

**ENVIRONMENT | PLANNING | DEVELOPMENT
SOLUTIONS, INC.**

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To: City of Riverside, Public Works Department, Traffic Engineering
Site: Wood and Lurin Residential Project
Subject: Vehicle Miles Traveled (VMT) Analysis

Introduction and Project Description

This technical memorandum provides an analysis of the Vehicle Miles Traveled (VMT) generated by the proposed Wood and Lurin Residential Project. The project is located on an 18.925-gross acre site (17.632 net acres) located northeast of the intersection of Wood Road and Lurin Avenue. The project site has a designation of Medium Density Residential (MDR) and the Zoning is R-1-13000-SP Single-family Residential and Specific Plan (Orangecrest) Overlay Zones and in the OSP-RA-SP – Residential Agricultural and Specific Plan (Orangecrest) Overlay Zones. The project does not propose a change to the General Plan designation or zoning of the site. The project location is shown in Figure 1.

The project would construct 96 single-family residential units at a density of 5.07 dwelling units per gross acre. Lot sizes would range from 4,250 to 5,995 square feet. The project would also develop one lot, in the center of the site, totaling 61,909 square feet, for recreational uses. The project site plan is shown in Figure 2. As shown on the conceptual site plan, the location of the park and surrounding proposed street system prohibits straight cut-through traffic and is designed to be traffic calming, as both left and right-turns are required to drive through the site.

Traffic Analysis Requirements

The City of Riverside Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment, dated July 2020 (TIA Guidelines) provide screening criteria to determine when a Level of Service (LOS) analysis would be required for General Plan Consistency or a Vehicle Miles Traveled (VMT) analysis would be required for assessment of environmental impacts per the California Environmental Quality Act (CEQA). The TIA Guidelines also provide methodology and impact thresholds to determine when a project would have a significant effect on LOS or a significant environmental impact on VMT.

Per the City's TIA Guidelines, single family residential tracts of less than 100 lots would not require a LOS analysis. Therefore, only an analysis of VMT is provided in this memo.

VMT Analysis

Project Screening

The City's VMT screening thresholds were applied to the proposed project to determine if a VMT analysis is required. The screening thresholds and their applicability to the project site are as follows:

- Transit Priority Area Screening: The project is not located in a Transit Priority Area, therefore this screening criteria does not apply and a VMT analysis would be required.
- Low VMT Area Screening: Per the online WRCOG VMT Screening Tool, the project is located in a traffic analysis zone (TAZ) with a VMT per capita of 16.88. The City jurisdictional average is 10.77. To meet the City's threshold of project generated VMT/capita that is 15 percent below the current jurisdictional average, the project VMT/capita would need to be reduced by 46 percent. The project is required to prepare a VMT analysis using this criteria.
- Project Type Screening: This applies to local serving projects, projects with 100% affordable housing and projects generating fewer than 110 daily vehicle trips. The project does not meet this screening criteria and a VMT analysis would be required.
- Mixed-Use Projects: The project is a single use and therefore does not meet this criteria and a VMT analysis would be required.
- Redevelopment Projects: The project site is vacant and therefore the project would not replace any land use currently generating VMT. Therefore this criteria would not apply to the project and a VMT analysis would be required.

As noted above, the project does not meet any of the screening criteria and would therefore be required to prepare a VMT analysis.

Methodology and Significance Criteria

According to the City's TIA Guidelines, projects not screened out of further analysis should complete the VMT analysis using the RIVTAM traffic model to determine if the project would generate VMT per capita exceeding 15 percent below the City's current average VMT/capita. The project would be input into the traffic analysis zone (TAZ) where the project is located or a new zone would be created for the project. The model would then be run to determine the project generated VMT/capita and the projects effect on VMT within the City limits.

