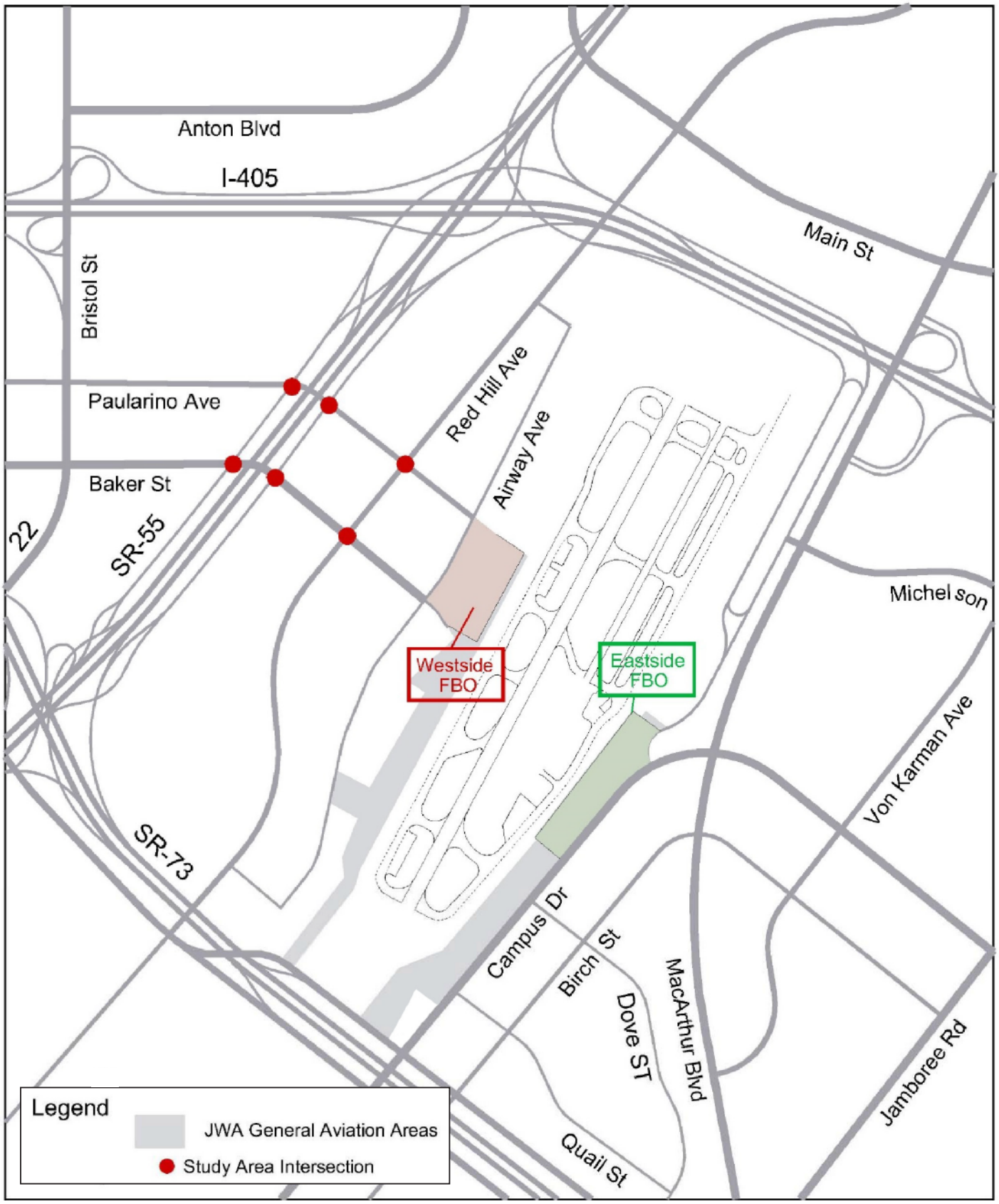
The traffic analysis evaluates potential construction-related (short-term) impacts and long-term operational impacts and considers the potential transportation impacts associated with the displacement of aircraft from JWA and the need for pilots to travel to other airports that offer general aviation in the region.

GAIP Traffic Forecasts

The traffic forecast data used to portray future cumulative conditions is taken from the traffic modeling forecasts prepared by the three cities in the project vicinity. They represent long range cumulative conditions rather than a specific year (for example the Irvine Transportation Analysis Model ["ITAM"] volumes are labeled as "post-2035" while the Costa Mesa forecasts are

[2] The 2016 baseline was identified in the Notice of Preparation (provided in Appendix A of this Program EIR) because it was the most recent year with complete information. Pursuant to Section 15125 of the CEQA Guidelines: "An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or . . . at the time environmental analysis is commenced . . . This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant."

[3] The TIA, provided in Appendix G, also provides an evaluation of 2021 traffic conditions, which represents an interim year. However, the 2026 timeframe is used in the Program EIR because it represents the GAIP horizon year and would have the greater project traffic impacts.



Source: Austin Transportation Consulting 2018

GAIP Traffic Study Intersection Locations

Exhibit 4.8-1

John Wayne Airport General Aviation Improvement Program

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referred to as "2035"). Hence they include cumulative projects plus other anticipated growth in each city, and also growth in the region through traffic on those roadways that serve regional and local traffic. On the east side of the Airport, the primary source of traffic forecast data is the, ITAM, which includes growth for JWA that reflects the 2014 Settlement Agreement (the Settlement Agreement established a ceiling on commercial operations at JWA). While the Costa Mesa traffic forecasts have yet to be updated, the future increase in traffic due to the Settlement Agreement does not affect any of the Costa Mesa roadways analyzed here.

The GAIP features that relate to potential traffic impacts are the location and function of general aviation facilities and aircraft operations. Of importance in this regard are the fixed-base operators ("FBOs") which account for a large proportion of such activities. For the Proposed Project and Alternative 1, a key feature of importance to the traffic analysis is the location of a full service FBO on the west side of the Airport. The traffic impact analysis uses this activity information to estimate the distribution of traffic on the surrounding roadway system and identify the potential impacts of that traffic. The traffic forecasts, which estimate the amount of traffic generated by each of the GAIP scenarios, use the constrained forecasts of general aviation operations at the Airport (see Section 3.5 for the unconstrained Aviation Forecast and Sections 3.6.2 and 3.6.3 for the constrained forecasts for the Proposed Project and Alternative 1, respectively). Forecasts are provided for average daily weekday vehicle trips and peak-hour trips (AM and PM).

The roadway network on the east side of the Airport is minimally affected by the GAIP. Currently, the two full service FBOs are based on the east side of the Airport; however, one of the FBOs has hangars located on the west side of the Airport. Having the function of a full service FBO consolidated on the west side would allocate more trips on the west side and would reduce the number of trips on the east side of the Airport when compared to the Baseline (2016). Alternative 1 does maintain two full service FBOs on the east side and provides for an additional third full service FBO on the west side. However, the addition of the third full service FBO does not result in a substantial increase in the number of trips because the total number of aircraft parking spaces does not substantially increase. This is discussed under the impact analysis provided in Section 4.8.6.

Airport Trip Generation

The variable used in the general aviation trip rates is aircraft operations (i.e., take-offs plus landings of general aviation aircraft). This is a representative measure of general aviation activity and, thereby, of general aviation-related trips to and from the Airport. The data are separated into four types of general aviation aircraft (piston aircraft, turbine aircraft, jets, and helicopters). The forecasts indicate a change in the aircraft mix over time, with fewer piston aircraft and more jet aircraft compared to existing general aviation operations.[4] This in turn means more of the larger general aviation aircraft, which, due to their higher passenger occupancy, have a greater number of ground transportation trips per aircraft.[5]To account for this change over time, trip generation rates have been developed for each of the four types of general aviation aircraft at JWA. The trip rates for each aircraft type remain constant for the forecast

[4] Historical trends at the Airport are discussed in Section 2.4 of this Program EIR.

[5] The GAIP will not improve or modify the JWA commercial flight terminal and will not change the commercial carrier operations. As discussed in Section 4.0, 1, Cumulative Project, the number of commercial carrier operations and annual passengers are controlled by the 2014 Settlement Agreement Amendment.

years, and the average rate changes for the forecast years in response to the change in aircraft mix. It should be noted that the existing and future aircraft operations are also separated into those by "based aircraft" and those by "transient aircraft." The traffic generation rates by aircraft type are summarized in Table 4.8-1 below.

TABLE 4.8-1
GENERAL AVIATION TRIP GENERATION RATES BY AIRCRAFT TYPE

Trip Rate	Piston	Turbine	Jet	Helicopter	Average[a]
Trip Ends/Annual Operations (thousands)	5.83	13.57	19.43	9.74	8.55

Trip Ends: Arriving plus departing ground transportation vehicle trips

[a] Average trip rate for 2016 aircraft mix (varies for forecast years due to different aircraft mix)

