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KITTELSON & ASSOCIATES

SODA MOUNTAIN SOLAR TRANSPORTATION ANALYSIS

SAN BERNARDINO COUNTY, CALIFORNIA

June 11, 2024

Soda Mountain Solar Project Transportation Analysis

San Bernardino, California

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EXECUTIVE SUMMARY

This report presents the findings of the analysis conducted under the California Environmental Quality Act (CEQA) and the local transportation analysis for the proposed solar facility in a rural area of the Mojave Desert, around 7 miles southwest of Baker town and 50 miles northeast of Barstow city, on the east side of Interstate 15 (I-15), and half a mile away from the western boundary of Mojave National Preserve. This report adheres to the California Energy Commission (CEC) requirements for CEQA analyses, while also being consistent with the San Bernardino County Transportation Impact Study Guidelines (2019) for the Desert region of San Bernardino County, and Caltrans[1] Guidelines for the preparation of transportation studies.

The proposed Project is a 300 MW photovoltaic solar facility located in a rural area of the Mojave Desert. It includes a solar plant site with East Array and South Arrays 1, 2, and 3, a substation, and a switchyard for interconnection to the existing transmission system. The Project site, spanning approximately 2,670 acres, is situated about 7 miles southwest of Baker town and 50 miles northeast of Barstow city, near Interstate 15 and Mojave National Preserve. Existing infrastructure in the area includes highways, communication towers, pipelines, transmission lines, and a gas station. Access to the Project site would be through a gated entrance from Rasor Road.

It is anticipated the project will require a workforce of approximately 25 to 40 workers with more workers on panel washing and cleaning days (including a mix of professional staff, maintenance, and security personnel). However, given that most operations will be remotely controlled, the project is anticipated to generate less than 110 daily one-way trips during operation with panel washing and cleaning occurring two times per year over a three-week period. Therefore, the project screens out as a small project and is not anticipated to result in a significant VMT impact due to low long-term operational project-related traffic volumes.

The intersection and freeway mainline segment operations analyses considered existing conditions and project construction conditions scenarios during peak periods in the morning (6 - 9 AM), midday (11 AM - 2 PM), and afternoon (3 - 6 PM) to assess the potential operational deficiencies associated with the added project-related traffic. Based on the analysis, project construction would generate up to 834 daily trips at the peak construction activity period. All facilities analyzed are considered state facilities, but in the absence of Caltrans LOS standards the LOS Desert region standards from the San Bernardino County Transportation Impact Study Guidelines were used as a reference to identify acceptable intersection operations (LOS C or better). Note that LOS is not a metric to evaluate project impacts under CEQA and is solely used to review traffic operations outside CEQA.

Table ES-1 summarizes LOS findings across existing and project construction scenarios for intersection operations. As shown in Table ES-1, the study intersections would operate under acceptable conditions during project construction. With the addition of project-related traffic during construction, the LOS shifted from LOS A to LOS C during the AM and PM Peaks for intersection 1 and shifted from LOS A to LOS B during the AM Peak for intersection 2. The queueing analysis performed at the off-ramps indicates that the 95th percentile queue would remain well within the storage capacity. Therefore, while traffic conditions at the study intersections would worsen, all but one study intersection would continue to operate at acceptable LOS and would not affect traffic on I-15.

Intersection of I-15 Southbound Ramps & Rasor Road is expected to operate at LOS E, with a predicted increase in delay of approximately 26.6 seconds per vehicle on the westbound approach of the I-15 Southbound off-ramp. However, only eight vehicles are affected during peak hours, and the length of the off-ramp of 1,450 feet would contain the queue within the off-ramp area without affecting the freeway mainline. Despite falling below ideal performance standards, these temporary traffic conditions during

[1] *Transportation Analysis Under CEQA, First Edition*. California Department of Transportation. Sept 2020.

construction are not considered a significant operational deficiency due to small number of vehicles affected, no queue spillback to the freeway mainline, and their temporary nature.

Table ES-1: Existing Conditions LOS Summary of Intersection Operations Results During Construction

ID	Intersection	Control Type	AM Peak Hour		MD Peak Hour		PM Peak Hour	
			EX	PR	EX	PR	EX	PR
1	I-15 NB Ramps & Rasor Road	SSSC	A	C	A	A	A	C
2	I-15 SB Ramps & Rasor Road	SSSC	A	B	A	A	A	E

Notes:
EX = Existing conditions, PR = Temporary project construction conditions.
SSSC = Side-Street Stop-Controlled

SOURCE: KITTELSON & ASSOCIATES, INC (2023)

Table ES-2 summarizes LOS findings across existing and project construction scenarios for basic freeway segment operations. As shown in Table ES-2, one freeway segment had a shift in operations from LOS B to LOS C during the PM peak. It is important to note that although I-15 operates at LOS D between Rasor Road and Zzyzx Road in both directions, Table ES-2 demonstrates that the increase in traffic due to the project would be minimal compared to existing traffic on I-15 and there would be no change in the LOS grade at these segments. Therefore, project construction traffic would not result in operational deficiencies on freeway segment traffic operations.

Table ES-2: Existing Conditions LOS Summary of Basic Freeway Segment Operations Results During Construction

Mainline Segment	AM Peak Hour		MD Peak Hour		PM Peak Hour	
	EX	PR	EX	PR	EX	PR
I-15 NB *Between Basin Road and Rasor Road*	B	B	C	C	B	C
I-15 NB *Between Rasor Road and Zzyzx Road*	B	B	D	D	C	C
I-15 SB *Between Basin Road and Rasor Road*	B	B	C	C	C	C
I-15 SB *Between Rasor Road and Zzyzx Road*	B	B	C	C	D	D

Notes:
EX = Existing conditions, PR = Temporary project construction conditions.

SOURCE: KITTELSON & ASSOCIATES, INC (2023)

Overall, this analysis demonstrates that project construction traffic would not cause an adverse effect to the study freeway segments and intersections. Additionally, freeway off-ramps would be able to accommodate the queue with project construction traffic, and project construction traffic would not adversely affect travel on the freeway mainline.

Despite the substantial number of workers, delivery vehicles, and construction vehicle trips expected during the Project's construction, the traffic flow in the Project area would not be substantially affected. To ensure satisfactory operation of the roadway network during construction, the following recommendations should be implemented:

- **Construction Traffic Management Plan:** The Plan should include details such as the types, capacities, and dimensions of construction vehicles to be used, as well as the estimated daily or weekly number of vehicles for each phase of the work. It should outline the routes for different types of vehicles, including passenger/worker vehicles, delivery vehicles, and excavation/construction vehicles. The Plan should also address traffic control methods, and a designated contact for addressing complaints. Traffic control measures, such as escort vehicles, signage, and flaggers, may be implemented during grading, construction of the main access point, and when wide-load or high-volume deliveries occur.

Construction haul trucks should comply with Caltrans and San Bernardino applicable weight restrictions as a standard condition.

- **Recreationalist Access:** Under the proposed plan, the array areas of the project would be fenced off, restricting access for recreationists. To maintain public access to the Rasor Off-Highway Vehicle (OHV) Area, Rasor Road would be relocated along the southern boundary of the project site. Signage should be installed to notify recreationists of road closures and provide alternate routes. The completion of the new road alignment and access to the Rasor OHV Area would occur before the existing Rasor Road alignment is closed or decommissioned.
- **Transport of Hazardous Materials:** The project anticipates transporting various hazardous materials such as gasoline/diesel fuels, lubricating oils, lead-acid storage batteries, and cleaning solvents. For such hazardous materials, carriers are recommended to develop emergency response plans and ensure proper training for personnel to address potential spills or accidents. Comprehensive documentation, such as safety data sheets, is essential for appropriate handling and emergency response. Proper maintenance and equipping of vehicles with safety features are critical to prevent accidents and mitigate impacts.

INTRODUCTION

Soda Mountain, LLC is proposing to develop a solar farm on approximately 2,670 acres of land administered by the United States Department of the Interior Bureau of Land Management (BLM) in unincorporated San Bernardino County, approximately 7 miles southwest of the town of Baker, California, along Interstate 15 (I-15).

Kittelson & Associates, Inc (Kittelson) prepared this transportation analysis report in association with the project to determine the expected transportation-related effects of the project. The purpose of this report is to identify potential impacts on the transportation infrastructure during construction and operation of the Project, and to provide recommendations to reduce project impacts to less than significant levels.

The transportation analysis documented in this report were performed to comply with California Environmental Quality Act (CEQA) transportation vehicle miles travelled (VMT) analysis and to assess transportation effects and consistency with California Energy Commission (CEC) CEQA requirements. This analysis is also consistent with the San Bernardino County Transportation Analysis Guidelines . The report covers the following transportation analyses:

- Project trip generation and trip distribution
- Construction and Operations analyses (level of service, site access, and internal circulation)
- Vehicle-miles travelled assessment

PROJECT BACKGROUND

PROPOSED PROJECT

The Project would consist of a proposed 300 MW photovoltaic solar facility that includes the solar plant site, substation and switchyard for interconnection to the existing transmission system, approximately 300 MW of battery energy storage systems across 18 acres, and operation and maintenance buildings and structures, stormwater infrastructure, and related infrastructure and improvements. The solar plant site would cover all facilities that create a footprint in and around the field of solar panels, including the solar power arrays (East Array and South Arrays 1, 2, and 3). The Project would operate 24 hours per day year-round and generate electricity during daylight hours when the sun is shining. The generated solar power would be delivered to the regional electrical grid through an interconnection with the existing Marketplace-Adelanto 500-kV transmission line operated by the Los Angeles Department of Water and Power (LADWP).

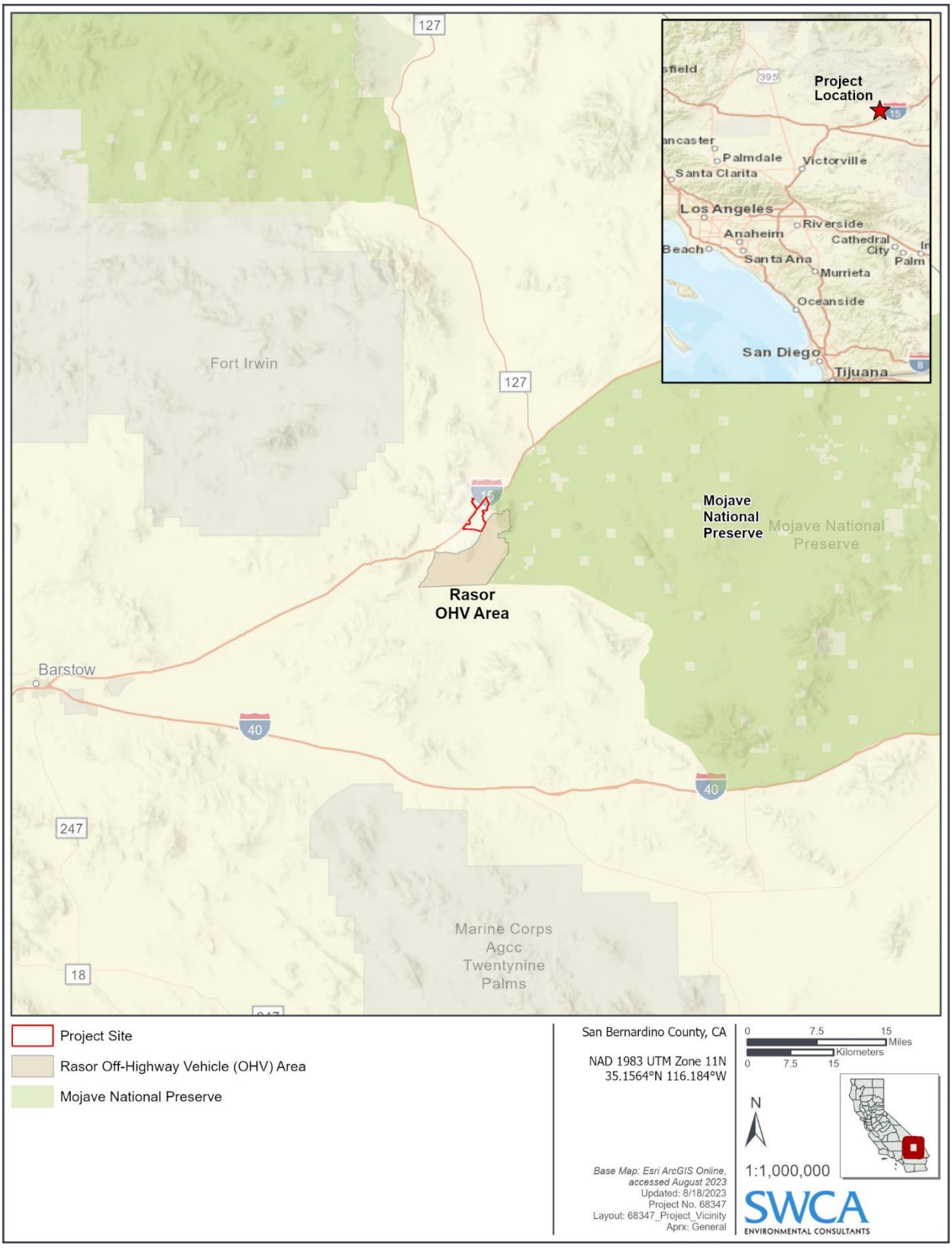
A detailed site plan of the project can be found in Appendix A.

LOCATION

The proposed Project site, measuring approximately 2,670 acres, is in a rural area of the Mojave Desert, around 7 miles southwest of Baker town and 50 miles northeast of Barstow city, on the east side of I-15, and half a mile away from the western boundary of Mojave National Preserve. The project is bounded directly to the east by the Mojave National Preserve (administered by the National Park Service) and BLM lands, including the Rasor Off-Highway Vehicle (OHV) recreation area at the southeast corner. I-15, the former Arrowhead Trail Highway, runs along the western boundary of the project site, with Rasor Road Services Shell Oil gas station located off I-15 southwest of the project site, along the access road to the project site. Primary access to the Project site during construction and operation would be through a gated entrance from Rasor Road.

