



AGENDA

VALLEJO PLANNING COMMISSION REGULAR MEETING – 7:00 P.M. VIA TELECONFERENCE

Robert Schussel, Chair
Peggy Cohen-Thompson, Vice-Chair
Diosdado "J.R." Matulac
Chris Platzer
Kathleen Diohep
Randy Larson
Thomas Judt

VIA TELECONFERENCE

www.cityofvallejo.net

May 4, 2020

This AGENDA contains a brief general description of each item to be considered. The posting of the recommended actions does not indicate what action may be taken. If comments come to the Planning Commission without prior notice and are not listed on the AGENDA, no specific answers or response should be expected at this meeting per State law.

Notice of Availability of Public Records: All public records relating to an open session item, which are not exempt from disclosure pursuant to the Public Records Act, that are distributed to a majority of the Planning Commission will be available on the City of Vallejo website at www.cityofvallejo.net subject to staff's ability to post the documents prior to the meeting.

Disclosure Requirements: Government Code Section 84308 (d) sets forth disclosure requirements which apply to persons who actively support or oppose projects in which they have a "financial interest", as that term is defined by the Political Reform Act of 1974. If you fall within that category, and if you (or your agent) have made a contribution of \$250 or more to any commissioner within the last twelve months to be used in a federal, state or local election, you must disclose the fact of that contribution in a statement to the Commission.

Appeal Rights: The applicant or any party adversely affected by the decision of the Planning Commission may, within ten days after the rendition of the decision of the Planning Commission, appeal in writing to the City Council by filing a written appeal with the City Clerk. Such written appeal shall state the reason or reasons for the appeal and why the applicant believes he or she is adversely affected by the decision of the Planning Commission. Such appeal shall not be timely filed unless it is actually received by the City Clerk or designee no later than the close of business on the tenth calendar day after the rendition of the decision of the Planning Commission. If such date falls on a weekend or City holiday, then the deadline shall be extended until the next regular business day.

Notice of the appeal, including the date and time of the City Council's consideration of the appeal, shall be sent by the City Clerk to all property owners within two hundred or five hundred feet of the project boundary, whichever was the original notification boundary.

The Council may affirm, reverse or modify any decision of the Planning Commission which is appealed. The Council may summarily reject any appeal upon determination that the appellant is not adversely affected by a decision under appeal.



The Council Chambers in City Hall is ADA compliant. Devices for the hearing impaired are available from the City Clerk. Requests for disability related modifications or accommodations, aids or services may be made by a person with a disability to the City Clerk's office no less than 72 hours prior to the meeting as required by Section 202 of the Americans with Disabilities Act of 1990 and the federal rules and regulations adopted in implementation thereof.

If you have any questions regarding any of the following agenda items, please call the assigned planner or project manager at (707) 648-4326.

Please note: Due to the Coronavirus emergency, all Planning Commission meetings will be held via teleconference. Members of the public will be able to submit public comment. Members of the public interested in participating or observing the Planning Commission meeting may either click the links below or type the link into an internet browser. You will be taken to the internet platform where the meeting is being held.

1. CALL TO ORDER

2. PLEDGE OF ALLEGIANCE

3. ROLL CALL

4. APPROVAL OF MINUTES

A. April 20, 2020

5. WRITTEN COMMUNICATIONS

6. REPORT OF THE SECRETARY

A. Upcoming Meetings:

May 18, 2020

0 Hichborn - Site Development / APN 0055-031-650
(Tentative)

384 Fairgrounds Drive - Site Development, Landscape
Review, Use Permit, Variance, Sign Permit, and
Environmental Determination (Tentative)

Zoning Code Study Session - Non-Residential Districts
(Tentative)

****This meeting will possibly start at 6:00 p.m.***

June 1, 2020

602 Georgia Street - Variance and Minor Exception
(Tentative)

850 Redwood Street - Use Permit for Sunny Acupressure Spa
(Tentative)

Vista La Terraza - Tentative Map and Priority Development
Agreement (Tentative)

7. CITY ATTORNEY REPORT

8. REPORT OF THE PRESIDING OFFICER AND MEMBERS OF THE PLANNING COMMISSION
AND LIAISON REPORTS

A. Report of the Presiding Officer and Members of the Planning Commission

B. Council Liaison to Planning Commission

9. COMMUNITY FORUM

Due to the current Shelter at Home Order and in conformance with the Governor's Executive Order N-29-30, the City of Vallejo has opted to hold Planning Commission meetings via teleconference. Any interested members of the public desiring to communicate with the Planning Commission as part of the Community Forum must do so by accessing the link at the conclusion of this paragraph. There will be no public access to City Hall for any Planning Commission meetings until further notice.

