

Draft Contra Costa Vehicle Miles Traveled (VMT) Mitigation Program Framework

Prepared for:

Contra Costa Transportation Authority



March 2023

WC21-3806.00

FEHR  PEERS

Table of Contents

Executive Summary	i
Introduction.....	i
Potential Program Structure.....	i
Evaluation Criteria.....	ii
Potential VMT Reduction Strategies.....	ii
Development Costs and Test Cases.....	iv
Next Steps.....	v
1. Introduction	1
1.1 Study Background	2
1.2 VMT Mitigation Program Alternatives.....	3
2. Study Process and Outreach	4
2.1 Study Sponsors.....	4
2.2 Stakeholder Engagement and Outreach.....	4
2.3 Project Advisory Committee.....	4
2.4 Small Group Meetings	6
3. Program Criteria and Framework	7
3.1 Legal Foundation	7
Relevant Case Law	8
Relevant Statutes and Regulations	9
3.2 Agency Oversight & Funding	10
Administering Agency.....	10
Transparency and Accountability	11
Funding Source.....	11
3.3 Geography & Scale	11
Scalability	11
Geography.....	11
3.4 Applicability.....	12
3.5 Data Analysis & Monitoring	14
Standardized Analysis.....	14
Program Monitoring.....	16
3.6 Program Risk Management.....	17
Program Legibility	17
Cost Certainty.....	17

Cost of Mitigation.....	19
4. Countywide VMT Context	20
4.1 Land Use Projects	20
4.2 Transportation Projects	22
5. Potential VMT Reduction Strategies.....	23
5.1 General Categories of VMT Reduction Strategies	23
Mitigation Menu #1: Established Transportation Strategies.....	23
Mitigation Menu #2: Emerging land use strategies.....	29
5.2 Specific Potential VMT Reduction Strategies for Contra Costa.....	31
Defining a Cost Effectiveness Metric.....	32
Cost Effectiveness of Short-listed Strategies	32
Acknowledging Uncertainties.....	36
5.3 VMT and Equity Considerations in Contra Costa.....	37
6. Development Costs and Test Cases.....	40
6.1 Development Costs and Potential VMT Fees	40
6.2 Test Cases	41
7. Considerations for Program Design.....	44
7.1 Legal Considerations	44
7.2 Administrative Framework	46
7.3 Monitoring.....	50
Monitoring Requirements for Different Program Types.....	50
Sources of VMT Monitoring Data	50
8. Next Steps.....	51
8.1 CCTA-led Pilot Program	51
8.2 Options for Local Agencies.....	56
8.3 Future Considerations.....	57

Appendices

- Appendix A – VMT Mitigation Program Structures Factsheet
- Appendix B – Stakeholder Engagement Plan
- Appendix C – Presentations and Notes from Project Advisory Committee Meetings
- Appendix D – Presentation for Small Group Meeting with Residential Developers
- Appendix E – Evaluation Criteria Memorandum
- Appendix F – White Papers on Land Use Strategies
- Appendix G – Cost Effectiveness Calculations
- Appendix H – Analysis of Development Costs and Effects of VMT Fees

List of Figures

Figure 1: VMT and Equity Priority Communities within Contra Costa County.....	39
Figure 2: VMT Impact Fee – Implementation Steps.....	47
Figure 3: VMT Bank – Implementation Steps.....	48
Figure 4: VMT Exchange – Implementation Steps.....	49
Figure 5: City and Developer Participation in CCTA-led Pilot Program.....	52

List of Tables

Table ES-1: Ranges of Cost Effectiveness for VMT Reduction Strategies in Contra Costa	iv
Table 1: Project Advisory Committee Participants	5
Table 2: Case Law Relevant to VMT Mitigation Programs	8
Table 3: Relevant Statutes and Regulations.....	9
Table 4: Mitigation Strategy Eligibility by Program Type.....	13
Table 5: VMT Mitigation Program Analysis Requirements	15
Table 6: Cost Certainty by VMT Mitigation Program Type.....	18
Table 7: Contra Costa VMT Per Resident	21
Table 8: Infrastructure Strategies	25
Table 9: Programmatic Strategies.....	26
Table 10: Transit Infrastructure and Service Strategies.....	27
Table 11: Pricing Strategies	29
Table 12: Emerging Land Use Strategies.....	31
Table 13: Cost Effectiveness of Short-listed Strategies	33
Table 14: Estimated Mitigation Costs for Residential Test Case.....	42
Table 15: Estimated Mitigation Costs for Industrial Test Case	43
Table 16: Potential VMT Mitigation Exchange/Bank Legal Requirements.....	45
Table 17: Evaluation Criteria Applied to Pilot Program.....	53

This page intentionally left blank.

Executive Summary

Introduction

With the passage of SB 743 and adoption of vehicle miles traveled (VMT) as the preferred transportation impact metric under the California Environmental Quality Act (CEQA), projects that trigger significant VMT impacts are required to mitigate those impacts to the fullest extent feasible. Mitigation options have historically focused on on-site actions such as TDM strategies applied at an individual building or group of buildings. However, there are limitations in how much VMT reduction can realistically be generated by these relatively small-scale strategies. As a result, there is now growing interest in exploring options for larger-scale VMT mitigation programs that could fund a broader set of off-site actions and potentially result in more substantial VMT reductions over time.

Through the effort documented in this report, the Contra Costa Transportation Authority (CCTA) has taken the lead on exploring the possibility of a countywide VMT mitigation program in Contra Costa, which could apply to land use or transportation projects that trigger significant VMT impacts and that require feasible mitigation. This was a need identified by the Contra Costa Planning Directors in 2019 and was included as a component of the 2020 Transportation Expenditure Plan for a new transportation sales tax measure in Contra Costa, which ultimately failed at the ballot in March 2020.

This study has been led by CCTA in partnership with Caltrans and was informed by a Project Advisory Committee made up of representatives from local jurisdictions, local and regional transit operators, state and regional transportation agencies, organizations that promote sustainable transportation and land use policy, and the development community.

Potential Program Structure

There are several ways that a mitigation program could be structured.

- **VMT Impact Fee:** Project applicants would pay a fee to an administering agency, and the fee revenue would be used to construct capital improvements that have a demonstrated effect of reducing VMT in the community.
- **VMT Exchange:** Project applicants would directly fund a specific VMT reduction strategy selected from a pre-qualified list, or could propose and fund a new strategy that can be demonstrated to achieve VMT reductions.
- **VMT Bank:** The administering agency would identify VMT reduction strategies and calculate the monetary value of achieving a unit of VMT reduction “credit” using those strategies, and project applicants would purchase the number of credits necessary to offset the project’s VMT impact.
- **VMT In-Lieu Fee Program:** Project applicants would pay a fee towards one or more VMT reduction strategies based on the lead agency’s finding of a reasonable relationship between VMT reductions and the enhancement of the public welfare. Court decisions have indicated that

in-lieu fee programs may not be subject to the strict nexus requirements found in the Mitigation Fee Act; at the same time, with a lower level of rigor applied to the nexus determinations, an in-lieu fee program standing alone may not satisfy the CEQA requirements for substantial evidence.

This study is agnostic about the various program structure options and has been focused on evaluating a range of options based on stakeholder input and designing a program framework that seems to best serve the local context and needs in Contra Costa.

Evaluation Criteria

In conjunction with the Project Advisory Committee, a set of evaluation criteria were developed that express the local priorities for the program. As program options were identified and discussed, the options were compared against these criteria to gauge the level of alignment with local priorities.

1. **Legal Foundation:** Does the program meet statutory requirements established under CEQA and other relevant state laws?
2. **Agency Oversight & Funding:** Which entity would manage the program and how would the program administration be funded?
3. **Geography & Scale:** Could the program be applied at multiple geographic scales? How would the location of VMT impacts relate to the location of mitigations?
4. **Applicability:** To what types of projects would the program apply, and what types of mitigations would it support? Would the program promote equitable outcomes for members of underserved communities?
5. **Data Analysis & Monitoring:** Would the program establish a standardized approach to evaluating VMT impacts and reductions, and have clearly defined methods for ongoing data collection and monitoring?
6. **Program Risk Management:** Is the program clear and easy to understand, and does it result in predictable and affordable results?

Potential VMT Reduction Strategies

The purpose of a VMT mitigation program is to fund a set of off-site VMT reduction strategies (meaning strategies that occur on a broader scale than a single development site) that can be demonstrated to lessen the VMT impacts of projects that participate in the program. This study investigated a wide range of off-site VMT reduction strategies that might be suitable for inclusion in the Contra Costa VMT mitigation program, and looked at the costs of implementation, the estimated effects on VMT, and resulting calculations of cost effectiveness.

Because the purpose of this program would be to help projects comply with CEQA requirements, and because CEQA requires that substantial evidence be provided to support findings, particular emphasis was placed on strategies for which there is a substantive body of evidence about their effects. At the same time, VMT mitigation programs are extremely new and the literature about the VMT effects of different policies and actions is evolving rapidly; therefore, it will be important that the program be flexible and able to adapt as our knowledge about VMT changes.



To move in the direction of a program that satisfies CEQA expectations, this study explored several categories of potential VMT-reducing strategies that are supported by substantive evidence:

- **Infrastructure Strategies**
 - Improvements to the pedestrian or bikeway networks
- **Programmatic Strategies**
 - Trip reduction programs offering travel information and incentives to encourage people to choose low-VMT options
 - Carshare programs
 - Bikeshare programs
- **Transit Service Strategies**
 - Extending transit routes or hours of service
 - Increasing transit frequency or offering Bus Rapid Transit service
- **Pricing Strategies**
 - Pricing on-street parking
 - Reducing transit fares

In addition, the study explored several emerging **land use-related strategies** that show promise for VMT reduction but that do not yet have a body of research speaking to their effects, such as financial incentives to facilitate infill development and rental or mortgage assistance allowing people to live closer to their workplaces. While the initial mitigation program will focus on strategies with more robust existing data, the project stakeholders supported continued exploration of these and other land use strategies to develop more quantitative information about the potential for substantive effects on VMT.

Considering the general categories of VMT-reduction strategies described above, the study identified a number of specific implementation ideas for Contra Costa, along with estimates of the costs and the VMT reductions that could be associated with each one. These specific strategies included, among others, things like closing gaps along the Bay Trail, implementing Complete Streets improvements along major corridors such as Bailey Road, instituting bus shuttle services through downtown Concord or Bishop Ranch, implementing a countywide carshare or e-bikeshare program, and deploying a countywide Mobility on Demand (MOD) app that provides real-time trip planning and payment processes and incentives for the use of more efficient modes.

As shown in **Table ES-1**, the locally-specific strategies explored here exhibit a very wide range of cost-effectiveness, expressed as the total cost to implement the strategy for a 10-year period compared to the total amount of VMT reduced over that same period. This result indicates that the local context matters a great deal when implementing VMT reduction strategies, and that it can be challenging to develop uniform assumptions about costs or VMT effects that could apply consistently across the entire county, even within a particular category of strategies.

Table ES-1: Ranges of Cost Effectiveness for VMT Reduction Strategies in Contra Costa

Category	Estimated Cost per Total VMT Reduced over 10 years
Infrastructure Strategies: Improvements on bike and pedestrian facilities	\$60 - \$225
Programmatic Strategies: Carshare or e-bike share programs, MOD app	\$0.07 - \$3
Transit Service Strategies: Extend transit hours or routes, increase frequencies	\$1 - \$25
Pricing Strategies: Parking pricing, transit fare reductions	Up to \$0.50
Land Use Strategies: Subsidies for workforce housing	\$1 - \$2

Development Costs and Test Cases

A VMT mitigation program will impose new costs on projects that trigger a significant VMT impact. As expressed in the evaluation criteria, the stakeholders were interested to learn more about the effects that those additional costs might have on the financial structure of the projects that would pay into the mitigation program. To explore those questions, the consultant team evaluated the overall development costs of several general categories of land development projects, and explored questions about whether additional costs could be absorbed while still achieving typically acceptable levels of investment returns.

Current development cost scenarios were investigated for several general categories of development: single-family residential, multi-family residential, office, and light industrial. Under current cost conditions, there appears to be limited potential for typical office or multi-family residential projects to absorb additional costs, as these development categories already experience challenging financial scenarios under current market conditions. The single-family residential and light industrial categories appear to have more potential for absorbing additional costs while still achieving the level of investment return that is typically considered feasible for project financing. More specifically, the analysis looked at scenarios where the additional cost associated with VMT mitigation ranged up to \$5,000 per single-family unit or up to \$4 per square foot for light industrial uses, and concluded that mitigation costs of that magnitude could generally be accommodated.

In light of those findings, two hypothetical test cases were developed, one as a prototypical single-family residential project and the other as a prototypical light industrial project. The VMT impacts of each project were calculated based on its location and size characteristics, and a variety of VMT reducing strategies were considered that could mitigate those impacts. Under a scenario where the lowest-cost VMT strategies were applied, the cost to fully mitigate each project’s VMT impacts was calculated at \$2,000 per unit for the prototypical single-family residential project and \$5 per square foot for the prototypical light industrial project. Applying higher-cost VMT strategies would naturally result in higher mitigation costs for each of the test cases. Thus, if the objective were to achieve full mitigation for these prototypical development projects and to keep the mitigation cost generally within the magnitude of costs that were found to be absorbable under current market conditions, the mitigation strategies selected would need to be highly cost-effective.



Next Steps

As a first step toward a countywide VMT mitigation program, CCTA could establish a targeted pilot program that would allow for ongoing monitoring, testing, and refinement over time. CCTA has expressed interest in establishing a pilot program focused on countywide implementation and refinement of the Mobility On Demand (MOD) app. Reasons for the initial focus on the MOD app are that it is a CCTA priority program that can be rolled out relatively quickly, it is one of the most cost-effective of the strategies explored in this study, the geographic scale at which it functions can be adjusted with relative ease, and it will generate data about how travel incentives affect VMT under a variety of local circumstances which can then be used to refine the mitigation program and to provide evidence to support CEQA findings.

The pilot program would be voluntary and would function as something of a hybrid of an exchange and an in-lieu fee program, in which local lead agencies and/or individual project sponsors could choose to participate as a means of lessening a project's VMT impacts. The program would be administered by CCTA and overseen by an Advisory Committee, made up of representatives from participating jurisdictions and interested stakeholders.

1. Introduction

The Contra Costa Transportation Authority (CCTA), in partnership with the California Department of Transportation (Caltrans) and local agency partners, is leading one of the first local efforts in the state to explore a Vehicle Miles Traveled (VMT) mitigation program framework for projects in Contra Costa County. The intent of the program is to expand the mitigation mechanisms available to land use development projects and transportation infrastructure projects that have significant VMT impacts as determined through California Environmental Quality Act (CEQA) review. This report is the initial step in that effort. It identifies a series of program criteria for the development of a countywide VMT mitigation program, describes the cost and efficacy of potential VMT mitigation strategies that could be included in such a program, and outlines next steps for the roll-out of a pilot program.

Key Terms:

- **VMT:** Vehicle miles traveled
- **Mitigation Program:** The policy framework that enables off-site mitigation of VMT impacts
- **Mitigation Strategies:** Individual VMT-reducing actions, such as capital improvement projects, programs, services, or management approaches that could be delivered through a mitigation program
- **Project Applicant:** Sponsor of a land use or transportation infrastructure project that requires VMT mitigation

The report is organized into eight chapters:

1. **Introduction** – provides an overview of the study background, VMT mitigation program alternatives, and outcomes from this study.
2. **Study Process and Outreach**– describes the study’s sponsors, stakeholder engagement, and the roles of project partners.
3. **Program Criteria and Framework** – describes the criteria used to evaluate program options and the resulting recommendations and key policy questions that were identified and investigated through this study.
4. **Countywide VMT Context** – describes VMT estimated to be generated by new residents and workers in Contra Costa and identifies the VMT reductions estimated to be needed to achieve the CEQA targets.
5. **Potential VMT Reduction Strategies** – describes the range of VMT mitigation strategies, including infrastructure, transit service changes, trip reduction programs, travel behavior change incentives, and land use strategies, that could be included in a mitigation program. This section also provides information related to equity considerations in Contra Costa and the relationships between VMT generation and under-resourced communities.
6. **Development Costs and Test Cases** – describes the potential costs associated with VMT reduction strategies and the projected effects on two prototypical land use development projects.
7. **Considerations for Program Design** – outlines program framework options, including legal foundations, administrative framework, and monitoring requirements, and recommends next steps for implementation.

8. **Next Steps** – describes an initial pilot program that could be implemented countywide, along with ideas for how local agencies could leverage a mitigation program for CEQA streamlining.

1.1 Study Background

With the passage of SB 743 and adoption of VMT as the preferred CEQA transportation impact metric,¹ lead agencies have begun defining VMT impacts and identifying mitigation options. This study does not address how the significance of VMT impacts is determined; each lead agency has the discretion and the responsibility to set significance thresholds for each CEQA topic area, and thus different agencies may define a significant VMT impact in different ways. Once a project has been found to cause a significant impact, CEQA requires that the project applicant mitigate that impact to the fullest extent feasible. This study focuses on exploring different ways that VMT impacts could be mitigated.

Mitigation options for project applicants typically include the following:

- **On-site mitigation:** This typically involves physical design changes to the project or its site, and/or on-site Transportation Demand Management (TDM) strategies designed to reduce personal vehicle travel to and from the project site. Most on-site mitigation strategies for land development projects are highly dependent on who will occupy the building(s), which may not be known at the outset of a project and may change throughout the project’s lifespan. The effectiveness of on-site VMT mitigation strategies can thus be difficult to quantify with a high level of confidence.
- **Off-site mitigation:** Off-site mitigation options can be provided through VMT mitigation programs. A “programmatic” approach to VMT mitigation could expand a project’s feasible VMT mitigation options to include off-site strategies that might extend from the neighborhood around the project site up to a regional or even statewide scale. These strategies may take the form of infrastructure expansion, such as new transit and bicycle facilities, new programs and services that reduce vehicle travel by changing traveler behavior, or other methods.

As lead agencies and project applicants have worked through the initial transition to a VMT metric, there has been increasing interest in seeking a wide range of effective VMT mitigation approaches, which has led several jurisdictions throughout California to explore the establishment of a VMT mitigation program. Through the effort documented in this report, CCTA has taken the lead on exploring the possibility of a countywide VMT mitigation program in Contra Costa, which could apply to land use or transportation projects that trigger significant VMT impacts and require feasible mitigation. This was a need identified by

¹ In response to growing concerns about the consequences of climate change, and the significant role of vehicle miles traveled (VMT) in the generation of greenhouse gas (GHG) emissions, the California State Legislature passed Senate Bill 743 (SB 743) in 2013. SB 743 required the adoption of a new methodology to replace motor vehicle delay, measured by level of service (LOS), for evaluating transportation impacts under the California Environmental Quality Act (CEQA) review process. The new methodology must serve to reduce GHG emissions, facilitate development of compact, transit-oriented communities, and encourage development of active transportation (bicycle and pedestrian) facilities and improvements. The governor’s Office of Planning and Research (OPR) was tasked with identifying an alternative transportation impact methodology that best meets the criteria of SB 743. In 2017, OPR selected VMT as the preferred CEQA transportation impact metric.



the Contra Costa Planning Directors in 2019, and a potential mitigation program was included as a component of the 2020 Transportation Expenditure Plan for a new transportation sales tax measure in Contra Costa, which ultimately failed at the ballot in March 2020.

1.2 VMT Mitigation Program Alternatives

There are several ways a mitigation program such as this could be structured. The program alternatives considered here include the following:

- **VMT Impact Fees:** allow a project applicant to pay a fee toward the cost of a set of mitigation strategies that effectively reduce VMT and are enforceable by the lead agency. Subject to the requirements of the California Mitigation Fee Act [California Government Code §66000-66001], strategies funded through impact fees should be capital improvements that can be demonstrated to have effects related to the impact being mitigated. The strategies are typically described in a capital improvement program (CIP) and the relationship between the fees and the project's share of the CIP cost are established in a nexus study.
- **VMT Exchanges:** allow a project applicant to fund and/or implement a specific mitigation strategy selected from a pre-qualified list, or to propose and fund a new strategy that can be demonstrated to achieve VMT reductions.
- **VMT Banks:** create a monetary value of VMT reduction such that a project applicant could purchase a specific number of VMT reduction credits commensurate with the level of VMT impact caused by the project. VMT reduction credits would be generated by qualified projects reducing VMT separate from any mandates or other requirements (that is, the VMT reductions eligible for credits would be in addition to reductions that are already required by law or regulation).
- **VMT In-Lieu Fee Program:** allow project applicants to pay a fee towards VMT reduction strategies based on the lead agency's finding of a reasonable relationship between VMT reductions and the enhancement of the public welfare. Court decisions have indicated that in-lieu fee programs may not be subject to the strict nexus requirements found in the Mitigation Fee Act; at the same time, with a lower level of rigor applied to the nexus determinations, an in-lieu fee program standing alone may not satisfy the CEQA requirements for substantial evidence.

The nuances of these alternatives are summarized in the factsheet included as **Appendix A** and discussed throughout the report. The program evaluation criteria established through this effort are agnostic about the program alternatives and are designed to help CCTA choose the strongest alternative for the area. The final program design for the Contra Costa VMT mitigation program may draw inspiration from each of the options, based on the preferences of participating stakeholders and the determination about the policy choices identified in this report. Therefore, rather than framing this process as a selection of one of the specific program options, this procedure is more about designing a program framework that meets the needs of diverse stakeholders across a county that experiences substantial variation in land use development context, VMT generation and mitigation needs, and capacity to implement a new mitigation program. Information in this report may also be used by CCTA member agencies that want to create their own programs tailored to their jurisdictional needs.

2. Study Process and Outreach

2.1 Study Sponsors

This study has been led by CCTA, using funding from a planning grant awarded by the California Department of Transportation (Caltrans).

2.2 Stakeholder Engagement and Outreach

Stakeholder engagement for this study primarily consisted of the formation and convening of a Project Advisory Committee (PAC). PAC participation was open to a wide range of potential state, regional, and local partners, including those who might implement the program and those whose work and interests would be affected by the program. This included representatives from Contra Costa County and its incorporated cities, state and regional transportation agencies such as Caltrans and MTC, local and regional transit operators, advocacy organizations that promote sustainable transportation and land use policy, and the development community. The Stakeholder Outreach Plan is in **Appendix B**.

2.3 Project Advisory Committee

The purpose of the PAC was to inform and seek feedback from stakeholders on the opportunities, challenges, feasibility, and overall interest in the establishment of a countywide VMT mitigation program. Throughout the course of the study, members of the PAC met five times and responded to one survey:

- **Introduction to the Project:** The first meeting was held virtually in September 2021 and was aimed at informing PAC members of the purpose and scope of the study, as well as hearing from the PAC on their insights and interest in a multi-agency VMT mitigation program and key considerations.
- **Survey:** A survey was sent to the PAC in November 2021 to solicit input from PAC members on their priorities for a VMT mitigation program in Contra Costa County. The survey is presented in **Appendix C**.
- **Program Criteria:** The second meeting was held virtually in November 2021 to present results from the PAC survey and discuss evaluation criteria for program alternatives. PAC members participated in breakout sessions to discuss concerns, desired program elements, and external challenges for a potential VMT mitigation program.
- **Mitigation Strategy Identification:** The third meeting was held virtually in August 2022 to provide an update to the PAC on recent Caltrans guidelines for VMT mitigations and to describe potential mitigation strategies and their relationship to program structure alternatives.
- **Mitigation Strategy Cost Effectiveness:** The fourth meeting was held virtually in October 2022. The project team presented estimates of the cost effectiveness of a variety of VMT mitigation strategies and solicited input on a potential program structure.



- **Proposed Pilot Program:** The fifth and final meeting was held virtually in January 2023. The project team provided an update on the calculated cost effectiveness of mitigation strategies and presented an overview of the proposed pilot program.

Presentations and notes from the PAC meetings, along with a copy of the PAC survey, are included in **Appendix C. Table 1** includes the full list of agencies that participated in one or more of the PAC meetings.

Table 1: Project Advisory Committee Participants

Organization	Sector	Focus
<i>Advanced Mobility Group</i>	Private	Transportation consultant
<i>Bay Area Rapid Transit (BART)</i>	Public	Rail transit service provider
<i>Building Industry Association, East Bay Chapter</i>	Private	Land development
<i>Caltrans Headquarters</i>	Public	Transportation, statewide
<i>Caltrans District 4</i>	Public	Transportation, Bay Area region
<i>City of Concord</i>	Public	Local government
<i>City of Martinez</i>	Public	Local government
<i>City of Pinole</i>	Public	Local government
<i>City of Pittsburg</i>	Public	Local government
<i>City of San Ramon</i>	Public	Local government
<i>City of Walnut Creek</i>	Public	Local government
<i>County Connection</i>	Public	Bus transit service provider
<i>Contra Costa County</i>	Public	Local government
<i>East Bay Leadership Council</i>	Private	Economic development
<i>Metropolitan Transportation Commission (MTC)</i>	Public	Transportation, Bay Area region
<i>Town of Danville</i>	Public	Local government
<i>Save Mount Diablo</i>	Nonprofit	Land use, land conservation
<i>Tri Delta Transit</i>	Public	Bus transit service provider
<i>West Contra Costa Transportation Advisory Committee (WCCTAC)</i>	Public	Transportation
<i>Western Contra Costa Transit Authority (WestCAT)</i>	Public	Bus transit service provider

Source: Fehr & Peers, 2023.

2.4 Small Group Meetings

The project team also conducted a small group meeting with a group of land developers active in Contra Costa County, to discuss ideas about how a VMT mitigation program might affect the costs of their projects and get their input about program design. The presentation discussed at that meeting is provided in **Appendix D**.



3. Program Criteria and Framework

Because a range of program options will be considered, it is important to develop criteria about what the Contra Costa program is intended to accomplish and what program features are most important to local stakeholders. The consultant team developed an initial list of evaluation criteria, which was reviewed and refined with the project team and the PAC.

The criteria fall into six categories:

1. **Legal Foundation:** Does the program meet statutory requirements established under CEQA and other relevant state laws?
2. **Agency Oversight & Funding:** Which entity would manage the program and how would the program administration be funded?
3. **Geography & Scale:** Could the program be applied at multiple geographic scales? How would the location of VMT impacts relate to the location of mitigations?
4. **Applicability:** To what types of projects would the program apply, and what types of mitigations would it support? Would the program promote equitable outcomes for members of underserved communities?
5. **Data Analysis & Monitoring:** Would the program establish a standardized approach to evaluating VMT impacts and reductions, and have clearly defined methods for ongoing data collection and monitoring?
6. **Program Risk Management:** Is the program clear and easy to understand, and does it result in predictable and affordable results?

A description of the process of developing and refining the evaluation criteria is provided in **Appendix E**.

3.1 Legal Foundation

The legal foundation for the program is the collection of statutes and regulations that define legal expectations for a mitigation program. The specific structure selected for the program (that is, impact fee, in-lieu fee, mitigation bank, or mitigation exchange) will have some effect on which regulations apply. In addition, any program, regardless of its structure, should be consistent with CEQA requirements defining what constitutes acceptable mitigation for an environmental impact. Therefore, the project team identified one criterion for evaluating the legal foundation of a program alternative:

- **CEQA Requirements:** Does the program meet statutory requirements established under CEQA?

Relevant Case Law

Court decisions often provide critical guidance on areas that are unclear or unspecified in statutes and regulations. Given the complexity and nuance involved in the application of CEQA requirements to specific projects, many case law examples can be reviewed to inform the regulatory framework guiding the development of VMT mitigation programs. While a full case law review was not completed for this phase of the study, **Table 2** highlights major case law examples that are frequently cited when developing mitigation programs.

Table 2: Case Law Relevant to VMT Mitigation Programs

Case	Description ¹	Impact Fee	Exchange	Bank	In-Lieu Fee
Nollan v. California Coastal Commission, 483 U.S. 825 (1987)	In <i>Nollan</i> , the Court held that a government could, without paying compensation, demand an easement as a condition for granting a development permit the government was entitled to deny, provided that the exaction would substantially advance the same government interest that would furnish a valid ground for denial of the permit, or in other words that there is an appropriate “nexus” between the project’s effect and the mitigation. This is known as the “nexus” test.	✓	✓	✓	✓ ²
Dolan v. City of Tigard, 512 U.S. 374 (1994)	The Court further refined the Nollan requirement in <i>Dolan</i> , holding that an adjudicative exaction requiring dedication of private property must also be “‘roughly proportional’ . . . both in nature and extent to the impact of the proposed development.” This is known as the “rough proportionality” test.	✓	✓	✓	✓ ²
Sacramento Old City Assoc. V City Council of Sacramento, 229 Cal App 3d 2011 (1991)	In this case, the court established the conditions under which identification of mitigation specifics can be properly deferred beyond the point of CEQA compliance: If the specifics cannot be identified at the time of CEQA compliance, then 1) the agency must commit itself to the mitigation and identify one or more measures for the significant effect and must establish clear performance standards; or 2) alternatively the agency must provide a menu of feasible mitigation options that can be selected to meet the stated performance standards.	✓	✓	✓	✓

Notes:

- <https://blog.aklandlaw.com/2013/07/articles/exactions-impact-fees-service-charges-and-property-taxes/the-us-supreme-courts-nollandolan-jurisprudence-is-catching-up-with-the-california-supreme-court-in-ehrllich-v-culver-city/>
- Case law indicates that the Nollan and Dolan requirements do not apply as strongly to in-lieu fee programs as to other forms of exactions.

Source: Fehr & Peers, 2022.



Relevant Statutes and Regulations

Table 3 provides an overview of relevant statutes and regulations and which mitigation program structure they are most applicable to.

Table 3: Relevant Statutes and Regulations

Statutory Reference	Description	Impact Fee	Exchange	Bank	In-Lieu Fee
CEQA Statute¹ CEQA Guidelines^{2,3}	The CEQA Statute and Guidelines establish that for mitigation to be imposed, a potentially significant impact must occur. The significance of an impact is determined by the lead agency's choice of thresholds. Mitigation must be roughly proportional to the increment of VMT that occurs above the threshold. Proposed mitigations must be effective, enforceable, and feasible, at the determination of the lead agency, provided that such determination is supported by substantial evidence. Mitigations must be monitored, although the form of monitoring may range from verification that the mitigation action was completed to periodic measurement of mitigation action results. The nexus and rough proportionality standards established by case law (i.e., Nollan/Dolan noted above) also apply.	✓	✓	✓	✓ ⁷
Mitigation Fee Act⁴	This legislation outlines the requirements for establishing a mitigation fee program. It includes specifications on the nexus study and what types of projects can be funded through fee programs, limiting the use of impact fees to "public facilities" necessary to support a project. Public facilities are generally defined as capital projects, which prevents the application of impact fees to correct existing deficiencies or to maintain or operate transportation facilities or services.	✓			
Fish & Game Code Analogy⁵	This legislation outlines the necessary steps to develop a conservation bank for mitigation purposes. While not directly applicable to VMT mitigation programs, it is reasonable to use this statute as a proxy given that VMT banks and exchanges would be established to <i>conserve</i> (or avoid) trip making and the associated emissions.		✓	✓	
Standards for Regulatory Carbon Offsets⁶	The California standards for regulatory carbon offsets under the state cap and trade system identify conditions that make a valid carbon offset. While not directly applicable to VMT credits, these standards are useful in determining "additionality" for VMT reductions. The standards specify that to be valid, carbon offset credits should be real, additional, permanent, verifiable, and enforceable, and provided clear definitions of these terms.	✓	✓	✓	✓

Notes:

1. California Public Resources Code §21000-21189
2. California Code of Regulations, Title 14, Division 6, Chapter 3, §15000-15387

3. California Code of Regulations, Title 14, Division 6, Chapter 3, §15041
4. California Government Code §66000-66001
5. California Government Code §1852
6. 17 California Code of Regulations §95802
7. Case law indicates that these requirements do not apply as strongly to in-lieu fee programs as to other forms of mitigation requirements.

Source: Fehr & Peers, 2021.

3.2 Agency Oversight & Funding

A VMT mitigation program would be a complex mechanism that would require ongoing attention and effort in order to function effectively and efficiently. This topic included three areas of consideration:

- **Administering Agency:** Has a public agency been identified to administer the program? Does that agency currently have authority to implement the program? If not, would the agency leadership be willing to acquire that authority?
- **Transparency and Accountability:** Does the program have transparency and accountability measures built into its design?
- **Funding Source:** Is the program structured to allow the administrator to recoup administration costs?

Administering Agency

The responsibilities of a program administrator could include program oversight and financial administration, demonstration of CEQA compliance and establishment of a nexus between VMT impact and mitigation action, data collection, analysis, and performance monitoring. Ideally, an administering agency would have the following characteristics:

- Familiarity with and connections to transportation and land use decision-making across Contra Costa County
- Willingness to lead a countywide program
- Established, trusting relationships with local and regional partners
- Sufficient staffing and resource capacity for program administration, including funding upfront financial obligations to initiate the program
- Relevant technical expertise, including staff capacity to undertake or manage nexus studies and VMT analysis

Given these considerations, the PAC unanimously supported CCTA undertaking the administrator role for a VMT mitigation program in Contra Costa County. CCTA has a long history of administering transportation funding programs throughout the county, plays a role in transportation and land use decision-making through the countywide Growth Management Program, has technical expertise in travel modeling and transportation data analysis, and is willing to lead a countywide mitigation program.



Transparency and Accountability

For a mitigation program to provide value, project applicants, lead agency staff, and the public should have confidence that program funds are being spent effectively and that investments are consistent with the program goals. The program should include measures to ensure transparency and accountability, through regular reporting requirements and a mechanism for regular oversight from stakeholders.

Funding Source

The costs of administering a mitigation program could act as a barrier to launching and maintaining the program, underscoring the need for a dedicated funding source built into the program's design.² The cost for a project applicant to participate in the program should be set to accommodate the direct cost of providing the VMT mitigation strategies plus an additional cost element for program administration. The administrative cost should be periodically reviewed and refined to ensure that the administrative burden is sustainable and being adequately accommodated.

3.3 Geography & Scale

Geography and scale of a mitigation program refers to its geographic boundaries and the scalability of the program as interest in participation increases. The key questions explored in this study included the following:

- **Scalability:** Can the program be scaled up from a smaller to larger geographic area as additional jurisdictions express interest in participation?
- **Geography:** Would the program fund mitigations countywide?

Scalability

A mitigation program could be designed to scale over time as more local jurisdictions become interested in establishing mitigation options for projects in their jurisdiction. The PAC recommended that the initial program be open on a voluntary basis to public agencies in Contra Costa County, and each agency could choose whether to participate. In addition, the program administrator should stay abreast of any new VMT mitigation programs that may be implemented at the regional or state level and should periodically consider whether there should be any changes to the Contra Costa program so that it can coordinate with other similar programs.

Geography

One of the benefits of a countywide VMT mitigation program would be the ability to implement mitigation strategies at a relatively large scale and in targeted locations that have the greatest potential to

² As a precedent example, California's wildlife and conservation mitigation bank program was put on hold due to lack of funding. Legislation was passed in 2013 that allowed the Department of Fish and Wildlife, which administers the program, to begin collecting fees specific to administration, allowing the program to get back on track. This demonstrates the importance of recognizing the burden of administrative costs early on in program development.

significantly reduce VMT. At the same time, some stakeholders emphasized the potential benefits of establishing mitigation boundaries such that local communities closest to the project site would most directly benefit from the mitigation. Thus, the VMT benefits of a countywide solution should be balanced with a recognition that local communities may bear other burdens created by the project. The PAC recommended that, at least initially, the VMT mitigation program be open to funding mitigation strategies anywhere in the county, so as to maximize the effectiveness of the program at achieving its primary objective of reducing VMT in the most efficient way possible.

3.4 Applicability

The concept of applicability refers to decisions about the types of activities that should be included as potential mitigation strategies in a countywide VMT mitigation program and the criteria used to evaluate them prior to funding and implementation. Some of the major considerations explored in this study include the following:

- **Flexibility:** Is the program able to mitigate the impacts of both land development and transportation infrastructure projects? Would the program result in less-than-significant impacts for most projects? Does the program provide flexibility in the choice of mitigation actions, in terms of costs, location, co-benefits, and other factors?
- **Coordination:** Does the program support mitigation actions that are cohesive and well-coordinated, regardless of jurisdictional boundaries?
- **Equity:** Should the program include equity factors, such as in the selection of mitigation actions and/or in distribution of funds?

Mitigation actions that have the potential to be funded through VMT mitigation programs typically fall into three categories:

- **Capital Improvement Projects (CIPs):** These are physical improvements to the transportation network. VMT-reducing capital improvement projects may include pedestrian, bicycle, or transit infrastructure projects, the acquisition of transit vehicles and other related equipment, and infrastructure needed to support parking pricing or other forms of pricing.
- **Programs:** These are programmatic approaches to VMT mitigation, which would likely include transportation demand management (TDM) strategies such as provision of discounted or free transit passes, amenities to support the use of active modes, and incentive programs that encourage the use of carpooling, telecommuting, active transportation, or transit.
- **Operational Improvements:** These types of improvements involve providing ongoing services that encourage people to use modes other than single-occupant vehicles. These can include increases in the frequency or speed of transit services, the expansion of transit routes into formerly unserved areas, or the provision of carshare/bikeshare/micromobility programs.

Based on the limited existing literature that addresses VMT mitigation programs (including white papers, case law, and exploratory efforts), each type of mitigation action may be subject to constraints depending



on the program design choices. For example, transportation impact fee programs that operate under the Mitigation Fee Act are required to focus on capital improvement projects, while exchanges, banks, or in-lieu fee programs can also address programmatic or operational mitigation actions. **Table 4** describes the potential to include each mitigation action type under each mitigation program structure.

Table 4: Mitigation Strategy Eligibility by Program Type

Action Type	Impact Fee	Exchange	Bank	In-Lieu Fee
CIPs	Straightforward: Implementing CIP lists through transportation impact fees is a routine and standard practice. However, there is often a lag between when projects are approved and developed versus when mitigation actions are implemented as CIPs are typically funded through multiple project applicants.	Doable (with caveats): Exchange programs require project applicants to pay the full cost of mitigation actions to mitigate their projects. It may be difficult to match a project’s mitigation obligation to a CIP’s VMT reduction potential, which would result in slower implementation of the mitigation action list.	Straightforward: Once enough VMT reduction credits have been purchased to fund the CIP, the mitigation action can then be implemented. Like impact fee programs, CIPs would likely be funded through multiple project applicants and are likely to experience a lag between project approval and mitigation action implementation.	Straightforward: Implementing CIP lists through an in-lieu fee is doable; however, the implementation of projects may lag behind project approval.
Programs	Potential (with caveats): Some transportation impact fees have started including programmatic actions in their project lists; however, the inclusion of programmatic actions has not yet been tested in court.	Straightforward: Programmatic actions can be included in an exchange program and can often be right-sized to meet the project applicant’s mitigation need.	Straightforward: Purchased VMT reduction credits could be allocated to programmatic actions.	Straightforward: In-lieu fees can be applied to programmatic actions.
Operational	Challenging: The Mitigation Fee Act (Government Code §65913.8) excludes operating and maintenance costs from being funded through fees.	Straightforward: Like programmatic actions, O&M actions can also be right-sized to meet project applicant needs.	Straightforward: Purchased VMT reduction credits could be allocated to O&M actions.	Straightforward: In-lieu fee revenue could be allocated to O&M actions.

Source: Fehr & Peers, 2023.

CEQA requires that proposed mitigation actions be effective at lessening the impact and be enforceable. In responses to the PAC member survey and in small group discussions, PAC members felt that a countywide program should fund a wide range of mitigation strategies, ideally including capital, operational and programmatic strategies related to transportation.

Land Use Strategies

PAC members diverged on whether the mitigation program should consider funding non-transportation strategies, such as land use strategies. Members who supported inclusion of land use strategies noted that vehicle travel is heavily influenced by land use decisions, and that reducing the distances between housing, jobs, and services and allowing denser development can result in lower VMT per capita. They also noted that incentivizing the construction of dense housing in mixed-use neighborhoods could help to address existing needs for housing. Other members felt that incorporating land use strategies in the mitigation action menu could present technical and legal challenges and would add complexity to a program that is new and untested.

Equity

PAC members diverged on whether equity should be a major consideration when identifying mitigation actions to include in the program. Some members felt that equity considerations should be a high priority, given the history of public disinvestment in low-income communities and communities of color paired with the undue burden of the climate crisis on these same communities. Other members expressed concern that incorporating equity considerations into mitigation actions may result in less effective mitigation overall, and that the highest priority should be to identify actions that reduce the most VMT at the least cost.

3.5 Data Analysis & Monitoring

This topic addresses the data collection, methodology, and analysis necessary to establish and monitor a VMT mitigation program. This includes two areas of consideration:

- **Standardized Analysis:** Does the program establish a standardized approach to evaluating VMT impacts and VMT reductions?
- **Program Monitoring:** Does the program have clearly defined methods for ongoing data collection and monitoring to evaluate its long-term success in reducing VMT?

Standardized Analysis

The Mitigation Fee Act [California Government Code §66000-66001] is the primary legal framework for imposing fees through an impact fee program. It requires that a nexus be completed to demonstrate that the imposed fee is directly related to the impacts of the project, and to ensure the amount of the fee is roughly proportional to the impacts of the project. The nexus requirements for a VMT bank or exchange program have not yet been formally established or tested through legal precedent. Court decisions have indicated that an in-lieu fee program may not be subject to strict nexus requirements; payment of an in-



lieu fee must be linked to an outcome that the jurisdiction has determined advances public health and welfare. Regardless of the type of mitigation program, the connection between a land use project’s entitlement and any CEQA mitigation action must comply with the expectations outlined in *Nollan v. California Coastal Commission* (483, U.S. 825 (1987)) and *Dolan v. City of Tigard*, 512 U.S. 374 (1994) (discussed in more detail in the **Legal Foundation** section above).

In addition, analysis will be needed to demonstrate the effectiveness of each mitigation action at reducing VMT and to quantify the benefits and costs of the actions. When evaluating the VMT reduction potential of individual mitigation actions, care should be taken to avoid double-counting reductions from future changes in land use, policy, travel behavior, and/or demographics that have already been assumed in the development of future VMT forecasts.

If the mitigation program is structured as a VMT bank, the program must also establish the cost to reduce one VMT. This cost would be based on a variety of factors, including economic conditions, development potential, full mitigation program reduction potential, and cost of implementing the full mitigation program. This is a much more complex metric to quantify and would require extensive research, economic analysis, and discussion on the best approach to valuation. The methodology would also need to include the ability for annual or more frequent adjustments to capture the varying market value on VMT reduction. This process is comparable to the valuation of cap-and-trade program carbon credits.

Table 5 summarizes analysis requirements based on the four alternative VMT mitigation program structures.

Table 5: VMT Mitigation Program Analysis Requirements

Analysis	Impact Fee	Exchange	Bank	In-Lieu Fee
Nexus	Required. Impact Fee Programs are governed by the Mitigation Fee Act, which requires a detailed nexus analysis.	Required. At a minimum, Nollan/Dolan expectations will apply. It is still unknown whether exchanges and banks would also fall under the expectations of the Mitigation Fee Act.		May not be required. California courts ¹ have ruled that in-lieu fees are not subject to strict nexus requirements, beyond linking the payment of fees to an outcome that enhances public welfare and is furthered by the use of the land.
Analysis Metric	VMT reduction potential and the cost to implement the mitigation actions contained within the program.		VMT reduction potential and the cost to implement the mitigation actions, and the dollar cost of reducing one VMT (evaluated on an ongoing basis).	VMT reduction potential and the cost to implement the mitigation actions.

1. *California Building Industry Assn. v. City of San Jose* (2015) 61 Cal.4th 435. Source: Fehr & Peers, 2023.

There are a variety of analytical tools and approaches to calculate the VMT reduction potential of mitigation actions. Several key considerations related to analysis methodology were identified through the literature review and conversations with stakeholders:

- **Standardized analysis:** With the adoption of SB 743 implementation guidelines, many jurisdictions have developed VMT calculation methodologies for project applicants to employ in their CEQA transportation impact analyses. While most of these tools have similar inputs, slight variations in methodologies may lead to different outcomes and therefore differing mitigation obligations. Adopting a standardized approach both for analyzing VMT impacts of projects and VMT benefits of mitigation actions could ensure consistency across the county and minimize confusion among jurisdictions and project applicants. The desire for consistency, however, should be balanced against accuracy, especially considering the expectations of the CEQA Guidelines and past court decisions regarding technical adequacy and substantial evidence.
- **Analyzing the VMT reduction potential of mitigation actions:** Since the adoption of SB 743 and release of *Quantifying Greenhouse Gas Mitigation Measures* (CAPCOA, 2010), CAPCOA's research on VMT/GHG reduction strategies has become the industry standard for quantifying VMT reduction potential at the project- and community-scale. This document was comprehensively updated in 2021 to incorporate new research and to better reflect the known effects of VMT reduction strategies.³ This or similar substantial evidence is necessary to support CEQA conclusions about the effectiveness of VMT mitigation strategies.
 - Programs that rely on this type of research should carefully review the available evidence supporting potential reductions and their applicability within the specific land use context where they will be applied. Common limitations with current research include reduction values that do not reflect statistically significant findings, uncertain transferability across land use contexts, performance of TDM strategies being dependent on unknown future building tenants, and limited sample sizes or case studies. VMT reduction has also been shown to vary widely based on how a program has been designed and promoted.

Program Monitoring

Lessons learned from past research and conversations with the PAC demonstrate the importance of a robust foundation of data collection and monitoring of a VMT mitigation program to demonstrate the program's long-term effectiveness. For a mitigation bank, the monitoring is even more essential since the monitoring data would be used to routinely update the monetary value of VMT reduction. There was consensus among the PAC that the mitigation program's performance should be monitored, even if data are difficult to collect. Monitoring is needed to ensure that program participants and the public can have confidence in the program, as well as to ensure that the program invests in effective mitigation actions.

³ Sac Metro Air District and California Air Pollution Control Officers Association. 2021. *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (GHG Handbook). Retrieved from: <https://www.airquality.org/businesses/ceqa-land-use-planning/ghg-handbook-caleemod>



- **Program monitoring:** CEQA requires mitigation monitoring as noted in CEQA Guidelines §15097. Monitoring is also essential for the long-term success of a VMT mitigation program, as it ensures that the program is effective and encourages the support of participants.
- **Data collection:** A data collection framework should be established at the outset of the program to ensure consistency and accuracy across all mitigation actions and address data privacy, availability, and ownership concerns early on.

3.6 Program Risk Management

This topic refers to ways in which a mitigation program could be structured to minimize risks associated with project development, program implementation, and costs. There are several areas of consideration here, including the following:

- **Program legibility:** Is the program intelligible and intuitive to public agency staff, developers, advocates, and other concerned stakeholders?
- **Cost Certainty:** Does the program offer certainty in costs to project applicants? Does the program offer certainty in revenue to ensure mitigation actions can be implemented?
- **Cost of Mitigation:** Does the program result in mitigation costs that are financially viable for project applicants? Could the cost of mitigations achieved through the program be accommodated without compromising the viability of new housing development?

Program Legibility

For credibility and ease of use, the mitigation program should provide a clear description of the VMT mitigation strategies eligible for funding, the costs associated with those strategies, and how the funds collected by the program will be used. The analysis of VMT impacts and reductions should be standardized to the extent possible without compromising accuracy.

Cost Certainty

Stakeholders who are active in land use and development projects emphasized the value of certainty in project mitigation costs as being a key concern for project applicants. For each of the program structure options, **Table 6** summarizes what amount would be paid, the certainty associated with that amount, and the frequency of adjustments in that amount.

Table 6: Cost Certainty by VMT Mitigation Program Type

	Impact Fee Program	VMT Exchange Program	VMT Bank Program	In-Lieu Fee Program
What is the amount being paid?	Adopted fee per unit	Full cost of implementation of the selected mitigation strategy(ies)	The amount required to purchase sufficient VMT reduction credits to mitigate the project’s VMT impacts	Adopted fee per unit
Level of certainty about amount to be paid	Certain. Fee schedules are relatively simple and are published each year, giving project applicants a clear understanding of project costs by land use type.	Uncertain. Project applicants will not know which mitigation strategies are available for their project and the related cost of implementation until the impact analysis is complete. There may not be an exact match between the project’s VMT mitigation obligation and the available mitigation strategies. Further, because project applicants are required to pay the full cost to implement a strategy, constant variations in construction, labor, and material costs will add uncertainty to total mitigation costs.	Somewhat certain. Although it requires substantial effort up front, once VMT credits are valued the credits function as a known, standardized cost. However, because the value of VMT reduction will vary based on macro-level market conditions (fuel costs, emissions reduction technology, etc.), the cost of VMT credits may also vary over time.	Certain. Fee schedules are relatively simple and are published each year, giving project applicants a clear understanding of project costs by land use type.
Frequency of cost fluctuations	Fees typically adjusted annually for inflation; nexus study updated every five years.	Cost can fluctuate constantly as availability of mitigation strategies changes	Cost of VMT credit could be updated annually, dependent on data availability	Fees may be adjusted annually or less often, at discretion of program administrator

Source: Fehr & Peers, 2023.



Cost of Mitigation

Some stakeholders expressed concerns about the cost of VMT mitigations and the effect that additional cost could have on the viability of new development. Several voiced particular concerns about not adversely affecting the viability of new housing developments that could be part of addressing the regional housing crisis. This is a complicated and dynamic subject, as development costs can fluctuate widely depending on macro-scale factors such as interest rates and inflation expectations, as well as on very localized factors such as site conditions and the regulatory procedures applied by the local jurisdiction. To address this concern, the consultant team conducted a development cost analysis for prototypical development projects in specific locations around Contra Costa; the findings are discussed in Chapter 3.

4. Countywide VMT Context

When considering a potential countywide VMT mitigation program, it is important to understand the magnitude of the VMT impacts that could occur within Contra Costa over a given time period, and thus the magnitude of VMT reductions that could be needed to mitigate those impacts. This is a complex question that relies upon assumptions regarding the number of new land use and transportation projects that may occur over that time period, how much VMT is likely to be generated by each of those projects, and how each lead agency will apply its CEQA thresholds to those projects to determine the level of significant VMT impacts and the associated mitigation requirements.

CEQA requires lead agencies to evaluate projects in their jurisdictions for potential VMT impacts on the transportation system. The types of projects that a lead agency will evaluate generally fall into two categories: transportation projects that add lane miles to the state highway system, and land use projects (that is, new residential and commercial developments) that will add to the jurisdiction's population and economic activity. Both types of projects can generate new VMT and thus must be evaluated for the potential to cause a significant VMT impact that requires mitigation.

Over a planning horizon of ten years, we estimate that future land use and transportation projects in Contra Costa may generate about 584,000 daily VMT that would require mitigation. The sources of those estimates are described further below.

4.1 Land Use Projects

Most of the added VMT in Contra Costa over the next ten years will come from growth in population and jobs throughout the County. All new population and jobs will add some VMT to the countywide road system, but not all new VMT would be considered a significant environmental impact under CEQA. Most of the local jurisdictions in Contra Costa have set a CEQA threshold that the VMT per capita from future development should be at least 15% lower than the existing VMT per capita in order to avoid a significant impact. To allow for a countywide calculation of potential VMT impacts, we assumed this 15% threshold would apply countywide.

It is challenging to predict how much development will actually occur in Contra Costa County over the next ten years, and it is not possible at this point to know with certainty what proportion of that new development will trigger a significant VMT impact. The VMT effects of an individual development project vary greatly depending on many factors, such as the size of the project, its individual characteristics, and its location and surrounding neighborhood features. Thus, for the purposes of this estimation, we have used the Contra Costa Countywide Travel Model to produce forecasts about the transportation effects of projected future development. The model's base year is 2020 and the future year is 2040; these scenarios were used for the initial calculations, and then the results were scaled down to represent a ten-year planning period.



Table 7: Contra Costa VMT Per Resident

	Total Daily VMT Generated within Contra Costa	Contra Costa Resident Population	Total Daily VMT per Resident Population
Base Year (2020)	46,913,500	1,174,000	40.0
Future Year (2040)	55,112,700	1,381,000	39.9

Source: Fehr & Peers, 2023.

Using these results, we calculated what level of countywide VMT reduction would be needed to conclude that future residents had generated VMT per capita at a rate that is at least 15% lower than the existing rate.

2020-2040 Projections from Countywide Travel Model

Current Rate of Daily VMT per Resident:

$$40.0$$

Desired Rate of Daily VMT per Resident for all future residents:

$$40.0 * (1 - 0.15) = 34.0$$

Projected growth in residents:

$$1,381,000 - 1,174,000 = 207,000$$

“Allowable” growth in VMT if the desired future VMT per resident rate were achieved:

$$207,000 \text{ new residents} * 34.0 \text{ VMT per resident} = 7,031,000 \text{ allowable new daily VMT}$$

Actual projected growth in VMT:

$$55,112,700 - 46,913,500 = 8,199,200 \text{ actual new daily VMT}$$

VMT to be mitigated, over 20 years:

$$8,199,200 - 7,031,000 = 1,168,200 \text{ daily VMT}$$

Ten-year projection of VMT to be mitigated:

VMT to be mitigated, over ten years: *One-half of 1,168,200, or **584,100 daily VMT***

Therefore, based on the land use growth projections contained in the countywide travel model and assuming all agencies set a threshold that new development should achieve a 15% reduction in VMT per capita, over the next ten years there would be approximately 584,000 daily VMT that would need to be mitigated. To put this in perspective, this amount of daily VMT is about 1.2% of the total amount of daily VMT that is currently generated within Contra Costa County.

4.2 Transportation Projects

The primary source of VMT impacts through transportation projects will be the addition of more than one mile of through lane capacity to facilities on the state highway system or principal arterials on local roadways. Caltrans is the lead agency for projects on the state highway system and considers every through lane-mile added as a potential source of induced VMT. Further, Caltrans has set a CEQA threshold of zero VMT increases on the state highway system. Thus, because any project that adds through lane-miles is considered to cause some increase in VMT, and because the agency considers any increase in VMT to be a significant impact, that means all projects that add through lane-miles will cause a significant VMT impact requiring mitigation.