The Project site vicinity can be visualized in Figure 1.

Figure 1: Site Vicinity



SOURCE: SWCA ENVIRONMENTAL CONSULTANTS (2024)

ROADWAYS

The project site is connected to the following regional and local roadway facilities:

- **Interstate 15 (I-15)** is a major north-south highway in California that runs for approximately 287 miles from the Mexican border to the Nevada state line. It serves as a crucial transportation route for both commercial and passenger traffic, connecting cities such as San Diego, Riverside, and Barstow. It has been designed to hold a capacity of 1,850 vehicles per lane per hour during the peak hour.[2]
- **Rasor Road** is a two-lane east-west roadway with one travel lane in each direction. According to San Bernardino County, it is classified as a secondary highway. It connects I-15 to the project. Beyond the Shell Oil Gasoline Station, Rasor Road becomes an unpaved roadway. It has been designed to hold a capacity of 20,000 vehicles per day.[3]

Other unpaved roads within and immediately surrounding the Project site are generally used by recreational motorists.

TRANSIT, BICYCLE AND PEDESTRIAN FACILITIES

There is no transit services, no paved sidewalks, and no dedicated bike lanes in the area. The primary mode of travel in the vicinity of the site is vehicular travel.

PROJECT TRAFFIC GENERATION

Project-related trip estimates were calculated to assess the project's traffic operational deficiencies on local roads during construction and while the solar farm is in operation.

TRIP GENERATION

It is anticipated that daily vehicle traffic would be primarily comprised of worker's passenger cars/light trucks, worker shuttles, delivery trucks, dump trucks, water trucks, waste hauling trucks, crane equipment vehicles, and porta let trucks during the construction period. The highest number of trips would generally be from construction workers traveling to and from the site each day. After the construction is finished and the Project site is in operation, traffic volumes in the area will be relatively low. The Project will be remotely controlled, eliminating the need for on-site employees. Primary security monitoring will also be conducted remotely. However, security personnel will perform unscheduled rounds and respond to alarms or fence breaches when necessary. The facility will not be accessible to the public, and access will be infrequent and limited to authorized personnel. In result, the Solar Field operation requires only a few daily trips to the site for security, maintenance, and repairs and would generate a negligeable number of trips. Therefore, this transportation analysis focuses on potential traffic operational deficiencies during Project construction.

The Project site and surroundings are undeveloped areas adjacent to the I-15 where traffic is mostly interstate between California and Nevada. Because typical urban environment commute-periods are not observed in the area, this analysis includes an analysis of traffic during the AM, midday (MD), and PM peak hours.

Construction is expected to occur over an 18-month period from Monday through Friday, typically from 6:00 a.m. to 6:00 p.m. Weekends would be reserved to make up time in the schedule, if needed. Typical start and end times may be adjusted during the summer months as a safety precaution, to protect workers from heat exposure during high ambient temperatures. A second shift may be added as necessary to accelerate, make up schedule deficiencies, or to complete critical construction activities. Estimated worker numbers would not change if a second shift is used.

[2] Highway Design Manual (2020). Page 100-4.
[3] San Bernardino County Road Planning Design Standards (1993). Page 3-1.

The workforce for onsite construction activities includes laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The onsite construction workforce is anticipated to be an average of 200 construction workers with a peak workforce of up to 300 workers during peak construction activities. To be conservative, it has been assumed all 300 workers will arrive during AM peak and leave during PM peak.

While passenger vehicle trips associated with the workforce are expected to be a daily occurrence during construction, heavy vehicle trips would vary throughout the construction period. Moreover, most construction and delivery trucks are expected to arrive and depart the site throughout the workday. To be conservative, it has been assumed that 80% heavy duty and water trucks would arrive during AM peak and leave during PM peak. The remaining number of trucks are to be distributed evenly throughout the remaining construction hours.

The construction trip generation is shown in Table 1 and has been calculated for total trips and passenger car equivalent (PCE). A PCE factor is applied to truck trips to account for the fact that trucks utilize more capacity on the roadway than a passenger car due to larger size and slower acceleration. A PCE factor of 2.0 for trucks was used for this analysis, based on the guidance for PCE factors found in the Highway Capacity Manual, 7th Edition. It is worth noting that San Bernardino County Congestion Management Plan specifies PCE factors to use accordingly based on truck axles. However, given the uncertainty surrounding the specific details of trucks for construction, default PCE factors from the HCM were employed to assess the traffic implications arising from heavy vehicles.

Table 1: Project Construction Daily Trip Generation

Trip Type	Number of Workers/ Trucks	Vehicle Trips				Passenger Car Equivalent (PCE) Trips			
		Daily	AM Peak Hour	MD Peak Hour	PM Peak Hour	Daily	AM Peak Hour	MD Peak Hour	PM Peak Hour
Workers	300	600	300	0	300	600	300	0	300
Heavy Duty Trucks	100	200	80	4	80	400	160	8	160
Water Trucks	17	34	14	1	14	68	28	2	28
Total		**834**	**394**	**5**	**394**	**1,068**	**488**	**10**	**488**

Note:

AM = before midday (morning)
MD = midday
PM = post midday (afternoon)

PM Peak Hour trips are outbound (e.g. leaving the project site) and AM/MD Peak Hour trips are inbound (e.g. entering the project site).

SOURCE: KITTELSON & ASSOCIATES, INC (2023)

TRIP DISTRIBUTION

The proposed project's trip distribution was developed based on a review of the adjacent roadway network and surrounding land uses to determine anticipated origins and paths of travel. It is assumed that 80 percent of the workforce would commute daily to the jobsite from communities south of the Project site, where Barstow and other major residential neighborhoods are located. The remaining 20 percent were assumed to commute from communities north of the Project site.

LEVEL-OF-SERVICE (LOS) ANALYSIS

ANALYSIS SOFTWARE AND APPROACH

INTERSECTION ANALYSIS METHODOLOGY

LOS describes the operating conditions experienced by motorists. LOS is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions and delay, freedom to maneuver, driving comfort, and convenience. LOS A through LOS F covers the entire range of traffic operations that might occur. Motorists using a facility that operates at a LOS A experience very little delay, while those using a facility that operates at a LOS F will experience long delays. Intersection analyses for the four study intersections were conducted using the operational methodologies outlined in the 7th Edition of the Highway Capacity Manual (HCM) methodology calculated with Vistro software.

Using the HCM procedure, the level of service designation for a signalized intersection is determined by calculating a weighted average control delay in seconds per vehicle. For unsignalized intersections, the HCM methodology is also used to calculate the weighted average control delay for each controlled intersection leg and for the intersection as a whole. In the case of two-way stop-controlled intersections, the LOS for the worst approach is used as the performance measure for the level of service.

Table 2 presents the relationship of average delay to level of service for both signalized and unsignalized intersections.

Table 2: Level of Service Definition for Intersections

Level of Service	Delay Per Vehicle (Seconds)	
	Signalized Intersection	Unsignalized Intersection
A	< 10.0	< 10.0
B	> 10.0 to 20.0	> 10.0 to 15.0
C	> 20.0 to 35.0	> 15.0 to 25.0
D	> 35.0 to 55.0	> 25.0 to 35.0
E	> 55.0 to 80.0	> 35.0 to 50.0
F	> 80.0	> 50.0

SOURCE: HIGHWAY CAPACITY MANUAL, 7TH EDITION

Peak 15-minute flow rates were used in the evaluation of all intersection levels of service to provide analyses based on a reasonable worst-case scenario. The peak hours were identified as the worst four consecutive 15-minute periods between 6 and 9 AM, between 11 AM and 2 PM, and between 3 and 6 PM on weekdays. These represent the critical time periods for evaluation based on peak demand on the surrounding transportation system and the peak demand associated with the project. Using the peak 15-minute flow rate ensures that this analysis is based on a reasonable worst-case scenario. For this reason, the analysis reflects conditions that are only likely to occur for 15 minutes out of each average peak hour. During all other periods, the transportation system likely will operate under conditions better than the conditions described in this report. The following default values were used in the intersection analysis:

- Saturation flow rate HCM default of 1,900 passenger cars per hour lane per lane.
- Heavy vehicle factor of 20%.
- Lane width HCM default of 12 feet.
- 45 miles per hour off-ramp speed based on Caltrans facility standards.
- Intersection peak hour factors based on count data for existing and future conditions.

BASIC FREEWAY SEGMENTS ANALYSIS METHODOLOGY

A basic segment is a freeway mainline segment that is not within a ramp influence area (i.e., within 1,500 feet of a ramp) or within a weaving segment. Adding or dropping a lane on the freeway results in the termination of a basic freeway segment. Peak hour volumes on basic freeway segments are analyzed using the methodology contained in the Highway Capacity Manual (HCM) 7th Edition, Chapter 12 ("Basic Freeway and Multilane Highway Segments"). The freeway analysis was conducted using the software HCS 7 to implement the HCM methodology for basic freeway segments. This methodology analyzes a uniform section of roadway by direction (e.g. northbound, southbound, eastbound, or westbound).

The mainline LOS is determined by a density calculation that divides the peak hour volumes by the number of lanes. A 70-mph free flow speed was assumed of this section of I-5. LOS criteria for evaluating basic freeway segments based on calculated density are given in Table 3.

Table 3: LOS Criteria for Basic Freeway Segments

LOS	Density (pc/mi/ln)
A	≤11
B	>11-18
C	>18-26
D	>26-35
E	>35-45
F	Demand exceeds capacity OR density >45

SOURCE: HIGHWAY CAPACITY MANUAL, 7TH EDITION

REGULATORY STANDARDS

The CEC, the CEQA lead agency for this project, has developed their own set of guidelines to evaluate projects from a transportation standpoint. These guidelines are detailed in Appendix B.

Freeway segments and intersections associated with freeway on- and off-ramps fall under Caltrans jurisdiction. Caltrans updated its guidance in 2020 to include metrics to evaluate transportation impacts based on vehicle miles traveled (VMT) and no longer sets a minimum acceptable LOS for its facilities. Based on the Caltrans *Vehicle Miles Traveled-Focused Transportation Impact Study Guide*[4], Caltrans is transitioning away from LOS performance standards and instead focused on VMT to identify significant impacts.

> "For land use projects and plans, automobile delay is no longer considered a significant impact on the environment under CEQA (SB 743, 2013). Caltrans review of land use projects and plans is focused on a VMT metric, consistent with changes to the CEQA Guidelines (California Code of Regulations Section 15064.3(b)(1)). This VMT-focused TISG provides a foundation for review of how lead agencies apply the VMT metric to CEQA project analysis.
>
> Beyond or in addition to the use of the VMT metric, determining how the State Highway System may otherwise be affected by a land use project may still be necessary at times, particularly as it relates to the safety of the traveling public. Additional future guidance will include the basis for requesting transportation impact analysis that is not based on VMT. This guidance will include a simplified safety analysis approach that reduces risks to all road users and focuses on multi-modal conflict analysis as well as access management issues. With this guidance the Department will transition away from requesting LOS or other vehicle operations analyses of land use projects."

[4] *Vehicle Miles Traveled-Focused Transportation Impact Study Guide.* May 20,2020.

In the absence of a LOS standard from Caltrans, the LOS Desert region standards from the San Bernardino County Transportation Impact Study Guidelines were used as a reference to identify acceptable intersection operations (LOS C or better). Note that LOS is not a metric to evaluate project impacts under CEQA.

Caltrans in its Interim LDIGP Safety Review Practitioners Guidelines directs practitioners and local district staff to provide safety reviews related to "queuing at off-ramps resulting in slow or stopped traffic on the mainline or speed differentials between adjacent lane". For projects where Caltrans is the lead agency it conducts its own safety review to determine whether the project's contribution to the adverse impacts constitutes a significant impact under CEQA. As Caltrans is not the lead agency for this project, it may review and comment on this study to recommend mitigation to address potential impacts to their facilities.