<https://www.opentownhall.com/8643>

10. CONSENT CALENDAR AND APPROVAL OF THE AGENDA

Due to the current Shelter at Home Order and in conformance with the Governor's Executive Order N29 30, the City of Vallejo has opted to hold Planning Commission meetings via teleconference. Any interested members of the public desiring to communicate with the Planning Commission as part of Public Comment Regarding Consent Calendar Items must do so by accessing the link at the conclusion of this paragraph. There will be no public access to City Hall for any Planning Commission meetings until further notice.

<https://www.opentownhall.com/8644>

11. PUBLIC HEARING

Due to the current Shelter at Home Order and in conformance with the Governor's Executive Order N-29-30, the City of Vallejo has opted to hold Planning Commission meetings via teleconference. Any interested members of the public desiring to communicate with the Planning Commission as part of Public Comment Regarding Public Hearing Items must do so by accessing the link at the conclusion of this paragraph. There will be no public access to City Hall for any Planning Commission meetings until further notice.

<https://www.opentownhall.com/8645>

A. Project Title:	General Plan Conformance Review for Fiscal Year 2020-2021 Capital Improvement Program
Applicant:	City of Vallejo
Location:	City-wide
Project Description:	Capital improvements are those individual construction projects and purchases of land, equipment, and contract services that cost more than \$50,000. Capital improvement planning is one of the main ways communities implement the General Plan. CIP funding priorities reflect community values, needs, desired services and projects and resources to accomplish them.
Proposed Environmental Determination:	This action is exempt from the California Environmental Quality Act (CEQA) because it is not a project which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, pursuant to CEQA Guideline Section 15378, therefore no further review is required. CEQA review is conducted for individual projects at the time of project approval.
Staff Recommendation:	On August 29, 2017, the City Council adopted General Plan 2040, a comprehensive statement of the City's land use policies for the next 25 years. The Planning Commission's

task relative to the CIP is to review the first year of the CIP and determine whether it conforms with the General Plan.

Project Manager: Melissa L. Tigbao, Assistant Public Works Director / City Engineer, (707) 648-4085
Melissa.Tigbao@cityofvallejo.net

B. Project Title: Compliance Review with Senate Bill 743 General Plan Amendment for Vehicle Miles Traveled

Applicant: City of Vallejo

Location: City-wide

Project Description: Senate Bill 743 (SB 743) was signed in 2013, with the intent to more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions (GHG). When implemented, traffic congestion shall not be considered a significant impact on the environment within (CEQA transportation analysis. July 1, 2020 is the statewide implementation date for compliance with SB 743.

Proposed Environmental Determination:

This action is exempt from the California Environmental Quality Act (CEQA) because it is not a project which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, pursuant to CEQA Guideline Section 15378, therefore no further review is required. CEQA review is conducted for individual projects at the time of project approval.

Staff Recommendation: After a public hearing, adopt Resolution 20-04 finding that the proposed General Plan Amendment interim approach for Vehicle Miles Travelled (VMT) is in conformance with the City of Vallejo's General Plan 2040, Senate Bill 743, California Air Resource Board and Office of Planning and Research.

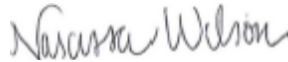
Project Manager: Afshan Hamid, AICP, Planning Manager, 707.648.4382
afshan.hamid@cityofvallejo.net;
Gillian Hayes, Planning & Development Services Director, 707.648.4326
Gillian.hayes@cityofvallejo.net

12. OTHER

A. Discussion of Future Agenda Items

13. ADJOURNMENT

I, Narcissa Wilson, Planning Executive Secretary, do hereby certify that I have caused a true copy of the above notice and agenda to be delivered to each of the members of the Vallejo Planning Commission, at the time and in the manner prescribed by law and that this agenda was posted at City Hall, 555 Santa Clara Street, CA at 5:00 p.m. Tuesday, April 24, 2020.



Dated April 24, 2020

Narcissa Wilson, Planning Executive Secretary

**CITY OF VALLEJO PLANNING COMMISSION
REGULAR MEETING MINUTES
COUNCIL CHAMBERS
April 20, 2020**

1. CALL TO ORDER

Chairman Schussel called the meeting to order at 7:01 P.M.

2. PLEDGE OF ALLEGIANCE

3. ROLL CALL

Present: Chair Schussel, Vice-Chair Cohen-Thompson, Commissioners Matulac, Larson, Platzer, Judt

Absent: Commissioner Diohep

Staff Present: Planning and Development Services Director Hayes, Assistant City Attorney Eckmeyer, Planning Manager Hamid, Principal Planner Sage

4. APPROVAL OF MINUTES - NONE

5. WRITTEN COMMUNICATIONS

Staff received comments regarding the Fairview at Northgate project and will review during action item.