Source: ATC 2018

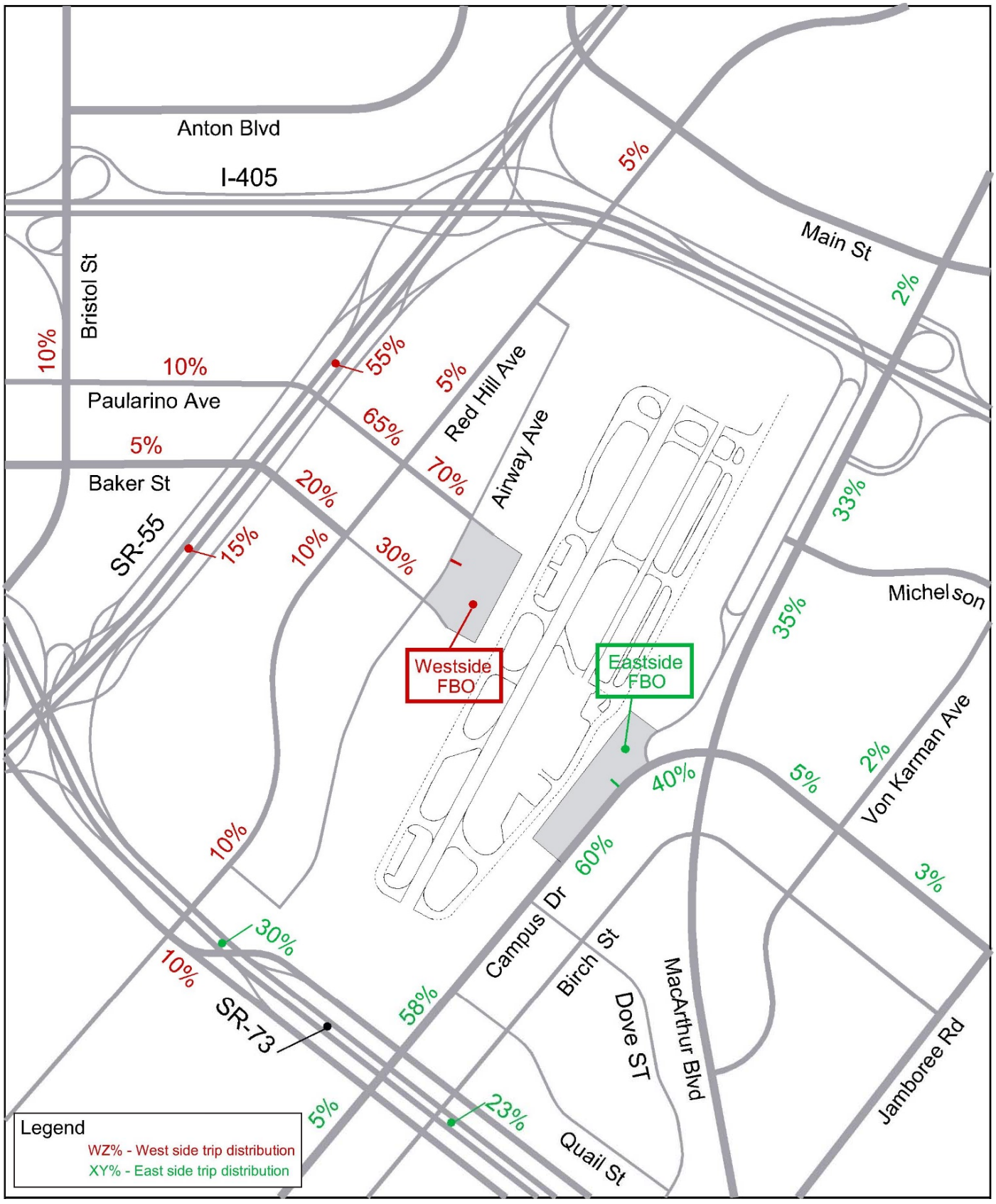
For the traffic impact analysis, the peak-hour trip generation (AM and PM) is used to identify potential traffic impacts. This is consistent with the traffic impact analysis methodology used by the local jurisdictions adjacent to the Airport and focuses on intersection performance during the two peak hours.

Based on the geographic distribution of aircraft owners/pilots for JWA general aviation aircraft, the average distance is 15.25 miles from JWA. This applies to the based aircraft, which account for around 50 percent of the total general aviation operations, with the remainder being from transient aircraft. Local destinations for passengers on transient aircraft are primarily major activity centers, and an average distance of 10.0 miles is representative for these uses. Therefore, the average trip distance for general aviation ground transportation trips used for this analysis is 12.6 miles for both LOS and VMT calculations.

Trip Distribution

The geographic distribution of general aviation-related traffic would be the same for the Proposed Project and Alternative 1 and is illustrated in Exhibit 4.8-2. The trip distribution has been estimated here by considering the two components of general aviation operations—those aircraft based at JWA and transient aircraft based elsewhere and flying into JWA.

For the based aircraft, the distribution of ground transportation trips is related to the locations of registered pilots and/or aircraft owners. This locational data, taken from the *General Aviation Forecasting and Analysis Technical Report* (AECOM 2018), was used to estimate a representative geographic distribution for this traffic component. For transient aircraft, ground transportation trips are assumed to be generally related to activity areas, such as the Irvine Business Complex, Irvine Spectrum, the Anaheim resort area, etc. The geographic distribution of trips for this component was estimated by considering the demographics of the surrounding area and Orange County in particular. For both general aviation trip components, freeway accessibility is a key consideration in determining the local streets used to access the general aviation facilities on each side of the Airport.



Source: Austin Transportation Consulting 2018

GAIP Trip Distribution

Exhibit 4.8-2

John Wayne Airport General Aviation Improvement Program

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Construction Traffic Trip Generation Rates

Construction traffic trip generation rates were based on State-recognized California Emissions Estimation Model ("CalEEMod") that is used throughout the State for estimating emissions produced by land use projects. The model estimates vehicle trips related to construction and also to the post-construction land uses in the project when those uses are operational. For the GAIP, the rates for office/industrial uses are considered the most applicable and are shown in Table 4.8-2. While the corresponding peak-hour trip rates are not given in CalEEMod, a peak-hour derivation can be made by considering the daily pattern of construction trips. For example, those made by construction workers peak between 6:00 to 8:00 AM and 3:30 to 4:30 PM; and vendor trips are relatively constant from 8:00 AM to 4:00 PM. Table 4.8-3 summarizes the representative peak-hour/ADT factors used in the derivation of the peak-hour trip.

TABLE 4.8-2
CONSTRUCTION TRIP GENERATION RATES

Trip Type	Rate Metric	Rate
Worker Trips	Daily trips per 1,000 sq ft of building area	0.4200
Vendor Trips	Daily trips per 1,000 sq ft of building area	0.1639
Source: ATC 2018, (taken from CalEEMod User's Guide Appendix A, Calculation Details) sq ft = square feet		

TABLE 4.8-3
CONSTRUCTION TRIP PEAK HOUR FACTORS

Percent of ADT - AM Peak Hour			Percent of ADT - PM Peak Hour		
Workers	**Vendors**	**Total Trips**	**Workers**	**Vendors**	**Total Trips**
0.2000	0.1250	0.1789	0.1000	0.1250	0.1070
ADT: Average Daily Traffic Source: ATC 2018					

It should be noted that these factors apply to the peak hours of the adjacent streets and differ from the peak hours of the construction trips (which for workers tend to be earlier than those of the adjacent streets). The application of these factors to the daily rates gives the corresponding peak-hour trip rates for construction traffic.

Performance Criteria

For this analysis, peak-hour intersection performance measures are used for evaluating traffic volumes at the primary study area intersections. The peak-hour performance measure used in the analysis is "intersection capacity utilization" ("ICU"). This determines intersection capacity based on the lane geometry of the intersection and then estimates the amount of that capacity that is "utilized" by the specific peak-hour turn movement volumes. A level of service ("LOS")

value is then determined from that ICU value. The LOS values are A through F (best to worst), with LOS D being the maximum acceptable value adopted by the local jurisdictions in the area. Table 4.8-4 provides the LOS ranges for the ICU volume/capacity analysis.

TABLE 4.8-4
LEVEL OF SERVICE AND INTERSECTION CAPACITY UTILIZATION CRITERIA

Level of Service	Description	ICU Volume / Capacity
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	<0.60
B	Operations with low delay occurring with good progression and/or short cycle lengths.	0.61–0.70
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	0.71–0.80
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	0.81–0.90
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	0.91–1.00
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	>1.00

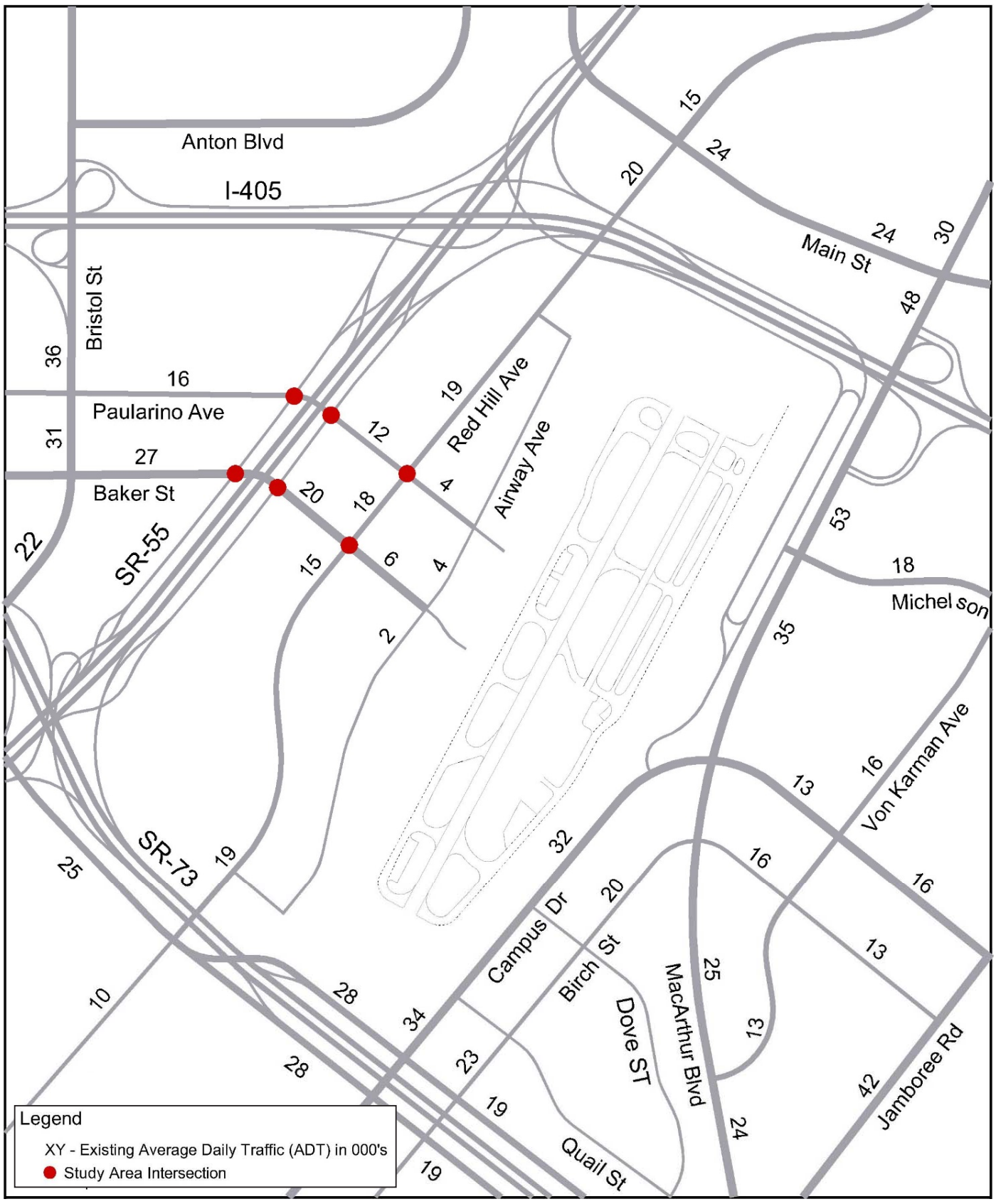
V/C = volume to capacity
Source: ATC 2018