DATA COLLECTION

To represent typical weekday conditions, traffic data was obtained on Thursdays. Turning movement counts were collected at the following study interchange intersections during AM (6 – 9 AM), midday (11 AM – 2 PM), and PM (3 – 6 PM) peak periods on Thursday, May 4, 2023:

1. I-15 NB Ramps and Rasor Road
2. I-15 SB Ramps and Rasor Road

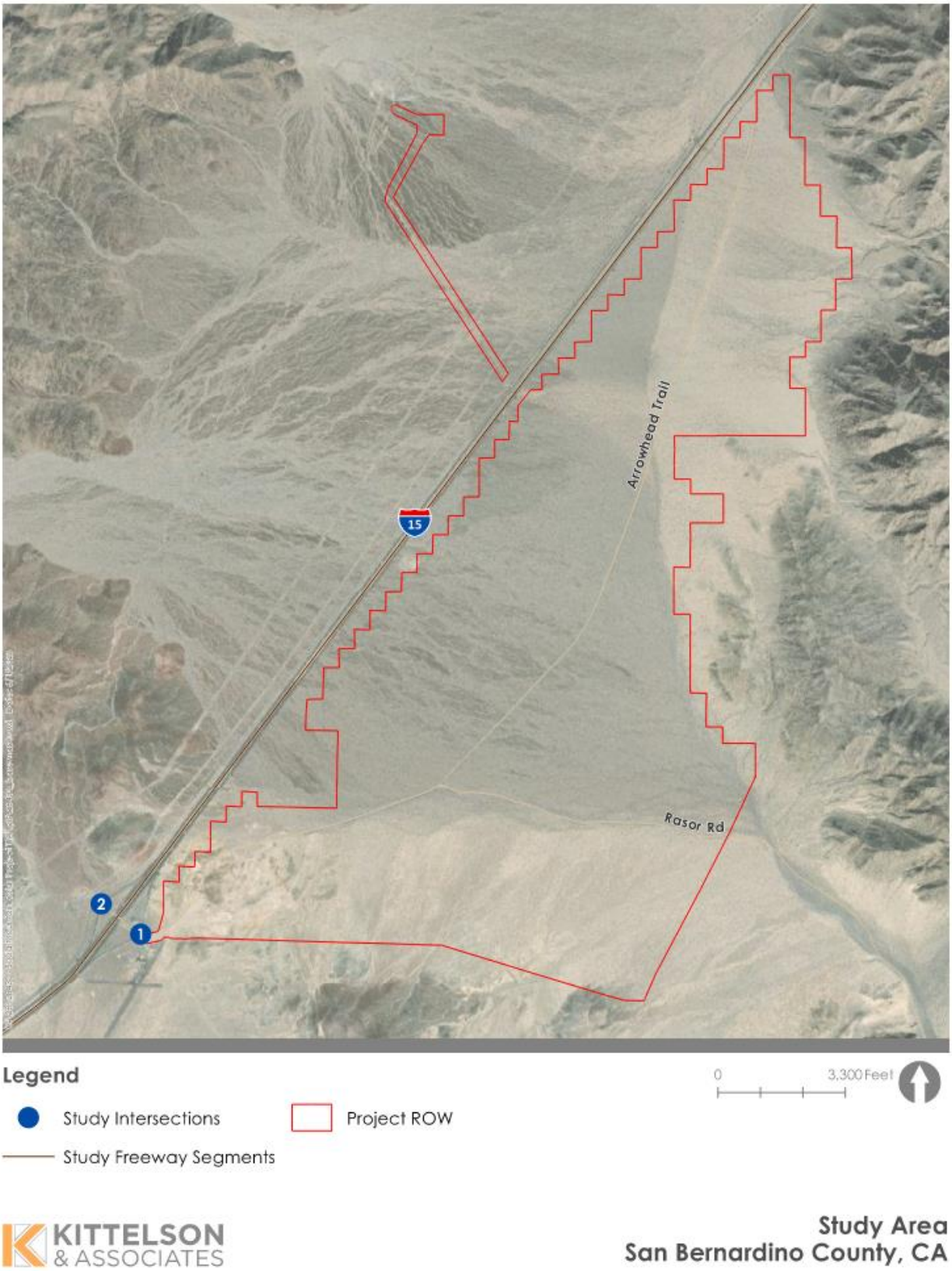
Freeway mainline data were compiled during the AM (6 – 9 AM), midday (11 AM – 2 PM), and PM (3 – 6 PM) peak periods in 15-minute increments using the Caltrans Performance Measurement System (PeMS) for the following segments on Thursday, April 20, 2023:

1. I-15 between Basin Road and Rasor Road
2. I-15 between Rasor Road and Zzyzx Road

Additionally, 2020 Caltrans Truck Annual Average Daily Traffic was obtained to establish heavy truck percentages throughout the analysis.

Refer to Appendix C for traffic count data reports. Figure 2 shows the study area for this transportation analysis.

Figure 2: Study Area



OPERATIONAL ANALYSES

As mentioned prior, the major concern for the trips generated into and out of the Project site is during the construction period. There may be some trips generated near the Project site due to traffic entering and existing a nearby Shell Oil gasoline station and the Rasor Off-Highway Vehicle (OHV) Recreational Area. However, these land uses are not major traffic generators. Therefore, our level-of-service (LOS) analysis is centered on the trips generated from Project construction for the following scenarios:

- Existing Conditions
- Project Construction Conditions

EXISTING CONDITIONS

Intersection Operations

Existing LOS results for the study intersections are shown in Table 4. The results indicate that all study intersections operate with little or no delay during all peak hours. Detailed results can be found in Appendix D.

Table 4: Existing Conditions LOS Results - Intersection

ID	Intersection	Control Type	Delay (s/veh)			LOS		
			AM Peak Hour	MD Peak Hour	PM Peak Hour	AM Peak Hour	MD Peak Hour	PM Peak Hour
1	I-15 NB Ramps & Rasor Road	SSSC	9.4	9.8	9.7	A	A	A
2	I-15 SB Ramps & Rasor Road	SSSC	9.3	9.5	9.3	A	A	A

Note:
SSSC = Side-Street Stop-Controlled

SOURCE: KITTELSON & ASSOCIATES, INC (2023)

Basic Freeway Segment Operations

Existing LOS results for the study highway mainline segments are shown in Table 5. It is found that the freeway segments currently operate at LOS D at two points on typical weekdays: along I-15 Northbound between Rasor Road and Zzyzx Road during the midday peak hour and along I-15 Southbound between Rasor Road and Zzyzx Road during the PM peak hour. Detailed results can be found in Appendix E.

Table 5: Existing Conditions LOS Results – Mainline Segment

Mainline Segment	Density (pc/mi/ln)			LOS		
	AM Peak Hour	MD Peak Hour	PM Peak Hour	AM Peak Hour	MD Peak Hour	PM Peak Hour
I-15 NB *Between Basin Road and Rasor Road*	13.6	22.1	15.6	B	C	B
I-15 NB *Between Rasor Road and Zzyzx Road*	15.9	31.9	24.5	B	D	C
I-15 SB *Between Basin Road and Rasor Road*	11.7	19.3	22.7	B	C	C
I-15 SB *Between Rasor Road and Zzyzx Road*	15.1	24.9	28.7	B	C	D

SOURCE: KITTELSON & ASSOCIATES, INC (2023)

PROJECT CONSTRUCTION CONDITIONS

Project construction is expected to take place over an 18-month period. The results below represent the expected change in operations during project construction.

Intersection Operations

Project LOS results for the study intersections are shown in Table 6. With construction traffic, longer delays would be experienced at the intersection of I-15 NB Ramps & Rasor Road, especially during the AM and PM peak hours. The intersection of I-15 SB Ramps & Rasor Road would experience longer delays during the PM peak hour and result in LOS E operations. Detailed results can be found in Appendix D.

Table 6: Project Construction Conditions Intersection LOS Summary

ID	Intersection	Control Type	Delay (s/veh)			LOS		
			AM Peak Hour	MD Peak Hour	PM Peak Hour	AM Peak Hour	MD Peak Hour	PM Peak Hour
1	I-15 NB Ramps & Rasor Road	SSSC	16.0	9.9	15.4	C	A	C
2	I-15 SB Ramps & Rasor Road	SSSC	10.0	9.6	35.9	B	A	E

Note:

SSSC = Side-Street Stop-Controlled

SOURCE: KITTELSON & ASSOCIATES, INC (2023)

As indicated prior, I-15 Southbound Ramps & Rasor Road would operate at LOS E. Upon further investigation, it has been found that the vehicles along the westbound approach, I-15 Southbound off-ramp, were predicted to experience an increase in delay by approximately 26.6 seconds per vehicle. Along this approach, only eight vehicles would be affected during the peak hour. The 95th percentile queue length along this approach is approximately five feet. With a storage capacity of 1,450 feet, any additional queuing that the delays may cause will most likely not spill onto the freeway mainline and affect freeway operations. Additionally, these delays are temporary traffic conditions that will not affect long-term traffic operations. Overall, even though this is considered less than ideal performance standards (LOS C or better), it is not considered a significant traffic operational deficiency since minimal vehicles are affected, the additional delay will not affect the freeway mainline, and these conditions are temporary during the construction period.

Basic Freeway Segment Operations

Project LOS results for the study highway mainline segments are shown in Table 7. It is found that the freeway segments currently operate at LOS D at two points during a given weekday: along I-15 Northbound between Rasor Road and Zzyzx Road during the midday peak hour and along I-15 Southbound between Rasor Road and Zzyzx Road during the PM peak hour. Compared to existing conditions, during project construction the PM peak would temporarily worsen from LOS B to LOS C along I-15 Northbound between Basin Road and Rasor Road. Detailed results can be found in Appendix E.

Project construction would generate a small amount of traffic compared to current traffic volumes and would not result in a significant traffic operational deficiency at the study freeway mainline segments.

Table 7: Project Construction Conditions LOS Results – Mainline Segment

Mainline Segment	Density (pc/mi/ln)			LOS		
	AM Peak Hour	MD Peak Hour	PM Peak Hour	AM Peak Hour	MD Peak Hour	PM Peak Hour
I-15 NB *Between Basin Road and Rasor Road*	17.4	22.2	19.2	B	C	C
I-15 NB *Between Rasor Road and Zzyzx Road*	15.9	31.9	24.5	B	D	C
I-15 SB *Between Basin Road and Rasor Road*	11.7	19.3	22.7	B	C	C
I-15 SB *Between Rasor Road and Zzyzx Road*	16.1	24.9	30.0	B	C	D

SOURCE: KITTELSON & ASSOCIATES, INC (2023)

OFF-RAMP QUEUEING ANALYSIS

Queuing analyses were conducted for off-ramp approaches at ramp intersections. The queuing analysis compares the minimum required storage lengths to the storage lengths provided for the analyzed intersections. The minimum required storage lengths are based on the maximum 95th percentile queue lengths for all lane groups on the off-ramp approach as calculated in the Vistro queuing worksheets. Vistro reports the 95th percentile queue length according to HCM procedures for a single lane of a lane group (highest queue length considering all lanes of the lane group) instead of the total queue length of all lanes in that lane group.

The provided storage lengths for an off-ramp are measured from the off-ramp gore point to the crosswalk if it is a continuous lane. Our off-ramp queuing analysis is centered on the trips generated from the construction of the solar farm for the following scenarios:

- Existing Conditions
- Project Construction Conditions

EXISTING CONDITIONS

Intersection queuing analysis results for the off-ramp interchanges are shown in Table 8. In all peak hours analyzed, queues at the study interchanges do not exceed the allocated storage capacity. Detailed results can be found in Appendix D.

Table 8: Existing Conditions Off-Ramp Queuing Analysis Results

ID	Location	Control Type	Storage Capacity (feet)	95th Percentile Queue (feet)		
				AM Peak Hour	MD Peak Hour	PM Peak Hour
1	I-15 NB Off-Ramp	SSSC	1,550	2.4	4.3	4.0
2	I-15 SB Off-Ramp	SSSC	1,450	0.9	2.3	0.9

Note:
SSSC = Side-Street Stop-Controlled

SOURCE: KITTELSON & ASSOCIATES, INC (2023)

PROJECT CONSTRUCTION CONDITIONS

Intersection queuing analysis results for the off-ramp interchanges are shown in Table 9. Compared to existing conditions, queues increase in length during all peak hours, especially at the I-15 Northbound Off-Ramp

during the AM and PM peak hours. However, the queues at the study interchanges still do not exceed the allocated storage capacity during project construction and are minimal compared to the storage capacity at the freeway off-ramps. Therefore, off-ramp queues would not adversely affect travel on the freeway mainline. Detailed results can be found in Appendix D.

Table 9: Project Construction Conditions Off-Ramp Queuing Analysis Results

ID	Location	Control Type	Storage Capacity (feet)	95th Percentile Queue (feet)		
				AM Peak Hour	MD Peak Hour	PM Peak Hour
1	I-15 NB Off-Ramp	SSSC	1,550	102.0	4.8	108.8
2	I-15 SB Off-Ramp	SSSC	1,450	15.2	2.4	5.2

Note:
SSSC = Side-Street Stop-Controlled

SOURCE: KITTELSON & ASSOCIATES, INC (2023)

SITE PERFORMANCE REVIEW

The existing roadway conditions and proposed site plan were assessed to determine if on-site safety or operational improvements were necessary due to an increase in traffic from the project.

SITE ACCESS

Access to the Project site would be provided from Rasor Road, which can be accessed approximately 250 feet south from I-15 Northbound Off-Ramp. Rasor Road will allow access to the southwest section of the Project area. There appears to be no visual obstructions and no significant topography changes from the Project access point. Additionally, the site plan indicates that there will not be any landscaping or other additions that will obstruct sight distance. Heavy vehicles heading to the site will have adequate spacing given the wide access at the Project access point.

INTERNAL CIRCULATION

Outside of Rasor Road, a California Department of Transportation access road to the Opah Ditch pit mine may be used for construction of the collection line to the substation on the west side of I-15. Other internal roadways will be located within the project right-of-way that will provide internal access. These internal roadways will be built to provide vehicle access to solar equipment (PV modules, inverters, transformers) for operation and maintenance activities. The existing surface area of Rasor Road will be cleared and compacted using on-site materials. The design standards of the internal access roads within the solar field will be consistent with the amount and type of use they will receive.

BICYCLE AND PEDESTRIAN TRAVEL

As mentioned before, there are no existing pedestrian or bicyclist facilities along any of the roadways surrounding the Project site. Therefore, bike or pedestrian travel are expected to not be affected along the Project site during any phase of construction or operation.

WEIGHT AND LOAD LIMITATIONS

According to California Vehicle Code Weight Sections 35550 to 35558, the construction contractors would comply with regulations as it pertains to vehicle weight as a standard condition. Therefore, it is anticipated that project-related traffic would not cause a significant impact to the roadway pavement and exceed

allowable weight limits. In general, the gross weight on any one axle should not exceed 20,000 pounds, and the gross weight of an entire vehicle should not exceed 80,000 pounds (regardless of the number of axles). There are some exceptions to this and consultation with Caltrans is advised.

On San Bernardino County roads, oversized/overweight load permits are required for vehicles over 65 feet long, over 80,000 pounds in gross weight, over 14 feet high, or over 8 feet and 6 inches wide.

