

ATTACHMENT 11

TRANSPORTATION DEMAND MANAGEMENT MEMORANDUM



MEMORANDUM

To: Marc Magstadt
Winehaven Legacy LLC

From: Ben Huie, P.E.
Kimley-Horn and Associates, Inc.

Date: July 2, 2020

Subject: **Transportation Demand Management (TDM) Memorandum for Point Molate**

Kimley-Horn and Associates, Inc. (KHA) was retained by Winehaven Legacy LLC to prepare a preliminary transportation demand management (TDM) plan for the proposed Point Molate project. A Draft Subsequent Environmental Impact Report (SEIR) for the Point Molate Mixed-Use Development Project was released on February 2020. Since then, the project land use mix has been refined to consist of the following land uses:

- Retail and restaurant – 55,000 square feet
- Office – 383,774 square feet
- Single-family Residential – 426 units
- Mid-rise Apartments – 1,026 units
- Ferry Parking – 100 parking spaces
- Civic Uses – 10,000 square feet

As mentioned in the SEIR, the project would include a transportation demand management (TDM) plan. This TDM plan was assumed to provide a 10 percent trip reduction according to the trip generation table in the SEIR. However, the 10 percent is the maximum trip reduction allowed by the Contra Costa Transportation Authority (CCTA) technical procedures for the purposes of the TIA. The project can propose a TDM plan that exceeds the 10 percent trip reduction since the trip monitoring aspect of this TDM plan will show the actual trip reductions achieved. The City of Richmond (City) discusses the performance requirements in its Municipal Code. In section 15.04.612.030, projects are required to reduce the vehicle trip generation by 15 percent below the standard rate established in the most recent version of the Institute of Transportation Engineers (ITE) Trip Generation Manual. The following discusses the proposed TDM plan to meet and exceed this goal and to reduce VMT and associated greenhouse gases to the maximum extent feasible.

PROJECT PEAK HOUR TRIPS

The number of project trips for the refined project was estimated in the *Point Molate Mixed Uses Development Project – Trip Generation Evaluation Draft Letter* by Kimley-Horn on May 29, 2020 using the industry standard ITE *Trip Generation Manual, 10th Edition*¹. This reference estimates project trips

¹ *Trip Generation Manual, 10th Edition*, Institute of Transportation Engineers, 2017.

based on land use from survey data. **Table 1** summarizes the raw trip generation for the refined project. This table does not include the internal capture reductions nor the TDM reductions, as shown in the SEIR, because the TDM requirements are based on a reduction of the ITE rates.

Table 1 – Trip Generation Summary

Land Use	Size	Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Retail and Restaurant			37.75	0.6	0.36	0.96	1.83	1.98	3.81
Unadjusted Trips	55	KSF	2,076	33	20	53	101	109	210
Pass-by (25%)			519	8	5	13	25	28	53
Net New Trips			1,557	25	15	40	76	81	157
Office			9.74	0.71	0.12	0.83	0.15	0.72	0.87
Unadjusted Trips	383.744	KSF	3738	274	45	319	57	277	334
SFR			Eqn	Eqn			Eqn		
Unadjusted Trips	426	DU	3945	77	230	307	257	151	408
Low-rise Apartments/Condos			Eqn	Eqn			Eqn		
Unadjusted Trips	0	DU	0	0	0	0	0	0	0
Mid-rise Apartments/Condos			Eqn	Eqn			Eqn		
Unadjusted Trips	1026	DU	5590	87	248	335	253	161	414
Ferry Parking Rates			2.81	0.33	0.09	0.42	0.11	0.32	0.43
	100	Spaces	281	33	9	42	11	32	43
Net New Trips			15,111	496	547	1,043	654	702	1,356

KSF = 1,000 square feet

DU = Dwelling Units

Fitted Curve Equations:

Single-Family Residential Daily: $\ln(T) = 0.92 \ln(X) + 2.71$; AM peak hour: $T = 0.71(X) + 4.80$; PM peak hour: $\ln(T) = 0.96 \ln(X) + 0.20$