6. REPORT OF THE SECRETARY

A. Upcoming Meetings:

May 4, 2020

Senate Bill 743 Vehicle Miles Traveled (VMT) Study Session (Tentative)

384 Fairgrounds Drive, Storage Facility: Site Development, Use Permit, Variance, Sign Permit, Landscape Review, Environmental Document (Tentative)

Public Works Capital Improvement Project (Tentative)

March 18, 2020

Zoning Code Study Session: Non-Residential Districts (Tentative)

Planning Manager Hamid reported on items A.

7. CITY ATTORNEY'S REPORT

Assistant City Attorney Eckmeyer commented on the City Attorney's office is tracking all Federal and State updates being released.

8. REPORT OF THE PRESIDING OFFICER AND MEMBERS OF THE PLANNING COMMISSION

Chairman Schussel thanked all the Commissioners on participating on the practice runs. Chairman Schussel commented on the pre-meeting with staff; in regards to running the meeting and when questions are asked it does not mean the project is being criticized.

9. COMMUNITY FORUM – NONE

10. CONSENT CALAENDAR AND APPROVAL OF THE AGENDA

On a motion of Vice-Chair Cohen-Thompson and carried unanimously to approve the consent calendar and agenda.

11. PUBLIC HEARING

- A. Costco/Fairview at Northgate; Zoning Map Amendment (ZMA)# 17-0001, Planned Development (PD) 17-0007, and Major Use Permit (UP) 18-0007 and Tentative Map (TM) 17-0002.

Chairman Schussel introduced the item.

Planning and Development Services Director Hayes commented on the project and process.

Principal Planner Sage presented the item. The applicant presented and commented on the project.

Ex Parte Communications:

Chairman Schussel has a Costco membership, spoken with members of the community, and spoke with Commissioner Judt and Platzer.

Vice-chair Cohen-Thompson attended community meetings.

Commissioner Judt spoke with applicant and has a Costco membership.

Commissioner Matulac has a Costco membership and overheard public comments while standing in line at Costco.

Commissioner Platzer is a Costco membership.

Commissioner Larsen has a Costco membership, attended community meetings and met with the applicant.

Staff and applicant responded to questions from the Commissioner.

Chairman Schussel opened for public comment.

Speakers: Steve Heram and Nataly Matey – representing Safeway, Dan Torres, George Gun, James Cooper, Joe Shelco, El Wilson, John Gomez, Unsigned, Ricky Davis, Unsigned, David Doeswell, Shussel Q, Mokuma

Chairman Schussel closed public comment.

Commissioners commented on the project.

Action: Vice-Chair Cohen-Thompson made the motion to approve resolution PC No20-01. recommend the City Council certify the Final EIR, recommend the City Council approve the zoning map amendment (ZMA) 17-0001, Planned Development (PD) 17 -0007, Major Use Permit (UP) 18-0007, approve the vesting Tentative Map (TM) 17-0002 contingent to the above City Council actions and adopt the minor changes made to the findings.

Substitute Motion: Commissioner Judt made a substitute motion to continue the certification Final EIR and accept a high standard for managing the level of service to the traffic lights.

Substitute Motion Vote:

AYES:	Commissioners Judt
NOES:	Chairman Schussel, Vice-Chair Cohen-Thompson, Commissioners Larson, Platzer, Matulac.
ABSENT:	Commissioner Diohep
ABSTAIN:	None

Vote:

AYES:	Chairman Schussel, Vice-Chair Cohen-Thompson, Commissioner Larson, Matulac, Platzer and Judt.
NOES:	None
ABSENT:	Commissioner Diohep
ABSTAIN:	None

12. OTHER

- A. Discussion of Future Agenda Items.

Chairman Judt requested to add an item to discuss the City Council's goal setting session.

13. ADJOURNMENT

Chairman Schussel adjourned the meeting at 9:42 P.M.

ROBERT SCHUSSEL, CHAIRPERSON

ATTEST:

CESAR OROZCO
ASSOCIATE PLANNER



DATE: May 4, 2020
TO: Planning Commission
FROM: Terrance Davis, Public Works Director
SUBJECT: GENERAL PLAN CONFORMANCE REVIEW FOR FISCAL YEAR 2020-2021 CAPITAL IMPROVEMENT PROGRAM

RECOMMENDATION

After a public hearing, adopt Resolution 20-03 finding that the proposed Fiscal Year (FY) 2020-2021 Capital Improvement Program conforms with the City of Vallejo's General Plan 2040.