VEHICLE MILES TRAVELED ASSESSMENT

As of July 1, 2020, compliance with SB 743 and the use of SB 743-compliant CEQA analysis became mandatory for land use and transportation projects. These changes have been officially approved and are currently in effect.

Senate Bill 743 (SB 743) was signed into law in September 2013. It required changes to the CEQA Guidelines specifically related to the analysis of transportation impacts. Prior to SB 743, transportation analyses under CEQA focused on factors such as roadway delay and capacity at specific locations. However, SB 743 introduced significant changes by eliminating the use of auto delay, level of service (LOS), and similar measures of vehicular capacity or traffic congestion as the basis for determining significant impacts. Instead, SB 743 identified vehicle miles traveled (VMT) as the most appropriate metric for evaluating a project's transportation impacts. This means that since the bill took effect, automobile delay measured by LOS and similar metrics no longer qualifies as a significant environmental effect under CEQA. However, LOS can still be used as a measure for local agency planning purposes.

In December 2018, the California Governor's Office of Planning and Research (OPR) and the State Natural Resources Agency submitted updated CEQA Guidelines to the Office of Administrative Law for final approval, in order to implement SB 743. The Office of Administrative Law approved these updated guidelines, making VMT the primary metric for analyzing transportation impacts. The finalized documents and related materials can be found at http://resources.ca.gov/ceqa.

The State Office of Planning and Research's (OPR) interpretation of CEQA Guidelines §15064.3 suggests that VMT analysis in the Transportation section of a CEQA document should be focused on automobiles and light duty truck trips. Therefore, vehicle trips mentioned in this section do not include trips that are from heavy duty trucks such as water-transporting and construction trucks.

SCREENING CRITERIA

To be screened out of a detailed VMT analysis, a project or project component would need to satisfy at least one of the VMT screening criteria. A summary of OPR's screening criteria and determinations are listed below:

- **Small Project Size:** Projects generating less than 110 trips per day may be considered to have an insignificant impact on VMT. This threshold is not VMT-based but relates to the CEQA categorical exemption for existing facilities and additions to existing structures up to 10,000 square feet.
- **Projects Within Transit Priority Areas:** Projects, including residential, retail, and office projects, as well as mixed-use projects within a ½ mile of an existing major transit stop or along a high-quality transit corridor, are generally presumed to have a minor impact on VMT. This presumption is not valid if project-specific or location-specific information indicates significant VMT levels. An existing major transit stop is defined as a site with a rail transit station, a ferry terminal served by bus or rail transit, or the intersection of multiple major bus routes with frequent service during peak commute periods.
- **Local-Serving Retail:** Projects categorized as local-serving retail are presumed to have an insignificant impact on VMT.
- **Redevelopment Projects Resulting in Net VMT Reduction:** Redevelopment projects that would decrease VMT, meaning the proposed land use generates less VMT than the existing use, may be considered to have an insignificant impact on VMT.

- **Affordable Housing:** The OPR's technical advisory provides special considerations for affordable housing. Projects that consist of 100% affordable housing in infill locations are presumed to have a minor impact on VMT. Infill locations generally offer better access to transit and more opportunities for walking and cycling. The definition of infill locations is determined based on local conditions.

VMT SCREENING DETERMINATION

OPRs technical guidelines focuses on long term VMT impacts from placement of land uses and transportation facilities and does not specify thresholds to evaluate impacts during project construction. Vehicle trips used for construction purposes would be temporary, and any generated VMT would generally be minor and limited to construction equipment and personnel and would not result in long-term trip generation. Therefore, the VMT screening criteria applies for long term operations.

After the completion of construction, the Project will be remotely controlled, eliminating the need for on-site employees. Primary security monitoring will also be conducted remotely. However, security personnel will perform unscheduled rounds and respond to alarms or fence breaches when necessary. The facility will not be accessible to the public, and access will be infrequent and limited to authorized personnel.

It is anticipated the project will require a workforce of approximately 25 to 40 workers with more workers on panel washing and cleaning days (including a mix of professional staff, maintenance, and security personnel). Given that the project will be remotely controlled, the project is anticipated to generate less than 110 daily one-way trips during operation with panel washing and cleaning occurring two times per year over a three-week period. Therefore, the project screens out as a small project and is not anticipated to result in a significant VMT impact due to low long-term operational traffic.

Table 10: Summary of VMT Screening Determination

Screening Criteria	Criterion Met?	Reasoning
Small Project Size	**Yes**	**The proposed project would operate primarily remotely and thus generate less than 110 daily one-way (non-truck) trips during operations.** Therefore, the project would screen out of a detailed VMT analysis.
Projects within Transit Priority Area	No	The proposed project is not located near high-quality transit and is not screened out under this criterion.
Local-Serving Retail	No	The proposed project is not considered local-serving retail.
Redevelopment Projects Resulting in Net VMT Reduction	No	The project would likely generate more daily total VMT since the land is currently open area and is not screened out under this criterion.
Affordable Housing	No	The project is not part of a residential project and is not screened out under this criterion.

SOURCE: KITTELSON & ASSOCIATES, INC (2023)

RECOMMENDATIONS

Even though the Project would generate a significant number of workers, delivery, and construction vehicle trips throughout construction, the traffic flow in the Project area would not be adversely affected. To ensure satisfactory operation of the roadway network during construction, the following recommendations should be implemented:

- Construction Traffic Management Plan
- Recreationalist Access
- Transport of Hazardous Materials

Each of these recommendations is detailed further in the sections below.

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

The contractor should prepare a Construction Traffic Management Plan (Plan) for Project construction to minimize adverse effects of project construction traffic. The Plan may be prepared in consultation with the County of San Bernardino Public Works Department or Caltrans prior to construction and identify the following:

- A breakdown of the number, type, capacity, and dimensions of the construction vehicles that would service the Project site
- An estimate of the average daily or weekly number of vehicles per vehicle type during each major phase of the work
- Construction haul trucks weight and loads as they should comply with Caltrans and San Bernardino County applicable weight restrictions as a standard condition
- Routing of passenger/worker vehicles, delivery vehicles, and excavation and construction vehicles
- Review of site access as well as recommendations of signage and markings as needed so accessibility to Shell gas station is not affected
- Enforcement of routing
- Delivery hour restrictions, if applicable
- Traffic control methods and when each is required
- A contact for complaints and how complaints are to be addressed

Traffic control shall be implemented during grading and construction of the Project's main access point from Rasor Road and when large deliveries in wide-load vehicles or a high volume of deliveries occurs. Traffic control may include escort vehicles for wide loads, signage, and/or flaggers. Traffic control should be consistent with the requirements in the Manual of Uniform Traffic Control Devices (MUTCD). All roadways should always be open to emergency personnel.

RECREATIONALIST ACCESS

The proposed array areas would be fenced and unavailable to recreationists. The arrays would block access to Arrowhead Trail, which is designated as a closed road by BLM. Rasor Road would be relocated along the southern boundary of the project site to maintain public access to the Rasor OHV Area. Road signage notifying recreationists of road closures and alternate routes would be installed as needed.

The realigned Rasor Road would be graded but remain unpaved. The road would conform to BLM specifications and would be approximately 26 feet wide and 2.85 miles long. The new road alignment should be completed and provide access to the Rasor OHV Area prior to closing or decommissioning of the existing Rasor Road alignment.

TRANSPORT OF HAZARDOUS MATERIALS

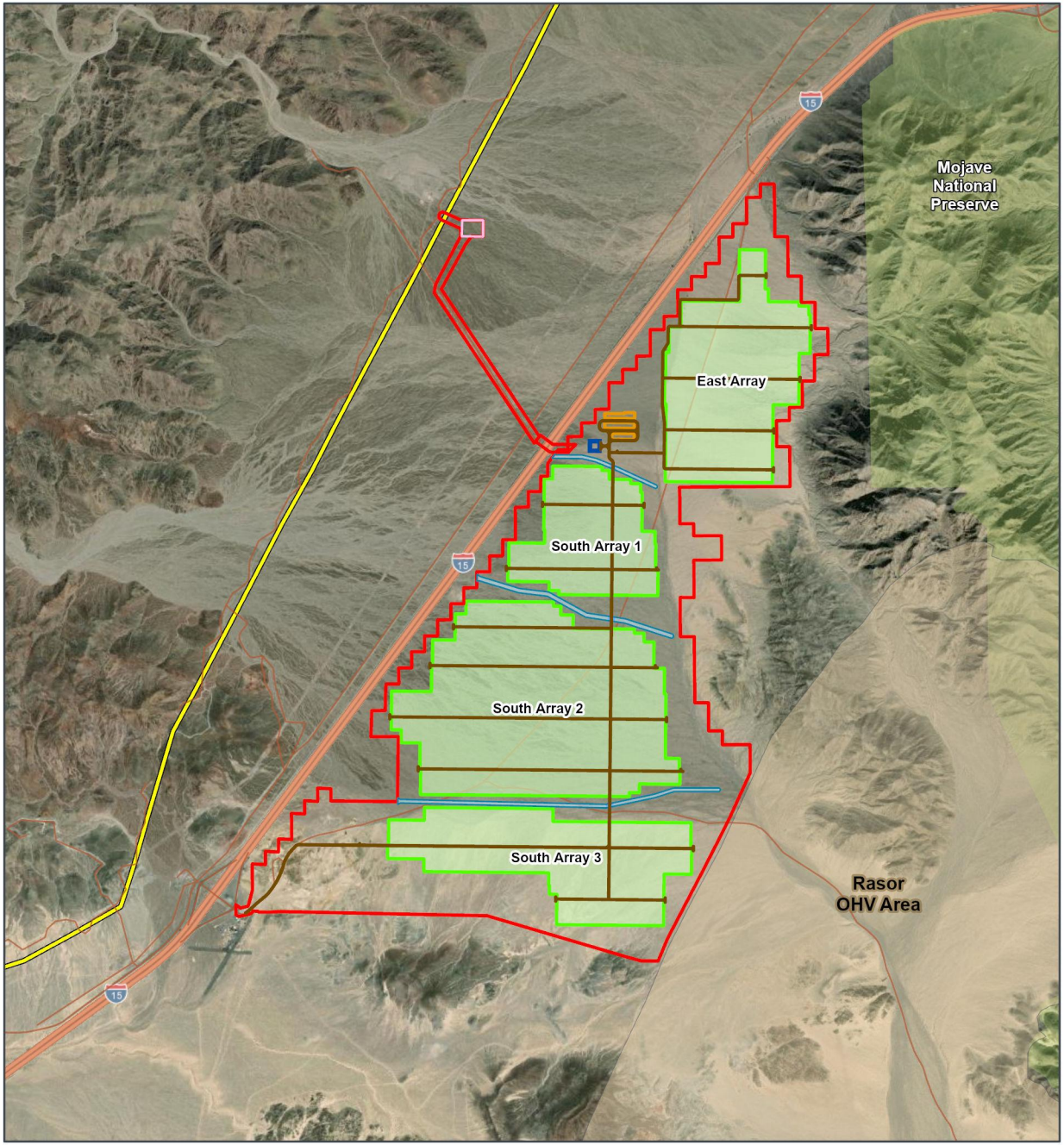
Transporting hazardous materials involves compliance with federal, state, and local regulations designed to ensure safety. The following hazardous materials are anticipated to be transported to and/or from the site during project construction and/or operations:

- **Gasoline and diesel fuel:** These are highly flammable liquids. Transportation hazards include the risk of spills and leaks, which could lead to fires or explosions. Properly sealed and approved containers should be used, and transport vehicles should be equipped with safety measures to handle potential leaks.
- **Lubricating oils, grease, hydraulic fluids, and gear oils:** These substances are less volatile but can still pose environmental hazards if spilled. They can contaminate soil and water bodies, affecting local ecosystems. Transportation should ensure that containers are leak-proof and that spills can be promptly contained and cleaned up.

- **Glycol-based antifreeze:** Antifreeze can be toxic to humans and wildlife if ingested. Spills need to be avoided, and appropriate measures should be taken to manage any accidental releases. Containers should be robust and securely sealed.
- **Lead-acid storage batteries and electrolyte solution:** These batteries contain lead and sulfuric acid, both hazardous materials. Spillage of sulfuric acid can cause severe burns and environmental damage. Batteries should be transported upright and secured to prevent tipping and leakage, with appropriate handling and emergency procedures in place.
- **Lithium-ion batteries:** These batteries can pose a fire risk, especially if damaged. They require careful handling to avoid punctures or crushing. Transport regulations specify packaging requirements to minimize the risk of short circuits and fires.
- **Cleaning solvents:** Many organic solvents are flammable and can release harmful vapors. Transportation requires containers that prevent leaks and are resistant to solvent degradation. Adequate ventilation and precautions should be prepared to prevent ignition sources.
- **Dielectric fluids:** While less hazardous than some other materials, dielectric fluids can still pose environmental risks if spilled. Secure containers and proper handling during transport should be utilized to prevent leaks.
- **Herbicides:** These chemicals can be toxic to plants and animals. Secure containers and careful handling are essential to prevent accidental spills and contamination of the surrounding environment.

Carriers should develop and have emergency response plans to address potential spills or accidents, including proper training for personnel. Comprehensive documentation of hazardous materials being transported, such as safety data sheets, is crucial for ensuring appropriate handling and emergency response. Additionally, vehicles used for transporting hazardous materials should be properly maintained and equipped with safety features to prevent accidents and mitigate the impact of any incidents. By implementing these safety measures, the potential hazards associated with transporting these materials can be significantly reduced, thereby protecting both human health and the environment.

