FEHR PEERS

Memorandum

Date: November 16, 2023

To: Nick Liccardo and Trin Campos, Caltrans District 3

From: Dave Stanek and Ronald T. Milam, Fehr & Peers

Subject: 03-3H900: I-80/US 50 Managed Lanes – VMT Mitigation Estimates

SA22-0177

This attachment to the VMT Mitigation Plan Executive Summary serves as a technical memorandum and documents the expected vehicle miles of travel (VMT) reduction from the proposed mitigation strategies developed for the I-80/US 50 Managed Lanes Project. Caltrans District 3 is developing multiple managed lanes alternatives to improve travel time reliability and accommodate travel demand growth in this corridor. Some of these alternatives have the potential to induce VMT, which may constitute a potentially significant impact under the California Environmental Quality Act (CEQA).

The VMT Mitigation Methodology Plan memorandum dated January 17, 2023, presented the induced VMT subject to mitigation and reviewed potential mitigation measures to reduce VMT. The memo concluded by recommending a subset of mitigation measures to proceed with VMT reduction estimation.

Induced VMT

Based on a review of the supporting research behind the National Center for Sustainable Transportation (NCST) Induced Travel Calculator[1], we have summarized the following components of total induced VMT.

- Changes in commercial driving = 19 to 29%
- Changes in individual or household driving = 9 to 39%
- Changes in population (includes population growth and migration) = 5 to 21%
- Diversion of traffic = 0 to 10%

For the I-80/US 50 Managed Lanes project alternatives, the commercial driving should be excluded

[1] Duranton, G., & M. A. Turner (2011). The Fundamental Law of Road Congestion: Evidence from US Cities. American Economic Review, 101(6), 2616-2652. Retrieved from https://www.aeaweb.org/articles?id=10.1257/aer.101.6.2616.

producing an induced automobile VMT elasticity of approximately 0.71.[2] This change was tentatively accepted by Caltrans headquarters (HQ) staff as documented in the December 28, 2022, memorandum from Eric Sundquist to Erin Damm. At this time, no other components, such as diversion of traffic, have been approved to be excluded.

Table 1 presents the induced annual VMT for the project alternatives. The total annal induced VMT uses an elasticity of 1.0 from the NCST Induced Travel Calculator. With commercial driving excluded, the automobile daily induced VMT has an elasticity of 0.71. This reduces the annual induced VMT from around 188 million to about 133 million for most alternatives. The induced VMT for the transit lane alternatives is unknown since the calculator does not apply to these alternatives. However, the Duranton and Turner paper cited above and used in developing the calculator concludes, "*We find no evidence that the provision of public transportation affects VKT [VMT].*"

Table 1: Induced Annual VMT

Scenario	Total Annual Induced VMT	Auto Annual Induced VMT
Alternative 1 (No Build)	0	0
Alternative 2 (Add HOV)	180,784,500	128,370,500
Alternative 3 (Add HOT2+)[1]	180,784,500	128,370,500
Alternative 4 (Add HOT3+)[1]	180,784,500	128,370,500
Alternative 5 (Add Toll)[1]	180,784,500	128,370,500
Alternative 6 (Add Transit)	-	-
Alternative 7 (Convert HOV)	4,489,500	3,175,500
Alternative 8 (Add HOV with Median Ramps)	188,340,000	133,736,000
Alternative 9 (Add HOV without Enterprise Crossing)	180,784,500	128,370,500
Alternative 10 (Add GP)	180,784,500	128,370,500
Alternative 11 (Add HOT2+ with Median Ramps)	188,340,000	133,736,000
Alternative 12 (Add HOT3+ with Median Ramps)	188,340,000	133,736,000
Alternative 13 (Add Toll with Median Ramps)	188,340,000	133,736,000
Alternative 14 (Add Transit with Median Ramps)	-	-
Alternative 15 (Convert HOV with Median Ramps)	12,045,000	8,541,000

Note: Long-term induced daily VMT estimated with an elasticity of 1.0 using NCST Induced Travel Calculator based on 2019 VMT in the four-county MSA (El Dorado, Placer, Sacramento, and Yolo). Auto daily VMT estimated using an elasticity of 0.71.