REASONS FOR RECOMMENDATION

The City's Capital Improvement Program (CIP) is an important planning tool that identifies infrastructure and other public facility projects, cost, funding mechanisms, and priorities for execution. The CIP is adopted for a five-year period and updated annually to show unspent funds for projects not yet completed and to add a new year to the cycle. It also reflects any changes in the priorities for projects that have not yet started. Each year, pursuant to California Government Code Section 65401, the Planning Commission must review the "ensuing fiscal year" of the CIP for conformance with the City's General Plan, and convey its findings to the City Council. The Commission's review is limited to General Plan conformance and does not include recommendations on the projects (except as related to General Plan conformance), priorities or budget projections of the CIP. Following this hearing, the City Council will conduct its own hearing and make a determination as to final adoption of the CIP.

BACKGROUND AND DISCUSSION

Capital improvements are those individual construction projects and purchases of land, equipment, and contract services that cost more than \$50,000. Capital improvement planning is one of the main ways communities implement the General Plan. CIP funding priorities reflect community values, needs, desired services and projects and resources to accomplish them.

The objectives of the CIP are as follows:

- To provide increased planning and coordination of CIP projects
- To relate the planning of CIP projects more effectively to general City goals and fiscal capability
- To assist City staff in projecting impacts on future workload requirements, department programs and the City's operating budget
- To ensure conformance of the capital projects with the City's General Plan
- To allocate resources to the City's highest priority projects
- To identify funding shortfalls and develop funding strategies

The CIP forecasts the City's proposed major projects over the next five years. The first year of the CIP includes those projects proposed for funding within the City of Vallejo's FY 2019-20 budget. The capital needs for the City exceed the amount of available (and anticipated) revenue, therefore, the CIP includes both funded and unfunded projects to capture the full needs of the City and enable the City Council to prioritize the projects. Pursuant to California Government Code Section 66002(a), the CIP includes the location, size, time of availability, and estimated costs for all improvements.

On August 29, 2017, the City Council adopted General Plan 2040, a comprehensive statement of the City's land use policies for the next 25 years. The Planning Commission's task relative to the CIP is to review the first year of the CIP and determine whether it conforms with the General Plan.

CONFORMANCE WITH THE GENERAL PLAN

Staff has conducted an audit of General Plan policies, and has prepared the attached matrix (Attachment 3) to document how each proposed capital improvement conforms with the City's General Plan. In general, each CIP item implements a program or policy in the General Plan, which are identified by policy number and description for reference in the attached matrix.

The General Plan has a time frame spanning the next 23 years, however, the City Council prioritizes and allocates limited resources every year. Not all General Plan goals or plans may be funded during each year of the CIP. The City Council ultimately decides spending priorities and determines if they are in harmony with the General Plan. Consequently, the proposed CIP does not spread City capital funding equally among all plan areas, but must prioritize funding based on the City Council's assessment of community needs and priorities. While a five-year future cost is forecast, the Council adopts fund allocations for a single-year CIP, so future years are not shown on the attached matrix.

There can sometimes be a concern that the amount budgeted for capital projects may not be adequate to support projected community growth. Conversely, another concern is that capital improvements might facilitate growth that exceeds planned levels, leading to development that is disorderly or adversely impacts the environment. Staff has reviewed the proposed CIP and finds no evidence that it will preclude the City from accommodating the growth envisioned in the General Plan, or cause any growth-management thresholds to be exceeded.

FISCAL IMPACT

The projects identified in the CIP are funded through a variety of mechanisms including grants, fees, gas tax, etc. Each project in the CIP document identifies the funding source(s) for that project to be allocated over the course of the five-year planning period. The City Council will authorize specific funding sources and amounts as part of the budget process, or at the time of individual project approval.

ENVIRONMENTAL REVIEW

This action is exempt from the California Environmental Quality Act (CEQA) because it is not a project which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable

indirect physical change in the environment, pursuant to CEQA Guideline Section 15378, therefore no further review is required. CEQA review is conducted for individual projects at the time of project approval.

ATTACHMENTS

1.	Resolution 20-03
2.	FY 2020-2021 CIP Project List
3.	FY 2020-2021 General Plan-CIP Conformance Matrix
4.	FY 2019-2020 General Plan-CIP Conformance Matrix
5.	Text of General Plan Policies Applicable to FY 2020-2021 CIP Projects

CONTACT

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Afshan.Hamid@cityofvallejo.net

Melissa L. Tigbao, Assistant Public Works Director / City Engineer, (707) 648-4085
Melissa.Tigbao@cityofvallejo.net

CITY OF VALLEJO PLANNING COMMISSION

RESOLUTION NO. PC 20-03

A RESOLUTION OF THE PLANNING COMMISSION
FINDING THE PROPOSED CAPITAL IMPROVEMENT PROGRAM
FOR FISCAL YEAR 2020-2021 TO BE IN
CONFORMANCE WITH THE GENERAL PLAN

BE IT RESOLVED by the Planning Commission of the City of Vallejo as follows:

WHEREAS, the City of Vallejo Capital Improvement Program (CIP) is a five-year program adjusted annually that outlines public improvements and estimated expenditures to construct these improvements; and

WHEREAS, a proposed CIP has been developed for the 2020-2025 time period for City Council review and adoption; and

WHEREAS, California Government Code Section 65401 requires the City's Planning Commission to determine whether the "ensuing fiscal year" of the CIP (Fiscal Year, or FY, 2020-21 in this case) is in conformance with the City's General Plan, and to report its determination to the City Council; and

WHEREAS, on May 4, 2020, the Planning Commission held a public hearing on the proposed FY 2020-2021 CIP.