A VMT analysis using the above methodology was recently prepared for the Cole Development Project (TTM37731), located at the southwest corner of Cole Avenue and Lurin Avenue. The Cole Development project proposes development of 138 single-family homes and is located within the same TAZ as the proposed project (TAZ 3574). TAZ 3574 is bounded by Krameria Avenue, Nandina Avenue, Wood Rd, and Cole Avenue (see Figure 3). Because the Cole Development project is a similar size (i.e. both are small residential projects of less than 150 dwelling units) and located within the same TAZ as the proposed Wood-Lurin Residential Project, the results of the VMT analysis would be very similar, if not the same as, the VMT reported for the Cole Development Project. Because VMT is reported as per capita, rather than overall VMT of the project or Zone, the VMT/Capita for the Cole Development project is a valid approximation for the VMT for the proposed project. Therefore, the results of the Cole Development project are applied to the proposed Wood and Lurin Residential project for purposes of project impact analysis. The VMT analysis for the Cole Development Project is attached for reference.

Project VMT

The City VMT/capita and the project VMT/capita are shown in Table 1.

Table 1. Baseline (2012) and Cumulative (2040) VMT per Capita

Scenario	City of Riverside	Threshold (15% Below Baseline)	Project
Baseline	10.8	9.18	19.0
Cumulative	10.6	9.01	17.0

Source: Cole Development Project VMT Analysis (LSA, 2020), Riverside Transportation Analysis Model

As shown in the table, in the Baseline condition, the project VMT per capita is more than double the threshold and the project VMT per Capita is approximately 89 percent higher than the threshold in the Cumulative condition. The project would have a significant impact in both the Baseline and Cumulative conditions. In order to mitigate the significant VMT impact, the project would need to implement strategies to reduce the project VMT/capita from 19.0 VMT/capita to 9.18 VMT/capita (a reduction of 52 percent).

VMT Reduction Measures

The City's TIA Guidelines state that to mitigate VMT impacts, the following may be considered for implementation:

1. Modify the project's built environment characteristics to reduce VMT generated by the project.
2. Implement Transportation Demand Management (TDM) measures to reduce VMT generated by the project.
3. Participate in a VMT fee program and/or VMT mitigation exchange/banking program (if they exist) to reduce VMT from the project or other land uses to achieve acceptable levels.

At this time a VMT fee program and/or VMT mitigation exchange/banking program do not exist within the City. If such a program were established prior to project approval, then the project would participate in a future VMT fee or mitigation exchange/banking program.

Evaluation of Transportation Demand Management Strategies

The City's TIA Guidelines identify a WRCOG study that identifies appropriate TDM measures for the region (<https://www.fehrandpeers.com/wp-content/uploads/2019/12/TDM-Strategies-Evaluation.pdf>). There are seven measures identified in the WRCOG guidance that are identified as likely to be effective in a rural or suburban setting, such as the WRCOG area. The measures include both modifications to the project's built environment and TDM measures and are taken from *Quantifying Greenhouse Gas Mitigation Measures*¹. Strategies are grouped into 4 categories: Land Use/Location, Neighborhood Site Enhancements, Transit System, and Commute Trip Reduction. It should be noted that *Quantifying Greenhouse Gas Mitigation Measures* has been updated as of December, 2021. Some of the measures identified in the 2010 CAPCOA guidance have been removed or reclassified in the updated 2021 CAPCOA guidance². In order to maintain consistency with the City's TIA Guidelines, the mitigation strategies discussed below are taken from the WRCOG and 2010 CAPCOA documents. However, the calculation methodology from the 2021 CAPCOA guidance is used to determine the effectiveness of the mitigation measures that are determined to be feasible. The following strategies were considered for mitigation of project VMT impacts:

Increase Diversity of Land Uses (LUT-3). This measure recognizes that VMT can be reduced by including different types of land uses within or near a development since trips between land use types are shorter and may be accommodated by non-auto modes of transportation. For example, when residential areas are proximate to employment uses, then a resident could make the commute trip via walking or bicycling.