[2] The high end of the range for each component adds up to the 1.0 elasticity used in the NCST calculator so the accounting adjustments for automobile only VMT use the high end of the range.

The project contains two Active Transportation Project (ATP) elements in the scope of work. The first will improve the bicycle/pedestrian path on the Yolo Causeway and its connections to County Road 32A and West Capitol Avenue. The pavement will be rehabilitated, the concrete barrier height will be increased, and a new fence will be installed. At County Road 32A, the path will be realigned from the levee to follow the off-ramp to eliminate a local street crossing. The enhancement of the existing connection may encourage additional bicycle and pedestrian trips. However, VMT reduction has been found only for new bicycle and pedestrian connections, not for simply enhancement of existing connections. The second component is the establishment of a mobility hub at the I-80/Enterprise Boulevard interchange that will provide 300 parking spaces, electric scooter and bicycle parking, and a transit transfer station. However, these features alone would not reduce the cost of convenience of walking, bicycling, or riding transit such that people would shift away from driving. In addition, Yolobus currently serves the existing park and ride lot on the north side of the interchange, so no new transit service would be provided. Since no documented evidence exists for the VMT effect of these project components, no reduction in the induced VMT was applied.

Mitigation Measures

The following mitigation measures were selected for further analysis to forecast potential VMT reduction.

- Microtransit
- Expand Sidewalks
- Voluntary Trip Reduction Program
- Expand Yolobus Route 42
- Subsidize Monthly Transit Passes
- Truxel Road Bridge
- Green Line LRT Extension – Township 9 to Airport
- Downtown Riverfront Streetcar
- Expand Causeway Connection Route 138
- Expand Unitrans
- Reduce Transit Fares
- Increase Parking Costs
- Housing Construction or Subsidies for Infill Areas

The VMT reduction with the first five measures were calculated using the TDM+ tool, which is one of the tools available on the Caltrans SB 743 Implementation Resources website. The remaining strategies, except for the last one, were evaluated using the SACSIM regional travel demand model. Changes in housing location were estimated using average travel by neighborhoods. The three estimation methods are described below. In addition, the information below includes more detail about each strategy that was necessary for quantification purposes. Some of these details may be subject to change after review.

VMT Estimation Using TDM+

Table 2 presents the VMT reduction estimates using TDM+. The mitigation measures were estimated for three areas: the City of Davis, the City of West Sacramento, and Yolo County, which includes all cities and rural areas in the county. The base VMT used in the calculations below was forecasted using the SACSIM model for the 2040 Alternative 2 scenario.

The Microtransit mitigation measure would expand transit service by 25 percent to add flexible route buses with more frequent service and/or longer service hours. The additional transit service is expected to be provided by Unitrans or Yolobus. Based on the *Handbook for Analyzing Greenhouse Gas Emission Reduction, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (California Air Pollution Control Officers Association (CAPCOA), 2021) strategy T-25, a 25 percent increase in transit service mileage or hours will result in a 0.29 percent reduction in passenger vehicle VMT within the area affected by the expanded transit service. This calculation assumes new riders substitute transit for driving without providing quantified evidence of this actual effect. As noted above, Duranton and Turner did not find that expanding transit would reduce VMT. This may be due to the study's reliance on large metropolitan statistical areas (MSAs) so it does not necessarily refute the CAPCOA reduction being applied in much small localized areas or corridors. The VMT reduction is anticipated to occur from residents, workers, and visitors to the area using the new service as a substitute to driving. Therefore, the VMT reduction was derived by calculating the VMT being generated by trips that start or end within the new service area.