Low-rise Apartments/Condos Daily: $T = 7.56(X) - 40.86$; AM peak hour: $\ln(T) = 0.95 \ln(X) - 0.51$; PM peak hour: $\ln(T) = 0.89 \ln(X) - 0.02$

Mid-rise Apartments/Condos Daily: $T = 5.45(X) - 1.75$; AM peak hour: $\ln(T) = 0.98 \ln(X) - 0.98$; PM peak hour: $\ln(T) = 0.96 \ln(X) - 0.63$

The refined project results in 15,111 daily trips, 1,043 AM peak hour trips, and 1,356 PM peak hour trips. Since the City requires that the TDM reduction be 15 percent below the standard rates in ITE, the TDM plan would be required to reduce the trips to at least 12,844 daily trips, 887 AM peak hour trips, and 1,153 PM peak hour trips.

INTERNAL CAPTURE

Per the SEIR, an internal capture reduction of 20 percent was assumed to account for the mix of complimentary uses proposed by the project. By incorporating this 20 percent internal capture reduction, the project would meet the 15 percent trip reduction required, even without a TDM plan.

PROJECT VEHICLE MILES TRAVELED (VMT)

The SEIR evaluated the project VMT using the Metropolitan Transportation Commission (MTC) Travel Demand Model. It showed the project with an estimated 21.7 VMT per capita in the Year 2020 and an estimated 31.0 VMT per employee in the Year 2020. Both of these exceed the corresponding City and Bay Area region averages for VMT. Since this is a regional model that accounts for the entire Bay Area, Kimley-Horn provided its own VMT analysis using a more local model, the CCTA travel demand forecast model. It should be noted that neither the City of Richmond nor CCTA have a defined VMT methodology as of June 2020. Therefore, the VMT methodology used was based on determining the

VMT for the City, the County region, and the project by home-based work trips for the service population. The service population is defined as both the residential population and the employment jobs. Based on this methodology, **Table 2** summarizes the project's VMT, the City VMT, and the County region's VMT.

Table 2 – VMT Summary

Study Area	VMT per Service Population
CCTA Region	11.1
City of Richmond	8.9
Project	13.0

The project is estimated to have a VMT of 13.0 per service population. The City is requesting that the project have a VMT that is 15 percent less than the CCTA region VMT. Therefore, the project would need to reduce its VMT by 28 percent, from 13.0 VMT per service population to 9.4 VMT per service population ($11.1 \times 0.85 = 9.4$).

TRANSPORTATION DEMAND MANAGEMENT PROGRAM

As outlined in the SEIR, there are TDM measures suggested for the proposed project. These TDM measures were reviewed to determine the anticipated trip reduction and VMT reduction that each measure would generate. The following describes these proposed TDM measures.

PROPOSED PROGRAM MEASURES

The following summarizes an initial approach to the proposed TDM program for the proposed project. It is assumed that the TDM program will be refined over time to adapt to changing transportation trends and to maximize the efficiency of the program. The TDM program is specifically designed to focus on incentives and rewards for residents and employees to participate in the program rather than penalties for not participating. An initial set of TDM measures is summarized in **Table 3**.

Table 3 – Proposed TDM Measure Summary

#	TDM Measure	Description
Recommended Trip and VMT Reduction Measures		
1	Shuttle to/from BART Station	A shuttle would be provided for the weekday AM and PM peak periods between the project site and the Richmond BART Station.
2	Guaranteed Ride Home Program	Provides an occasional subsidized ride to commuters who use alternative modes and eliminates a common hurdle to the use of alternative modes. Guaranteed ride home for people if they need to go home in the middle of the day due to an emergency or stay late and need a ride at a time when transit service is not available.
3	Preferential Carpool Parking Spaces	Reserved carpool spaces closer to building entrances.
4	Preferential Vanpool Parking Spaces	Reserved vanpool spaces closer to building entrances.
5	Commute Assistance Center	Provide a computer kiosk that allows employees to research other modes of transportation for commuting.
6	On-site TDM Program Manager and TDM marketing materials	Marketing and public information campaign to promote awareness of TDM program with an on-site coordinator to monitor program.
7	On-site Amenities	Provide a minimum of three trip reducing on-site amenities, such as: banks, grocery stores, cleaners, exercise facilities, childcare, etc.
8	Unbundled Parking	For the apartment units, parking can be unbundled from the rent costs. This gives residents the option to not have parking, and reduce the number of vehicle trips.
9	Telecommuting	Provide a workspace for residents and encourage office uses to implement a telecommuting program.
10	Water Taxi Service	Water taxi is proposed between the Project and San Francisco
11	Bicycle Parking	Long-term Class I and short-term Class II bicycle parking will be provided for offices.