The project proposes the construction of 96 single-family dwelling units. In order for the above measure to apply, at least 3 of the following land uses should be located on-site or if not on-site then off-site within ¼ mile of the project: residential development, retail development, office development, park, or open space.

¹ *Quantifying Greenhouse Gas Mitigation Measures*, California Air Pollution Control Officers Association (CAPCOA), August 2010.

² *Handbook for Analyzing Greenhouse Gas Emission Reduction, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, California Air Pollution Control Officers Association (CAPCOA), December 2021.

The proposed project does not include a mix of land uses on-site but is located within ¼ mile of Martin Luther King High School and within ½ mile of the intersection of Wood Road/Van Buren Boulevard. There are restaurant, service and retail uses located at the intersection, which is approximately ½ mile from the project. According to the WRCOG guidance, this TDM measure could provide a maximum reduction of 4 percent. This measure is not included in the 2021 CAPCOA guidance, however, a similar measure, T-31-A Locate Project in Area with High Destination Accessibility, is included in the 2021 guidance. This measure is noted as a “Supporting or Non-Quantified GHG Reduction Measure” in the 2021 guidance, meaning that it would be a complementary measure and could increase the effectiveness of other measures, but would not result in a reduction in GHG or VMT by itself.

Provide Pedestrian Network Improvements (SDT-1). Creating a connected pedestrian network with the development and connecting to nearby destination could encourage walking for local trips. This leads to a reduction in VMT due to a mode shift from driving to walking for shorter trips (typically less than ¼ mile and no greater than ½ mile). This measure is also included in the 2021 guidance as Measure T-18.

The project would construct sidewalks along all internal streets as well as along the project's frontages on Wood Road, Krameria Avenue, and Lurin Avenue. According to the 2021 guidance a maximum VMT reduction of 6.4 percent can be achieved by SDT-1. However, the increase in pedestrian connectivity to existing and planned commercial and residential uses in the area has the potential to decrease VMT by 0.5 to 5.7 percent, according to the WRCOG guidance. It should be noted that due to the lack of diversity of land uses in the immediate vicinity of the project, the maximum reduction of 5.7 percent is unlikely to be achieved.

Provide Traffic Calming Measures (SDT-2). This measure would encourage walking and bicycling instead of using a vehicle through the implementation of pedestrian and bicycle safety and traffic calming measures. Traffic calming would reduce motor vehicle speeds through features such as marked crosswalks, raised intersections, median islands, tight corner radii, roundabouts and similar improvements. This measure is also in the 2021 CAPCOA guidance as Measure T-35. Although the 2010 guidance notes a potential decrease in VMT of up to 1 percent, the 2021 guidance includes traffic calming as a supporting, non-quantified measure.

Implement Car-Sharing Program (TRT-9). A car sharing program would allow residents to have on-demand access to a shared fleet of vehicles on an as-needed basis. Costs are typically paid by the user via an annual membership or on a per-use basis. Car sharing programs are more effective when implemented on an area-wide basis and are not as applicable to smaller single-family developments. The maximum reduction in VMT that could be achieved by a car sharing program in the WRCOG region is 1.6 percent. This measure is included in the 2021 Guidance (Measure T-21-A), however according to the 2021 update the maximum reduction in VMT is reduced to 0.15%.

Increase Transit Service Frequency/Speed (TST-4). This measure is achieved through the addition of additional busses along an existing bus route, the addition of additional routes, or by adding rapid/express bus service that would provide service to activity areas with fewer local stops. This measure is included in the 2021 guidance as Measure T-26. Implementation of this measure would be by the local transit authority with funding from local developments. This measure is not as applicable to a single development, but would be achieved through multiple funding sources, including development fees. According to the 2021 guidance a maximum VMT reduction of 11.3 percent can be achieved by TST-4. However, the maximum achievable VMT reduction in the WRCOG area from this measure is 6.3 percent.