NOW THEREFORE, the Planning Commission of the City of Vallejo hereby finds, determines and resolves as follows:

Section 1: The Planning Commission has duly considered the full record before it on this matter, which includes but is not limited to such things as the City staff report, the FY 2020-2021 CIP, testimony by staff and the public (if any), and any other materials or evidence submitted or provided to the Commission. Furthermore, the recitals set forth above are found to be true and correct and are incorporated herein by reference.

Section 2: This action is not subject to the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines Section 15378, since it is not a "project" as defined under CEQA.

Section 3: The proposed FY 2020-2021 CIP conforms with the Vallejo General Plan 2040.

PASSED AND ADOPTED at a regular meeting of the Planning Commission of the City of Vallejo, State of California, on the 4th of May, 2020, by the following vote to-wit:

AYES:

NOES:

ABSENT:

Robert Schussel, CHAIRPERSON
City of Vallejo Planning Commission Attest:

Afshan Hamid, SECRETARY
City of Vallejo Planning Commission

Attachment 2
City of Vallejo
Fiscal Year 2020-2021 Proposed CIP with New and Existing Funding

Line #	Fund No.	Fund Name	Project #	Project Name	New Appropriation
1	137	Neighborhood Park Dev Fee	CED001	Vallejo Bluffs Trail	\$ 296,756
		subtotal Fund 137			\$ 296,756
2	138	Hiddenbrooke Improvement District	PWL001	Hiddenbrooke Parkway Improvements	\$ 275,000
3	138	Hiddenbrooke Improvement District	PWL006	Hiddenbrooke Welcome Center Rehab	\$ 50,000
		subtotal Fund 138			\$ 325,000
4	185	Glen Cove LMD	PWL002	Glen Cove Parkway Improvements	\$ 150,000
		subtotal Fund 185			\$ 150,000
5A	201	Capital Outlay	PWC109	Streets/Pavement Maintenance and Rehabilitation	\$ 500,000
6	201	Capital Outlay	PWC111	City Building Repairs	\$ 300,000
7	201	Capital Outlay	PW9428	Urban Forest Management Plan	\$ 10,000
8	201	Capital Outlay	PW9429	Hazardous Material Remediation / Underground Tank	\$ 10,000
9	201	Capital Outlay	PW9430	ADA Improvements	\$ 5,000
10	201	Capital Outlay	PW9705	ADA Curb Ramps	\$ 5,000
11	201	Capital Outlay	PW9706	Mare Island Bridge Lift Span Repairs	\$ 10,000
12	201	Capital Outlay	PW9739	Sonoma Retaining Wall	\$ 10,000
		subtotal Fund 201			\$ 850,000
13	201	Capital Outlay	PW9431	B46 MI Museum Life Safety Brickwork Repair	\$ 39,000
		subtotal Fund 201 -- from existing funding in PO#033408			\$ 39,000
14	203	Traffic Impact	PW9730	Citywide Road Diet Study	\$ 50,000
15	203	Traffic Impact	PW9731	Redwood Street Road Diet	\$ 125,000
		subtotal Fund 203			\$ 175,000
5B	219	Gas Sec 2103	PWC109	Pavement Maintenance and Rehabilitation	\$ 350,000
		subtotal Fund 219			\$ 350,000
16	221	Grant Reimb	PW9729	Sacramento Street Road Diet	\$ 681,000
		subtotal Fund 221			\$ 681,000
17	226	Road Maint Rehab Act / SB1	PW9703	Springs Road Pavement Rehabilitation	\$ 900,000
18	226	Road Maint Rehab Act / SB1	PW9704	Tennessee Street Pavement Rehabilitation	\$ 900,000
		subtotal Fund 226			\$ 1,800,000
19	415	Marina	PWMo6	Marina Dredging	\$ 300,000
		subtotal Fund 415			\$ 300,000
20	404	City Water Systems	WT7093	FH SED&FLOC CHAMBER EQUIP	\$ 1,400,000
21	404	City Water Systems	WT7098	METER REPLACEMENT PROGRAM	\$ 600,000
22A	404	City Water Systems	WT7109	NEW ERP (HTE REPLACEMENT)	\$ 280,000
23	404	City Water Systems	WT7116	WATER MAIN REPLACEMENT 20-21	\$ 2,000,000
		subtotal Fund 404			\$ 4,280,000
22B	410	Travis Water Systems	WT7109	NEW ERP (HTE REPLACEMENT)	\$ 35,000
		subtotal Fund 410			\$ 35,000
22C	411	Lake Water Systems	WT7109	NEW ERP (HTE REPLACEMENT)	\$ 35,000
24	411	Lake Water Systems	WT7117	GORDON VALLEY WATER MAIN REHAB/REPLACEMENT	\$ 500,000
		subtotal Fund 411			\$ 535,000