EFFECTIVENESS OF TDM PROGRAM ELEMENTS

The effectiveness of the proposed TDM measures was primarily based on the California Air Pollution Control Officers Association (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures*² reference. This reference discusses various transportation mitigation measures to reduce greenhouse gases, which are also related to VMT and vehicle trips. It was assumed that a percent reduction in VMT has the same percent reduction for vehicle trips, except where noted, because the TDM measures would remove trips rather than shorten trips for each TDM measure, except the on-site amenities, which would shorten trips. **Table 4** summarizes the estimated VMT and trip reductions.

² *Quantifying Greenhouse Gas Mitigation Measures*, CAPCOA, August 2010.

Table 4 – TDM Trip & VMT Reduction Summary

#	TDM Measure	CAPCOA Measure #	Residential		Office		Project		Notes/ Assumptions
			Trip Reduction %	VMT Reduction %	Trip Reduction %	VMT Reduction %	Trip Reduction %	VMT Reduction %	
1	Shuttle to/from Richmond BART Station	TRT-11	11%	8%	11%	8%	11%	8%	Assumed 11% mode share, % VMT Reduction = A * B * C, where A = % shift in mode share, B = % employees eligible, and C = 0.67
2	Guaranteed Ride Home Program	N/A	9%	9%	9%	9%	9%	9%	Source: <i>Guaranteed Ride Home Programs: A Study of Program Characteristics, Utilization, and Cost</i> , William B. Mencer, 2007.
3	Preferential Carpool Parking	LUT-9	-	-	-	-	-	-	No Trip Reduction data available. Estimated to be minimal reduction.
4	Preferential Vanpool Parking	LUT-9	-	-	-	-	-	-	No Trip Reduction data available. Estimated to be minimal reduction.
5	Commuter Assistance Center	LUT-9	-	-	-	-	-	-	Combined with other TDM trip reductions.
6	On-site TDM Program Manager and TDM marketing materials	TRT-1	-	-	-	-	-	-	Combined with other TDM trip reductions.
7	On-site Amenities	N/A	1%	1%	1%	1%	1%	1%	Based on internal capture reductions for 10 KSF of retail.
8	Unbundle Residential Parking	PDT-2	7%	7%	0%	0%	4.5%	4.5%	% VMT Reduction = change in vehicle cost * elasticity * A, where cost = monthly parking cost x (12/\$4,000), Elasticity = 0.4, A = 85% adjustment from vehicle ownership to VMT (only applied to multi-family units)
9	Telecommuting	TRT-6	2%	2%	2%	2%	2%	2%	Assumes 10% employee or resident participation rate for telecommuting 1.5 days a week
10	Water Taxi Service	N/A	3%	3%	3%	3%	3%	3%	Assumes 3% of residents will use and 3% of office employees will use.
11	Bicycle Parking	SDT-6	0%	0%	1%	1%	0.5%	0.5%	For office only.
Estimated Project Reduction			33%	30%	27%	24%	31%	28%	
Maximum Reduction Allowed			None	20%	None	20%	None	20%	CAPCOA max VMT reduction for Suburban Center

Proposed Shuttle to/from the Richmond BART Station

The proposed shuttle would provide weekday service between the project and the Richmond BART station during the 2-hour AM and 2-hour PM peak periods. The shuttles will operate on 20-minute headways.