4.8.3 EXISTING CONDITIONS

Existing Intersection Operations

Existing ADT traffic volumes in the vicinity of the Airport are shown in Exhibit 4.8-3. These volumes include data collected by the three cities in this area (Costa Mesa, Irvine, and Newport Beach) and the traffic flow map prepared by OCTA.[6] As noted under Performance Criteria above, for this analysis peak-hour intersection performance measures are used for evaluating traffic impacts. The intersections that would have a measurable increase in peak-hour traffic as a result of the GAIP consist of six intersections in Costa Mesa on the west side of the Airport. The City of Costa Mesa uses LOS D (ICU to not exceed 0.90) as the acceptable performance standard. As shown in Table 4.8-5, in the baseline condition all of the study intersections are operating at an acceptable LOS C or better based on the ICU methodology. To provide context for the future scenario, Table 4.8-5 also provides the projected ICU and LOS values for the future No Project Alternative (without the GAIP but with the cumulative growth) for the study area intersections. For both of these scenarios, all study area intersections are projected to operate at an acceptable LOS.

[6] The ADT volumes provide context and are used in the air quality analysis.



Source: Austin Transportation Consulting 2018

Existing Average Daily Trip Volumes

Exhibit 4.8-3

John Wayne Airport General Aviation Improvement Program

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TABLE 4.8-5
BASELINE (2016) AND NO PROJECT FUTURE ICU AND LOS
AT STUDY AREA INTERSECTIONS

Location	Scenario[a]	AM Peak Hour		PM Peak Hour	
		ICU	LOS	ICU	LOS
SR-55 SB Ramps and Paularino Avenue	Existing	0.71	C	0.64	B
	Future	0.78	C	0.77	C
SR-55 NB Ramps and Paularino Avenue	Existing	0.68	B	0.71	C
	Future	0.74	C	0.83	D
Red Hill and Paularino Avenue	Existing	0.43	A	0.56	A
	Future	0.56	A	0.68	B
SR-55 SB Ramps and Baker Street	Existing	0.66	B	0.69	B
	Future	0.73	C	0.79	C
SR-55 NB Ramps and Baker Street	Existing	0.67	B	0.75	C
	Future	0.83	D	0.87	D
Red Hill and Baker Street	Existing	0.34	A	0.63	B
	Future	0.43	A	0.72	C

ICU: Intersection Capacity Utilization; LOS: Level of Service; NB: Northbound; SB: Southbound; SR: State Route

[a] "Future" is the GAIP No Project 2026 traffic volumes with cumulative growth.

Source: ATC 2018

Mass Transit and Non-Motorized Travel

OCTA has four bus routes that are accessible to the east side and/or west side general aviation areas. Routes 76 and 212 serve the JWA commercial terminal, Route 71 provides service along Red Hill Avenue, and Route 178 provides service along Birch Street. No designated bike routes are located immediately adjacent to the Airport.

4.8.4 THRESHOLDS OF SIGNIFICANCE

In accordance with the County's Environmental Analysis Checklist and Appendix G of the CEQA Guidelines, the Project would result in a significant transportation and traffic impact if the following thresholds were exceeded:

Threshold 4.8-1 Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Threshold 4.8-2 Would the project conflict with an applicable congestion management program, including, but not limited to level of service standard and travel

demand measures, or other standards established by the county congestion management agency for designated roads or highways?

4.8.5 REGULATORY REQUIREMENTS AND STANDARD CONDITIONS OF APPROVAL

Implementation of the GAIP assumes compliance with existing regulations and the County's Standard Conditions of Approval related to transportation and traffic. No regulatory requirement is specific to transportation and traffic. However, with the proposed improvements to the Campus Drive and Quail Street intersection (see Section 3.6 Project Description), the following County of Orange Standard Conditions of Approval ("SC") would apply:

Standard Conditions

SC TRA-1: Prior to the issuance of any grading permits, the applicant shall provide adequate sight distance per Standard Plan 1117 at all street intersections, in a manner meeting the approval of the Manager, Building and Safety OC Infrastructure/Traffic Engineering Permit Services. The applicant shall make all necessary revisions to the plan to meet the sight distance requirement such as removing slopes or other encroachments from the limited use area in a manner meeting the approval of the Manager, Building and Safety Permit Services. (County Standard Condition of Approval T10)

4.8.6 IMPACT ANALYSIS

Threshold 4.8-1

- ***Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?***

Proposed Project

Future-Term Operations

Trip Generation and Distribution

The Proposed Project proposes a Full Service West FBO and a Full Service East FBO. The total aircraft storage capacity under the Proposed Project would be reduced by approximately 27 percent compared to the number of general aviation aircraft currently based at the Airport. As a result, the number of overall trips generated from the Proposed Project would decrease compared to baseline (2016) conditions. The reduction in overall trips related to general aviation is shown in Table 4.8-6, which provides a comparison of the No Project and the Proposed Project trip generation for both the baseline condition (2016) and future (2026) time

frame. The reduction in trips is not proportional to the reduction in the number of annual operations (e.g., from 192,800 in the 2016 baseline to 167,900 in 2026) because the lower number of aircraft operations in the future is offset by the higher average trip generation rates caused by the greater proportion of larger aircraft. The average trip generation rate difference due to this change in aircraft mix can be seen in Table 4.8-7.

TABLE 4.8-6
GENERAL AVIATION OPERATIONS AND TRIP GENERATION FOR THE PROPOSED PROJECT AND NO PROJECT ALTERNATIVE 2016 AND 2026

Alternative	Measure	2016	2026
No-Project	*Annual Operations*	*192,800*	*201,000*
	AM Peak-Hour Trip Ends	125	137
	PM Peak-Hour Trip Ends	120	130
	Daily Trips	1,648	1,796
Proposed Project	*Annual Operations*	*192,800*	*167,900*
	AM Peak-Hour Trip Ends	125	125
	PM Peak-Hour Trip Ends	120	119
	Daily Trips	1,648	1,638

Annual Operations - Total annual general aviation aircraft take-offs plus landings

AM Trip Ends - Average AM peak hour weekday general aviation vehicle trips to and from JWA

PM Trip Ends – Average PM peak hour weekday general aviation vehicle trips to and from JWA

ADT Trip Ends - Average weekday general aviation vehicle trips to and from JWA

Source: ATC 2018

TABLE 4.8-7
GENERAL AVIATION TRIP GENERATION RATE COMPARISON BASELINE VERSUS 2026—PROPOSED PROJECT

Project	Annual Aircraft Operations						Average ADT Rate[a] (in 1,000)
		Piston	Turbine	Jet	Helicopter	TOTAL	
Baseline (2016)	Total Operations	147,300	9,800	31,800	3,900	192,800	8.550
	Percent of Operations	*76.4%*	*5.1%*	*16.5%*	*2.0%*	*100.0%*	
Proposed Project	Total Operations	111,000	11,700	40,400	4,800	167,900	9.756
	Percent of Operations	*66.1%*	*7.0%*	*24.1%*	*2.9%*	*100.0%*	

[a] Average Daily Trip Rate for daily trip ends per annual operations in thousands based on mix of aircraft types.

Source: ATC 2018

Although the daily trip generation for the Proposed Project is actually less than for the No Project (1,638 versus 1,796), there is the potential for traffic impacts. The Proposed Project would redistribute some trips to the west side of the Airport because it would consolidate the activities of one of the full service FBOs, which are currently split between the east and west sides of the Airport. (As previously mentioned, currently one of the full service FBOs on the east side of the Airport has hangar space on the west side of the Airport). Trips associated with general aviation would be reduced on the east side compared to existing conditions and the No Project Alternative. Table 4.8-8 summarizes these differences for both the peak hours and the daily trips. This impact analysis provides a comparison of the Baseline (2016) (i.e., Existing Conditions) to the Baseline (2016) (i.e., existing traffic plus the Proposed Project traffic for 2026). Additionally, it compares the Proposed Project traffic volumes to the GAIP No Project conditions in a future setting (i.e., build-out of the GAIP and cumulative growth).

TABLE 4.8-8
GENERAL AVIATION TRAFFIC IMPACT VOLUMES
PROPOSED PROJECT AND NO PROJECT

			AM PEAK HOUR			PM PEAK HOUR			
	Comparison[a]	**Westside/ Eastside**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**ADT**
Proposed Project	Existing Plus Proposed Project forecasts compared to Baseline (2016) Difference	West Side Difference	35	22	57	25	29	54	738
		East Side Difference	-35	-22	-57	-25	-30	-55	-748
		Total Difference	0	0	0	0	-1	-1	-10
	Future Proposed Project forecast compared to 2026 No-Project Difference	West Side Difference	35	21	56	25	29	54	730
		East Side Difference	-42	-26	-68	-30	-35	-65	-888
		Total Difference	-7	-5	-12	-5	-6	-11	-158

ADT: Average Daily Trips

[a] Reference to "Future" scenarios includes traffic volumes with projected cumulative growth.