Encourage Telecommuting and Alternative Work Schedules (TRT-6). This measure would encourage employers to allow employees to work from home or work a flexible schedule or compressed work week,

thereby reducing the number of days that residents would commute to their workplace. This measure is commonly implemented by employers as part of a commute trip reduction program. The maximum achievable reduction in VMT in the WRCOG region due to telecommuting and alternative work schedules is 4.5 percent. It should be noted that this measure is included in the 2021 guidance as T-42, however the 2021 guidance indicates that some recent studies show that Telecommuting and Alternative Work Schedules could result in total VMT increases and other disbenefits and recommends that the latest literature be reviewed before implanting a telecommute program for VMT reduction.

Provide Ride-Sharing Programs (TRT-3). A ride-sharing program would increase vehicle occupancy by matching commuters with others who live and work within close proximity to one another. This strategy is generally implemented by employers through a Transportation Management Association or on a region-wide basis through a regional ride-share matching program. Ride-sharing programs are generally not implemented within a single-family development. The maximum achievable VMT reduction from ride-sharing programs in the WRCOG region is 8.3 percent. This measure is also included in the 2021 guidance as Measure T-8. According to the latest guidance, the maximum VMT reduction from Ride-sharing programs is 8 percent.

Implement Subsidized or Discounted Transit Program (TRT-4). This measure is not included in the WRCOG report and is not identified as a measure that would achieve meaningful reduction within the WRCOG region. The measure is included in the 2021 guidance as T-9, which indicates that up to 5.5% reduction in VMT can be achieved. At the City's request, EPD evaluated a transit pass subsidy for mitigation of project VMT. Riverside Transit Route 22 runs along Wood Road with a stop at the corner of Wood Road and Lurin Avenue. Riverside Transit routes 22 and 27 run along Van Buren Boulevard, approximately 0.75 miles north of the project site. Because the site is served by transit, a subsidized or discounted transit program could be effective in reducing project VMT.

Implement Commute Trip Reduction Marketing (2010 Guidance TRT-7, 2021 Guidance T-7). This measure would implement a marketing strategy intended to reduce commute trips through promotion of an employer's commute trip reduction program (CTR). CTR marketing would educate employees (or residents) about their travel choices beyond driving such as carpooling, transit, walking and bicycling. A CTR Marketing program is generally implemented by an employer and could result in a reduction in VMT of 4 percent. There is no guidance for calculating the benefit when implemented by a residential project, therefore this measure would be considered a supportive measure to other resident-based programs, such as the subsidized/discounted transit program.

Implement a School Pool Program (2010 Guidance TRT-10, 2021 Guidance T-41). This measure is not included in the WRCOG guidance but was included at the request of the City. A School Pool program would entail creating a ridesharing program for school children and is generally implemented on a District-wide basis. Implementation of a school pool by an individual development project would not be effective due to the limited number of potential school students utilizing the program. According to the 2021 CAPCOA guidance, school pool program would help match parents to transport students to private schools or to schools where students cannot walk or bike but do not meet the requirements for bussing. It should be noted that Mark Twain Elementary School and Martin Luther King High School are both located approximately 1/4 mile from the project and are therefore within walking distance. While implementation of a School Pool Program has the potential to reduce VMT for residential projects, the 2021 CAPCOA guidance indicates School Pool programs as a supporting measure and does not provide a method for calculating the reduction in VMT for School Pool programs.

Table 2 shows each strategy and the maximum reduction that could be achieved within the WRCOG region.