Within Contra Costa County, CCTA is typically the sponsor for projects on the state highway system. Over the next ten years, CCTA is sponsoring one project, the I-680 Northbound Express Lane project, that will add through lane-miles to the state highway system. There are other state highway-related projects in the Countywide Transportation Plan, although those projects are either expected to occur beyond the ten-year timeframe or are the types of projects that will not add more than one mile of through lane capacity to the system (such as projects to add auxiliary lanes or projects that reconstruct existing interchanges).

The I-680 Northbound Express Lane project has recently undergone extensive evaluation of its VMT impacts and identification of mitigation strategies to address those impacts. For context, that project would add a new express lane along about 7 miles of I-680 and was projected to generate roughly 100,000 daily VMT that would need to be mitigated. At this point, it is anticipated that the Express Lane project is likely to have a project-specific VMT mitigation strategy, and so would not be likely to participate in a potential future countywide VMT mitigation program.

It is likely that some local agencies in Contra Costa will sponsor projects that add some lane-miles to local streets within their jurisdictions. Each local agency has discretion to set the CEQA VMT threshold that would be applied in those circumstances. It is challenging to predict which local street projects might occur over the next ten years or to predict what VMT threshold each agency will set for its local street projects. For simplicity, we have assumed there will be relatively few local street projects that would be found to cause significant VMT impacts over the next ten years, and those projects that are found to cause impacts would create relatively small amounts of VMT requiring mitigation. As described above, even the VMT impact from the I-680 NB Express Lane project, at a large value of 100,000 daily VMT, represents a relatively small portion of the VMT impacts anticipated to be caused by new land use development, and the contribution to VMT impacts from local street projects is likely to be much smaller than that.



5. Potential VMT Reduction Strategies

The purpose of a VMT mitigation program is to fund a set of off-site VMT reduction strategies (meaning strategies that occur on a broader scale than a single development site) that can be demonstrated to lessen the VMT impacts of projects that participate in the program. This study investigated a wide range of off-site VMT reduction strategies that might be suitable for inclusion in the Contra Costa VMT mitigation program. This section provides a description of the strategies, an estimate of the VMT reduction effects resulting from each one, the estimated costs of implementation, and a calculation of cost effectiveness.

CEQA requires that substantial evidence be provided to support the findings in environmental impact assessment. Substantial evidence is defined as “facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts.”⁴ In practice, this means an analyst should present facts and evidence to support conclusions about the effectiveness of actions that are proposed as mitigations for environmental impacts. The body of research supporting the effectiveness of VMT reduction actions is currently limited but is anticipated to grow over time as public agencies in California implement and monitor the effectiveness of a wide range of VMT mitigation actions. Additionally, it should be noted that “substantial evidence” does not equate to an absolute guarantee. CEQA confirms that an agency’s fact-based determination regarding the effectiveness of mitigation should be sufficient, even if other conclusions may also be reached based upon the same facts. (State CEQA Guidelines 15384(a).)

To better illuminate the range of VMT reduction strategies investigated in this study, the strategies are presented in two categories: Mitigation Menu #1 contains established transportation strategies already supported by substantial evidence in the literature; and Mitigation Menu #2 contains emerging land use strategies that indicate promise toward VMT reduction but for which there is currently limited data available.

5.1 General Categories of VMT Reduction Strategies

Mitigation Menu #1: Established Transportation Strategies

Substantial evidence is available to support the VMT reduction effectiveness of a range of actions, including infrastructure investments, transit services, programs aimed toward changing travel behavior, and others, that can be taken at a relatively broad geographic scale (that is, beyond an individual project site). The primary source of data for the effects of VMT reduction strategies is the *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*

⁴ California Code of Regulations, Title 14: Natural Resources. Section 15384 - Substantial Evidence. Current through Register 2022 Notice Reg. No. 50, December 16, 2022.

(2021, California Air Pollution Control Officers Association). The CAPCOA Handbook contains strategies that are supported by research, and the methods contained in the Handbook were developed to provide the best balance between accuracy and reliability, following the good practices defined by the Intergovernmental Panel on Climate Change (IPCC). The quantification methods included in the Handbook will be accurate to the degree that a project adheres to the assumptions, limitations, and other criteria specified for a given measure. The Handbook recommends that project-specific data be used whenever possible. New strategies will likely be added over time as the body of evidence for community-scale VMT reduction grows.

For each of the categories presented in this section, a table shows the general strategies identified in the 2021 CAPCOA handbook and the maximum possible effect on VMT found in the CAPCOA data, followed by examples of how those strategies could be implemented countywide in Contra Costa and estimates of the VMT reductions that could occur specifically in Contra Costa.

Estimates of VMT reductions for the Contra Costa countywide examples have been calculated using the TDM+ spreadsheet tool, which applies the methods from the 2021 CAPCOA report to specific implementation locations. Each location has unique characteristics, such as current mode share, population density, and other factors that are accounted for in the TDM+ tool. The CAPCOA report presents a maximum VMT reduction associated with each strategy; by definition, almost all implementations of that strategy will result in VMT reductions that are less than the maximum. The VMT reductions estimated for any local example should reflect the local characteristics of that situation. For the Contra Costa countywide examples described here, data about local conditions has been drawn from a variety of sources, including the Countywide Travel Model, the US Census, and regional travel surveys.

VMT-Reducing Infrastructure Investments

VMT-reducing infrastructure supports bicycling and walking and improves access to transit in lieu of driving. Bike and pedestrian infrastructure could include new or expanded sidewalks, pedestrian crossing improvements, bike lanes and cycle tracks, multi-use trails, and other infrastructure that makes walking, bicycling, and accessing transit easier, more comfortable, and more useful.

Table 8 presents several types of infrastructure strategies that could be included in a VMT mitigation program. The table describes the general strategies identified in the 2021 CAPCOA handbook and the maximum possible effect on VMT found in the CAPCOA data, followed by examples of how those strategies could be implemented countywide in Contra Costa and estimates of the VMT reductions that could occur specifically in Contra Costa given the local conditions.



Table 8: Infrastructure Strategies

Strategy Name	Description	Potential VMT reductions
T-18. Provide Pedestrian Network Improvement	GENERAL DESCRIPTION: Increase sidewalk coverage to improve pedestrian access. Providing sidewalks and an enhanced pedestrian network encourages people to walk instead of drive, resulting in a reduction in VMT.	MAXIMUM POSSIBLE EFFECT: 6.4% VMT reduction within area served by network
	Countywide example: Construct all pedestrian improvements in the 2018 Countywide Bike/Ped Plan, resulting in a 5-15% increase in sidewalk coverage countywide.	Reduction of 0.25% - 0.75% in VMT from all household trips within Contra Costa
T-20. Expand Bikeway Network	GENERAL DESCRIPTION: Increase the length of a city or community bikeway network to expand the interconnected system of bike lanes, paths, routes, and cycle tracks. Improving infrastructure for bicycling encourages a mode shift from vehicles to bicycles, reducing VMT.	MAXIMUM POSSIBLE EFFECT: 0.5% VMT reduction within area served by network
	Countywide example: Fully construct the bike network defined in the 2018 Countywide Bike/Ped Plan, creating a countywide low-stress bike network and increasing total bikeway miles by 50% to 100% countywide.	Up to 0.15% reduction in all VMT generated within Contra Costa

Sources: California Air Pollution Control Officers Association, *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, 2021; Fehr & Peers, 2022.

VMT-Reducing Programs

VMT-reducing programs are designed to reduce vehicular travel through promotion of walking, bicycling, transit, and/or ridesharing. These programs could include car share and bike share systems, tools and incentives to make carpooling and vanpooling easier and more attractive, and education and information campaigns that focus on reducing single-occupant vehicle trips.

Table 9 presents programmatic strategies that could be included in a VMT mitigation program. The table describes the conceptual strategies identified in the 2021 CAPCOA report and identifies specific examples of how they could be implemented in Contra Costa County and estimates of the VMT reductions that could occur specifically in Contra Costa given the local conditions. It is important to note that programs designed to market and encourage low-VMT travel options (such as Strategies T-7 and T-23) can only be effective if those travel options are convenient and readily available.

Table 9: Programmatic Strategies

CAPCOA Strategy Name	Description	Potential VMT reductions
T-7. Implement Commute Trip Reduction Marketing	GENERAL DESCRIPTION: Implement a marketing strategy to promote existing commute trip reduction programs, including sharing information and promoting transportation options such as carpooling, taking transit, walking, and biking, thereby reducing VMT.	MAXIMUM POSSIBLE EFFECT: 4% reduction of employee commute VMT in area served by program
	Countywide example: <i>Develop and promote a Mobility On Demand (MOD) application to provide real-time, multimodal trip planning, enable uniform payment across modes, and provide incentives to reward low-VMT travel, reaching up to one-quarter of commuters within Contra Costa.</i>	<i>Reduction of up to 1% of employee commute VMT within Contra Costa</i>
T-21-A. Implement Carshare Program	GENERAL DESCRIPTION: Provide carshare vehicles. Carsharing offers people convenient access to a vehicle for personal or commuting purposes, allowing them to rely on alternative modes for most of their trips and reducing vehicle ownership, thereby reducing VMT.	MAXIMUM POSSIBLE EFFECT: 0.15% reduction of VMT in area served by program
	Countywide example: <i>Offer a countywide carshare program that increases available carshare within Contra Costa by 500-1,500 vehicles.</i>	<i>Reduction of 0.07% - 0.15% in VMT from all trips within Contra Costa</i>
T-22-B. Implement Electric Bikeshare Program	GENERAL DESCRIPTION: Provide an electric bikeshare system, providing users with on-demand access to electric pedal assist bikes for short-term rentals. Electric bikes are more effective at reducing VMT than conventional bicycles because an e-bike can make it feasible for the cyclist to take longer trips.	MAXIMUM POSSIBLE EFFECT: 0.06% reduction of VMT in area served by program
	Countywide example: <i>Create an e-bikeshare system that provides bikeshare access for up to 50% of county residents.</i>	<i>Reduction of 0.02% of VMT within Contra Costa</i>
T-23. Provide Community-Based Travel Planning	GENERAL DESCRIPTION: Provide information and encouragement to local residents with a community-based travel planning (CBTP) program. CBTP is a residential-based approach to outreach that provides households with customized information, incentives, and support to encourage the use of transportation alternatives in place of single occupancy vehicles, thereby reducing household VMT.	MAXIMUM POSSIBLE EFFECT: 2.3% reduction of household VMT in area served by program
	Countywide example: <i>Promote non-SOV travel options to households within Contra Costa County, targeting 2% to 10% of households per year.</i>	<i>Reduction of .05% - .23% in household VMT over ten years</i>

Sources: California Air Pollution Control Officers Association, *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, 2021; Fehr & Peers, 2022.



Transit Infrastructure and Service Strategies

Investments in transit infrastructure and services can enable increased transit use as a substitute for driving. Transit infrastructure investments could include capital funding to purchase transit vehicles or to construct infrastructure that enables increased transit service, such as dedicated bus lanes. Transit service investments could include increased funding for transit operations (staffing, fuel, and maintenance) that allow for adding new transit routes, expanding the hours and/or frequency of existing routes, or expanding the existing transit network.

Table 10 presents transit strategies that could be included in a VMT mitigation program. The table describes the conceptual strategies from the 2021 CAPCOA report and identifies specific examples of how they could be implemented in Contra Costa County and estimates of the VMT reductions that could occur specifically in Contra Costa given the local conditions. Potential VMT reductions from the countywide implementation examples were calculated using the Countywide Travel Model and the TDM+ spreadsheet tool. These potential reductions represent the high end of potential effectiveness since the CAPCOA methods and travel model are not fully sensitive to induced VMT effects that may occur as a result of transit improvements.

Table 10: Transit Infrastructure and Service Strategies

CAPCOA Strategy Name	Description	Potential VMT reductions
T-25. Extend Transit Network Coverage or Hours	GENERAL DESCRIPTION: Expand the service area, number of routes, or operating hours of existing transit service. Increasing the places and times served by transit encourages the use of transit, thereby reducing VMT.	MAXIMUM POSSIBLE EFFECT: 4.6% reduction in VMT in area served
	Countywide example:	
	Extend service to off-peak period for all bus routes serving Contra Costa County, resulting in an increase of 15%-25% in total service hours.	Reduction of up to 1.15% of all VMT within Contra Costa
T-26. Increase Transit Service Frequency	GENERAL DESCRIPTION: Increase transit frequency on one or more transit lines, reducing waiting and overall travel times. Improving the user experience makes transit a more attractive option, resulting in a mode shift from single occupancy vehicles to transit and reducing VMT.	MAXIMUM POSSIBLE EFFECT: 11.3% reduction in VMT in area served
	Countywide examples:	
	Provide 15-minute headways on all bus routes countywide, increasing transit frequency by 125% within Contra Costa County.	Reduction of 3.2% - 4.3% in VMT from all trips within Contra Costa

Table 10: Transit Infrastructure and Service Strategies

CAPCOA Strategy Name	Description	Potential VMT reductions
T-28. Provide Bus Rapid Transit	GENERAL DESCRIPTION: Convert existing bus routes to a bus rapid transit (BRT) system, including exclusive right-of-way (e.g., busways, queue jumping lanes) at congested intersections, limited-stop service, technological improvements such as transit signal priority, increased vehicle capacity, enhanced station design, efficient fare-payment smart cards or smartphone apps, branding of the system, and use of vehicle guidance systems. BRT can increase the transit mode share in a community by improving travel times and service frequencies, thereby reducing VMT.	MAXIMUM POSSIBLE EFFECT: 13.8% reduction in VMT in area served by BRT
	<p>Potential local example:</p> <p>Provide Bus Rapid Transit on San Pablo Ave. and Macdonald (Phase 2), connecting downtown Oakland to the Richmond Parkway Transit Center and extending north to the Hercules Transit Center. Includes bus-only lanes on San Pablo Avenue and Macdonald and expanded parking at transit centers.</p>	<p>Reduction of up to 0.55% in VMT from all trips within Contra Costa</p>

Sources: California Air Pollution Control Officers Association, *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, 2021; MTC PBA 2050 Project List; Fehr & Peers, 2022.

Pricing Strategies

Pricing strategies affect the costs and benefits of transportation options. The use of low-VMT modes can be incentivized either by decreasing the costs of those modes and/or increasing the cost of driving. Pricing strategies that could be enabled by a countywide mitigation program include supporting the expansion of market-rate on-street parking pricing in dense commercial areas, or subsidizing transit fares.

Table 11 presents pricing strategies that could be included in a Countywide VMT mitigation program. The table describes the conceptual strategies from the 2021 CAPCOA report and identifies specific examples of how they could be implemented in Contra Costa County and estimates of the VMT reductions that could occur specifically in Contra Costa given the local conditions.



Table 11: Pricing Strategies

CAPCOA Strategy Name	Description	Potential VMT reductions
T-24. Implement Market Price Public Parking (On-Street)	GENERAL DESCRIPTION: Implement market-rate pricing for on-street parking with a focus on parking near central business districts, employment centers, and retail centers. Increasing the cost of parking increases the total cost of driving to a location, incentivizing shifts to other modes and thus decreasing total VMT.	MAXIMUM POSSIBLE EFFECT: 30% reduction in VMT within area affected by pricing
	Countywide example: Implement demand-responsive, market-rate pricing of on-street parking in commercial areas across Contra Costa County, resulting in an increase of 25%-100% in the price to park in 10% of the area in the county.	Reduction of 0.25%-1% of all VMT within Contra Costa
T-26. Reduce Transit Fares	GENERAL DESCRIPTION: Reduce transit fares on the transit lines serving the plan/community area. A reduction in transit fares makes transit use less costly, thereby encouraging a shift from driving to transit and reducing VMT.	MAXIMUM POSSIBLE EFFECT: 1.2% reduction in VMT in area affected by change
	Countywide example: Reduce transit fares on all bus routes serving Contra Costa County by 50-100%.	Reduction of 0.68% - 0.91% in VMT from all trips within Contra Costa

Sources: California Air Pollution Control Officers Association, *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, 2021; MTC PBA 2050 Project List; Fehr & Peers, 2022.

Mitigation Menu #2: Emerging land use strategies

The transportation strategies presented in Mitigation Menu #1 are based on data from strategies that have been implemented in other locations and for which a body of research and evidence exists on the effect of those strategies on VMT. The depth and breadth of the research may vary, but for all the strategies a minimum threshold level of evidence exists that would constitute substantial evidence for CEQA purposes.

Using VMT as a measure of environmental impact and identifying methods for mitigating VMT impacts are very new areas of planning practice, and a thorough understanding of the best methods to reduce VMT may still be ahead of us, with creative approaches still needing to be developed and implemented. Compounding the novelty of this approach to CEQA transportation impacts are the dramatic changes in how and why people travel that have been unfolding over the last several years. It is possible that tried-and-true strategies from the past may not be as effective in tomorrow’s world of transportation. For all these reasons, it is important to look ahead, think outside the box, and identify potential strategies that merit consideration, even without the body of research and experience that accompany more conventional strategies.

There are several considerations involved in incorporating innovative and emerging strategies into a VMT mitigation program:

- Innovative strategies may need additional time to design and prepare for implementation. Some are complex and involve skills in topic areas outside the expertise of most transportation funding agencies, and thus may require new partners to help in either design, funding, or implementation.
- Recognizing the higher level of risk associated with innovative strategies, pilot testing should be considered as a way of implementing a small-scale version of an innovative strategy and generating information about effectiveness, costs, and administrative challenges.
- Ideally, the risk associated with developing, testing, and implementing new strategies could be shared across multiple organizations by developing partnerships with other organizations that have a strong interest in achieving measurable VMT reductions.
- Given that CEQA requires substantial evidence of a strategy's effectiveness, the deployment of any emerging strategy should be accompanied by a plan for ongoing VMT monitoring and evaluation.

Land Use Strategies

There is increasing interest in using land use strategies as a means of reducing VMT. Strategies that allow people to live closer to their jobs or that put more residential units close to personal services, retail, and transit opportunities should result in lower VMT when compared to a scenario of increased housing availability in low-density, high-VMT locations. While there are many possible variations on these themes, two potential strategies would involve incentives for infill development or direct assistance to people who want to live closer to their jobs, as described in **Table 12**. Because these are emerging strategies that have not been fully fleshed out, the consultant team has prepared a white paper about each strategy, describing the concept in more detail and laying out some of the data collection and programmatic considerations involved; these are provided in **Appendix F**.



Table 12: Emerging Land Use Strategies

Strategy Name	Description	Potential VMT reductions
<p>Programmatic Infill Development Incentives</p>	<p>Local agencies often cite the lack of adequate infrastructure and the scale/size of developable parcels as major barriers to achieving desired levels of infill development. Some agencies are developing programs to overcome some of these obstacles and accelerate the rate of infill development relative to greenfield. The challenge would be to set up such programs so that they could serve as CEQA VMT mitigation.</p> <p>Implementation example</p> <p>Infill acceleration programs exist (e.g., SACOG’s “Green Means Go” program, some elements of the One Bay Area Grant (OBAG) program through MTC). Their application as CEQA mitigation is untested.</p>	<p>Unknown, but would be based on the acceleration of rate of infill development, and the difference in household VMT relative to residents of greenfield developments. For Transit Oriented Developments, CAPCOA estimates up to 30% VMT reduction compared to similar development in non-TOD location.</p>
<p>Housing Relocation/ Affordability Assistance</p>	<p>Solve the “drive ‘til you qualify” dilemma for people with jobs in Contra Costa who live far outside the county, by providing financial assistance to offset the higher cost of housing and allow them to move to a low-VMT area in Contra Costa. VMT savings would be generated by reduced commuting of workers into Contra Costa, and by allowing people to live in lower-VMT areas. Similar programs exist as “employer-assisted housing” with incentives to allow workers to live within a targeted community—the innovative twist here would be to explicitly monitor VMT savings associated with the program.</p> <p>Implementation example</p> <p>Enable a healthcare worker whose job is in Martinez to relocate their residence from Stockton to a lower-VMT area of Pleasant Hill by providing a \$400 monthly rent subsidy.</p>	<p>Up to 40% reduction in VMT for individual households; total effects would depend on number of households participating</p>

Source: Fehr & Peers, 2023.

5.2 Specific Potential VMT Reduction Strategies for Contra Costa

Designing a potential Contra Costa countywide VMT mitigation program requires identification of specific VMT reduction strategies that could be undertaken within Contra Costa, combined with an understanding of the costs and VMT effects that each strategy would entail. For this study, a thorough review of recent planning documents was undertaken to create a list of planned projects and programs located in Contra Costa that could have VMT reducing effects. Some of the documents reviewed included the most recent Contra Costa Countywide Transportation Plan, the MTC Plan Bay Area 2050, the MTC Regional Active

Transportation Program, short-range transit plans from local bus operators (such as County Connection, Tri Delta Transit, and WestCAT), and others.

From the list of planned projects and programs, several were selected to create a short list of potential strategies to test how each might fit within a countywide mitigation program. The strategies were selected to represent a wide set of options that would represent a range of the strategy categories described above, located across all geographic locations in Contra Costa, and operating at a range of different scales, from targeted projects at a specific location to areawide improvements.

Defining a Cost Effectiveness Metric

For each short-listed strategy, the analysis requires an estimate of the costs to implement the strategy and the VMT reduction that the strategy could generate if implemented. For the purposes of this study, both the costs and the effects are presented for a ten-year timeframe.

Evaluating costs over time allows for a more realistic comparison between different types of strategies. Some strategies have large start-up or construction costs but require limited funding to operate over time, while other strategies have limited start-up costs but require substantial ongoing investments every year. To put all strategies on an even playing field, costs have been calculated as the sum of the start-up or construction costs plus ten years of operating costs.

Similarly, the amount of VMT reduction achieved should be commensurate with the timeframe represented in the cost estimates and should accurately reflect the relative effects of each strategy. Some strategies primarily affect certain types of VMT (for example, commute-focused strategies have the greatest effect on home-based work trips and more limited effects on other types of trips), while other strategies affect all travel (such as land use strategies that involve residential relocations from high-VMT to low-VMT neighborhoods). For the purposes of creating a balanced metric, this study presents the effects of each strategy as the cumulative total VMT reduced over a ten-year period.

Therefore, the cost effectiveness of each strategy is calculated as the total cost to implement the strategy for ten years divided by the total VMT reduced over ten years.

Cost Effectiveness of Short-listed Strategies

Table 13 presents the results of the cost effectiveness calculations for the short-listed strategies. Cost estimates have been developed based on available data, such as cost estimates from recent planning documents and cost data from implementations of similar strategies in other locations. The VMT reductions have been estimated using the TDM+ tool, which reflects the equations from the CAPCOA handbook applied with data representing local conditions in Contra Costa. A more detailed description of how the costs and VMT reduction values were estimated is presented in **Appendix G**.



Table 13: Cost Effectiveness of Short-listed Strategies

Strategy Name	Strategy Description	Category	Source	Costs (millions)			Total VMT Reduced (10 Years)	10-year Cost per VMT Reduced
				Capital	Operating (Annual)	Total (10 Years)		
1. San Pablo Ave Bay Trail Gap Closure	Reconfigure San Pablo Ave with three travel lanes and a separate Class 1 shared-use path. Closes 3.2-mile Bay Trail Gap between Pacific Avenue in Rodeo and Carquinez Bridge Trail in Crockett.	Infrastructure	MTC-ATP	\$9.48	\$0.09	\$10.43	132,807	v
2. North Bailey Road Active Transportation Corridor	Construct two-way cycle track, ADA-compliant curb ramps, ADA-accessible sidewalks, traffic signal, and reconfigure travel lanes on Bailey Road between Willow Pass and Canal Roads.	Infrastructure	MTC-ATP	\$6.80	\$0.07	\$7.48	26,561	\$281.61
3. Martinez-Crockett Bay Trail Gap Closure	Construct Class 1 shared-use path from Berrellesa Street to the Nejedly Staging Area at Carquinez Strait Regional Shoreline.	Infrastructure	MTC-ATP	\$2.79	\$0.03	\$3.07	26,561	\$115.58
4. Treat Blvd Ped/Bike Improvements	Pedestrian and bicycle improvements on Treat Blvd.	Infrastructure	MTC-PBA	\$3.00	\$0.03	\$3.30	26,561	\$124.24
5. Countywide e-Bike Share Program	Provide an e-bike share system that results in bikeshare access for up to 50% of county residents.	Program	Consultant	\$8.00	\$4.27	\$50.72	19,804,524	\$2.56
6. Downtown Concord Circulator	Downtown circulator/trolley service in Concord.	Transit	CC-SRTP	\$1.90	\$1.70	\$18.90	708,953	\$26.66
7. Bishop Ranch Circulator	Circulator shuttle operating every 15 minutes throughout Bishop Ranch.	Transit	CC-SRTP	\$1.90	\$1.60	\$17.90	124,378	\$143.92
8. Hercules BART Extension (Phase 3, Alternative 6)	Extend BART service from Richmond Station north to Hercules. Includes construction cost of guideway, 3 new stations, and a terminal yard, vehicle acquisition, and cost of added service.	Transit	CCTA-CTPL	\$3,582.00	\$40.50	\$3,987.00	230,920,752	\$17.27
9. San Pablo/MacDonald BRT (Phase 2)	Extend BRT service to the Richmond Parkway Transit Center and north to the Hercules Transit Center. Includes expanded service, expanded parking at Richmond Parkway and Hercules Transit Centers, and bus-only lanes on San Pablo Avenue and MacDonald.	Transit	CCTA-CTPL	\$180.00	\$23.39	\$413.86	98,032,395	\$4.22

Strategy Name	Strategy Description	Category	Source	Costs (millions)			Total VMT Reduced (10 Years)	10-year Cost per VMT Reduced
				Capital	Operating (Annual)	Total (10 Years)		
10. 23rd St BRT (Phase 2)	Develop BRT route connecting planned Richmond Ford Point Ferry Terminal and Richmond Field Station via San Pablo and downtown Richmond. Includes expanded parking at Richmond Parkway and Hercules Transit Centers, new vehicle purchases, extended service to Hercules, and bus-only lanes and BRT stations on 23rd/San Pablo Avenue.	Transit	CCTA-CTPL/ MTC-PBA	\$108.00	\$9.75	\$205.53	98,032,395	\$2.10
11. Concord Naval Weapon Station Routes (Phases 1-2)	Phase 1: Provide all-day transit service connecting CNWS to BART and downtown Concord. Phase 2: Add Los Medanos circulator route and express service between Los Medanos, BART, and downtown.	Transit	CC-SRTP	\$9.32	\$9.00	\$99.32	5,632,816	\$17.63
12. 15-Minute BART Feeder Network	Increase frequency to every 15 minutes on 10 County Connection routes serving BART stations during peak commute periods.	Transit	County Connection / MTC-PBA	\$10.80	\$7.80	\$88.80	39,212,958	\$2.26
13. 23rd St BRT (Phase 3)	Develop BRT route connecting planned Richmond Ford Point Ferry Terminal and Richmond Field Station via San Pablo and downtown Richmond. Includes bus-only lanes and BRT stations on 23rd/San Pablo Avenue and extension of Rapid Bus service.	Transit	CCTA-CTPL/ MTC-PBA	\$63.00	\$11.54	\$178.36	98,032,395	\$1.82
14. Countywide Transit Fare Reductions	Provide fare-free transit on all bus routes operating within Contra Costa County.	Pricing	Consultant Research	n/a	\$16.20	\$161.95	673,353,824	\$0.24
15. Countywide Carshare Program	Offer a countywide carshare program, subsidizing memberships by up to \$50/year for all members, up to 80,000 members, and 10% administrative costs.	Program	Consultant Research	n/a	\$ 4.46	\$44.55	148,533,932	\$0.30
16. Mobility As A Service (MAAS)	Develop a Mobility On-Demand (MOD) app to provide real-time, multimodal trip planning, streamline transit and shared mobility payments, and incentivize more efficient modes based on time of day.	Program	CCTA-680	\$6.90	\$0.33	\$10.15	132,806,805	\$0.08



Strategy Name	Strategy Description	Category	Source	Costs (millions)			Total VMT Reduced (10 Years)	10-year Cost per VMT Reduced
				Capital	Operating (Annual)	Total (10 Years)		
17. Homeowner Relocation Subsidy	Program would fund grants or zero-interest loans to offset home purchase costs for residents who commit to a minimum residence term in a low VMT area and to completing regular travel surveys.	Land Use	Consultant Research		Ten-year cost estimated at \$125,000 per unit subsidized; assume 1,000 units participate.	\$125	131,250,000	\$0.95
18. Renter Relocation Subsidy	Program would fund monthly rental subsidies to offset housing costs for residents who commit to a minimum residence term in a low VMT area and to completing regular travel surveys.	Land Use	Consultant Research		Ten-year cost estimated at \$90,000 per unit subsidized; assume 1,000 units participate.	\$90	104,400,000	\$0.86

Sources: Fehr & Peers, 2023, also:

1. MTC-ATP: Metropolitan Transportation Commission, 2021 Regional Active Transportation Program Cycle 5 Project Applications Received List
2. MTC-PBA: MTC, Plan Bay Area 2050, Plan Bay Area 2050 Transportation Project List, <https://www.planbayarea.org/2050-plan/final-plan-bay-area-2050/final-supplemental-reports/interactive-transportation-project-list>
3. CC-SRTP: County Connection, 2016-2025 Short Range Transit Plan
4. CCTA-CTPL: Contra Costa Transportation Authority, Comprehensive Transportation Project List
5. CCTA-680: Draft Innovate 680 Project List, provided by CCTA
6. Consultant Research: Analysis developed by consultant team.

As shown in **Table 13**, the short-listed strategies exhibit a wide range of cost effectiveness. In general, infrastructure strategies such as building bicycle paths or sidewalks tend to be the least cost effective (that is, those strategies have high values for cost per VMT reduced). This is because infrastructure investments can be relatively expensive, and because walking and cycling trips tend to be relatively short and do not tend to substitute for the long car trips that contribute much of a region's VMT. This is not to say that investing in bicycle and pedestrian infrastructure is not valuable; there are many co-benefits of walking and cycling, such as personal health and community safety. For the purposes of a VMT mitigation program, which is typically aimed at achieving the greatest amount of VMT reductions at the lowest cost, the cost effectiveness of each strategy is an important consideration.

Some of the transit-related strategies have relatively weak cost effectiveness, while others exhibit a mid-range of cost effectiveness results; all the results for transit-related strategies should be viewed with caution for the reasons outlined below. The housing subsidy programs have relatively good cost effectiveness compared to many of the other strategies; housing programs could benefit from monitored pilot projects to determine what magnitude of VMT reductions might be achievable if such programs were attempted at a large scale. The most cost-effective strategies tend to be those related to changing the price of travel or that involve educating and incentivizing the public to use modes other than single-occupant vehicles.

The total amount of VMT estimated to be reduced over a 10-year period from the combined effects of all the CAPCOA-supported strategies (that is, the summation of strategies 1 through 17 in Table 13 above) would be about 1.54 billion VMT. For context, the total amount of VMT that would need to be mitigated over the next ten years in Contra Costa is estimated to be about 2 billion (calculated as the 584,100 daily VMT presented in Chapter 4, extrapolated out to ten years).

Acknowledging Uncertainties

It is important to recognize the uncertainty of VMT effects for any particular strategy when implemented in a specific location. Adding to that general uncertainty is the fact that personal travel behavior has changed dramatically over the past several years, as the COVID-19 pandemic and evolutions in technology have triggered major shifts in when, where, and how people choose to travel and work. As a result, the historical research on which the CAPCOA handbook estimates are based may no longer fully reflect current conditions.

This may particularly be true when considering transit-related strategies. The CAPCOA research largely presumes that increases in transit ridership equate to declines in VMT without actually measuring VMT effects. Other research has shown that expansion of regional transit does not necessarily reduce overall VMT, although this conclusion was only measured at a large area scale. To complicate matters, many public transit services were experiencing declines in ridership leading up to the pandemic, and those trends have been further exacerbated since 2020. It is not yet clear what kinds of long-term changes in transit ridership and service patterns may emerge in the post-COVID era, but it is possible that the historical relationship between transit investment and ridership will be permanently altered. Thus, the CAPCOA estimates of VMT reductions associated with transit investments should be used with caution.



Another important caveat is that some of the strategies, particularly those involving the construction of infrastructure or other major capital investments such as acquiring transit vehicles, require a critical mass of funds to even begin implementation and may require a CEQA review process as well. If those types of strategies are the focus of a VMT mitigation program, the program administrator should recognize that there is likely to be a delay of at least several years between the collection of mitigation fees and the implementation of the strategies.

5.3 VMT and Equity Considerations in Contra Costa

This section examines how the rates of VMT vary geographically across Contra Costa and may be associated with under-resourced communities, and how the VMT mitigation actions described above might affect these communities.

Figure 1 shows low-, medium-, and high-VMT areas within Contra Costa for each traffic analysis zone (TAZ) in the base year of 2020. Low-VMT areas are defined as TAZs with home-based VMT per resident more than 15% below countywide average (17.3), high-VMT areas are those with home-based VMT per resident more than 15% above countywide average, and medium-VMT areas are those in between. The home-based VMT per resident has been developed from the Contra Costa Countywide Travel Model.

The Metropolitan Transportation Commission (MTC) defined Equity Priority Communities (EPCs) for use in developing the Plan Bay Area 2050 long-range transportation plan. EPCs are areas with a high percentage of low-income households combined with a high percentage of persons of color, or areas with a high percentage of low-income households plus a combination of three or more other factors such as housing cost burden, linguistic isolation, a high percentage of elderly or disabled residents, and other social factors. EPCs have been used here to represent under-served or under-resourced areas within Contra Costa. **Figure 1** displays the location of EPCs in Contra Costa County.

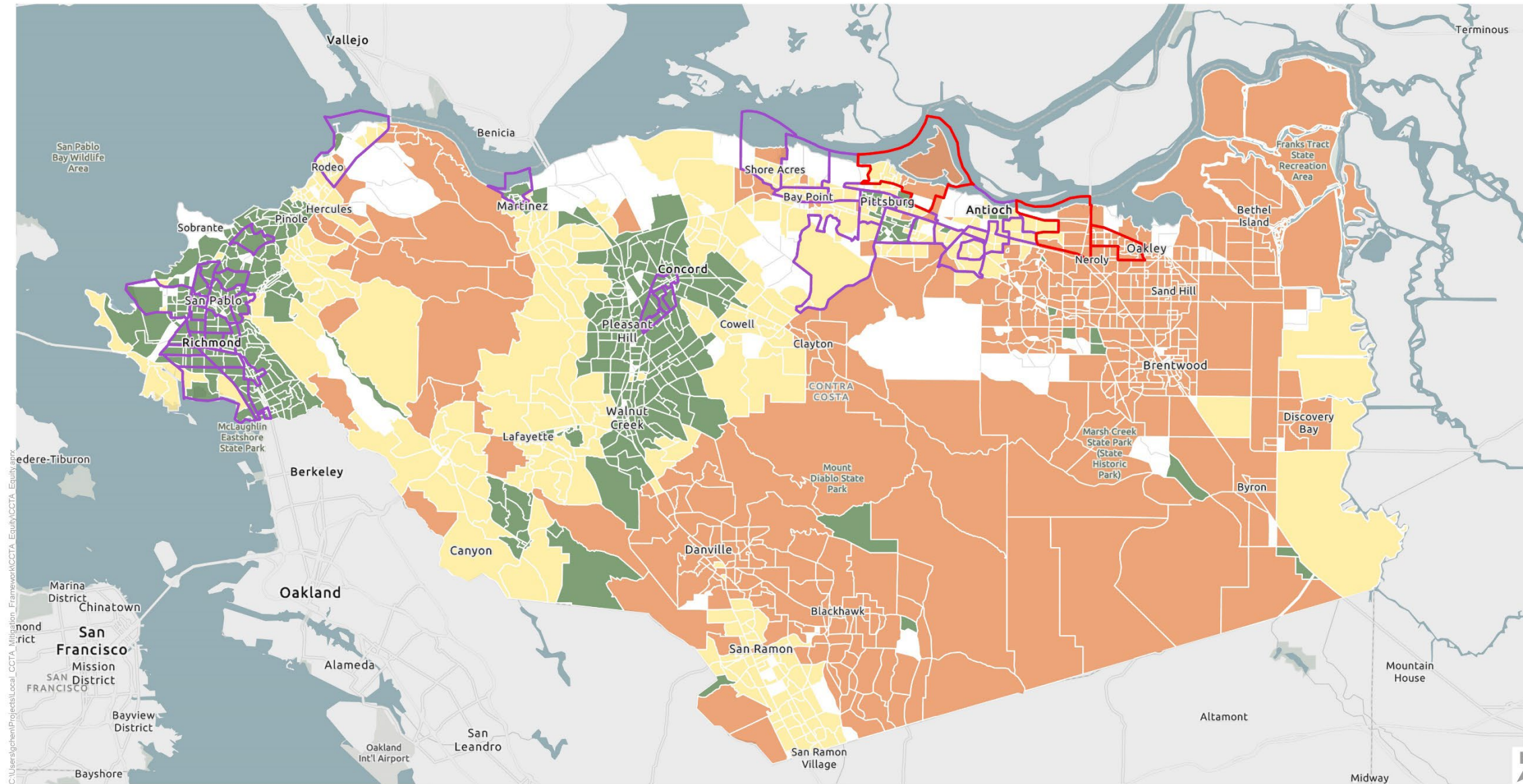
As shown in the figure, the relationship between EPC locations and areas of particularly high or low VMT is somewhat mixed. There are several areas where EPC communities have low-VMT characteristics, such as in parts of West County, Martinez, and the Monument Boulevard Corridor area in Concord. Many of these areas tend to be more urbanized, with relatively higher densities of development and a combination of travel options available including nearby transit services and bicycle and pedestrian facilities. At the same time, there are some EPC areas with high-VMT characteristics, such as in parts of Oakley, Antioch, and Pittsburg. These tend to be lower density areas with limited travel options and relatively long distances separating most activities.

Because of the variety in development patterns and VMT characteristics, it will take a variety of VMT reduction strategies to address the needs in each EPC. Many of the VMT reduction strategies listed earlier in this chapter tend to be more effective in places that have higher densities of development, shorter travel distances, and more travel options available, and thus could be more appropriate for the EPC areas that already generate VMT at lower rates. At the same time, questions should be considered about whether an EPC area that already exhibits low-VMT characteristics should be expected to implement strategies to further lower its VMT generation rate. It will also be important to consider the needs of the

EPC areas that generate high levels of VMT and acknowledge that they may need unusual or emerging strategies to address the unique circumstances of their communities. In all cases, it may be beneficial to evaluate whether a particular VMT reduction strategy could contribute to improvement of the communities' economic outcomes, and to use that as one of the criteria for deciding which strategies to prioritize within each EPC area.



Figure 1: VMT and Equity Priority Communities within Contra Costa County



Source: Contra Costa County Travel Demand Model; MTC Plan Bay Area 2050

Countywide Average Home-Based VMT per Resident (2020): 17.3

- High VMT Area (home based VMT per resident 15%+ higher than countywide average)
- Medium VMT Area (home based VMT per resident in between)
- Low VMT Area (home based VMT per resident 15%+ lower than countywide average)
- VMT Data Unavailable
- Plan Bay Area 2050 Equity Priority Communities
- Equity Priority Communities & High VMT



Figure 1

VMT and Equity Priority Communities within Contra Costa County

6. Development Costs and Test Cases

One of the evaluation criteria for this program is that it should result in mitigation costs that are viable for most project applicants. Developers of new residential and commercial projects in California have raised concerns about the concept of VMT mitigation programs adding substantial costs to a development process that is already lengthy and expensive. From a developer perspective, the costs of a mitigation program should be offset by savings elsewhere, either by reducing other direct costs in the development process (such as other impact fees or permitting fees) or by reducing the time required to complete the development approval process. Developers have also shown an interest in mitigation programs that provide direct benefits to project users (that is, where the mitigation action takes place in close proximity to the development that paid the mitigation fees). To explore these questions further, the consultant team has investigated the cost of development in Contra Costa and evaluated the viability of adding different levels of new mitigation costs.

6.1 Development Costs and Potential VMT Fees

To evaluate the implications of a potential introduction of a VMT mitigation program on the viability of new development in Contra Costa, the consultant team conducted a planning-level analysis of the development prospects of four prototype developments in different locations throughout Contra Costa. The prototypes included a single-family residential development in Antioch, a multi-family residential development in Concord, an office development in San Ramon, and an industrial development in North Richmond. It should be emphasized that these are illustrative prototypes and are not intended to represent specific development projects.

For each of the prototypes, a basic pro forma was developed to reflect the direct and indirect costs, as well as the land acquisition costs, associated with development of that type. For the single-family example, the analysis identified the sales price required to be able to cover the development costs and provide a typical level of profit. For the other examples, development feasibility was assessed based on the lease rate that would be required to provide a typical return on the development costs. For illustrative purposes, the analysis looked at potential VMT fees of \$1,000, \$3,000, or \$5,000 per dwelling unit equivalent, and drew conclusions about what the ramifications of setting fees at any of those levels might be on the feasibility of each development prototype. The analysis and results are described in detail in **Appendix H**.

The major findings can be summarized as follows; please see **Appendix H** for more detail.

1. A new VMT fee would add costs to all private land use types and developments. Even with the relatively modest fee levels evaluated here (up to a maximum of \$5,000 per dwelling unit equivalent), it could be challenging for some land use types to accommodate those additional costs under current market conditions.



2. Single-family detached development, especially in eastern Contra Costa, has been economically robust and viable in recent years. A theoretical VMT fee of \$5,000 per single-family unit would represent an increase of about 0.76% in total development cost for this prototype and would require a similar increase in home price to cover that additional cost. This is a relatively modest change in overall costs, although with recent increases in interest rates and the already high costs of development, the development community is concerned about any additional cost burdens.
3. While new multi-family development projects have been occurring in some parts of Contra Costa, and many cities are encouraging such developments near transit stations, this prototype is already subject to very high development costs and must be able to achieve high lease rates to be feasible, even before the potential addition of VMT fees. To achieve the necessary return on investment, the illustrative prototype would require a lease rate of \$3,800 per month for a 900 square-foot unit, which is higher than current apartment lease rates in most Contra Costa cities. A theoretical VMT fee of \$5,000 per single-family dwelling unit equivalent (or \$2,500 per apartment unit) would represent an increase of 0.4% in total development costs. This is relatively modest, but any cost increase should be considered in the context of the challenging development economics that already exist for multi-family projects.
4. Office development activity has been modest in recent years in Contra Costa, and the pandemic and work-from-home trends have created challenges for the office market. The illustrative prototype would require a monthly lease rate of about \$5.61 per square foot to cover costs and provide a necessary return on investment; this is well above the typical lease rates for Contra Costa's larger office buildings. The combination of high development costs and contracting demand makes office development challenging. A theoretical VMT fee of \$5,000 per dwelling unit equivalent would be the equivalent of \$7 per gross square foot for a new office building and would represent an increase of approximately 1% in total development costs for the office prototype.
5. Industrial development, and specifically warehouse and distribution developments, have been performing strongly, and likely have some capacity to absorb additional costs such as VMT fees. The illustrative prototype would require a monthly lease rate of \$0.86 per square foot to cover costs and provide a necessary return on investment; this is well within the current range of lease rates seen for these types of buildings in Contra Costa. A theoretical VMT fee of \$5,000 per dwelling unit equivalent would be the equivalent of \$4.25 per gross square foot for a new industrial building and would represent an increase of about 2.5% in total development costs for this prototype; this is a more substantial increase than for the other prototypes, but it may still be absorbable given the current strong market conditions.

6.2 Test Cases

To better understand the ramifications of a VMT mitigation program, the consultant team looked at two specific test cases. These test cases have a mix of characteristics of actual projects that have been developed recently in Contra Costa and are not intended to represent any specific individual project. Based on the development cost analysis described above, the two development prototypes that exhibit the highest likelihood of absorbing a new VMT mitigation fee are single-family residential and industrial. These are represented in the two test cases.

- The first test case is a residential development of 150 single-family dwelling units in a suburban neighborhood where the current VMT per capita is 20% above the local threshold.
- The second test case is a 500,000 square-foot light industrial/warehouse development in a predominantly industrial/commercial area where the current VMT per worker is 50% above the local threshold.

It is assumed that each test case project would be subject to local TDM requirements that would require some on-site VMT mitigation strategies that would encourage reduced vehicle usage by the project’s residents or employees. The on-site mitigation requirements would reduce but not eliminate the project’s VMT impact, and the remaining VMT could then be addressed by participating in a countywide VMT mitigation program.

For illustrative purposes, these test cases look at an option where the VMT mitigation program sets a fee of \$0.10 per VMT reduced. This level of fee would represent the low end of the costs of possible VMT reduction strategies; another way of stating this is that by setting a fee at \$0.10 per VMT reduced, the mitigation program would focus only on strategies that are most cost effective. At the same time, it is important to recognize that setting a fee at this level would result in total VMT reductions that would be only a small portion of the total estimated ten-year countywide VMT impact described in Chapter 4.

Outcomes for each test case are outlined in **Table 14** and **Table 15** below.

Table 14: Estimated Mitigation Costs for Residential Test Case

	Residential Project
Description	150 single-family units in suburban location
VMT Impact	VMT per capita is 20% above threshold
On-site Mitigation	Assumed to be required, will partially mitigate
Remaining Impact	2,950,000 total VMT over 10-year period
Mitigation Option	Participate in countywide VMT mitigation program at cost of \$0.10 per VMT
Cost to Mitigate	\$295,000 total, or \$2,000 per house

Source: Fehr & Peers, 2023.

The residential test case project indicates that a VMT mitigation program with a fee of \$0.10 per VMT reduced would lead to a VMT mitigation cost of about \$2,000 per house. Based on the pro forma analysis described above, this magnitude of additional cost could likely be accommodated without compromising the viability of the development. Note that if the VMT fee were set at a higher level, the cost per house would scale accordingly; for example, if the VMT fee were doubled to \$0.20 per VMT, the mitigation cost would also double to \$4,000 per house.



Table 15: Estimated Mitigation Costs for Industrial Test Case

	Industrial/Commercial Project
Description	500,000 sq ft warehouse/office in light industrial location
VMT Impact	VMT per capita is 50% above threshold
On-site Mitigation	Assumed to be required, will partially mitigate
Remaining Impact	25.8 million total VMT over 10-year period
Mitigation Option	Participate in countywide VMT mitigation program at cost of \$0.10 per VMT
Cost to Mitigate	\$2.58 million total, or \$5 per square foot

The industrial test case project indicates that a VMT mitigation program with a cost of \$0.10 per VMT reduced would lead to a VMT mitigation cost of about \$5 per square foot. This magnitude of additional cost is somewhat higher than was studied in the pro forma analysis described above, but if market conditions continue to be strong then this cost could likely be accommodated without compromising the viability of the development. Note that if the VMT fee were set at a higher level, the cost per square foot would scale accordingly; for example, if the VMT fee were doubled to \$0.20 per VMT, the mitigation cost would also double to \$10 per square foot.

7. Considerations for Program Design

7.1 Legal Considerations

The main legal considerations identified for a VMT mitigation program start with the CEQA statute and associated CEQA Guidelines since they govern expectations for effective and enforceable mitigation actions.⁵ These are highlighted below in **Table 16** and are built upon research by Berkeley Law and ITS Berkeley.⁶ Since specific statutes do not exist for VMT exchanges and banks, conservation programs established under the California Fish & Game code §1852(c) were used to set potential expectations.⁷ This is a reasonable proxy given that the intent behind VMT exchanges and banks is a form of conservation. Instead of habitat, VMT exchanges and banks are trying to conserve vehicle trip making and the VMT generated through this activity. VMT mitigation banks or exchanges do not appear to require new legislative authority, but having statewide templates for their development could help establish clear standards and expectations for program designs.

⁵ Association of Environmental Professionals. 2019 California Environmental Quality Act (CEQA) Statute & Guidelines, 2019.

⁶ Elkind E. N., Lamm T., Prather E. Implementing SB 743 An Analysis of Vehicles Miles Traveled Banking and Exchange Frameworks, October 2018.

⁷ California Legislative Information. Fish and Game Code.

<https://leginfo.ca.gov/faces/codesTOCSelected.xhtml?tocCode=FGC&tocTitle=+Fish+and+Game+Code+-+FGC>



Table 16: Potential VMT Mitigation Exchange/Bank Legal Requirements

Program Structure	Legal Requirements & Statutory Reference
Impact Fee	<ul style="list-style-type: none"> • Mitigation Fee Act requires individual development projects to pay for all or portion of the cost to implement public facilities necessary to support the project.¹ Public facilities are generally limited to capital projects. • Court decisions have placed limits and requirements for a nexus between the mitigation and a legitimate government interest plus a rough proportionality between the mitigation and the adverse impact caused by the project.² This burden is lessened when mitigation is delivered through a legislated impact fee program especially for in-lieu fee programs.³ However, Assembly Bill (AB) 602 that went into effect on July 1, 2022 does require large jurisdictions with a population of over 250,00 to adopt a CIP. • CEQA Statute and Guidelines require that for mitigation to be imposed, a potentially significant impact must occur.⁴ The significance of those impacts is determined by the lead agency’s choice of thresholds. This limits mitigation to what is roughly proportional to the increment of VMT change that occurs above the threshold.
VMT Exchange or Bank	<p>While Impact fees are well established by laws and regulation, VMT exchanges and banks are not governed by any such legal requirements. Using California Fish & Game code conversion programs the following are identified as requirements:</p> <ul style="list-style-type: none"> • An explanation of the VMT mitigation purpose of and need for the bank or exchange. • The geographic area covered by the bank or exchange and rationale for the selection of the area, in conjunction with a description of the existing transportation and land use dynamics. • A summary of historic, current, and projected future transportation stressors and pressures in the area, including economic, population growth and development trends. • Provisions ensuring that the bank or exchange will comply with all applicable state and local legal and other requirements and plans and does not preempt the authority of local agencies to implement infrastructure and urban development in local general plans. • VMT mitigation goals and measurable objectives. • VMT mitigation projects along with a description of how to achieve the mitigation goals and objectives, and a description of project prioritization.

Notes:

1. Government Code section 66001
2. Nollan v. California Coastal Commission, 483 U.S. 825 (1987)
<https://supreme.justia.com/cases/federal/us/483/825/>
Dolan v. City of Tigard, 512 U.S. 374 (1994)
<https://supreme.justia.com/cases/federal/us/512/374/>
3. California Building Industry Assn. v. City of San Jose (2015) 61 Cal.4th 435 (CBIA). Use of an in-lieu approach has already been established by the City of San Diego for VMT mitigation. For this type of program to be effective and accepted, we would recommend that the local agencies and development community participate in the selection of the CIP projects and the setting of fee levels. Ideally, CIP projects would be viewed as improvements in the communities where the development is occurring.
4. CEQA Statute. CA Public Resources Code 21000-21189 and CEQA Guidelines. CA Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387

A review of these potential legal requirements suggests that the creation of an exchange or a bank may not be less rigorous than that of a conventional transportation impact fee program. These legal requirements, combined with the need to demonstrate additionality and provide verification, could create implementation costs beyond those of a conventional transportation impact fee program.

7.2 Administrative Framework

The creation and administration of the program options will differ depending on the specific mitigation actions being funded, if the program is local or countywide, and if on-going monitoring and verification of VMT reductions are required. To understand key differences, specific implementation steps for creating and administering each program type are outlined in **Figure 2**, **Figure 3**, and **Figure 4**.

All of the program options could be operated at a local or countywide level. VMT mitigation exchanges or banks may also be possible at the regional or state level. Based on stakeholder input, CCTA was identified as a trusted agency for a countywide program. If local programs were developed, the steps in **Figure 2**, **Figure 3**, and **Figure 4** would be similar.

As programs begin to operate at larger scales, a challenge may arise in that mitigation benefits are likely to occur some distance away from the development projects that generate the fees. For some stakeholders, this can be a significant disadvantage of scaling up the program size.

The cost of administration for a VMT impact fee program is expected to be like other fee programs with a similar scale. This is commonly expressed as a percentage of the CIP, usually ranging anywhere from 1% to 4%.



