APPENDIX J
TRAFFIC ANALYSIS TECHNICAL MEMORANDUM

TRAFFIC ANALYSIS TECHNICAL MEMORANDUM

Janus Solar Project
Colusa County, California

July 2021

RWE

RWE Solar Development, LLC

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ACRONYMS AND ABBREVIATIONS

CEQA	California Environmental Quality Act
GHG	greenhouse gas
LOS	Level of Service
Project	Janus Solar Project
VMT	Vehicle Miles Traveled

1.0 OVERVIEW

In 2013, the State of California passed Senate Bill 743, which stated the most appropriate measure of transportation impacts is Vehicle Miles Traveled (VMT) as guided by the California Environmental Quality Act (CEQA). Jurisdictions had until July 1, 2020 to adopt and begin implementing VMT thresholds for traffic analysis. Prior to July 1, 2020, jurisdictions had the option to continue using Level of Service (LOS) analysis or converting to VMT analysis once such thresholds were adopted.

This Traffic Analysis Memorandum focuses on the following potential impacts:

- Peak construction impacts during the month(s) of construction that will have the largest number of workers and deliveries as well as implications for the remaining construction process.
- A discussion of the results and implications of the estimated Project traffic on the existing transportation system.
- A discussion of the Project's VMT impacts as required by the State CEQA Guidelines.

The purpose of this Traffic Analysis Memorandum is to qualify and quantify impacts of construction and operations traffic to the local transportation infrastructure and to provide Colusa County with the information necessary for approval of the Project and to satisfy requirements within the State CEQA Guidelines.

In accordance with Appendix G of the State CEQA Guidelines, a proposed project would have a significant transportation impact if the project would:

1. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;
2. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b);
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
4. Result in inadequate emergency access.

2.0 PROJECT DESCRIPTION

The Janus Solar Project (Project) consists of constructing and operating a photovoltaic solar electricity generating facility and battery energy storage system and associated infrastructure that would produce up to 80 megawatts of alternating current energy at the point of electrical grid interconnection on approximately 1,024 acres of privately owned agricultural land (Figure 1) in Colusa County. The Project would include the construction of solar arrays, an electrical substation and electrical interconnection facilities, a battery energy storage system and other necessary infrastructure, including an operation and maintenance building, septic system and leach field, a supervisory control and data acquisition system, a meteorological data system, buried conduit for electrical wires, collector lines, on-site access roads, and security fencing.

2.1 PROJECT LOCATION

The Project site is located at 1830 and 1961 Spring Valley Road in Williams, California, approximately 8 miles southwest of the city of Williams. The Project site is currently operated as a cattle ranch and is comprised of three parcels totaling approximately 1,024 acres and is surrounded by rural residential, agricultural fields, and undeveloped land.

2.2 PROJECT SCHEDULE

The Project is planned to begin construction between mid-2022 and early 2023 and will take approximately 11 months to be fully constructed. The peak construction period will last 2–3 months and is expected to be operational by early 2024.

2.3 METHODOLOGY

This study was designed to evaluate potential impacts associated with routing Project traffic to and from the Project via the major local intersections on the haul route. This was accomplished primarily using the VMT for construction and operations. Additionally, because traffic count data is not available for the rural roads surrounding the Project, LOS will be considered qualitatively, and a conservative approximation of LOS is calculated. Because traffic counts were not collected and none were available for the roads and intersections near the Project, the approximation is based on land use, road connectivity and nearest locations where traffic counts are available. Additionally, because the LOS calculation is a conservative approximation, it is reasonably appropriate for both the intersection at Walnut Drive and Spring Valley Road and Walnut Dive and East Camp Road where construction traffic is concentrated. General conclusions about the operational quality of the local infrastructure are drawn from this analysis..