The trip and VMT reductions for the proposed shuttle to/from the Richmond BART Station were based on CAPCOA Measure TRT-11. This measure calculates the percent VMT reduction based on the product of the percent shift in mode share of commute trips multiplied by the percent of eligible employees and multiplied by the adjustments from mode share to commute VMT. The annual reduction in vehicle mode share ranges from 2-20 percent, with the lower range occurring for smaller employers and the higher range occurring for the larger employers. Since this project has a fairly large office square footage and number of residents, it was assumed to be similar to a larger employer. However, to be conservative, since the BART station is located approximately 5 miles away, an 11 percent mode shift was assumed. Assuming that employees and residents are eligible to use the shuttle, and the mode share to VMT variable is given to equal 0.67, this results in a 8 percent VMT reduction. An 11 percent trip reduction was calculated by not applying the mode share to VMT variable (i.e. not applying the 0.67 factor).

Guaranteed Ride Home Program

The trip and VMT reductions for the proposed Guaranteed Ride Home Program were based on the *Guaranteed Ride Home Program Characteristics, Utilization, and Cost* study by William B. Menczer. This study mentions different reduction percentages for mode shift ranging from 9 to 47 percent. To be conservative, a 9 percent mode shift was assumed to be attributed to a Guaranteed Ride Home Program. It should be noted that the program can vary in terms of the reimbursement value for users, which may result in a higher or lower mode shift. The initial assumption was that a \$50 to \$100 monthly reimbursement could be given to 100 percent of the employees and households. There was no data related to the VMT reduction and therefore the VMT reduction was assumed to be the same as the trip reduction.

Preferential Carpool and Vanpool Parking Spaces

Although CAPCOA mentions preferential carpool and vanpool parking spaces in CAPCOA Measure LUT-9, there is no data suggesting the trip reduction or VMT reduction. However, it is estimated that this measure would have a minimal impact of the reduction of trips and VMT as a standalone measure. Further incentives, such as cash payouts for using carpools or vanpools would likely be needed to change travel behavior.

Commute Assistance Center and On-Site TDM Manager

Although CAPCOA mentions a commute assistance center in CAPCOA Measure LUT-9 and an on-site TDM manager in CAPCOA measure TRT-1, there is no data suggesting the trip reduction or VMT reduction. These two measures typically are not stand-alone measures, but are a means of improving or implementing other TDM measures. Therefore, the trip and VMT reductions are combined with other TDM trip and VMT reductions.

On-site Amenities

The trip and VMT reductions for the proposed on-site amenities were not mentioned in any specific references. Therefore, to estimate the trip and VMT reductions, Kimley-Horn considered the concept of internal capture reductions. Internal capture reductions are meant to estimate the number of trips that occur within a site due to the interaction of complimentary uses. For example, a residential neighborhood and a childcare facility on the same site would result in trips that occur between these two uses and would not generate vehicles trips outside of the site. Using this concept, the internal capture reductions for a 10,000-square foot retail use and the proposed project's 383,744-square foot office uses and the 1,452-unit residential uses were calculated. It should be noted that the project permits up to 55,000 square feet of retail and restaurant uses, of which 40,000 square feet can be regional retail and restaurant uses. Although the other 15,000 square feet is limited in size and to the ground floor of otherwise residential buildings or small, single-story commercial buildings, to be conservative, this TDM assumes only 10,000 square feet would be filled with amenities that reduce trips. The 10,000-square foot retail uses would result in 3 AM peak hour and 1 PM peak hour internal trips with the office use, and would result in 2 AM peak hour and 7 PM peak hour internal trips with the residential use. This results in approximately a one percent internal capture reduction for the retail uses. Since no data was provided for a VMT reduction, it was assumed that the VMT reduction would be equal to the trip reduction.

Unbundle Residential Parking

Unbundling parking would entail developers providing an option for renters to buy parking as opposed to including parking in the lease agreement. By providing parking as an option, renters can opt to not pay for parking and therefore reduce vehicle ownership in the neighborhood and reduce vehicle trips.