Appendix A
Proposed Site Plan



Existing Road

500kV Mead-Adelanto Transmission Line

Rasor Off-Highway Vehicle (OHV) Area

Mojave National Preserve

Proposed Project Components

Access Road

Drainage Canal

Project Site

Proposed BESS Yard

Proposed Box Culverts

Proposed Substation

Proposed Switchyard

Solar Array

San Bernardino County, CA
NAD 1983 UTM Zone 11N
35.1564°N 116.184°W

0 0.35 0.7 Miles

0 0.35 0.7 Kilometers

N

1:50,000

Base Map: Esri ArcGIS Online, accessed March 2024
Updated: 3/6/2024
Project No. 68347
Layout: 68347_Prj_Overview_Site_Plan
Aprx: General

SWCA ENVIRONMENTAL CONSULTANTS

Appendix B
CEC Guidelines

Barclays California Code of Regulations
Title 20. Public Utilities and Energy
Division 2. State Energy Resources Conservation and Development Commission (Refs & Annos)
Chapter 5. Power Plant Site Certification

20 CCR Div. 2 Ch. 5 App. B

Appendix B Information Requirements for an Application for Certification (AFC) or Small Power Plant Exemption (SPPE).

Effective: July 20, 2023
Currentness

Traffic and Transportation

A. A regional transportation setting, on topographic maps (scale of 1:250,000), identifying the project location and major transportation facilities. Include a reference to the transportation element of any applicable local or regional plan.

B. If the proposed project including any linear facility is to be located within four miles of an airport, a planned or proposed airport runway, or an airport runway under construction, discuss the project's compliance with the applicable sections of the current Federal Aviation Regulation Part 77 -- Safe, Efficient Use, and Preservation of the Navigable Airspace, specifically any potential to obstruct or impede air navigation generated by the project during construction or operation; such as, a thermal plume, a visible water vapor plume, glare, electrical interference, or surface structure height. The discussion should include:

   a. A map at a scale of 1:24,000 that displays the airport or airstrip runway configuration, the airport influence area including all safety zones, and the proposed power plant site and related facilities;

   b. A thermal plume analysis that describes the plume's velocity;

   c. A discussion of the project's conformance with applicable Airport Land Use Compatibility Plan policies; and

   d. Copies of FAA Form 7460-1, Notice of Proposed Construction or Alteration, that were submitted or approved for any project component requiring notice.

C. An evaluation of the project's potential impacts related to vehicle miles traveled (VMT) that may include:

   a. The local jurisdiction's thresholds of significance;

   b. Methodologies (such as local VMT Evaluation Tool);

   c. VMT heat maps; and

   d. Transportation demand management plans and any documents supporting the project applicant's CEQA determination.

D. An identification, on topographic maps at a scale of 1:24,000 and a description of existing and planned roads, rail lines (including light rail), bike trails, airports, bus routes serving the project vicinity, pipelines, and canals in the project area affected by or serving the proposed facility. For each road identified, include the following information, where applicable:

   a. Road classification and design capacity;

   b. Current daily average and peak traffic counts;

   c. Current and projected levels of service before project development, during construction, and during project operation;

   d. Weight and load limitations;

   e. Estimated percentage of current traffic flows for passenger vehicles and trucks; and

   f. An identification of any road features affecting public safety.

E. An assessment of the construction and operation impacts of the proposed project on the transportation facilities

identified in subsection (g)(5)(D). Also include anticipated project-specific traffic, estimated changes to daily average and peak traffic counts, levels of service, and traffic/truck mix, and the impact of construction of any facilities identified in subsection (g)(5)(D). Include:

a. Estimated one-way trip lengths for workers, deliveries, and truck haul trips generated by the construction of the project.

b. Description of public roadways and intersections temporarily or permanently altered by construction and operation including the duration of activities.

F. A discussion of project-related hazardous materials to be transported to or from the project during construction and operation of the project, including the types, estimated quantities, estimated number of trips, anticipated routes, means of transportation, and any transportation hazards associated with such transport.

Appendix C
Data Collection

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of San Bernardino
N/S: I-15 Northbound Ramps
E/W: Rasor Road
Weather: Clear

File Name : 01_SCB_15N_Rasor AM
Site Code : 99923422
Start Date : 5/4/2023
Page No : 1

Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				Rasor Road Westbound				I-15 Northbound Off Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
06:00 AM	0	0	0	0	0	1	1	2	0	3	0	3	0	0	0	0	5
06:15 AM	0	0	0	0	0	0	2	2	0	0	3	3	0	0	0	0	5
06:30 AM	0	0	0	0	0	0	2	2	0	2	3	5	0	1	0	1	8
06:45 AM	0	0	0	0	0	1	5	6	0	3	3	6	0	0	0	0	12
Total	0	0	0	0	0	2	10	12	0	8	9	17	0	1	0	1	30
07:00 AM	0	0	0	0	0	0	2	2	0	2	2	4	0	1	0	1	7
07:15 AM	0	0	0	0	0	0	3	3	0	4	4	8	0	0	0	0	11
07:30 AM	0	0	0	0	0	0	3	3	0	1	2	3	0	1	0	1	7
07:45 AM	0	0	0	0	0	3	1	4	0	1	2	3	0	0	0	0	7
Total	0	0	0	0	0	3	9	12	0	8	10	18	0	2	0	2	32
08:00 AM	0	0	0	0	0	0	3	3	0	0	2	2	0	0	0	0	5
08:15 AM	0	0	0	0	0	0	2	2	0	0	1	1	0	0	0	0	3
08:30 AM	0	0	0	0	0	0	2	2	0	1	2	3	0	0	0	0	5
08:45 AM	0	0	0	0	0	0	5	5	0	1	5	6	0	0	0	0	11
Total	0	0	0	0	0	0	12	12	0	2	10	12	0	0	0	0	24
Grand Total	0	0	0	0	0	5	31	36	0	18	29	47	0	3	0	3	86
Apprch %	0	0	0		0	13.9	86.1		0	38.3	61.7		0	100	0		
Total %	0	0	0	0	0	5.8	36	41.9	0	20.9	33.7	54.7	0	3.5	0	3.5	

	I-15 Northbound On Ramp Southbound				Rasor Road Westbound				I-15 Northbound Off Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 06:30 AM																	
06:30 AM	0	0	0	0	0	0	2	2	0	2	3	5	0	**1**	0	**1**	8
06:45 AM	0	0	0	0	0	**1**	**5**	**6**	0	3	3	6	0	0	0	0	**12**
07:00 AM	0	0	0	0	0	0	2	2	0	2	2	4	0	1	0	1	7
07:15 AM	0	0	0	0	0	0	3	3	0	**4**	**4**	**8**	0	0	0	0	11
Total Volume	0	0	0	0	0	1	12	13	0	11	12	23	0	2	0	2	38
% App. Total	0	0	0		0	7.7	92.3		0	47.8	52.2		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.600	.542	.000	.688	.750	.719	.000	.500	.000	.500	.792

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County of San Bernardino
N/S: I-15 Northbound Ramps
E/W: Rasor Road
Weather: Clear

File Name : 01_SCB_15N_Rasor MD
Site Code : 99923422
Start Date : 5/4/2023
Page No : 1

Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				Rasor Road Westbound				I-15 Northbound Off Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
11:00 AM	0	0	0	0	0	1	11	12	0	0	7	7	0	2	0	2	21
11:15 AM	0	0	0	0	0	5	4	9	0	1	10	11	0	4	0	4	24
11:30 AM	0	0	0	0	0	2	10	12	0	1	5	6	0	0	0	0	18
11:45 AM	0	0	0	0	0	1	4	5	1	4	8	13	1	0	0	1	19
Total	0	0	0	0	0	9	29	38	1	6	30	37	1	6	0	7	82
12:00 PM	0	0	0	0	0	0	7	7	1	0	7	8	1	3	0	4	19
12:15 PM	0	0	0	0	0	6	6	12	0	0	8	8	0	3	0	3	23
12:30 PM	0	0	0	0	0	3	9	12	0	3	15	18	0	1	0	1	31
12:45 PM	0	0	0	0	0	3	9	12	0	0	7	7	0	1	0	1	20
Total	0	0	0	0	0	12	31	43	1	3	37	41	1	8	0	9	93
01:00 PM	0	0	0	0	0	1	8	9	0	1	2	3	0	0	0	0	12
01:15 PM	0	0	0	0	0	2	2	4	0	4	3	7	0	2	0	2	13
01:30 PM	0	0	0	0	0	0	5	5	0	1	6	7	0	0	0	0	12
01:45 PM	0	0	0	0	0	1	11	12	0	0	10	10	0	2	0	2	24
Total	0	0	0	0	0	4	26	30	0	6	21	27	0	4	0	4	61
Grand Total	0	0	0	0	0	25	86	111	2	15	88	105	2	18	0	20	236
Apprch %	0	0	0		0	22.5	77.5		1.9	14.3	83.8		10	90	0		
Total %	0	0	0	0	0	10.6	36.4	47	0.8	6.4	37.3	44.5	0.8	7.6	0	8.5	

	I-15 Northbound On Ramp Southbound				Rasor Road Westbound				I-15 Northbound Off Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	0	0	0	0	0	0	7	7	**1**	0	7	8	**1**	**3**	0	**4**	19
12:15 PM	0	0	0	0	0	**6**	6	**12**	0	0	8	8	0	3	0	3	23
12:30 PM	0	0	0	0	0	3	**9**	12	0	**3**	**15**	**18**	0	1	0	1	**31**
12:45 PM	0	0	0	0	0	3	9	12	0	0	7	7	0	1	0	1	20
Total Volume	0	0	0	0	0	12	31	43	1	3	37	41	1	8	0	9	93
% App. Total	0	0	0		0	27.9	72.1		2.4	7.3	90.2		11.1	88.9	0		
PHF	.000	.000	.000	.000	.000	.500	.861	.896	.250	.250	.617	.569	.250	.667	.000	.563	.750

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	I-15 Northbound On Ramp Southbound				Rasor Road Westbound				I-15 Northbound Off Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	0	0	0	0	0	1	10	11	0	0	6	6	0	2	0	2	19
03:15 PM	0	0	0	0	0	2	9	11	0	3	8	11	0	0	0	0	22
03:30 PM	0	0	0	0	0	0	6	6	0	2	6	8	0	0	0	0	14
03:45 PM	0	0	0	0	0	0	10	10	0	5	9	14	0	1	0	1	25
Total	0	0	0	0	0	3	35	38	0	10	29	39	0	3	0	3	80
04:00 PM	0	0	0	0	0	1	6	7	0	1	9	10	0	0	0	0	17
04:15 PM	0	0	0	0	0	1	6	7	0	3	4	7	0	1	0	1	15
04:30 PM	0	0	0	0	0	2	6	8	0	0	7	7	0	1	0	1	16
04:45 PM	0	0	0	0	0	1	10	11	0	0	8	8	0	1	0	1	20
Total	0	0	0	0	0	5	28	33	0	4	28	32	0	3	0	3	68
05:00 PM	0	0	0	0	0	1	3	4	0	4	4	8	0	0	0	0	12
05:15 PM	0	0	0	0	0	2	3	5	0	0	6	6	0	1	0	1	12
05:30 PM	0	0	0	0	0	1	6	7	0	0	6	6	0	1	0	1	14
05:45 PM	0	0	0	0	0	1	6	7	0	1	4	5	0	1	0	1	13
Total	0	0	0	0	0	5	18	23	0	5	20	25	0	3	0	3	51
Grand Total	0	0	0	0	0	13	81	94	0	19	77	96	0	9	0	9	199
Apprch %	0	0	0		0	13.8	86.2		0	19.8	80.2		0	100	0		
Total %	0	0	0	0	0	6.5	40.7	47.2	0	9.5	38.7	48.2	0	4.5	0	4.5	

	I-15 Northbound On Ramp Southbound				Rasor Road Westbound				I-15 Northbound Off Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:00 PM																	
03:00 PM	0	0	0	0	0	1	**10**	**11**	0	0	6	6	0	**2**	0	**2**	19
03:15 PM	0	0	0	0	0	**2**	9	11	0	3	8	11	0	0	0	0	22
03:30 PM	0	0	0	0	0	0	6	6	0	2	6	8	0	0	0	0	14
03:45 PM	0	0	0	0	0	0	10	10	0	**5**	**9**	**14**	0	1	0	1	**25**
Total Volume	0	0	0	0	0	3	35	38	0	10	29	39	0	3	0	3	80
% App. Total	0	0	0		0	7.9	92.1		0	25.6	74.4		0	100	0		
PHF	.000	.000	.000	.000	.000	.375	.875	.864	.000	.500	.806	.696	.000	.375	.000	.375	.800

Counts Unlimited, Inc.
PO Box 1178
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County of San Bernardino
N/S: I-15 Southbound Ramps
E/W: Rasor Road
Weather: Clear

File Name : 02_SCB_15S_Rasor AM
Site Code : 99923422
Start Date : 5/4/2023
Page No : 1

Groups Printed- Total Volume

	I-15 Southbound Off Ramp Southbound				Rasor Road Westbound				I-15 Southbound On Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	2
07:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	1	0	1	2	1	0	0	1	0	0	0	0	0	0	1	1	4
Total	1	2	1	4	2	0	0	2	0	0	0	0	0	0	1	1	7
08:00 AM	1	1	1	3	0	0	0	0	0	0	0	0	0	0	1	1	4
08:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	2	2	0	0	0	0	0	0	0	0	0	0	1	1	3
08:45 AM	1	0	0	1	3	0	0	3	0	0	0	0	0	0	1	1	5
Total	2	2	3	7	3	0	0	3	0	0	0	0	0	0	3	3	13
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	1	1	2	0	0	0	0	0	0	0	0	0	0	1	1	3
09:30 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
09:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	4	1	5	0	0	0	0	0	0	0	0	0	0	1	1	6
Grand Total	3	8	5	16	5	0	0	5	0	0	0	0	0	0	5	5	26
Apprch %	18.8	50	31.2		100	0	0		0	0	0		0	0	100		
Total %	11.5	30.8	19.2	61.5	19.2	0	0	19.2	0	0	0	0	0	0	19.2	19.2	