Figure 2: VMT Impact Fee – Implementation Steps

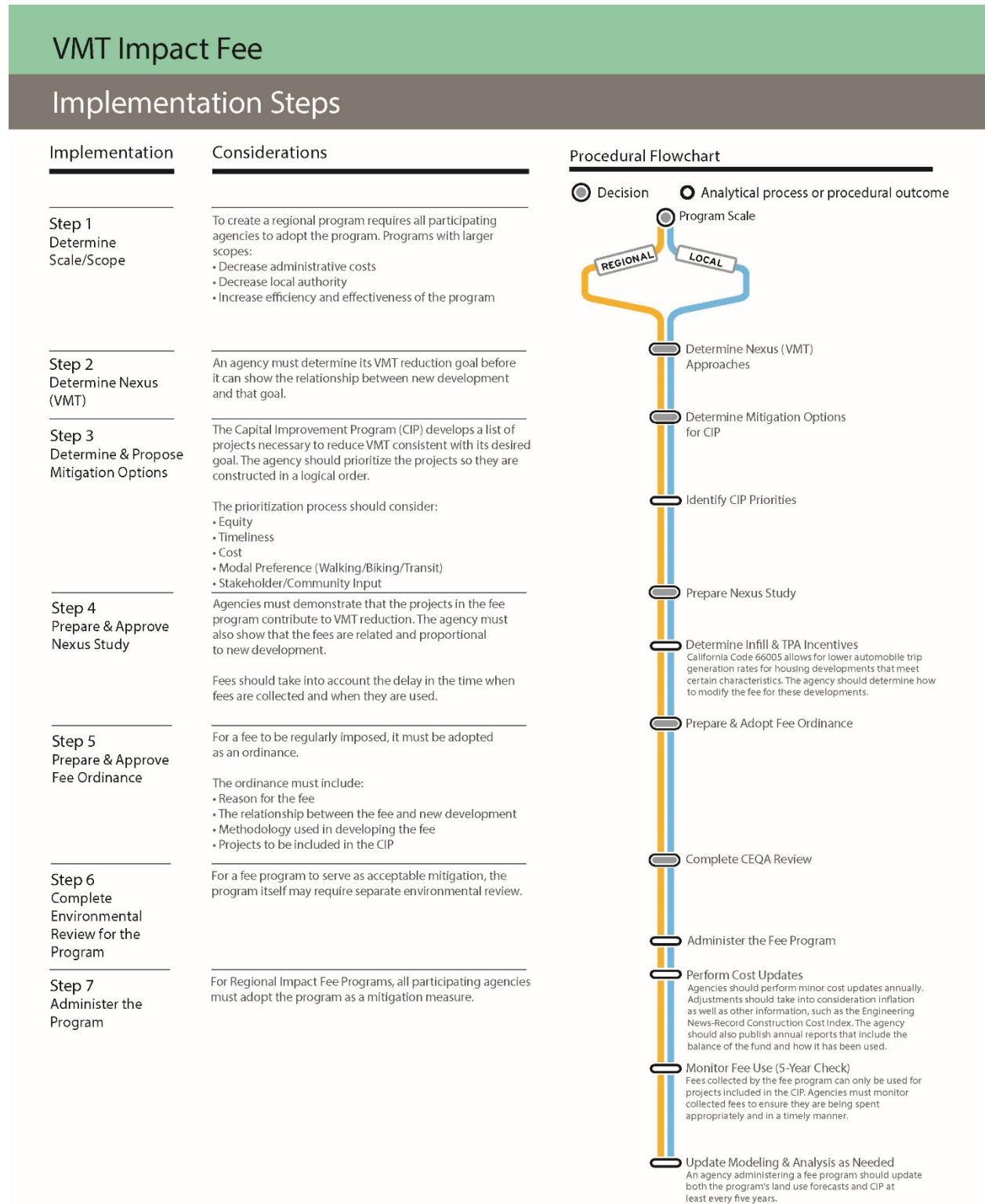


Figure 3: VMT Bank – Implementation Steps

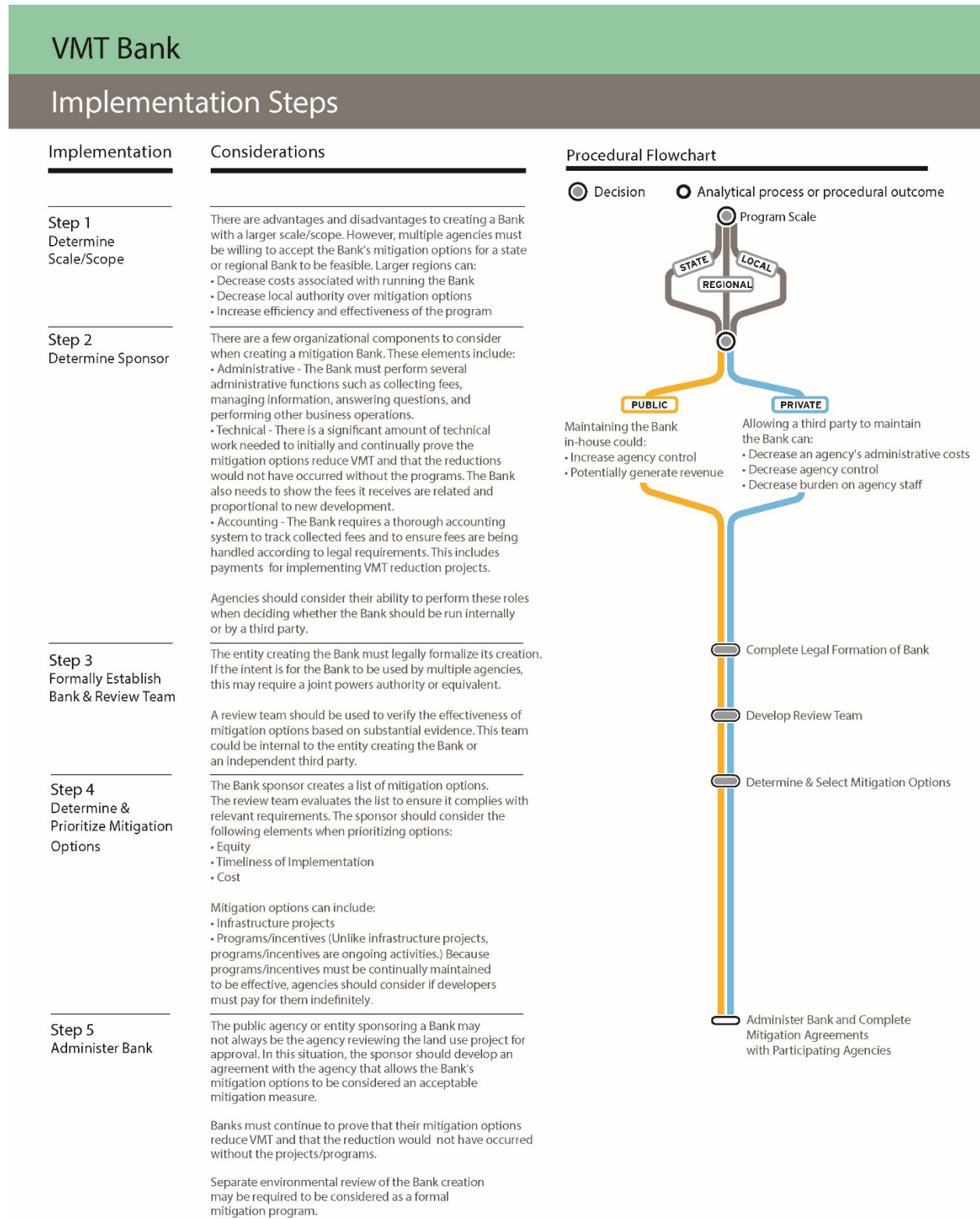
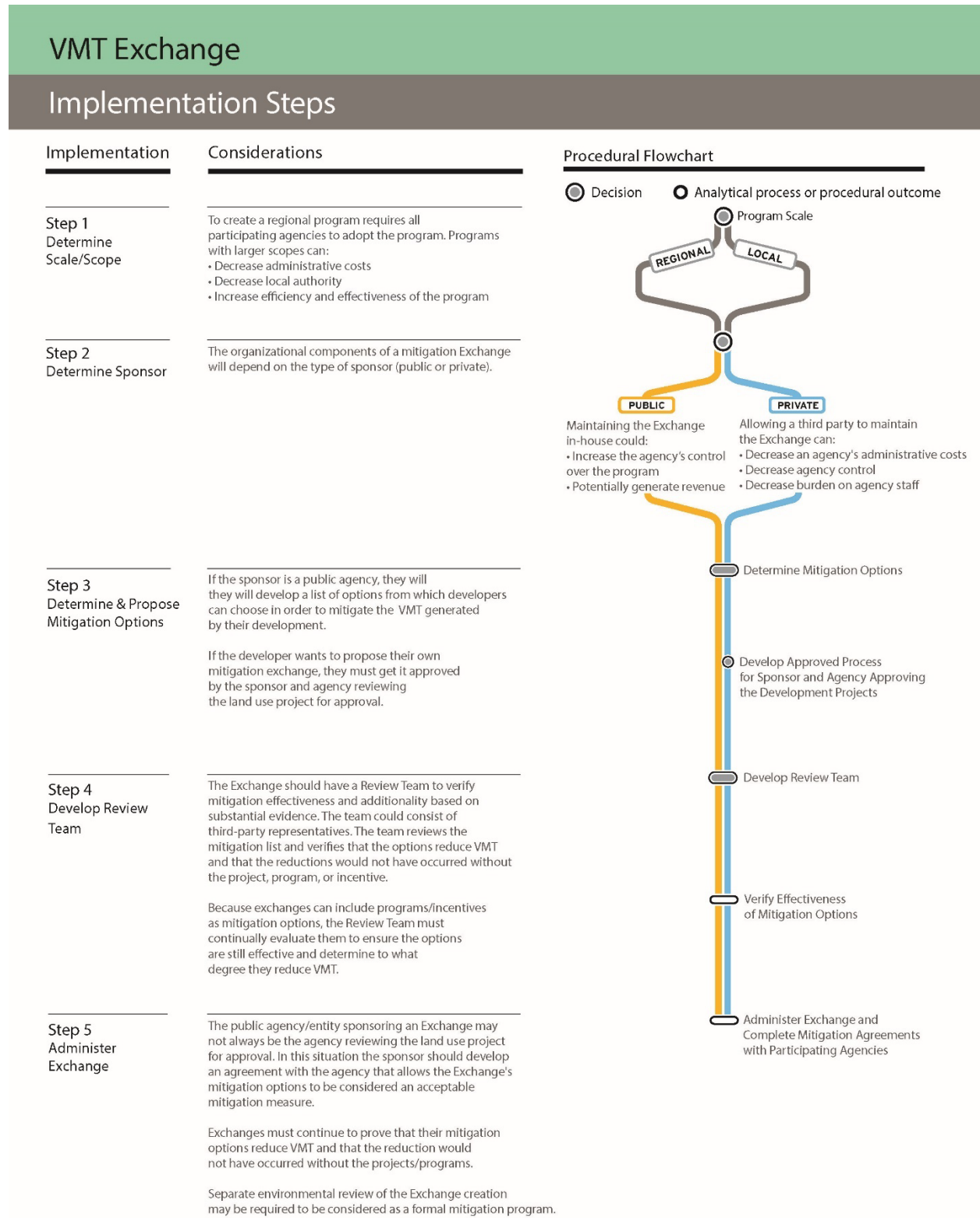


Figure 4: VMT Exchange – Implementation Steps



7.3 Monitoring

Monitoring Requirements for Different Program Types

Monitoring the effectiveness of a VMT mitigation program may be necessary for determining the CEQA VMT impact significance associated with participation in the program and could be an important element for maintaining support for the program's long-term operation. For the program to offer participants the certainty that their VMT impacts could be reduced to a less-than-significant level, substantial evidence must be generated to demonstrate the program's ability to achieve effective VMT reductions over time. Instead, if the program relies solely on currently available evidence about how the VMT strategies have worked in other places in the past, then it may only be able to demonstrate that VMT impacts would be lessened but not to a specific level of less-than-significant.

As to legal requirements, the type and extent of monitoring will vary by program option. For example, impact fee programs are simply required to demonstrate that fee revenue is being used to implement the program's CIP, with a verification process required every five years. This level of monitoring and documentation satisfies the requirements of the Mitigation Fee Act, but would not produce the level of evidence required by CEQA to support a conclusion that the program reduces VMT to a specific level.

For a bank program, VMT performance monitoring would be essential since it is the method that would establish the annual cost for each VMT reduction credit. VMT is heavily influenced by external market conditions beyond the control of local and regional agencies so the bank would need a continual and consistent flow of VMT performance data to gauge the program's effectiveness and determine whether the cost of credits would need to be adjusted.

An exchange program could largely follow the same expectations for monitoring associated with an impact fee program. The basic form of monitoring would be verification that the funds were being used to implement the intended VMT reduction strategies; as described above, this would demonstrate that VMT impacts are being lessened, but would not provide sufficient data to support a conclusion of reducing VMT to a specific less-than-significant level.

Sources of VMT Monitoring Data

Some data vendors produce VMT estimates through mobile device, connected vehicle, or activity-based models (e.g., StreetLight and Replica). These could potentially serve as a source of data about locally-generated VMT and how it changes over time. However, it is important to note that these companies have had to refine their models over time to accommodate evolving raw data sources, so variations may occur in their VMT estimates simply due to changes in data sources and not due to actual program effects.

These limitations highlight the potential opportunity to create a local data source tied directly to the travel behavior of Contra Costa residents or workers. This type of data would be obtained through direct travel surveys or mobile device tracking that would occur regularly over time. This monitoring could be designed into the VMT mitigation program.



8. Next Steps

Advancing VMT mitigation programs in Contra Costa County could occur at the countywide or local jurisdiction level. Based on stakeholder input, there is interest in a countywide program and a consensus that CCTA would be the right entity to lead it. The main goals of this type of program would be to identify, fund, and implement effective VMT reduction strategies that benefit the projects funding the mitigation and their associated communities.

8.1 CCTA-led Pilot Program

As a first step toward a countywide VMT program, CCTA could establish a targeted pilot program with a focus on VMT monitoring, testing, and refinement over time. CCTA has expressed interest in establishing a pilot program targeted toward implementing the Mobility On Demand (MOD) app. Reasons for the initial focus on the MOD app are that it is a CCTA priority program that can be rolled out relatively quickly, it is one of the most cost-effective of the strategies explored in this study (at an estimated cost of \$.07 per VMT reduced over a ten-year period as shown in **Table 13**), the geographic scale at which it functions can be adjusted with relative ease, and it will generate data about how travel incentives affect VMT under a variety of local circumstances which can then be used to refine the mitigation program and to provide evidence to support CEQA findings.

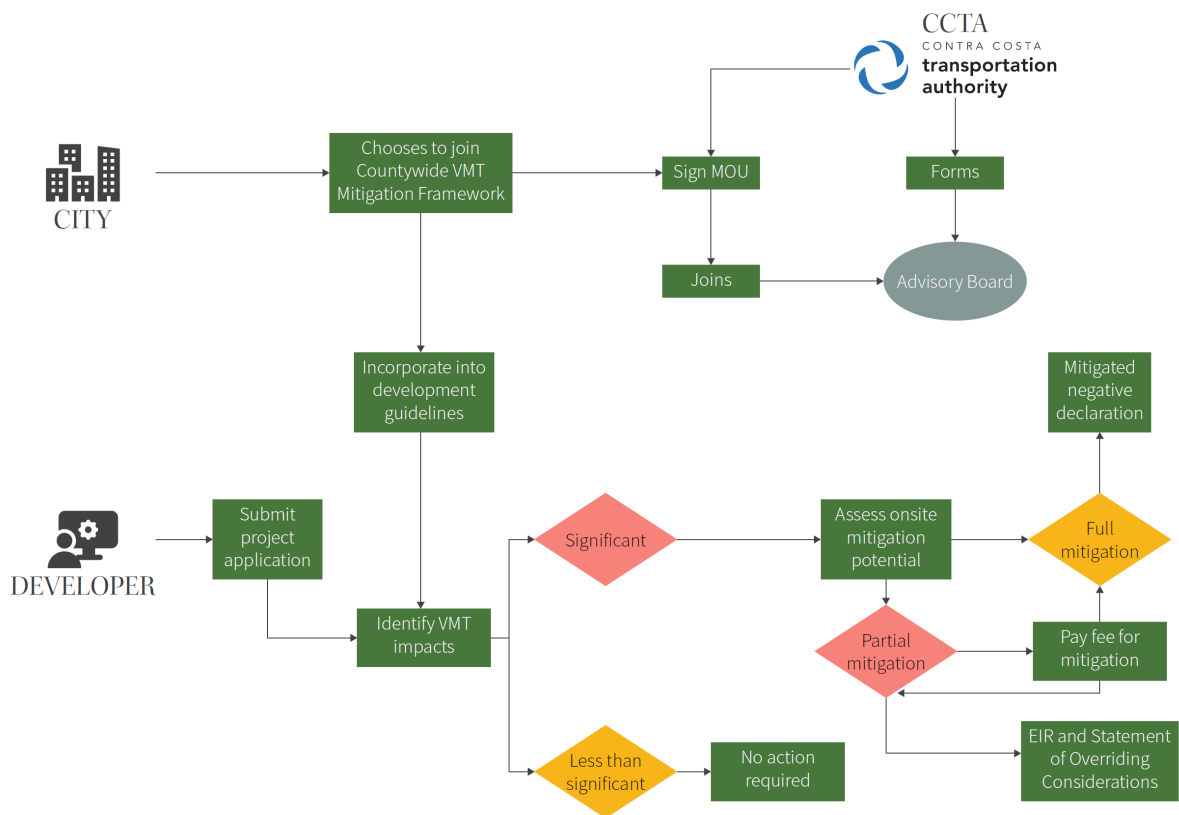
The MOD app would function as a voluntary commute trip reduction program and a source of community-based travel information. These two strategies are recognized as VMT-reducing according to the *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (California Air Pollution Control Officers Association, 2021). The app offers the ability to monitor the VMT generation of its participants before and after they start using the program, thereby allowing the quantification of VMT effects and a fine-grained understanding of the relationship between travel information/incentives and actual usage of non-single-occupant-vehicle travel modes. This would create the ability to directly calculate the program's cost effectiveness for VMT reduction, thereby providing detailed evidence of effectiveness that would satisfy CEQA expectations.

The pilot program would be voluntary and would function as something of a hybrid of an exchange and an in-lieu fee program, where local lead agencies and/or individual project sponsors could choose to participate as a means of lessening the project's VMT impacts. The program would be administered by CCTA and would be overseen by an Advisory Committee, made up of representatives from participating jurisdictions and interested stakeholders, which would serve as the oversight body for the pilot program. Advisory Committee responsibilities would include:

1. Review and evaluate progress made in implementing the MOD strategy and any other mitigation strategies.
2. Review Pilot Program budget and financial records, including all incoming funds from project sponsors and all outgoing funds allocated to mitigation actions.
3. Discuss progress and evaluate the Pilot Program.
4. Recommend adjustments to the Pilot Program.

Figure 5 presents a summary of the actions that cities and land developers would take if a city chooses to participate in a CCTA-led pilot program.

Figure 5: City and Developer Participation in CCTA-led Pilot Program



FEHR PEERS

Alignment with Program Evaluation Criteria

A countywide pilot program initially focused on funding the MOD app would be in alignment with many of the evaluation criteria described in Chapter 3. The criteria are presented in **Table 17**, accompanied by a discussion of how the proposed pilot program aligns with each one.



Table 17: Evaluation Criteria Applied to Pilot Program

Criteria	Description	Characteristics of Proposed Pilot Program
Legal Foundation		
CEQA Requirements	Does the program meet statutory requirements established under CEQA?	There is substantial evidence supporting the conclusion that community-based travel information and voluntary commute trip reduction programs (as contained in the MOD app) are effective VMT-reducing strategies.
Agency Oversight & Funding		
Administering Agency	Has a public agency been identified to administer the program?	CCTA is interested in administering the program.
	Does that public agency currently have authority to implement the program? If not, would leadership be willing to acquire that authority, and is there a clear path to do so?	CCTA can implement the program and executive leadership is supportive.
Transparency and Accountability	Does the program have transparency and accountability measures built into its design?	CCTA and the program advisory committee would set guidelines for transparency and accountability; the MOD app produces a lot of data that could be summarized and reported for these purposes.
Dedicated Funding Source	Is the program structured to allow the administrator to recoup administration costs?	The initial pilot would be a proof of concept, and the cost structure could be modified over time as more is learned about the magnitude of administrative costs.
Geography & Scale		
Scalability	Can the program be scaled up from a smaller to larger geographic area as additional jurisdictions express interest in participation?	The MOD app can be adjusted over time to cover different geographic areas. Initial program participation would be voluntary and could be expanded as jurisdictions express interest.
Geography	Would the program fund mitigations countywide?	The MOD app could be applied countywide.
Applicability		
Flexibility	Is the program able to mitigate the impacts of both land development and transportation infrastructure projects?	The sponsors of either land development or transportation infrastructure projects could participate in the program if desired.

Table 17: Evaluation Criteria Applied to Pilot Program

Criteria	Description	Characteristics of Proposed Pilot Program
	Would the program result in less-than-significant impacts for most projects?	The initial pilot program would be a proof of concept. As a voluntary program, there is uncertainty about how many project sponsors would participate and what amount of VMT reduction would be achieved. Even if there were full countywide participation, the total VMT reductions estimated from the MOD app would represent only a small portion of the total estimated countywide VMT impacts over the next ten years, so the MOD app alone would not be sufficient to result in less-than-significant impacts for most projects in Contra Costa over the next ten years.
	Does the program provide flexibility in the choice of mitigation actions, in terms of costs, location, co-benefits, and other factors?	Initially, the pilot program would be focused on the MOD app. The program could be expanded in the future to encompass a broader set of mitigation actions.
Coordination	Does the program support mitigation actions that are cohesive and well-coordinated, regardless of jurisdictional boundaries?	CCTA and the program advisory committee would set guidelines for how mitigation actions will be prioritized.
Equity	Does the program include equity factors, such as in the selection of mitigation actions and/or in distribution of funds?	CCTA and the program advisory committee would set guidelines for how equity factors would be included; as an example, the MOD app could be set up to offer higher incentives for users located in equity priority communities.
Data Analysis & Monitoring		
Standardized Analysis	Does the program establish a standardized approach to evaluating VMT impacts and VMT reductions?	The MOD app will produce a lot of data that will allow for detailed quantification of VMT effects.
Program Monitoring	Does the program have clearly defined methods for ongoing data collection and monitoring to evaluate its long-term success in reducing VMT?	The MOD app will produce a lot of data that will allow for detailed quantification of VMT effects.
Program Risk Reduction		
Program Legibility	Is the program intelligible and intuitive to public agency staff, developers, advocates, and other concerned stakeholders?	The initial pilot program would be a proof of concept. The data produced by the MOD app would offer a great deal of information to stakeholders about the VMT effects of the program.



Table 17: Evaluation Criteria Applied to Pilot Program

Criteria	Description	Characteristics of Proposed Pilot Program
Cost Certainty	Does the program offer certainty in costs to project applicants?	This would depend on how CCTA and the program advisory committee decide to establish the program costs and the frequency with which those costs are updated.
	Does the program offer certainty in revenue to ensure mitigation actions can be implemented?	Because the pilot program would be voluntary, there is uncertainty about how many project sponsors would participate and how much revenue would be generated.
	Does the program result in mitigation costs that are financially viable for project applicants?	The MOD app is one of the most cost effective VMT reduction strategies identified in this study. Analysis of local development costs indicates that the addition of a mitigation cost of this magnitude could be accommodated for typical single-family residential and light industrial projects. For other types of development projects, the mitigation cost may not be financially viable.
Cost of Mitigations	Could the cost of mitigations achieved through the program be accommodated without compromising the viability of new housing development?	The MOD app is one of the most cost effective VMT reduction strategies identified in this study. Analysis of local development costs indicates that the addition of a mitigation cost of this magnitude could be accommodated without compromising the viability of new single-family housing development. For multi-family developments, the mitigation cost may not be financially viable.

Source: Fehr & Peers, 2022.

8.2 Options for Local Agencies

Cities and counties, in their role as lead agencies under CEQA, have the discretion to pursue any type of VMT mitigation strategy that can be demonstrated to be effective and enforceable, and that their agency considers feasible. If desired, a local agency could use the information prepared through this study to develop a local VMT mitigation program that could incorporate one or more of the VMT reduction strategies described in Chapter 5.

Cities and counties also have a unique programmatic mitigation strategy under CEQA associated with tiering under CEQA Guidelines Section 15183.⁸ This section of the Guidelines relieves a project of additional environmental review if the environmental impact was adequately addressed in the General Plan EIR (meaning that project-level mitigation to lessen future VMT impacts must be included in the EIR) and the project is consistent with the General Plan.

15183. Projects Consistent with a Community Plan or Zoning

(a) CEQA mandates that projects which are consistent with the development density established by existing zoning, community plan, or general plan policies for which an EIR was certified shall not require additional environmental review, except as might be necessary to examine whether there are project-specific significant effects which are peculiar to the project or its site. This streamlines the review of such projects and reduces the need to prepare repetitive environmental studies.

The use of Section 15183 also addresses cumulative impacts as acknowledged in Section 15130(e).

15130. Discussion of Cumulative Impacts

(e) If a cumulative impact was adequately addressed in a prior EIR for a community plan, zoning action, or general plan, and the project is consistent with that plan or action, then an EIR for such a project should not further analyze that cumulative impact, as provided in Section 15183(j).

For Contra Costa jurisdictions, addressing transportation VMT impacts in city or county General Plan EIRs could streamline subsequent project CEQA reviews. Under this approach, a VMT impact associated with the General Plan's growth would be identified. VMT mitigation deemed feasible by the jurisdiction would be identified that could be implemented through standard conditions of approval for subsequent projects or through a mandatory impact fee program. The VMT impact may remain significant after mitigation. Subsequent projects consistent with the General Plan would simply tier from this finding, and no new VMT impact analysis would be required for these subsequent projects. These projects would contribute to the General Plan's VMT mitigation by implementing mitigation actions through standard conditions of approval or possibly the payment of impact fees if the jurisdiction chose to implement such a program.

⁸ A General Plan EIR can also be used to streamline project-level VMT analysis through other methods such as tiered EIRs (CEQA Guidelines Section 15152) and Program EIRs (CEQA Guidelines Section 15168).



Using standard conditions of approval could take the form of a simplified VMT exchange where specific mitigation actions in the General Plan EIR (which could be drawn from the VMT reduction strategies described in this study) are identified as part of a VMT mitigation menu. Individual project applicants would negotiate with the jurisdiction to select the 'menu items' best suited for their project. Those actions would be incorporated into the project's conditions of approval representing their contribution to lessening future VMT growth consistent with the general plan expectations. An example of this approach is used by the City of Roseville – see mitigation measure 4.3.1.⁹

8.3 Future Considerations

It has been acknowledged at various points in this report the many uncertainties related to VMT mitigation. Given that VMT is very new as a measure of transportation impacts under CEQA, there is substantial uncertainty about the legal and administrative requirements to create valid and well-supported mitigation strategies. Further, there continue to be major changes in how and when we travel, as a result both of the COVID pandemic and the continuing evolution of transportation-related technologies. All of these uncertainties merit ongoing awareness, coordination and planning by CCTA and its partners to make necessary adaptations to the VMT mitigation program, and to take advantage of emerging opportunities for cost-effective VMT mitigation. Examples of activities that CCTA and other agencies can take to facilitate this adaptation are listed below.

- Monitoring case law on VMT as a measure of transportation impact in CEQA, and adequacy of VMT mitigations, will be critically important. It is a truism that CEQA is part statute and part case law, and changes in case law can occur relatively quickly. CCTA can, on behalf of its member agencies, assist in tracking emerging case law and changes in statute that affect VMT mitigation.
- Several approaches to administratively implementing VMT mitigations have been discussed here (fees, exchanges, banks). At the time of this report, very few mitigation programs are in active operation. Given the number of lead agencies wrestling with this same issue around the state, novel approaches will undoubtedly be developed and implemented over time and CCTA and its partners can and should continue to learn from other agencies.
- Initially the VMT mitigation program in Contra Costa will be a voluntary program for CCTA member agencies. After successful implementation as a voluntary program, CCTA could consider transitioning to a mandatory program through incorporating it into the countywide Growth Management Program.
- As it currently stands, the Mitigation Fee Act limits fee revenues to be used only on capital investments. As described in this report, while there are some infrastructure-related VMT reduction strategies, many other strategies involve non-infrastructure expenditures such as operating transit services or funding programs that incentivize changes in travel behavior. In support of the state's policy emphasis on VMT reductions, CCTA could advocate for legislative changes to the Mitigation Fee Act to allow fee revenues to be used for a wider range of investment categories, such as transit operations.

⁹ https://cdn5-hosted.civiclive.com/UserFiles/Servers/Server_7964838/File/Government/Departments/Development%20Services/Planning/General%20Plan/Final%20General%20Plan%20EIR/City%20of%20Roseville%20EIR.pdf

- One positive outcome of COVID is the live experiment it has provided in finding substitutes for physically-present work, education, healthcare, shopping and other activities. We are already observing how those forced, short-term changes are evolving into voluntary, longer-term realities: hybrid workplaces, increased use of tele-medicine, remote learning and online shopping, etc. Opportunities to programmatically harness and enhance the use of “substitutes for travel” to reduce VMT should be explored.
- All of the research on VMT reduction potential used in this report is from the “before COVID” time period. Indications are that the pandemic and the subsequent changes in economic and social norms are likely to have long-term effects on choices about travel. For example, current evidence shows that transit ridership has been slow to return to pre-COVID levels in the Bay Area. CCTA and its partners should track continued post-COVID changes to travel, as well as newer research on VMT generation and reduction, and adjust VMT mitigation programs accordingly.
- While housing subsidy programs offer some intriguing possibilities for supporting people in living closer to their daily activities, more research, outreach and coordination will be needed for these programs to become integral parts of a VMT mitigation strategy. This would include identifying partner organizations (e.g., housing authorities or non-profits) who could help implement such programs and developing small-scale pilots to test the magnitude of subsidies necessary to achieve varying levels of participation and results. A well-designed pilot test could help to determine key program factors like cost of subsidies to households, program overhead costs, and VMT monitoring procedures.



Appendix A – VMT Mitigation Program Structures Factsheet

Appendix A: Project Factsheet

PURPOSE

VEHICLE MILES TRAVELED MITIGATION



PURPOSE OF CALIFORNIA'S SENATE BILL 743

On September 27, 2013, Governor Jerry Brown signed Senate Bill (SB) 743 into law and started a process that has fundamentally changed transportation impact analysis as part of California Environmental Quality Act (CEQA) compliance. SB 743 has goals related to **public health**, meeting **housing demand through infill development**, and **reducing greenhouse gas (GHG) emissions**. In order to encourage this shift, transportation impacts are now determined based on **vehicle miles traveled (VMT)**, rather than level of service (LOS) or other measures of traffic congestion.

By using VMT as a metric to determine transportation impacts, **development is encouraged in places where trips are short**. The close proximity of destinations in these places makes walking, bicycling, and transit viable and competitive with driving. As population and employment growth are attracted to these places, **the net effect over time is to reduce per-capita VMT and its adverse effects on the environment**.

HOW CEQA VMT MITIGATION WORKS TODAY

If a project causes a significant VMT impact, the project is required to mitigate to the fullest extent feasible. The number of feasible strategies for reducing VMT from an individual project is limited. Most of the on-site VMT mitigation strategies are highly dependent on who will occupy the buildings, which may not be known at the outset of a project and may change throughout the project's lifespan. The effectiveness of on-site VMT mitigation strategies is therefore difficult to quantify with a high level of confidence. The VMT mitigation strategies that can be quantified may still only offer limited VMT reduction potential.

HOW TO EXPAND CEQA VMT MITIGATION OPTIONS

A "program approach" to VMT mitigation expands the feasible VMT mitigation options to include off-site strategies that can extend from the project site neighborhood to regional in scale. These strategies may take the form of infrastructure expansion such as new bicycle facilities or programs/services that influence travel demand.

The establishment of such a VMT Mitigation Program is a high priority for California jurisdictions searching for effective mitigation approaches as lead agencies and project applicants work through the initial years of the transition to a VMT metric. CCTA has taken the lead on exploring the possibility in Northern California.

This VMT Mitigation Program Fact Sheet summarizes the possibilities, the outstanding questions, and some initial work currently underway.

PROGRAM OPTIONS

CCTA has identified a need to **EXPAND CEQA VMT MITIGATION OPTIONS** beyond the project site to achieve our sustainable transportation goals.

CCTA is exploring how this might work in practice through impact fees, exchanges, and banks.



DEFINITIONS

VMT

Vehicle Miles Traveled

Mitigation Program

Refers to the impact fee, exchange, or bank

Mitigation Action

Capital improvement projects, programs, services, or operations and maintenance efforts that are delivered through a mitigation program

Project

Development or transportation project requiring mitigation

VMT-based Impact Fees

- Allow a project applicant to **pay a fee** toward the cost of a set of VMT-reducing capital improvement projects that are sufficient to mitigate General Plan-level¹ VMT impacts

- Could include **a range of infrastructure projects**, consistent with the General Plan and CEQA expectations and designed to reduce VMT

- **May not achieve full VMT reduction** necessary to mitigate impact to a less than significant level

VMT Exchanges

- Allow a project applicant to **fund and/or implement a mitigation action** off a pre-qualified list or propose a new one

- Expand **mitigation actions beyond capital improvement projects** (i.e., increasing transit service frequency, operating a car sharing program, etc)

- **May not produce scalable VMT reductions** that would match project impact responsibility

VMT Banks

- Create a monetary value for VMT reduction such that a project applicant could purchase **VMT reduction credits**

- Create a **marketplace for VMT reduction** by establishing a bank administrator capable of pricing VMT reduction actions and adjusting those prices over time

- Provide certainty in development costs, scaled to project's impact responsibility, and **could allow for full impact mitigation**

¹ Fee programs may also be developed for other types of land use plans such as community plans and specific plans.

PROGRAM OPTIONS



AGENCY OVERSIGHT & FUNDING

VMT-based Impact Fees

VMT Exchanges

VMT Banks

Who pays who?

Project Applicant → Lead Agency

Project Applicant → Lead Agency
or
Project Applicant → Lead Agency → Exchange Mitigation Action
or
Project Applicant → Exchange Mitigation Action

Project Applicant → Lead Agency
or
Project Applicant → Lead Agency → Exchange Mitigation Action
or
Project Applicant → Exchange Mitigation Action

Who implements the mitigation action?

Lead Agency

Lead Agency or Project Applicant

Banks

PROGRAM CRITERIA & EFFICACY

What types of mitigation actions can be funded?

Capital improvement projects

Note: Some jurisdictions have incorporated transit service and Transportation Demand Management (TDM) strategies to their Capital Improvement Plans.

Capital improvement projects, programs, services, or operations & maintenance efforts

Capital improvement projects, programs, services, or operations & maintenance efforts

MONITORING

What is being evaluated?

Capital Improvement Plan implementation

Depends on how a project's impact and mitigation is structured in the EIR
May need to evaluate mitigation action implementation and/or VMT reduction performance over time

Depends on how a project's impact and mitigation is structured in the EIR
May need to evaluate mitigation action implementation, VMT reduction performance over time, and/or market price changes for VMT reduction over time

Who evaluates the mitigation action?

Lead Agency

Lead Agency

Lead Agency, Bank, or other designated third party

How frequently does evaluation occur?

Fee program costs are updated annually and five year checks are mandatory in the statute

Dependent on how a project's impact and mitigation is structured in the EIR

Regularly—possibly every year

CEQA COMPLIANCE

What is the CEQA mitigation potential?

May allow for full mitigation for projects consistent with a General Plan for which the fee program was designed to mitigate a VMT impact in the General Plan EIR

May allow for full mitigation depending on rigor of data collection and analysis, but depends on availability and lifespan of mitigation actions

May allow for full mitigation but depends on the VMT reduction performance of Bank strategies and market conditions affecting prices over time

GEOGRAPHY, DURATION & EQUITY

Three key topics to be addressed through this project include: Defining the right geographic scale and boundary for a mitigation program, understanding a project applicant's required duration of participation, and understanding the equity-related impacts and trade-offs with respect to VMT reduction effectiveness.

Appendix B – Stakeholder Engagement Plan

Memorandum

Date: October 15, 2021
To: Matt Kelly and Stephanie Hu, CCTA
From: Julie Morgan and Sarah Peters, Fehr & Peers
Subject: **VMT Mitigation Framework Task 1.3: Draft Stakeholder Outreach Plan**

WC21-3806

The Contra Costa Transportation Authority (CCTA) is developing a regional framework to mitigate Vehicle Miles Traveled (VMT) impacts associated with new development and transportation infrastructure. The resulting VMT Mitigation Program will support CCTA member jurisdictions as they make land use and transportation decisions that reduce reliance on single-occupant vehicles. To complete this work, CCTA has engaged a consultant team, led by Fehr & Peers, and will conduct in-depth engagement with project stakeholders.

This memorandum defines the VMT Mitigation Framework project's priorities for engaging stakeholders and technical advisors, defines the role of the Project Advisory Committee (PAC), identifies important stakeholders, and describes how the PAC will be engaged at specific points in the study.

Engagement Priorities

Technical advisors and other stakeholders will be engaged throughout the project to guide the development of the VMT mitigation program. Regular input from those people will ensure that the proposed program can be implemented using a reasonable level of effort and resources and will advance public and private goals for future growth in Contra Costa County. Their input will be critical to:

- Defining the program's scope, scale, and administrative processes
- Identifying environmental mitigation measures that are effective at reducing VMT and feasible to implement
- Determining public agency roles in administering the program and implementing mitigations



- Exploring and attempting to mitigate potential legal risks associated with the proposed program
- Discussing how program benefits and burdens can be equitably distributed

Project Advisory Committee

The PAC will provide input and guidance from two key groups of stakeholders:

- Implementers: Representatives of organizations who would implement the proposed program or who have expertise with similar programs.
- Collaborators: External stakeholders whose work and interests would be affected by the proposed program.

PAC members will be engaged at regular meetings where project team members will present progress and receive feedback. The PAC will also review and comment on draft documents prepared by the consultant team.

PAC Members

PAC members will represent a wide variety of viewpoints, including public agencies, private developers, and advocates, as described below.

Lead Agencies

Staff from public agencies who commonly serve as lead agencies on CEQA documents in Contra Costa County and who could be responsible for implementing a VMT mitigation framework will be consulted to ensure that the proposed program would be technically robust, feasible, and consistent. This group could include staff from CCTA, Contra Costa County, and the cities/towns of Contra Costa.

State and Regional Partners

Staff from public agencies with relevant expertise on transportation, land use, and VMT will be invited to share their perspectives on large-scale mitigation programs and lessons learned from similar efforts. This group could include staff from California Air Resources Board, Caltrans, and possibly regional bodies such as MTC and ABAG.

Public Service Providers

Transit agencies and providers of other transportation services will be consulted to identify opportunities to partner on VMT mitigation strategies and to identify potential challenges that could arise from the proposed program. This group could include staff from BART, AC Transit, WestCAT, County Connection, Tri-Delta Transit, and 511 Contra Costa.



Developers and Environmental Professionals

Land use and development professionals whose projects would be eligible to participate in a VMT mitigation program will be invited to share their interests and concerns about such programs and to provide guidance on CEQA compliance and lessons learned from a user perspective. This group could include representatives from the Building Industry Association and other residential and commercial developers active in Contra Costa County, CEQA and land use attorneys, and consultants and public agency staff who prepare and review environmental documents.

Advocacy organizations

Organizations that work in Contra Costa County and throughout the Bay Area to promote equitable and sustainable planning and policy will be invited to share their priorities for and concerns about a VMT mitigation program. Participants may include representatives from TransForm, Greenbelt Alliance, SPUR, and Save Mount Diablo, among others.

Engagement Approach

The PAC will be engaged throughout the project using a combination of virtual and in-person techniques, depending on current health guidance and group member availability and preferences.

The PAC will meet approximately every two to three months to provide input on program approach and to review presentations and provide feedback on draft deliverables. Draft documents will be provided to PAC members at least one week in advance of these meetings via a Microsoft SharePoint site, which will allow members to collaborate on document review and comments, and/or via email if needed. PAC members will be given time after each meeting to provide comments on draft documents.

PAC Meetings

PAC meetings are described below and summarized in the attached schedule.

- **Project Introduction (PAC Meeting #1):** The first project meeting will introduce the study to PAC members and provide a baseline level of understanding related to VMT mitigation fee programs, VMT mitigation exchanges, and VMT mitigation banks. The meeting will include presentations from the project team and brief breakout discussions to define successful outcomes for the recommended program. The meeting is planned for September 2021.
- **PAC Meeting #2: Program evaluation criteria:** PAC members will brainstorm evaluation criteria during their second meeting, planned for late fall/early winter 2021.
- **PAC Meeting #3: Review draft evaluation criteria:** PAC members will provide feedback on draft evaluation criteria during their third meeting, tentatively planned for early 2022.

Matt Kelly, Stephanie Hu
October 15, 2021
Page 4 of 5



- **PAC Meeting #4: Define program options:** Project team will present and collect initial feedback on the four program options; tentatively planned for early Spring 2022.
- **PAC Meeting #5: Evaluate program options:** PAC members will provide additional feedback on the program options and discuss the results of the project team's evaluation of the four program options.
- **PAC Meeting #6: Present administrative draft program:** The project team will present the administrative draft program and Technical Justification memorandum and respond to initial questions from the PAC.
- **PAC Meeting #7: Review administrative draft program:** The project team will solicit detailed feedback from PAC about the administrative draft program and Technical Justification memorandum.
- **PAC Meeting #8: Present final draft program:** The project team will present the final draft program to the PAC, respond to questions, and solicit initial feedback.
- **PAC Meeting #9: Present final program:** The project team will present the final program to the PAC.

Appendix C – Presentations and Notes from Project Advisory Committee Meetings

VMT Mitigation Framework for Contra Costa

Responding to the Challenge Of VMT Reduction under
CEQA

September 2021



WELCOME!

INTRODUCTION

Agenda

2:00-2:10 pm

Introduction

2:10-2:20 pm

Project Goals

2:20-2:35 pm

Technical Background

2:35-3:00 pm

VMT Mitigation Approaches

3:00-3:05 pm

Break

3:05-3:30 pm

Breakout Sessions

3:30-3:50 pm

Report Back

3:50-4:00 pm

Next Steps

INTRODUCTION

Project Background

CCTA role

- Lead agency for study of framework options
- Supporting land use and transportation planning through Growth Management Program
- Supporting member jurisdictions in implementing SB 743

Project history

- 2018-2019: CCTA member jurisdictions support regional solution for VMT mitigation
- 2020: Regional VMT mitigation program included in TEP
- 2020: Study funded through Caltrans Sustainable Communities Transportation Planning Grant
- 2021: RFP issued and consultant team selected

INTRODUCTION

Study Objectives

- 1) Develop an approach for mitigating VMT increases from land development and transportation projects in Contra Costa
- 2) Develop a framework for a VMT Mitigation Program and determine whether an Impact Fee, Mitigation Bank, or Exchange would be most appropriate
- 3) Position Contra Costa lead agencies to be compliant with changes to CEQA transportation-related impacts under SB 743

Challenges of VMT Mitigation

FRAMEWORK PROJECT GOALS

Challenge: Who Decides?

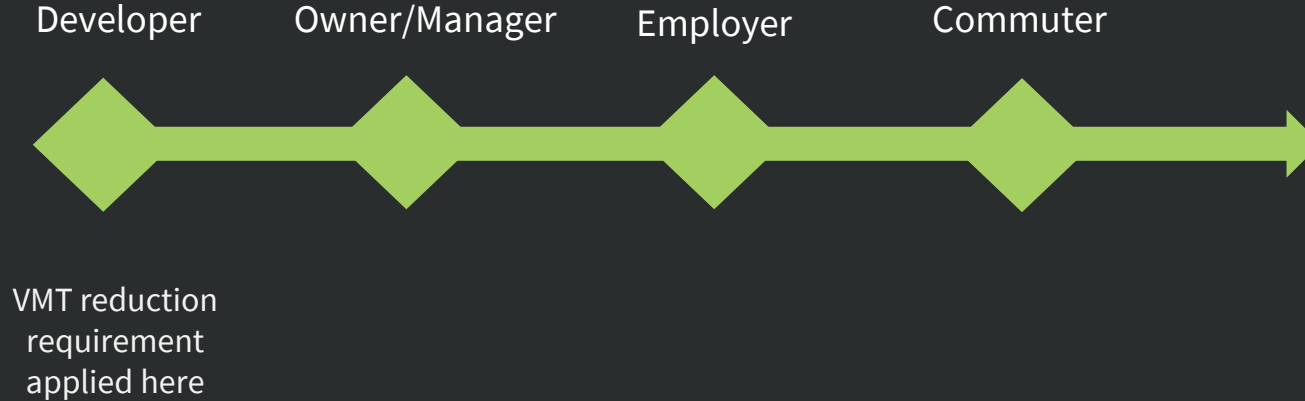
Commercial Property



FRAMEWORK PROJECT GOALS

Challenge: Who Decides?

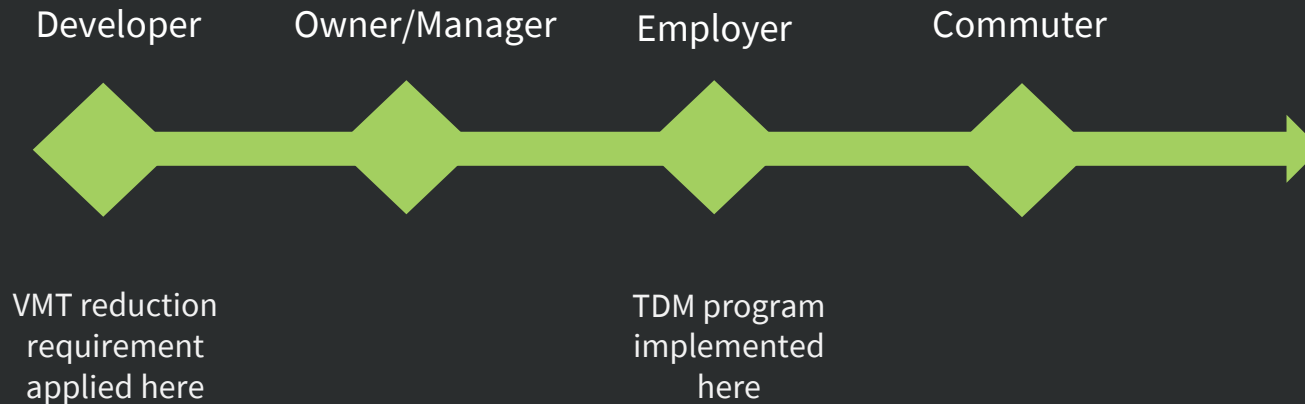
Commercial Property



FRAMEWORK PROJECT GOALS

Challenge: Who Decides?

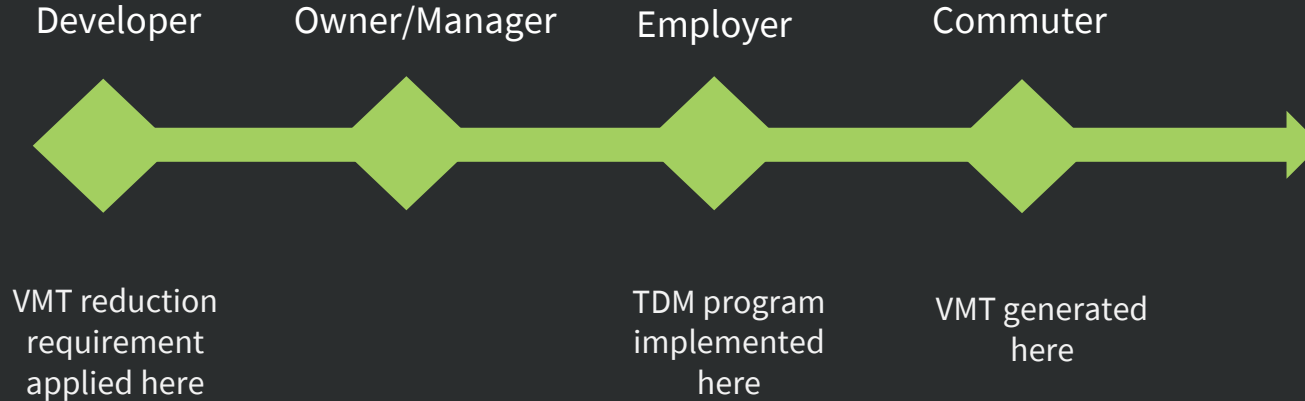
Commercial Property



PROJECT OVERVIEW

Challenge: Who Decides?

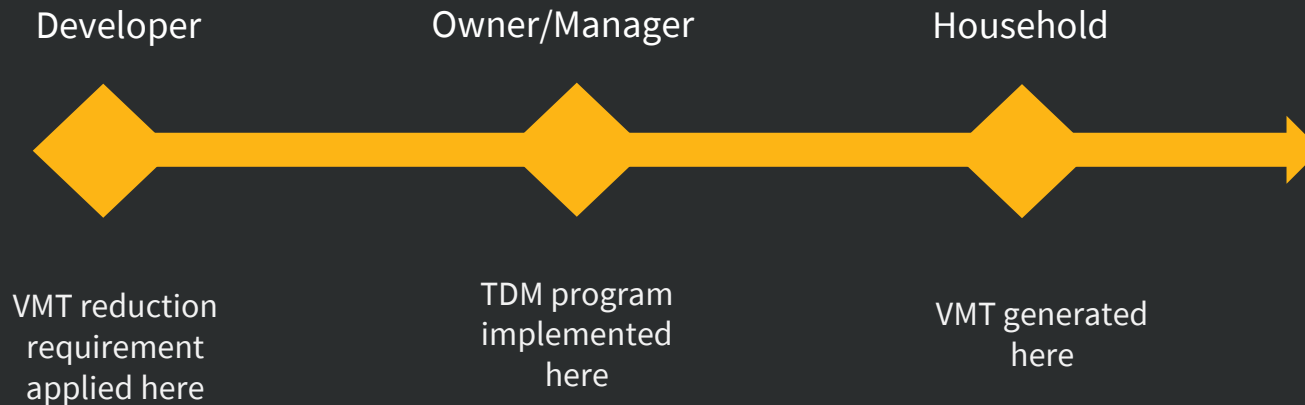
Commercial Property



FRAMEWORK PROJECT GOALS

Challenge: Who Decides?

Residential Property



Challenges

- The commitment to reduce VMT is far upstream from the behavior that actually changes VMT
- VMT is conceptually simple – but calculating it and tracking it consistently over time is complicated
- CEQA requires that impacts be mitigated to the extent feasible, and that conclusions be supported by substantial evidence
- Project-specific VMT reduction strategies have limited effectiveness and are dependent on local/regional context

Responses

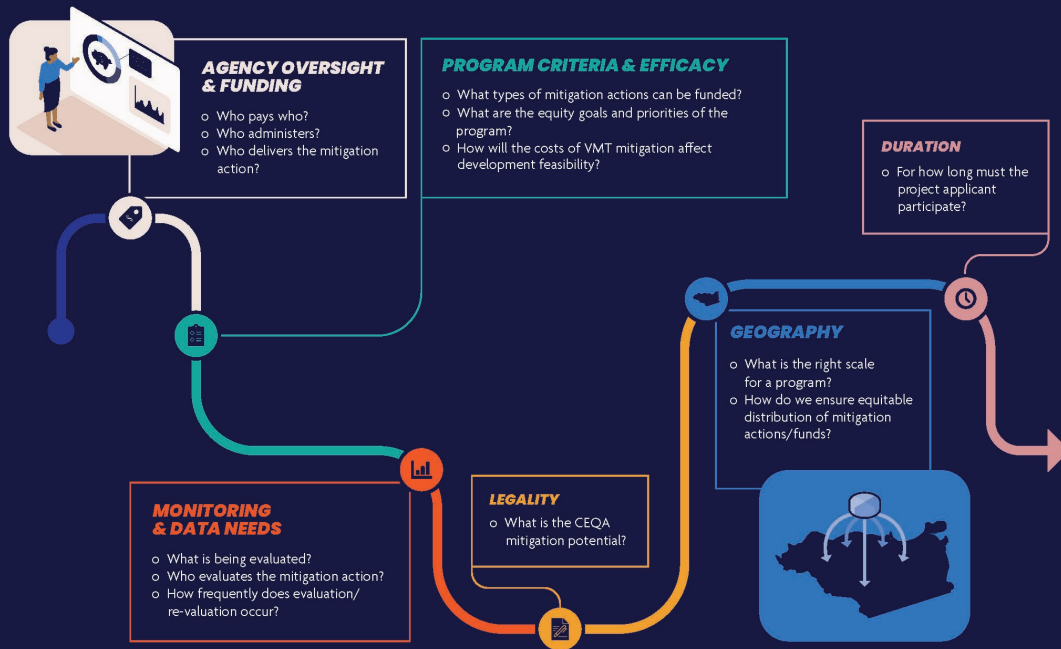
- Develop approach to mitigate VMT impacts of land development and transportation infrastructure projects using best available evidence
- Explore varied options for program's legal basis, effectiveness, costs, and administrative framework
- Get frequent input from important stakeholders to test program's efficacy and feasibility

FRAMEWORK PROJECT GOALS

Study Process

KEY QUESTIONS IN DEVELOPING A VMT MITIGATION FRAMEWORK

In the process of developing the VMT Mitigation Framework, we'll need to ask some important questions:



FRAMEWORK PROJECT GOALS

Project Advisory Committee

As a member of the PAC, we are hoping that you can:

- Share your perspective on the needs for a VMT Mitigation Program in Contra Costa
- Provide guidance on how the program should be designed and evaluated
- Review deliverables and help shape the VMT Mitigation Program
- Spread awareness of the program in communities across Contra Costa County



FRAMEWORK PROJECT GOALS

PAC Inputs

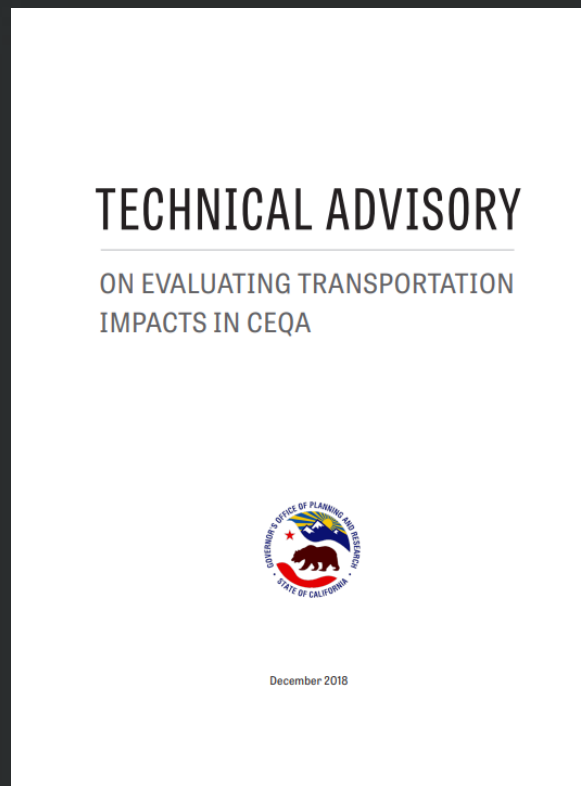
- Brainstorm Evaluation Criteria – Late 2021
- Solidify Evaluation Criteria – Early 2022
- Define Program Options – Spring 2022
- Evaluate Program Options – Summer 2022
- Review Draft Program – Late 2022
- Review Final Program – Early 2023

Technical Background

TECHNICAL BACKGROUND

SB 743

SB 743 aligns the metrics used to determine CEQA impacts in the Transportation category with **state GHG goals**



TECHNICAL BACKGROUND

VMT Trends



TECHNICAL BACKGROUND

Mitigation Approaches

What's Feasible?