The trip and VMT reductions for unbundling residential parking were based on CAPCOA Measure PDT-2. This measure calculates the percent VMT reduction based on the product of the change in vehicle cost multiplied by the elasticity of vehicle ownership with respect to total vehicle costs multiplied by a conversion factor from vehicle ownership to VMT. This assumes that the cost of parking is \$100 a month and \$4,000 representing the annual vehicle cost. This also assumes an elasticity of 0.4 for the vehicle ownership with respect to the total vehicle costs. Lastly, an 85 percent adjustment factor was applied to convert vehicle ownership to VMT. These values are from documentation from the Victoria Transport Policy Institute (VTPI). Since no data was provided for a trip reduction, it was assumed that the trip reduction would be equal to the VMT reduction. This TDM measure was only applied to the multi-family residential units and not the single-family residential or townhome units.

Telecommuting

Telecommuting would be promoted for the residential uses and for the office uses. For the residential uses, a workspace could be provided within the leasing center that allows residents to telecommute. For office uses, tenants would be encouraged to allow employees to telecommute. This could either be through financial incentives or other incentives to employers.

The trip and VMT reductions for telecommuting were based on CAPCOA Measure TRT-6. This measure calculates the percent VMT reduction based on data provided by Fehr and Peers in *Moving Cooler Technical Appendices*. Based on employee participation and the work schedule or number of

telecommuting days, a percent VMT reduction can be estimated. It was assumed that 10 percent of residents and employees would participate and telecommute for 1.5 days a week. This resulted in a 2 percent VMT reduction. Since no data was provided for a trip reduction, it was assumed that the trip reduction would be equal to the VMT reduction.

Water Taxi Service

A water taxi service is being proposed for the project. This would provide residents an alternative form of transportation for commuting to other ferry terminals around the San Francisco Bay, such as to San Francisco. This would also provide employees of the office uses the option to take a water taxi to work. It is estimated that 3 percent of the residents and 3 percent of the employees would use this mode of transportation for commuting.

Bicycle Parking

Class I (long-term) bicycle parking is proposed for the project. This includes covered and secure bicycle parking facilities within 75 feet of building entrances for a minimum of nine (9) locations. In addition, Class II (short-term) bicycle parking is proposed for the project. This includes bicycle racks located within 50 feet of the main entrances to the commercial buildings.

The trip and VMT reductions for bicycle parking were based on CAPCOA Measure SDT-6. This measure mentions a 0.625 percent reduction in VMT. Since there was no mention of trip reductions, it was assumed that there would be an equivalent 0.625 percent reduction in vehicle trips. These percentages were rounded up to one percent in **Table 4** for the office uses. However, when calculating for the entire project, since this measure did not apply to the residential uses, which makes up a larger portion of the vehicle trips, the project trip reduction and VMT reduction were assumed to be less than 0.5 percent, and was therefore rounded down to 0 percent.

TDM Effectiveness Summary

The proposed TDM plan is expected to result in a 33 percent trip reduction and 30 percent VMT reduction for residential uses and a 27 percent trip reduction and 24 percent VMT reduction for office uses. **Combined for the entire project, this is estimated to result in a 31 percent project trip reduction and a 28 percent project VMT reduction.** These are estimated values for the reductions and are applied individually. It should be noted that there is a point of diminishing returns with trip reductions and VMT reductions since an individual may take advantage of multiple TDM measures. CAPCOA mentions that the maximum VMT reduction for a compact infill site (locations such as Albany and Hayward) is 35 percent, and for a suburban center (locations such as San Rafael and San Mateo) is 20 percent. Since there is limited data on the estimated VMT reductions and maximum VMT reductions, and it would be difficult to monitor VMT for the project, it is recommended that the TDM monitoring focus on vehicle trips.

MONITORING PLAN

To ensure that the TDM program is working effectively and achieving its goals, annual monitoring of commute patterns and reviewing the TDM program is necessary. The following describes the review process.