Table 2. Potential VMT Reduction Strategies

VMT Reduction Strategy	Maximum Achievable VMT Reduction	Feasible for Project
Land Use/Location Strategies (Maximum Reduction 5%)¹		
- Increase Diversity of Land Uses	0% Supportive Measure	No
Neighborhood Site Enhancements (Maximum Reduction 5%)¹		
- Provide Pedestrian Network Improvements	5.7%	Yes
- Provide Traffic Calming Measures	0% Supportive Measure	Yes
- Implement Car-Sharing Program	1.6%	No
Calculated VMT Reduction from Neighborhood Site Enhancements¹	7.2%	
Transit System (Maximum Reduction 10%)¹		
- Increase Transit Service Frequency/Speed	6.3%	No
Commute Trip Reduction (Maximum Reduction 15%)¹		
- Encourage Telecommuting and Alternative Work Schedules	4.5%	No
- Provide Ride-Sharing Programs	8.3%	No
- Implement Subsidized or Discounted Transit Program	3.6%	Yes
- Implement Commute Trip Reduction Marketing	0% - Supportive Measure	Yes
- Implement a School Pool Program	0% - Supportive Measure	No
Calculated VMT Reduction from Commute Trip Reduction¹	15.6%	
Total VMT Reduction from All Subsectors (Assumes Maximum Reduction where Calculated Reduction is Greater)²	24.9%	

¹ Maximum Reduction per Sector from CAPCOA.

² Per CAPCOA total VMT reduction for multiple strategies within same subsector is calculated using the equation: $1 - (1-A) * (1-B) * (1-C) \dots$ where A, B, C are equal to individual mitigation strategy reduction percentages. This equation is applied to measures within a sector as well as the totals across all sectors. When applied to the project, the calculation would be $1 - (1 - 0.05) * (1 - 0.063) * (1 - 0.156) = 0.2487$, or 24.9%.

If the project were to implement every VMT reduction strategy and achieve the maximum VMT reduction, then the VMT could be reduced by 24.9 percent. This calculation includes the maximum reductions for each sector, even if the calculated reduction is higher and reflects the limited effectiveness that some measures have in suburban areas. To mitigate the significant VMT impact, a reduction of 52 percent would be required. Because it is not possible to reduce the project's VMT by more than 24.9 percent, the VMT impact would remain significant and unavoidable.

Evaluation of Off-Site Improvements to Reduce Project VMT

EPD worked with City staff to identify other feasible mitigation for the project besides those measures shown in Table 2. Another measure that was considered was project funding of off-site bicycle lanes or pedestrian facilities. Using a City-provided list of planned bicycle lane improvements as well as the estimated cost for each improvement, EPD evaluated several potential bicycle lane projects to determine if

their implementation could reduce VMT by an amount that would mitigate the project VMT impact. The potential VMT reduction was calculated using the methodology in *Quantifying Reductions in Vehicle Miles Traveled from New Bike Paths, Lanes, and Cycle Tracks*, California Air Resources Board, April 15, 2019. Three projects on high volume roadways were evaluated using the following calculation:

Auto VMT Reduced = $(D) \cdot (ADT) \cdot (A+C) \cdot (L)$, where:

D = days of use per year (default is 200 days)

ADT = Annual average 2-way daily vehicular traffic on parallel road (maximum of 30,000)

A = Adjustment factor (table lookup value)

C = Activity center credit (table lookup value)

L = Bike trip length (1.8 miles/trip in one direction)

It should be noted that the calculation identified the reduction in yearly VMT, whereas project VMT is reported in daily VMT. Also, the calculation identifies the reduction in total VMT, rather than the percent reduction. Therefore, EPD calculated the required reduction in total VMT using the following method:

- Project VMT/Capita = 19.0 (see Table 1)
- Total Project Population = Average Household size per the City's General Plan Housing element (3.18) multiplied by 96 dwelling units = 305 persons
- Total Project VMT = $19.0 \times 305 = 5,795$ VMT
- 52% of Project VMT = 3,013 VMT reduction required for mitigation

Table 3 shows the VMT reduction potential for three bicycle lane projects. If all three projects identified in Table 3 were implemented, the total reduction in daily VMT would be 383 VMT and the mitigation cost would be \$946,497.29. Implementation of bicycle lane projects would not mitigate the project VMT to less than significant and would result in significant cost to the project, making development of the project potentially infeasible due to mitigations costs to achieve a total VMT reduction of 3,013 (52 percent reduction from project VMT).