On-Site Mitigation Options

- Change the physical design or location of the project
- Implement Transportation Demand Management (TDM) measures

Challenges

- Most projects can accommodate only limited changes in design or location while still being feasible and achieving their purpose and need
- Effectiveness of TDM programs depends on building tenants, which are often unpredictable and change over time

TECHNICAL BACKGROUND

Mitigation Approaches

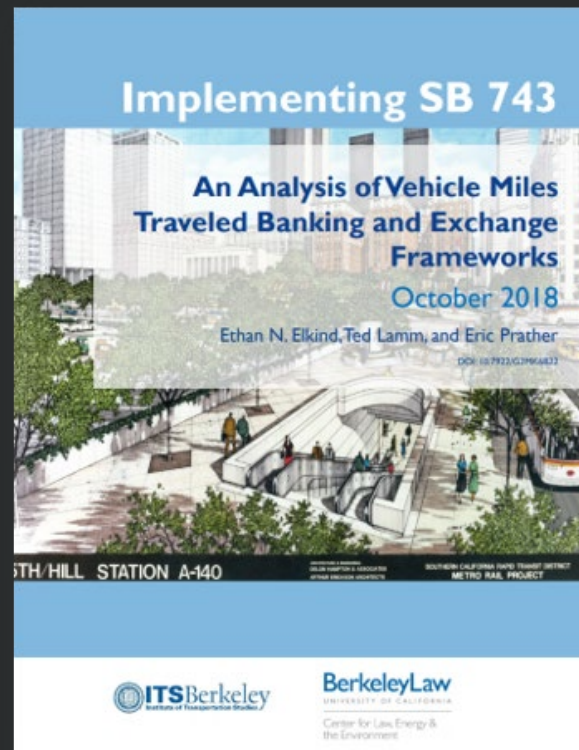
What's Feasible?

Off-Site Mitigation Options

- Increased transit services and/or reduced fares
- Bicycle and pedestrian infrastructure and services
- Carshare/bikeshare programs

Challenges

- Must comply with legal requirements, which are untested in this context
- Affordability and ability to monitor effects over time



VMT Mitigation Approaches: Impact Fees, Banks & Exchanges

Interactive Poll

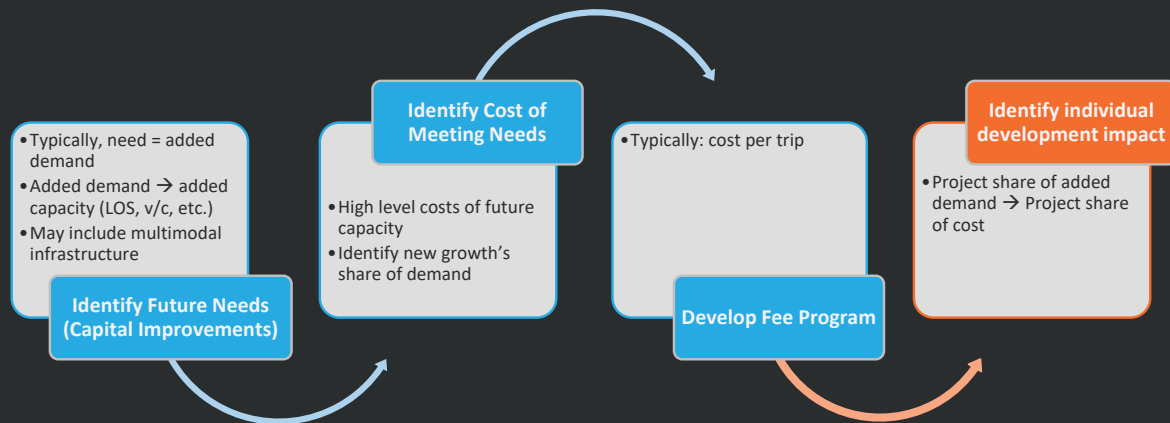
How familiar are you with the idea of a VMT mitigation program such as a bank or exchange?

Similar concepts: cap and trade, wetlands mitigation banking

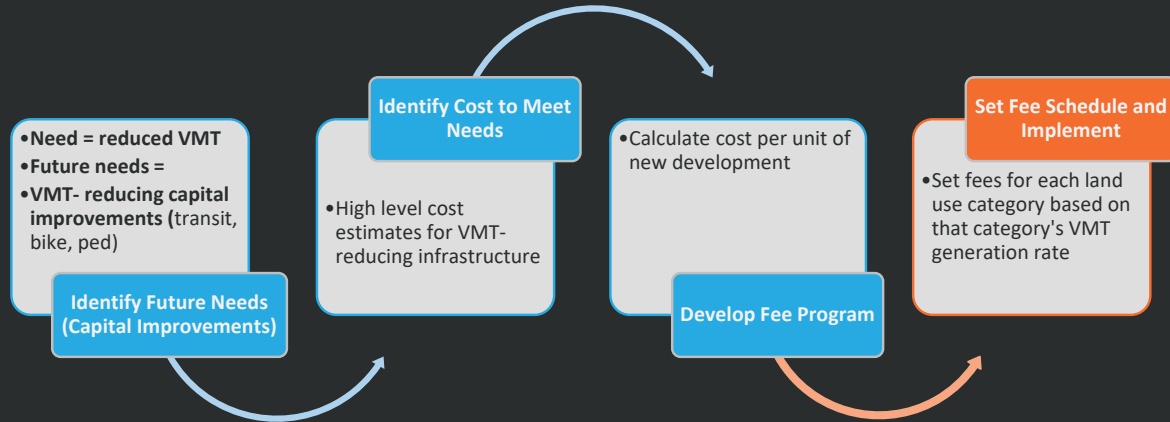
VMT MITIGATION APPROACHES

VMT Impact Fees

How do **impact fees** work?



What if we made **impact fees** VMT-based?





VMT Mitigation Banks

create a **monetary value** on VMT Reduction such that a developer could purchase VMT reduction **credits**.



VMT Mitigation Exchanges

require the developer to **fund and/or implement** VMT-reducing **infrastructure or programs** off a pre-qualified list, or propose a new one.

VMT Bank & Exchange



Benefits

- ⊕ **Expands mitigation options** to include a longer list of infrastructure projects, cost for programs, operations, and maintenance
- ⊕ **Creates the potential to quantify VMT reductions** which would allow for projects to be fully mitigated
- ⊕ **Allows for mitigation projects that serve multiple jurisdictions** creating the potential for more equitable distribution of infrastructure projects/programs
- ⊕ **Takes advantage of economies of scale** increasing the potential for VMT reduction by allowing for regional-scale infrastructure projects and programs
- ⊕ **New efficiencies may be created** by pursuing these models

Challenges

- ⊖ **Increases mitigation costs for developers** because it increases feasible mitigation options
- ⊖ **Requires extensive data analysis and demonstration of 'additionality'** with potential privacy concerns if there is a third-party administrator
- ⊖ **Geographic distribution** of mitigation projects and programs can become political
- ⊖ **Requires more investment in agency oversight** and administration due to larger-scale, regional focus
- ⊖ **Unprecedented with unknowns** such as the required timeframe for mitigation

VMT Bank & Exchange



⊕ **Projects can be fully mitigated**
under CEQA due to the valuation of VMT

⊖ **Projects may not be able to claim a less than significant impact**
depending on rigor of data collection and analysis of mitigation actions

⊕ **Multiple agencies can deliver mitigations**
not just the lead agency, which could greatly expand
the infrastructure project/program list

⊖ **Mitigation actions are limited to a pre-qualified list determined by the lead agency.** A developer can propose a new infrastructure project or program subject to lead agency verification.

⊕ **Added certainty to development costs**
compared to an exchange

⊖ **Potential mismatch**
between mitigation need and infrastructure improvements and programs

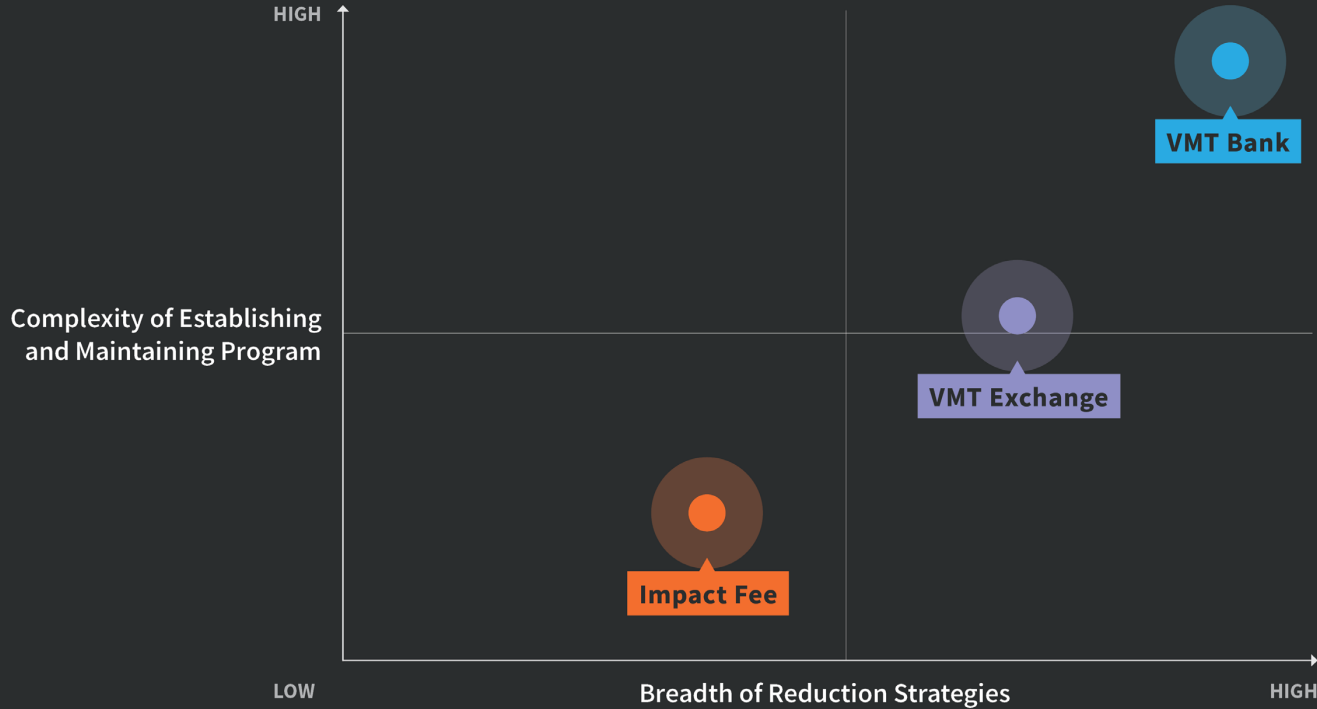
⊖ **Requires strong nexus**
to determine VMT credits for each mitigation/action
and to assign a monetary value to VMT

⊕ **Reduces nexus obligation**
compared to an impact fee program or bank

⊖ **Very complex to establish and administer**
and therefore time consuming and expensive

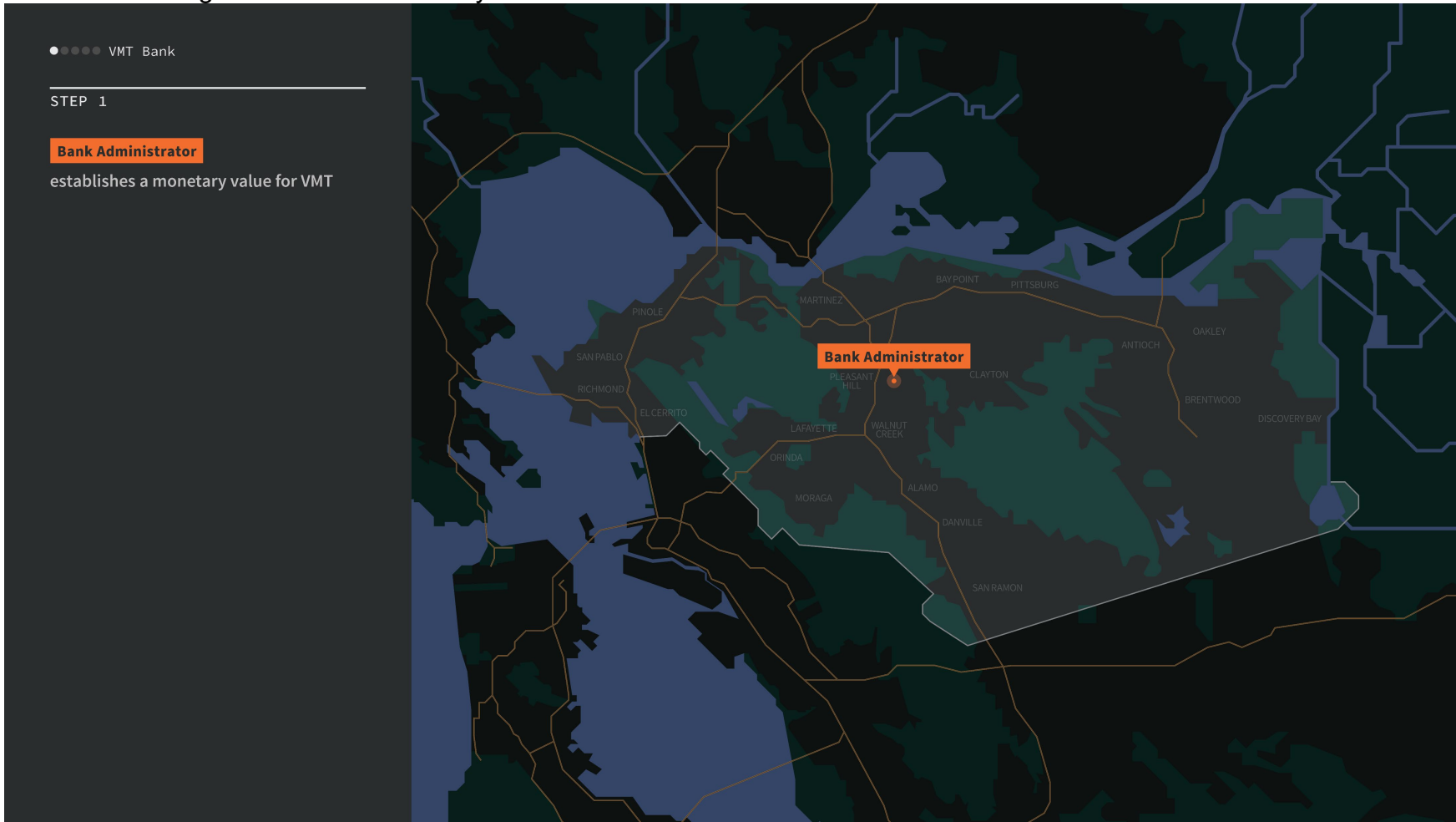
⊕ **Less complex** than a bank

VMT Bank & Exchange



VMT MITIGATION APPROACHES

VMT Bank

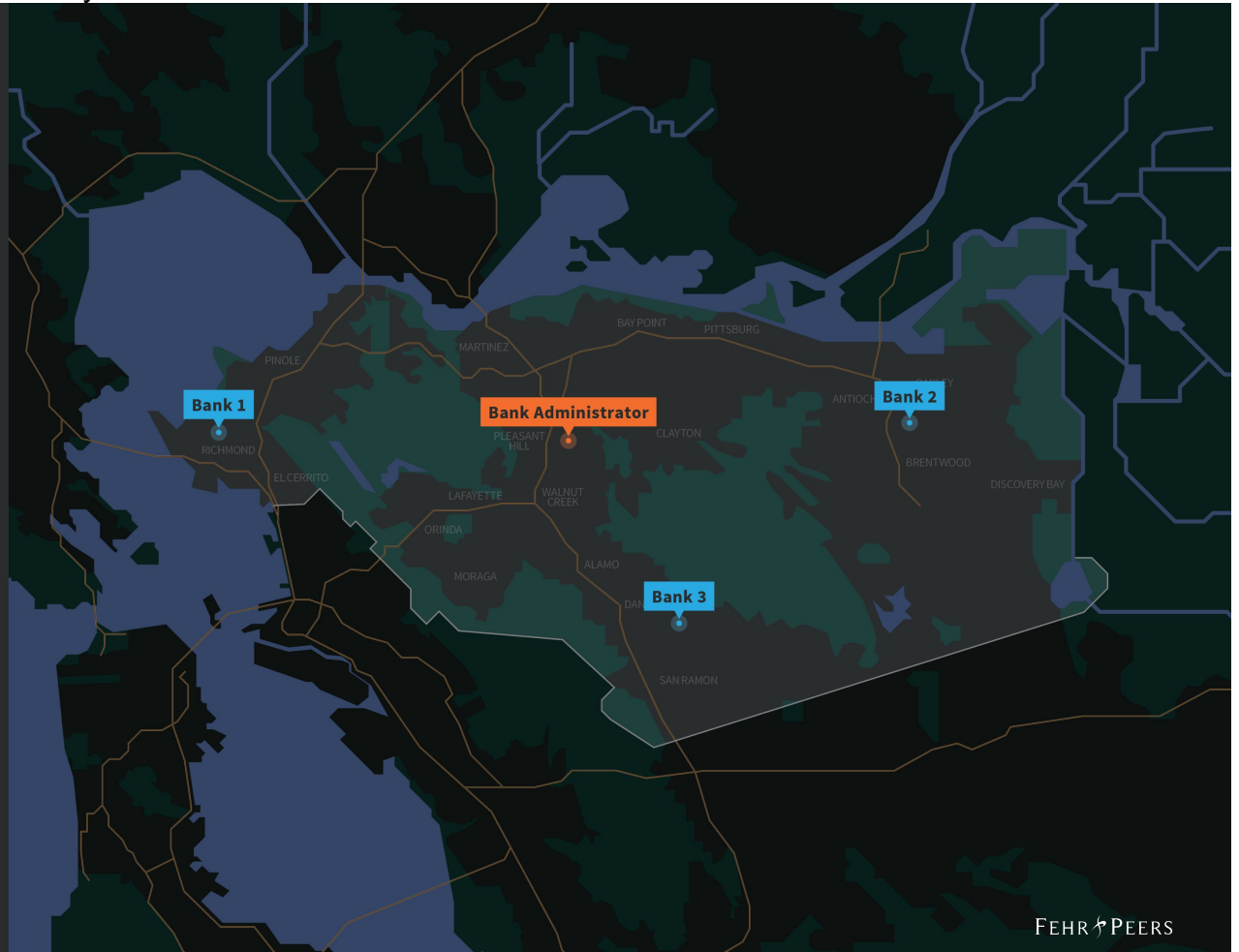


●●●● VMT Bank

STEP 2

Agencies & institutions evaluate their infrastructure improvements and programs for ADDITIONALITY and VMT reduction potential.

They then apply with a **Bank Administrator** to become a **Bank**

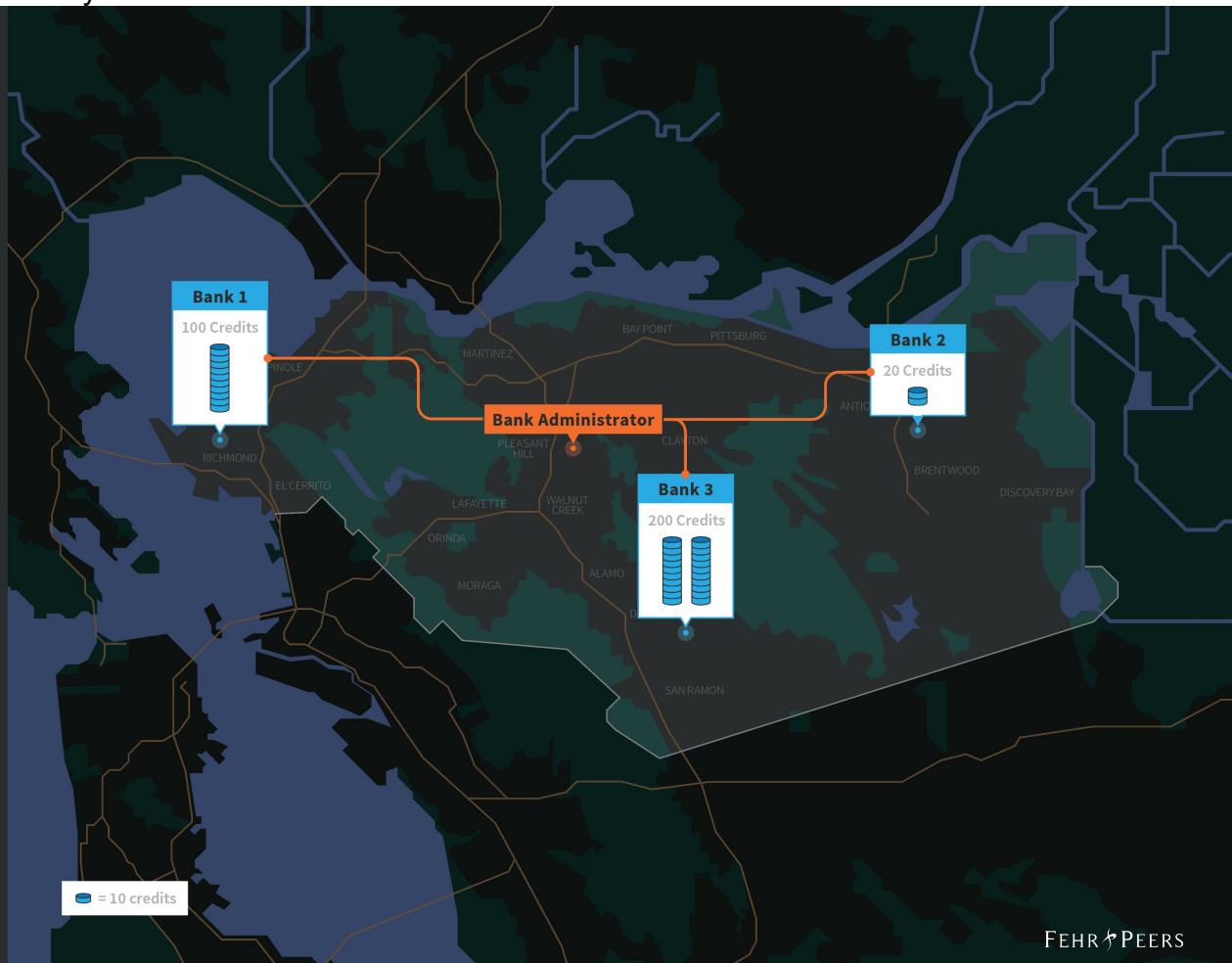


●●●● VMT Bank

STEP 2

Agencies & institutions evaluate their infrastructure improvements and programs for ADDITIONALITY and VMT reduction potential.

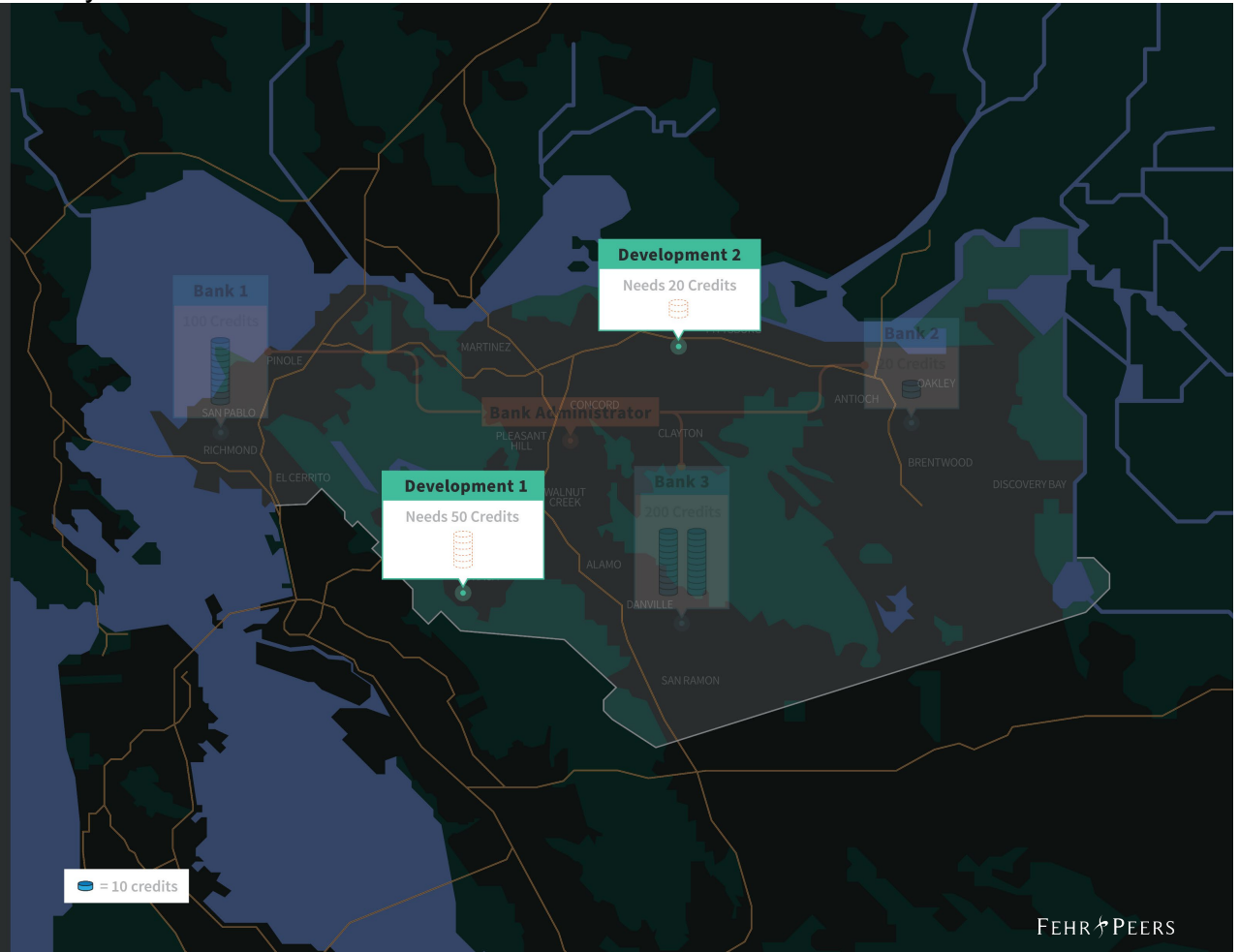
They then apply with a **Bank Administrator** to become a **Bank**, and are assigned a certain number of **CREDITS** to sell based on their VMT reduction potential.



●●●● VMT Bank

STEP 3

Developers determine their project's mitigation needs.



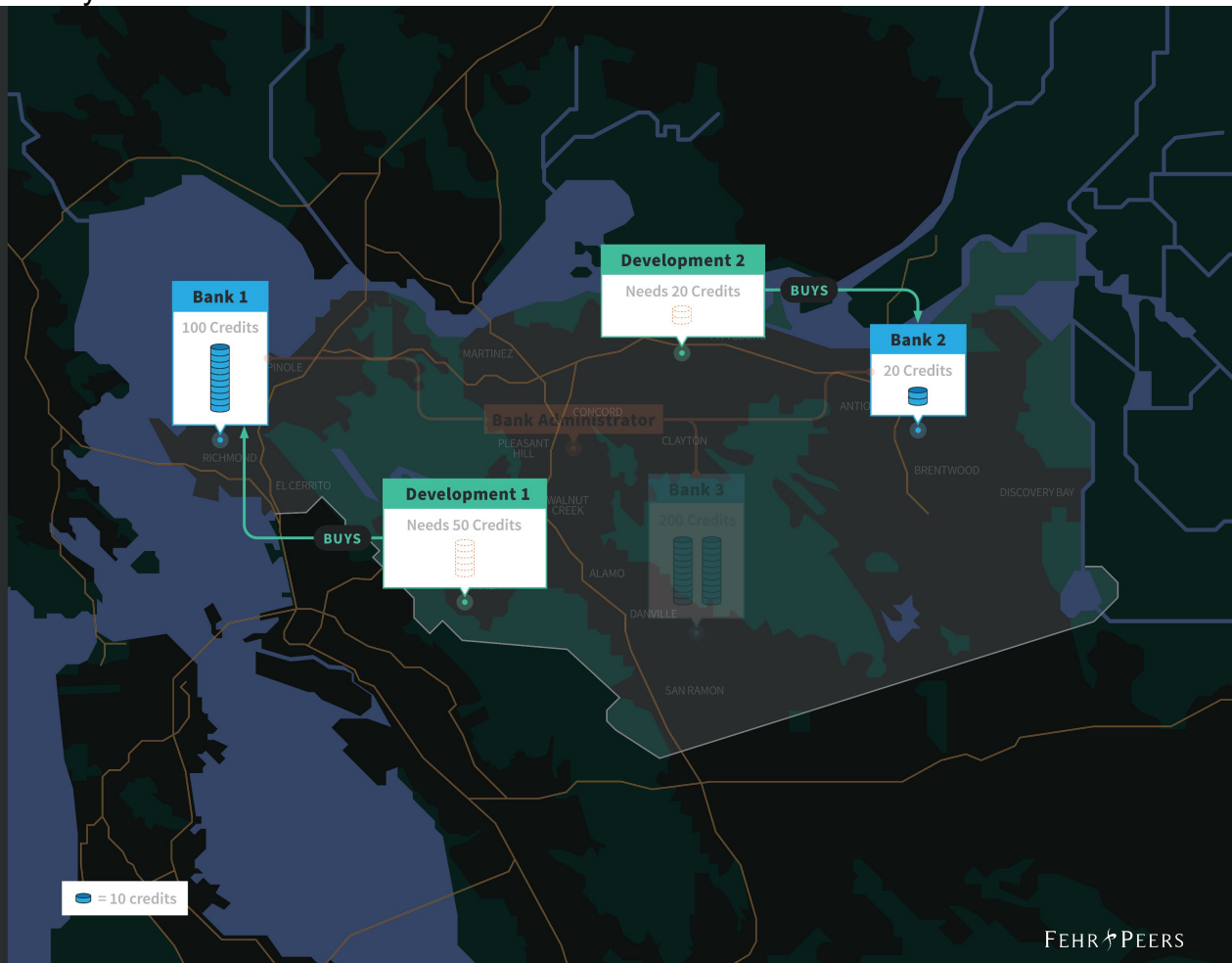
●●●● VMT Bank

STEP 3

Developers determine their project's mitigation needs.

They then **BUY** those **CREDITS** on the open market.

→ The **Developers** cost is determined by the current value of a VMT credit.
(ESTABLISHED IN STEP 1)

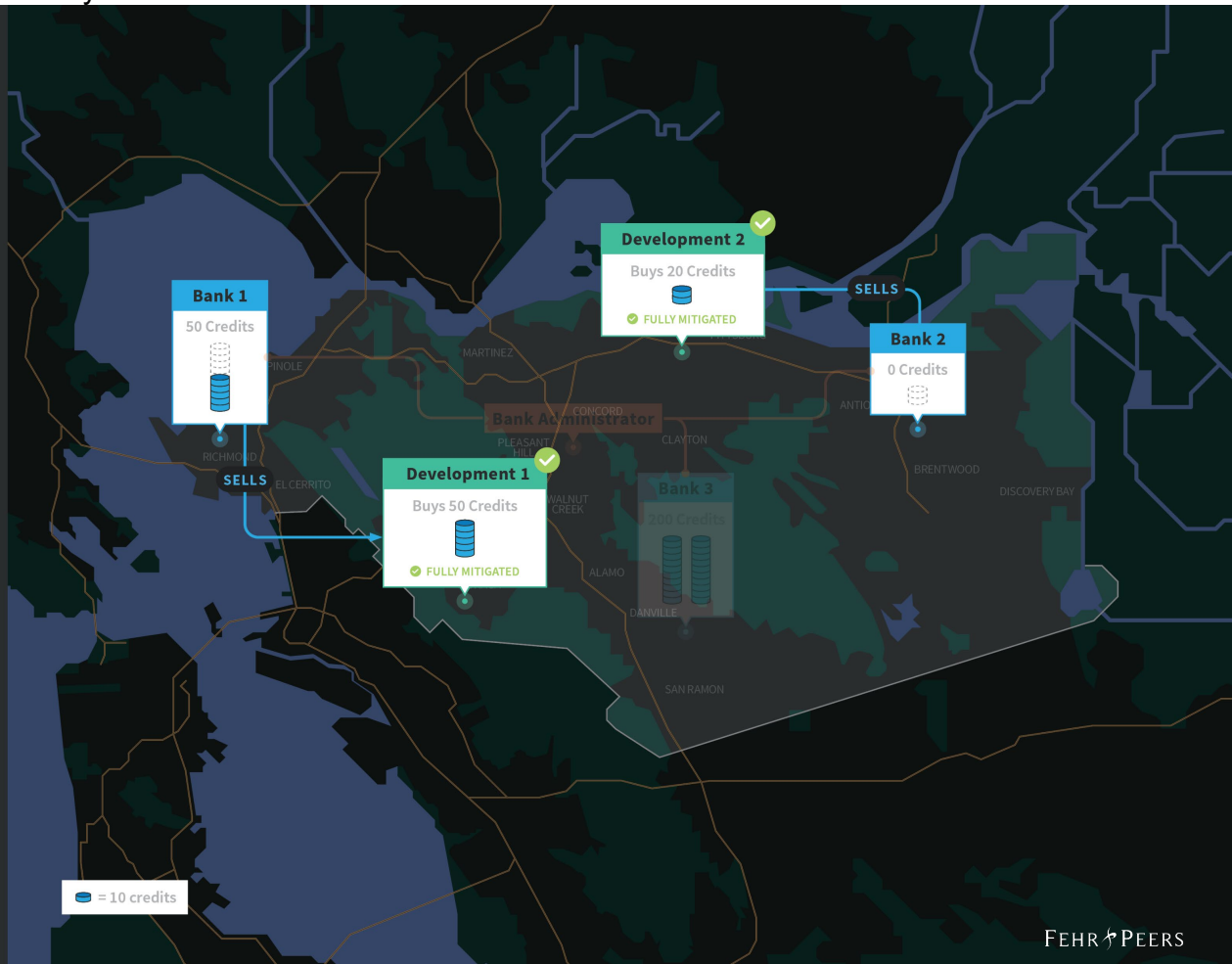


●●●● VMT Bank

STEP 4

Banks SELL those CREDITS to **Developers** to mitigate their projects.

Developers are able to fully mitigate their projects and **Banks** use their revenue to implement their infrastructure improvements and programs. **Banks** total number of credits available to sell are reduced.

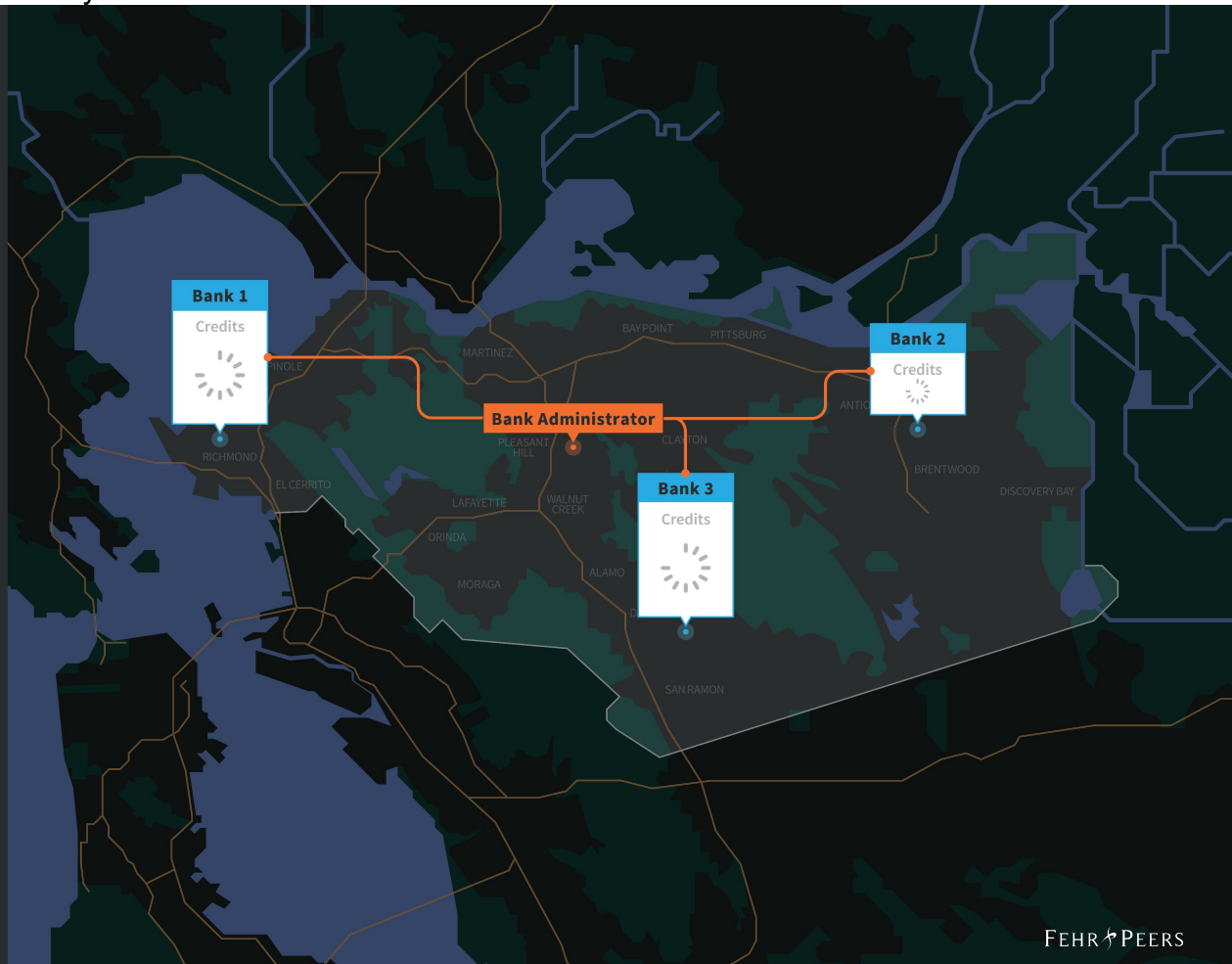


●●●● VMT Bank

STEP 5

Bank Administrator re-assesses the value of VMT on a rolling basis (likely every 1-2 years). The value of VMT is based on current demand.

Banks re-apply for VMT credits.



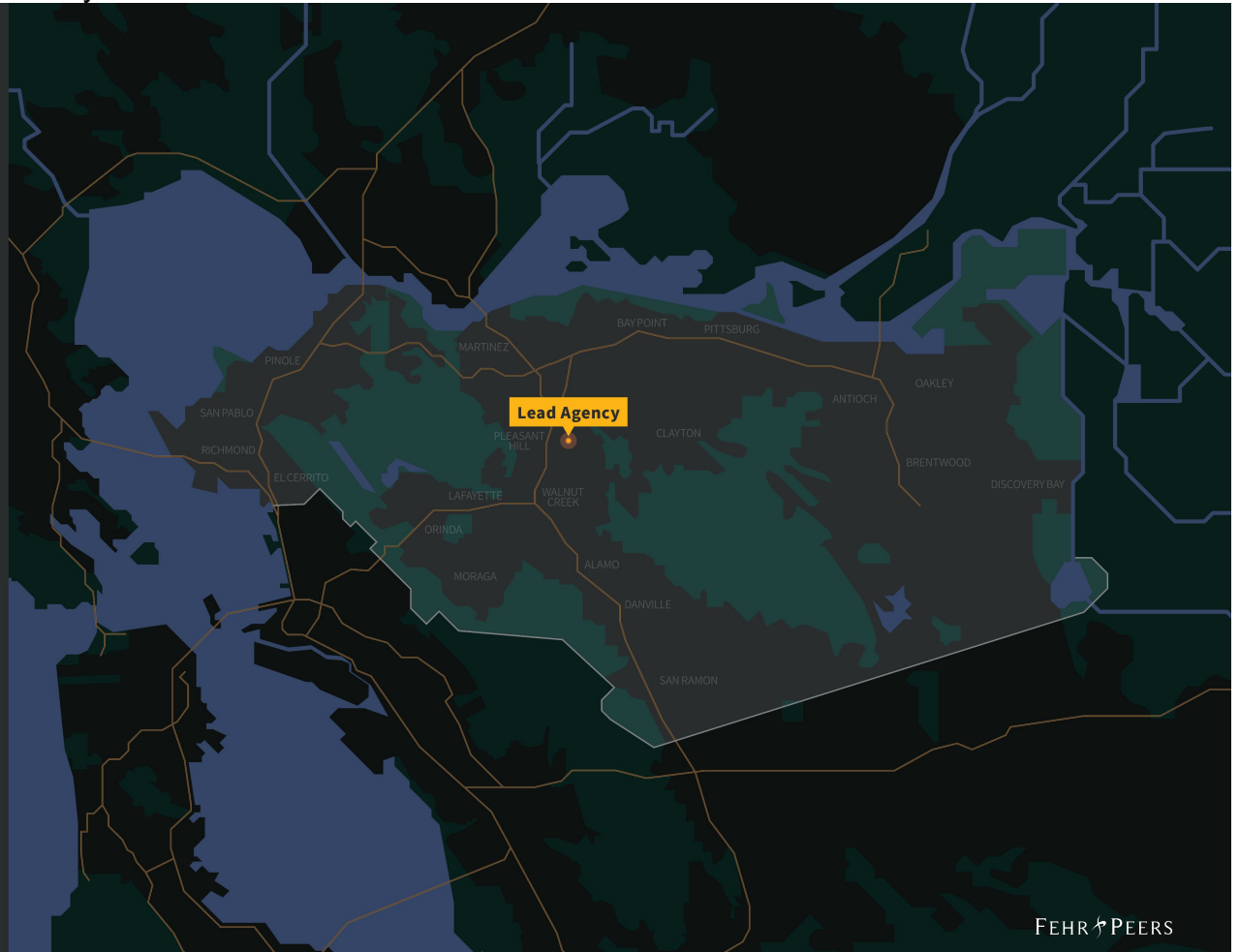
VMT MITIGATION APPROACHES

VMT Exchange

● ● ● VMT Exchange

STEP 1

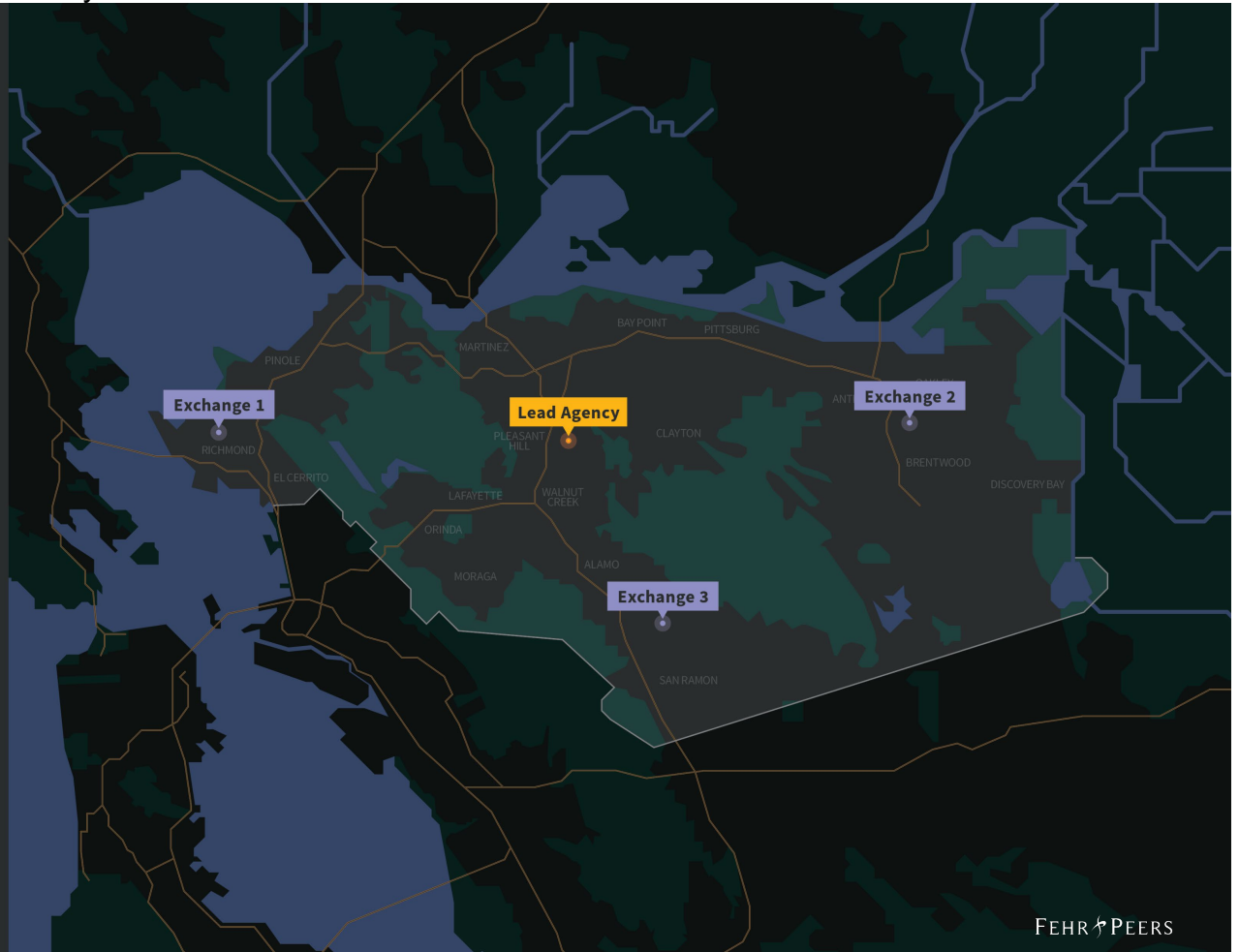
A **Lead Agency** is established.



● ● VMT Exchange

STEP 1

Lead Agency establishes a list of VMT-reducing infrastructure improvements and programs.

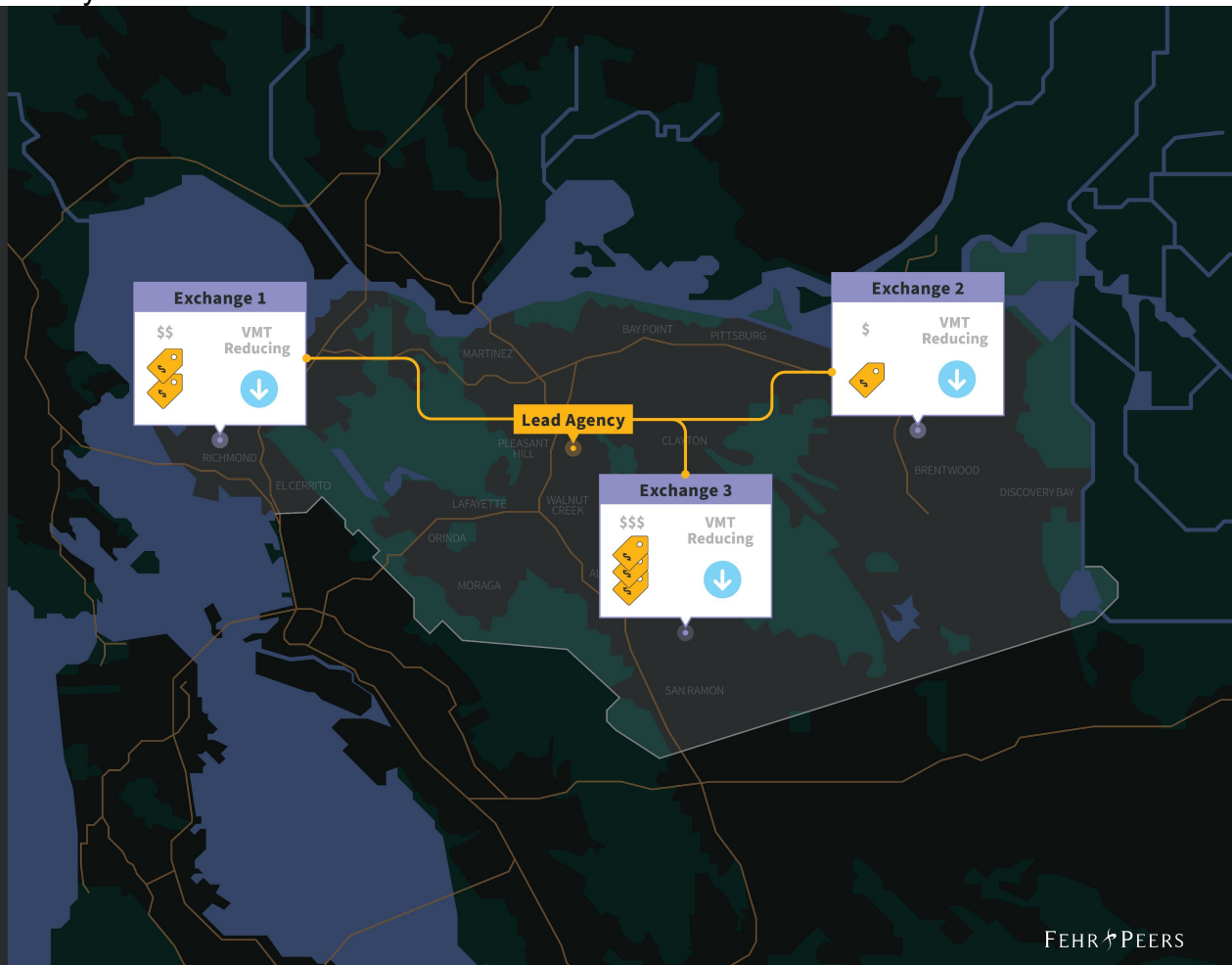


● ● ● VMT Exchange

STEP 1

Lead Agency evaluates each **Exchange** to confirm ADDITIONALITY and cost to implement.

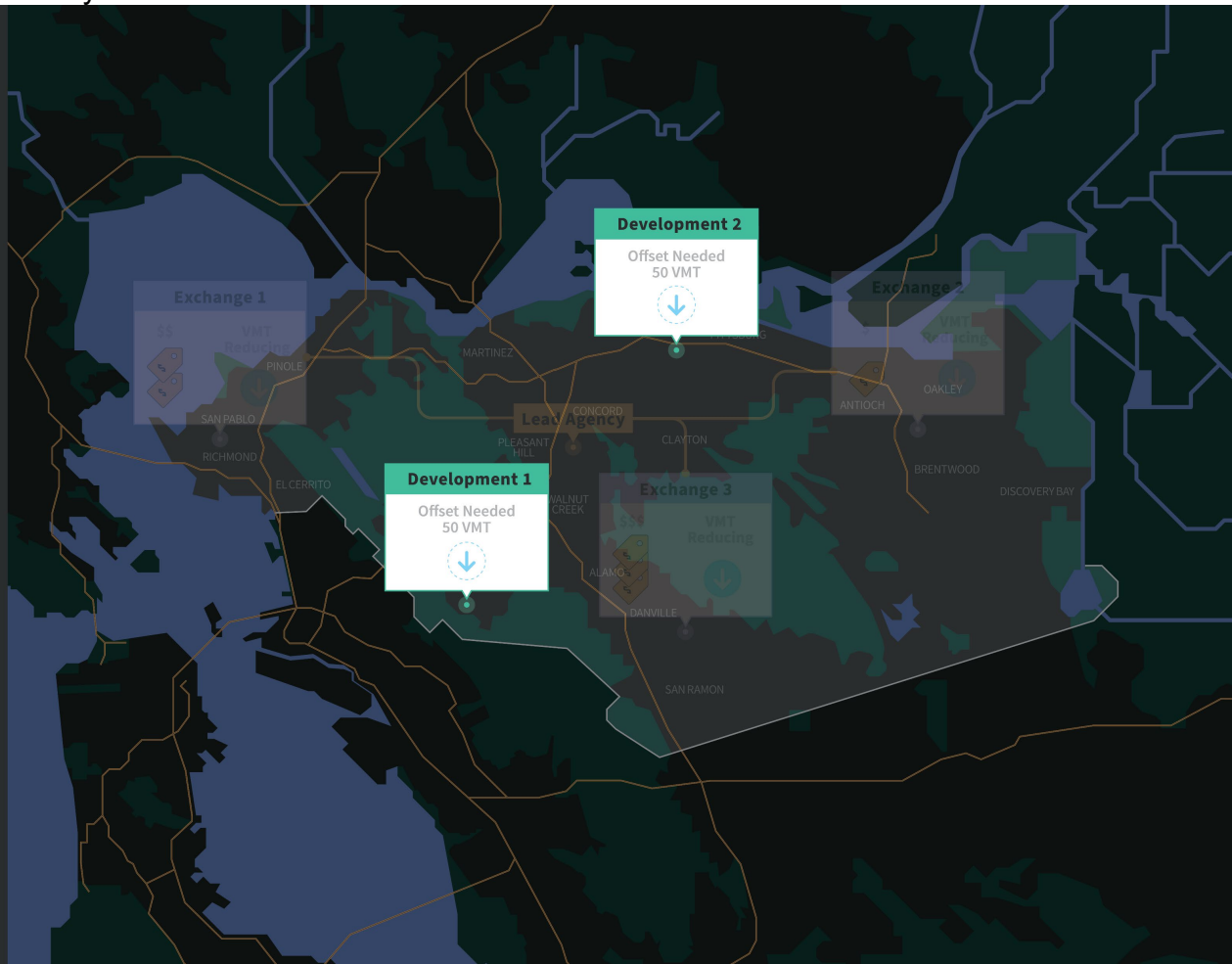
Depending on the rigor of analysis, each **Exchange** may be analyzed to quantify its **VMT reduction potential**.