The VMT metric is implemented to help quantify traffic induced by construction and operations. The VMT metric is used to align effects on traffic with greenhouse gas (GHG) emissions. VMT is presented as a total value for the entire Project. The California Natural Resources Agency adopted changes to the CEQA identifying VMT as “the most appropriate metric to evaluate a project’s transportation impacts… Thus, to achieve the State’s long-term climate goals, California needs to reduce per capita VMT.” The VMT values calculated should be compared to a jurisdictionally determined threshold of significance which ultimately dictates whether a project’s traffic impacts are significant and require mitigation or are a less than significant impact.

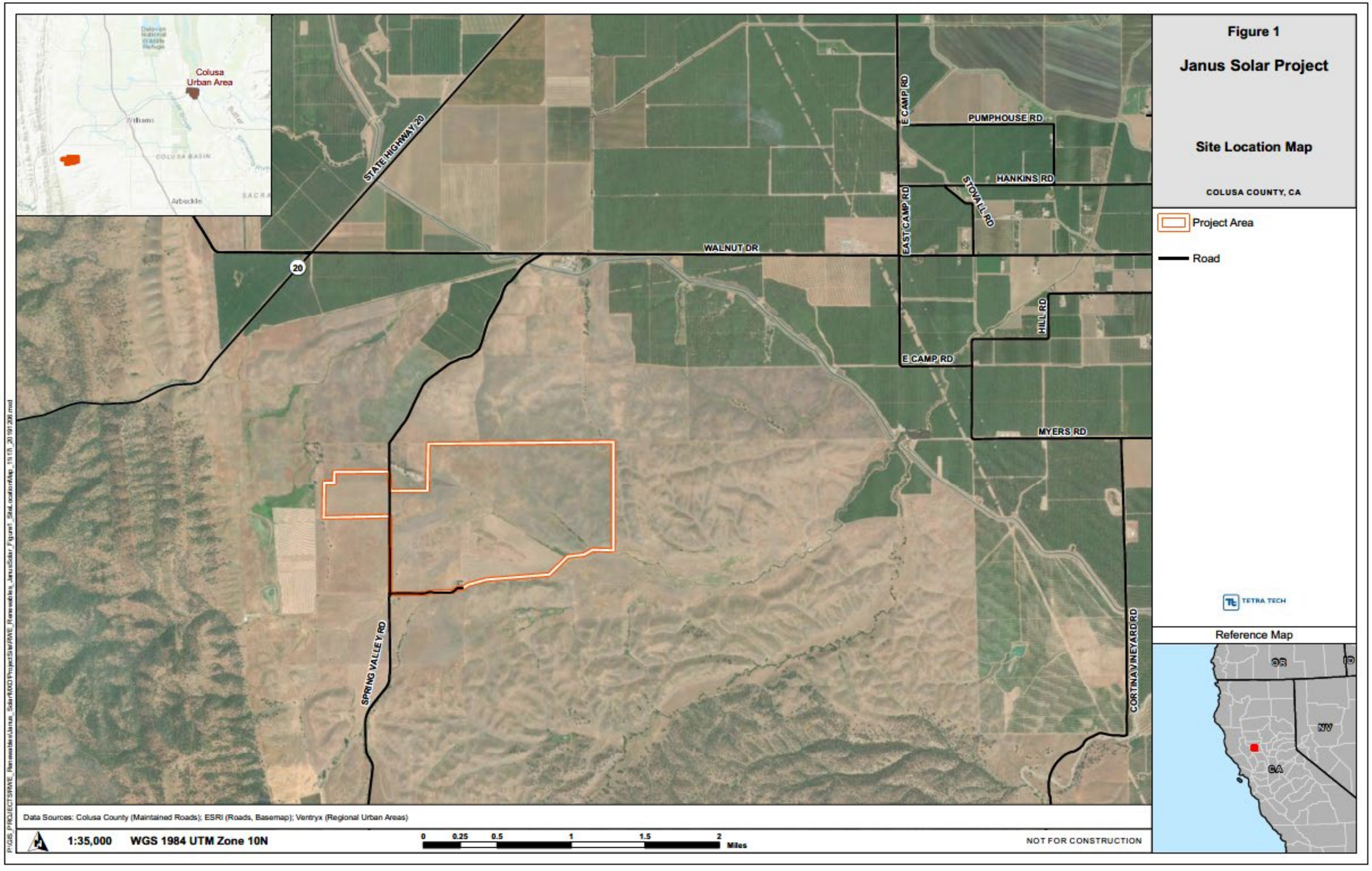


Figure 1
Janus Solar Project
Site Location Map
COLUSA COUNTY, CA
Project Area
Road
TETRA TECH
Reference Map
OR
ID
NV
CA
Colusa Urban Area
Williams
COLUSA BASIN
Arbuckle
STATE HIGHWAY 20
WALNUT DR
20
E CAMP RD
PUMPHOUSE RD
HANKINS RD
STOVALL RD
EAST CAMP RD
HILL RD
MYERS RD
SPRING VALLEY RD
CORTINA/VINEYARD RD
Data Sources: Colusa County (Maintained Roads); ESRI (Roads, Basemap); Ventryx (Regional Urban Areas)
1:35,000
WGS 1984 UTM Zone 10N
0 0.25 0.5 1 1.5 2
Miles
NOT FOR CONSTRUCTION

Colusa County has no threshold of significance for VMT, such that the criteria included in the Technical Advisory on Evaluating Transportation Impacts in CEQA (CEQA 2018) will apply;

> "*The VMT metric can support the three statutory goals: "the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (Pub. Resources Code, § 21099, subd. (b)(1), emphasis added.) However, in order for it to promote and support all three, lead agencies should select a significance threshold that aligns with state law on all three. State law concerning the development of multimodal transportation networks and diversity of land uses requires planning for and prioritizing increases in complete streets and infill development but does not mandate a particular depth of implementation that could translate into a particular threshold of significance. Meanwhile, the State has clear quantitative targets for GHG emissions reduction set forth in law and based on scientific consensus, and the depth of VMT reduction needed to achieve those targets has been quantified. Tying VMT thresholds to GHG reduction also supports the two other statutory goals. Therefore, to ensure adequate analysis of transportation impacts, OPR recommends using quantitative VMT thresholds linked to GHG reduction targets when methods exist to do so*."