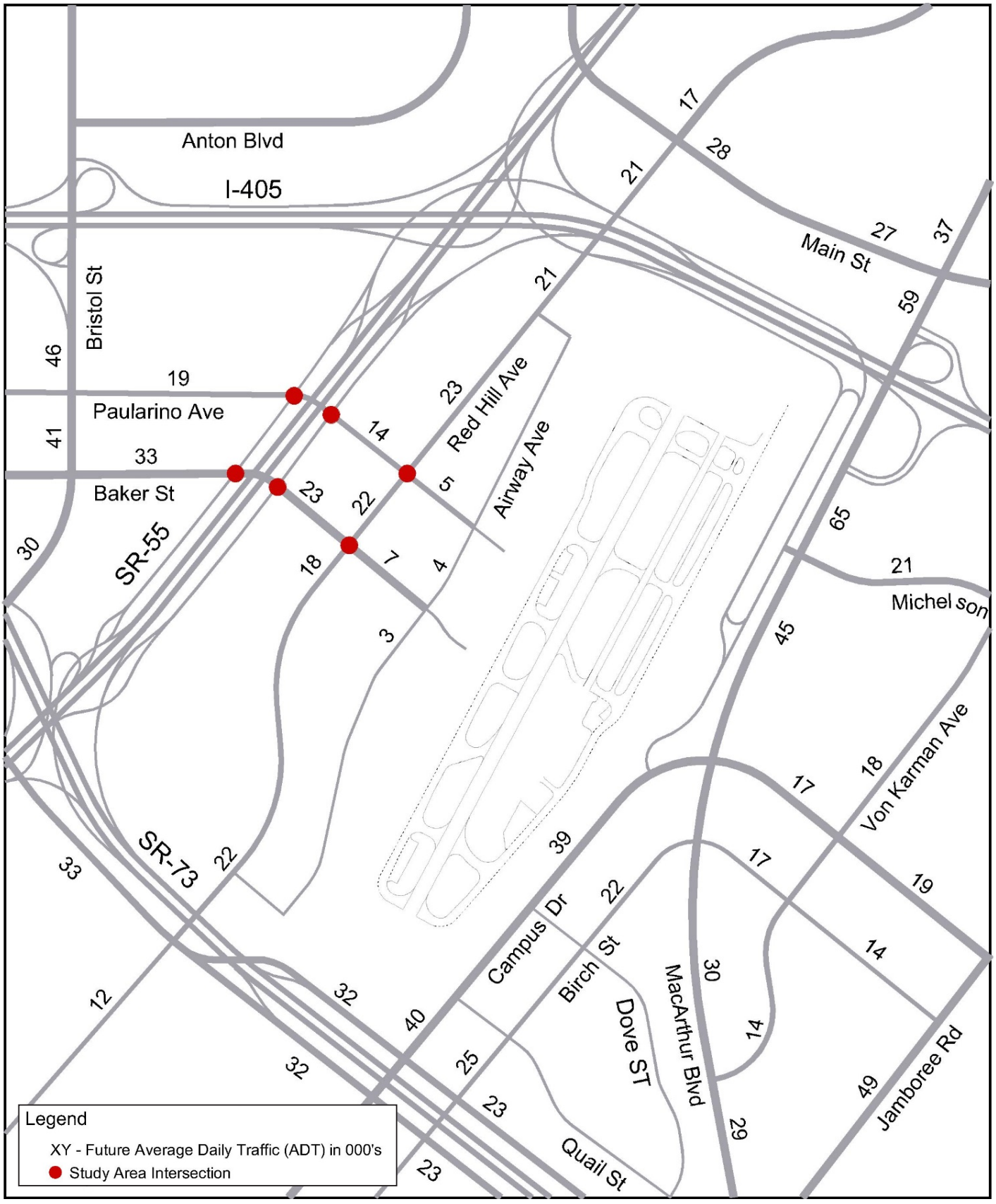
Source: ATC 2018

Exhibit 4.8-4 depicts the projected future (long-range) ADT in the vicinity of the Airport.[7] As shown in Table 4.8-8, the traffic the Proposed Project would add to the west side is a maximum of 738 ADT, with a comparable reduction in traffic on the east side. This information is graphically shown in Exhibit 4.8-5. During the peak hours, the Proposed Project would result in a maximum increase of 57 trips. The AM and PM peak-hour distributions are shown in Exhibit 4.8-6.

Peak-Hour Intersection Analysis

The Proposed Project ICU values and the corresponding LOS are provided in Table 4.8-9. The corresponding No Project values are also provided for comparison purposes. As shown, all the

[7] As indicated under Methodology, the long-range cumulative condition or "future volumes" reflect the build-out conditions for each of the local jurisdictions. The ITAM volumes are labeled as post-2035, while the City of Costa Mesa forecasts are referred to as 2035.



Source: Austin Transportation Consulting 2018

Future Average Daily Trip Volumes

Exhibit 4.8-4

John Wayne Airport General Aviation Improvement Program

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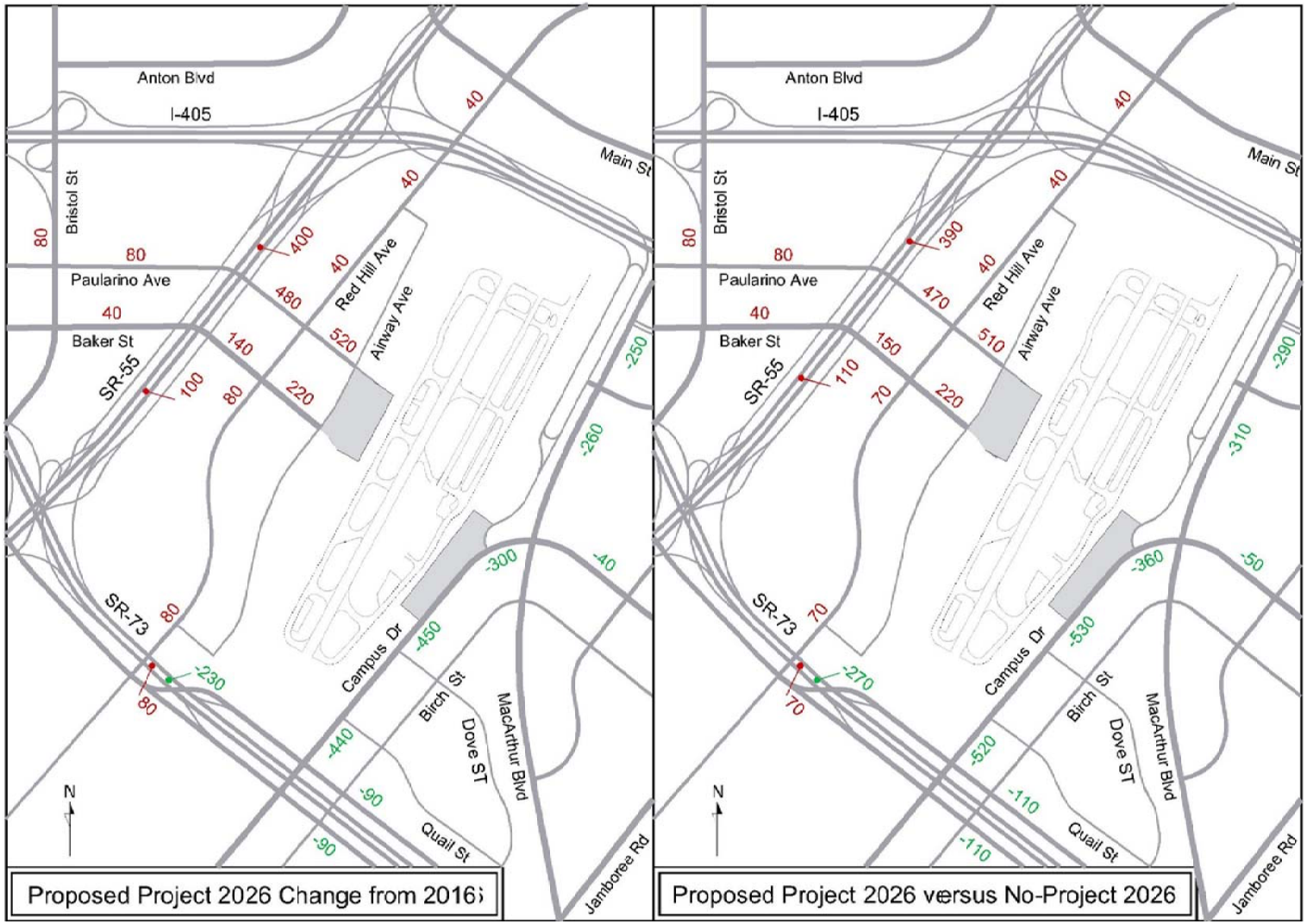