●● VMT Exchange

STEP 2

Developers determine their project's mitigation needs.

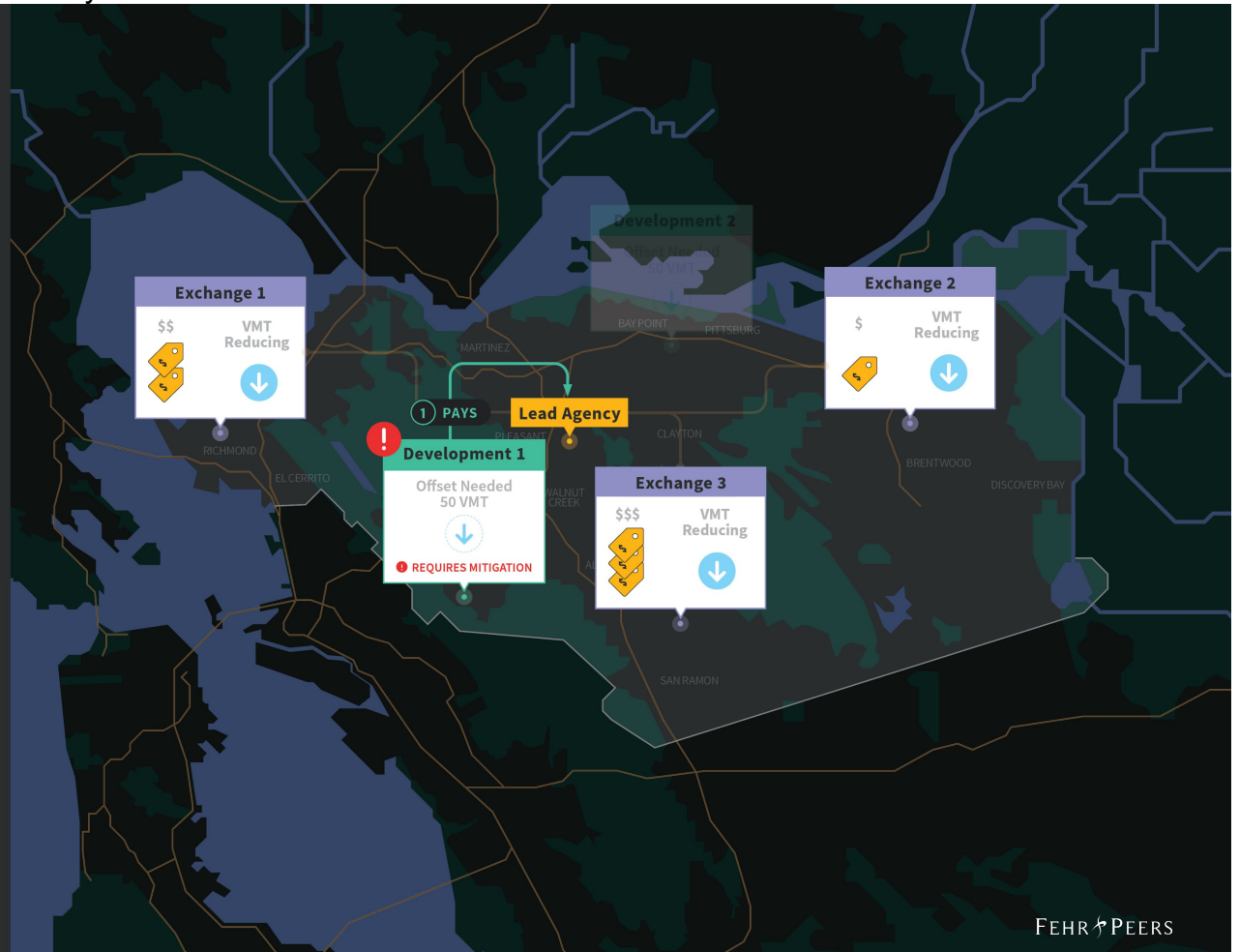


●● VMT Exchange

STEP 2

Developers determine their project's mitigation needs.

The first **Development** in the door gets their choice of all **Exchanges** and will likely choose the one that offers the lowest-cost option for VMT reduction.



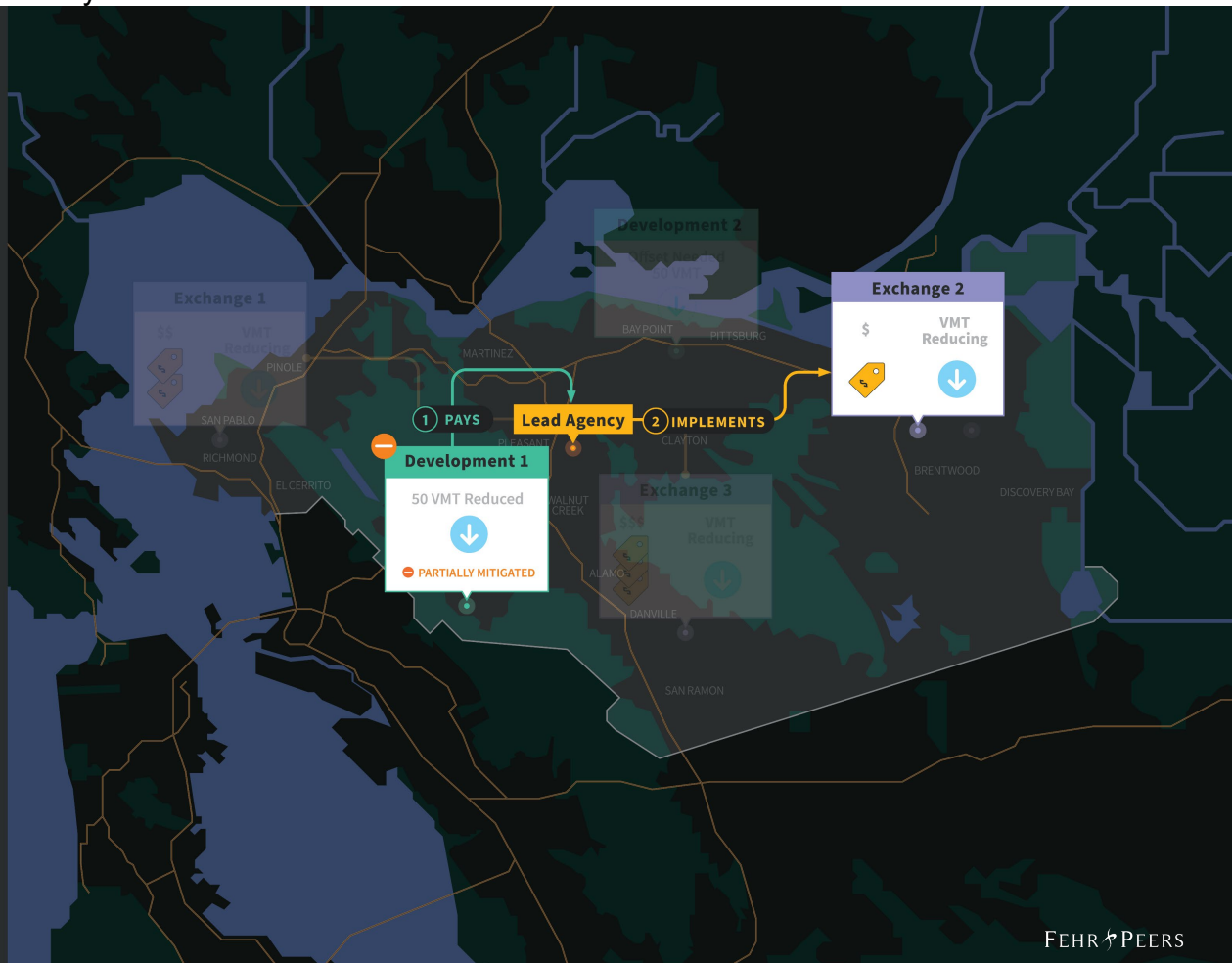
●● VMT Exchange

STEP 2

Developers determine their project's mitigation needs.

They then **PAY** for an **Exchange** that meets their needs and the **Lead Agency** **IMPLEMENTS** the **Exchange**.

With the implementation of the **Exchange**, the development can at least **partially mitigate** their project.



●● VMT Exchange

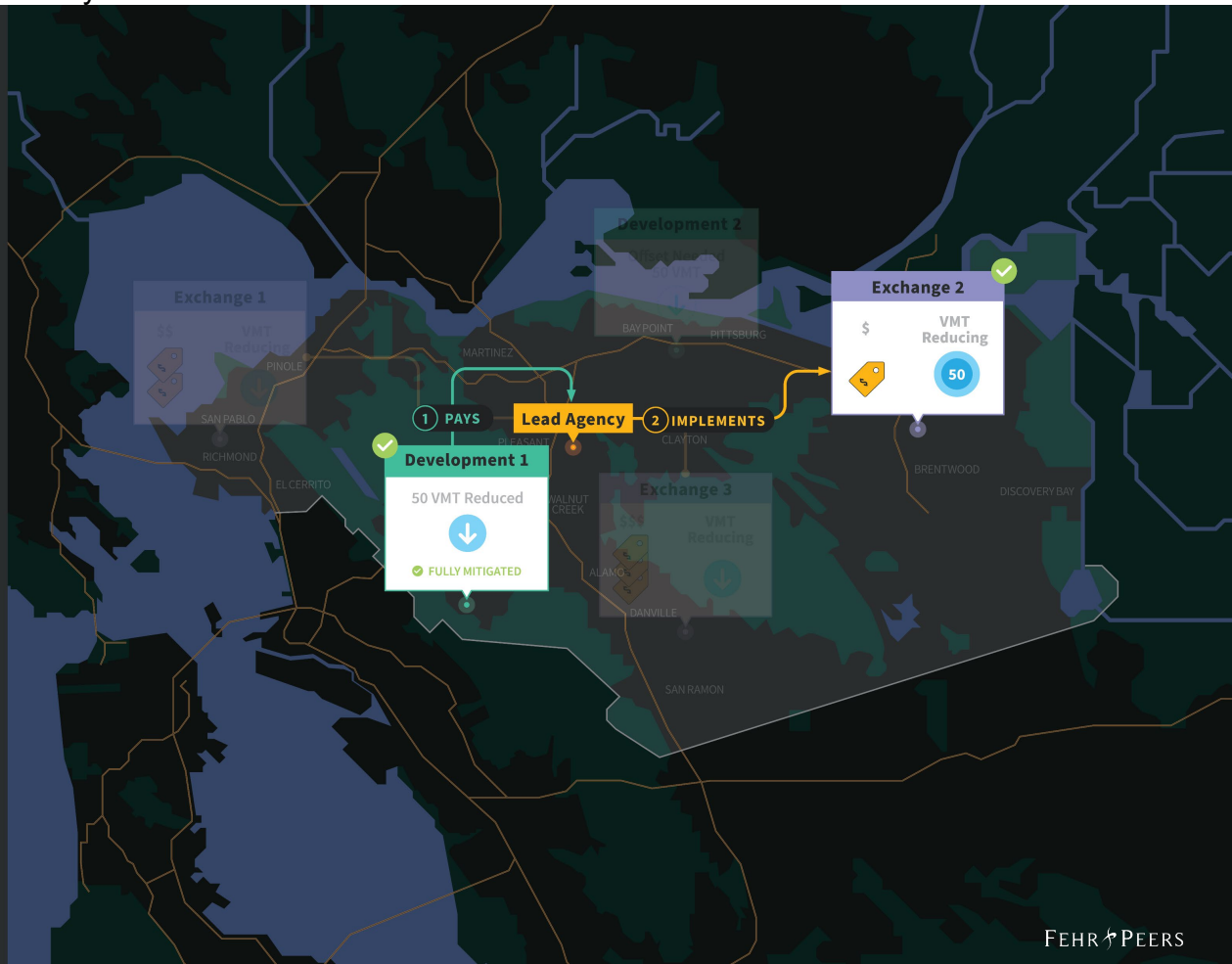
STEP 2

Developers determine their project's mitigation needs.

They then **PAY** for an **Exchange** that meets their needs and the **Lead Agency** **IMPLEMENTS** the **Exchange**.

With the implementation of the **Exchange**, the development can at least **partially mitigate** their project.

If the **Lead Agency** has completed the full data analysis required to quantify the VMT reduction potential of the **Exchange**, then the development can leverage that analysis to **fully mitigate** their project.



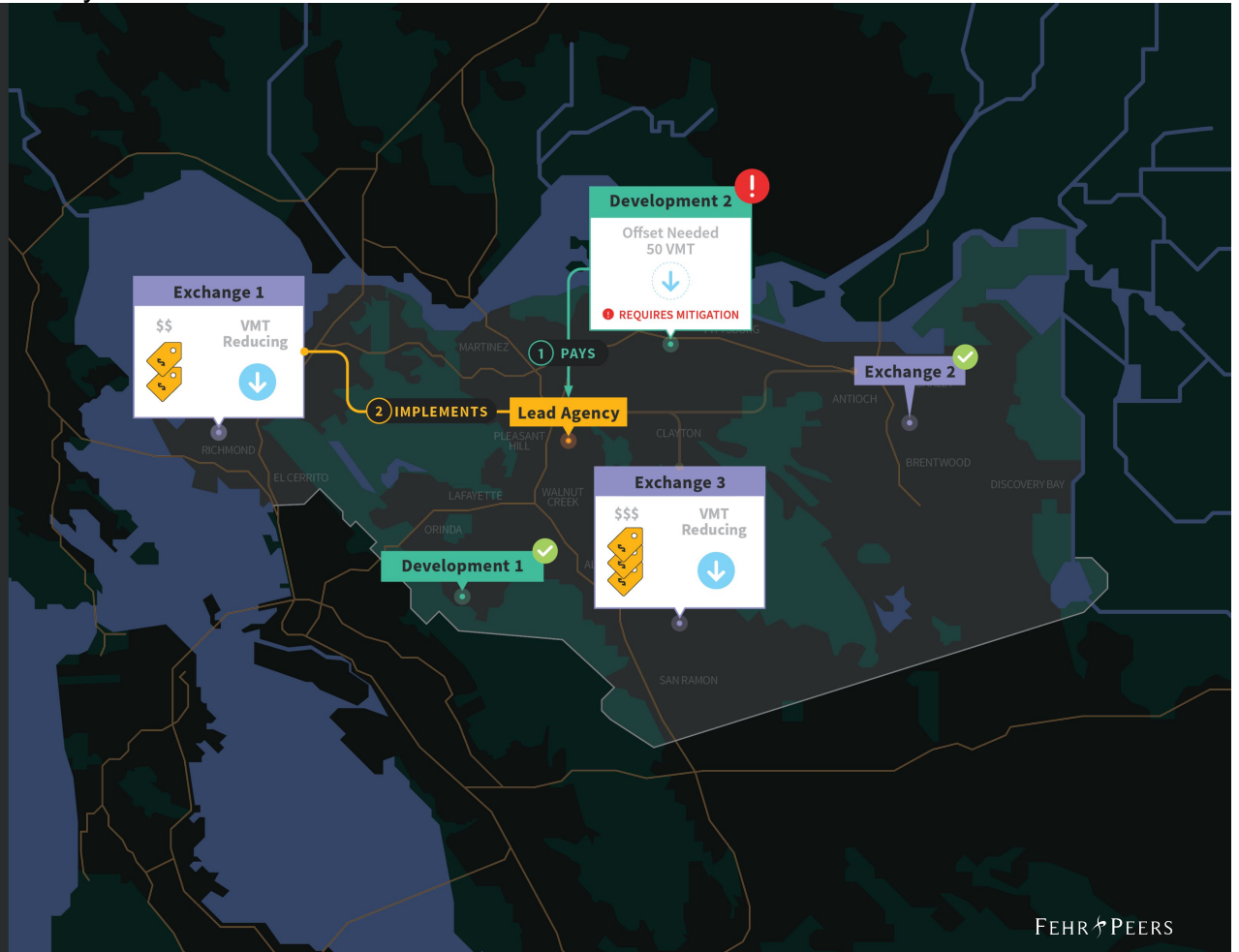
●● VMT Exchange

STEP 2

Developers determine their project's mitigation needs.

Then **PAY** for a VMT-reducing program that is available through the Exchange.

→ **Developers** cost is determined by the price of the VMT reduction available.



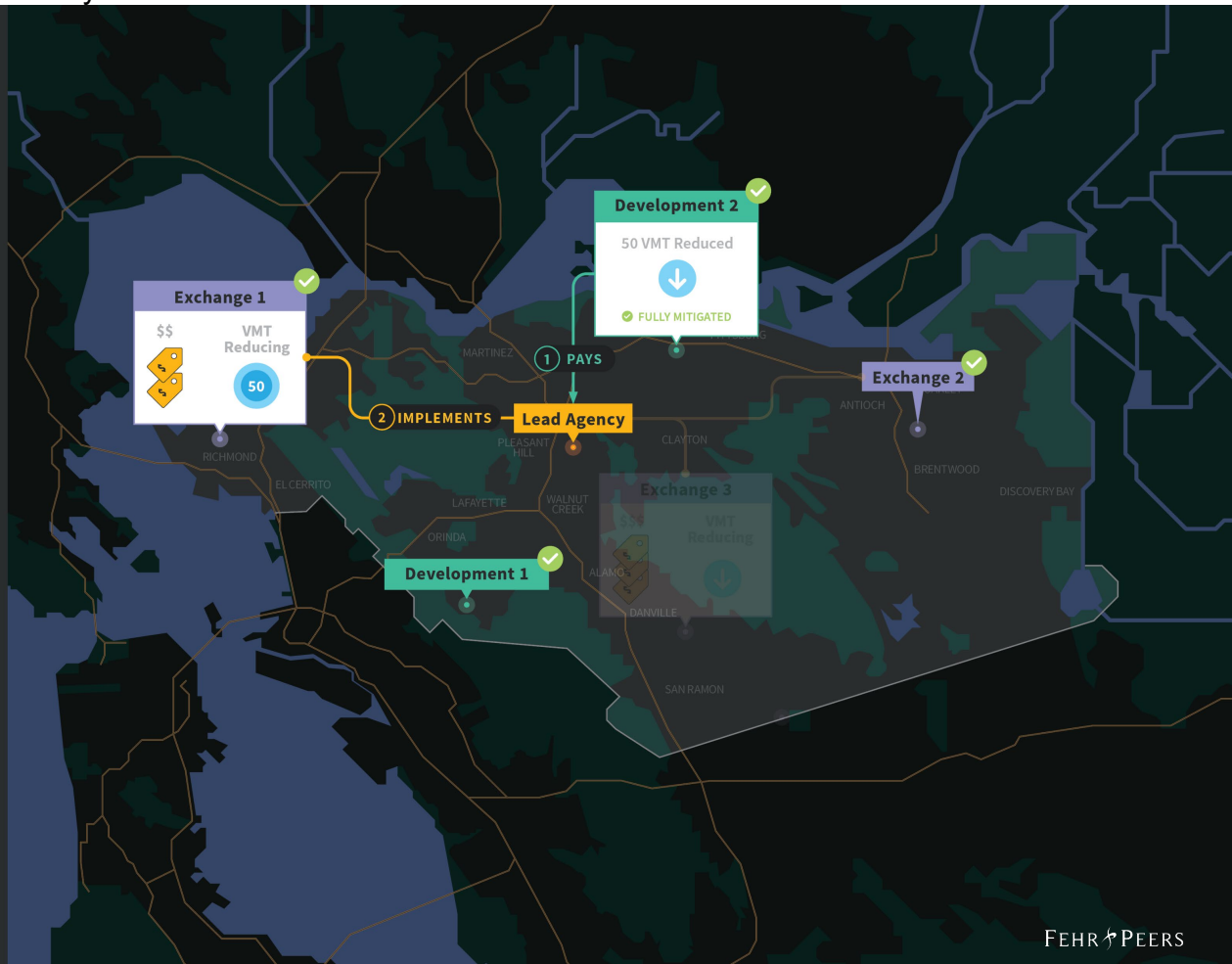
●● VMT Exchange

STEP 2

Developers determine their project's mitigation needs.

Then **PAY** for a VMT-reducing program that is available through the Exchange.

→ **Developers** cost is determined by the price of the VMT reduction available.



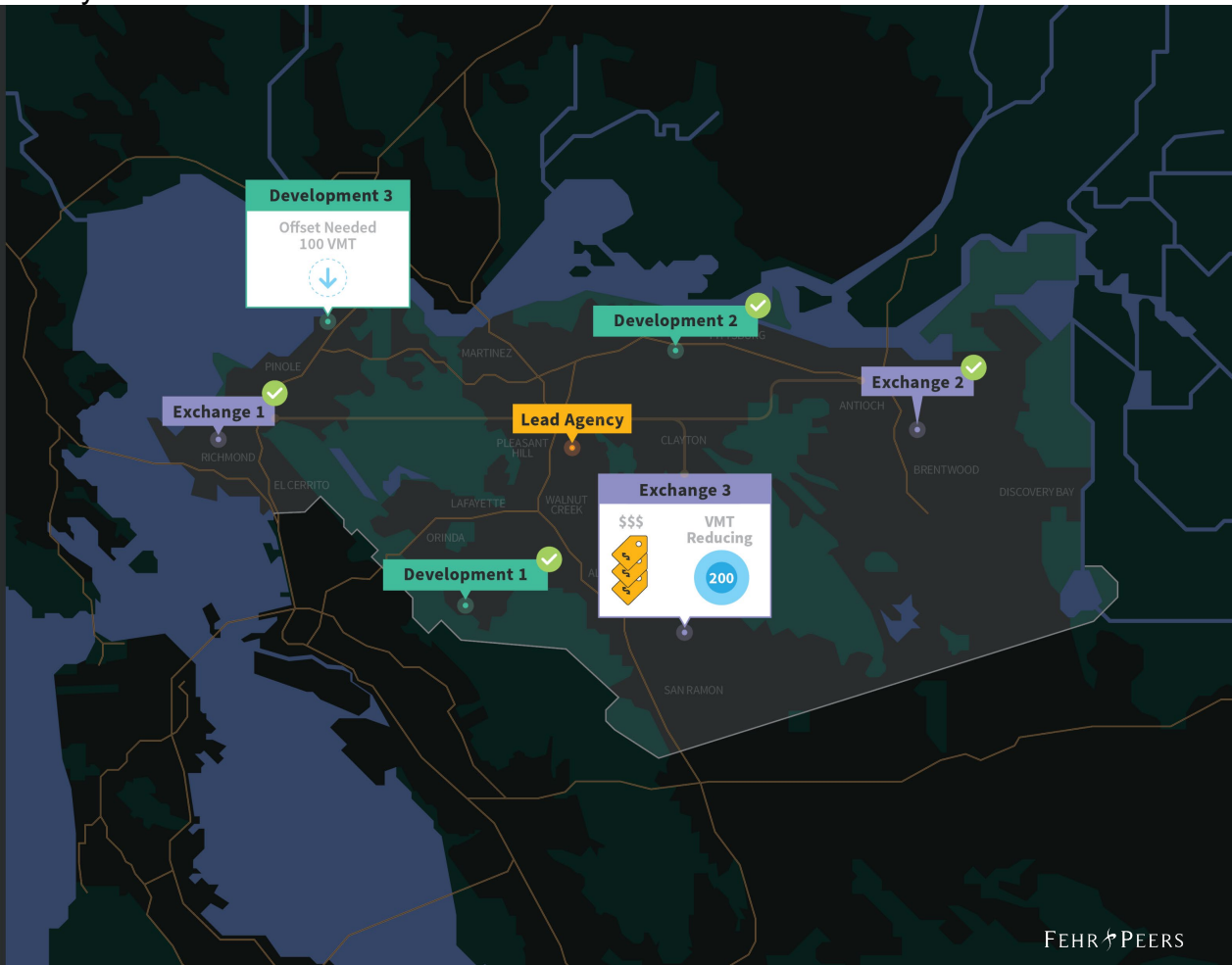
●● VMT Exchange

STEP 2

Developers determine their project's mitigation needs.

Then **PAY** for a VMT-reducing program that is available through the Exchange.

→ **Developers** cost is determined by the price of the VMT reduction available.



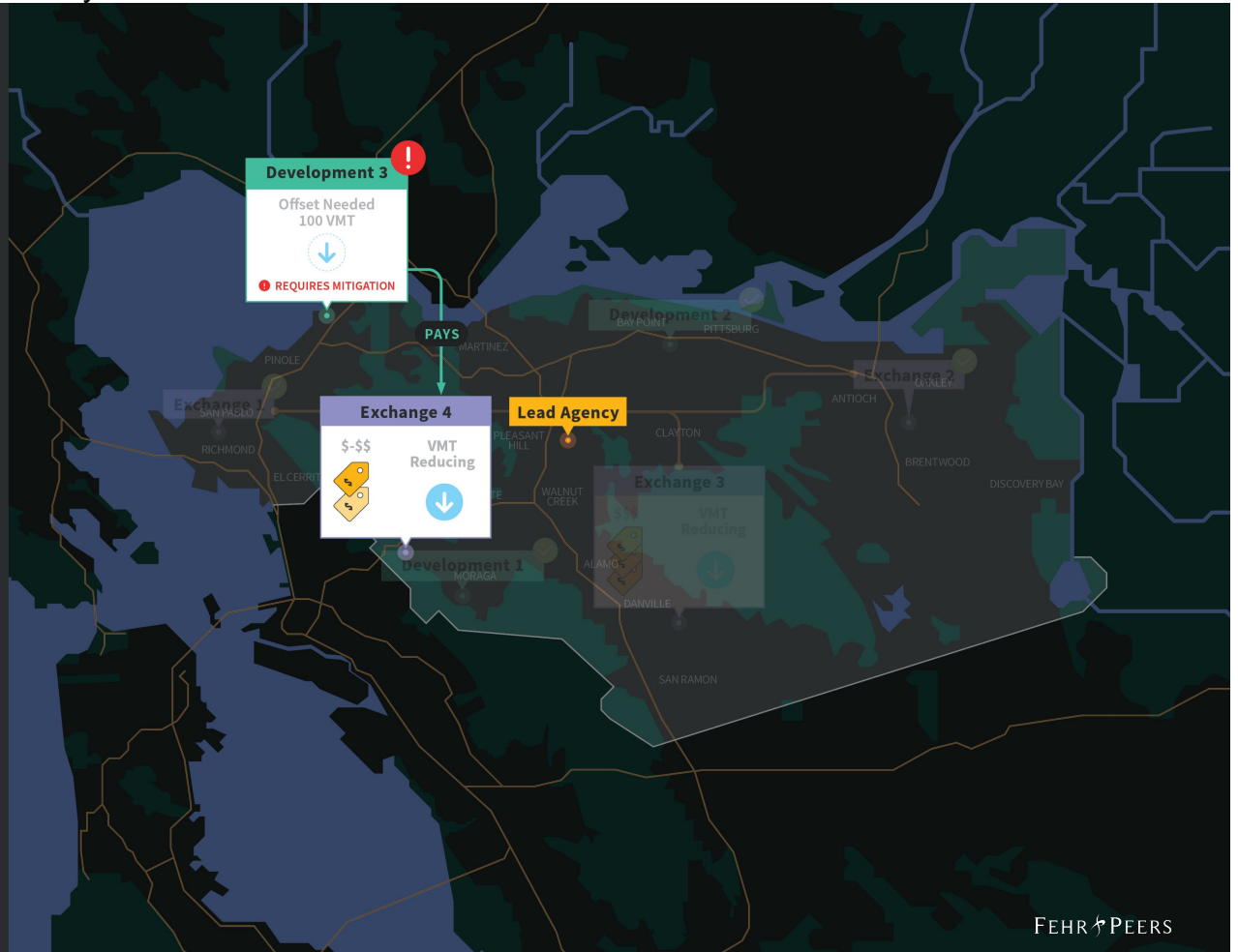
●● VMT Exchange

STEP 2

Developers determine their project's mitigation needs.

Then **PAY** for a VMT-reducing program that is available through the Exchange.

→ **Developers** cost is determined by the price of the VMT reduction available.



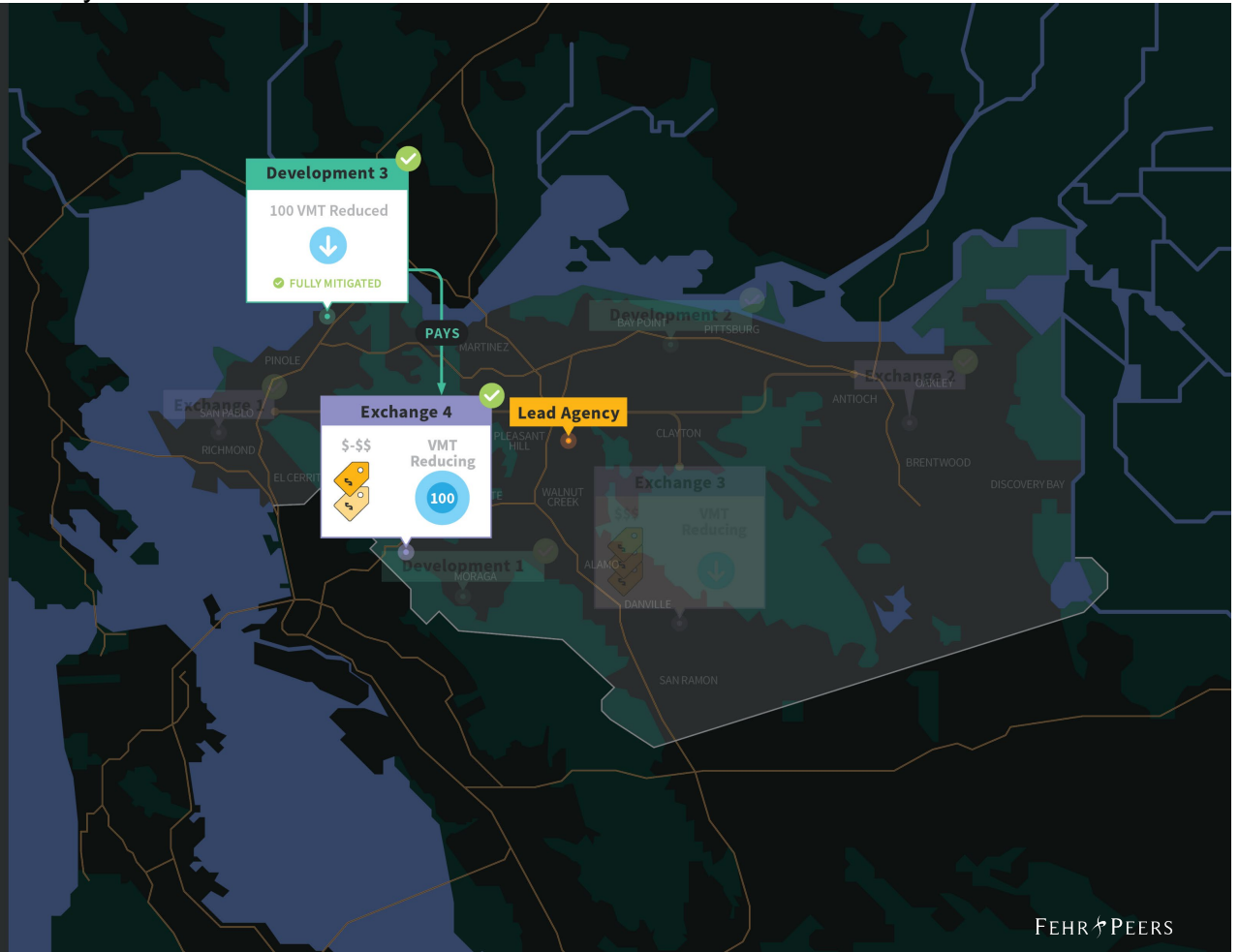
●● VMT Exchange

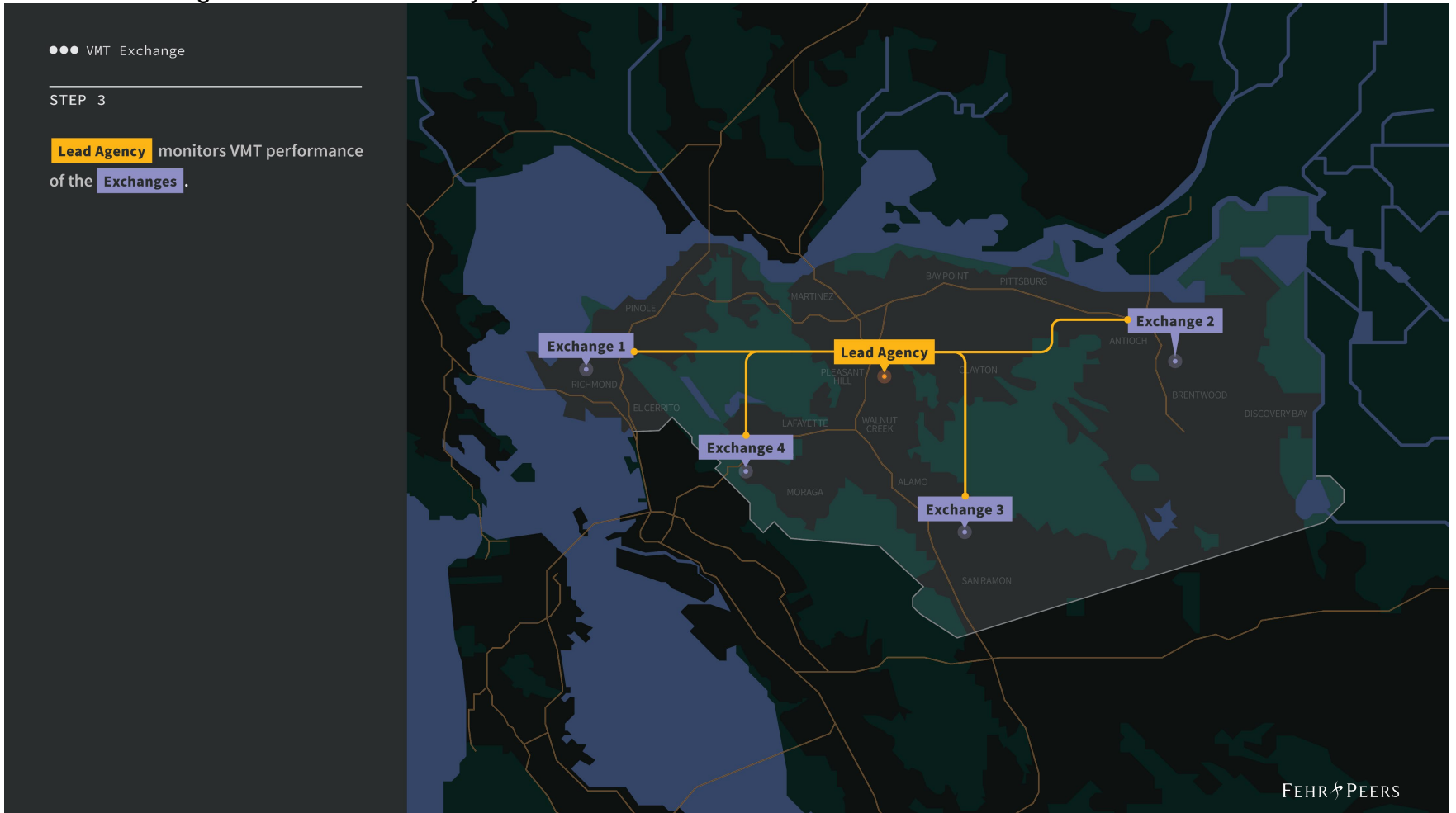
STEP 2

Developers determine their project's mitigation needs.

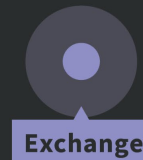
Then **PAY** for a VMT-reducing program that is available through the Exchange.

→ **Developers** cost is determined by the price of the VMT reduction available.

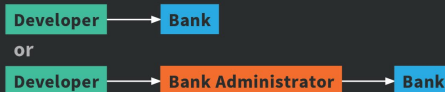




VMT Bank & Exchange



Who pays who?

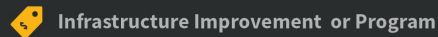


Who delivers the project/program?

Banks

Lead Agency or Developer

What are you paying for?



What is being evaluated?

Value of VMT Reduction

Infrastructure Improvement or Program's VMT Reduction Potential

How frequently is it evaluated?

Regularly—possibly every year

To be determined

What is the CEQA mitigation potential?

May allow for full mitigation, but depends on lifespan of bank mitigation strategies

Depends on rigor of data collection and analysis.

Breakout Discussions

BREAKOUT DISCUSSIONS

Breakout Session Guiding Questions

PROGRAM NEED

- What problems are you hoping a VMT mitigation program helps solve for Contra Costa?

AGENCY OVERSIGHT

- Who is the right “bank administrator” or “lead agency”?

LEGALITY/FEASIBILITY

- What are your primary concerns from a CEQA perspective? From a political perspective?

GEOGRAPHY & SCALE

- What do you think is the right scale for a VMT mitigation program?
- How do we ensure equitable distribution of infrastructure improvements, programs, and funds?

PROGRAM INTEREST

- Given what you know right now, would your agency want to participate in this type of program? If unsure, what information would you need to decide whether to participate?

BREAKOUT DISCUSSIONS

Breakout Session Report Back

PROGRAM NEED

- What problems are you hoping a VMT mitigation program helps solve for Contra Costa?

AGENCY OVERSIGHT

- Who is the right “bank administrator” or “lead agency”?

LEGALITY/FEASIBILITY

- What are your primary concerns from a CEQA perspective? From a political perspective?

GEOGRAPHY & SCALE

- What do you think is the right scale for a VMT mitigation program?
- How do we ensure equitable distribution of infrastructure improvements, programs, and funds?

PROGRAM INTEREST

- Given what you know right now, would your agency want to participate in this type of program? If unsure, what information would you need to decide whether to participate?

CLOSING

Next Steps

- Develop evaluation criteria for a countywide VMT mitigation program
 - *Next steps for the PAC:* Brainstorm evaluation criteria
- Develop four program options
- Test effectiveness and costs of the program options

Thank you!

CCTA VMT Mitigation Framework: Project Advisory Committee Meeting #1

September 28, 2021

2:00 PM – 4:00 PM

Meeting Notes

Introductions

Introductions

Agenda

Project Background

- Included funding in recent transportation expenditure package, which did not pass
- Funding provided through Caltrans Sustainable Communities Transportation Planning Grant

Framework Project Goals

Goals of the Project

Project Advisory Committee Role

- Provide feedback on efficacy, feasibility of various options

Technical Background

SB 743

Current VMT Mitigation Approaches

VMT Mitigation Approaches

Impact Fees

Questions and Comments

- For transportation projects, are you making a distinction here between "impact fee programs", as in a standardized measurement of impact/payment vs project-specific ad hoc pro-rata fair share contributions...?
 - *Response:* Caltrans is in a somewhat unique position - it is enabled to accept ad-hoc pro-rata fair share contributions

LOCATION:

Zoom

PRESENTERS:

Matt Kelly, CCTA
Stephanie Hu, CCTA
Julie Morgan, Fehr & Peers
Ron Milam, Fehr & Peers
Sarah Peters, Fehr & Peers

- Will these fees for transit include operating and capital? How are the fees collected over the course of 30 years?
 - *Response:* Banks and Exchanges allow for program and operations funding; impact fees generally do not.

Banks vs. Exchanges

- How does the developer know how much a VMT reduction is worth? The cost per VMT reduced (Capital and operating) is a lot more on BART than on a bus service.
 - *Response:* The Bank administrator would need to determine this - so while the Bank approach seems simple, there's a great deal of background work that needs to happen.
- Related to the complexity of administration - big ask here, but have you all looked at a "hybrid model" that incorporates some of the simplified/ standardized assumptions & admin. structure that go into LU impact fee programs w/ the expansive options & flexibility of banks/exchanges, but with the long-range monitoring needed for VMT reduction?
 - *Response:* Not yet, but this could be explored. There's no standard for the length of time that VMT reductions would need to be monitored.
- *Question:* Over the course of the project (30 years) one developer sells to another developer – are there laws in place to transfer the responsibility from one developer to the next?
 - *Response:* This is typically incorporated into a project's deed and included in the sales contract.

Breakout Discussions

- *See summaries (attached)*

Report Back

- Mitigations add costs - only so much cost can be added onto project costs; this could result in lead agencies needing to pick and choose between impacts that must be mitigated.
- Support for funding transit agency operations through mitigation fees.
- Consider leveraging existing RTPC structures along with CCTA to administer and monitor this kind of program.
- Concerns around cost and effect of adding more mitigation pressure to the cost of development. CEQA has not been a force for simplification in California.
- Support for spurring more cohesive/coordinated programs to reduce VMT - address some of the intra-jurisdictional challenges of current project/program development.

Attachments:

Attendee List

Breakout Session Summaries

Attachment 1: Attendee List

- Matt Kelly, CCTA
- Julie Morgan, Fehr & Peers
- Ron Milam, Fehr & Peers
- Sarah Peters, Fehr & Peers
- Neil Peacock, Senior Environmental Planner, Caltrans HQ Division of Local Assistance
- Steve Ponte, COO at Tri Delta Transit
- Stephanie Hu, Director of Projects for CCTA
- Misha Kaur, Senior Project Manager, City of Pinole
- Laurel Sears, Grant Manager, Caltrans D4
- Andy Dillard, Transportation Manager, Town of Danville
- Ben Schuster, Transportation Planner with City of Martinez
- Kristen Connelly, CEO of East Bay Leadership Council
- Lisa Vorderbrueggen, Building Industry Association, East Bay
- Linsey Willis, Director of External Affairs for CCTA
- Trishia Caguiat, Associate Planner, City of Pittsburg
- John Hoang, CCTA
- John Nemeth, Executive Director, WCCTAC
- Lisa Bobadilla, Transportation Division Manager, City of San Ramon
- Melody Reeb, Manager of Planning, County Connection
- Saravana Suthanthira, Transportation Program Manager, City of Concord
- Smadar Boardman, Traffic Engineer, City of Walnut Creek
- Kamala Parks, Senior Planner, BART
- Corinne Dutra-Roberts, Vice President, Advanced Mobility Group
- James Choe, Climate Program Manager at MTC/ABAG, filling in for Krute Singha
- Jamar Stamps, Principal Planner, Contra Costa County
- John Cunningham, Principal Planner, Contra Costa County
- Jody London, Sustainability Manager at Contra Costa County
- Juan Pablo Galvan Martinez, Senior Land Use Manager, Save Mount Diablo
- Rob Thompson, Planning Manager, WestCAT

Attachment 2: Breakout Discussion Summaries

Discussion Questions

- PROGRAM NEED: What problems are you hoping a VMT mitigation program helps solve for Contra Costa?
- AGENCY OVERSIGHT: Who is the right “bank administrator” or “lead agency”?
- LEGALITY/FEASIBILITY: What are your primary concerns from a CEQA perspective? From a political perspective?
- GEOGRAPHY & SCALE: What do you think is the right scale for a VMT mitigation program? How do we ensure equitable distribution of infrastructure improvements, programs, and funds?
- PROGRAM INTEREST: Given what you know right now, would your agency want to participate in this type of program? If unsure, what information would you need to decide whether to participate?

Group 1 Discussion

- Program could be a good source of funding for transit improvements
- Wonder if VMT-reduction strategies could include widespread parking pricing or congestion pricing?
- Strong desire to encourage better land use development patterns
- Wary of adding yet more complexity and cost to development projects when we already have such a problem building affordable housing. Having a program like this in Contra Costa but not in nearby counties could mean that development just goes elsewhere.
- “CEQA abuse” is a real phenomenon.
- Feels that developments should first do all they can to mitigate VMT impacts on-site, and only then be able to buy credits to finish mitigating.
- Hoping this program will spur mitigation ideas that are more cohesive, coordinated, and robust than the very haphazard and fragmented mitigation that currently occurs.
- Advocates for a countywide network of bicycle facilities that serve functional transportation purposes.

Group 2 Discussion

- Program should actually change development patterns or encourage more compact land use development.
- Does this conflict with goals for infill and changing the built environment and traditional development patterns?
- Limit VMT mitigation strategies that reinforce the above and make transit and active transportation more effective

- Getting people out of cars reduces transit revenue from gas tax.
- Higher costs for development further away from centers and transit.
- Bus passes only cover 20% of operating costs. Higher operating costs for the longer distance trips.
- Buyers pay higher mitigation costs. Can increase use of HOAs with higher costs for housing.
- Developers have fixed mitigation costs. An increase in VMT mitigation will reduce dollars for other mitigations or public improvements.
- Want mitigation dollars to have a clear nexus.
- No in perpetuity mitigation.
- Program need – both land use and transportation project mitigation.
- *Question:* Can building more infill housing qualify as a VMT mitigation? *Response:* This depends on the legal authority of the entities involved in the development review and CEQA process. We can ask this question of our legal experts.
- Need to be synced with the RTP and SCS.
- Legal – Need assurance of mitigation effectiveness and appropriate verification. Need alignment of local actions with regional and state goals.
- Representing a transit poor community: Split on concept. Want to maintain high quality of life. Concerned about buying way out of VMT impacts, especially if dollars go to another community.
- Positive that transit operating costs can be covered in a bank or exchange.
- Prioritize accelerating VMT reduction projects in RTP/SCS in equity areas of concern.

Group 3 Discussion

- *Question:* Is there a possibility of project development happening in a piecemeal fashion? Transportation projects tend to require large capital investments and may be hard to finance by small-scale VMT mitigation payments.
- *Question:* What other projects are being developed around the state? There are so many projects in terms of scale, depth, geography.
- *Question:* What does the bank fund? *Response:* VMT-reducing projects and potentially programs.
- As a CEQA lead agency, Contra Costa County would want a program that allows projects with minor VMT impacts to be able to pay into a fund to reduce impacts.
- For Concord, most transportation projects are complete streets-oriented - not necessarily concerned about those.
- Could address jurisdictional challenges in making improvements that reduce VMT (e.g., an SRTS improvement that stops at the city limit)
- CCTA seems like a good option as “bank administrator” or “lead agency.”

- One administrative option: have CCTA be the lead agency but delegate administration to the RTPCs (aligns with recommendations from Innovate 680).
- Many lead agency options to consider: Joint Powers Authority model (especially relevant if the relevant geography goes beyond the County line), MTC, Caltrans, CCTA.
- Lead agency will need to be able to use some of the funding to pay for administration to cover fee. There will be complexity in establishing administrative fees, cost and effort required to monitor mitigations.
- From Caltrans D4 POV, it's important to think about:
 - Enforceability (CCTA has power to ensure that mitigations and monitoring are enforced).
 - Monitoring is the most challenging part of ensuring that TDM and other programmatic VMT reduction measures are enforced.
- Concerned about feasibility of establishing a nexus for mitigations. How do we ensure that mitigations are related to the projects whose impacts they mitigate?
- RTPC model could help establish a reasonable nexus. Projects within one RTPC region can fund improvements within that region.
- May be easier to mitigate impacts if VMT impact metric is established with a significance threshold defined at the Countywide level.
- Geography of program should match the geography at which the impact is evaluated.
- Currently, significance thresholds are being established at the local level.
- Geography of program should encompass the entire County.

PAC Questionnaire: Guidance for a Potential Contra Costa Countywide VMT Mitigation Program

Please complete this questionnaire by Friday, November 19th. You may select more than one option on each question. Please choose all options that reflect your opinion, and feel free to add clarification in the comments section

- 1. Creation of a Program:** A countywide VMT mitigation program might expand the range of possible mitigation strategies for VMT impacts, streamline the approval process for projects with VMT impacts, and increase the costs associated with VMT mitigation. Should there be such a program in Contra Costa?

 - a. Yes
 - b. No (please describe concerns below)
 - c. Unsure

Comments: _____

- 2. Types of Projects Eligible to Participate:** Should the program be available to sponsors of:

 - a. Land development projects?
 - b. Transportation infrastructure projects?
 - c. Other project types (please specify)?

Comments: _____

- 3. Types of Mitigation Strategies Funded:** Should the program be used to fund:

 - a. Capital improvements that encourage walking, bicycling, and transit use, such as new sidewalks, expanded bike facilities, or extensions of transit lines (for more information, refer to strategies T-17 through T-19, T-24, and T-26 in the draft [Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity](#))
 - b. Transportation service operations, such as increased frequency on bus routes, or operating a bikeshare or scooter share service (for more information, refer to strategies T-20, T-21, and T-25 in the draft [Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity](#))
 - c. Programs that aim to change travel behavior, such as commute trip reduction marketing programs, ridesharing programs, or subsidized transit programs (for more information, refer to strategies T-4 through T-12 and T-22 in the draft [Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity](#))
 - d. Other options (please specify): _____

Comments: _____

- 4. Level of Mitigation Achieved:** Should the program offer:

 - a. Full mitigation of VMT impacts (i.e., a project's impact must be reduced to a less-than-significant level in order to participate)?

- b. Partial mitigation of VMT impacts (i.e., a project’s impact would be reduced but not necessarily to a less-than-significant level)?

Comments: _____

5. On-Site Mitigation Requirement: Should the program be:

- a. Available only after the project has implemented all feasible on-site mitigation?
- b. Available in lieu of on-site mitigation?

Comments: _____

6. Program Participation: Should the program be:

- a. Voluntary (optional) within participating jurisdictions?
- b. Mandatory within participating jurisdictions?

Comments: _____

7. Program Administration: Should the program be administered by:

- a. An existing agency that can effectively oversee a countywide program (please specify)?
- b. A newly formed entity?

Comments: _____

8. Additionality: Should the program fund VMT reduction strategies that are:

- a. Not funded through existing tax or exaction programs?
- b. Eligible for funding through existing tax or exaction programs but not currently included in a financially constrained countywide or regional transportation plan?
- c. Currently included in a financially constrained countywide or regional transportation plan?

Comments: _____

9. Social Equity: Should the program:

- a. Address social equity concerns through evaluating differential VMT impacts on equity priority communities?
- b. Address social equity concerns through ensuring that mitigation funds are spent predominantly in equity priority communities?
- c. Address social equity concerns through some other mechanism (please specify)?
- d. Not include equity as an explicit goal of the program?

Comments: _____

10. Cost Effectiveness: Should the program:

- a. Prioritize strategies that reduce VMT at the lowest possible cost?
- b. Be required to demonstrate that the cost of mitigations can be accommodated without compromising the viability of new housing construction?
- c. Prioritize the minimization of agency administrative costs?
- d. Address cost effectiveness concerns through some other mechanism (please specify)?

Comments: _____

11. Geographic Scale: Should the program:

- a. Require that VMT mitigation funds be spent in the same corridor or jurisdiction where the funds originated?
- b. Require that VMT mitigation funds be spent in the same county sub-area where the funds originated?
- c. Allow VMT mitigation funds to be spent anywhere in Contra Costa County?
- d. Allow VMT mitigation funds to be spent anywhere in the Bay Area region or other geography (please specify)?

Comments: _____

VMT Mitigation Framework for Contra Costa

Project Advisory Committee Meeting #2

November 29, 2021



INTRODUCTION

Agenda

2:00-2:15 pm

Introduction

2:15-2:40 pm

Framework Survey Results

2:40-3:00 pm

Evaluation Criteria

3:00-3:30 pm

Breakout Sessions

3:30-3:50 pm

Report Back

3:50-4:00 pm

Next Steps

INTRODUCTION

Welcome back!

PAC Member role

- Share your perspective on the needs for a VMT Mitigation Program in Contra Costa
- Provide guidance on how the program should be designed and evaluated
- Review deliverables and help shape the VMT Mitigation Program
- Spread awareness of the program in communities across Contra Costa County



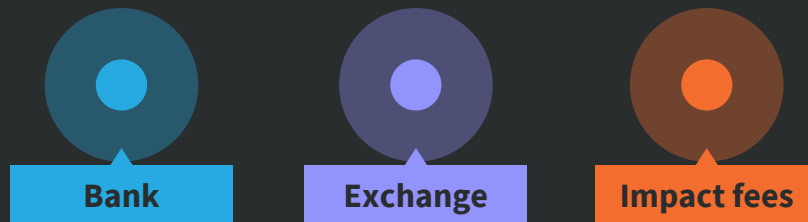
INTRODUCTION

September PAC Meeting

Technical background

- ✓ SB 743
- ✓ CEQA Impact and Mitigation Concepts

Program alternatives



INTRODUCTION

Observations from September Meeting

- ✓ **Concern** about program costs and effects on affordable housing development
- ✓ **Interest** in funding transportation projects and programs that experience challenging funding landscape
- ✓ **Support** for greater coordination in transportation project/program implementation
- ✓ **Interest** in leveraging existing agency structures to implement

INTRODUCTION

Following up

Further thoughts?

- **Legal/CEQA** questions
- Relevant **program models**
- Any particular **concerns?**

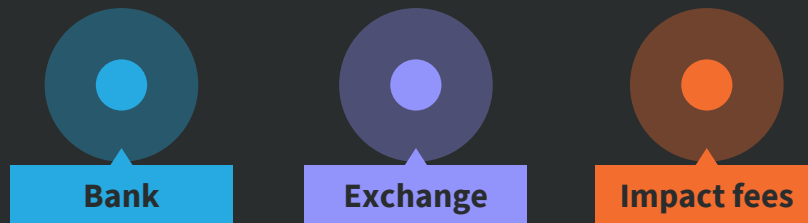
INTRODUCTION

Current Efforts

Develop evaluation criteria

- ✓ **Draft criteria** to evaluate program alternatives
- ✓ **Survey of PAC members** to shape criteria

Begin identifying program alternatives



Framework Survey

Framework Survey: What We Heard

Consensus

- Program should be available to mitigate impacts of **land use developments** (93%) and **transportation infrastructure projects** (80%)
- Program should fund **capital improvements** (100%), **transportation services** (88%), and **behavior change programs** (81%), and perhaps also other strategies such as areawide parking pricing programs or subsidizing infill development
- An **existing agency** should lead the program (100%)
- Program should address **social equity** (although approaches vary)

Framework Survey: What We Heard

Range of Opinions

Should maximum on-site mitigation be required first before participating in this program?

