# Appendix E.
# Additional Supporting Information

**Table E-1** displays mitigation actions that were suggested by TATF members and were not selected for further analysis as a part of the Program. Many of these measures can improve access and opportunity for low income or disadvantaged communities by making it easier for people to travel and life full lives by reducing the cost or time of travel. These actions, which include a variety of improvement types, were not selected for various reasons, such as a lack of available research to quantify VMT/GHG reductions or due to limited effectiveness at reducing VMT/GHG. Therefore, given the essential nexus requirements that there be substantial evidence showing these mitigation actions can reduce VMT/GHG, this Program is not appropriate to fund these measures, and the relevant agencies should seek funding from other sources. Some measures, such as Safe Routes to School infrastructure projects, can be rolled into the local bicycle and pedestrian improvement mitigation actions, as the City of Escondido has done as described in the below case study. Other GHG reduction measures, such as street trees, either do not provide as effective mitigation value or do not align with the purpose of the Program to address transportation-related emissions, as documented in Appendix D. Additional considerations about VMT mitigation for induced highway projects is presented in the following section.

**Case Study: Escondido Mitigation Exchange**

The City of Escondido VMT Exchange program was adopted in 2022 and provides a list of off-site transportation projects and programs that a project applicant can select to mitigate their VMT impact.[105] The Program offers a variety of VMT reducing projects and programs, such as constructing bicycle and pedestrian facilities, improving transit stops, funding a City run circulator shuttle, and funding commute trip reducing programs for City staff and residents/employees within Escondido. These projects and programs are those that have been identified through citywide plans but do not currently have funding allocated to them. After identifying the amount of VMT per day that the project would generate over the threshold, the project applicant selects from a list of qualifying measures that offer pre-determined levels of VMT reductions. The project applicant is then responsible for implementing these mitigation actions through their mitigation monitoring and reporting program (MMRP).

[105] https://www.escondido.org/Data/Sites/1/media/Planning/VMT/EscondidoFeeProgramDocumentation_PublicReviewDraft10212022_clean.pdf

**Table E-1: Non-Recommended VMT/GHG Mitigation Actions**

| Proposed Mitigation Action | Action Type | Reason for Removal |
|---|---|---|
| Express Bus Service to East Bay | Operational | Removed due to high costs, dispersed market, and the difficulty of scaling operations. |
| Mobility Wallet | Programmatic | Removed in favor of a subsidized transit pass program, due to limited available research to quantify VMT reductions from subsidizing other mobility services. |
| Neighborhood Electric Vehicle Share | Operational | Removed due to lack of VMT quantification research. Full sized electric carshare vehicles are included in the mobility hubs mitigation action. |
| Parking Cash Out and Unbundled Parking | Other | These actions are more suitable as mitigation measures for individual land use projects, rather than a broader mitigation program. |
| Roadway Pricing | Other | Removed due to lack of clear scope on how roadway pricing system would be structured in San Mateo County |
| Safe Routes to School | Capital | Pedestrian and bicycle safety infrastructure are included as separate mitigation actions. |
| Seamless Transit Transfers | Capital/Operational | Removed due to lack of VMT quantification research |
| Secure Bicycle/Scooter Parking | Capital | Removed due to lack of VMT quantification research |
| Street Trees | Capital | Removed due to limited effectiveness when compared to other mitigation actions |
| Other Community Measures | Capital/Operational | Funding of local community amenities such as childcare, grocery stores, or health care facilities was not included due to lack of substantial evidence supporting VMT/GHG reductions that could be applied within this program. |

**Mitigation Actions and Induced Highway VMT**

The California Air Resources Board (CARB) published comment letters addressing the Orange County Interstate 5 express lane capacity improvement project's Draft Environmental Impact Report (DEIR) on July 18, 2023 and the Yolo 80 Corridor Improvements Project DEIR on January 10, 2024. These letters present CARB's concerns with the analysis approach used in these DEIRs. The CARB comments that are relevant to

this C/CAG study focus on the quantification methods used to assess mitigation measures for highway capacity projects.

First on the Orange County Interstate 5 express lane project, CARB mentions the importance of having a developed scope for proposed mitigation measures, and that there must be sufficient evidence to ensure that the actions are effective. Second, and most importantly, CARB cites research on induced automobile travel demand and how it is affected by improvements to other transportation modes, such as transit service. Typically, the environmental review process analyzes the VMT induced from the new roadway capacity added from these highway lane expansion projects. This induced travel occurs because the time cost of travel has been reduced with the increased highway capacity. This dynamic occurs because drivers may make new trips that they would have previously avoided, because the time cost of travel has been reduced.

However, CARB, in their letter on the Orange County Interstate 5 express lane project, also highlighted the need to measure and account for the induced automobile travel from the mitigation actions themselves, which is caused by backfilled traffic. In short, some transportation improvements and programs that cause some people to shift from automobiles, such as transit service expansions and fare subsidies, can also induce new private automobile trips from other people who were not previously driving. For example, a transit service expansion could encourage a US 101 driver to use the bus, but the space that is now available on the freeway can motivate another person, who previously was not driving at that time, to take up that newly available roadway space. CARB mentioned the need to account for this induced VMT when analyzing the effects of improvements and programs used to mitigate the VMT from highway expansion projects.

Importantly, CARB also commented that this dynamic does not occur for all potential mitigation actions, and that improvements like affordable housing and roadway pricing do not lead to induced vehicle trips from backfilled roadway space.

The Yolo 80 Corridor Improvements Project DEIR CARB letter raised similar concerns, such as the lack of a lane conversion alternative and questions about the feasibility and costs of the mitigations, and raised additional concerns related to the use of the travel demand model that did not validate within Caltrans' maximum deviation.

**Relationship between Density and VMT Mitigation**

The research behind VMT mitigation indicates that many measures often have limited effectiveness at reducing VMT for low density communities. For example, below are the caveats cited in the CARB letter relating to the limitations of transit service at reducing VMT in low density areas that was used in **Figure 5** showing transit-supportive densities.

*Increasing frequencies, extending hours of operation, extending existing routes, providing new routes, or providing new express or BRT service are all projects with the goal of providing a reliable transit service that can compete with driving. Combining transit projects with improvements to the active transportation*

*networks or increasing parking costs can further incentivize a mode shift towards transit and away from driving. For these types of transit improvements to be effective at reducing VMT, they need to occur in places where existing roadway congestion is high (i.e., multiple hours of the day), parking is limited and priced, transit travel times are both reliable and competitive with driving, and* ***population + employment density exceeds about 11,000 per square mile****. Even under these conditions, transit expansion may not produce lower VMT levels because it will result in the same induced travel effects that roadway capacity expansion creates. Basically, people shift from driving to transit thus freeing up roadway capacity that is quickly consumed by latent demand. This effect has been analyzed and quantified in the same research that was used to support the NCST induced travel calculator.*[106]

[106] Duranton, G., & M. A. Turner (2011). The Fundamental Law of Road Congestion: Evidence from US Cities. American Economic Review, 101(6), 2616-2652.