Legend

XY - Average Daily Traffic (ADT) - Positive difference

WZ - Average Daily Traffic (ADT) - Negative Difference

GA FBO's

Note: Project volume differences less than 30 not shown

Source: Austin Transportation Consulting 2018

Proposed Project Average Daily Trip Volumes

Exhibit 4.8-5

John Wayne Airport General Aviation Improvement Program

JOHN WAYNE AIRPORT ORANGE COUNTY

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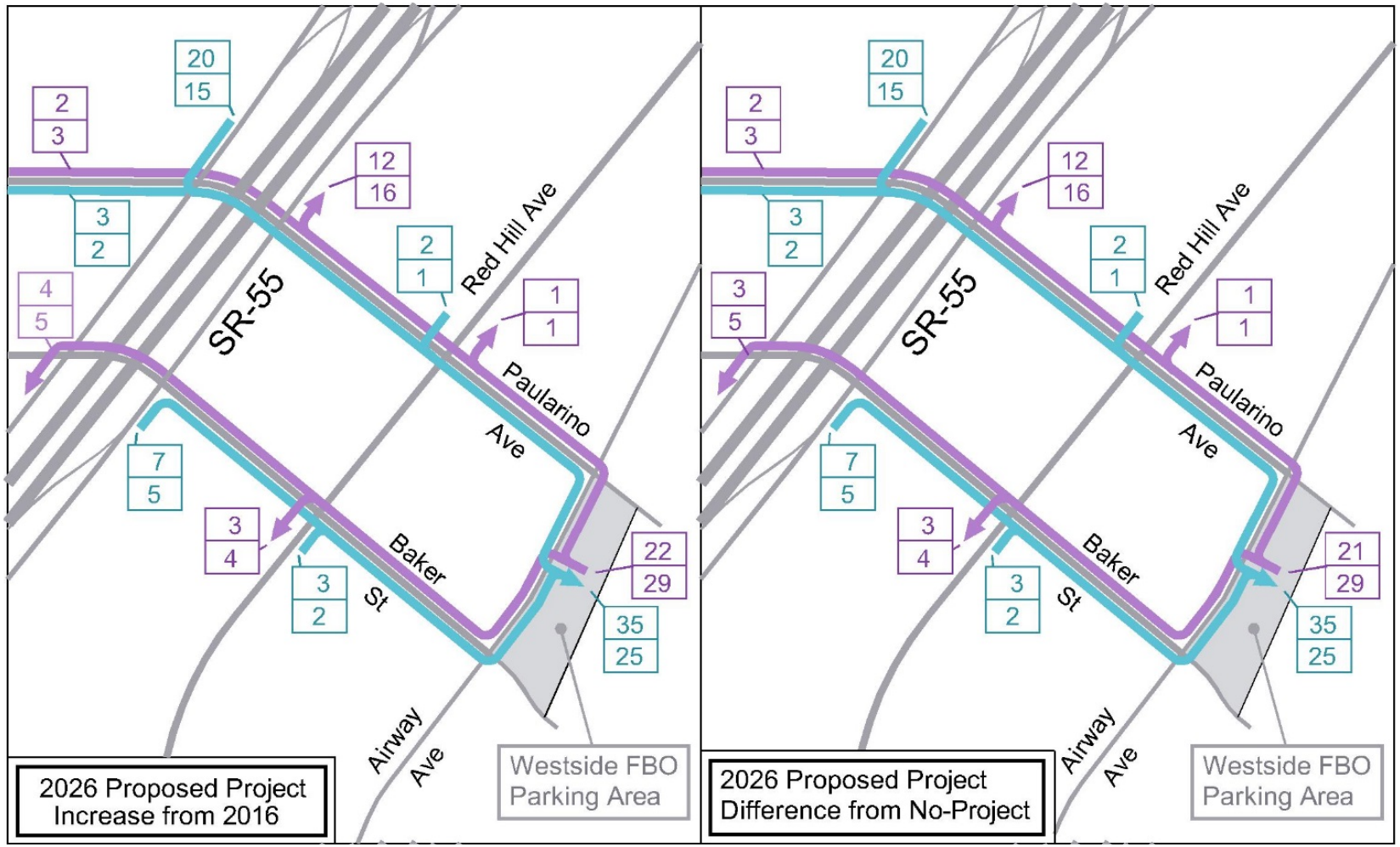

Legend

XY / WZ	AM Inbound / PM Inbound	XY / WZ	AM Outbound / PM Outbound

Source: Austin Transportation Consulting 2018

Proposed Project Peak Hour Trip Volumes

Exhibit 4.8-6

John Wayne Airport General Aviation Improvement Program

JOHN WAYNE AIRPORT ORANGE COUNTY

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study intersections currently operate at LOS C or better. In the future year, all intersections would be operating at a satisfactory LOS D or better. The highest contribution by the Proposed Project to any ICU value is 0.01; however, the Proposed Project does not result in an exceedance of the LOS D performance criteria to be exceeded (ICU does not exceed 0.90). Therefore, the Proposed Project does not have any significant impacts at the study intersections.

TABLE 4.8-9
PEAK-HOUR ICU AND LOS SUMMARY

Location	Scenario[a]	AM Peak Hour		PM Peak Hour	
		ICU	LOS	ICU	LOS
SR-55 SB Ramps and Paularino Avenue	Existing (Baseline 2016)	0.71	C	0.64	B
	Existing Plus Proposed Project	0.72	C	0.64	B
	Future No Project	0.78	C	0.77	C
	Future Plus Proposed Project	0.79	C	0.77	C
SR-55 NB Ramps and Paularino Avenue	Existing (Baseline 2016)	0.68	B	0.71	C
	Existing Plus Proposed Project	0.68	B	0.71	C
	Future No Project	0.74	C	0.83	D
	Future Plus Proposed Project	0.75	C	0.84	D
Red Hill Avenue and Paularino Avenue	Existing (Baseline 2016)	0.43	A	0.56	A
	Existing Plus Proposed Project	0.44	A	0.57	A
	Future No Project	0.56	A	0.68	B
	Future Plus Proposed Project	0.57	A	0.69	B
SR-55 SB Ramps and Baker Street	Existing (Baseline 2016)	0.66	B	0.69	B
	Existing Plus Proposed Project	0.66	B	0.70	B
	Future No Project	0.73	C	0.79	C
	Future Plus Proposed Project	0.73	C	0.79	C
SR-55 NB Ramps and Baker Street	Existing (Baseline 2016)	0.67	B	0.75	C
	Existing Plus Proposed Project	0.67	B	0.75	C
	Future No Project	0.83	D	0.87	D
	Future Plus Proposed Project	0.83	D	0.87	D
Red Hill Avenue and Baker Street	Existing (Baseline 2016)	0.34	A	0.63	B
	Existing Plus Proposed Project	0.35	A	0.63	B
	Future No Project	0.43	A	0.72	C
	Future Plus Proposed Project	0.43	A	0.72	C

ICU: Intersection Capacity Utilization; LOS: Level of Service; SR: State Route; SB: Southbound; NB: Northbound

[a] Reference to "Future" scenarios includes traffic volumes with the projected cumulative growth.

Source: ATC 2018

Vehicle Miles Traveled

While the impact analysis above has followed the LOS procedures used by the adjacent jurisdictions for addressing traffic impacts, California SB 743 establishes guidelines for CEQA documents to address VMT (in addition to LOS if a local jurisdiction requires a LOS analysis). The VMT analysis is not specific to a defined study area but estimates the overall change in VMT caused by the Proposed Project's generated trips. Measures include the absolute change in VMT and the change in VMT per capita. The latter recognizes that VMT will increase with increasing population in a region, and the analysis thereby evaluates whether any increase in VMT is higher or lower than the increase in population in the area being considered. Table 4.8-10 shows an average weekday VMT summary for the No Project and Proposed Project.

TABLE 4.8-10
AVERAGE WEEKDAY VMT SUMMARY

	2016		2026		*Increase*
Alternative	**ADT**	**VMT**	**ADT**	**VMT**	***2016-2026***
No Project	1,648	20,765	1,796	22,630	*9.0%*
Proposed Project	1,648	20,765	1,638	20,639	*-0.6%*
ADT: Average daily traffic generated by the GAIP VMT - Vehicle miles traveled for GAIP trips (Based on average distance of 12.6 miles)					
Source: ATC 2018					

The highest increase compared to the 2016 baseline is for the No Project with an increase in VMT of 9.0 percent. The Proposed Project shows a slight decrease in VMT from 2016 to 2026. Therefore, the Proposed Project would not result in a substantial increase in regional VMT.

Short-Term Construction Impacts

Construction work for the GAIP is planned to take place over slightly more than a seven-year period, commencing in 2019 and extending through 2026. During that time, construction workers and service vehicles would access the site on a daily basis. Construction-related trips, broken out by the primary phases, for the Proposed Project are provided in the Table 4.8-11. Each phase of construction would generate a different number of daily and peak-hour trips. The activities listed in these tables for each phase are from the overall construction schedule (see Exhibit 3-3a and 3-3b for the phasing concept for the Proposed Project) and are those that overlap with the highest number of construction trips in that phase. In cases where the construction involves facilities such as T-hangars and box-hangars, the use of the construction trip rates for office/industrial land use probably overestimates the trips for these facilities, since they have considerably less structural and architectural components than the office and FBO facilities.

TABLE 4.8-11
PROPOSED PROJECT CONSTRUCTION TRIPS

Phase[a]	Description	Square Feet (1,000)	Daily Trip Ends			Peak Hour Trip Ends	
			Workers	Vendors	Total	AM	PM
1	Sheriff's Office and FBO	63.7	27	10	37	7	4
2	Office and FBO	62.1	26	10	36	6	4
3-3A	FBO, office and aircraft service area	36.0	15	6	21	4	2
4	FBO and apron	28.1	12	5	17	3	2
5	FBO and apron	48.3	20	8	28	5	3
7–8	T-hangars	66.9	28	11	39	7	4
9A–9B	Flight School offices	10.0	4	2	6	1	1
10	T-hangars and apron	48.3	20	8	28	5	3
11	Box hangars	71.5	30	12	42	7	4
12	Box hangars and T-hangars	55.6	23	9	32	6	3
13	Offices, FBO hangars and customs area	139.3	59	23	82	15	9
Vehicle Trip Rates (trip ends per 1,000 square feet)			*0.4200*	*0.1639*	*0.5839*	*0.1045*	*0.0625*

[a] Phases 6 and 14 are relatively small road improvements and would not generate substantial daily traffic volumes.

Source: ATC 2018

The highest number of construction trips under the Proposed Project occurs in Phase 13 and comprises 82 daily vehicle trip ends, with 15 in the AM peak hour and 9 in the PM peak hour. For the west side, the peak-hour construction trip generation is considerably less than the general aviation trips calculated for the Proposed Project (57 and 54 in the AM and PM, respectively) (see Table 4.8-8, Traffic Impact Volumes). The full allocation of west side general aviation trips would not occur until the facilities are completed, so at no time would the construction trips be additive to the long-term operational trips. Hence, any potential impacts due to construction traffic would be less than those addressed above as part the general aviation traffic impact analysis. Therefore, the peak hour construction trips will not cause the LOS for any area intersections or road segments to become deficient, and therefore the Project's construction-related traffic impacts are less than significant.

For the east side, the construction trips would be additive to the background traffic. However, it must be noted that an early construction phase is the construction of the Full Service West FBO, after which some functions currently on the east side of the Airport would be relocated to the new facility on the west side. The currently split full service FBO will have all their activities located on the west side and some of the existing trips accessing the Airport on the east side would then access on the west side, thereby reducing the trips on the east side roadway network. Construction work would then commence on the east side. Hence, the construction traffic on the east side would be compensated for by the reduction in general aviation traffic due to relocation

of FBO facilities to the west side. Since the construction traffic is less than the relocated FBO traffic, the result is no net increase in traffic on the east side.