- “On-site mitigation will always be the most direct...and can address equity concerns better than indirect, off-site mitigations.”
- “Most of the impacts will be felt at the countywide, regionwide, and mega-regionwide level, not just on-site.” Better to use these funds to support a list of prioritized countywide projects.

Framework Survey: What We Heard

Range of Opinions

Should the program be mandatory?

- “The benefit of this program is an ‘all-in’ approach to ensure success.” “Would need to be mandatory to be effective and provide the strongest nexus.”
- “Requiring participation could backfire and create/exacerbate friction.”

Framework Survey: What We Heard

Range of Opinions

How important is it that the program limit its cost burden?

- “Prioritize strategies that reduce the greatest amount of VMT, period.”
- “Prioritize strategies that minimize cost.”
- “Lowest possible cost is going to result in quick-build implementation only...There are high-cost, high-impact network issues that need to be addressed...How are we going to implement the more substantial projects?”

FRAMEWORK SURVEY

Framework Survey: What we heard

Range of Opinions

Should this program...

- Fund strategies that are **currently unfunded**? 50% yes
- Fund strategies that are **eligible for funding** (but not included in a financially constrained program)? 50% yes
- Fund strategies **included in a financially constrained program**? 52% yes
- Prioritize **low-cost strategies**? 60% yes
- Demonstrate that mitigation costs will **not impact new housing**? 53% yes
- **Minimize administrative costs**? 40% yes
- Fund mitigations in the **same county sub-area**? 53% yes
- Fund mitigations **anywhere in Contra Costa County**? 59% yes

Evaluation Criteria

EVALUATION CRITERIA

Essential Characteristics



Legally sound



**Administratively
sound**



**Responsive to public/
stakeholder needs**

EVALUATION CRITERIA

Optional Characteristics

- A. Program achieves full mitigation for most projects (i.e., few projects will have SU VMT impacts and require a statement of override).
- B. Program funds a very wide range of VMT reduction strategies including non-transportation strategies like subsidizing infill housing.
- C. Program keeps mitigation funds relatively local.
- D. Program applies an equity lens when making investment decisions.
- E. Program minimizes the total cost per VMT reduced.
- F. Program minimizes the year-to-year variation in cost per VMT reduced.
- G. Each applicant makes a one-time payment to the program that satisfies their mitigation obligation.
- H. Program includes methods for monitoring countywide VMT outcomes over a long-term period (at least 10 years).
- I. It is easy to add more VMT strategies and more jurisdictions to the program.

Breakout Discussions

BREAKOUT DISCUSSIONS

Breakout Session Priority Exercise

Key concerns

- What is most important to you/your agency/your stakeholders?

Must have vs. good to have

- Which program elements are critical to success, from your point of view?
- Where do you see tradeoffs between different program elements?
- What pitfalls/consequences do you foresee if certain elements are not prioritized?

External issues

- Do you envision political, economic, or other hurdles that could be managed through program design?

BREAKOUT DISCUSSIONS

Breakout Session Report Back

Key concerns

- What is most important to you/your agency/your stakeholders?

Must have vs. good to have

- Which program elements are critical to success, from your point of view?
- Where do you see tradeoffs between different program elements?
- What pitfalls/consequences do you foresee if certain elements are not prioritized?

External issues

- Do you envision political, economic, or other hurdles that could be managed through program design?

CLOSING

Next Steps

- ✓ **Refine evaluation criteria** for a countywide VMT mitigation program
- ✓ **Develop four program options**
- ✓ **Test** effectiveness and costs of the program options

FRAMEWORK PROJECT GOALS

PAC Meetings

Spring 2022

Summer 2022

Late 2022

Early 2023



Define
Program
Options



Evaluate
Program
Options



Review
Draft
Program



Review
Final
Program

FRAMEWORK PROJECT GOALS

Study Process

KEY QUESTIONS IN DEVELOPING A VMT MITIGATION FRAMEWORK

In the process of developing the VMT Mitigation Framework, we'll need to ask some important questions:



AGENCY OVERSIGHT & FUNDING

- o Who pays who?
- o Who administers?
- o Who delivers the mitigation action?

PROGRAM CRITERIA & EFFICACY

- o What types of mitigation actions can be funded?
- o What are the equity goals and priorities of the program?
- o How will the costs of VMT mitigation affect development feasibility?

DURATION

- o For how long must the project applicant participate?

GEOGRAPHY

- o What is the right scale for a program?
- o How do we ensure equitable distribution of mitigation actions/funds?



MONITORING & DATA NEEDS

- o What is being evaluated?
- o Who evaluates the mitigation action?
- o How frequently does evaluation/re-valuation occur?

LEGALITY

- o What is the CEQA mitigation potential?

Thank you!

CCTA VMT Mitigation Framework: Project Advisory Committee Meeting #2

November 29, 2021

2:00 PM – 4:00 PM

Meeting Notes

Introduction

- Welcome
- Agenda
- Project Update & September meeting recap

Questions and Comments

- Is there support for exempting affordable housing developments from CEQA requirements or overriding determinations of significant and unavoidable impacts for affordable housing?
 - *Response:* Technical assessment of affordable housing trip generation supports exempting them from CEQA impact analysis. Lead agencies can also make a policy determination to exempt affordable housing.
- *Resources:* UC Berkeley paper on VMT Banking; Link 21 VMT banking document

Framework Survey

- What we heard

Questions and Comments

- Each city has their own requirements for developer actions (TDM programs, etc.) that could also be addressed by a Countywide VMT mitigation program. Would the countywide program supersede local requirements? How would the countywide program evaluate VMT reduction effects of local requirements?
 - *Response:* This will have to be addressed in program design. One question for stakeholders: would local agencies accept reducing local requirements in exchange for participation in a countywide program, or would they prefer to continue local requirements?

LOCATION:

Zoom

PRESENTERS:

Matt Kelly, CCTA
 Julie Morgan, Fehr & Peers

- Would like to continue to see a range of options and some kind of requirement for larger projects.
- The impacts of very small projects are hard to mitigate; these types of projects are most likely to benefit from this kind of program.

Evaluation Criteria

- Purpose of criteria
- Essential characteristics
- Optional characteristics
- Discussion

Questions and Comments

- Which of these characteristics are most likely to result in reduced GHG emissions?
 - *Response:* All would do so indirectly.
- Which approach is most likely to support the funding of ongoing transit operations?
 - *Response:* It can be a challenge to evaluate a new land use/transportation project's fair share of ongoing program costs. Another challenge is ensuring that mitigations continue for the life of the project. To stop making an ongoing contribution, a project would need to provide substantial evidence that its operations result in mitigation of VMT impacts and will continue to do so.
- Is it currently an option for a project to not achieve full mitigation of VMT impacts under CEQA?
 - *Response:* The CEQA requirement is mitigation "to the extent feasible." When feasible mitigation actions do not fully mitigate impacts to a "less than significant" level, then statements of overriding considerations are made.
- Would this program then be intended to mitigate residual impacts from projects that cannot fully mitigate their impacts internally?
 - *Response:* It could be used that way if that is the design; i.e., a project would be required to implement all feasible on-site mitigations first, and then if there are still residual impacts the project would participate in the countywide program to achieve enough additional mitigations such that its VMT impact is mitigated to a "less than significant" level.

Small Group Discussions

- *See summaries (attached)*

Report Back

- Individual projects must be accountable for their impacts; however, there must be a way to approve projects with a negative declaration.
- Important to provide a wide range of mitigation strategies. Difference of opinion on whether non-transportation projects should be funded.
- Countywide scale for mitigation funding preferred.
- Equity must be addressed; however, program should ensure that equity concerns do not affect legal defensibility of program under CEQA.
- Developers must have predictable costs.
- Performance monitoring is critical to ensure that the program is effective and retains support.
- Important to maintain flexibility as technology changes.

Attachments:

Attendee List

Breakout Session Summaries

Attachment 1: Attendee List

- Matt Kelly, CCTA
- Julie Morgan, Fehr & Peers
- Ron Milam, Fehr & Peers
- Sarah Peters, Fehr & Peers
- John Hoang, Director of Planning for CCTA
- Stephanie Hu, Director of Projects for CCTA
- Steve Ponte, COO, Tri Delta Transit
- Laurel Sears, Grant Manager, Caltrans D4
- Ben Schuster, Transportation Planner, City of Martinez
- Kristen Connelly, CEO of East Bay Leadership Council
- Lisa Vorderbrueggen, Building Industry Association, East Bay
- John Nemeth, Executive Director, WCCTAC
- Melody Reeb, Manager of Planning, County Connection
- Winnie Chung, Transportation Program Manager, City of Concord
- Smadar Boardman, Traffic Engineer, City of Walnut Creek
- Kamala Parks, Senior Planner, BART
- Jamar Stamps, Principal Planner, Contra Costa County
- Jody London, Sustainability Manager, Contra Costa County
- Juan Pablo Galvan Martinez, Senior Land Use Manager, Save Mount Diablo
- Rob Thompson, Planning Manager, WestCAT

Attachment 2: Breakout Discussion Summaries

Discussion Framework

Directions: Please give each characteristic a 1-2-3 rating. A 1 rating means you think that characteristic is essential. A 2 rating means it would be great if the program had that characteristic, but it wouldn't be a dealbreaker if it didn't. A 3 rating means you do not think that characteristic should be a priority at all.

Rating	Characteristic
	A. Program achieves full mitigation for most projects (i.e., few projects will have SU VMT impacts and require a statement of override.)
	B. Program funds a very wide range of VMT reduction strategies, including non-transportation strategies like subsidizing infill housing.
	C. Program keeps mitigation funds relatively local.
	D. Program applies an equity lens when making investment decisions.
	E. Program minimizes the total cost per VMT reduced.
	F. Program minimizes the year-to-year variation in cost per VMT reduced.
	G. Each applicant makes a one-time payment to the program that satisfies their mitigation obligation.
	H. Program includes methods for monitoring countywide VMT outcomes over a long-term period (at least 10 years).
	I. It is easy to add more VMT strategies and more jurisdictions to the program.

Group 1 Discussion Summary

Ratings	Characteristic	Notes
2,2,1, 2, 2	A. Program achieves full mitigation for most projects (i.e., few projects will have SU VMT impacts and require a statement of override.)	Program should allow projects a way to move forward by contributing to mitigating their impacts, particularly infill projects, which are often "dinged" for impacts. This gets to the heart of the legitimacy of this program - individual projects must be accountable for their impacts.
1, 1, 1, 1	B. Program funds a very wide range of VMT reduction strategies, including non-transportation strategies like subsidizing infill housing.	This is the essence of what we're trying to do here.
3, 3, 2, 3	C. Program keeps mitigation funds relatively local.	Impacts often spread beyond jurisdictional boundaries. If it's a countywide program the funds should be spent within the county, but not otherwise restricted.
1, 1, 1	D. Program applies an equity lens when making investment decisions.	Focus on socioeconomic equity. Historical disinvestment is a concern.
3, 3, 3	E. Program minimizes the total cost per VMT reduced.	Efficiency is important but can be difficult to implement.
2, 2, 2	F. Program minimizes the year-to-year variation in cost per VMT reduced.	Important from a developer's perspective to have consistency in costs.
2, 2	G. Each applicant makes a one-time payment to the program that satisfies their mitigation obligation.	
1, 1	H. Program includes methods for monitoring countywide VMT outcomes over a long-term period (at least 10 years).	Critical to measure performance – even if it's difficult to do.
1, 1	I. It is easy to add more VMT strategies and more jurisdictions to the program.	Program needs to be flexible enough to expand beyond the County and address new transportation technologies.

Group 2 Discussion Summary

These are the items that the group members felt strongly about. The items without rankings did not engender much discussion from the group.

Rating	Characteristic
1, 1	A. Program achieves full mitigation for most projects (i.e., few projects will have SU VMT impacts and require a statement of override.)
	B. Program funds a very wide range of VMT reduction strategies, including non-transportation strategies like subsidizing infill housing.
3, 1, 1	C. Program keeps mitigation funds relatively local.
	D. Program applies an equity lens when making investment decisions.
1, 1, 1, 1	E. Program minimizes the total cost per VMT reduced.
1, 1	F. Program minimizes the year-to-year variation in cost per VMT reduced.
1, 1	G. Each applicant makes a one-time payment to the program that satisfies their mitigation obligation.
1	H. Program includes methods for monitoring countywide VMT outcomes over a long-term period (at least 10 years).
	I. It is easy to add more VMT strategies and more jurisdictions to the program.

Home-builders perspective: Highest priority items are E, F, G, and H. Predictability of mitigation costs is very important. They prefer to do most of a project’s mitigation on-site, since those changes would directly benefit the project’s residents.

CCTA perspective: Highest priority items are A, E, and G. Keeping funds local (item C) is not a priority, because CCTA delivers large infrastructure projects that will probably require broad-scale mitigation options.

City perspective: Would like to achieve full mitigation so that findings of override are not required. However, realizes that this might be difficult to achieve for large projects, particularly big transportation infrastructure projects.

Transit agency perspective: Concerned about non-local agencies viewing the program as a source of dollars, so wants to keep the money local.

County perspective: Keeping the money local will be important for political viability of the program.

Business perspective: Concerned about adding costs to development, prioritize keeping costs managed and predictable.

Group 3 Discussion Summary

Rating	Characteristic	Comments
1,1,1	A. Program achieves full mitigation for most projects (i.e., few projects will have SU VMT impacts and require a statement of override.)	Important to allow for neg decs.
3,3,2	B. Program funds a very wide range of VMT reduction strategies, including non-transportation strategies like subsidizing infill housing.	Challenging enough to select and fund transportation strategies and there should be plenty of transportation strategies to choose from.
3,3	C. Program keeps mitigation funds relatively local.	County-wide scale provides the best bang for the buck.
2	D. Program applies an equity lens when making investment decisions.	Important but concerned that adding an equity lens could add legal risk if that means reducing the effectiveness of reducing the environmental impact.
1,3	E. Program minimizes the total cost per VMT reduced.	Depends on the types of projects/strategies being funded.
1/2,2,2	F. Program minimizes the year-to-year variation in cost per VMT reduced.	Developers need mitigation cost certainty.
3,3,3	G. Each applicant makes a one-time payment to the program that satisfies their mitigation obligation.	Developers need mitigation cost certainty.
2,1,1	H. Program includes methods for monitoring countywide VMT outcomes over a long-term period (at least 10 years).	Need the investments to have a high return to maintain support for the program.
2,2,2	I. It is easy to add more VMT strategies and more jurisdictions to the program.	Flexibility is important especially as transportation technology changes.

VMT Mitigation Framework for Contra Costa

Project Advisory Committee Meeting #3

August 16, 2022



INTRODUCTION

Agenda

10:00-10:10 am	Introduction
10:10-10:30 am	Project Update
10:30-11:15 am	Program Options
11:15-11:55 am	Discussion
11:55 am-noon	Next Steps

Introduction

INTRODUCTION

Welcome back!

Reminder on PAC Member role:

- Share your perspective on the needs for a VMT Mitigation Program in Contra Costa
- Provide guidance on how the program should be designed and evaluated
- Review deliverables and help shape the VMT Mitigation Program
- Spread awareness of the program in communities across Contra Costa County



Project Update

PROJECT UPDATE

Recap of Prior PAC Meetings

Discussed

- ✓ **Program structure**
- ✓ **Desired outcomes**
- ✓ **Priorities**

PROGRAM OPTIONS

Program Structure Alternatives



PROJECT UPDATE

Program Evaluation Criteria

- Legal Foundation
- Agency Oversight & Funding
- Geography & Scale
- Applicability
- Data Analysis & Monitoring
- Program Risk Management

EVALUATION CRITERIA

Essential Program Characteristics

✓ Legally sound

✓ Administratively sound

✓ Responsive to public/
stakeholder needs

PROGRAM OPTIONS

Feedback on Program Characteristics

Agreement: Program *should*

- ✓ Apply Countywide
- ✓ Fully mitigate impacts for most projects
- ✓ Provide predictable, stable costs
- ✓ Have CCTA as likely administrator

Divergence: Program *could*

- ⊕ Prioritize equity
- ⊕ Fund only transportation-related strategies
- ⊕ Fund land use and other non-transportation-focused strategies

PROJECT UPDATE

New VMT Guidance Available

Recent Caltrans Documents

- Mitigation Playbook
- Recommended Project Review Practices

PROJECT UPDATE

Caltrans Mitigation Playbook

Mitigating induced VMT for highway projects

- Wide array of eligible mitigation strategies: land use, commute trip reduction, active transportation, parking
- Costs and mitigation effectiveness evaluated over 20 years
- Tools available: [Caltrans SB 743 Implementation Resources](#)



PROJECT UPDATE

Caltrans Significance Thresholds

Project Review for Highway Projects

- **Threshold:** Any increase in lane miles will induce VMT, and any increase in VMT is a significant impact (i.e., threshold is net zero VMT)
- **Process:** Sets a very high bar for accepting a significant and unavoidable VMT impact
- **Likely Result:** Very limited number of highway projects of any type, even Express Lanes projects, may be approved; may have effects on increased local congestion and cut-through traffic

Mitigation Program Options

PROGRAM OPTIONS

Alternatives Development

Explored:

- ✓ Program structure
- ✓ VMT reduction estimates
- ✓ Level of feasible mitigation
- ✓ Equity factors

PROGRAM OPTIONS

Future Growth in Countywide VMT

Source:

Adding highway lane-miles

Adding population and jobs

Daily VMT to be Mitigated:

100,000 – 200,000

~ 450,000

PROGRAM OPTIONS

Program Structure

Countywide program funding some or all of the following:

- Bicycle and pedestrian network improvements
- Community-scale TDM strategies
- Expansion/addition of transit services
- Removal of existing travel lanes (e.g., road diets)
- Construction of new affordable housing units

PROGRAM OPTIONS

VMT Reduction Estimates

Source from CAPCOA Handbook: Effect varies widely by strategy

- Community-level strategies:
 - Small reductions applied to large populations
- Project-level strategies:
 - Larger reductions applied to small populations



VMT & GHG Reduction Strategies

Percentage of VMT or greenhouse gases that would be mitigated using each strategy

Filter strategies by:

Location context

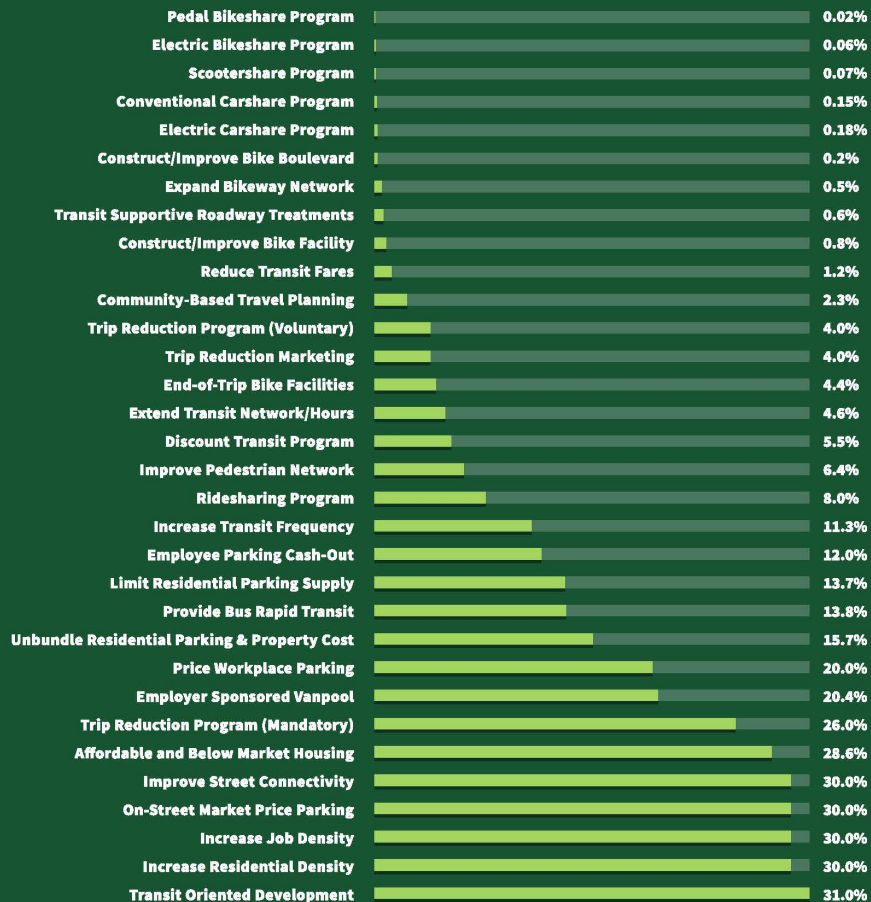
Urban & Suburban

Rural

Scale of application

Project

Community





VMT & GHG Reduction Strategies

Percentage of VMT or greenhouse gases that would be mitigated using each strategy

Filter strategies by:

Location context

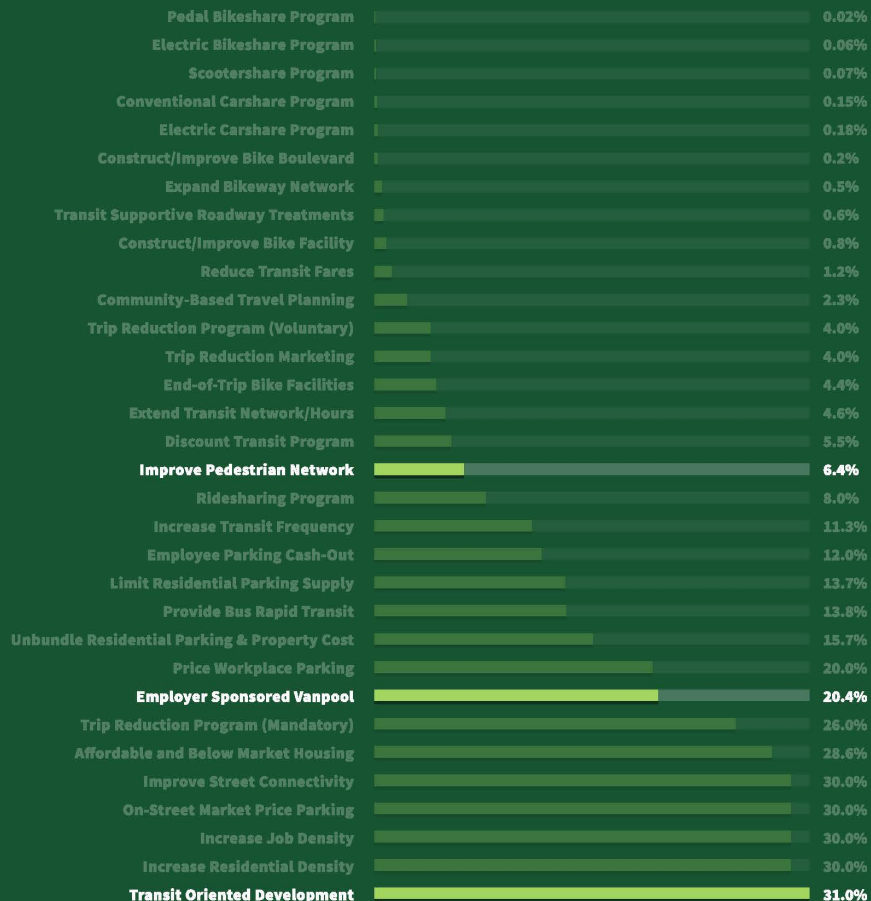
Urban & Suburban

Rural

Scale of application

Project

Community





VMT & GHG Reduction Strategies

Percentage of VMT or greenhouse gases that would be mitigated using each strategy

Filter strategies by:

Location context

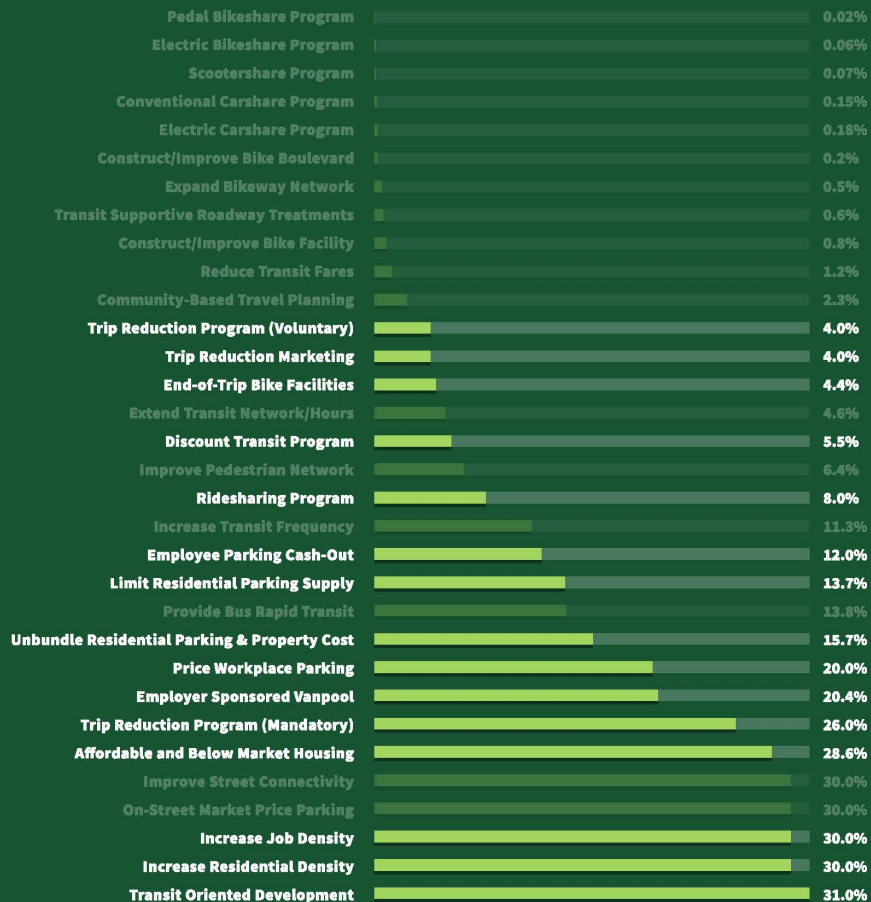
Urban & Suburban

Rural

Scale of application

Project

Community





VMT & GHG Reduction Strategies

Percentage of VMT or greenhouse gases that would be mitigated using each strategy

Filter strategies by:

Location context

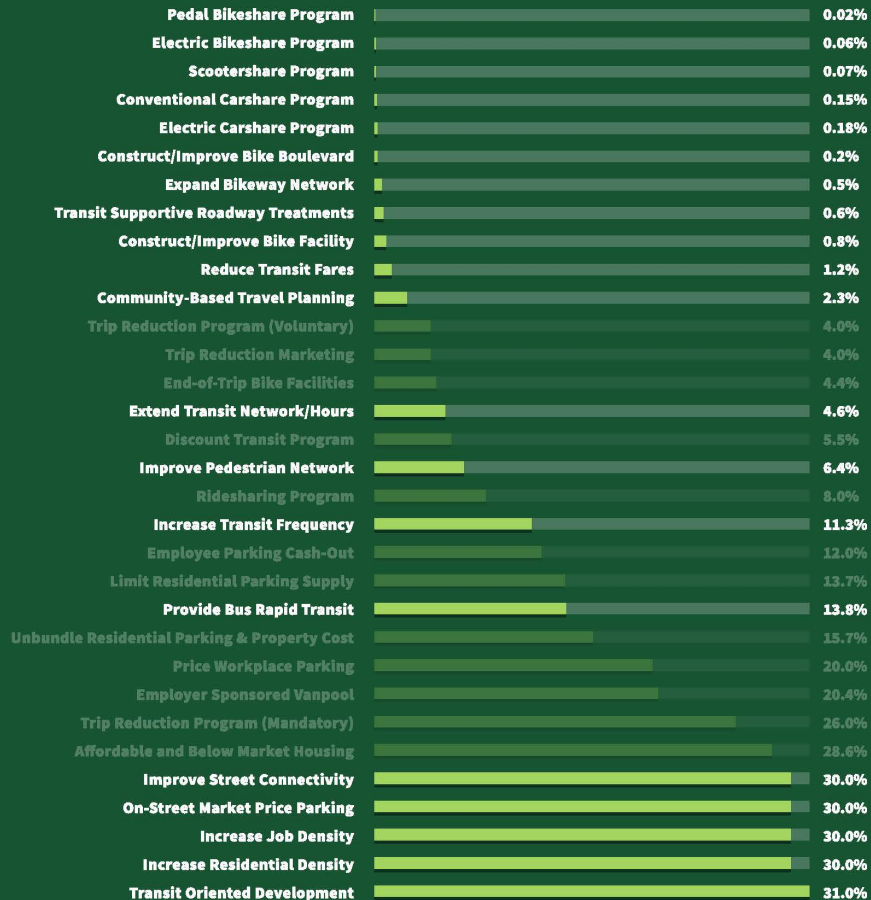
Urban & Suburban

Rural

Scale of application

Project

Community



PROGRAM OPTIONS

Program Structure

Countywide program funding some or all of the following:

- Bicycle and pedestrian network improvements
- Community-scale TDM strategies
- Expansion/addition of transit services
- Removal of existing travel lanes (e.g., road diets)
- Construction of new affordable housing units

PROGRAM OPTIONS

Possible Mitigation Actions

- Bicycle and pedestrian network improvements
 - ✓ Build out countywide low-stress bicycle network
- Community-scale TDM strategies
 - ✓ Give free eBikes to all households below a certain income level
 - ✓ Price parking in all commercial districts countywide
- Expansion/addition of transit services
 - ✓ Make all bus routes countywide fare-free
 - ✓ Make all bus routes operate at 10-minute headways
- Removal of existing travel lanes (e.g., road diets)
- Construction of new affordable housing units

PROGRAM OPTIONS

Program Alternatives

- **Banks:** Program puts a monetary value on VMT reduction and applicant purchases VMT reduction credits
- **Exchanges:** Program creates a pre-qualified list of VMT reduction strategies and applicant chooses a strategy and funds it directly
- **Impact Fees:** Program funds capital projects that reduce VMT, applicant pays a set fee and administrator uses money to construct projects



PROGRAM OPTIONS

Mitigation Banks

- ✓ Can fund any type of mitigation strategy
- ✓ Could focus on specific geographic area, or could apply countywide
- ✓ Good potential to address equity issues and other policy priorities, as bank administrator has control over prioritizing funding



Bank

PROGRAM OPTIONS

Mitigation Exchanges

- ✓ Best for funding small-scale or incremental mitigation strategies
- ✓ Could be a countywide program, but applicants may prefer to fund mitigation strategies close to their project site
- ✓ Limited ability to address equity issues or other policy priorities, as applicants will choose the mitigation strategy that most closely matches their VMT needs at the lowest possible cost and administrator doesn't control the prioritization



Exchange

PROGRAM OPTIONS

Impact Fees/In-Lieu Fees

Impact Fees

- ✓ Fund capital projects from a defined project list
- ✓ Establish clear nexus with VMT reductions
- ✓ Requires annual monitoring and reporting

In-Lieu Fees

- ✓ Fund actions that can be demonstrated to improve public welfare
- ✓ No annual monitoring or reporting requirements



Impact fees

PROGRAM OPTIONS

Approach to Achieving Less-than-Significant CEQA Findings

Depends on other actions taken by lead agencies:

- **Option:** Lead agencies prepare VMT impact analysis in General Plan/GP EIR, make findings about the jurisdiction-wide VMT impact (in some cases, this would be a significant and unavoidable impact), and identify a set of feasible mitigation actions to reduce the severity of the impact, which could include participation in a countywide mitigation program (like a bank , exchange, or fee program).

Discussion

DISCUSSION

Questions

1. What needs to be clarified?
2. What VMT reduction strategies are you most interested in, and why?

Next Steps

NEXT STEPS

Future PAC Meetings

Fall 2022

Early 2023



Review
Draft
Program



Review
Final
Program

Thank you!

CCTA VMT Mitigation Framework: Project Advisory Committee Meeting #3

Meeting Notes

August 16, 2022
10:00 AM – 12:00 PM

Introduction

Welcome

- Today we will share an update of what we've been working on, will be asking for input on program options to explore further

Project Update

Progress to date

Recap of takeaways from PAC Meeting #2

- *Clarification:* CEQA review does not currently include an equity component.
- *Clarification:* The types of mitigations that could be funded would be either transportation-only OR both transportation and land use-related.

Questions and Comments

- What were some of the concerns about incorporating land use strategies as a mitigation for VMT impacts? They can be very effective.
 - *Response:* Concerns about how enforceable/administratively feasible the land use strategies would be, especially because many stakeholders who would enforce the mitigations are in transportation agencies that may not have the capacity to enforce land use strategies.

New VMT Guidance from Caltrans

- Mitigation Playbook
 - Discrepancy between CAPCOA guidance and Caltrans Mitigation Playbook
 - Cost per VMT reduced is an important question for developers and local jurisdictions. Under CEQA, however, feasibility does not include an assessment of how affordable. Focus is on mitigations that are effective and enforceable.

LOCATION:

Zoom

[Click here to join](#)

PRESENTERS:

Matt Kelly, CCTA
 Stephanie Hu, CCTA
 Julie Morgan, Fehr & Peers
 Ron Milam, Fehr & Peers
 Sarah Peters, Fehr & Peers
 Grace Chen, Fehr & Peers

- Recommended Project Review Practices: Caltrans Significance Thresholds for Highway Projects
 - Currently, the effective threshold is net zero VMT – that is, a “substantial and measurable increase in VMT.”
 - Therefore, any increase in lane miles or reduction in delay results in an increase in VMT, which is a significant impact that would need to be mitigated.

Questions and Comments

- *Clarification:* Note - Caltrans does not set thresholds. The VMT review is to identify and mitigate substantial and measurable increases in VMT.
- Tolling and charging for parking, when priced properly, shouldn't induce demand.
 - *Response:* Pricing at the parking end can discourage vehicle trip making; however, tolling is unlikely to reduce demand unless tolls are set high enough to induce drivers to switch modes. Currently, Caltrans tolls lanes to optimize vehicle throughput, resulting in improved flow rates within a travel lane, which is a much lower price than the toll rate that would reduce demand for highway space.

Program Options

VMT reduction estimates

- Future growth in Countywide Daily VMT above adopted threshold (15% below existing daily VMT/capita).
 - Review this to understand how much VMT needs to be mitigated in CC County over the next 20 years.
 - Sources of VMT growth:
 - Added highway lane-miles/other effective increases to capacity: induced Daily VMT estimate of ~100-200,000 (using NCST calculator tool)
 - Added population and jobs: 450,000 VMT/day
 - **Total:** 550,000-650,000 VMT/day to achieve the thresholds adopted by local jurisdictions

Questions and Comments

- This seems assume that everyone who lives/works in Contra Costa County will drive as their primary means of transportation. This program should encourage the use of non-driving modes, encourage employers to work together to provide shuttles to/from transit, etc. Forgive me if this is coming up later in the presentation.
 - *Response:* Yes, that's coming up. What we're trying to show here is the scale of the problem. Next step looks at a grouping of strategies and evaluating how effective they would be.
 - *Response:* These projects are Measure J projects that are programmed to be constructed by 2040, most of which is coming from the I-680 Express Lanes project; the rest is growth that is projected in adopted city and County general plans. We are not predicting the future or trying to shift behavior - this is just what is projected based on current plans.

- It would be great to improve existing transit service rather than adding shuttles. It's very challenging to be a transit-dependent rider in the County.
- This seems to be punishing Contra Costa County for providing places for people to live and work.
 - *Response:* These numbers are coming from adopted local and regional plans and modeling.
 - *Response:* This is also a pre-pandemic forecast - so it may not fully reflect changes in where people live and how they commute that have occurred in the past few years.

Program structure

- Countywide program funding mitigations at a countywide scale.

Mitigation strategies

- Potential mitigations include reduction of existing vehicle capacity (e.g., road diets) and land use strategies as well as traditional transportation improvements.

Questions and Comments

- How would a travel lane reduction occur on a highway?
 - *Response:* Examples include road diets on "traditional highways" that might be the main route through a town - functioning like an arterial. Removing freeway lanes is very rare.
- So this would not mitigate the VMT resulting from freeway projects? What about allocating lanes to bus-only lanes?
 - *Response:* Any expansion of freeway capacity would induce VMT; mitigations would be targeted to reduce VMT from local travel. Alternatively, mitigations could take the form of aggressive tolling on freeway lanes or increasing parking prices. Technical analysis has not shown a VMT reduction from bus-only/HOV lanes on freeways.
 - *Response:* This *Question* has come up as well when examining freight-only lanes.
- Our experience with bus-only lanes in Alameda County has been that transit ridership increases massively when bus-only lanes. Conversely, when road diets have occurred that reduce vehicle capacity to add bike lanes, we see transit ridership fall. Road diets need to consider effects on transit.
- Very important, however, to ensure buses can enforce the bus only lane with cameras. The BRT mentioned got state legislation passed to enable AC Transit to enforce the use of bus only lanes. Some other bus only lanes that haven't been enabled hasn't worked as well because they are used by freight delivery, passenger pick-ups and drop-offs, and parking for other services.

CAPCOA Mitigation menu

- Scale of application: Project-scale and Community-scale strategies.
 - Note that community-scale strategies tend to have smaller percentage effects but will apply to a much larger population.
- Location context: Urban/Suburban/Rural

- Note that some other strategies may be feasible (as shown in Mitigation Playbook) but may not have robust enough data to qualify as foundations of significance findings under CEQA.

Questions and Comments

- The regional-scale (and corridor-specific) mitigation 'target' shared a moment ago simply helps guide the makeup of the program's suite of services & investments. As Julie is sharing now, what exactly those mitigation strategies are, and what their collective effectiveness is, and how to tailor them to specific users & communities becomes the real challenge. The point regarding first/last mile solutions to link land use & mobility services is well-taken & I would recommend be a big focus for the program because they can help maximize different measures.
- There is round-trip car share, but also point-to-point car share (AKA one-way car share), which I think might have stronger mode-shift impacts and can also discourage some multiple vehicle ownership.

Possible mitigation actions

- Build out countywide low-stress bike network - \$350M-1B for a modest reduction in VMT.
- Community scale TDM: free e-bikes to low-income households, price parking in all commercial districts

Questions and Comments

- I would use the term "manage parking" and include 1/2 mile around major transit stops and stations.
- Most employers offer free parking. I'm sure you know that. Making people pay to park at work would probably make a big difference if you could pull it off politically.
- Important to identify strategies that could help workers commute without their cars.
- Expand/add transit services: fare free buses countywide; 10-minute headways countywide

Questions and Comments

- 10-minute headways are not likely to be feasible without much greater densities along bus routes. Important to do a gut check when proposing updates to headways. Would prefer to see land use strategies to support transit service before expanding service.
- I think you also need to solve for last-mile challenges if you want people to take transit.
- It seems like some of these strategies would be much more effective than others. How do we measure and prioritize among these mitigations? The way these actions are presented makes them seem to be equally effective.
 - *Response:* Correct, these are not all equally effective. The point here is to get stakeholders thinking about countywide-scale actions that could be funded by this type of program.
- We need to see these mitigations presented in order of effectiveness to prioritize among them.
 - *Response:* Yes, we will come back with estimates of cost and effectiveness with each of these kinds of strategies.
- It seems that the housing and other land use strategies are the most effective.
 - *Response:* Yes, but this does not yet include cost. Need to understand cost per VMT reduced.

- Construction of affordable housing needs to be built in places that have good transportation and access to goods and services.
- I would be very interested to see what the costs and associated effectiveness would be. This funding must come from somewhere, and fees currently contribute significantly to high housing construction costs. Any fee needs to produce direct and demonstrable impacts under CEQA if this would be an impact fee program.
 - *Response:* Thank you for pointing that out.
- One point that is missing is the cost of meeting minimum parking requirements, which increase the cost of construction. If thinking about e-bike distribution, we also need to provide a safe place to park them - usually a locker or something similar, which would add to the cost. Also note that bus or shuttle transit to a BART station tends to be much less used than walk/bike/drop off at BART.
 - *Response:* Also note that all our research is pre-COVID - there are still open questions about how long the COVID effects on transit will last.
 - *Response:* Three big outstanding questions regarding transit and reduction in VMT: 1) Lasting effects of COVID and how it affects travel behavior. 2) National decline in transit ridership across the country and increase in # autos/household (starting in 2015). 3) Since 2015, there's a question about what transit's role is in reducing VMT - it has become less effective since then. Concern is that improved transit may not substantially reduce VMT without adjusting other factors that influence decisions (e.g., bus-only lane added in a road diet).
- Pricing is important; currently, parking is free and often on public streets. Looking at unbundling parking from housing, removing parking minimums, and pricing parking are most effective at encouraging people not to drive when it is an option for them.
 - *Response:* Local jurisdictions have a lot of control over parking policy and pricing.
- Can this program consider economic development initiatives that will create jobs closer to jobs in East County?
- I think it would be worthwhile for this group to consider a post-implementation evaluation. It would be good to build our local database to show the effectiveness of these strategies. This could help reinforce the confidence in these strategies from local agencies and developers. Also, travel behavior changes so much over time - we need to take that into account when thinking about the effectiveness of certain strategies.
 - *Response:* That sounds like an excellent topic for a Caltrans SCS grant.
 - *Response:* VMT monitoring is done at the city, county, MPO, and state level through the Caltrans HPMS. <https://dot.ca.gov/programs/research-innovation-system-information/highway-performance-monitoring-system>. This is an aggregate level look at VMT trends. Other methods such as using mobile device data are also available through vendors such as Replica and StreetLight.
- I am waiting to hear about how all this will tie into individual jurisdictions' roles and responsibilities. Establishing nexus is critical for the City to agree on this. As mentioned, I don't see any of the local road projects triggering VMT increase - most of them are bike/ped improvements. So, it goes to the land development projects - for which the Cities have already

adopted local VMT threshold. How will this program interface with that already adopted local policies? If I'm jumping the gun, I'll wait to see at the end.

- *Response:* To clarify, the two numbers here are countywide. Each individual city's portion would depend on its context and its share of future growth. In some cities, most of the growth is likely to happen in very transit-oriented areas and will result in lower VMT impacts; in others, growth will occur far from transit and result in higher VMT impacts.

Approach to achieving less-than-significant CEQA Findings

- One option: Lead agencies prepare VMT impact analysis in General Plan/GP EIR, which could include participation in a countywide VMT mitigation program.

Questions and Comments

- To be clear, will this project be determining the structure of that countywide mitigation program?
 - *Response:* Yes.

Next steps

Questions and Comments

- Will this be presented to individual city councils?
 - *Response:* Not as part of this project - since we are not yet implementing anything through this effort - but before any of this would be implemented, we would of course present to City Councils. If there is interest, we can present on the feasibility study to City Councils and commissions.
- Will we have an opportunity to review and provide comment on these materials?
 - *Response:* Yes, we will send out the slide deck and work with Matt to establish a timeline for your comments.
- What's the expected timeline for analysis to be complete so we can review and provide additional feedback?
 - *Response:* We will have results for you this fall - anticipating a late October/early November meeting to review results, and reconvening in early 2023.

PAC Members Attending

- John Cunningham, Contra County
- Steve Ponte, TriDelta Transit
- Kamala Parks, BART
- Krute Singa, MTC/ABAG
- Laurel Sears, Caltrans D4
- Saravana Suthanthira, City of Concord Transportation Program Manager
- Jody London, Contra Costa County Sustainability
- Melody Reeb, Contra Costa County Connection
- John Hwang, CCTA
- Lindy Johnson, East Bay Leadership Council
- Laurie Talbert, 511 Contra Costa
- Lisa Vorderbrueggen, BIA Bay Area
- Jamar Stamps, Contra Costa County
- Juan Pablo Galvan Martinez, Save Mount Diablo
- Yun Na Rhee, City of Walnut Creek
- Chris Kuzak, Caltrans HQ Sustainability
- Neil Peacock, Caltrans HQ SB 743 advisor
- Leah Greenblat, WCCTAC
- Jim Cunradi, AC Transit

VMT Mitigation Framework for Contra Costa

Project Advisory Committee Meeting #4

October 26, 2022



INTRODUCTION

Agenda

3:00-3:10 pm

Introduction

3:10-3:25 pm

Project Update

3:25-4:15 pm

VMT Mitigation Cost Effectiveness

4:15-4:50 pm

Discussion

4:50-5:00 pm

Next Steps

Introduction

INTRODUCTION

Welcome back!

Reminder on PAC Member role:

- Share your perspective on the needs for a VMT Mitigation Program in Contra Costa
- Provide guidance on how the program should be designed and evaluated
- Review deliverables and help shape the VMT Mitigation Program
- Spread awareness of the program in communities across Contra Costa County



Project Update

PROJECT UPDATE

Recap of Prior PAC Meetings

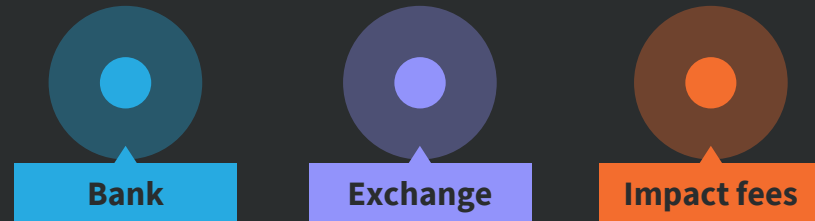
Discussed

- ✓ **Program structure**
- ✓ **Program priorities**
- ✓ **Mitigation strategies**

PROJECT UPDATE

Program Structure

- Countywide program
- Designed to fund strategies with demonstrated VMT reduction benefits
- Could be structured as a bank, exchange, or fee program
- Should have clear linkage to the VMT impact determinations of local agencies (for land development projects) and of Caltrans (for highway projects)



Feedback Received on Program Characteristics

Ideally, Program *should*:

- ✓ Apply Countywide
- ✓ Fully mitigate impacts for most projects
- ✓ Provide predictable, stable costs
- ✓ Have CCTA as likely administrator

Program *could*:

- ⊕ Prioritize equity in a variety of ways
- ⊕ Fund only transportation-related strategies
- ⊕ Fund transportation plus land use and other non- transportation-focused strategies

PROJECT UPDATE

Feedback on Mitigation Strategy Options

Program should be open to funding these categories of strategies:

- Bicycle and pedestrian network improvements
- Community-scale TDM strategies
- Expansion/addition of transit services
- Removal of existing travel lanes (e.g., road diets)
- Land use strategies, such as construction of affordable housing units or rental/mortgage subsidies for local workforce housing

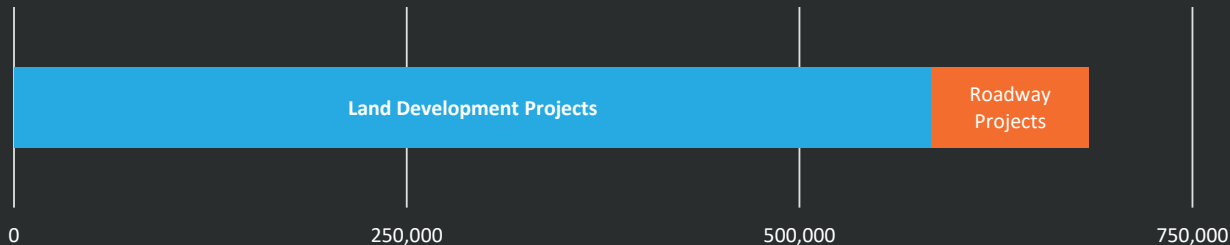
Costs and Effectiveness of VMT Mitigation Strategies



VMT MITIGATION COST EFFECTIVENESS

Projected Countywide VMT Growth above CEQA Threshold

- Land use projects: *~580,000 daily VMT above CEQA threshold over next ten years*
- Transportation projects: *~100,000 daily VMT above CEQA threshold over next ten years*



For context, total countywide VMT is currently estimated at ~47 million.



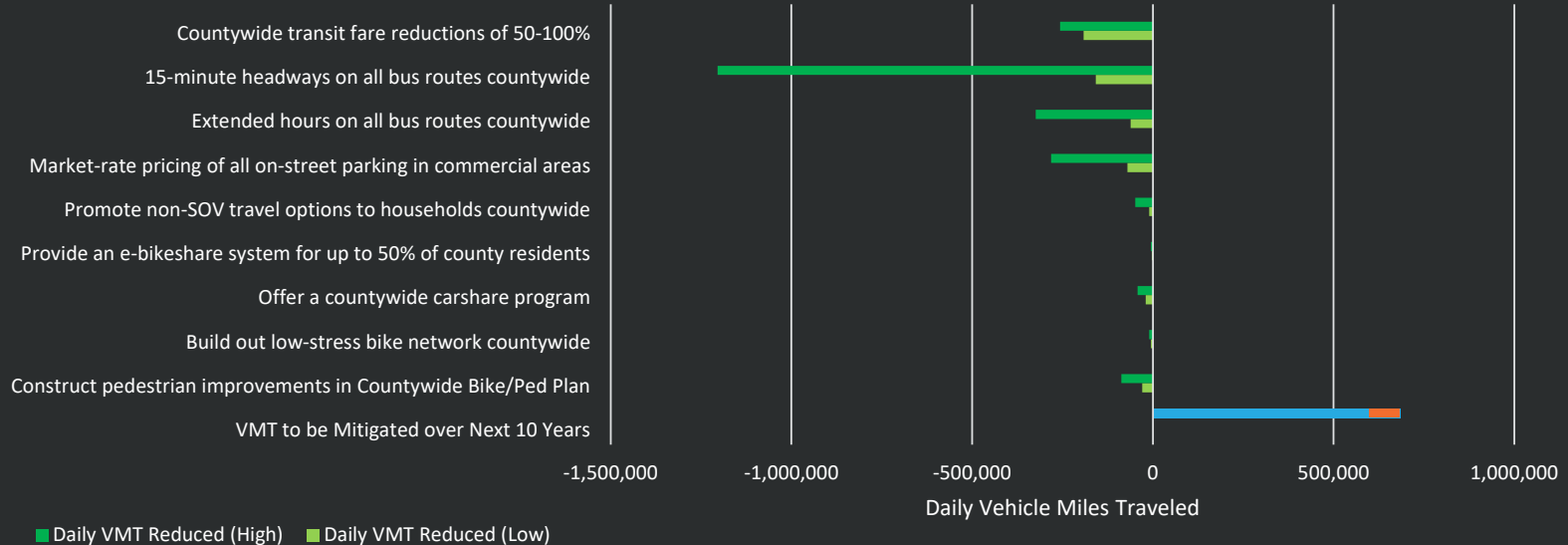
Possible Mitigation Strategies

- Bicycle and pedestrian network improvements
 - Build out countywide low-stress bicycle network and pedestrian network
- Community-scale TDM strategies
 - Countywide eBike-share system
 - Countywide carshare program
 - Price parking in all commercial districts countywide
- Expansion/addition of transit services
 - Reduce or eliminate fares on all bus routes countywide
 - Make all bus routes operate at 15-minute headways
 - Extend hours on all bus routes
- Land use strategies – *results forthcoming*



VMT MITIGATION COST EFFECTIVENESS

Potential VMT Reductions from each Strategy





Caveats

“Best available” evidence doesn’t tell us everything we want to know

- There is little available data about applying some of these strategies at a large geographic scale (such as citywide or countywide)
- There have been big changes in travel behavior since the available data was collected
 - All data predates COVID-19
 - Much of the data was collected prior to the mid-2010s, so is prior to the emergence of ride-hailing services and the sustained downturn in transit ridership



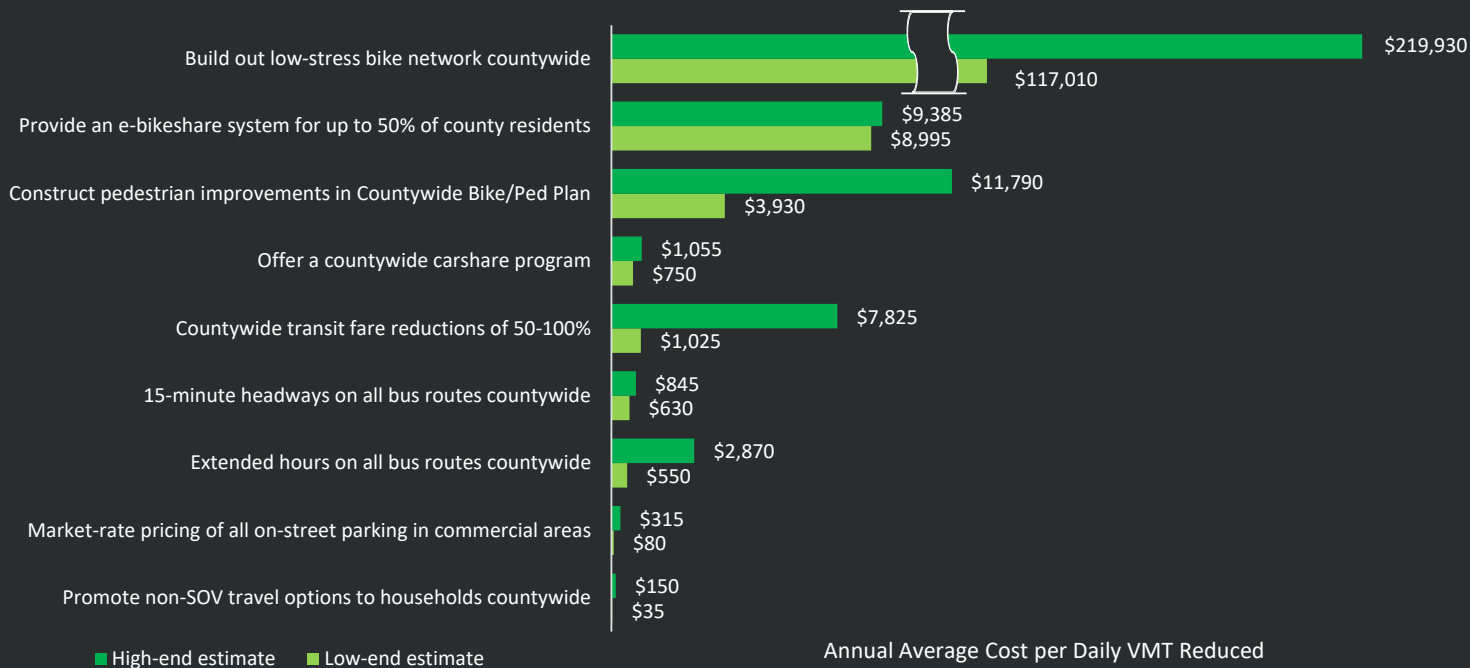
Estimating Costs of the VMT Strategies

- Cost estimates are presented as ranges
- Used data from prior implementations of similar strategies, to the extent available
- Used locally-specific data, to the extent available



VMT MITIGATION COST EFFECTIVENESS

Cost per Daily VMT Reduced





Potential costs for typical developments

Residential Project

Description:	Approx 150 single-family units in suburban location
VMT Impact:	VMT per capita is 20% above threshold
On-site Mitigation:	Assume on-site TDM is required, will partially mitigate
Remaining Impact:	Approx 800 daily VMT
Cost to Mitigate:	\$800,000 - \$3.2 million (i.e., \$1000-\$4000 per daily VMT)

Potential costs for typical developments

Commercial/Industrial Project

Description:	Approx 500,000 sq ft warehouse/office in light industrial location
VMT Impact:	VMT per capita is 50% above threshold
On-site Mitigation:	Assume on-site TDM is required, will partially mitigate
Remaining Impact:	Approx 7,000 daily VMT
Cost to Mitigate:	\$7 million - \$28 million (i.e., \$1000-\$4000 per daily VMT)

Suggested Program Structure

Countywide Mitigation Program

- Administered by CCTA, with support from an advisory committee
- Lead agencies within Contra Costa can suggest VMT reduction strategies
- CCTA vets the strategies against the eligibility criteria, including effectiveness and readiness for implementation, and creates a final list
- Advisory committee would make recommendations about how to prioritize the funding
- CCTA would provide regular reporting about how the funds are used

Suggested Program Structure, continued

Countywide Mitigation Program

- Program sets a fee per daily VMT reduced, with consideration for amount that could be accommodated while maintaining financial viability
- Projects that have VMT impacts could pay the fee on the VMT they are unable to mitigate through on-site measures
- The program may be focused on partial mitigation of VMT impacts; claiming full mitigation could be challenging because of the uncertainties involved in which VMT reduction strategies will be funded and how effective they will be



Discussion

DISCUSSION

Questions

1. Which VMT mitigation strategies make the most sense to pursue, given the cost-effectiveness estimates? Are there specific strategies from your jurisdiction that you would like to suggest?
2. Are we missing anything?
3. What would be a reasonable cost to developers?