Attachment 3
FY20-21 General Plan-CIP Conformance Matrix

#	Category	Project ID	Project Name	Description	Location	Vallejo General Plan 2040		
						Chapter	Topical Area	Applicable Goals/Policies (all are policies unless otherwise noted)
1	Infrastructure: Other	CED001	Vallejo Bluffs Trail	The proposed class I Vallejo Bluff Trail would close a gap in three major regional trails that share an alignment near the northern landing of the Carquinez Bridge in Solano County; the San Francisco Bay Trail, the Bay Area Ridge Trail, and the California Delta Trail.	State Route 29, Lincoln Road East, & Sequoia Ave going south along I-80 to a point near Carquinez Strait at Clearview Drive	Mobility, Transportation, & Connectivity	Citywide Mobility	MTC-1.5
2	Infrastructure: Transportation	PWL001	Hiddenbrooke Parkway	This proposed project with remove and replace existing landscaping and update irrigation along north and south sides of Hiddenbrooke Parkway, as well as the center medians.	Hiddenbrooke Parkway	Community & People	Urban Greening and Community Health	CP-1.7
3	Infrastructure: Other	PWL006	Hiddenbrooke Welcome Center Rehab	This proposed project will rehab the Welcome center at Hiddenbrooke Parkway	Hiddenbrooke Welcome Center	Community & People	Urban Greening and Community Health	CP-1.7
4	Infrastructure: Transportation	PWL002	Glen Gove Parkway Improvements	This project will include public right-of-way improvements from one-time surplus funds from the maturing Glen Cove Improvement District bond, budgeted in 2008. This project will remove and replace existing landscaping along Glen Cove Pkwy from Robles Way to its southern terminus. The project has been divided into six phases. Phase 1 will consist of the area from Robles Way to Wellfleet Drive.	Glen Cove Parkway	Community & People	Urban Greening and Community Health	CP-1.7
5	Infrastructure: Transportation	PWC109	Pavement Maintenance and Rehabilitation	Paving of various streets throught the city.	Citywide	Mobility, Transportation, & Connectivity	Citywide Mobility	MTC-2.6
6	Facilities	PWC111	Public Building Repairs	This project includes performing work on facilities owned by the City	Citywide	Economy, Education, & Training	Stewardship of Public Assets	EET-1.9
7	Infrastructure: Other	PW9428	Urban Forest Management Plan	This project will complete a citywide tree inventory and develop an Urban Forest Management Plan to establish a citywide commitment to a healthy, growing urban forest in the City of Vallejo.	Citywide	Nature and Built Environment	Urban Greening	NBE-1.7
8	Infrastructure: Other	PW9429	Hazardous Material Remediation / Underground Tank Removal	The purpose of this project is to remove underground storage tanks containing hazardous materials, as they are discovered, following the state and federal regulations.	Citywide	Nature and Built Environment	Community Standards	NBE-1.13
9	Facilities	PW9430	ADA Improvements	Improving ADA Accessibility at public facilities, such as the Mare Island Chapel.	Public Facilities	Mobility, Transportation, & Connectivity	MTC: Citywide Mobility	MTC-2.7