Displaced Aircraft Impact Analysis

In the 2016 baseline condition, 482 general aviation aircraft are based at JWA. With the Proposed Project, the capacity would be reduced to 354 general aviation aircraft. This represents a reduction of 128 aircraft (a 27-percent reduction). For existing conditions, 49 percent of the total general aviation operations are from based aircraft (aircraft stationed at the Airport) versus transient aircraft, which translates into 218 vehicle trips related to displaced aircraft. The *General Aviation Forecasting and Analysis Report* prepared for the GAIP examines 15 airports with general aviation facilities in an area defined as the Competitive Market Area ("CMA"). In addition to Orange County, the CMA includes parts of Los Angeles, Riverside, and San Bernardino Counties, and information in that report shows that 90 percent of JWA registered aircraft owners are in Orange County, with the remainder in those adjacent counties. It is estimated that the average trip distance for JWA-related general aviation trips is 15.25 miles. This gives a weekday VMT of 3,325 for trips generated by the displaced aircraft (218 trips times 15.25 miles). For the purpose of this analysis, it is assumed that the maximum increase in average trip length that could reasonably be expected is 100 percent (i.e., a doubling of the average trip length for all trips associated with the displaced aircraft). This is considered a worst case, given the 14 alternative airports in the CMA and hence the opportunity for relocation to facilities that do not involve substantially greater travel distances and, in some cases, shorter distances. This number of VMT was compared to total regional VMT to assess the likelihood of an impact on the regional circulation network. The added VMT for the Proposed Project represents an increase of 0.0022 percent. This increase would have a negligible impact on the region's traffic, and the impact is considered less than significant. The results of the VMT analysis for displaced aircraft are shown in Table 4.8-12.

TABLE 4.8-12
DISPLACED AIRCRAFT VMT

1. Displaced Aircraft	2. DA Weekday Trips	3. DA Weekday VMT	4. DA Added Weekday VMT	5. DA Percent of Regional VMT
128	218	3,325	6,649	0.0022%

DA: Displaced Aircraft; VMT: Vehicle Miles Traveled

1. Displaced aircraft in 2026 for Proposed Project

2. Displaced aircraft weekday ground trips to/from JWA

3. Vehicle miles traveled (VMT) by displaced aircraft (based on 15.25-mile average trip length)

4. Added VMT from displaced aircraft trips (based on 100-percent longer trips to those airports)

5. Added VMT compared to total regional weekday VMT (estimated at around 300M VMT)

Source: ATC 2018

Mass Transit and Non-Motorized Travel

As noted above, bus Routes 76 and 212 serve the JWA commercial terminal, Route 71 provides service along Red Hill Avenue, and Route 178 provides service along Birch Street. The GAIP (Proposed Project and Alternative 1) would not interfere with any of these routes because improvements are mostly internal to the Airport. The only potential element of the GAIP that would extend into public right-of-way would be the intersection improvements at Campus Drive and Quail Street. However, this would be a minimal encroachment during construction; and no transit stops are in this location. Additionally, no designated bike routes on Campus Drive would be impacted during construction. The sidewalk on the west side of Campus Drive ends at the Quail Street/Campus Drive intersection. Therefore, pedestrians would be directed to the east side of the street, thereby minimizing potential conflict with pedestrians. The vehicle trip estimates for the Proposed Project do not assume any use of public transit, but these bus routes do provide a transit mode option, particularly for general aviation workers. Additionally, no designated bike routes are located immediately adjacent to the Airport. Therefore, the Proposed Project would not result in impacts to transit or other non-motorized modes of transportation.

Impact Conclusion: *The Proposed Project would generate overall fewer trips than the No Project Alternative. It would not conflict with adopted plans, ordinances, or policies establishing measures of effectiveness for the circulation system, as it would not cause any change in LOS at the study area intersections. All intersections would operate at an acceptable LOS D or better. No conflicts with alternative modes of transportation would result. Impacts would be less than significant under Threshold 4.8-1.*

Alternative 1

Future-Term Operations

Trip Generation and Distribution

Alternative 1 proposes a Full Service West FBO and a two full service FBOs on the east side—the Full Service Northeast FBO and a Full Service Southeast FBO. The total aircraft storage capacity under Alternative 1 would be reduced by approximately 26 percent compared to the number of general aviation aircraft currently based at the Airport. As a result, the number of overall trips generated from Alternative 1 would decrease compared to baseline (2016) conditions. The reduction in overall trips related to general aviation is shown in Table 4.8-13, which provides a comparison of the No Project and Alternative 1 trip generation for both the baseline condition (2016) and future (2026) time frame. As with the Proposed Project, the reduction in trips is not proportional to the reduction in the number of annual operations (e.g., from 192,800 in the 2016 baseline to 168,600 in 2026) because the lower number of aircraft operations in the future is offset by the higher average trip generation rates caused by the greater proportion of larger aircraft. The average trip generation rate difference due to this change in aircraft mix can be seen in Table 4.8-14.

TABLE 4.8-13
GENERAL AVIATION OPERATIONS AND TRIP GENERATION FOR ALTERNATIVE 1 AND NO PROJECT ALTERNATIVE 2016 AND 2026

Alternative	Measure	2016	2026
No Project	*Annual Operations*	*192,800*	*201,000*
	AM Peak-Hour Trip Ends	125	137
	PM Peak-Hour Trip Ends	120	130
	Daily Trips	1,648	1,796
Alternative 1	*Annual Operations*	*192,800*	*168,600*
	AM Peak-Hour Trip Ends	125	125
	PM Peak-Hour Trip Ends	120	120
	Daily Trips	1,648	1,649

Annual Operations - Total annual general aviation aircraft take-offs plus landings
AM Trip Ends - Average AM peak-hour weekday general aviation vehicle trips to and from JWA
PM Trip Ends – Average PM peak-hour weekday general aviation vehicle trips to and from JWA
ADT Trip Ends - Average weekday general aviation vehicle trips to and from JWA
Source: ATC 2018

TABLE 4.8-14
GENERAL AVIATION TRIP GENERATION RATE COMPARISON BASELINE VERSUS 2026—ALTERNATIVE 1

Project		Annual Aircraft Operations					Average ADT Rate[a] (in 1,000)
		Piston	Turbine	Jet	Helicopter	Total	
Baseline (2016)	Total Operations	147,300	9,800	31,800	3,900	192,800	8.550
	Percent of Operations	*76.4%*	*5.1%*	*16.5%*	*2.0%*	*100.0%*	
Alternative 1	Total Operations	111,600	10,800	41,400	4,800	168,600	9.777
	Percent of Operations	*66.1%*	*6.4%*	*24.6%*	*2.8%*	*100.0%*	

[a] Average Daily Trip Rate for daily trip ends per annual operations in thousands based on mix of aircraft types.
Source: ATC 2018

Although the daily trip generation for Alternative 1 is actually less than for the No Project (1,649 versus 1,796), there is the potential for traffic impacts. Similar to the Proposed Project, Alternative 1 would redistribute some trips to the west side of the Airport because it would consolidate the activities of one of the full service FBOs to the west side of the Airport. (As previously mentioned, currently one of the full service FBOs on the east side of the Airport has hangar space on the west side of the Airport). Trips associated with general aviation would be reduced on the east side compared to existing conditions and the No Project Alternative.

Table 4.8-15 summarizes these differences for both the peak hours and the daily trips. This impact analysis provides a comparison of the Baseline (2016) (i.e., Existing Condition) to the Baseline (2016) Plus Alternative 1 (i.e., existing traffic plus the Alternative 1 traffic for 2026. Additionally, it compares the Alternative 1 traffic volumes to the GAIP No Project conditions in a future setting (i.e., build-out of the GAIP and cumulative growth).

TABLE 4.8-15
GENERAL AVIATION TRAFFIC IMPACT VOLUMES
ALTERNATIVE 1 AND NO PROJECT

Alternative	Comparison[a]	Westside/ Eastside	AM PEAK HOUR			PM PEAK HOUR			ADT
			In	Out	Total	In	Out	Total	
Alternative 1	Existing Plus Alternative 1 forecasts compared to Baseline (2016) Difference	West Side Difference	27	17	44	19	23	42	578
		East Side Difference	-27	-17	-44	-19	-23	-42	-578
		Total Difference	0	0	0	0	0	0	0
	Future Alternative 1 forecast compared to 2026 No-Project Difference	West Side Difference	27	16	43	19	23	42	570
		East Side Difference	-34	-21	-55	-24	-28	-52	-717
		Total Difference	-7	-5	-12	-5	-5	-10	-147

ADT: Average Daily Trips

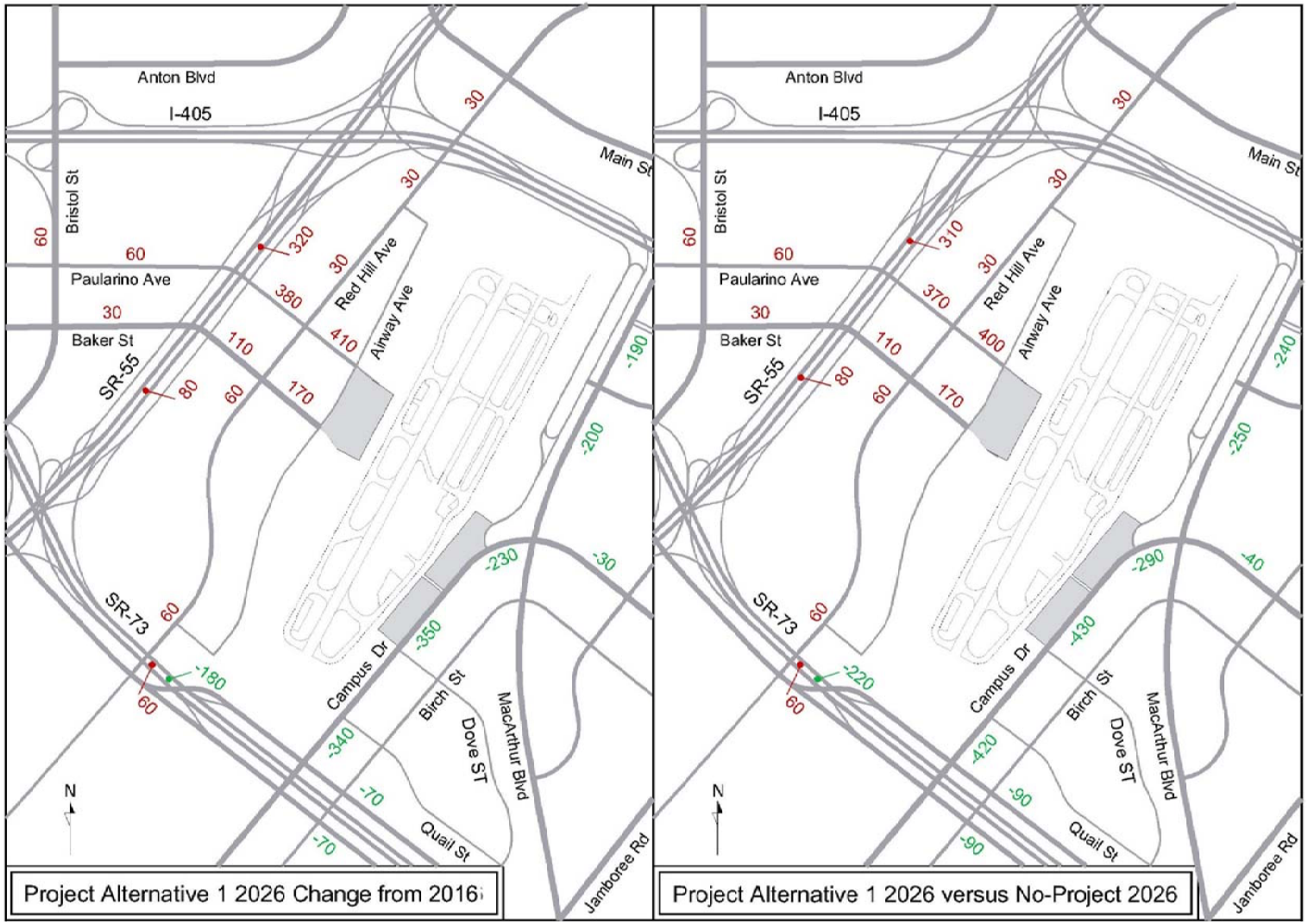
[a] Reference to "Future" scenarios includes traffic volumes with projected cumulative growth.