Next Steps

NEXT STEPS

Future PAC Meetings

December 2022

Early 2023



Review
Draft
Program



Review
Final
Program

Thank you!

CCTA VMT Mitigation Framework: Project Advisory Committee Meeting #4

Meeting Notes

October 26, 2022

3:00 PM – 5:00 PM

Introduction

Welcome

- Today we will share an update of what we've been working on, will be asking for input on program options to explore further

Project Update

Costs and Effectiveness of VMT Mitigation Strategies

Projected Countywide VMT Growth above CEQA Threshold

- Sources: land development projects and roadway expansion projects

Questions and Comments

- Is the CEQA threshold on this chart 15 percent below countywide average?
 - *Response:* Yes. This shows how much of the VMT generated by new growth will be above the CEQA threshold (15% below countywide average)
- Could you talk about where these numbers come from? Was the NCST calculator used?
 - *Response:* This is from the regional travel demand model, using land use assumptions from Plan Bay Area. NCST calculator used to estimate induced VMT from roadway projects.
 - *Follow up:* My understanding is that NCST calculator is pretty broad and may overstate the impact at the county level. Has its output been compared to the model outputs?
 - *Response:* Yes, this is a little higher than what the CCTA model would estimate. The CCTA model has some blind spots when it comes to estimating long-term estimates of induced travel. Tough to judge, but NCST does come out a bit high when compared to observed data.
 - Does this include through trips?

LOCATION:

Zoom

[Click here to join](#)

PRESENTERS:

Matt Kelly, CCTA
 Stephanie Hu, CCTA
 Julie Morgan, Fehr & Peers
 Ron Milam, Fehr & Peers
 Sarah Peters, Fehr & Peers
 Grace Chen, Fehr & Peers

- *Response:* This includes only VMT from trips starting or ending in Contra Costa County.

Possible Mitigation Strategies

- Bike/ped network improvements
- Community-scale TDM
- Expansion/addition of transit services
- Land use strategies – coming out later

Questions and Comments

- I recall that affordable and infill housing seemed promising in earlier meetings. Are those included in the upcoming land use analysis?
 - *Response:* Yes.
- Were there no improvements that would make buses more reliable?
 - *Response:* Not explicitly, although roadway improvements may be needed to make transit run more frequently.

Potential VMT Reductions from Each Strategy

- Assumptions – based on available data
- Lots of uncertainty – best available evidence doesn't reflect the scale or circumstances of the proposed application (countywide, post-COVID-19, pre-late 2010's transit ridership declines)
- Therefore, apply a lot of caution when thinking about potential effectiveness

Questions and Comments

- Since the objective of SB 743 is related to GHG reduction, will a strategy related to increasing the share of EVs in the traffic mix be considered in this group of strategies? It can be supported by installing more EV chargers at strategic locations across the county.
 - *Response:* EV strategies were not considered. While SB 743 is intended to reduce GHG emissions, OPR set the thresholds in terms of VMT only.

Estimating Costs of the VMT Strategies

- Assumptions – local cost data used as much as possible
 - Bikeshare: relied on data from City of Richmond's recent re-launch of bikeshare
 - Transit service strategies – relied on agency profiles in National Transit Database
- Results shown in terms of cost per daily VMT reduced
 - Costs shown over a ten-year period, averaged to a single year, to better align

Questions and Comments

- Is it correct to interpret this as showing that bike network buildout is less cost-effective than other strategies?
 - *Response:* Yes, for a few reasons. First, the data available on VMT reductions from bike network buildout only applies to commute trips, so even though we know that people will make other kinds of trips (school, shopping, etc.), the available evidence doesn't support a

substantial reduction. There are also a lot of other benefits to bicycle networks beyond VMT reduction. Also, bicycle facilities can be quite expensive to build.

- My request is that you caveat this heavily in the report if it is published, because this could misrepresent the benefits of bicycle networks.
 - *Response:* We would have to put it in context of VMT mitigation and remember that this is a narrow lens. CCTA supports building out the bike network.
 - *Response:* Davis, CA for example has an excellent bike network, but also has very high VMT per capita. There are so many factors that go into VMT – and bike trips tend to be very short, so increasing them will not reduce VMT as much as longer-distance results (see,
- Appreciate the clarity around the limitation of the data and analysis. CAPCOA looks to be fairly crude regarding bike data when applied to Contra Costa County context, particularly with the BART access and off-road network available. This data was also pre-ebike. This should be validated for the local context.
- Is it possible to evaluate the cost-effectiveness of the bike network based on where it's located? And can there be an evaluation of feasibility similar to the evaluation of costs?
 - *Response:* For cost-effectiveness, local cost estimates for local projects would help us refine this estimate.
 - *Comment:* Bike routes of regional significance have been identified in the Contra Costa County.
- Some of these programs are operational funding, which we don't believe are eligible costs under the Mitigation Fee Act.
 - *Response:* If funding of transportation operations rose to the top, CCTA would be interested in sponsoring some sort of legislation that would allow for fee funding of this program.
 - *Response:* It's literally just one sentence in AB 1600 that would need to be changed; there may be some movement on that in the next legislative session.
- Is it possible to compare the cost-effectiveness of the land use strategies to these strategies?
 - *Response::* Yes.
- It seems like there's a lot of funding to build the bicycle network, and I'm wondering if this fee vehicle may not be the best suited to implementing that strategy. Returning to 15-minute headways, you need to look at operational improvements that could be done at little/no cost.
- Would reducing parking supply be a replacement for market-rate public parking?
 - *Reply:* Data is only available for housing parking reduction; generally, reducing parking supply tends to result in a mode shift. However, there's a risk of inducing more VMT by shifting driving trips to Uber/Lyft trips, which result in more VMT than driving oneself.

Potential costs for typical developments

- Weighted average cost (excluding bicycle facilities buildout): \$1000-4000 per daily VMT reduced
- Residential example: 800 daily VMT above threshold, \$800k-\$3.2M for total development (150 SF units)
- Commercial example: 7,000 daily VMT above threshold, \$7M-28M for total development (500 ksf warehouse/light industrial)

- Elsewhere in the state, developers have indicated that they would be open to an increase of up to 1% of total development costs.

Questions and Comments

- Bottom line for BIA members is that they would support a regional VMT fee program that is faster, more predictable, and no more expensive than the current approach. If it costs more, or adds time or uncertainty, it will not be supported. This is new, and there's a concern about this especially for suburban development outside of transit areas. A lot of our members are feeling very nervous about how this will turn out.
 - Point of comparison: Habitat Conservation Program collects a fee used to fund permits, etc. – this has been wildly successful, makes costs more predictable. I see this program as being potentially along those same lines if the payment of a fee allows development to move forward at the same or lower cost and with more certainty than they currently can.
 - *Response:* Note that if this kind of program does not exist, the amount of mitigation available to developers is reduced – resulting in an unavoidable impact that would require a full EIR and the associated time, cost, and uncertainty. The determination of feasibility can include cost, but that is dependent on the local jurisdiction's determination.
 - One approach would be to have the general plan include the CEQA analysis and adopt a statement of overriding considerations, allowing developments that comply with the GP to avoid EIR. City of Roseville has used this approach.
 - *Comment:* That would make this program mandatory, rather than voluntary. Also, the development community and perhaps a lot of elected officials would not support that does not fully mitigate impacts.
- We are heading to a tough decision about VMT – generally, when you are building in outlying areas, VMT will be higher. Infill building requires a concomitant policy approach (rezoning, etc.) – but we've been prioritizing sprawling development for decades now. Other nations have prioritized development that is close-in, which requires less infrastructure and has less impact on the environment.

Suggested Program Structure

- Administered by CCTA with advisory committee
- If program were to stand on its own, it would be focused on partial mitigation of VMT
- If program were used to supplement a city or countywide General Plan, it could be used to mitigate impacts identified in the GP, allowing development projects consistent with the GP to fully mitigate VMT impacts by paying the VMT mitigation fee

Discussion and Questions

- Can developing a Mobility Hub be one of the strategies? This is being looked at across the region.
 - *Response:* Would need to be more specific about what would be included in the mobility hub to allow us to evaluate their VMT effects.
 - *Response:* For a mobility hub to qualify as a VMT reduction strategy it must contain elements that reduce the cost, or increase the convenience, of using transit,

- bicycle/scooter, and walking. Would need to change the ability to transfer, reduce travel time, and/or reduce cost.
- *Response:* Mobility wallet concepts were initially about spreading the wealth to encourage travel for members of disadvantaged. Now there's a focus on VMT reduction.
 - Currently, developers must track VMT mitigation effectiveness. Would this program track usage and VMT reduction effectiveness, or would the developer still have to track this?
 - *Response:* Historically, CEQA mitigations have not required ongoing monitoring.
 - A lot of our members would be encouraged to use this program if they were not responsible for ongoing monitoring.
 - *Response:* We didn't do verification with LOS improvements. For whatever reason, people want to hold VMT to a higher bar. The emerging nature of VMT has led consultants to be more careful about our recommendations.
 - *Response:* The administrator could be responsible for the monitoring and tracking.
 - E-car share program in pilot in Richmond: www.miocar.org. Antioch is working with Richmond Community Foundation to bring it to Antioch. Focus on Impacted Communities. Very low cost.
 - This program could serve as sort of a streamlining mechanism if agencies fold this into their general plan. However, a project would need to be consistent with the General Plan to use this streamlining – is that right?
 - *Response:* Right, this would streamline approvals for projects that are consistent with the GP.
 - *Comment:* The vast majority of GPs in the Bay Area are outdated.
 - *Response:* There is an amazing amount of streamlining that GPs can provide, but jurisdictions vary substantially in how frequently they update them.
 - That makes me wonder how this kind of program would respond to a local agency's update of the GP. Does a program like this get updated so it can appropriately respond to the changing land use context that it's serving?
 - *Response:* This type of program isn't necessarily determined by land use decisions.
 - *Response:* Similar programs (like a CIP) are updated to reflect cost changes every year; other programs may be updated every 5-10 years. Land use context (e.g., suburban vs. urban) also affects the effectiveness.
 - What is being found in pilot programs around the state?
 - *Response:* Biggest effects come at a regional scale; many jurisdictions are waiting to see how pilots play out before launching their own.
 - Will we get the presentation?
 - *Response:* Yes, Matt can distribute.
 - *Comment:* If you do share the slides, please share the context as well.
 - Will the next meeting have the land use strategies? And will there be a fee associated with them? It would not make sense to attach a fee to an affordable housing overlay.
 - *Response:* The first question would be, what additional funding could a program like this bring to the table to increase affordable housing supply. The second question would be, how much VMT reduction would this program provide, and how much credit could the program take?
 - *Comment:* Would like to see how this relates to the Growth Management Program.
 - What are the next steps? Or are you getting to them after discussion?

- *Response:* We are planning to get together with this group twice more – once in early December and another early next year. We will be back in touch when we are ready to schedule the next meeting.

PAC Members Attending

- John Cunningham, Contra County
- Krute Singa, MTC/ABAG
- Saravana Suthanthira, City of Concord Transportation Program Manager
- Jody London, Contra Costa County Sustainability
- Melody Reeb, Contra Costa County Connection
- Lisa Vorderbrueggen, BIA Bay Area
- Jamar Stamps, Contra Costa County
- Juan Pablo Galván Martínez, Save Mount Diablo
- John Nemeth, WCCTAC
- Chris Kuzak, Caltrans HQ Sustainability
- Kristin Connelly, East Bay Leadership Council
- Jim Cunradi, AC Transit
- Mark Leong, Caltrans D4 Land Development & Review

VMT Mitigation Framework for Contra Costa

Project Advisory Committee Meeting #5

January 26, 2023



Agenda

2:00-2:10 pm

Introductions

2:10-2:40 pm

Project Update

2:40-3:15 pm

VMT Program Options

3:15-3:50 pm

Discussion and Feedback

3:50-4:00 pm

Next Steps

Introductions

Project Update

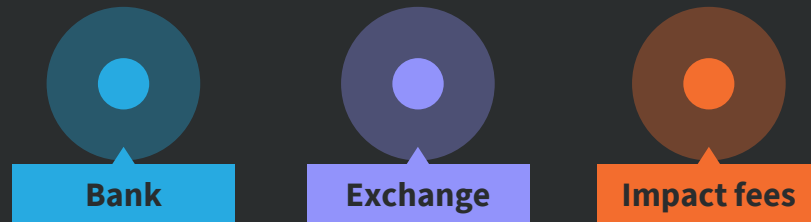
Recap of Prior PAC Meetings

Discussed

- ✓ **Program structure**
- ✓ **Program priorities**
- ✓ **Mitigation strategies**
- ✓ **Cost effectiveness**

Priorities for Program

- Countywide program, led by CCTA
- Would fund strategies with demonstrated VMT reduction benefits
- Could be structured as a bank, exchange, or fee program
- Ideally would allow for full mitigation of VMT impacts for most projects
- Would have predictable, stable costs



Input from Development Community

- Met with developer representatives in December
- Discussion topics
 - Pro forma analysis conducted by economic consultants
 - Potential effect on cost of new development
 - Reaction to potential for a broad-scale VMT mitigation program

Input from Development Community

- Feedback received
 - Comments about some cost assumptions in pro forma
 - Interested in VMT mitigation strategies that directly benefit their customers, while also unsure that localized VMT mitigation will be effective
 - Concern about current market volatility (interest rates, continued uncertainties about customer preferences post-pandemic, regulatory changes)
 - Interest in VMT mitigation program if costs were reasonable and if participation resulted in streamlining of CEQA procedures

Possible Mitigation Strategies

- Bicycle and pedestrian network improvements
 - Build out countywide low-stress bicycle network
 - Close gaps in existing system (trails, sidewalks, crossings, bike lanes)
- TDM programs
 - Countywide eBike-share system
 - Mobility On Demand app pilot
- Transit service improvements
 - BRT projects
 - Increased frequencies, extended hours
- Land use strategies
 - Workforce housing subsidies (rental and purchase)

Mobility on Demand app

- App-based, real-time, multimodal trip planning
- Provides incentives for using low-VMT/low-GHG travel modes
- Encourages increased use of transit, shared mobility modes, carpooling
- Phase 1 included in Innovate 680; future expansion/improvements in Phase 2



Note on Cost Effectiveness Metric

- Metric that allows for reasonable comparison between strategies that have very different cost structures (some require large upfront investment and limited ongoing costs, others have small upfront investment but significant ongoing costs) and that affect different categories of VMT
- **Previous metric:** Total Cost over 10 years / Daily VMT reduced
- **Revised metric:** Total Cost over 10 years / Total VMT reduced over 10 years

Cost per Total VMT Reduced over 10 Years

Category	Estimated Cost per Total VMT Reduced over 10 years
VMT Reducing Infrastructure: bike and pedestrian networks	\$60 - \$225 (could be as high as \$500)
Transit Strategies: Extend transit hours or network	\$4 - \$25 (could be as high as \$130)
Transit Strategies: BRT	\$1 - \$4
Transit strategies: Increase frequencies	\$0.25 - \$3
Housing Strategies: subsidies for workforce housing	\$1 - \$2
TDM Programs: MOD app, bikeshare, carshare	\$0.10 - \$3
Pricing Strategies: parking pricing, transit fare reductions	Up to \$0.50

Strategy implementation challenges

Timing of funds compared to timing of implementation

- *Some strategies (infrastructure, new transit service) require substantial amounts of upfront investment to become fully functional and begin to realize VMT reductions.*
- *A mitigation program (especially if voluntary) will create unpredictable and possibly relatively small funding streams, so may take a long time to generate enough money to implement strategies with high upfront costs.*

Need for public subsidy/investment on untested strategies to establish effectiveness and best practices

- *Emerging strategies such as workforce housing subsidies are very interesting, but lack any quantitative data about effects on VMT*

Program Option

Countywide Pilot Program

Structure

- Administered by CCTA, with support from an advisory committee
- Optional participation by lead agencies within Contra Costa County

Implementation

- Fund implementation of the Mobility on Demand (MOD) app to provide streamlined trip planning and payment for non-SOV travel and incentives for shifting from SOV to non-SOV modes
- CCTA to provide regular reporting about funds collected and expended, metrics about VMT reductions and other effects

Countywide Pilot Program

Mobility on Demand App

- Estimated cost: \$0.10 - \$0.35 per VMT reduced over 10 years
- Uncertainty in cost effectiveness due to innovative nature of the MOD app
- In-app data collection and performance monitoring would refine this estimate over time
- If MOD proves to be effective, could use demonstrated VMT reductions and cost data as the basis for a future fee program

Cost per Total VMT Reduced over 10 Years

Category	Estimated Cost per Total VMT Reduced over 10 years
VMT Reducing Infrastructure: bike and pedestrian networks	\$60 - \$225 (could be as high as \$500)
Transit Strategies: Extend transit hours or network	\$4 - \$25 (could be as high as \$130)
Transit Strategies: BRT	\$1 - \$4
Transit strategies: Increase frequencies	\$0.25 - \$3
Housing Strategies: subsidies for workforce housing	\$1 - \$2
TDM Programs: MOD app, bikeshare, carshare	\$0.10 - \$3
Pricing Strategies: parking pricing, transit fare reductions	Up to \$0.50

Potential costs for a typical development

Residential Project

Description:	150 single-family units in suburban location
VMT Impact:	VMT per capita is 20% above threshold
On-site Mitigation:	Assume on-site TDM is required, will partially mitigate
Remaining Impact:	2,950,000 total VMT over 10-year period
Cost to Mitigate:	\$295,000 total, or \$2,000 per house

Potential costs for a typical development

Commercial/Industrial Project

Description:	500,000 sq ft warehouse/office in light industrial location
VMT Impact:	VMT per capita is 50% above threshold
On-site Mitigation:	Assume on-site TDM is required, will partially mitigate
Remaining Impact:	25.8 million total VMT over 10-year period
Cost to Mitigate:	\$2.58 million, or \$5 per square foot

Discussion

Questions

1. What questions do you have about the potential for a MoD-focused mitigation program?
2. Does the program seem reasonable in cost and implementation?
3. Would your agency be interested in participating in such a program led by CCTA?

Next Steps

Draft Report to be reviewed by CCTA staff

Report will be presented to CCTA Planning Committee and Board

Thank you!

CCTA VMT Mitigation Framework: Stakeholder Advisory Meeting #5

Meeting Notes

Introduction

Welcome

- Today we will share an update on mitigation cost effectiveness and share a potential pilot program to test a countywide VMT mitigation program

Project Update

Progress to date

Recap of prior meetings

- Input from Development Community
 - Interested in strategies that directly benefit customers
 - Concern about market volatility and regulatory changes
 - Interest in program if costs were reasonable and participation resulted in CEQA streamlining
 - Concern about ongoing monitoring requirements - who is responsible for providing ongoing mitigation once original developer/CEQA project lead has moved on?

Mitigation strategies

- MOD app
- Cost effectiveness
 - Updated metric - total 10 year cost per total vmt reduced over 10 years
 - Broad range of cost effectiveness
- Implementation challenges
 - Timing of funds vs. funding of implementation
 - Need for investment in untested strategies to establish effectiveness and best practices

January 26, 2023

2:00 PM – 4:00 PM

LOCATION:

Zoom

[Click here to join](#)

PRESENTERS:

Matt Kelly, CCTA
Stephanie Hu, CCTA
John Hoang, CCTA
Julie Morgan, Fehr & Peers
Ron Milam, Fehr & Peers
Bruce Griesenbeck, Fehr & Peers
Sarah Peters, Fehr & Peers

Comments/questions

- What about denser/increased development in PDA/transit priority areas? Not seeing a lot of action to rezone for density around BART stations in Contra Costa County. This aligns with MTC's transit-oriented metrics for investment.
 - *Response:* We assumed that many jurisdictions would already be making changes to densify those areas. This could be more of a comment for local agencies, who have that zoning authority. Are you thinking that the funds generated by this program would be used to provide grants to help local agencies conduct density-forward zoning updates that support transit and other [low-VMT] modes of travel?
 - Contra Costa County's General Plan update is looking at zoning and how we can increase access to transit, with a focus on the two BART stations that are within County's jurisdiction (Pleasant Hill and BayPoint)
- Was housing density addressed in previous meetings?
 - *Response:* yes, per CAPCOA
- From a mitigation standpoint, how could you use funds to support increased density? The workforce housing subsidy makes sense since it's a direct subsidy. Would the mitigation action be something like funding affordable housing within a TOD?
 - *Response:* Potentially. We did review what it would take to directly incentivize/subsidize affordable housing production - takeaway was that it was highly uncertain, expensive, and hard for a local agency to implement. Workforce housing provides a more certain reduction and a more direct role for cities.
- Developers brought up the question of streamlining. Would another possible VMT strategy be to help cities streamline their development review process? Would that be a strategy to get [denser, lower VMT-generating] housing built sooner rather than later?
 - *Response:* Interesting possibility, but the VMT connection would be yet more tenuous.
- Challenge is developing the nexus and quantifying the benefits of mitigation. This could be a potential future action. Challenging for cities as well since density is not fully within their control.
- Under the possible mitigation strategies - is this the complete list or are these strategies highlighted and there are others considered?
 - *Response:* These strategies are highlighted as examples - we reviewed a broad range of strategies, including specific projects drawn from in capital improvement plans.

Proposed Pilot Program

Suggested program structure and implementation

- Countywide Pilot program - initial funding of MOD app, allowing for research as implementation rolls out
- Cost per development
 - \$2,000 per housing unit (assuming low end of cost range)
 - Economic analysis indicates that this would cost less than 1/2 of 1% of the cost to develop
 - \$5 per square foot assuming development of 500 ksf warehouse

Outstanding questions

- What does the app do?
 - *Response:* It's an app that amalgamates all transportation information, markets and provides incentives for using low-VMT modes.
- I'm dubious about the effectiveness of this strategy.
- MOD app is cool, new, exciting: the costs are just for the use of the app. How do you decide if the app is the right way to go -if you don't have the structure/services in place that the app enables?
 - *Response:* The cost effectiveness is based on just the app for now, but there would be additional costs to provide additional services.
- Developers would pay a fee contributing to the use of this app. Developers are already providing incentives on top of this app. If this is just an informational app, the question is what the developers would be getting beyond what they're already providing.
 - *Response:* Up to lead agencies to determine how participation in this program would relate to other requirements.
- Curious about how you developed the cost figures for these estimates.
 - *Response:* Report will provide more detail on how these calculations were developed. Note that these are cost effectiveness estimates, not cost estimates. Part of the challenge for bike/ped infrastructure is that infrastructure alone has limited effect on mode shift and that walk/bike trips replace short car trips.
- Do these potential costs assume that 100 percent of the VMT reductions would be through the regional fee?
 - *Response:* These potential costs assume that some onsite TDM is required by the local jurisdiction and would partially mitigate the project's VMT impacts.
- When transit is evaluated, estimates often assume frequencies that are not supported by existing densities and street networks. It's hard to imagine that BRT would be very successful in Contra Costa County without significant revisiting land uses and street networks.
- I'm a bit curious about the methodology underneath these numbers. Is it fair to compare the app to transit, given that the app depends on transit for its effectiveness?
 - *Response:* Good question. At this point, we're assuming that the app will push people to existing transit services. If it is successful, there will likely be a need to expand services, and there would be costs associated with that as well.

Discussion and Feedback

- This still seems pretty speculative to me. I'm not seeing enough action that would actually get people out of their cars.
- I agree. I'd be curious about the methodology behind this conclusion; seems like a pretty narrow basis for the basis for the entire program.
 - *Response:* Part of the thinking is that these kinds of programs are very new; this would be a method by which CCTA would learn more about what is effective at encouraging mode shift and would provide more locally-specific data on effectiveness.

- *Response:* Regarding the technical methodology: in some cases, we are relying on research from CAPCOA, which are broad averages from multiple studies from across the US and California. This is the best available information but is not specific to CCTA.
- *Response:* What kind of evidence would you need to see to have confidence in this type of strategy? To the extent that this report can specify what kind of additional data or information is needed, that would be helpful.
- I agree. I'm skeptical of MoD, it's quite untested and hasn't really been transformative in places where it's been implemented. I'd like to see evidence of where MoD has actually shifted modes and what are the conditions where it's successful (urban, suburban, etc.).
- It would be helpful to see the full range of strategies to see how this mitigation program would be rounded out.
 - *Response:* yes, we can provide that.
- Consider integrating unfunded components of regional transit pass programs.
- Transit providers currently have on-demand transit pilot. Interested in participating.
- How have studies teased out the effectiveness of these kinds of apps beyond simply providing the service?
 - *Response:* The research on presenting information to people about their travel choices has a demonstrated behavioral effect before and after the information is presented.
 - *Response:* Just a reminder that this is a list of actions that an incoming project could contribute to as a way to mitigate its impacts. Dense development near transit is generally exempt from CEQA analysis under SB 743 because they are inherently low-VMT.

Next Steps

- When can we expect to see the draft report?
 - *Response:* The report will be out by the end of April.
- Will you be presenting this to local agency leaders?
 - *Response:* We are presenting this to our board in March or April.
- How will we know when the report is ready to be reviewed? Will we be providing comments on a draft document, or will we receive the document when its
 - *Response:* We will share this report when it's ready to go to the board. We will incorporate any comments you have now based on the presentation into the report.
 - *Response:* Thank you for your time and input. Please send any additional comments to Matt or to Julie.

PAC Members Attending

- Steve Ponte, Chief Operating Officer, Tri Delta Transit (outgoing)
- Chris Kuzak, Caltrans HQ Sustainability
- Mark Leong, Caltrans LDR-D4
- Jody London, Sustainability Coordinator, Contra Costa County
- Toan Tran, Chief Operating Officer, Tri Delta Transit (incoming)
- Andrew Dillard, City of Danville
- Melody Reeb, agency
- John Cunningham, Contra Costa County
- Jim Cunradi, LRP manager at AC Transit
- Kamala Parks, Principal Station Planner, BART
- Krute Singa, MTC Planning Section
- Lisa Vorderbrueggen, BIA Bay Area
- Jamar Stamps, Contra Costa County
- John Nemeth, Executive Director, WCCTAC
- Smadar Boardman, Traffic Engineer, City of Walnut Creek
- Juan Pablo Galván Martínez, Senior Land Use Manager, Save Mount Diablo
- Saravana Suthanthira, City of Concord
- Nathan Landau, Senior Transportation Planner, AC Transit

Appendix D – Presentation for Small Group Meeting with Residential Developers

SINGLE FAMILY DEVELOPMENT COSTS/ DYNAMICS

Contra Costa County
Transportation Authority

VMT Mitigation Program Study
December 9, 2022



Economic & Planning Systems, Inc.
The Economics of Land Use

1330 Broadway, Suite 450 ■ Oakland, CA 94612
510.841.9190 ■ www.epsys.com

INTRODUCTION

- Understand development costs and real estate dynamics
- Important to have baseline as VMT Mitigation Program options explored
- For Single Family Detached development, considering illustrative Single Family Detached Prototype in City of Antioch
- EPS developed Planning-Level Estimates of Development Costs
- Interested in feedback on assumptions as well as dynamic market for housing in Contra Costa County

ACTIVE SUBDIVISIONS IN ANTIOCH

Project Name	Total Planned Units	Home Size Range (sq ft)	Base Price Range	Base Price per sq ft Range
Cielo at Sand Creek	162	2,091 - 2,833	\$810,990 - \$924,990	\$326.51 - \$387.85
Crest at Parkridge	300	2,078 - 3,553	\$751,000 - \$992,000	\$279.20 - \$361.41
Luca	179	1,448 - 2,738	\$669,000 - \$795,000	\$290.36 - \$462.02
Luna	102	2,035 - 3,183	\$636,880 - \$800,880	\$251.61 - \$312.96
Oriana	115	2,328 - 3,637	\$686,880 - \$890,880	\$244.95 - \$295.05
The Hills at Park Ridge	118	1,948 - 2,820	\$695,900 - \$834,900	\$296.06 - \$357.24

ILLUSTRATIVE PROTOTYPE

- **Development Program**
 - 2-story Single Family Detached Home
 - 2,500 sq ft of Living Space and 400 sq ft of Garage

- **Information Sources**
 - Marshall & Swift
 - The Gregory Group
 - City of Antioch
 - CoStar/ Redfin
 - Prior EPS Analyses

ILLUSTRATIVE DEVELOPMENT COSTS

Single Family 100-Unit Subdivision Prototype -- Total Development Costs

DEVELOPMENT PROGRAM ASSUMPTIONS			Total	Per Unit	% of Value
15-Acre Site (Gross Square Feet)			653,400	6,534	N/A
Residential Units			100	N/A	N/A
Gross Building Area (Square Feet)	2,900	SF per Unit	290,000	2,900	N/A
Net Area (Square Feet)	2,500	SF per Unit	250,000	2,500	N/A
Parking Spaces			<i>Integrated Garage</i>		
DEVELOPMENT COSTS, LAND VALUES, AND RETURN					
LAND ACQUISITION	\$400,000	per site acre	\$6,000,000	\$60,000	8%
DIRECT COSTS					
Basic Site Work/ Lot Improvements	\$45,000	Per Lot	\$4,500,000	\$45,000	6%
Direct Construction Cost	\$140	Cost/SF (GBA)	<u>\$40,600,000</u>	<u>\$406,000</u>	<u>55%</u>
Direct Cost Total			\$45,100,000	\$451,000	61%
INDIRECT COSTS					
Architecture and Engineering / Other Consultants	6.0%	of Direct Cost	\$2,706,000	\$27,060	4%
Taxes and Insurance	2.0%	of Direct Cost	\$902,000	\$9,020	1%
Financing	4.0%	of Direct Cost	\$1,804,000	\$18,040	2%
Sales and Marketing	3.0%	of Direct Cost	\$1,353,000	\$13,530	2%
Developer Fee	4.0%	of Direct Cost	\$1,804,000	\$18,040	2%
Permits and Fees	\$62,645	per Unit	<u>\$6,264,469</u>	<u>\$62,645</u>	<u>8%</u>
<i>Total Indirect Costs</i>			\$14,833,469	\$148,335	20%
TOTAL LAND/ DEVELOPMENT COSTS	\$227	per square foot (GBA)	\$65,933,469	\$659,335	89%
DEVELOPER RETURN REQUIREMENT	12.5%	of Total Development Costs	\$8,241,684	\$82,417	11%
TOTAL COST/ RETURN	\$256	per gross square foot	\$74,175,153	\$741,752	100%
	\$297	per net square foot			

Sources: City of Antioch; Costar; Marshall & Swift; The Gregory Group; EPS

FEEDBACK

- General feedback on Cost Estimates
- Feedback on Specific Assumptions:
 - Any missing cost categories?
 - Construction Cost per Square Foot
 - Land Acquisition Cost per Acre
 - Permits and Fees per Unit
- Broader Market Context/ Prospects:
pandemic, interest rates, other

Appendix E – Evaluation Criteria Memorandum

Memorandum

Date: August 11, 2022
To: Matt Kelly and Stephanie Hu, CCTA
From: Julie Morgan and Sarah Peters
Subject: VMT Mitigation Framework: Evaluation Criteria

WC21-3806

The Contra Costa Transportation Authority (CCTA) is developing a regional framework to mitigate Vehicle Miles Traveled (VMT) impacts associated with new development and transportation infrastructure. The resulting VMT Mitigation Program will support CCTA member jurisdictions as they make land use and transportation decisions that reduce reliance on single-occupant vehicles. To complete this work, CCTA has engaged a consultant team led by Fehr & Peers to evaluate VMT mitigation program alternatives and to develop recommendations reflecting the priorities of project stakeholders.

To assess the program alternatives, the project team has developed and refined a set of evaluation criteria. Defined evaluation criteria enable project sponsors, stakeholders, and team members to develop a clear understanding of the benefits and drawbacks of different program alternatives. Aligning criteria with the goals and values of project stakeholders ensures that programs that meet the criteria will advance those goals and values.

This memorandum describes the process used to develop these criteria, including outreach to and feedback received from project stakeholders. The memorandum concludes with a set of recommended evaluation criteria, which will be used to assess different program alternatives.

Criteria development process

The consultant team developed an initial list of evaluation criteria, drawing on experience with similar projects and on priorities expressed by CCTA staff and members of the Project Advisory Committee (PAC). This initial list was refined after review by CCTA staff, and then shared with members of the PAC.



The initial list identified draft criteria under six categories:

- **Legal Foundation:** Does the program alternative meet statutory requirements established under CEQA?
- **Agency Oversight & Funding:** Which public agency would manage the program, and how would that administration be funded?
- **Geography & Scale:** Could the program be applied at multiple geographic scales? How would the location of VMT impacts relate to the location of impact mitigations?
- **Applicability:** To what types of projects would the program apply, and what types of mitigations would it support? Would the program promote equitable outcomes for members of underserved communities?
- **Data Analysis & Monitoring:** Would the program establish a standardized approach to evaluating VMT impacts and reductions, and does it have clearly defined methods for ongoing data collection and monitoring?
- **Program Risk Reduction:** Is the program clear and easy to understand, and does it result in predictable and affordable results?

To gather focused input from the PAC, the project team developed a survey that asked questions about a VMT mitigation program's purpose, priorities, and structure. Seventeen responses were collected, representing about two-thirds of the PAC membership. Additional input from PAC members was collected during a two-hour Zoom meeting on November 29, 2021.

Feedback on draft criteria

PAC members provided feedback on nearly all draft criteria. They reached broad consensus on a few issues – program geography, desired CEQA outcomes, and program stability – but shared divergent opinions on other issues, including the role that equity should play in evaluating program alternatives and which types of mitigation strategies should be funded.

Areas of Agreement

PAC members agreed on several issues:

- **Program funds should be invested countywide** and should not be restricted to the communities in which impacts are identified. A countywide program would be more effective than a locally restricted program, and the program should prioritize funding mitigations that most effectively reduce VMT.
- **The program should fully mitigate VMT impacts on most projects**, allowing lead agencies to make findings of less-than-significant impacts under CEQA.
- **The program should offer predictable and stable costs** to provide certainty for project applicants when determining project mitigation costs.



Mixed Responses

PAC members diverged on a few issues:

- **Should the program focus on funding only transportation-related mitigation strategies or should it encompass a broader spectrum of strategies?** Some PAC members expressed an interest in funding a broad range of strategies, with a particular interest in using mitigation funds to support the construction of affordable housing. Other members were concerned that funding too broad a range of strategies could make the program less effective and overly complex.
- **Should the program apply an equity lens when making investment decisions?** Some PAC members felt that the VMT mitigation program should prioritize actions that would address historic disinvestment and environmental justice issues. Other members felt that the program’s highest priority should be to achieve the greatest VMT reductions in the most cost-effective way.

Proposed Evaluation Criteria

Based on feedback received from the PAC, the evaluation criteria were revised as shown in **Table 1**.

Table 1: Proposed Evaluation Criteria

Criteria/Metric	Description
Legal Foundation	
CEQA Requirements	Does the program alternative meet statutory requirements established under CEQA?
Agency Oversight & Funding	
Administering Agency	Has a public agency been identified to administer the program?
	Does that public agency currently have authority to implement the program? If not, would leadership be willing to acquire that authority, and is there a clear path to do so?
Transparency and Accountability	Does the program have transparency and accountability measures built into its design?
Dedicated Funding Source	Is the program structured to allow the administrator to recoup administration costs?
Geography & Scale	
Scalability	Can the program be scaled up from a smaller to larger geographic area as additional jurisdictions express interest in participation?



Table 1: Proposed Evaluation Criteria

Criteria/Metric	Description
Geography	Would the program fund mitigations countywide?
Applicability	
Flexibility	Is the program able to mitigate the impacts of both land development and transportation infrastructure projects?
	Would the program result in less-than-significant impacts for most projects?
	Does the program provide flexibility in the choice of mitigation actions, in terms of costs, location, co-benefits, and other factors??
Coordination	Does the program support mitigation actions that are cohesive and well-coordinated, regardless of jurisdictional boundaries?
Equity	Does the program include equity factors, such as in the selection of mitigation actions and/or in distribution of funds?
Data Analysis & Monitoring	
Standardized Analysis	Does the program establish a standardized approach to evaluating VMT impacts and VMT reductions?
Program Monitoring	Does the program have clearly defined methods for ongoing data collection and monitoring to evaluate its long-term success in reducing VMT?
Program Risk Reduction	
Program Legibility	Is the program intelligible and intuitive to public agency staff, developers, advocates, and other concerned stakeholders?
Cost Certainty	Does the program offer certainty in costs to project applicants?
	Does the program offer certainty in revenue to ensure mitigation actions can be implemented?
	Does the program result in mitigation costs that are financially viable for project applicants?
Cost of Mitigations	Could the cost of mitigations achieved through the program be accommodated without compromising the viability of new housing development?

Source: Fehr & Peers, 2022.

Next Steps

The draft evaluation criteria will be used to narrow down program options and to evaluate how well those options meet priorities identified by PAC members. Program alternatives will be presented to PAC members at upcoming meetings.

Appendix F – White Papers on Land Use Strategies

**CONCEPT: Going from “Drive Until You Qualify” to “You Don’t Have to Drive—You’re Qualified!”
VMT Mitigation by Reducing Barriers to Living in Low VMT Neighborhoods**

The higher cost of housing is one factor that reduces the opportunities for homeowners and renters to reside in highly accessible, centrally located neighborhoods. The catchphrase “drive until you qualify” is a shorthand for the dynamic of a prospective homeowner or renter looking for a residence close to work or school, failing to qualify for financing, and taking the search for housing further and further out. This dynamic forces workers to commute longer distances. However, it also may force other members of the household to live in less accessible, auto-dominated locations where driving is required for nearly every household activity. Some see this dynamic with an equity lens, too—lower wage workers and lower income households are more likely to be forced out of the higher cost residential areas.

This concept for a VMT mitigation program 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. One part of the program would identify candidates. An ideal candidate would:

- Currently work in Contra Costa County, and reside well outside the County, in a low-accessibility/high VMT area;
- Prefer to live in a high-accessibility/low VMT area within the County, but unable to afford a suitable residence;
- Are willing to commit to a minimum residence term in the low VMT area, and commit to doing periodic surveys to monitor program (not individual) travel; and Have employment in the County that is likely to continue through the minimum residence term mentioned above (e.g. public employees, or other employees with long tenure).

This Housing Relocation-Subsidy Program (HRSP) would require the CCTA to fund grants, zero-interest loans, or monthly subsidies to offset the housing cost differential for the ideal candidates described above. The program would require CCTA or a contractor to administer the program (recruiting and screening candidates for the grants or subsidies, monitoring to ensure that households receiving grants or subsidies continue to reside in a high-accessibility/low-VMT area, and to deal with households that need to transition in or out of the program).

The VMT mitigation would come from tallying the reduction in VMT generated by the residents of a households in a HRSP-enabled location in a high-accessibility/low-VMT area, compared to the VMT that the households generated in low-accessibility/high VMT areas. The reduction could be calculated in a number of different ways:

- The most rigorous would be based on ACTUAL travel by households relocating from a low-accessibility/high VMT areas, and similar surveys of the relocated households in the high-accessibility/low VMT areas. This would limit the program to households willing to relocate from one area to another.
- Another approach would be to base the VMT reduction calculation on the AVERAGE RATES for households in the low-accessibility/high VMT areas and high accessibility/low VMT areas. This approach would still be limited to households willing to relocate, but the survey and monitoring of the program would be far less intensive. Candidates for calculation of average rates are:

DRAFT Housing Relocation-Subsidy Program
CCTA VMT Mitigation Framework

reliable travel model estimates (e.g. MPO's published rates); estimates from big data sources like Streetlight or Replica; or rates based on household travel surveys, and keyed to observable land use and demographic characteristics of the candidate program participants.

- In all cases, VMT reductions would come from not just one day or one year, but for the full term of the expected relocation of the households. Most of the residential subsidy programs in use currently have some minimum term residents receiving the subsidies. HRSP should have a relatively long minimum term, like 5 years or more—but the number of years of likely benefit should extend beyond that minimum term, presuming that some households will remain after the minimum term is expired.

Although the impetus and main goal of this program is facilitating a long-term reduction in household-generated VMT, to offset VMT increases generated by highway capacity projects, other goals could be served by this program as well:

- Because more low-wage workers and lower-income households are priced out of higher cost housing in high-accessibility/low-VMT neighborhoods, it is likely that more of these lower-income households will be ideal candidates for grants, and could increase access to housing for those households, and increase income diversity in those areas.
- Most current residential subsidy programs already in use are motivated by workforce concerns—basically, wanting to help employees of a large organization to find suitable housing closer to their worksite. This program, if targeted to workers in Contra Costa County, will have a similar impact.

Establishing a program would require several significant findings and determinations.

- Identifying high-accessibility/low-VMT areas and low-accessibility/high-VMT areas should be based on the best available data on household-generated VMT and land use. Travel models, household travel surveys, and regional GIS datasets are all candidates for doing this. Having sources for area identification that have some level of consistency with the sources of VMT impacts for transportation projects is desirable, at least. See Figures 1, 2 and 3 for examples of VMT per capita estimates for Contra Costa County.
- An analysis of housing costs in the different areas needs to be prepared, to establish what the grants or subsidies need to be in order to stimulate the household relocations that drive this program. Some level of housing market analysis should be performed on a sample of housing in both high-accessibility/low-VMT areas, and low-accessibility/high-VMT areas. Initial data on housing costs is provided below.
- Finally, the logic of this program would require that to truly reduce household-generated VMT over the longer term, the program would result in a shift or acceleration of housing production in high-accessibility/low-VMT areas. If it doesn't do this, the program could reduce VMT for subsidized households, but those reductions would simply be offset by other households backfilling the dwellings in low-accessibility/high VMT areas. For this reason, the program would work best if Contra Costa County or the jurisdictions within had explicit infill housing priority programs that mesh with the goals of the VMT mitigation program.

Examples of Similar Programs

Many examples of “employer-assisted housing” programs exist, in which a specific employer offers some form of subsidy or other assistance to offset high housing costs that may be a dis-incentive to a new or prospective hire relocating to the employer. Many also provide assistance to existing employees, to facilitate relocating residence closer to the employer, or within a jurisdiction in the case of a public employer like a city or county. Housing assistance is offered by many universities (e.g. Stanford, most of the UC’s), and some cities or counties. A few examples of documented programs are provided below.

- Detroit, Michigan—this program offered housing subsidies primarily as a strategy to develop neighborhoods within Detroit. The program offered subsidies for both renters and buyers, and 2000 households used the subsidies to move into targeted neighborhoods. [What happens when you give people cash to move to Detroit - DETOUR \(detourdetroit.com\)](#)
- University of Chicago—this program offered interest-free loans to U of C employees, to purchase housing in targeted neighborhoods near the university. Subsidies have been provided to 228 households. [Employer-Assisted Housing - Metropolitan Planning Council \(metroplanning.org\)](#)
- Aurora Healthcare, Milwaukee, Wisconsin—Aurora sought to facilitate “walk to work” potential for their workforce, and used interest free loans to households to assist in finding housing in targeted neighborhoods near their clinics. A unique and in-depth case study of the 208 participants in the program is available. [Microsoft Word - EAH Value Proposition_finalformatted.doc \(hawaiihousingalliance.org\)](#)

The HRSP program for CCTA would be a variant of these existing programs. One variation would be, the existing programs are run by individual employers, targeting their own employees or prospective employees. The HRSP described here would target employees working within Contra Costa County, but would not be limited to one employer. A second difference would be the inclusion of VMT reduction as an explicit program goal would require some level of monitoring that existing programs do not have.

Cost Effectiveness

For purposes of estimating cost effectiveness, the following assumptions are made about the basic form of a residential subsidy program:

- 1) The program would target workers in Contra Costa County, who currently reside in low accessibility/high VMT locations outside the county. See the attached Table 1 (Worker Residence to Workplace Flows).
- 2) The program would provide subsidies to allow worker households to relocate to preferred locations in high accessibility/low VMT areas within Contra Costa County. See attached Table 2 for some VMT statistics for several potential residential relocation “pairings” for program participants.
- 3) Subsidies would be sized based on the housing cost differential between the current low accessibility/high VMT residential location, and a targeted high accessibility/low VMT location within Contra Costa County. (Note: housing research needs to be completed to assess the cost

DRAFT Housing Relocation-Subsidy Program
CCTA VMT Mitigation Framework

differential for some of the potential relocation “pairings”). See Tables 3 and 4 for an initial summary of housing cost differences for rented and owned units. For purposes of this analysis, rental subsidy was assumed to range from \$300 to \$600 per month, and down payment assistance was assumed to range between \$75,000 and \$100,000. The assumed ranges for owned units are unlikely to fully make up housing cost differences shown on Tables 3 and 4.

- 4) Subsidies for owned homes would be provided as a forgivable loan to the worker, to eliminate the housing cost difference and allow the worker household to relocate. The loan would be forgiven entirely if the worker met conditions on term of residence in the new location, and on participation in annual travel surveys to monitor program performance. Subsidies for rental homes would be provided for each month a worker resided in the new rental home or apartment, and participated in annual travel surveys. (Note: see Tables 5a and 5b shows scenarios showing sensitivity to some of the key factors).

Major factors will affect the cost effectiveness of a residential subsidy program targeted at reducing VMT:

- 1) VMT differential between the current low accessibility/high VMT locations of targeted residents of a subsidy program, and the future residential location in a high accessibility/low VMT location. All other things being equal, the cost effectiveness of the program would be highest if residents are moving from a very high VMT location, and to a very low VMT location within Contra Costa County.
- 2) Duration of program participation. Especially for owned homes, a one time subsidy (i.e. the forgivable loan) could generate many years of VMT reduction in the new residence location.

Table 1
DRAFT Residence to Workplace Flows, MTC Region and Surrounding Counties

Based on 2015 ACS 5-year Sample Data

Residing in...	Working in...																	Total Workers
	Alam.	C.Costa	Marin	Napa	S.Fran.	S.Mateo	S.Clara	S.Cruz	Sol.	Son.	S.Joaquin	Stanis.	Yolo	Sacram.	Mont.	S.Benito	All Other	
Alameda	462,270	41,010	4,823	304	92,246	35,263	70,878	410	1,670	962	2,500	619	304	899	291	114	4,569	719,132
Contra Costa	100,160	283,631	8,564	1,653	58,089	11,201	14,023	219	7,534	968	2,271	389	788	1,687	330	11	4,239	495,757
Marin	4,052	1,957	81,726	476	27,614	2,485	1,097	45	472	4,387	11	37	29	38	-	-	1,186	125,612
Napa	1,047	1,873	1,312	51,743	1,788	525	460	10	4,422	2,423	87	17	189	370	8	-	727	67,001
San Francisco	21,561	4,116	6,933	321	353,484	48,768	27,100	389	506	990	177	77	162	403	-	-	3,363	468,350
San Mateo	12,423	1,916	1,004	114	81,943	218,287	58,936	475	302	149	47	31	35	225	72	25	2,518	378,502
Santa Clara	37,913	3,310	323	90	14,241	45,818	774,477	4,249	267	389	338	420	108	299	2,727	1,333	6,408	892,710
Santa Cruz	862	156	30	34	714	1,242	17,458	99,105	68	55	17	75	20	88	6,583	700	938	128,145
Solano	10,315	19,504	5,272	11,850	8,974	2,616	1,496	-	109,059	2,780	538	32	5,058	5,287	38	-	2,052	184,871
Sonoma	2,271	1,155	15,863	4,434	6,811	1,233	1,095	32	1,009	197,589	67	27	190	260	16	27	2,938	235,017
																		3,695,097
San Joaquin	26,485	5,861	156	325	2,023	2,040	10,075	99	1,051	197								
Stanislaus	7,159	1,571	75	49	753	1,021	4,639	190	196	28								
Yolo	681	611	96	300	526	220	293	11	4,979	64								
Sacramento	2,558	1,992	550	308	2,212	940	1,801	56	5,850	608								
Monterey	404	147	24	-	156	461	5,200	9,640	6	23								
San Benito	185	74	12	-	83	114	9,030	1,038	1	52								
All Other Places	9,395	3,818	1,479	2,472	9,442	8,158	17,199	1,171	3,249	3,865								
Total Workplaces	699,741	372,702	128,242	74,473	661,099	380,392	1,015,257	117,139	140,641	215,529								

Workers with jobs in Contra Costa County
 Workers residing in Contra Costa County

Table 2
DRAFT Potential VMT Savings for Residential Subsidy Program

Current residence & Daily VMT per Capita		Relocated residence & Daily VMT per Capita		VMT Difference
SJC: Tracy (Hwy 205 / West Byron Rd)	30	Pleasant Hill (680 / Monument / Walnut Creek)	15	-49%
Morgan Hill (SW Quad US-101 / Cochrane Rd)	29	Central El Cerrito (NE Quad of San Pablo Ave / Moeser Rd)	16	-46%
Alamo (NE Quad of I-680 / Stone Valley Rd)	26	Central Richmond (Macdonald Ave / Barrett / Harbour)	19	-27%
San Ramon (I-680 / Norris Canyon / Bollinger)	23	Clayton (Ygnacio Valley / Clayton / Pine Hollow)	22	-4%

Source: Fehr & Peers. Based on VMT per capita estimates from Streetlight data.

Table 3. Comparison of Selected Rents

County	City	Average Sq Ft [1]	Average Rent [2]	Average Rent per Sq Ft
Contra Costa	Alamo	974	\$2,834	\$2.91
	El Cerrito	843	\$2,488	\$2.95
	Pleasant Hill	800	\$2,461	\$3.08
	Martinez	760	\$2,295	\$3.02
	Pittsburg	870	\$2,124	\$2.44
San Joaquin	Stockton	803	\$1,573	\$1.96
	Tracy	916	\$2,497	\$2.73
Stanislaus	Modesto	808	\$1,626	\$2.01
Solano	Vallejo	789	\$1,802	\$2.28
Santa Clara	Milpitas	841	\$3,329	\$3.96
	Morgan Hill	946	\$2,917	\$3.08
Alameda	Livermore	785	\$2,542	\$3.24

[1] Source: Costar

[2] Average of 2-bedroom rents reported in Costar, Zillow, and Rent.com

Table 4. Comparison of Selected Single Family Home Sales

County	City	Redfin, 3-bedroom houses sold last 1 year			
		Number of Records	Average Sq Ft	Average Sale Price	Average Price per Sq Ft
Contra Costa	Alamo	24	2,165	\$1,817,500	\$895
	El Cerrito	116	1,488	\$1,275,000	\$842
	Pleasant Hill	197	1,408	\$1,000,000	\$721
	Martinez	247	1,490	\$800,000	\$540
	Pittsburg	147	1,493	\$531,380	\$341
San Joaquin	Stockton	1,562	1,432	\$431,500	\$302
	Tracy	406	1,631	\$680,000	\$437
Stanislaus	Modesto	1,395	1,440	\$435,000	\$303
Solano	Vallejo	594	1,324	\$550,514	\$417
Santa Clara	Milpitas	125	1,328	\$1,430,000	\$1,016
	Morgan Hill	136	1,629	\$1,133,000	\$701
Alameda	Livermore	423	1,421	\$1,110,000	\$782

Source: Redfin.