3.0 TRAFFIC CONDITIONS

3.1 EXISTING TRAFFIC AND INFRASTRUCTURE

There are two primary routes into the Project area depending on the origin of workers and materials. Workers and materials from Sacramento or the Port of San Francisco will arrive via Interstate 5 to Meyers Road, Zumwalt Road, Beauchamp Road (which changes to Walnut Drive), and finally to Spring Valley Road for access to the Project site. The other route from Colusa, Yuba City, or Williams will utilize State Route 20, to East Camp Road to Walnut Drive, and finally to Spring Valley Road.

Because of the site's rural location, current traffic on the roads immediately adjacent to the Project is light. The Caltrans data available for Colusa County includes Interstate 5 and State Route 20. Interstate 5 included 30,800 vehicles per day, and State Route 20 included 5,900 vehicles per day within Colusa County (Caltrans 2019). Near the Project location the roads are rural without dedicated turn lanes. The existing traffic is expected to be light, and based on experience with similar projects and the lack of connectivity to commercial, industrial, or higher density residential areas; the rural roads are estimated to have between 500 and 800 vehicles per day, or less than 100 vehicles during peak hour.

3.2 PROJECT TRAFFIC GENERATION

The Project traffic will peak at about 200 workers, of which approximately 25 percent are likely to carpool. As mentioned, the peak is only expected to last 2–3 months, however traffic volume will be somewhat near the peak for 7 months. All Project workers will commute to the Project location at about the same time resulting in 150 vehicles during peak hour. The 150 workers are expected to come from several different locations and construction traffic will not be combined until the intersection of Walnut Drive and East Camp Road. From that intersection all workers will head west to Spring Valley Road and south to the Project access location. LOS impacts would be most pronounced along this stretch of roadways and intersections.