Table 3. Reduction in VMT from Bicycle Lane Implementation

Adams Street (Lincoln to California) Bicycle Lane (Project Cost \$602,837.25)		
	Segment North of 91 Freeway	Segment South of 95 Freeway
D	200	200
ADT	23000	16000
A	0.002	0.002
C	0.003	0.003
L	1.8	1.8
Yearly Reduction in VMT	41400	28800
Daily Reduction in VMT	113	79
Cost/VMT	\$ 2,657.43	\$ 3,820.06
Arlington Ave (Indiana to Magnolia) Bicycle Lane (Project cost \$1,174,689, TUMF Funding \$845,776, Non-TUMF \$328,913.04)		
D	200	
ADT	23974	
A	0.002	
C	0.003	
L	1.8	
Yearly Reduction in VMT	42830	
Daily Reduction in VMT	117	
Cost/VMT	\$ 2,803.07	
Magnolia Ave (Meyers to McKenzie) Bicycle Lane (Project cost \$14,747)		
D	200	
ADT	25000	
A	0.001	
C	0.002	
L	1.8	
Yearly Reduction in VMT	27000	
Daily Reduction in VMT	74	
Cost/VMT	\$ 199.36	

Mitigation Measures Applicable to Proposed Project

As noted in Table 2, the following VMT reduction strategies would be applicable to the project:

- Provide Pedestrian Network Improvements
- Provide Traffic Calming Measures.
- Implement Subsidized or Discounted Transit Program
- Implement Commute Trip Reduction Marketing

Table 4 shows the actual VMT reduction that could be achieved with the mitigation measures applicable to the project. The specific Implementation of each measure is discussed below:

Table 4. Calculated VMT Reduction with Project Mitigation

Mitigation Measure (Number corresponds to the 2021 CAPCOA Handbook)	Formula	Comments	Calculated Reduction in VMT (%)
Neighborhood Design			
T-18 Provide Pedestrian Network Improvement	$A = ((C/B)-1)*D$, Where B = Existing sidewalk length in study area, C = Sidewalk length in study area with measure, and D = Elasticity of household VMT with respect to the ratio of sidewalks-to-streets (-0.05 constant)	Approximately 6,235 linear feet of existing sidewalks in RivTAM TAZ 3574. Project would construct approximately 5,780 LF of sidewalk within project and along Wood Road, Lurin Avenue and Krameria Avenue.	4.6%
Trip Reduction Programs (maximum reduction of 45% commute VMT)			
T-7 Implement Commute Trip Reduction Marketing	$A = B * C * D$, Where B = Percent of employees/residents eligible for program, C = Percent reduction in employee commute trips, D = Adjustment from Vehicle trips to VMT	Based on the formula, an employer Commute Trip Reduction (CTR) Marketing program could result in a 4% reduction in VMT. However, because no methodology exists to evaluate a CTR Marketing Program for a residential project, this measure is considered supportive to other measurable mitigation measures.	0.0%
T-9 Implement Subsidized or Discounted Transit Program	Formula provided in report text.		3.6%
Total VMT Reduction from Individual Trip Reduction Programs (T-7 & T-9)¹			3.6%
Total VMT Reduction from Neighborhood Designs¹			4.6%
Total VMT Reduction from All Subsectors¹			8.1%

¹ Per CAPCOA total VMT reduction for multiple strategies within same subsector is calculated using the equation: $1-(1-A)*(1-B)*(1-C)...$ where A, B, C are equal to individual mitigation strategy reduction percentages.