Both tables prepared by Economic & Planning Systems (EPS), January 2023.

Table 5a
DRAFT Cost per VMT, Owned Residence

VMT Change	Daily VMT per Capita	Annual VMT per Household	Daily VMT per Capita	Annual VMT per Household
Current	30	75	25	55
Relocated	15	38	18	40
Change		-38		-15
Cost Effectiveness Factors:				
Duration of Relocation (Years)		10		10
VMT Annualization Factor		350		350
Total Daily VMT Saved (10 years)		131,250		53,900
Relocation Subsidy (one-time)		\$100,000		\$75,000
Overhead (25%)		\$25,000		\$18,750
Cost per VMT saved		\$0.95		\$1.74

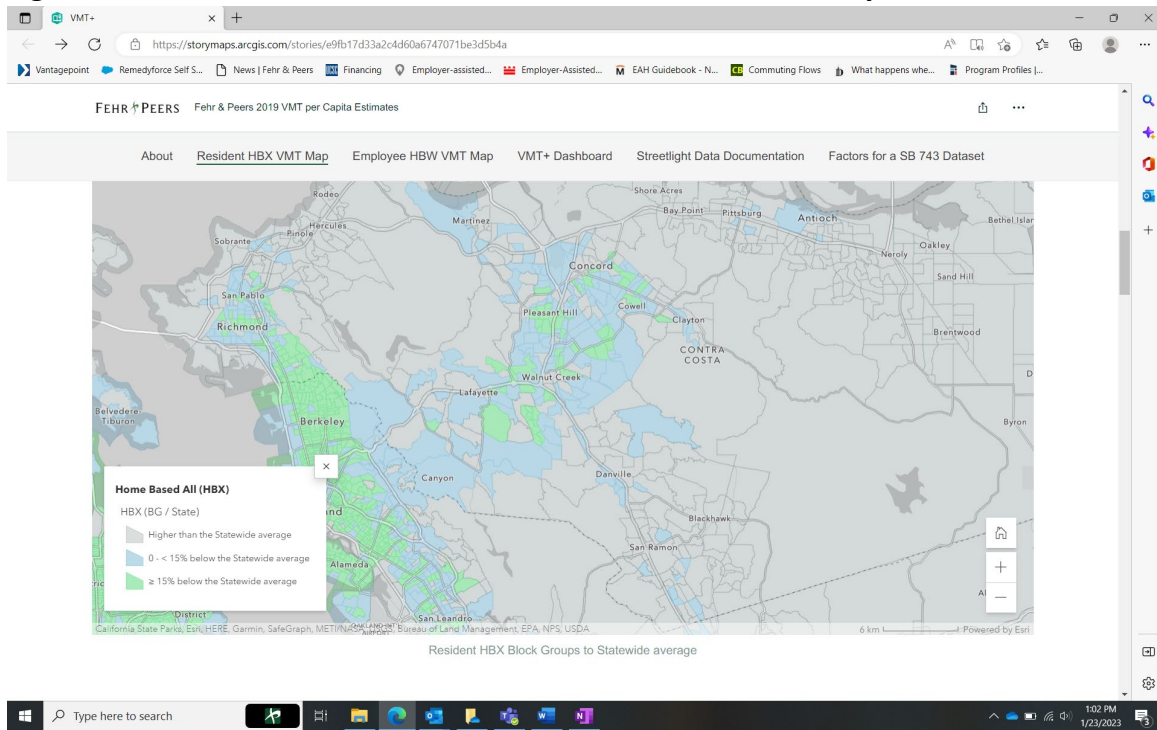
Source: Fehr & Peers, January 2023.

Table 5b
DRAFT Cost per VMT, Rented Residence

VMT Change	Daily VMT per Capita	Monthly VMT per Household	Daily VMT per Capita	Monthly VMT per Household
Current	25	55	20	36
Relocated	12	26	16	29
Change		-29		-7
Cost Effectiveness Factors				
Duration of Relocation (months)		120		120
Annualization Factor		350		350
Total VMT Saved (10 years)		100,100		25,200
Relocation Subsidy (monthly)		\$600		\$300
Overhead (25%)		\$150		\$75
Cost per VMT saved		\$0.90		\$1.79

Source: Fehr & Peers, January 2023.

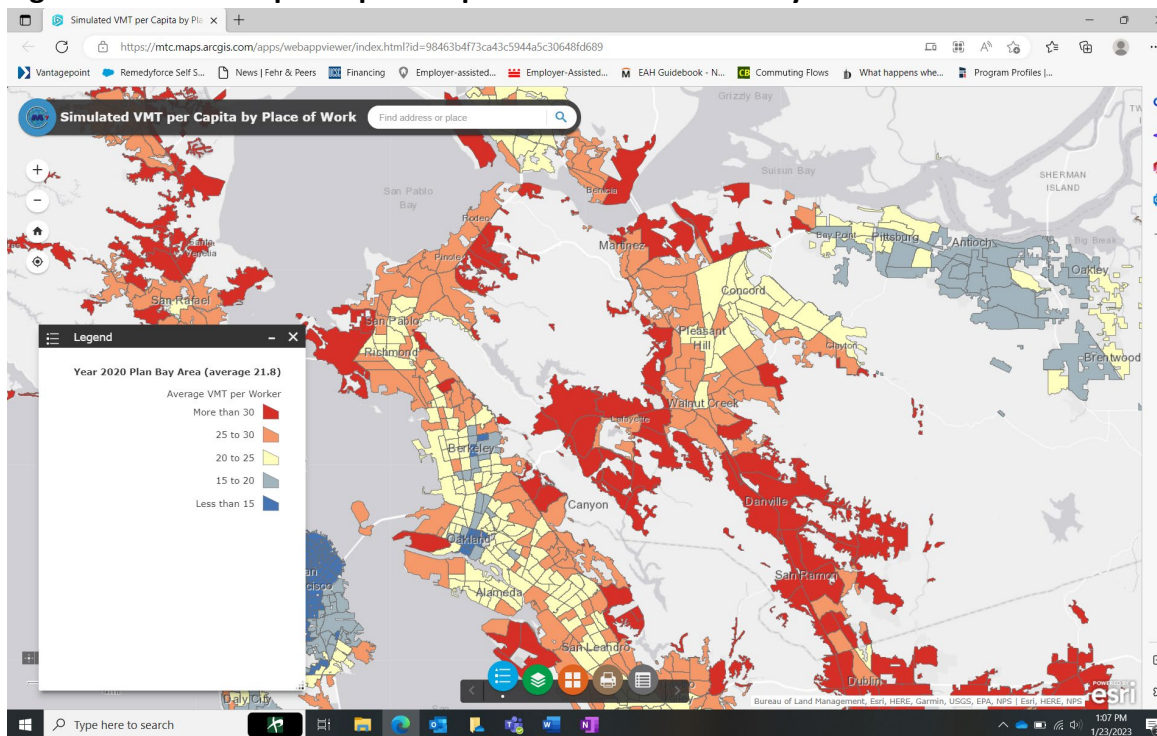
Figure 1. VMT+ “HBX VMT Per Resident” for Contra Costa County



Source: Fehr & Peers.

<https://storymaps.arcgis.com/stories/e9fb17d33a2c4d60a6747071be3d5b4a>

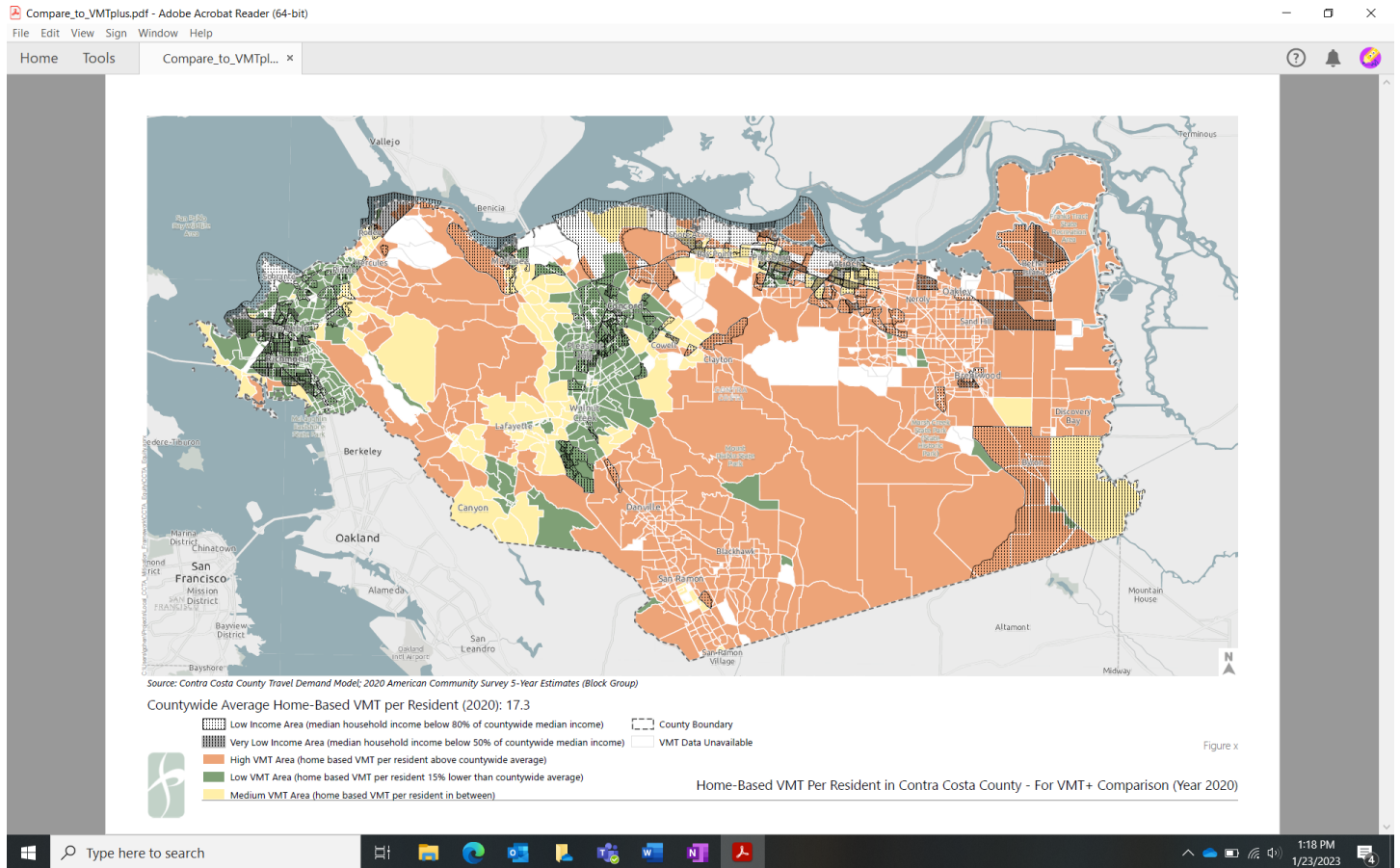
Figure 2. MTC VMT per Capita Map for Contra Costa County



Source: MTC.

<https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=98463b4f73ca43c5944a5c30648fd689>

Figure 3. CCTA Model Home-Based VMT Per Capita for Contra Costa County



Source: Fehr & Peers, based on CCTA model.

DRAFT Programmatic Infill Development Incentives

CCTA VMT Mitigation Framework

Significant state, regional and local policies promote accelerated development in infill areas to increase sustainability of land development in general, and reducing overall vehicle miles traveled (VMT) in particular. Lower VMT generated by residents and workers in infill areas is caused by:

- Higher accessibility of infill areas, due to being amidst existing developed areas, allowing needed trips by residents or workers to be shorter than comparable development in greenfield areas.
- Proximity to existing transit services, bike lanes, pedestrian networks, etc., allowing trips to be made by modes other than driving.

The most recent state policy promoting accelerated development in infill areas is the Regional Early Action Planning Grants (so-called “REAP”) program. The state program of grants was set up partly in response to regional and local agencies reports of significant obstacles to infill development: lack of adequate infrastructure to support development, scale/size of developable parcels, NIMBY-ism, and others factors. REAP is intended to help regional and local agencies in their efforts to overcome these obstacles and increase the rate at which new housing is developed in infill areas.

Some examples of regional programs aligned with the state’s REAP program are:

- SACOG’s “Green Means Go” program—the program is currently allocating up to \$34M in state grants to locally designated “Green Zones”, which are by definition infill areas ([SACOG Green Zone map](#)). Green Zones have much lower-than-average VMT per capita than other areas within the region, and by stimulating new development in those areas, an overall reduction of VMT in the region will result. The majority of the funding is targeted to infrastructure improvements in Green Zones needed to support new housing development in those areas.
- MTC’s “Priority Development Areas” (PDA’s)—the program is currently allocating grants to finalize plans and begin implementation of development in PDA’s, which are also infill areas with significant transportation assets, such as high density of transit service ([MTC PDA map](#)).

The concept proposed for further exploration as part of the CCTA VMT Mitigation Framework is to recognize the significant existing policies and programs at the state and regional level to promote lower-VMT, infill development and contribute to those programs, through CEQA mitigations, to stimulate new development in those areas. Two potential approaches to connecting a project’s VMT mitigation to an infill development program are an *exchange* or a *bank*.

- The exchange approach would require a project developer to support a low-VMT, infill development project. An example could be a proposed affordable housing project in an infill area like SACOG’s Green Zones, or MTC’s PDA’s, that is short of funding. Funding from one or more CEQA projects with VMT impacts could be used to complete funding for the affordable housing project. VMT savings creditable to the CEQA project would be based on a pro-rata share of the project cost. The lead agency for the CEQA project, or some other agency involved in the example project, would need to fulfill the administrative and technical requirements for the exchange.
- The bank approach relies on the agency sponsoring a regional, sub-regional, or local infill development program, to establish a bank and set up procedures for receiving contributions from CEQA projects. The bank could more easily calculate VMT savings from a pool of proposed development projects in infill areas, and establish funding needed to complete projects in that

DRAFT Programmatic Infill Development Incentives

CCTA VMT Mitigation Framework

same pool. The VMT savings creditable to the CEQA project would be based on the cost of VMT savings established by the bank, and the amount of the contribution from the CEQA project.

In both cases, the agency sponsoring the exchange or bank would need to perform the administrative, technical and procedural work to establish the mechanism, and to make it possible for CEQA projects with VMT impacts to contribute. Providing substantial evidence of VMT savings and monitoring the programs would also fall to the sponsoring agency.

In both cases, it is also assumed that the CEQA project's contribution would not normally fully fund any one infill development in its entirety. The project contribution would be part a pool of other funding needed to get an infill project in a low-VMT area "across the finish line" to completion.

The advantages of the concept of infill development incentives as a potential CEQA mitigation for VMT impacts of a project are:

- Scale—this concept expands the scale of mitigation from the project to jurisdiction, sub-regional or regional scale.
- Leverage existing state, regional, and (in some cases) local policies and investments—this concept recognizes that no one source can fully fund most land use changes that result in long-term VMT savings, and that pooling available funding and resources from multiple sources will be needed.
- Duration of impact—because the concept would fund housing in low-VMT areas, the duration of VMT savings is extended. A one-time investment of mitigation funds leads to a long-term savings of VMT, with very low ongoing operational or maintenance costs.

This concept is included in the "Innovative" category primarily because the mechanisms needed to implement it (e.g. banks or exchanges), while not new, have not been applied to VMT savings. Exchanges or banks are normally established for more "static" mitigations, like habitat replacement. Using the mechanism for a more dynamic mitigation like VMT savings would require new technical approaches to calculate savings, and new monitoring approaches to ensure that savings endure over time.

Additionally, the concept requires either the agencies establishing infill development incentive programs (like SACOG and MTC, mentioned above) to expand their programs to include CEQA mitigation, or for other agencies to stand up programs with that purpose in mind. Both of those are longer term propositions, and would require dialog and partnership with those agencies.

Appendix G – Cost Effectiveness Calculations

STEP 1: Raw Total 10-Year VMTR (Sum from Table 13)

Total	1,545,408,616
--------------	----------------------

STEP 2: Within-Subsector Reduction

Type of VMT	Subsector	Reduction %	Total 10-Year VMTR	Subsector Cap	Within Subsector Cap?
Employee Commute Boundary VMT	Neighborhood Design (#1,2,3,4)	0.0016%	212,490	10%	Yes
	Trip Reduction Program (#17)	1%	132,806,805	45%	Yes
Total Boundary VMT	Neighborhood Design (#5, 15)	0.1700%	168,308,749	10%	Yes
	Transit (#6,7,8,9,10,11,12,13,14)	1.2512%	1,238,957,873	15%	Yes
Total			1,540,285,917		

STEP 3: Across-Subsector Reduction

Type of VMT	Subsector	Reduction %	Total 10-Year VMTR
Employee Commute Boundary VMT	Neighborhood Design (#1,2,3,4)	0.0016%	212,490
	Trip Reduction Program (#16)	1%	132,806,805
Total Boundary VMT	Combined	1.4190%	1,405,160,766
Total			1,538,180,060
Which is			75% of total 10-Year VMT that needs to be mitigated

Total 10-Year VMT To Be Mitigated (Report p. 21)

Daily VMT	Annualization factor	Years	Total 10-Year VMT
584,100		351	10
			2,050,191,000

Strategy Name	Strategy Description	Category	Source	Costs (millions)			Total VMT Reduced (10 Years)	10-year Cost per VMT Reduced	Reduction %	10 Year VMTR (from 2030)	Countywide VMT Applied	CAPCOA Strategy	Subsector	Scale	Strategy Cap	Within Strategy Cap?	
				Capital	Operating (Annual)	Total (10 Years)											
1 San Pablo Ave Bay Trail Gap Closure	Reconfigure San Pablo Ave with three travel lanes and a separate Class 1 shared-use path. Closes 3.2-mile Bay Trail Gap between Pacific Avenue in Rodeo and Carquinez Bridge Trail in Crockett.	Infrastructure	MTC-ATP	\$9.48	\$0.09	\$10.43	132,807	\$78.54	0.00100%	132,807	Employee Commute Boundary VMT	T-20 Expand Bike Network	Neighborhood Design	P/C	0.50%	Yes	
2 North Bailey Road Active Transportation Corridor	Construct two-way cycle track, ADA-compliant curb ramps, ADA-accessible sidewalks, traffic signal, and reconfigure travel lanes on Bailey Road between Willow Pass and Canal Roads.	Infrastructure	MTC-ATP	\$6.80	\$0.07	\$7.48	26,561	\$281.61	0.00020%		26,561	Employee Commute Boundary VMT	T-20 Expand Bike Network	Neighborhood Design	P/C	0.50%	Yes
3 Martinez-Crockett Bay Trail Gap Closure	Construct Class 1 shared-use path from Berrellesa Street to the Nejedly Staging Area at Carquinez Strait Regional Shoreline.	Infrastructure	MTC-ATP	\$2.79	\$0.03	\$3.07	26,561	\$115.58	0.00020%		26,561	Employee Commute Boundary VMT	T-20 Expand Bike Network	Neighborhood Design	P/C	0.50%	Yes
4 Treat Blvd Ped/Bike Improvements	Pedestrian and bicycle improvements on Treat Blvd.	Infrastructure	MTC-PBA	\$3.00	\$0.03	\$3.30	26,561	\$124.24	0.00020%		26,561	Employee Commute Boundary VMT	T-20 Expand Bike Network	Neighborhood Design	P/C	0.50%	Yes
5 Countywide e-Bike Share Program	Provide an e-bike share system that results in bikeshare access for up to 50% of county residents.	Program	Consultant	\$8.00	\$4.27	\$50.72	19,804,524	\$2.56	0.02000%		19,804,524	Total Boundary VMT	T-22-B Implement Electric Bikeshare Program	Neighborhood Design	P/C	0.06%	Yes
6 Downtown Concord Circulator	Downtown circulator/trolley service in Concord.	Transit	CC-SRTP	\$1.90	\$1.70	\$18.90	708,953	\$26.66	0.00072%		708,953	Total Boundary VMT	T-25 Extend Transit Network Coverage or Hours	Transit	P/C	4.60%	Yes
7 Bishop Ranch Circulator	Circulator shuttle operating every 15 minutes throughout Bishop Ranch.	Transit	CC-SRTP	\$1.90	\$1.60	\$17.90	124,378	\$143.92	0.00013%		124,378	Total Boundary VMT	T-25 Extend Transit Network Coverage or Hours	Transit	P/C	4.60%	Yes
8 Hercules BART Extension (Phase 3, Alternative 6)	Extend BART service from Richmond Station north to Hercules. Includes construction cost of guideway, 3 new stations, and a terminal yard, vehicle acquisition, and cost of added service.	Transit	CCTA-CTPL	\$3,582.00	\$40.50	\$3,987.00	230,920,752	\$17.27	0.23320%		230,920,752	Total Boundary VMT	T-25 Extend Transit Network Coverage or Hours	Transit	P/C	4.60%	Yes
9 San Pablo/ MacDonald BRT (Phase 2)	Extend BRT service to the Richmond Parkway Transit Center and north to the Hercules Transit Center. Includes expanded service, expanded parking at Richmond Parkway and Hercules Transit Centers, and bus-only lanes on San Pablo Avenue and MacDonald.	Transit	CCTA-CTPL	\$180.00	\$23.39	\$413.86	98,032,395	\$4.22	0.09900%		98,032,395	Total Boundary VMT	T-28 Provide Bus Rapid Transit	Transit	P/C	13.80%	Yes
10 23rd St BRT (Phase 2)	Develop BRT route connecting planned Richmond Ford Point Ferry Terminal and Richmond Field Station via San Pablo and downtown Richmond. Includes expanded parking at Richmond Parkway and Hercules Transit Centers, new vehicle purchases, extended service to Hercules, and bus-only lanes and BRT stations on 23rd/San Pablo Avenue.	Transit	CCTA-CTPL/ MTC-PBA	\$108.00	\$9.75	\$205.53	98,032,395	\$2.10	0.09900%		98,032,395	Total Boundary VMT	T-28 Provide Bus Rapid Transit	Transit	P/C	13.80%	Yes
11 Concord Naval Weapon Station Routes (Phases 1-2)	Phase 1: Provide all-day transit service connecting CNWS to BART and downtown Concord. Phase 2: Add Los Medanos circulator route and express service between Los Medanos, BART, and downtown.	Transit	CC-SRTP	\$9.32	\$9.00	\$99.32	5,632,816	\$17.63	0.00569%		5,632,816	Total Boundary VMT	T-25 Extend Transit Network Coverage or Hours	Transit	P/C	4.60%	Yes
12 15-Minute BART Feeder Network	Increase frequency to every 15 minutes on 10 County Connection routes serving BART stations during peak commute periods.	Transit	County Connection / MTC-PBA	\$10.80	\$7.80	\$88.80	39,212,958	\$2.26	0.03960%		39,212,958	Total Boundary VMT	T-26 Increase Transit Service Frequency	Transit	P/C	11.30%	Yes
13 23rd St BRT (Phase 3)	Develop BRT route connecting planned Richmond Ford Point Ferry Terminal and Richmond Field Station via San Pablo and downtown Richmond. Includes bus-only lanes and BRT stations on 23rd/San Pablo Avenue and extension of Rapid Bus service.	Transit	CCTA-CTPL/ MTC-PBA	\$63.00	\$11.54	\$178.36	98,032,395	\$1.82	0.09900%		98,032,395	Total Boundary VMT	T-28 Provide Bus Rapid Transit	Transit	P/C	13.80%	Yes
14 Countywide Transit Fare Reductions	Provide fare-free transit on all bus routes operating within Contra Costa County.	Pricing	Consultant Research	n/a	\$16.20	\$161.95	673,353,824	\$0.24	0.68000%		673,353,824	Total Boundary VMT	T-29 Reduce Transit Fares	Transit	P/C	1.20%	Yes
15 Countywide Carshare Program	Offer a countywide carshare program, subsidizing memberships by up to \$50/year for all members, up to 80,000 members, and 10% administrative costs.	Program	Consultant Research	n/a	\$ 4.46	\$44.55	148,533,932	\$0.30	0.15000%		148,533,932	Total Boundary VMT	T-21-A Implement Conventional Carshare Program	Neighborhood Design	P/C	0.15%	Yes
16 Mobility As A Service (MAAS)	Develop a Mobility On Demand (MUD) app to provide real-time, multimodal trip planning, streamline transit and shared mobility payments, and incentivize more efficient modes based on time of day.	Program	CCTA-680	\$6.90	\$0.33	\$10.15	132,806,805	\$0.08	1.00000%		132,806,805	Employee Commute Boundary VMT	T-7 Implement Commute Trip Reduction Marketing	Trip Reduction Programs	P/S	4%	Yes

Strategy Name		LOW						HIGH						Assumptions	Data Sources
		Total cost	Capital Costs			Operating costs		Total cost	Capital Costs			Operating costs			
			Per-unit cost	Unit type	# units	Cost per year	# years		Per-unit cost	Unit type	# units	Cost per year	# years		
6	Provide an e-bikeshare system for up to 50% of county residents	\$ 26,470,000.00	\$1,600	e-bike	2500	\$ 2,247,000.00	10	\$ 50,720,000.00	\$1,600	e-bike	5000	\$ 4,272,000.00	10	Countywide bike program would require 10x (low) or 20x (high) more bicycles than Richmond bike program (proportional to population) Richmond program 2022 reboot costs Platform cost = \$7.5k/month Maintenance labor = \$5k/month Software/SIM= \$15/device/month Warehouse/Insurance = \$6k/month Bike replacements = 30% of fleet per year Battery replacements = 50% of fleet per year at \$300/battery	Contract for 6-month operations/maintenance/replacement of 250-unit bikeshare system in Richmond, CA. City Council minutes, August 19, 2022.
15	Countywide transit fare reductions of 50-100%	\$ 161,951,251.68	n/a	n/a	n/a	\$ 16,195,125.17	10	\$ 161,951,251.68	n/a	n/a	n/a	\$ 16,195,125.17	10	Fill funding gap for: 100% fare revenue for County Connection, Tri Delta Transit, WestCat; 9% of fare revenue for AC Transit.	NTD agency profiles, 2019. See Transit Service Data Tab
16	Offer a countywide carshare program	\$ 14,850,000.00	n/a	vehicle	500	\$ 1,485,000.00	10	\$ 44,550,000.00	n/a	vehicle	1500	\$ 4,455,000.00	10	Assumes: \$50 annual subsidy (plus 10% admin fee) for all members, assuming standard rate of 54 members/carshare vehicle and 1500 vehicles total.	

Strategy Name		Percentage reduction		Type of VMT affected	Assumptions		Plan horizon (years)	2020 Daily VMT Reduced (by method)		2040 Daily VMT Reduced (by method)				2030 Daily VMT Reduced (Interpolation)		2030 Annual VMT Reduced		2030 Cumulative VMT Reduced over 10 years	
		Low	TDM+ High		Low	High		Low	High	2040 Daily VMT Reduced (by method)		Regional Model	Literature	Low	High	Low	High	Low	High
										TDM+ Low	TDM+ High								
6	Provide an e-bikeshare system for up to 50% of county residents	0.01%	0.02%	All neighborhood/city trips	Up to 25% of households have access to e-bike sharing	Up to 50% of households have access to e-bike sharing	10	2,597	5,195	3,042	6,084		-	2,820	5,640	990,154	1,980,308	9,901,542	19,803,084
15	Countywide transit fare reductions of 50-100%	0.68%	0.91%	All neighborhood/city trips	50% fare reduction; 60% of routes without fares.	100% fare reduction; 80% of routes without fares.	10	176,628	236,370	206,868	276,838		-	191,748	256,604	67,330,485	90,104,031	673,304,850	901,040,314
16	Offer a countywide carshare program	0.07%	0.15%	All neighborhood/city trips	500 vehicles deployed.	1500 vehicles deployed; based on ~1600 vehicles deployed in SF carshare pilot (2015)	10	18,182	38,962	21,295	45,633		-	19,739	42,297	6,931,079	14,852,313	69,310,793	148,523,129

VMT Change	18. Homeowner Relocation Subsidy				19. Renter Relocation Subsidy			
	High		Low		High		Low	
	Daily VMT per Capita	Daily VMT per Capita	Daily VMT per Capita	Daily VMT per Capita	Daily VMT per Capita	Daily VMT per Household	Daily VMT per Capita	Daily VMT per Household
Current	30	75	25	55	25	55	20	36
Relocated	15	38	18	40	12	26	16	29
Change		-38		-15		-29		-7
Cost Effectiveness Factors:								
Duration of Relocation (Years)		10		10		120		120
VMT Annualization Factor		350		350		350		350
Total Daily VMT Saved (10 years)		131,250		53,900		100,100		25,200
Relocation Subsidy (one-time)		\$100,000		\$75,000		\$600		\$300
Overhead (25%)		\$25,000		\$18,750		\$150		\$75
Cost per VMT saved		\$0.95		\$1.74		\$0.90		\$1.79

Appendix H – Analysis of Development Costs and Effects of VMT Fees

DRAFT APPENDIX _: TECHNICAL MEMORANDUM

To: Julie Morgan, Fehr & Peers

From: Teifion Rice-Evans and Rosanna Ren, Economic & Planning Systems, Inc. (EPS)

Subject: CCTA VMT Study: Fees and Development Cost and Feasibility Considerations; EPS #211003

Date: February 7, 2023

The Economics of Land Use



Economic & Planning Systems, Inc. (EPS), as a subconsultant to Fehr & Peers, Inc. (F&P), was asked to consider the implications of the potential introduction of a VMT Mitigation program on the prospects and viability of new development in Contra Costa County. The purpose of this memorandum is to provide information to CCTA policymakers and staff and F&P as they consider options for addressing the requirements of SB 743.

This EPS assessment includes a planning-level analysis of the development prospects of four different land use types in Contra Costa County and the relative effects of the imposition of a new VMT Mitigation program. The analysis focuses on four prototype developments reflecting four land uses in four different locations:

- Single Family Development in the City of Antioch.
- Multi Family Development in the City of Concord.
- Office Development in the City of San Ramon.
- Industrial Development in the unincorporated community of North Richmond.

These four land uses were selected to reflect a broad range of development types with associated cities selected based on areas where this type of development is currently being developed, has historically been developed, and/or is being considered for development.

*Economic & Planning Systems, Inc.
1330 Broadway
Suite 450
Oakland, CA 94612
510 841 9190 tel*

*Oakland
Sacramento
Denver
Los Angeles*

www.epsys.com

This is a planning-level analysis that provides broad conclusions about development prospects and viability, though it is important to recognize that: (1) not all projects are the same, so there will be individual examples where project-specific effects will be different from the overall conclusion provided; (2) any new or increased fee placed on new development will add to development costs and thereby create an additional hurdle to development even if modest in the broad picture of development economics; and, (3) broader economic and real estate market cycles will typically have a larger effect on development feasibility than fee adjustments. F&P provided illustrative VMT Fees for assessment, including fee levels of \$1,000, \$3,000, and \$5,000 per Dwelling Unit Equivalent. This assessment has focused on the highest illustrative fee of \$5,000 per DUE.

It is important to recognize that the potential for a VMT Mitigation program is being developed in response to SB 743 and new CEQA requirements to consider VMT impacts. Because a VMT Fee would only apply to projects that do not screen out (generate more VMT than a specified threshold) and cannot fully rely on site-specific strategies, not all development projects would be required to pay the potential VMT Fee. While the potential for an adopted VMT Fee to expedite certain developments, through CEQA process streamlining, remains uncertain and will depend on lead agency decisions among other factors, it is possible that under some circumstances the additional costs imposed on new development by a VMT Fee could be offset by streamlining benefits.

Summary of Findings

This section provides a summary of findings concerning the four land uses studied.

1. A new VMT Fee would add costs to all private land use types and developments. Without considering the uncertain but potential streamlining or other benefits, this new fee would require new developments to cover higher costs to be feasible. Even with relatively modest fee levels, this could be challenging for some land uses in the short to medium term.

As a percentage of estimated average development costs, the highest illustrative VMT fee (\$5,000 per DUE) would represent a 0.76 percent increase in single family detached development costs, 0.40 percent for multifamily development, 0.97 percent for office development, and 2.51 percent for industrial development. While the size of these percentage increases provides an important insight into the relative impact of costs, the broader real estate prospects for each of these land uses is equally if not more important.

For office development, real estate conditions are challenging and are likely to remain that way for some time. For multifamily development, the high costs of development, especially for midrise or denser products, limits the number of locations where it is viable. Single family development in Contra Costa County has seen something of a renaissance in the pandemic era but are now confronted with higher interest rates as well as construction cost challenges. The industrial/ logistics industry may be softening, but remains strong, in locations with appropriate sites and transportation infrastructure.

Table 1 Summary of VMT Mitigation program Impacts

	Single Family	Multifamily	Office	Industrial
Illustrative Fee [1]	\$5,000 per DUE \$5,000 per DU	\$5,000 per DUE \$2,500 per DU	\$5,000 per DUE \$7.00 per sq ft	\$5,000 per DUE \$4.25 per sq ft
Development Costs				
Current Total Costs	\$661,150 per DU	\$622,029 per DU	\$719.53 per sq ft	\$169.45 per sq ft
Total Costs with VMT Fee	\$666,150 per DU	\$624,529 per DU	\$726.53 per sq ft	\$173.70 per sq ft
Percent Increase with VMT Fee	0.76%	0.40%	0.97%	2.51%
Fees as % of Total Development Cost				
Current Fees as % of Total Development Cost	8.1%	6.4%	3.2%	7.7%
VMT Fee as % of Current Total Development Cost	<u>0.8%</u>	<u>0.4%</u>	<u>1.0%</u>	<u>2.5%</u>
Fees with VMT Fee as % of Current Total Development Cost	8.9%	6.8%	4.2%	10.2%
Permits and Impact Fees				
Current Permits and Fees	\$53,625 per DU	\$39,842 per DU	\$23.10 per sq ft	\$13.11 per sq ft
Permits/Fees with VMT Fee	\$58,625 per DU	\$42,342 per DU	\$30.10 per sq ft	\$17.36 per sq ft
Percent Increase with VMT Fee	9.32%	6.27%	30.30%	32.43%
Transportation Impact Fees				
Current Transportation Impact Fees	\$26,133 per DU	\$5,965 per DU	\$10.20 per sq ft	\$12.19 per sq ft
Transportation Fees with VMT Fee	\$31,133 per DU	\$8,465 per DU	\$17.20 per sq ft	\$16.44 per sq ft
Percent Increase with VMT Fee	19.13%	41.91%	68.63%	34.86%

[1] Assumed DUE factors are: 1 DUE per DU for single family; 0.5 DUE per DU for multifamily; 1.4 DUE per 1,000 sq ft for Office; 0.85 DUE per 1,000 sq ft for Industrial
This analysis has focussed on the highest illustrative fee of \$5,000 per DUE. Lower illustrative scenarios (i.e. \$1,000 and \$3,000 will have proportionately lower effects).

Sources: Selected Contra Costa County cities; Fehr & Peers; EPS

2. Single family detached development, especially in East Contra Costa County, has been economically robust and viable in recent years. However, multiple, recent increases in interest rates and already high costs of development mean the development community is concerned about any additional cost burdens.

A potential illustrative VMT Fee of \$5,000 per DUE (\$5,000 per single family unit) was considered in the context of current development economics. With an average, illustrative cost of home development (excluding developer profit) estimated at about \$660,000 per unit, the illustrative VMT fee would represent an increase in development costs of about 0.76 percent and would require a similar level of increase in home price (or reduction in land cost) to cover this additional cost. In the context of estimated existing development impact fees, this fee would represent a 9.3 percent increase in fee levels.

While this could be considered a relatively modest change in overall costs, the realities of the current economic and development landscape – specifically higher interest rates reducing demand for new homes as well as already high development costs - make any near-term increase in fees a concern for residential developers looking to develop in East Contra Costa County and could render some projects infeasible. To the extent that the introduction of the VMT Mitigation program comes with reductions in other transportation expenditure obligations or CEQA streamlining, these cost increases might be somewhat offset.

3. While new multifamily development projects have been occurring in some areas of some cities in Contra Costa County in recent years, and many other cities are encouraging them especially near transit stations, the high existing costs of development mean that these projects must be able to achieve high lease rates to be feasible even before taking account potential VMT Fees.

The illustrative development prototype provided below estimates an average cost of multifamily development at about \$622,000 per unit. To cover this level of cost, the average market rate rent per unit must be about \$4.22 per square foot per month or about \$3,800 per month for a 900-square foot unit. This is above the achievable lease rate in many Contra Costa County cities and indicates the importance of location and amenities to successful siting of apartment buildings as well as the challenges for many locations to attract this type of development.

A potential, illustrative VMT Fee of \$5,000 per DUE (\$2,500 per unit for multifamily development) would represent an increase in development costs of about 0.40 percent and would require an offsetting level of increased lease rates (or reduction in land cost) to cover this additional cost. In the context of estimated existing development impact fees, this fee would represent an increase in overall fee levels of 6.27 percent. While this fee level increase is modest, any such increase should be considered in the context of the challenging development economics for multifamily development in many locations as well as the potential for such a fee program to provide streamlining or other offsetting benefits.

4. While there are clusters of existing office development in some Contra Costa County cities, most cities have seen modest office development in recent years, with the pandemic and work-from-home trends creating challenges for cities hoping to attract new office development.

The illustrative development prototype provided below estimates an average cost of a large, modern office development at about \$720 per gross building square foot. To cover this level of cost, the average lease rate must be about \$5.61 per net leasable square foot per month. This is well above the typical lease rates of Contra Costa County's larger office buildings. The combination of high development costs and contracting office demand makes office development challenging.

A potential, illustrative VMT Fee of \$5,000 per DUE (\$7 per gross building square foot) would represent an increase in development costs of about 0.97 percent and would require an offsetting level of increase in lease rates (or reduction in land cost) to cover this additional cost. In the context of estimated existing development impact fees, this fee would represent an increase in overall fee levels of 30.3 percent. This level of fee increase is not insignificant, though more importantly would be added onto a land use that is already struggling from a broader market perspective.

5. Industrial development, and specifically warehouse and distribution developments, have been performing strongly, likely with some capacity to absorb some level of VMT fees.

The logistics real estate market has performed strongly in recent years with online shopping, improving technology, and the pandemic accelerating an already growing industry. This has resulted in substantial new logistics development throughout California with demand for the spaces of different sizes and types in a broad range of locations throughout the state. Selected locations in Contra Costa County with sufficient site sizes, appropriate zoning, and transportation infrastructure proximity are likely to be appealing for new industrial development. And, while the pace of economic growth is expected to slow logistics development in the coming year, prospects are strong for this sector.

The illustrative development prototype provided below estimates an average cost of industrial development at about \$169 per gross building square foot. A potential, illustrative VMT Fee of \$5,000 per DUE (\$4.25 per gross building square foot) would represent an increase in development costs of about 2.5 percent and would require an offsetting level of increase lease rates (or reduction in land cost) to cover this additional cost. In the context of estimated existing development impact fees, this fee would represent an increase in overall fee levels of 32 percent. This is a more substantial percentage increase than for the residential development prototypes, though may still be absorbable, potentially in smaller increments, given the strong development economics.

Development Cost and Feasibility Analysis

EPS developed estimated average development cost profiles for four illustrative development prototypes in the following locations:

- Single Family Development in the City of Antioch.
- Multi Family Development in the City of Concord.
- Office Development in the City of San Ramon.
- Industrial Development in the unincorporated community of North Richmond.

For each land use, EPS developed planning levels estimates of project costs in the format of a vertical development budget, including direct construction costs, indirect costs (including existing development impact fees), and site acquisition costs. These illustrative development cost profiles provided a baseline against which to understand the development cost changes associated with illustrative VMT Fees as well as to consider the current feasibility of these land uses under current market conditions.

The illustrative development cost budgets by land use/ development prototype are shown in **Table 2 – 5** below. Key cost categories include:

- **Direct Costs.** Direct construction costs including labor, materials, and associated overhead required to prepare the site, build structures, install parking systems, and fit out leasable spaces. Construction cost estimates reflect data from Marshall & Swift, a third-party cost estimating resource.¹ The analysis of construction costs is specific to the type of construction anticipated for the prototypes with unique cost estimates (construction costs per square foot and parking costs per space vary by number of stories, type of construction, and nature of parking).
- **Indirect Costs.** Indirect costs include soft costs and development fees. Soft costs include professional services associated with planning, design, and other professional support services; assumptions regarding taxes and insurance and financing costs; as well as marketing and leasing costs and general and administrative costs borne by the project developer. These soft costs are typically estimated as a percentage of direct costs. Permits and fees are estimated at a planning level based on a review of applicable development impact fees.
- **Site (Land) Acquisition Costs.** Land acquisition costs can vary significantly by site. EPS developed estimates of average per acre land cost for the different development prototypes in the different cities using CoStar and Redfin data.

Together these three cost categories provide estimates of total project cost per unit (for residential) or per gross building square foot (for non-residential). In the case of single family detached developments, for development feasibility analysis purposes, a developer

¹ EPS evaluated construction cost data for Oakland ZIP code 94612 reported by Marshall & Swift Commercial Building Cost Data.

profit is also shown and added to the project costs to indicate the sales price required to be able to cover the development costs and provided a hurdle level of profit. For other uses, development feasibility is assessed based on a hurdle developer yield/ return on cost. Under this metric, the lease rate required to provide a hurdle yield rate to developers is estimated.

As shown in **Tables 2 – 5**, the following feasibility thresholds and comparisons were developed for each land use type:

Single Family Detached Development. The estimated home sale price required to cover the illustrative single family detached development cost and hurdle profit is about \$760,000 per unit or \$304 per net/ livable square foot. The current range of housing prices in the City of Antioch range between \$635,000 and \$1.0 million, or \$244 to \$388 per net square foot. The reality of recent home construction and sales and the fact that the estimated required price point falls in the on-the-ground range indicates the current general feasibility of single family detached development in East Contra Costa County.

Multi Family Apartment Development. Given the estimated project cost of \$622,000 per unit for midrise multifamily development, an average lease rate of \$4.22 per net square foot per month or \$3,800 per month is required from the market rate units to generate a hurdle yield of 5 percent. This calculation also takes into account the City of Concord's inclusionary requirement of 10 percent. Current top-of-market lease rates in the City of Concord are about \$3.59 per square foot per month or \$3,200 monthly for a 900-square foot apartment. This indicates that apartment developers will need to be selective in choosing cities and locations that can command these high rents.

Office Development. Given the estimated project cost of \$720 per gross square foot for large, modern office buildings, an average lease rate of \$5.61 per square foot per month is required to generate a hurdle yield of 6 percent. The City of San Ramon has a substantial existing office building stock with average lease rates of about \$3.65 per square foot per month. This underlies the feasibility challenges for new speculative office development in central and likely others part of Contra Costa County.

Industrial/ Logistics Development. Given the estimated project cost of \$169 per gross square foot for large warehouse and distribution developments, an average lease rate of \$0.86 per square foot per month is required to generate a hurdle yield of 5.5 percent. A recently built warehouse project in the community of North Richmond currently commands this level of lease rate, indicating industrial development feasibility and a likely continued demand for these types of development in parts of Contra Costa County with site sizes, zoning and transportation infrastructure access that could accommodate these new industrial buildings.

Table 2 Single Family 100-Unit Subdivision Prototype – Total Development Costs

DEVELOPMENT PROGRAM ASSUMPTIONS			Total	Per Unit	% of Value
15-Acre Site (Gross Square Feet)			653,400	6,534	N/A
Residential Units			100	N/A	N/A
Gross Building Area (Square Feet)	2,900	SF per Unit	290,000	2,900	N/A
Net Area (Square Feet)	2,500	SF per Unit	250,000	2,500	N/A
Parking Spaces			<i>Integrated Garage</i>		
DEVELOPMENT COSTS, LAND VALUES, AND RETURN					
LAND ACQUISITION	\$400,000	per site acre	\$6,000,000	\$60,000	8%
DIRECT COSTS					
Basic Site Work/ Lot Improvements	\$90,000	Per Lot	\$9,000,000	\$90,000	12%
Direct Construction Cost	\$125	Cost/SF (GBA)	<u>\$36,250,000</u>	<u>\$362,500</u>	<u>48%</u>
Direct Cost Total			\$45,250,000	\$452,500	60%
INDIRECT COSTS					
Architecture and Engineering / Other Consultants	6.0%	of Direct Cost	\$2,715,000	\$27,150	4%
Taxes and Insurance	2.0%	of Direct Cost	\$905,000	\$9,050	1%
Financing	4.0%	of Direct Cost	\$1,810,000	\$18,100	2%
Sales and Marketing	3.0%	of Direct Cost	\$1,357,500	\$13,575	2%
Developer Fee	4.0%	of Direct Cost	\$1,810,000	\$18,100	2%
Permits and Fees	\$62,675	per Unit	<u>\$6,267,469</u>	<u>\$62,675</u>	<u>8%</u>
<i>Total Indirect Costs</i>			\$14,864,969	\$148,650	20%
TOTAL LAND/ DEVELOPMENT COSTS	\$228	per square foot (GBA)	\$66,114,969	\$661,150	87%
DEVELOPER RETURN REQUIREMENT	15.0%	of Total Development Costs	\$9,917,245	\$99,172	13%
TOTAL COST/ RETURN	\$262	per square foot (GBA)	\$76,032,214	\$760,322	100%
\$304	per net square foot				
FEASIBILITY THRESHOLDS					
Required Market Price Points for Illustrative Development Prototype	\$304	per net square foot		\$760,322	per Unit
Observed Market Price Points for Active Subdivisions (City of Antioch/ Gregory Group) (1)	\$244 - \$388	per net square foot	\$635,000 - \$992,000		per Unit

(1) Per Gregory Group, sales prices of active single family subdivisions in the City of Antioch.
Sources: City of Antioch; Costar; Marshall & Swift; The Gregory Group; EPS

Table 3 Multifamily 100-Unit Prototype – Total Development Costs

DEVELOPMENT PROGRAM ASSUMPTIONS		PER GBA	TOTAL	PER UNIT	% of Value
Site (Square Feet)			43,560	N/A	N/A
Residential Units			100	N/A	N/A
Gross Building Area (Square Feet)	1,100 SF per Unit		110,000	1,100	N/A
Rentable Area (Square Feet)	82% of GBA		90,000	900	N/A
Total Parking Spaces	1.50 per Unit		150	2	N/A
Surface Parking Spaces	0% of total parking		0	0	N/A
Podium Parking Spaces	100% of total parking		150	2	N/A
DEVELOPMENT COSTS, LAND VALUES, AND RETURN					
DIRECT COSTS					
Basic Site Work	\$20.00 per site SF		\$871,200	\$8,712	1%
Building Direct Cost	\$350 Cost/SF (GBA)		\$38,500,000	\$385,000	62%
Total Parking Direct Cost	\$45,000 per Space		<u>\$6,750,000</u>	<u>\$67,500</u>	<u>11%</u>
<i>Total Construction Cost</i>			\$46,121,200	\$461,212	74%
INDIRECT COSTS					
Architecture and Engineering	4.0% of Direct Construction Cost		\$1,810,000	\$18,100	3%
Other Soft Costs	2.0% of Direct Construction Cost		\$905,000	\$9,050	1%
Permits and Fees	\$39,842 per Unit		\$3,984,172	\$39,842	6%
Taxes and Insurance	2.0% of Direct Construction Cost		\$905,000	\$9,050	1%
Financing	4.0% of Direct Construction Cost		\$1,810,000	\$18,100	3%
Marketing/Leasing	3.0% of Direct Construction Cost		\$1,357,500	\$13,575	2%
Developer Fee	4.0% of Direct Construction Cost		<u>\$1,810,000</u>	<u>\$18,100</u>	<u>3%</u>
<i>Total Indirect Costs (without VMT Fee)</i>			\$12,581,672	\$125,817	20%
TOTAL DEVELOPMENT COSTS	\$533.66 per square foot (GBA)		\$58,702,872	\$587,029	94%
Land Value (Market Comps)	\$31.82 per square foot (GBA)		\$3,500,000	\$35,000	6%
	<u>\$3,500,000</u> per site acre				
TOTAL LAND/ DEVELOPMENT COSTS	\$565.48 per square foot (GBA)		\$62,202,872	\$622,029	100%
	\$691.14 per net square foot				
FEASIBILITY THRESHOLDS					
Required Market Price Points for Illustrative Development Prototype	\$4.22 per SF/Month			\$3,796	per month
Observed Market Price Points for Market Prototypes	\$3.59 per SF/Month			\$3,233	per month
(Upper End of City of Concord Rents/Costar) (1)					

(1) Average rents for 1- and 2-bedroom apartments (average size 900 square feet) for the 228-unit Grant apartment project (built in 2022)
Sources: Selected Contra Costa County cities; Costar; Marshall & Swift; EPS

Table 4 Office Prototype – Total Development Costs

DEVELOPMENT PROGRAM ASSUMPTIONS			Total	Per GBA	% of Value
Site (Square Feet)			217,800	N/A	N/A
Gross Building Area (Square Feet)	0.60	FAR	130,680	N/A	N/A
Rentable Area (Square Feet)	90%	of GBA	117,612	N/A	N/A
Parking Spaces	3.0	per 1,000 SF	392	N/A	N/A
DEVELOPMENT COSTS, LAND VALUES, AND RETURN					
DIRECT COSTS					
Basic Site Work	\$20.00	per site SF	\$4,356,000	\$33.33	5%
Direct Construction Cost ²	\$325	Cost/SF (GBA)	\$42,471,000	\$325.00	45%
Tenant Improvement Cost	\$70	Cost/SF (GBA)	\$9,147,600	\$70.00	10%
Parking Direct Cost	\$50,000	per Space	\$10,781,100	\$82.50	11%
<i>Total Construction Cost</i>			\$66,755,700	\$510.83	71%
INDIRECT COSTS					
Architecture and Engineering	4.0%	of Direct Construction Cost	\$2,495,988	\$19.10	3%
Other Soft Costs	2.0%	of Direct Construction Cost	\$1,247,994	\$9.55	1%
Permits and Fees	\$23.10	per GBA	\$3,018,555	\$23.10	3%
Taxes and Insurance	2.0%	of Direct Construction Cost	\$1,247,994	\$9.55	1%
Financing	4.0%	of Direct Construction Cost	\$2,495,988	\$19.10	3%
Marketing/Leasing	3.0%	of Direct Construction Cost	\$1,871,991	\$14.33	2%
Developer Fee	4.0%	of Direct Construction Cost	\$2,495,988	\$19.10	3%
<i>Total Indirect Costs (without VMT Fee)</i>			\$14,874,498	\$113.82	16%
TOTAL DEVELOPMENT COSTS (excluding land)			\$81,630,198	\$624.66	87%
Land Value (Market Comps)	\$94.87	per square foot (GBA)	\$12,397,448	\$94.87	13%
	\$2,479,490	per site acre			
TOTAL COST			\$94,027,646	\$719.53	100%
FEASIBILITY THRESHOLDS					
Required Market Price Points for Illustrative Development Prototype	\$5.61	per SF/Month			
Observed Market Price Points for Market Prototypes	\$3.65	per SF/Month			
(Large Office Building in City of San Ramon/Costar) (1)					

(1) CoStar reported full-service office lease rate for major office development in Bishop Ranch (built 1983; renovated 2016).
Sources: Selected Contra Costa County cities; Costar; Marshall & Swift; EPS

Table 5 Industrial Warehouse Prototype - Total Development Costs

DEVELOPMENT PROGRAM ASSUMPTIONS		Total	Per GBA	% of Value
Site (Square Feet)		1,250,000	N/A	N/A
Gross Building Area (Square Feet)	0.40 FAR	500,000	N/A	N/A
Rentable Area (Square Feet)	100% of GBA	500,000	N/A	N/A
Parking Spaces	2.0 per 1,000 SF	1,000	N/A	N/A
DEVELOPMENT COSTS, LAND VALUES, AND RETURN				
DIRECT COSTS				
Basic Site Work	\$5.00 per site SF	\$6,250,000	\$12.50	7%
Direct Construction Cost ²	\$90 Cost/SF (GBA)	\$45,000,000	\$90.00	53%
Parking Direct Cost	\$5,000 per Space	\$5,000,000	\$10.00	6%
<i>Total Construction Cost</i>		\$56,250,000	\$112.50	66%
INDIRECT COSTS				
Architecture and Engineering	4.0% of Direct Construction Cost	\$2,000,000	\$4.00	2%
Other Soft Costs	2.0% of Direct Construction Cost	\$1,000,000	\$2.00	1%
Permits and Fees	\$13.11 per GBA	\$6,553,440	\$13.11	8%
Taxes and Insurance	2.0% of Direct Construction Cost	\$1,000,000	\$2.00	1%
Financing	4.0% of Direct Construction Cost	\$2,000,000	\$4.00	2%
Marketing/Leasing	3.0% of Direct Construction Cost	\$1,500,000	\$3.00	2%
Developer Fee	4.0% of Direct Construction Cost	\$2,000,000	\$4.00	2%
<i>Total Indirect Costs (without VMT Fee)</i>		\$16,053,440	\$32.11	19%
TOTAL DEVELOPMENT COSTS		\$72,303,440	\$144.61	85%
Land Value (Market Comps)	\$24.84 per square foot (GBA) \$432,828 per site acre	\$12,420,463	\$24.84	15%
TOTAL COST		\$84,723,903	\$169.45	100%
FEASIBILITY THRESHOLDS				
Required Market Price Points for Illustrative Development Prototype		\$0.86 per SF/Month		
Observed Market Price Points for Market Prototypes (City of Richmond/Costar) (1)		\$0.83 per SF/Month		

(1) Costar estimated lease rate for warehouse/distribution center in North Richmond (built 2022)
Sources: Selected Contra Costa County cities: Costar; Marshall & Swift; EPS