Table 2: Estimated Annual VMT Reduction using TDM+

Mitigation Measure	Davis[1]	West Sacramento	Yolo County[2]
Microtransit[3]	2,007,500	2,482,000	6,241,500
Expand Sidewalks[4]	2,591,500	2,774,000	13,578,000
Voluntary Trip Reduction Program[5]	5,402,000	10,256,500	24,674,000
Subsidize Monthly Transit Passes[3]	1,788,500	2,226,500	5,621,000
Expand Yolobus Route 42[3]	1,496,500	1,861,500	4,745,000

Notes:
1. Includes the entire UC Davis campus in both Yolo and Solano Counties
2. Includes Davis, West Sacramento, and the entire UC Davis campus in both Yolo and Solano Counties
3. Reduction applied to origin-destination passenger vehicle VMT for all trips in the affected area. Presumes that the voluntary trip reduction program does not include transit pass subsidies as an offering.
4. Reduction applied to boundary passenger vehicle VMT for all trips in the affected area.
5. Reduction applied to origin-destination passenger vehicle VMT for home-based work trips in the affected area. Assumed to apply to the 80% of workers who would become eligible to participate.

The Expand Sidewalks mitigation measure would increase sidewalk coverage by 10 percent. Further investigation is needed to confirm that the sidewalk network can be increased by 10 percent by determining actual sidewalk coverage. CAPCOA strategy T-18 estimates a 10 percent increase in sidewalks will result in a 0.5 percent reduction in passenger vehicle VMT within the affected area. This strategy only applies to trips contained within the affected area since the strategy acts to replace or avoid short-distance auto trips with walking trips.

The Voluntary Trip Reduction Program mitigation measure would expand the current program provided by Yolo Commute, the Yolo County transportation management association, to apply for all residents and workers. The program could include features such as community-based travel planning, ridesharing, transit pass subsidies, and pay-per-mile auto insurance. An estimated 20 percent of workers are currently eligible. This measure would expand the program to cover the other 80 percent. CAPCOA strategy T-5 estimates a 4 percent reduction in home-based work trips when employees in a study area participate in the voluntary trip reduction program. If transit pass subsidies are included as part of this strategy, then the separate reduction in Table 2 would not apply.

The next measure would reduce the cost of monthly passes by 50 percent on the Capitol Corridor and Yolobus transit services for Yolo County residents. CAPCOA strategy T-29 estimates a 0.26 percent reduction in passenger vehicle VMT within the area affected by the reduced cost of monthly transit passes. The VMT reduction is anticipated to occur from residents and workers in the area using transit as a substitute to driving due to the reduced cost. Therefore, the VMT reduction was derived by calculating the VMT being generated by trips that start or end within the area.

Yolobus Route 42 provides hourly service to Woodland, Sacramento International Airport, Downtown Sacramento, and Davis via clockwise and counterclockwise routes (Routes 42A and 42B). The mitigation measure would increase service to 15-minute headways during the AM and PM peak periods. Based on CAPCO strategy T-26, a 50 percent increase in service frequency and a 50 percent level of implementation would result in a 0.22 percent reduction in related vehicle trips. The VMT reduction is anticipated to occur from residents, workers, and visitors to the area using the expanded service as a substitute to driving. Therefore, the VMT reduction was derived by calculating the VMT being generated by trips that start or end within the service area.

VMT Estimation Using SACSIM

The following mitigation measures were evaluated using SACSIM.

- Truxel Road Bridge – Construct a two-lane multimodal bridge at the American River from Garden Highway to Sequoia Pacific Boulevard
- Green Line LRT Extension: Township 9 to Airport – Extend the Green Line LRT from Township 9 Boulevard to the Sacramento International Airport
- Downtown Riverfront Streetcar – Construct and operate the proposed Downtown Riverfront Streetcar system from midtown Sacramento to West Sacramento City Hall and along Broadway
- Expand Yolobus Route 42 – Reduce service headways from 60 minutes all day to 15 minutes for AM and PM peak periods for Routes 42A and 42B
- Expand Causeway Connection Route 138 – Reduce service headways from 60 minutes all day to 15 minutes for AM and PM peak periods and 30 minutes for midday/off-peak periods for Route 138
- Expand Unitrans – Increase frequency from 30 to 15 minutes during the AM and PM peak periods
- Reduce Transit Fares – Reduce fare by 50 percent for Yolobus and Capitol Corridor
- Increase Parking Costs – Double parking costs for UC Davis and downtown Sacramento