ANNUAL TRAVEL SURVEY

The Project Applicant will perform an annual travel survey to assess the current use of alternative transportation options by residents and employees. The travel survey will also survey residents and employees on planned travel modes, to gauge the need for necessary measures to comply with the required vehicle trip reductions. Results of the survey should be used to identify adjustments that could be made to sustain or increase the use of transit, carpool, bicycling, and walking.

PEAK HOUR TRIP MONITORING

Peak hour traffic counts for monitoring shall be collected at gateway locations to the project. For example, traffic counts could be collected at the intersection of Stenmark Drive and Dutra Materials, if this would encapsulate all the project vehicle trips. The AM (7-9) peak hour vehicle volumes at each driveway should be collected for a minimum of three (3) days subject to the following restrictions:

- Counts must be on a Tuesday, Wednesday, or Thursday when local schools are in session
- Counts must avoid days immediately before or after holidays or long weekends
- Counts should not be collected on days with inclement weather

The following are guidelines in determining the number of peak hour vehicle trips that the project is generating for that year:

1. Collect peak hour traffic counts (inbound and outbound) for three (3) separate days.
2. Determine the AM peak hour and PM peak hour trips for each day counted.
3. Sum up the traffic counts for each day.
4. Average the three (3) days of counts.
5. Compare the average number of AM peak hour trips counted to the AM peak hour trips allowed. **With a 15 percent trip reduction goal, the project would be allowed to generate 887 AM peak hour trips (1,043 AM peak hour trips x 0.85).** Compare the average number of PM peak hour trips counted to the PM peak hour trips allowed. **With a 15 percent trip reduction goal, the project would be allowed to generate 1,153 PM peak hour trips (1,356 PM peak hour trips x 0.85).**

It should be noted that there is no VMT monitoring proposed at this time. There are currently no established methods for measuring the Project's VMT generated and the CCTA Region VMT.

ANNUAL MONITORING REPORT

An annual monitoring report will be prepared and submitted to the City beginning on January 1 of the year after the first full year that the project is at a 75 percent occupancy. The annual monitoring report would include, but is not limited to:

- List of TDM program elements

- Results of travel surveys
- Trip monitoring for the site compared to the trip goals

Annual monitoring shall comply with Richmond Municipal Code section 15.04.612.080. Pursuant to that section, a “five-year review may be required by the Director of the Department of Transportation or citywide TMA to evaluate the overall effectiveness of all of the TDM activities and may suggest new or modified activities or substitute activities to meet the program's objectives, per the Department of Transportation's or TMA's review and approval. The Director of the Department of Transportation may impose reasonable changes to assure the program's objectives will be met.”

Specifically, if the annual monitoring report shows that the project is not meeting its trip generation goals, then adjustments will be made to improve on this goal. Adjustments should be made based on information from the travel surveys, vehicle trip counts, and the annual monitoring report to adapt to changing transportation trends and to maximize the efficiency and performance of the program. If necessary, adjustments to the TDM program may include implementing additional TDM elements (i.e. incentives for using alternative modes).

The Project Applicant will have 90 days to incorporate the new TDM measures and implement them. The City would conduct a supplemental traffic count to determine if the Project is not compliant. If the Project is still non-compliant, then the Project Applicant will have an additional 90 days to incorporate more TDM measures. The City would then conduct a second supplemental traffic count. If the Project were to be non-compliant, then the Project Applicant shall pay a penalty of \$250 for each excess AM peak hour trip over the 887 allowed AM peak hour trips or for each excess PM peak hour trip over the 1,153 allowed PM peak hour trips, whichever is higher. The maximum annual penalty would be \$100,000 per year.

CONCLUSIONS

The proposed TDM plan is expected to result in a 31 percent trip reduction and a 28 percent VMT reduction for the project. The 31 percent trip reduction would meet the 15 percent trip reduction needed and would result in a 28 percent VMT reduction, which would be 15 percent below the CCTA region VMT.