Source: ATC 2018

As shown in Table 4.8-15, Alternative 1 traffic added to the west side is a maximum of 578 ADT, with a comparable reduction in traffic on the east side. This is also less than for the Proposed Project (which is 738 ADT). This information is graphically shown in Exhibit 4.8-7. During the peak hours, Alternative 1 would result in a maximum increase of 44 trips. The AM and PM peak-hour distributions are shown in Exhibit 4.8-8.

Peak-Hour Intersection Analysis

Alternative 1 ICU values and the corresponding LOS are provided in Table 4.8-16. The corresponding No Project values are also provided for comparison purposes. As shown, all the study intersections currently operate at LOS C or better. In the future year, all intersections would be operating at a satisfactory LOS D or better. The highest contribution by Alternative 1 to any ICU value is 0.01. As with the Proposed Project, Alternative 1 does not result in an exceedance of the LOS D performance criteria to be exceeded (ICU does not exceed 0.90). Therefore, Alternative 1 does not have any significant impacts at the study intersections.



Legend

XY - Average Daily Traffic (ADT) - Positive Difference

WZ - Average Daily Traffic (ADT) - Negative Difference

GA FBO's

Note: Project volume differences less than 30 not shown

Source: Austin Transportation Consulting 2018

Alternative 1 Average Daily Trip Volumes

Exhibit 4.8-7

John Wayne Airport General Aviation Improvement Program

JOHN WAYNE AIRPORT ORANGE COUNTY

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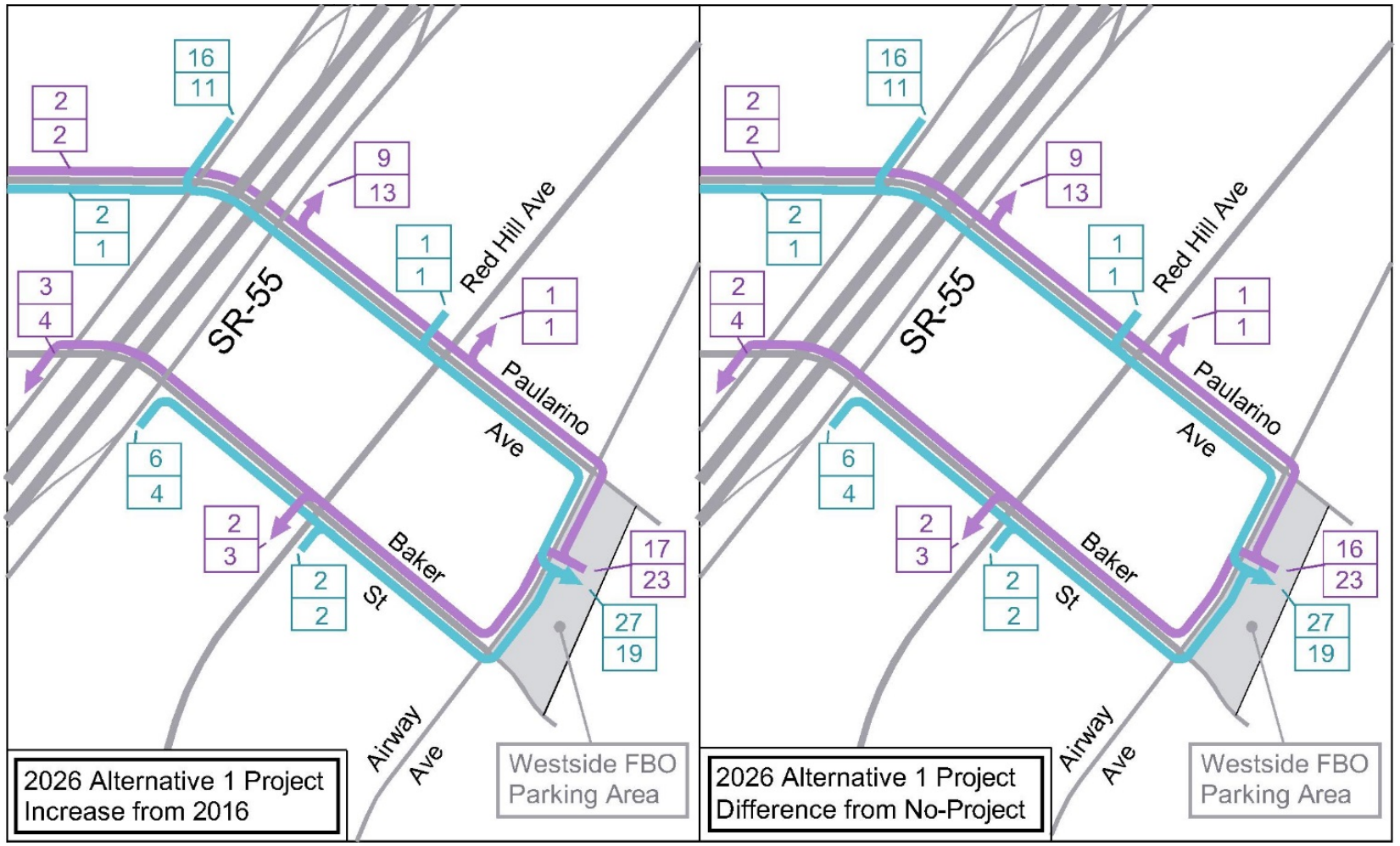

Legend

XY	AM Inbound	XY	AM Outbound
WZ	PM Inbound	WZ	PM Outbound

Source: Austin Transportation Consulting 2018

Alternative 1 Peak Hour Trip Volumes

Exhibit 4.8-8

John Wayne Airport General Aviation Improvement Program

TABLE 4.8-16
PEAK-HOUR ICU AND LOS SUMMARY

Location	Scenario[a]	AM Peak Hour		PM Peak Hour	
		ICU	LOS	ICU	LOS
SR-55 SB Ramps and Paularino Avenue	Existing (Baseline 2016)	0.71	C	0.64	B
	Existing Plus Alternative 1	0.72	C	0.64	B
	Future No Project	0.78	C	0.77	C
	Future Plus Alternative 1	0.79	C	0.77	C
SR-55 NB Ramps and Paularino Avenue	Existing (Baseline 2016)	0.68	B	0.71	C
	Existing Plus Alternative 1	0.68	B	0.71	C
	Future No Project	0.74	C	0.83	D
	Future Plus Alternative 1	0.75	C	0.84	D
Red Hill Avenue and Paularino Avenue	Existing (Baseline 2016)	0.43	A	0.56	A
	Existing Plus Alternative 1	0.44	A	0.57	A
	Future No Project	0.56	A	0.68	B
	Future Plus Alternative 1	0.57	A	0.68	B
SR-55 SB Ramps and Baker Street	Existing (Baseline 2016)	0.66	B	0.69	B
	Existing Plus Alternative 1	0.66	B	0.70	B
	Future No Project	0.73	C	0.79	C
	Future Plus Alternative 1	0.73	C	0.79	C
SR-55 NB Ramps and Baker Street	Existing (Baseline 2016)	0.67	B	0.75	C
	Existing Plus Alternative 1	0.67	B	0.75	C
	Future No Project	0.83	D	0.87	D
	Future Plus Alternative 1	0.83	D	0.87	D
Red Hill Avenue and Baker Street	Existing (Baseline 2016)	0.34	A	0.63	B
	Existing Plus Alternative 1	0.35	A	0.63	B
	Future No Project	0.43	A	0.72	C
	Future Plus Alternative 1	0.43	A	0.72	C

ICU: Intersection Capacity Utilization; LOS: Level of Service; SR: State Route; SB: Southbound; NB: Northbound

[a] Reference to "Future" scenarios includes traffic volumes with projected cumulative growth.

Source: ATC 2018

Vehicle Miles Traveled

As with the data presented for the Proposed Project, the VMT analysis is not specific to a defined study area but estimates the overall change in VMT caused by Alternative 1 generated trips. Measures include the absolute change in VMT and the change in VMT per capita. The latter recognizes that VMT will increase with increasing population in a region, and the analysis thereby evaluates whether any increase in VMT is higher or lower than the increase in population in the area being considered. Table 4.8-17 shows an average weekday VMT summary for the No Project and Alternative 1.

TABLE 4.8-17
AVERAGE WEEKDAY VMT SUMMARY

Alternative	2016		2026		*Increase*
	ADT	**VMT**	**ADT**	**VMT**	***2016-2026***
No Project	1,648	20,765	1,796	22,630	*9.0%*
Alternative 1	1,648	20,765	1,649	20,777	*0.0%*
ADT: Average daily traffic generated by the GAIP VMT - Vehicle miles traveled for GAIP trips (Based on average distance of 12.6 miles)					
Source: ATC 2018					

The highest increase compared to the 2016 baseline is for the No Project, with an increase in VMT of 9.0 percent. Alternative 1 shows a minimal change in VMT from 2016 to 2026. Therefore, Alternative 1 would not result in a substantial increase in regional VMT.