To estimate the passenger vehicle VMT reductions, the analysis started with the 2040 SACSIM model that was used to prepare the travel demand forecasts and other performance measures for the project's Alternative 2, which would add a HOV lane on from I-80 at Richards Boulevard in Davis to US 50 at I-5 in Sacramento and on I-80 from US 50 in West Sacramento to West El Camino Avenue in Sacramento. This version of the model included some of the proposed mitigation measures or different versions of the mitigation measures as planned projects. Therefore, different model versions were created that added or removed the mitigation measure, as appropriate, to measure the effect to VMT.

SACSIM simulates person-level travel demand, with travel patterns for each person in the model computed in a randomized order. The random variation creates potential "noise" in the simulation of travel and VMT. Therefore, to minimize the effect of random noise and better understand the potential VMT reduction for each mitigation measure, the SACSIM model was run with three different random number seeds, with the reported VMT results using the average of the three runs.

Table 3 reports the potential VMT reduction from the SACSIM model runs. The mitigation measure with the greatest impact is the doubling of parking costs. The next highest reduction is almost 10 times less effective.

The following model limitations are important to note when considering these results.

- Model runs from earlier analysis years (2027 and 2035) during mitigation testing revealed potential increases in VMT due to the addition of the Truxel Road Bridge.
- A review of the model outputs showed unexpected changes on the freeway HOV lanes far from the project area (for example, US 50 in Rancho Cordova and SR 99 in Elk Grove).
- Model runs for expansion of service for Yolobus Route 42 showed a VMT increase rather than a reduction. (As a result, the VMT reduction for this mitigation measure was estimated using TDM+).
- The range in the VMT estimates for the three model runs was larger than the estimated VMT reduction for all mitigation measures except for increasing parking costs.

Performing additional multiple model runs as noted above may help to minimize some of these output issues and improve confidence in the forecasts. It is also possible that other refinements to the model may be necessary to improve sensitivity especially under future conditions when the level of congestion may be severe enough to warrant a more sensitive dynamic traffic assignment (DTA) model.

Table 3: Estimated Annual VMT Reduction using SACSIM

Mitigation Measure	Annual VMT Reduction
Truxel Road Bridge	3,686,500
Green Line LRT Extension: Township 9 to Airport	7,190,500
Downtown Riverfront Streetcar[1]	4,270,500
Expand Causeway Connection Route 138	3,102,500
Expand Unitrans	1,168,000
Reduce Transit Fares[2]	3,723,000
Increase Parking Costs	64,094,000

Notes: 1. This estimate is for the two-line streetcar system, not the starter line that is currently being studied and designed.
2. Some portion of the VMT reduction may not apply if the monthly transit pass subsidy strategy in Table 2 above is also implemented. The strategies offer different methods for reducing transit costs but may end up targeting similar people that could dampen the reported effectiveness.

VMT Estimation for Housing Construction or Subsidies for Infill Areas

Affordable housing construction, especially if it occurs in areas well served by transit, can contribute to lower future VMT growth in an area. This type of housing may also produce more immediate VMT reductions if a program is designed to relocate people from high to low VMT generating areas. This mitigation measure focuses on reducing the housing cost differential between highly accessible neighborhoods, where a low VMT lifestyle is easier to establish and maintain and low-accessibility areas on the fringe of a region where daily activities generate more VMT. To be fully effective, this program would need to shift or accelerate housing development in the low VMT area versus creating new housing demand. If the new housing just satisfies existing demand in the low VMT area, the demand for housing on the fringe may not be affected. As a result, less VMT substitution would occur.