	I-15 Southbound Off Ramp Southbound				Rasor Road Westbound				I-15 Southbound On Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	**1**	**1**	1	**3**	0	0	0	0	0	0	0	0	0	0	**1**	**1**	4
08:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	**2**	2	0	0	0	0	0	0	0	0	0	0	1	1	3
08:45 AM	1	0	0	1	**3**	0	0	**3**	0	0	0	0	0	0	1	1	**5**
Total Volume	2	2	3	7	3	0	0	3	0	0	0	0	0	0	3	3	13
% App. Total	28.6	28.6	42.9		100	0	0		0	0	0		0	0	100		
PHF	.500	.500	.375	.583	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.750	.750	.650

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County of San Bernardino
N/S: I-15 Southbound Ramps
E/W: Rasor Road
Weather: Clear

File Name : 02_SCB_15S_Rasor MD
Site Code : 99923422
Start Date : 5/4/2023
Page No : 1

Groups Printed- Total Volume

	I-15 Southbound Off Ramp Southbound				Rasor Road Westbound				I-15 Southbound On Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
11:00 AM	2	2	0	4	1	0	0	1	0	0	0	0	0	0	0	0	5
11:15 AM	3	5	1	9	4	0	0	4	0	0	0	0	0	0	0	0	13
11:30 AM	0	2	0	2	2	0	0	2	0	0	0	0	0	0	1	1	5
11:45 AM	0	0	0	0	1	1	0	2	0	0	0	0	0	1	1	2	4
Total	5	9	1	15	8	1	0	9	0	0	0	0	0	1	2	3	27
12:00 PM	3	3	2	8	0	1	0	1	0	0	0	0	0	2	1	3	12
12:15 PM	2	3	1	6	5	0	0	5	0	0	0	0	0	0	1	1	12
12:30 PM	1	2	3	6	4	0	0	4	0	0	0	0	0	0	3	3	13
12:45 PM	1	1	2	4	3	0	0	3	0	0	0	0	0	0	3	3	10
Total	7	9	8	24	12	1	0	13	0	0	0	0	0	2	8	10	47
01:00 PM	0	1	1	2	1	0	0	1	0	0	0	0	0	0	0	0	3
01:15 PM	2	0	0	2	2	0	0	2	0	0	0	0	0	0	1	1	5
01:30 PM	0	1	1	2	0	0	0	0	0	0	0	0	0	0	1	1	3
01:45 PM	2	2	1	5	1	0	0	1	0	0	0	0	0	0	1	1	7
Total	4	4	3	11	4	0	0	4	0	0	0	0	0	0	3	3	18
Grand Total	16	22	12	50	24	2	0	26	0	0	0	0	0	3	13	16	92
Apprch %	32	44	24		92.3	7.7	0		0	0	0		0	18.8	81.2		
Total %	17.4	23.9	13	54.3	26.1	2.2	0	28.3	0	0	0	0	0	3.3	14.1	17.4	

	I-15 Southbound Off Ramp Southbound				Rasor Road Westbound				I-15 Southbound On Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	**3**	**3**	2	**8**	0	**1**	0	1	0	0	0	0	0	**2**	1	**3**	12
12:15 PM	2	3	1	6	**5**	0	0	**5**	0	0	0	0	0	0	1	1	12
12:30 PM	1	2	**3**	6	4	0	0	4	0	0	0	0	0	0	**3**	3	**13**
12:45 PM	1	1	2	4	3	0	0	3	0	0	0	0	0	0	3	3	10
Total Volume	7	9	8	24	12	1	0	13	0	0	0	0	0	2	8	10	47
% App. Total	29.2	37.5	33.3		92.3	7.7	0		0	0	0		0	20	80		
PHF	.583	.750	.667	.750	.600	.250	.000	.650	.000	.000	.000	.000	.000	.250	.667	.833	.904

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County of San Bernardino
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Weather: Clear

File Name : 02_SCB_15S_Rasor PM
Site Code : 99923422
Start Date : 5/4/2023
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Groups Printed- Total Volume

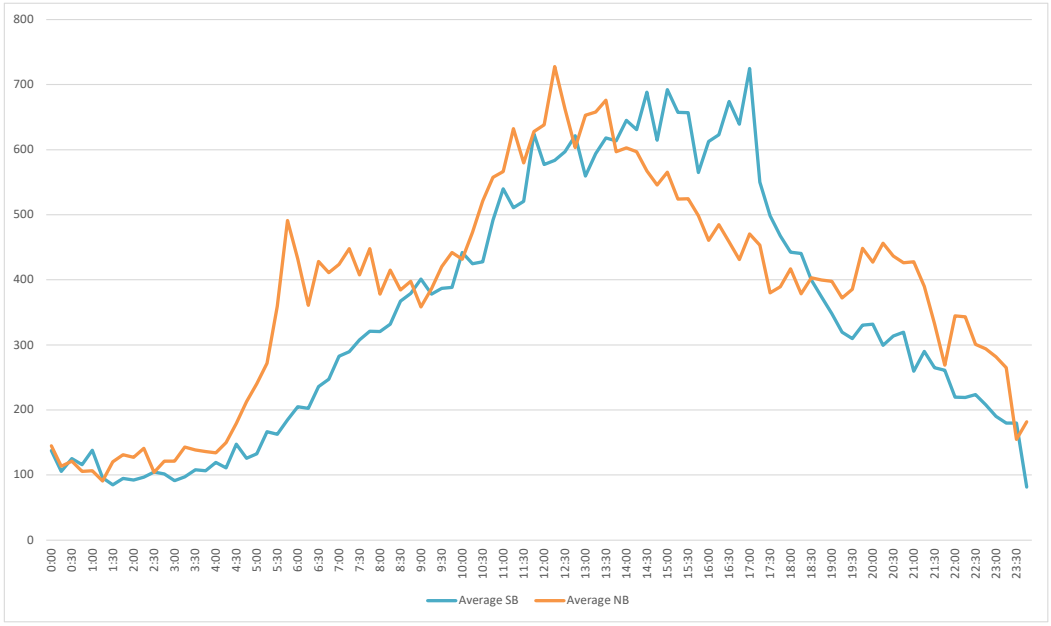
	I-15 Southbound Off Ramp Southbound				Rasor Road Westbound				I-15 Southbound On Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	2	2	0	4	1	0	0	1	0	0	0	0	0	0	0	0	5
03:15 PM	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2
03:30 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	1	1	3
03:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2
Total	3	4	0	7	3	0	0	3	0	0	0	0	0	0	2	2	12
04:00 PM	0	0	2	2	1	0	0	1	0	0	0	0	0	0	2	2	5
04:15 PM	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	2
04:30 PM	1	0	0	1	2	0	0	2	0	0	0	0	0	0	0	0	3
04:45 PM	1	2	0	3	1	0	0	1	0	0	0	0	0	0	0	0	4
Total	3	2	2	7	5	0	0	5	0	0	0	0	0	0	2	2	14
05:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	1	0	2	3	2	0	0	2	0	0	0	0	0	0	0	0	5
05:30 PM	1	1	0	2	1	0	0	1	0	0	0	0	0	0	2	2	5
05:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	3	1	2	6	4	0	0	4	0	0	0	0	0	0	2	2	12
Grand Total	9	7	4	20	12	0	0	12	0	0	0	0	0	0	6	6	38
Apprch %	45	35	20		100	0	0		0	0	0		0	0	100		
Total %	23.7	18.4	10.5	52.6	31.6	0	0	31.6	0	0	0	0	0	0	15.8	15.8	

	I-15 Southbound Off Ramp Southbound				Rasor Road Westbound				I-15 Southbound On Ramp Northbound				Rasor Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**1**	**2**	0	**3**	1	0	0	1	0	0	0	0	0	0	0	0	4
05:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	1	0	**2**	3	**2**	0	0	**2**	0	0	0	0	0	0	0	0	**5**
05:30 PM	1	1	0	2	1	0	0	1	0	0	0	0	0	0	**2**	**2**	5
Total Volume	3	3	2	8	5	0	0	5	0	0	0	0	0	0	2	2	15
% App. Total	37.5	37.5	25		100	0	0		0	0	0		0	0	100		
PHF	.750	.375	.250	.667	.625	.000	.000	.625	.000	.000	.000	.000	.000	.000	.250	.250	.750

index	sheet name
2	I15_NB_Basin_Rasor
3	I15_NB_Rasor_Zzyzx
4	I15_SB_Basin_Rasor
5	I15_SB_Rasor_Zzyzx

		Flow (veh/15 minutes)								
Date-Time	Time	I15_NB_Basin_Rasor	I15_NB_Rasor_Zzyzx	I15_SB_Basin_Rasor	I15_SB_Rasor_Zzyzx	Average SB	Average NB	Hourly SB	Hourly NB	Hourly Sum
2023-04-20 00:00:00	0:00	129	161	116	159	137.5	145	484.5	485.5	970
2023-04-20 00:15:00	0:15	101	126	97	114	105.5	113.5	485	447	932
2023-04-20 00:30:00	0:30	103	140	111	140	125.5	121.5	475.5	424.5	900
2023-04-20 00:45:00	0:45	83	128	95	137	116	105.5	435	423.5	858.5
2023-04-20 01:00:00	1:00	112	101	120	156	138	106.5	414	449	863
2023-04-20 01:15:00	1:15	75	107	84	108	96	91	368.5	470	838.5
2023-04-20 01:30:00	1:30	113	128	80	90	85	120.5	369.5	520	889.5
2023-04-20 01:45:00	1:45	119	143	73	117	95	131	389	503.5	892.5
2023-04-20 02:00:00	2:00	110	145	94	91	92.5	127.5	395.5	494	889.5
2023-04-20 02:15:00	2:15	127	155	81	113	97	141	394.5	488	882.5
2023-04-20 02:30:00	2:30	92	116	94	115	104.5	104	395	490	885
2023-04-20 02:45:00	2:45	108	135	91	112	101.5	121.5	398.5	524.5	923
2023-04-20 03:00:00	3:00	116	127	99	84	91.5	121.5	403.5	539	942.5
2023-04-20 03:15:00	3:15	130	156	85	110	97.5	143	431.5	551.5	983
2023-04-20 03:30:00	3:30	124	153	104	112	108	138.5	445	558.5	1003.5
2023-04-20 03:45:00	3:45	130	142	91	122	106.5	136	484.5	599.5	1084
2023-04-20 04:00:00	4:00	122	146	113	126	119.5	134	504	676.5	1180.5
2023-04-20 04:15:00	4:15	149	151	120	102	111	150	517	783	1300
2023-04-20 04:30:00	4:30	187	172	137	158	147.5	179.5	572.5	905	1477.5
2023-04-20 04:45:00	4:45	208	218	118	134	126	213	587.5	1085	1672.5
2023-04-20 05:00:00	5:00	246	235	122	143	132.5	240.5	646.5	1363	2009.5
2023-04-20 05:15:00	5:15	263	281	150	183	166.5	272	719	1554.5	2273.5
2023-04-20 05:30:00	5:30	351	368	140	185	162.5	359.5	755	1643.5	2398.5
2023-04-20 05:45:00	5:45	461	521	166	204	185	491	828.5	1712	2540.5
2023-04-20 06:00:00	6:00	362	502	185	225	205	432	891	1632	2523
2023-04-20 06:15:00	6:15	333	389	203	202	202.5	361	968.5	1624	2592.5
2023-04-20 06:30:00	6:30	411	445	208	264	236	428	1055.5	1711	2766.5
2023-04-20 06:45:00	6:45	358	464	221	274	247.5	411	1127	1690.5	2817.5
2023-04-20 07:00:00	7:00	394	454	283	282	282.5	424	1200.5	1727.5	2928
2023-04-20 07:15:00	7:15	388	508	261	318	289.5	448	1238.5	1681.5	2920
2023-04-20 07:30:00	7:30	379	436	291	324	307.5	407.5	1281	1648.5	2929.5
2023-04-20 07:45:00	7:45	398	498	276	366	321	448	1340.5	1625.5	2966
2023-04-20 08:00:00	8:00	313	443	275	366	320.5	378	1398.5	1575	2973.5
2023-04-20 08:15:00	8:15	390	440	306	358	332	415	1479	1555.5	3034.5
2023-04-20 08:30:00	8:30	338	431	335	399	367	384.5	1525	1527	3052
2023-04-20 08:45:00	8:45	341	454	325	433	379	397.5	1545	1563	3108
2023-04-20 09:00:00	9:00	292	425	342	460	401	358.5	1554.5	1607.5	3162
2023-04-20 09:15:00	9:15	356	417	343	413	378	386.5	1595.5	1680.5	3276
2023-04-20 09:30:00	9:30	397	444	327	447	387	420.5	1642.5	1767	3409.5
2023-04-20 09:45:00	9:45	355	529	315	462	388.5	442	1683	1867.5	3550.5
2023-04-20 10:00:00	10:00	393	470	395	489	442	431.5	1786	1983	3769
2023-04-20 10:15:00	10:15	419	527	363	487	425	473	1884	2118	4002
2023-04-20 10:30:00	10:30	480	562	350	505	427.5	521	1970	2277	4247
2023-04-20 10:45:00	10:45	486	629	412	571	491.5	557.5	2063	2335.5	4398.5
2023-04-20 11:00:00	11:00	532	601	473	607	540	566.5	2196	2406	4602
2023-04-20 11:15:00	11:15	560	704	424	598	511	632	2233	2477.5	4710.5
2023-04-20 11:30:00	11:30	521	638	429	612	520.5	579.5	2305.5	2573	4878.5
2023-04-20 11:45:00	11:45	548	708	540	709	624.5	628	2382	2656	5038
2023-04-20 12:00:00	12:00	619	657	505	649	577	638	2379	2631	5010
2023-04-20 12:15:00	12:15	624	831	508	659	583.5	727.5	2361.5	2646	5007.5
2023-04-20 12:30:00	12:30	590	735	510	684	597	662.5	2372	2576.5	4948.5
2023-04-20 12:45:00	12:45	519	687	549	694	621.5	603	2393	2590	4983
2023-04-20 13:00:00	13:00	567	739	487	632	559.5	653	2385	2584	4969
2023-04-20 13:15:00	13:15	532	784	517	671	594	658	2470.5	2533.5	5004
2023-04-20 13:30:00	13:30	589	763	516	720	618	676	2507.5	2472.5	4980
2023-04-20 13:45:00	13:45	501	693	524	703	613.5	597	2578	2364	4942
2023-04-20 14:00:00	14:00	510	695	558	732	645	602.5	2579	2312.5	4891.5
2023-04-20 14:15:00	14:15	522	672	551	711	631	597	2626	2275.5	4901.5
2023-04-20 14:30:00	14:30	480	655	613	764	688.5	567.5	2652.5	2202.5	4855
2023-04-20 14:45:00	14:45	464	627	529	700	614.5	545.5	2621	2159.5	4780.5
2023-04-20 15:00:00	15:00	447	684	637	747	692	565.5	2571.5	2112.5	4684
2023-04-20 15:15:00	15:15	434	614	551	764	657.5	524	2492	2007.5	4499.5
2023-04-20 15:30:00	15:30	429	620	545	769	657	524.5	2457.5	1968	4425.5
2023-04-20 15:45:00	15:45	426	571	519	611	565	498.5	2474.5	1901.5	4376
2023-04-20 16:00:00	16:00	389	532	518	707	612.5	460.5	2548.5	1834	4382.5
2023-04-20 16:15:00	16:15	380	589	561	685	623	484.5	2660.5	1844	4504.5
2023-04-20 16:30:00	16:30	364	552	569	779	674	458	2587.5	1813	4400.5
2023-04-20 16:45:00	16:45	355	507	579	699	639	431	2412	1735	4147
2023-04-20 17:00:00	17:00	348	593	620	829	724.5	470.5	2240.5	1693.5	3934
2023-04-20 17:15:00	17:15	377	530	497	603	550	453.5	1958.5	1640	3598.5
2023-04-20 17:30:00	17:30	289	471	434	563	498.5	380	1849	1565	3414
2023-04-20 17:45:00	17:45	334	445	353	582	467.5	389.5	1750	1588	3338
2023-04-20 18:00:00	18:00	327	507	378	507	442.5	417	1656	1598	3254
2023-04-20 18:15:00	18:15	320	437	354	527	440.5	378.5	1561.5	1578.5	3140
2023-04-20 18:30:00	18:30	326	480	327	472	399.5	403	1440.5	1572	3012.5
2023-04-20 18:45:00	18:45	348	451	323	424	373.5	399.5	1350.5	1554.5	2905
2023-04-20 19:00:00	19:00	309	486	305	391	348	397.5	1307.5	1603.5	2911
2023-04-20 19:15:00	19:15	308	436	253	386	319.5	372	1291.5	1633	2924.5
2023-04-20 19:30:00	19:30	332	439	246	373	309.5	385.5	1271.5	1717	2988.5