Provide Pedestrian Network Improvements: The project would construct sidewalks along all internal streets as well as along the project's frontages on Wood Road, Krameria Avenue, and Lurin Avenue. The effectiveness of this measure was calculated using the methodology in the 2021 CAPCOA guidance, which is based on the increase in sidewalks within the project area. For purposes of the calculation the project area was defined as RivTAM TAZ3574. In the existing condition, there is approximately 6,235 linear feet of existing sidewalks. The project would construct an additional 5,780 LF of sidewalk along Wood Road, Lurin Avenue, Krameria Avenue and within the project. The increase in pedestrian connectivity to existing

and planned commercial and residential uses in the area has the potential to decrease VMT by 3.6 percent, according to the CAPCOA calculation.

Provide Traffic Calming Measures: As shown on the conceptual site plan, the location of the park and surrounding proposed street system prohibits straight cut-through traffic and is designed to be traffic calming, as both left and right-turns are required to drive through the site. Although traffic calming would not result in a reduction in VMT, it is supportive to the pedestrian network improvements and would provide a more comfortable walking environment within the project site as well as connections to the off-site pedestrian network.

Implement Subsidized or Discounted Transit Program: To encourage use of transit and reduce the VMT/capita of the project, the project shall implement a subsidized transit pass program. The project applicant shall establish an account in the amount of \$50,000, to be administered by the Homeowners Association (HOA) to provide free or reduced cost transit passes to project residents for a period of at least 10 years from project occupancy. Implementation of the subsidized transit pass program by the HOA shall be included in the project Covenants, Conditions and Restrictions (CC&R's) and the fund shall be established prior to occupancy of the first unit of the project. The program shall provide up to \$60 for a Riverside Transit Agency monthly pass or up to \$100 for a Metrolink monthly pass to qualified residents who request transit reimbursement from the HOA. Residents who participate in the subsidized transit pass program would also be eligible to receive reimbursement for use of a ride sharing service (i.e. Uber or Lyft) for an emergency ride home.

The HOA shall provide an annual report of the transit pass program that includes the number of reimbursement requests, the amount disbursed to residents, and the remaining amount in the transit pass account. If the program experiences low participation, the City shall have the discretion to direct the HOA to redirect the funds to implementation another measure intended to reduce vehicle miles traveled by project residents. Such measures could include, but are not limited to, offsite or onsite pedestrian, bicycle or transit improvements, funding toward a bikeshare station on or near the site, implementation of further traffic calming measures, or other feasible and implementable transportation demand management (TDM) measures.

The subsidized transit pass program would be administered by the project Homeowners Association (HOA) and would rely on a fund, established by the project applicant, to purchase transit passes for project residents. The amount required by the fund was determined using the project's projected population, the regional transit mode share and the cost of Riverside Transit Agency (RTA) and Metrolink monthly passes. The project population is estimated to be 305 persons using an average household size of 3.18 persons per the City's General Plan Housing Element. According to the Handbook for Analyzing GHG Emission Reductions, Assessing Climate Vulnerabilities and Advancing Health and Equity (California Air Pollution Control Officers Association, 2021), the average transit mode share in the Riverside-San Bernardino-Ontario statistical area is 1.37%. Based on the project population and average transit mode share, the project would generate a demand for 4.18 passes per month, or approximately 50 passes per year. The fund value is estimated using an average cost of transit pass of \$100 (Current transit pass costs include \$95 for RTA Commuter Link+Local or \$100 for Metrolink). Over a 10-year period, the cost of transit passes would be \$50,000.

The calculation methodology for VMT reduction was referenced from the California Air Resources Board Quantification Methodology³ with input on trip lengths from Riverside Transit Authority (RTA). According to the methodology, the annual auto VMT displaced from the project is calculated according to the following equation:

$\text{AutoVMT}_{\text{yr}} = \text{Ryr} \times \text{A} \times \text{L}$ where,

Ryr = Annual increase in unlinked passenger trips directly associated with the first or final year. Ryr was calculated using the Transit Mode Share for the Riverside-San Bernardino-Ontario Statistical Area from the CAPCOA Handbook for Analyzing GHG Emission Reduction⁴ (Table T-3.1). According to this source, the average transit mode share for all trips is 1.37%. The daily project trip generation would be 906 daily trips⁵. Therefore, the expected transit trips would be $906 \times 1.37\%$ or 13 trips. Because VMT is a measure of per capita trips per day, Ryr was not calculated on a yearly basis, as would be required for GHG reduction calculation.