Table 1. Trip Generation

Phase	Daily		Trip Generation			
			AM Peak Hour		PM Peak Hour	
	Workers	Trucks	in	out	in	out
Peak Construction Traffic	200	15	150	8	8	150
Operations	1-2*	2*	1*	1*	1*	1*

*Traffic during site Operations is expected to be intermittent during the week, and not daily.

4.0 PROJECT IMPACTS

The LOS analysis performed for this Traffic Analysis Memorandum relies on the following conservative estimates due to the lack of traffic count data. Given the remoteness of the Project site, the local roads are believed to have far fewer vehicles than their capacity. Applying the conservative estimate of 800 vehicles per day under current conditions, during the peak hour there would be 80 or fewer vehicles on the road using the Highway Capacity Manual (HCM) standard estimation method of peak hour being 10% of the daily. The HCM capacity for a single free flow lane is 1,800 vehicles per hour (TRB 2016). These intersections are two-way stop-controlled intersections, so they have one free-flowing lane in each direction. The estimated total number of vehicles during the peak hours, taking into account 80 vehicles per hour at Walnut Drive and at East Camp Road currently, plus 150 vehicles generated by Project construction, would be 230 to 310. The actual capacity of the intersection is far less than the sum of the two lanes since there would be a break in the traffic for stopped vehicles; however, the estimated 230 to 310 vehicles during the peak hour is far below the capacity of the infrastructure, and the roadways surrounding the Project site would still function desirably during Project construction. The LOS calculation for Walnut Drive and Spring Valley Road is provided as Appendix A, and yields a LOS A during peak construction. Based on this conservative estimate, it can be reasonably concluded that the LOS will be C or better during construction.

The VMT analysis quantifies the total number of vehicle miles added to the roads as a direct result of the construction and operations of the Project. The analysis includes the estimated number of workers on a weekly basis, reduced by the number that are likely to carpool, and multiplied by the approximate distance traveled and the number of times per week that distance is traversed (i.e., commutes happen 10 times per week = 2 times per day). A total VMT of 721,453 was calculated for the Project, which is relatively low compared to similarly sized projects within California. Additionally, solar projects are being built in order to reduce GHG emissions and provide a more secure energy future. Diversifying energy production sources is both critical as well as a stated goal of California and the United States.

The details of the VMT calculations are included in Table 2.

Table 2. Construction Vehicle Miles Traveled

Type	Source Location	Distance	Times per week	Percent of Total	Percent Carpool	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Worker Trip	Williams	9.3	10	15	25	697.5	697.5	1395	2790	2790	2790	2790	2790	2790	279
Worker Trip	Colusa	18.4	10	10	25	920	920	1840	3680	3680	3680	3680	3680	3680	368
Worker Trip	Yuba City	42.2	10	10	25	2110	2110	4220	8440	8440	8440	8440	8440	8440	844
Worker Trip	Sacramento	64.4	10	65	25	20930	20930	41860	83720	83720	83720	83720	83720	83720	8372
Equipment Trip	Sacramento	64.4	2	100	N/A	644	644	128.8	128.8	128.8	128.8	128.8	128.8	128.8	644
Materials Trip	Port of SF	118	2	60	N/A	708	708	1416	1416	2124	2124	2124	2124	708	0
Materials Trip	Sacramento	64.4	2	40	N/A	257.6	257.6	515.2	515.2	772.8	772.8	772.8	772.8	515.2	0
Total:		**721,453**													

5.0 CONCLUSION

Impacts to LOS caused by the Project are anticipated to be minimal or negligible. The Project is not expected to result in serious delays or deterioration of function of the local infrastructure in Colusa County or surrounding areas that would be utilized for transportation of materials, workers, and equipment.