Attachment 3
FY20-21 General Plan-CIP Conformance Matrix

#	Category	Project ID	Project Name	Description	Location	Vallejo General Plan 2040		
						Chapter	Topical Area	Applicable Goals/Policies (all are policies unless otherwise noted)
10	Infrastructure: Transportation	PW9705	ADA Curb Ramps	The purpose of this project is to improve intersections throughout the City to ensure the curb ramps and sidewalks are ADA accessible & compliant.	Citywide	Mobility, Transportation, & Connectivity	MTC: Citywide Mobility	MTC-2.7
11	Infrastructure: Other	PW9706	Mare Island Bridge Lift Span Repairs	This project is to repair the lift span of the Mare Island Causeway Bridge to ensure that residents have more than one route off the island.	Mare Island Causeway Bridge	Mobility, Transportation, & Connectivity	MTC: Citywide Connectivity	MTC-3.1
12	Infrastructure: Other	PW9739	Sonoma Retaining Wall	This project will reinforce a retaining wall with tiebacks to reduce the risk to pedestrian safety at 602 Capitol Street on the side of the property facing Sonoma Boulevard. Due to this retaining wall being on a major thoroughfare through the City, it is a safety concern that the retaining wall might collapse and needs to be dealt with for the public's safety.	Sonoma Boulevard at Capitol Street	Nature and Built Environment	Community Standards	NBE-1.13
13	Facilities	PW9431	B46 MI Museum Life Safety Brickwork Repair	Repair the failing brickwork of Building 46A, the small building located in the middle of the Mare Island Museum Building 46.	Mare Island Building 46A	Nature and Built Environment	Community Standards	NBE-1.13
14	Infrastructure: Transportation	PW9730	Citywide Road Diet Study	This project is to review which roadways in the City are good candidates for reducing the number of lanes from 4 lanes to 2 lanes.	Citywide	Mobility, Transportation, & Connectivity	Safe Streets, Citywide Mobility	MTC-2.1, MTC-2.4, MTC-2.7
15	Infrastructure: Transportation	PW9731	Redwood Street Road Diet	This project will reduce the number of travel lanes on Redwood Street between Tuolumne Street and Broadway, from four lanes down to two lanes. Turning lanes and loop detectors at the traffic signals will also be rearranged.	Redwood Street between Tuolumne Street & Broadway	Mobility, Transportation, & Connectivity	Safe Streets, Citywide Mobility	MTC-2.1, MTC-2.4, MTC-2.7
16	Infrastructure: Transportation	PW9729	Sacramento Street Road Diet	This project will reduce the number of travel lanes on Sacramento Street between Tennessee Street and Redwood Street, from four lanes down to two lanes. Turning lanes and loop detectors at the traffic signals will also be rearranged.	Sacramento Street between Tennessee Street & Redwood Street	Mobility, Transportation, & Connectivity	Safe Streets, Citywide Mobility	MTC-2.1, MTC-2.4, MTC-2.7
17	Infrastructure: Transportation	PW9703	Springs Road Pavement Rehabilitation	This reconstruction project will consist of pavement rehabilitation, removal and replacement of non-compliant ADA curb ramps, sidewalk, curb and gutter and driveways.	Springs Road between Maywood Drive & Parkwood Drive	Mobility, Transportation, & Connectivity	Citywide Mobility	MTC-2.6, MTC-2.7
18	Infrastructure: Transportation	PW9704	Tennessee Street Pavement Rehabilitation	This reconstruction project will consist of pavement rehabilitation, removal and replacement of non-compliant ADA curb ramps, sidewalk, curb and gutter and driveways.	Tennessee Street between Rollingwood Drive & Curtis Drive	Mobility, Transportation, & Connectivity	Citywide Mobility	MTC-2.6

Attachment 3
FY20-21 General Plan-CIP Conformance Matrix

#	Category	Project ID	Project Name	Description	Location	Vallejo General Plan 2040		
						Chapter	Topical Area	Applicable Goals/Policies (all are policies unless otherwise noted)
19	Infrastructure: Marina	PWM06	Marina Dredging	This project provides ongoing dredging within the Marina to allow ingress and egress of vessels to and from berths and fueling docks.	Vallejo Municipal Marina - 42 Harbor Way	Nature & Built Environment; Mobility, Transportation, & Connectivity	NBE: Community Enhancing Uses; MTC: Waterways	NBE-4.1 (Action B), MTC-3.10 (Actions A and B)
20	Water	WT7093	FLEMING HILL SEDIMENT & FLOCCULATION CHAMBER EQUIPMENT	Replacement and upgrades of the sedimentation and flocculation facilities at the Fleming Hill Water Treatment Plant.	Fleming Hill Water Treatment Plant	Community and People	Healthy Community	POLICY CP-1.13 (Action CP-1.13A, Action CP-1.13B)
21	Water	WT7098	METER REPLACEMENT PROGRAM	Replace water meters and meter reading technology. Total project budget estimated at \$13M to \$18M. Financing TBD - currently exploring options.	Citywide	Community and People	Healthy Community	POLICY CP-1.13 (Action CP-1.13A, Action CP-1.13B)
22	Water	WT7109	NEW ENTERPRISE RESOURCE PLANNING PROJECT (HTE REPLACEMENT)	Annual transfer to Finance Department to support new Enterprise Resource Planning project (HTE replacement)	Citywide	Community and People	Healthy Community	POLICY CP-1.13 (Action CP-1.13A, Action CP-1.13B)
23	Water	WT7116	WATER MAIN REPLACEMENT 20-21	Annual replacement of pipes in the distribution system. FY20-21	Citywide	Community and People	Healthy Community	POLICY CP-1.13 (Action CP-1.13A, Action CP-1.13B)
24	Water	WT7117	GORDON VALLEY WATER MAIN REHAB / REPLACEMENT	Rehab and/or replace the Gordon Valley Water Main that is past its useful life.	Lakes System	Community and People	Healthy Community	POLICY CP-1.13 (Action CP-1.13A, Action CP-1.13B)