Fehr & Peers has developed a web tool that provides estimates of VMT per capita for census block groups in California (https://www.fehrandpeers.com/project/find-my-vmt/). The VMT data was derived from a custom application of the mobile source data collected in 2019 by StreetLight Data. **Tables 4, 5, and 6** below compare the average home-based VMT per resident (per capita) for a neighborhood in well-served transit areas with several outlying areas in Sacramento, Davis, and West Sacramento. The tables also provide average household size for these block groups from the 2020 census.

The downtown Sacramento census block group in **Table 4** is bounded by J Street, 16th Street, N Street, and 7th Street. The governor recently announced that three state office buildings in this area would be converted to approximately 400 housing units (*Sacramento Bee*, January 31, 2023). The average home-based VMT in this neighborhood is 15.2 daily VMT per capita. The three sample neighborhoods in North Natomas, Elk Grove, and North Highlands have an average of 22.1 daily VMT per capita, and an average household size of 3.28. On average, relocating a household from these suburban areas would result in a reduction of (22.1 – 15.2 =) 6.9 daily VMT per capita. For an average suburban household, this is a

reduction of (6.9 x 3.28 =) 22.6 daily VMT per household. If 400 housing units were constructed in downtown Sacramento instead of an outlying area, the regional daily VMT would be reduced by approximately (400 x 22.6 =) 9,040. This may be a high estimate of the VMT reduction since the households that choose to relocate downtown may have a lower-than-average household size.

Table 4: VMT per Capita by Census Block Group - Sacramento

Census Block Group	Home-based Daily VMT per Capita	Household Size
Downtown Sacramento (060670011033)	15.2	1.25
North Natomas Community Park (060670071062)	23.2	3.11
Elk Grove Commons (060670096323)	21.8	3.36
Watt Avenue & Antelope Road (060670074172)	21.3	3.37

Source: The census block group number is listed in parentheses. Average VMT per capita as reported by VMT+, https://www.fehrandpeers.com/project/find-my-vmt/. Average household size is from Census 2020: DEC Redistricting Data (PL 94-171).

The Nishi property in Davis is bounded by I-80, the Union Pacific railroad, and Putah Creek. The proposed development would include up to 700 housing units for students at the adjacent UC Davis campus. As shown in **Table 5**, Nishi is in a census block group with an average home-based daily VMT per capita of 10.1. The three sample neighborhoods in Davis with similar student housing populations have an average of 12.1 daily VMT per capita, and an average household size of 2.46. On average, locating a student household at Nishi instead of one of the other areas would result in a reduction of (12.1 – 10.1 =) 2.0 daily VMT per capita. For an average household, this is a reduction of (2.0 x 2.46 =) 4.9 daily VMT per household. If 700 housing units were constructed in Nishi instead of the other areas, the regional daily VMT would be reduced by approximately (700 x 4.9 =) 3,430.

Table 5: VMT per Capita by Census Block Group - Davis

Census Block Group	Home-based Daily VMT per Capita	Household Size
Olive Drive (061130106024)	10.1	2.56
Downtown Davis (061130107014)	10.6	2.04
West Manor Park (061130105132)	14.3	2.73
Sycamore Lane North (061130105103)	10.1	2.54
F Street North (061130107012)	13.6	2.11

Source: The census block group number is listed in parentheses. Average VMT per capita as reported by VMT+, https://www.fehrandpeers.com/project/find-my-vmt/. Average household size is from Census 2020: DEC Redistricting Data (PL 94-171).

The VMT reduction could be higher or lower depending on the following factors.

- The relative percentage of students in each census block group since students have lower VMT on average than other populations
- The actual location of alternative housing for students

The VMT reduction could be higher if student housing would otherwise occur in neighboring jurisdictions due to the housing supply constraints in Davis. Without the Nishi project some students may have to reside outside of Davis in the nearby communities of Woodland, Winters, Dixon, and West Sacramento. Average citywide daily VMT per household in these communities ranges from 22.6 to 33.4.