A = Adjustment factor (provided in Appendix A of the CARB guidance) – 0.561 for fixed route service and 0.705 for Commuterlink (express) service.

L = Estimated length of trip (per RTA 9.3 miles for fixed route and 23.3 miles for Commuterlink service).

The expected VMT reduction due to providing transit pass subsidy would be:

Fixed Route = $13 \times 0.561 \times 9.3 = 68$ VMT or 0.22 VMT/capita

Commuterlink = $13 \times 0.705 \times 23.3 = 214$ or 0.70 VMT/capita

VMT per capita was calculated by multiplying the VMT reduction by the expected population of the project (305 persons using an average household size of 3.18 persons per the City's General Plan Housing Element). Based on a project VMT/capita of 19.0 (see Table 1), the maximum VMT reduction assuming all transit trips would be on Commuterlink trips would be 3.6 percent. A bus pass program would generally be implemented as part of an employer commute trip reduction program. However, implementation of a bus pass subsidy for a single-family residential development could be implemented by the project's HOA.

Implement Commute Trip Reduction Marketing: As noted previously, a Commute Trip Reduction Marketing program is generally implemented by an employer and is intended to reduce commute trips through promotion of an employer's commute trip reduction program (CTR). A residential project could, however, provide a CTR marketing program via information provided by the HOA and would educate residents about their travel choices beyond driving such as carpooling, transit, walking and bicycling. The project HOA shall provide up to date travel information in a publicly accessible location, such as a website or on-site bulletin board. The CTR Marketing program shall provide information on the Subsidized Transit Pass program as well as other travel options such as transit routes and schedules, bikeway maps, and location of nearby bike and carshare stations. The information shall be reviewed and updated as needed and no less than every six months.

³ California Air Resources Board (CARB), *Quantification Methodology California Department of Transportation Low Carbon Transit Operations Program*, December 20, 2019.

⁴ California Air Pollution Control Officers Association, *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, December 2021.

⁵ Institute of Transportation Engineers (ITE), *Trip Generation, 11th Edition*, 2021. Trip rates of 9.43 trips per dwelling units based on land use code 210 Single-Family Detached Housing.

Conclusion

The project VMT/Capita would be approximately 19.0, which is 89 percent higher than the threshold in the Cumulative condition. The project would have a significant impact in both the Baseline and Cumulative conditions. In order to mitigate the significant VMT impact, the project would need to implement strategies to reduce the project VMT/capita from 19.0 VMT/capita to 9.18 VMT/capita (a reduction of 52 percent).

The project would implement the following four mitigation measures:

- Provide Pedestrian Network Improvements
- Provide Traffic Calming Measures.
- Implement Subsidized or Discounted Transit Program
- Implement Commute Trip Reduction Marketing

Implementation of these four measures could result in a decrease in VMT of 8.1 percent. Additional feasible mitigation measures are not available for residential projects at this time, therefore, the project's impact on VMT would remain significant and unavoidable.

At this time a VMT fee program and/or VMT mitigation exchange/banking program do not exist within the City. If such a program were established prior to project approval, then the project would participate in a future VMT fee or mitigation exchange/banking program.

Figure 1 – Project Location



Figure 2 – Project Site Plan



KRAMERIA & WOOD - ORANGECREST

RIVERSIDE | CA

COASTAL COMMERCIAL PROPERTIES | 20-128

DATE 06 | 07 | 21



ILLUSTRATIVE SITE PLAN | SP-0



Figure 3. RIVTAM TAZ 3574