As noted in Section 2.3, there is no established threshold of significance for VMT in Colusa County. Since no quantitative, qualitative, or performance level is identified, the significance of 721,453 additional miles traveled must be evaluated based on the three guidance criteria from the CEQA Technical Advisory, including "the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." Based on the following CEQA criteria, the Project results in a less than significant impact for VMT:

1. Reduction of GHG emissions – The Project is a solar facility and the chief aim of constructing solar facilities is the reduction of dependence on GHG emitting fossil fuel energy sources. The Project will provide clean renewable energy for 30 years once completed. Additionally, the *Air Quality and Greenhouse Gas Technical Report* for the Janus Solar Project concluded a "less than significant impact" for both construction and operations emissions. The technical report identified a quantitative threshold of significance for GHG emissions. The analysis included in that report accounted for construction traffic emissions to determine the total emissions for the Project. Using this definitive quantitative metric yielded a "less than significant impact." Based on this conclusion a threshold value for VMT would likely be much higher than the Project generated VMT. This assertion is in line with the fact that the guidance for conducting VMT analysis originated with GHG emissions reduction regulations and goals and the guidance states "OPR recommends using quantitative VMT thresholds linked to GHG reduction targets when methods exist to do so."
2. Diversity of land use – Diversity of land use is a much more difficult criteria to quantify for a comparative analysis; however, the Project expands land use diversity to accommodate the increase in energy demand. This development changes land use from undeveloped grazing land to renewable energy production. Put simply, in order for California to reach its energy goals many thousands of acres will need to be converted to alternative energy sources. Because the Project assists in that goal and there are very few means of reducing the VMT while constructing the Project, the additional VMT are considered insignificant.

6.0 REFERENCES

California Environmental Quality Act (CEQA). 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California, Governors Department of Planning and Research.

Caltrans. 2019. *Traffic Census Program.* https://dot.ca.gov/programs/traffic-operations/census

Transportation Research Board (TRB). 2016. Highway Capacity Manual. 6th Ed. Washington, D.C.

APPENDIX A – LOS CALCULATION AT WALNUT DRIVE AND SPRING VALLEY ROAD

HCS7 Two-Way Stop-Control Report

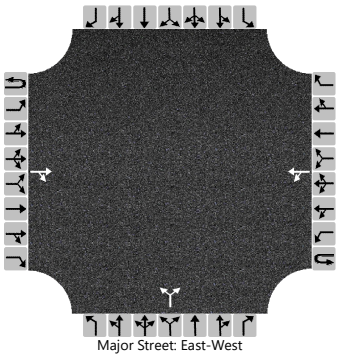
General Information

Analyst	ENM
Agency/Co.	
Date Performed	7/13/2021
Analysis Year	2021
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	

Site Information

Intersection	Primary Project Int.
Jurisdiction	Colusa County
East/West Street	Walnut Drive
North/South Street	Spring ValleyRoad
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			36	4		150	40			10		70				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						163					87					
Capacity, c (veh/h)						1559					920					
v/c Ratio						0.10					0.09					
95% Queue Length, Q_{95} (veh)						0.3					0.3					
Control Delay (s/veh)						7.6					9.3					
Level of Service (LOS)						A					A					
Approach Delay (s/veh)						6.2				9.3						
Approach LOS										A						

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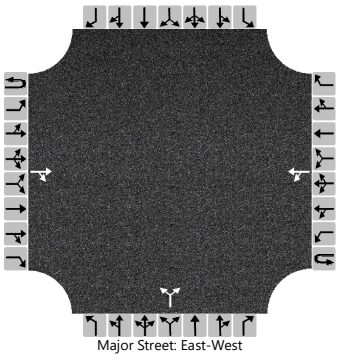

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			36	4		4	36			10		220				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						4					250					
Capacity, c (veh/h)						1559					1021					
v/c Ratio						0.00					0.24					
95% Queue Length, Q_{95} (veh)						0.0					1.0					
Control Delay (s/veh)						7.3					9.7					
Level of Service (LOS)						A					A					
Approach Delay (s/veh)					0.8				9.7							
Approach LOS					A											