2023-04-20 19:45:00 19:45	416	481	276	385	330.5	448.5	1275.5	1768	3043.5
2023-04-20 20:00:00 20:00	383	471	264	400	332	427	1264.5	1745.5	3010
2023-04-20 20:15:00 20:15	407	505	263	336	299.5	456	1192	1746	2938
2023-04-20 20:30:00 20:30	375	498	254	373	313.5	436.5	1182.5	1680	2862.5
2023-04-20 20:45:00 20:45	375	477	279	360	319.5	426	1134	1576	2710
2023-04-20 21:00:00 21:00	382	473	209	310	259.5	427.5	1075.5	1419	2494.5
2023-04-20 21:15:00 21:15	327	453	236	344	290	390	1035.5	1336	2371.5
2023-04-20 21:30:00 21:30	259	406	222	308	265	332.5	964.5	1289	2253.5
2023-04-20 21:45:00 21:45	228	310	214	308	261	269	923	1257.5	2180.5
2023-04-20 22:00:00 22:00	323	366	208	231	219.5	344.5	870	1282.5	2152.5
2023-04-20 22:15:00 22:15	315	371	179	259	219	343	840.5	1219.5	2060
2023-04-20 22:30:00 22:30	285	317	196	251	223.5	301	801.5	1141.5	1943
2023-04-20 22:45:00 22:45	278	310	173	243	208	294	758	995.5	1753.5
2023-04-20 23:00:00 23:00	239	324	175	205	190	281.5	631.5	883.5	1515
2023-04-20 23:15:00 23:15	234	296	169	191	180	265			
2023-04-20 23:30:00 23:30	125	185	158	202	180	155			
2023-04-20 23:45:00 23:45	171	193	3	160	81.5	182			



RTE	RTE_SFX	DIST	CNTY	POSTMILE_PFX	POSTMILE	POSTMILE_SFX	LEG	DESCRIPTION	VEHICLE_AADT_TOTA	TRUCK_AADT_TOTAL	TRK_PERCENT_TOT	TRK_2_AXLE	TRK_3_AXLE	TRK_4_AXLE	TRK_5_AXLE	TRK_2_AXLE_PCT	TRK_3_AXLE_PCT	TRK_4_AXLE_PCT	TRK_5_AXLE_PCT	EAL	YEAR_VER	EST
015		08	SBD		2.389		A	JCT. RTE. 10	192000	19872	10.35	5,995	1,208	493	12,176	30.17	6.08	2.48	61.27	4,594	06	E
015		08	SBD		5.306		B	JCT. RTE. 66	186000	15066	8.10	4,545	916	374	9,231	30.17	6.08	2.48	61.27	3,483	15	E
015		08	SBD		5.306		A	JCT. RTE. 66	162000	13252	8.18	4,483	955	314	7,498	33.83	7.21	2.37	56.58	2,878	15	V
015		08	SBD		5.973		A	RANCHO CUCAMONGA, MILLER AVENUE	165000	14388	8.72	5,099	1,058	353	7,880	35.44	7.35	2.45	54.77	3,046	17	V
015		08	SBD		31.813		B	JCT. RTE. 395 NORTH	142000	19213	13.53	4,455	1,299	469	12,990	23.19	6.76	2.44	67.61	4,826	00	E
015		08	SBD		31.813		A	JCT. RTE. 395 NORTH	110000	17193	15.63	3,989	1,169	413	11,622	23.20	6.80	2.40	67.60	4,317	00	E
015		08	SBD		40.509		B	JCT. RTE. 18 SOUTH	94000	16986	18.07	3,927	1,150	406	11,501	23.12	6.77	2.39	67.71	4,271	00	E
015		08	SBD		40.509		A	JCT. RTE. 18 SOUTH	88000	15022	17.07	3,482	1,018	365	10,158	23.18	6.78	2.43	67.62	3,774	00	E
015		08	SBD		43.488		A	VICTORVILLE, JCT. RTE. 18 SOUTHEAST	59000	13959	23.66	3,233	944	342	9,439	23.16	6.76	2.45	67.62	3,507	00	E
015		08	SBD		68.770		B	BARSTOW, LENWOOD ROAD	54000	13495	24.99	3,136	918	325	9,117	23.24	6.80	2.41	67.56	3,387	00	E
015		08	SBD		68.770		A	BARSTOW, LENWOOD ROAD	60000	14346	23.91	3,334	976	346	9,692	23.24	6.80	2.41	67.56	3,601	01	E
015		08	SBD		74.418		B	BARSTOW, JCT. RTE. 40 EAST	68000	13376	19.67	3,102	904	324	9,046	23.19	6.76	2.42	67.63	3,360	01	E
015		08	SBD		74.418		A	BARSTOW, JCT. RTE. 40 EAST	43000	7181	16.70	1,859	199	95	5,027	25.89	2.77	1.32	70.01	1,832	05	E
015		08	SBD		76.883		B	JCT. RTE. 58 WEST	43000	7310	17.00	1,893	202	96	5,118	25.89	2.77	1.32	70.01	1,865	05	E
015		08	SBD		76.883		A	JCT. RTE. 58 WEST	43000	7091	16.49	1,532	203	94	5,262	21.61	2.86	1.32	74.21	1,902	15	V
015		08	SBD	R	81.834		B	GHOST TOWN ROAD		10034	17.06	1,928	396	153	7,557	19.21	3.95	1.52	75.31	2,734	20	V
015		08	SBD	R	87.260		O	YERMO INSPECTION STATION	38000	6973	18.35	1,445	193	92	5,242	20.72	2.77	1.32	75.18	1,890	15	E
015		08	SBD	R	136.574		B	BAKER, JCT. RTE. 127	33000	6600	20.00	1,284	321	182	4,813	19.45	4.86	2.76	72.93	1,762	01	E
015		08	SBD	R	136.574		A	BAKER, JCT. RTE. 127	32000	6733	21.04	1,310	327	186	4,910	19.45	4.86	2.76	72.93	1,797	01	E
015		08	SBD		176.459		B	NIPTON ROAD	37000	6645	17.96	1,701	218	86	4,639	25.60	3.28	1.30	69.81	1,693	01	E
015		08	SBD		186.238		B	NEVADA STATE LINE	38000	6825	17.96	1,747	224	89	4,765	25.60	3.28	1.30	69.81	1,739	01	E

Appendix D
Vistro Reports

Soda Mountain Solar TIA

Vistro File: H:\...\Soda Mountain Vistro.vistro
Report File: H:\...\Exist AM LOS.pdf

Scenario 1 Exist AM
5/31/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Rasor Road/I-15 NB Ramp Intersection	Two-way stop	HCM 7th Edition	EB Thru	0.017	9.4	A
2	Rasor Road/ I-15 SB Ramp Intersection	Two-way stop	HCM 7th Edition	WB Thru	0.004	9.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Rasor Road/I-15 NB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			30.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Base Volume Input [veh/h]	0	1	12	0	2	0	0	11	12	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	20.00	20.00	20.00	20.00	2.00	20.00	20.00	20.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	12	0	2	0	0	11	12	0	0	0
Peak Hour Factor	1.0000	0.7920	0.7920	0.7920	0.7920	1.0000	0.7920	0.7920	0.7920	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	4	0	1	0	0	3	4	0	0	0
Total Analysis Volume [veh/h]	0	1	15	0	3	0	0	14	15	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.41	0.00	0.00	8.87	9.41	8.62	0.00	0.00	0.00
Movement LOS		A	A	A	A		A	A	A			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	2.41	2.41	2.41	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			9.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.44											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Rasor Road/ I-15 SB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Base Volume Input [veh/h]	3	0	0	0	0	3	0	0	0	2	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	20.00	20.00	2.00	2.00	20.00	20.00	2.00	2.00	2.00	20.00	20.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	0	0	0	0	3	0	0	0	2	2	3
Peak Hour Factor	0.6500	0.6500	1.0000	1.0000	0.6500	0.6500	1.0000	1.0000	1.0000	0.6500	0.6500	0.6500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	0	0	0	1	0	0	0	1	1	1
Total Analysis Volume [veh/h]	5	0	0	0	0	5	0	0	0	3	3	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.81	9.32	8.52
Movement LOS	A	A			A	A				A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03
95th-Percentile Queue Length [ft/ln]	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.87	0.87
d_A, Approach Delay [s/veh]	7.40			0.00			0.00			8.82		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	6.38											
Intersection LOS	A											

Soda Mountain Solar TIA

Vistro File: H:\...\Soda Mountain Vistro.vistro
Report File: H:\...\Exist MD LOS.pdf

Scenario 3 Exist MD
5/31/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Rasor Road/I-15 NB Ramp Intersection	Two-way stop	HCM 7th Edition	EB Thru	0.005	9.8	A
2	Rasor Road/ I-15 SB Ramp Intersection	Two-way stop	HCM 7th Edition	WB Thru	0.012	9.5	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Rasor Road/I-15 NB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Base Volume Input [veh/h]	0	12	31	1	8	0	1	3	37	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	20.00	20.00	20.00	20.00	2.00	20.00	20.00	20.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	12	31	1	8	0	1	3	37	0	0	0
Peak Hour Factor	1.0000	0.7500	0.7500	0.7500	0.7500	1.0000	0.7500	0.7500	0.7500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	10	0	3	0	0	1	12	0	0	0
Total Analysis Volume [veh/h]	0	16	41	1	11	0	1	4	49	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.50	0.00	0.00	9.18	9.78	8.74	0.00	0.00	0.00
Movement LOS		A	A	A	A		A	A	A			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.17	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.04	0.04	0.00	4.29	4.29	4.29	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.63			8.82			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	3.93											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Rasor Road/ I-15 SB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Base Volume Input [veh/h]	12	1	0	0	2	8	0	0	0	7	9	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	20.00	20.00	2.00	2.00	20.00	20.00	2.00	2.00	2.00	20.00	20.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	1	0	0	2	8	0	0	0	7	9	8
Peak Hour Factor	0.9040	0.9040	1.0000	1.0000	0.9040	0.9040	1.0000	1.0000	1.0000	0.9040	0.9040	0.9040
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	0	0	1	2	0	0	0	2	2	2
Total Analysis Volume [veh/h]	13	1	0	0	2	9	0	0	0	8	10	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
d_M, Delay for Movement [s/veh]	7.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.03	9.55	8.61
Movement LOS	A	A			A	A				A	A	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.61	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.29	2.29	2.29
d_A, Approach Delay [s/veh]	6.89			0.00			0.00			9.08		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	6.57											
Intersection LOS	A											

Soda Mountain Solar TIA

Vistro File: H:\...\Soda Mountain Vistro.vistro
Report File: H:\...\Exist PM LOS.pdf