The Downtown Davis Specific Plan area is generally bounded by the Union Pacific railroad, 1st, A, and 5th Streets and includes the G Street corridor from 5th to 8th Streets. The approved plan calls for up to 1,000 additional housing units in the specific plan area. As shown in **Table 5,** the downtown Davis census block group has an average home-based daily VMT per capita of 10.6. The new housing units would likely attract students like the nearby Nishi project. The three sample neighborhoods in Davis with similar student housing populations have an average of 12.1 daily VMT per capita, and an average household size of 2.04. On average, locating a student household in downtown Davis instead of one of the other areas would result in a reduction of (12.1 – 10.6 =) 1.5 daily VMT per capita. For an average household, this is a reduction of (1.5 x 2.46 =) 3.7 daily VMT per household. If 1,000 housing units were constructed in downtown Davis instead of the other areas, the regional daily VMT would be reduced by approximately (1,000 x 3.7 =) 3,700. This estimate could vary due to the factors noted above especially if housing would otherwise occur outside of Davis. The total daily VMT reduction could increase closer to 50,000 if housing locates in communities such as Woodland or Dixon.

The Bridge District Specific Plan area is bounded by the Sacramento River, Tower Bridge Gateway, US 50, South River Road, and 15th Street. The approved plan calls for up to 4,442 additional housing units in the specific plan area. As shown in **Table 6,** is the Bridge District census block group has an average home-based daily VMT per capita of 19.8. The three sample neighborhoods from the Southport area of West Sacramento have an average of 25.0 daily VMT per capita, and an average household size of 2.77. On average, relocating a household from these suburban areas would result in a reduction of (25.0 – 19.8 =) 5.2 daily VMT per capita. For an average suburban household, this is a reduction of (5.2 x 2.77 =) 14.4 daily VMT per household. If 4,442 housing units were constructed in Bridge District instead of an outlying area of West Sacramento, the regional daily VMT would be reduced by approximately (4,442 x 5.2 =) 23,100. Like the estimates above, the VMT reduction may vary depending on the alternative housing location and factors such as household size. Households that choose to relocate downtown may have a lower-than-average household size.

Table 6: VMT per Capita by Census Block Group – West Sacramento

Census Block Group	Home-based Daily VMT per Capita	Household Size
Bridge District (061130102011)	19.8	2.27
Bridgeway Island Park (061130103104)	27.3	2.83
Village Parkway South (061130103141)	24.4	2.91
Southport Gateway (061130103131)	23.3	2.58

Source: The census block group number is listed in parentheses. Average VMT per capita as reported by VMT+, https://www.fehrandpeers.com/project/find-my-vmt/. Average household size is from Census 2020: DEC Redistricting Data (PL 94-171).

Summary

Table 7 summarizes the potential VMT reduction estimated for the proposed mitigation measures.

Table 7: Estimated Annual VMT Reduction

Mitigation Measure	Method	Annual VMT Reduction[1]
Microtransit in Yolo County	TDM+	6,241,500
Expand Sidewalks in Yolo County	TDM+	13,578,000
Voluntary Trip Reduction Program in Yolo County	TDM+	24,674,000
Subsidize Monthly Transit Passes in Yolo County[2]	TDM+	5,621,000
Expand Yolobus Route 42	TDM+	4,745,000
Truxel Road Bridge	SACSIM	3,686,500
Green Line LRT Extension: Township 9 to Airport	SACSIM	7,190,500
Downtown Riverfront Streetcar	SACSIM	4,270,500
Expand Causeway Connection Route 138	SACSIM	3,102,500
Expand Unitrans	SACSIM	1,168,000
Reduce Transit Fare[2]	SACSIM	3,723,000
Increase Parking Costs at UC Davis and Downtown Sacramento	SACSIM	64,094,000
400 Housing Units in Downtown Sacramento	VMT+	3,299,600
700 Housing Units at Nishi in Davis	VMT+	14,644,750[3]
1,000 Housing Units in Downtown Davis	VMT+	18,250,000[4]
4,442 Housing Units at Bridge District in West Sacramento	VMT+	8,431,500