Short-Term Construction Impacts

Similar to the Proposed Project, construction work is planned to take place over slightly more than a seven-year period, commencing in 2019 and extending through 2026. Construction-related trips, broken out by the primary phases, for Alternative 1 are provided in the Table 4.8-18. Each phase of construction would generate a different number of daily and peak-hour trips, which correspond with the overall construction schedule (see Exhibit 3-5a and 3-5b) for the phasing concept for Alternative 1. When multiple tasks are included in a phase, the highest number of construction trips are used in this analysis. In cases where the construction involves facilities such as T-hangars and box-hangars, the use of the construction trip rates for office/industrial land use probably overestimates the trips for these facilities, since they have considerably less structural and architectural components than the office and FBO facilities.

TABLE 4.8-18
ALTERNATIVE 1 CONSTRUCTION TRIPS

Phase[a]	Description	Square Feet (1,000)	Daily Trip Ends			Peak Hour Trip Ends	
			Workers	Vendors	Total	AM	PM
1	Sheriff's Office and FBO	63.7	27	10	37	7	4
2	Office and FBO	62.1	26	10	36	6	4
3-3A	FBO, office and aircraft service area	30.0	13	5	18	3	2
4	FBO and apron	28.1	12	5	17	3	2
5	FBO and apron	81.3	34	13	47	8	5
7–8	T-hangars	69.2	29	11	40	7	4
9A–9B	Flight School offices	10.0	4	2	6	1	1
10	T-hangars and apron	51.0	21	8	30	5	3
11	Box hangars	76.0	32	12	44	8	5
12	Box hangars and T-hangars	47.6	20	8	28	5	3
13	Offices, FBO hangars, and customs area	139.3	59	23	82	15	9
Vehicle Trip Rates (trip ends per 1,000 square feet)			*0.4200*	*0.1639*	*0.5839*	*0.1045*	*0.0625*

[a] Phases 6, 14, and 15 are relatively small road improvements and would not generate substantial daily traffic volumes.

Source: ATC 2018

The highest number of construction trips with Alternative 1 occurs in Phase 13 and comprises 82 daily vehicle trip ends, with 15 in the AM peak hour and 9 in the PM peak hour. For the west side, the peak-hour construction trip generation is considerably less than the general aviation trips calculated for Alternative 1 (44 and 42 in the AM and PM, respectively) (see Table 4.8-15, Traffic Impact Volumes). The full allocation of west side general aviation trips would not occur until the facilities are completed, so at no time would the construction trips be additive to the long-term operational trips. Hence, any potential impacts due to construction traffic would be less than those addressed above as part the general aviation traffic impact analysis. Therefore, the peak hour construction trips will not cause the LOS for any area intersections or road segments to become deficient, and therefore the Project's construction-related traffic impacts are less than significant.

For the east side, the construction trips would be additive to the background traffic. However, it must be noted that an early construction phase is the construction of the Full Service West FBO, after which some functions currently on the east side of the Airport would be relocated to the new facility. The currently split full service will have all their activities located on the west side and some of the existing trips accessing the Airport on the east side would then access on the west side, thereby reducing the trips on the east side roadway network. Construction work would then commence on the east side. Hence, the construction traffic on the east side would be compensated for by the reduction in general aviation traffic due to relocation of FBO facilities to the west side. Since the construction traffic is less than the relocated FBO traffic, the result is no net increase in traffic on the east side.

Displaced Aircraft Impact Analysis

In the 2016 baseline condition, 482 general aviation aircraft are based at JWA. With Alternative 1, the capacity would be reduced to 356 general aviation aircraft. This represents a reduction of 126 aircraft (a 26-percent reduction). As noted in the discussion of the Proposed Project, under existing conditions 49 percent of the total general aviation operations are from based aircraft (versus transient aircraft). Alternative 1 would result in 210 vehicle trips related to displaced aircraft. Using the average trip distance for JWA-related general aviation trips of 15.25 miles, displaced aircraft under Alternative 1 result in a weekday VMT of 3,202 (210 trips times 15.25 miles). For the purpose of this analysis it is assumed that the maximum increase in average trip length that could reasonably be expected is 100 percent (i.e., a doubling of the average trip length for all trips associated with the displaced aircraft). This is considered a worst case, given the 14 alternative airports in the CMA and hence the opportunity for relocation to facilities that do not involve substantially greater travel distances and, in some cases, shorter distances. This number of VMT was compared to total regional VMT to assess the likelihood of an impact on the regional circulation network. The added VMT for Alternative 1 represents an increase of 0.0021 percent. This increase would have a negligible impact on the region's traffic, and the impact is considered less than significant. The results of the VMT analysis for displaced aircraft are shown in Table 4.8-19.

TABLE 4.8-19
DISPLACED AIRCRAFT VMT

1. Displaced Aircraft	2. DA Weekday Trips	3. DA Weekday VMT	4. DA Added Weekday VMT	5. DA Percent of Regional VMT
126	210	3,202	6,405	0.0021%

DA: Displaced Aircraft; VMT: Vehicle Miles Traveled

1. Displaced aircraft in 2026 for Alternative 1

2. Displaced aircraft weekday ground trips to/from JWA

3. Vehicle miles traveled (VMT) by displaced aircraft (based on 15.25-mile average trip length) (rounded)

4. Added VMT from displaced aircraft trips (based on 100 percent longer trips to those airports)

5. Added VMT compared to total regional weekday VMT (estimated at around 300M VMT)

Source: ATC 2018

Mass Transit and Non-Motorized Travel

Alternative 1 would not interfere with any of the bus routes serving the Airport. Intersection improvements at Campus Drive and Quail Street, proposed as part of the GAIP, may result in a minimal encroachment during construction; however, similar to the Proposed Project, it would not impact transit, bikeways, or pedestrians. The vehicle trip estimates for Alternative 1 do not assume any use of public transit, but these bus routes do provide a transit mode option, particularly for general aviation workers. Additionally, no designated bike routes are located immediately adjacent to the Airport. Therefore, Alternative 1 would not result in impacts to transit or other non-motorized modes of transportation.

Impact Conclusion: *Alternative 1 would generate overall fewer trips than the No Project Alternative. It would not conflict with adopted plans, ordinances, or policies*

establishing measures of effectiveness for the circulation system, as it would not cause any LOS change at the study area intersections. All intersections would operate at an acceptable LOS D or better. No conflicts with alternative modes of transportation would result. Impacts would be less than significant under Threshold 4.8-1.

Threshold 4.8-2

- ***Would the project conflict with an applicable congestion management program, including, but not limited to level of service standard and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?***

Proposed Project and Alternative 1

The study intersections were identified because the GAIP had the potential to result in "measurable" change in traffic as defined by the performance criteria of the local jurisdiction. None of the six study area intersections are CMP intersections, and none of the roadways adjacent to the Airport are part of the CMP Highway System (OCTA 2017). The closest CMP facility (i.e., roadway or intersection) is Jamboree Road located approximately 0.75 mile to the east of the Airport in the cities of Irvine and Newport Beach. To the west, the closest CMP facility is Harbor Boulevard located approximately three miles from the Airport in the city of Costa Mesa. Therefore, the GAIP (both the Proposed Project and Alternative 1) would not conflict with the OCTA CMP.

Impact Conclusion: *None of the six study area intersections fall within the jurisdiction of the OCTA CMP 2017. Therefore, neither the Proposed Project nor Alternative 1 would conflict with the OCTA CMP. No impacts would occur under Threshold 4.8-2.*

4.8.7 CUMULATIVE IMPACTS

The background traffic for the 2026 analysis represents "long range cumulative" conditions and uses future traffic volumes based on buildout of the General Plans of the three cities in the vicinity of the Airport. The volumes thereby address cumulative projects along with future development as embodied in those General Plans. The use of these forecasts satisfies the need to address cumulative projects while ensuring consistency with each city's long-range planning work.

Section 4.0 of this Program EIR identifies cumulative projects. From a traffic perspective, the JWA Settlement Agreement Amendment would have potential to result in cumulative impacts. Construction for the other projects would be completed, and the projects would be operational and would not add a substantial number of trips to the roadway network.

The 2014 Settlement Agreement Amendment would increase the number of commercial carrier operations and thus would increase the number of passengers travelling to JWA. Although Final EIR 617, prepared for the Settlement Agreement Amendment, did identify significant direct and cumulative traffic impacts associated with the increased number of commercial carrier flights

and passengers, these trips have been incorporated into the traffic volumes shown as the future traffic volumes; therefore, the 2026 analysis represents a cumulative analysis. As discussed above, the study intersections, which are the locations where the GAIP would result in a measurable change in traffic, are projected to operate at an acceptable level of service. No cumulative impacts are anticipated. Furthermore, it should be noted, the trips associated with the commercial operations would be predominately on the east side of the Airport where the commercial terminal is located.

4.8.8 MITIGATION PROGRAM

No significant impacts were identified; therefore, no mitigation program is required for either the Proposed Project or Alternative 1.

4.8.9 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The long range cumulative analysis (2026) reflects projected cumulative growth in the study area. No significant impacts were identified; therefore, GAIP-specific (Proposed Project or Alternative 1) and cumulative impacts would be less than significant.

4.8.10 REFERENCES

AECOM. 2018. (January). *General Aviation Forecasting and Analysis Technical Repor*t. Orange, CA. (Appendix C)

Austin Transportation Consulting (ATC). 2018. *John Wayne Airport General Aviation Improvement Program Traffic Impact Analysis*. Orange, CA. (Appendix I)

Orange, County of, John Wayne Airport (JWA). 2014 (September). *Final Environmental Impact Report No. 617 for the John Wayne Airport Settlement Agreement (SCH No. 2001111135).* Costa Mesa, CA: JWA.

Orange County Transportation Authority (OCTA). 2017 (approved November 27, 2017). *2017 Orange County Congestion Management Program*. https://www.octa.net/pdf/Draft-CMP-Attachment-A.pdf (accessed February 14, and April 16, 2018). Orange, CA