Scenario 5 Exist PM
5/31/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Rasor Road/I-15 NB Ramp Intersection	Two-way stop	HCM 7th Edition	EB Thru	0.016	9.7	A
2	Rasor Road/ I-15 SB Ramp Intersection	Two-way stop	HCM 7th Edition	WB Thru	0.005	9.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Rasor Road/I-15 NB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	9.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Base Volume Input [veh/h]	0	3	35	0	3	0	0	10	29	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	20.00	20.00	20.00	20.00	2.00	20.00	20.00	20.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	3	35	0	3	0	0	10	29	0	0	0
Peak Hour Factor	1.0000	0.8000	0.8000	0.8000	0.8000	1.0000	0.8000	0.8000	0.8000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	11	0	1	0	0	3	9	0	0	0
Total Analysis Volume [veh/h]	0	4	44	0	4	0	0	13	36	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.48	0.00	0.00	9.05	9.67	8.70	0.00	0.00	0.00
Movement LOS		A	A	A	A		A	A	A			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.16	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	4.03	4.03	4.03	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			8.96			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	4.35											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Rasor Road/ I-15 SB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Base Volume Input [veh/h]	5	0	0	0	0	2	0	0	0	3	3	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	20.00	20.00	2.00	2.00	20.00	20.00	2.00	2.00	2.00	20.00	20.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	0	0	0	0	2	0	0	0	3	3	2
Peak Hour Factor	0.7500	0.7500	1.0000	1.0000	0.7500	0.7500	1.0000	1.0000	1.0000	0.7500	0.7500	0.7500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	0	0	0	1	0	0	0	1	1	1
Total Analysis Volume [veh/h]	7	0	0	0	0	3	0	0	0	4	4	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.83	9.34	8.53
Movement LOS	A	A			A	A				A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04
95th-Percentile Queue Length [ft/ln]	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.90	0.90
d_A, Approach Delay [s/veh]	7.40			0.00			0.00			8.93		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	7.14											
Intersection LOS	A											

Soda Mountain Solar TIA

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Report File: H:\...\ExistProj AM LOS.pdf

Scenario 2 ExistProj AM
5/31/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Rasor Road/I-15 NB Ramp Intersection	Two-way stop	HCM 7th Edition	EB Thru	0.020	16.0	C
2	Rasor Road/ I-15 SB Ramp Intersection	Two-way stop	HCM 7th Edition	WB Thru	0.004	10.0	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Rasor Road/I-15 NB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.020

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Base Volume Input [veh/h]	0	1	12	0	100	0	0	11	402	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	20.00	20.00	20.00	20.00	2.00	20.00	20.00	20.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	12	0	100	0	0	11	402	0	0	0
Peak Hour Factor	1.0000	0.7920	0.7920	0.7920	0.7920	1.0000	0.7920	0.7920	0.7920	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	4	0	32	0	0	3	127	0	0	0
Total Analysis Volume [veh/h]	0	1	15	0	126	0	0	14	508	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.58	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.41	0.00	0.00	15.45	15.96	15.04	0.00	0.00	0.00
Movement LOS		A	A	A	A		C	C	C			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	4.08	4.08	4.08	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	102.04	102.04	102.04	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			15.06			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	11.84											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: Rasor Road/ I-15 SB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Base Volume Input [veh/h]	3	0	0	0	0	3	0	0	0	100	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	20.00	20.00	2.00	2.00	20.00	20.00	2.00	2.00	2.00	20.00	20.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	0	0	0	0	3	0	0	0	100	2	3
Peak Hour Factor	0.6500	0.6500	1.0000	1.0000	0.6500	0.6500	1.0000	1.0000	1.0000	0.6500	0.6500	0.6500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	0	0	0	1	0	0	0	38	1	1
Total Analysis Volume [veh/h]	5	0	0	0	0	5	0	0	0	154	3	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00
d_M, Delay for Movement [s/veh]	7.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.53	10.04	9.25
Movement LOS	A	A			A	A				A	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.61	0.61
95th-Percentile Queue Length [ft/ln]	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.20	15.20	15.20
d_A, Approach Delay [s/veh]	7.40			0.00			0.00			9.53		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	9.19											
Intersection LOS	B											

Soda Mountain Solar TIA

Vistro File: H:\...\Soda Mountain Vistro.vistro
Report File: H:\...\ExistProj MD LOS.pdf

Scenario 4 ExistProj MD
5/31/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Rasor Road/I-15 NB Ramp Intersection	Two-way stop	HCM 7th Edition	EB Thru	0.005	9.9	A
2	Rasor Road/ I-15 SB Ramp Intersection	Two-way stop	HCM 7th Edition	WB Thru	0.012	9.6	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Rasor Road/I-15 NB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Base Volume Input [veh/h]	0	16	32	1	9	0	1	3	41	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	20.00	20.00	20.00	20.00	2.00	20.00	20.00	20.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	16	32	1	9	0	1	3	41	0	0	0
Peak Hour Factor	1.0000	0.7500	0.7500	0.7500	0.7500	1.0000	0.7500	0.7500	0.7500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	11	0	3	0	0	1	14	0	0	0
Total Analysis Volume [veh/h]	0	21	43	1	12	0	1	4	55	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.52	0.00	0.00	9.24	9.86	8.77	0.00	0.00	0.00
Movement LOS		A	A	A	A		A	A	A			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.04	0.04	0.00	4.80	4.80	4.80	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.58			8.85			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	3.93											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Rasor Road/ I-15 SB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Base Volume Input [veh/h]	16	1	0	0	2	8	0	0	0	8	9	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	20.00	20.00	2.00	2.00	20.00	20.00	2.00	2.00	2.00	20.00	20.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	1	0	0	2	8	0	0	0	8	9	8
Peak Hour Factor	0.9040	0.9040	1.0000	1.0000	0.9040	0.9040	1.0000	1.0000	1.0000	0.9040	0.9040	0.9040
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	0	0	1	2	0	0	0	2	2	2
Total Analysis Volume [veh/h]	18	1	0	0	2	9	0	0	0	9	10	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
d_M, Delay for Movement [s/veh]	7.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.11	9.63	8.61
Movement LOS	A	A			A	A				A	A	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
95th-Percentile Queue Length [ft/ln]	0.86	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.41	2.41	2.41
d_A, Approach Delay [s/veh]	7.04			0.00			0.00			9.13		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	6.72											
Intersection LOS	A											

Soda Mountain Solar TIA

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Scenario 6 ExistProj PM
1/16/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Rasor Road/I-15 NB Ramp Intersection	Two-way stop	HCM 7th Edition	EB Thru	0.036	15.4	C
2	Rasor Road/ I-15 SB Ramp Intersection	Two-way stop	HCM 6th Edition	WB Left	0.033	35.9	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Rasor Road/I-15 NB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	15.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.036

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 NB Off-Ramp			I-15 SB On-Ramp		
Base Volume Input [veh/h]	0	393	133	0	3	0	0	10	29	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	20.00	20.00	20.00	20.00	2.00	20.00	20.00	20.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	393	133	0	3	0	0	10	29	0	0	0
Peak Hour Factor	1.0000	0.8000	0.8000	0.8000	0.8000	1.0000	0.8000	0.8000	0.8000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	123	42	0	1	0	0	3	9	0	0	0
Total Analysis Volume [veh/h]	0	491	166	0	4	0	0	13	36	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	9.23	0.00	0.00	14.37	15.38	8.90	0.00	0.00	0.00
Movement LOS		A	A	A	A		B	C	A			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.23	0.23	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	5.72	5.72	5.72	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			10.62			0.00		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	0.73											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: Rasor Road/ I-15 SB Ramp Intersection

Control Type:	Two-way stop	Delay (sec / veh):	35.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.033

Intersection Setup

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Rasor Road			Rasor Road			I-15 SB On-Ramp			I-15 SB Off-Ramp		
Base Volume Input [veh/h]	395	0	0	0	0	2	0	0	0	3	3	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	20.00	20.00	2.00	2.00	20.00	20.00	2.00	2.00	2.00	20.00	20.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	395	0	0	0	0	2	0	0	0	3	3	2
Peak Hour Factor	0.7500	0.7500	1.0000	1.0000	0.7500	0.7500	1.0000	1.0000	1.0000	0.7500	0.7500	0.7500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	132	0	0	0	0	1	0	0	0	1	1	1
Total Analysis Volume [veh/h]	527	0	0	0	0	3	0	0	0	4	4	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00
d_M, Delay for Movement [s/veh]	8.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.89	32.93	9.95
Movement LOS	A	A			A	A				E	D	A
95th-Percentile Queue Length [veh/ln]	1.59	1.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.21	0.21
95th-Percentile Queue Length [ft/ln]	39.75	39.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.16	5.16	5.16
d_A, Approach Delay [s/veh]	8.66			0.00			0.00			27.74		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	9.00											
Intersection LOS	E											

Appendix E
HCS Reports

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	8:00 - 9:00 AM
Project Description	AM Peak Hour - NB Existing Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Basin to Rasor
Analysis Period Number	1	Segment Analysis Period	08:00-08:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1382	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.89	Flow Rate (V_p), pc/h/ln	932
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.39
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.6
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Zzyzx
Analysis Period Number	1	Segment Analysis Period	08:00-08:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1768	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.97	Flow Rate (V_p), pc/h/ln	1094
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.46
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.9
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	12:00 - 1:00 PM
Project Description	MD Peak Hour - NB Existing Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Basin to Rasor
Analysis Period Number	1	Segment Analysis Period	12:00-12:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2352	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1502
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	67.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.1
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Zzyzx
Analysis Period Number	1	Segment Analysis Period	12:00-12:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2910	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.88	Flow Rate (V_p), pc/h/ln	1985
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.83
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	62.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	31.9
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	3:00 - 4:00 PM
Project Description	PM Peak Hour - NB Existing Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Basin to Rasor
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1736	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.97	Flow Rate (V_p), pc/h/ln	1074
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.45
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.6
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Zzyzx
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2489	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.91	Flow Rate (V_p), pc/h/ln	1642
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	24.5
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	8:00 - 9:00 AM
Project Description	AM Peak Hour - SB Existing Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Zzyzx to Rasor
Analysis Period Number	1	Segment Analysis Period	08:00-08:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1556	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.90	Flow Rate (V_p), pc/h/ln	1038
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.43
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.1
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Basin
Analysis Period Number	1	Segment Analysis Period	08:00-08:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1241	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.93	Flow Rate (V_p), pc/h/ln	801
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.34
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	11.7
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	12:00 - 1:00 PM
Project Description	MD Peak Hour - SB Existing Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Zzyzx to Rasor
Analysis Period Number	1	Segment Analysis Period	12:00-12:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2686	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.97	Flow Rate (V_p), pc/h/ln	1662
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.70
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	24.9
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Basin
Analysis Period Number	1	Segment Analysis Period	12:00-12:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2072	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1323
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.55
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	19.3
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	3:00 - 4:00 PM
Project Description	PM Peak Hour - SB Existing Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Zzyzx to Rasor
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2891	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1846
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	28.7
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Basin
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2252	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.88	Flow Rate (V_p), pc/h/ln	1536
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	67.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.7
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	8:00 - 9:00 AM
Project Description	AM Peak Hour - NB Project Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Basin to Rasor
Analysis Period Number	1	Segment Analysis Period	08:00-08:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1772	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.89	Flow Rate (V_p), pc/h/ln	1195
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.50
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	17.4
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Zzyzx
Analysis Period Number	1	Segment Analysis Period	08:00-08:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1768	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.97	Flow Rate (V_p), pc/h/ln	1094
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.46
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.9
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	12:00 - 1:00 PM
Project Description	MD Peak Hour - NB Project Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Basin to Rasor
Analysis Period Number	1	Segment Analysis Period	12:00-12:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2356	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1504
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	67.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.2
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Zzyzx
Analysis Period Number	1	Segment Analysis Period	12:00-12:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2911	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.88	Flow Rate (V_p), pc/h/ln	1986
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.83
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	62.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	31.9
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	3:00 - 4:00 PM
Project Description	PM Peak Hour - NB Project Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Basin to Rasor
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2126	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.97	Flow Rate (V_p), pc/h/ln	1316
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.55
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	19.2
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Zzyzx
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2489	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.91	Flow Rate (V_p), pc/h/ln	1642
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	24.5
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	8:00 - 9:00 AM
Project Description	AM Peak Hour - SB Project Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Zzyzx to Rasor
Analysis Period Number	1	Segment Analysis Period	08:00-08:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1654	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.90	Flow Rate (V_p), pc/h/ln	1103
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.46
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	16.1
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Basin
Analysis Period Number	1	Segment Analysis Period	08:00-08:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1241	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.93	Flow Rate (V_p), pc/h/ln	801
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.34
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	11.7
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	12:00 - 1:00 PM
Project Description	MD Peak Hour - SB Project Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Zzyzx to Rasor
Analysis Period Number	1	Segment Analysis Period	12:00-12:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2687	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.97	Flow Rate (V_p), pc/h/ln	1662
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.70
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	24.9
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Basin
Analysis Period Number	1	Segment Analysis Period	12:00-12:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2076	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1326
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.56
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	19.3
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Analyst	KAI - SYL	Date	4/20/2023
Agency	SWCA	Analysis Year	2023
Jurisdiction	Caltrans	Time Analyzed	3:00 - 4:00 PM
Project Description	PM Peak Hour - SB Project Conditions	Units	U.S. Customary
Segment Number	1	Segment Name	I15 Zzyzx to Rasor
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	13532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2989	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1908
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.80
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	30.0
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I15 Rasor to Basin
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	8041	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	68.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2252	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.88	Flow Rate (V_p), pc/h/ln	1536
Total Trucks, %	20.00	Capacity (c), pc/h/ln	2387
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2387
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	67.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.7
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.7		