Notes:
1. The non-housing mitigation measures are based on 2040 conditions according to the SACSIM model. The housing mitigation measures are based on 2019 conditions as represented by StreetLight Data applied in the VMT+ tool and 2020 census data.
2. Some portion of the VMT reduction may not apply if the monthly transit pass subsidies and reduced transit fares are offered. The strategies offer different methods for reducing transit costs but may end up targeting similar people that could dampen the reported effectiveness.
3. The annual VMT reduced from the Nishi student home development is calculated using the high-end assumption of 33.4 daily VMT per household from nearby communities of Davis (as described on Page 9). The calculation is as follows (and uses equations derived from research on Page 8):
(33.4 – 10.1) = 23.3 * 2.46 = 57.3 * 700 units = 40,122 daily VMT * 365 days = 14,644,750 annual VMT reduced
4. The annual VMT reduced for the Downtown Davis units is based on the realistic assumption noted on Page 9, that adding 1000 units in Downtown Davis would attract residents who currently reside in neighboring cities (such as Woodland and Dixon). This would result in a large VMT reduction.

Further review by the project team resulted in removal of several mitigation measures due to concerns about cost effectiveness. The remaining feasible mitigation measures are provided in **Table 8.**

Table 8: Estimated Annual VMT Reduction for Potential Mitigation Measures

Mitigation Measure	Annual VMT Reduction[1]
Microtransit in Yolo County	6,241,500
Expand Sidewalks in Yolo County	13,578,000
Voluntary Trip Reduction Program in Yolo County	24,674,000
Subsidize Monthly Transit Passes in Yolo County[2]	5,621,000
Expand Yolobus Route 42	4,745,000
Expand Causeway Connection Route 138	3,102,500
Expand Unitrans	1,168,000
Reduce Transit Fare[2]	3,723,000
400 Housing Units in Downtown Sacramento	3,299,600
700 Housing Units at Nishi in Davis	14,644,750[3]
1,000 Housing Units in Downtown Davis	18,250,000[4]
4,442 Housing Units at Bridge District in West Sacramento	8,431,500

Notes:
1. The non-housing mitigation measures are based on 2040 conditions according to the SACSIM model. The housing mitigation measures are based on 2019 conditions as represented by StreetLight Data applied in the VMT+ tool and 2020 census data.
2. Some portion of the VMT reduction may not apply if the monthly transit pass subsidies and reduced transit fares are offered. The strategies offer different methods for reducing transit costs but may end up targeting similar people that could dampen the reported effectiveness.
3. The annual VMT reduced from the Nishi student home development is calculated using the high-end assumption of 33.4 daily VMT per household from nearby communities of Davis (as described on Page 9). The calculation is as follows (and uses equations derived from research on Page 8):
(33.4 – 10.1) = 23.3 * 2.46 = 57.3 * 700 units = 40,122 daily VMT * 365 days = 14,644,750 annual VMT reduced
4. The annual VMT reduced for the Downtown Davis units is based on the realistic assumption noted on Page 9, that adding 1000 units in Downtown Davis would attract residents who currently reside in neighboring cities (such as Woodland and Dixon). This would result in a large VMT reduction.

The potential total VMT reduction is not sufficient to offset the induced VMT forecasts of around 133 million for most of the project alternatives. Further increases in housing beyond the units noted above are possible and the VMT reduction from infill and affordable housing could be greater if it avoids future residents from having to locate further from jobs or more central destinations.

The potential VMT reduction of the mitigation measures listed in **Table 8** would be sufficient to fully offset only the alternatives that would convert an existing lane to an HOV-only lane (Alternatives 7 and 15) presuming that the SACSIM sensitivity issues noted above do not result in an overestimate of the VMT reduction potential.