Attachment 4
FY19-20 General Plan-CIP Conformance Matrix

#	Category	Project ID	Project Name	Description	Location	Vallejo General Plan 2040		
						Chapter	Topical Area	Applicable Goals/Policies (all are policies unless otherwise noted)
1	Infrastructure: Other	PWL005	Highlands Park Septic Tank Vault Repair Design	The septic tank located at Highlands Park is faulty. This project is for the design of rehabilitation of the septic tank vault.	Highlands Park	Community & People	Healthy Environment	CP-1.15 (Action C)
2	Infrastructure: Transportation	PWL002	Glen Gove Parkway Improvements	This project will include public right-of-way improvements from one-time surplus funds from the maturing Glen Cove Improvement District bond, budgeted in 2008. This project will remove and replace existing landscaping along Glen Cove Pkwy from Robles Way to its southern terminus. The project has been divided into six phases. Phase 1 will consist of the area from Robles Way to Wellfleet Drive.	Glen Cove Parkway	Community & People	Urban Greening and Community Health	CP-1.7
3	Infrastructure: Other	PW9423	Waterfront Park Project	This project will develop the entire Waterfront Park, from the southern end, Independence Park region, to the Waterfront Green, north of the ferry terminal. Improvements will include landscaping, the installation of fitness equipment, a performance stage and native plants and trees.	Waterfront	Community & People; Nature & Built Environment; Mobility, Transportation, & Connectivity	CP: Active Living; NBE: Access & Connectivity; MTC: Downtown/Waterfront t	CP-1.4 (Action A), NBE-4.3, NBE-4.5, MTC-3.5 (Action A)
4	Infrastructure: Transportation	PWC109	Pavement Maintenance and Rehabilitation	Paving of various streets throught the city.	Citywide	Mobility, Transportation, & Connectivity	Citywide Mobility	MTC-2.6
5	Facilities: Other	PWC111	Public Building Repairs	This project includes performing work on facilities owned by the City	Citywide	Economy, Education, & Training	Stewardship of Public Assets	EET-1.9
6	Infrastructure: Other	PW9406	North Mare Island Levee Repair	The purpose of this project is to repair the North Mare Island Levee.	North Mare Island Levee	Nature & Built Environment	Flood Control	NBE-5.6 (Action F)
7	Facilities: City Hall	PW9409	Trash Enclosures - City Hall and Waterfront	Build trash enclosures at City Hall and the Ferry Building to keep the public and waterways safe from the trash.	City Hall and Ferry Building	Community & People	Healthy Environment	CP-1.15 (Action A)
8	Facilities: Other	PW9413	ADA Downtown Parking Lots Design - Phase A	Improve the ADA accessibility and compliance at the Downtown parking lots D, H, I, J, K, L, and M. These lots are contractually obligated to be completed by May 30, 2020.	Downtown Parking Lots D, H, I, J, K, L, and M	Mobility, Transportation, & Connectivity	Citywide Mobility	MTC-2.4
9	Infrastructure: Other	PW9415	ADA Sidewalk Shaving Program	The purpose of this project is to improve sidewalks throughout the City to ensure the sidewalks are in compliance with the Americans with Disabilities Act (ADA).	Citywide	Community & People; Mobility, Transportation, & Connectivity	CP: Active Living; MTC: Citywide Mobility	CP-1.6, MTC-2.4
10	Facilities: Other	PW9418	Mare Island Cemetery Rehabilitation	This project is for the rehabilitation of the Mare Island Cemetery and the possible transfer of ownership back to the Federal Government.	Mare Island Cemetery	Nature & Built Environment; Economy, Education, & Training	NBE: Cultural Resources, Play to Strengths; EET: Visitor Destination	NBE-1.9, NBE-2.4 (Action A), EET-1.3 (Action B)
12	Infrastructure: Other	PWR20A	PG&E Rule 20A Project	PG&E has Rule 20A credits which are to be used for underground wiring of the overhead PG&E lines during construction.	Citywide	Nature & Built Environment	Scenic Resources	Goal NBE-1, Policy NBE-1.5
						Vallejo General Plan 2040		

Attachment 4
FY19-20 General Plan-CIP Conformance Matrix

Category	Project ID	Project Name	Description	Location	Chapter	Topical Area	Applicable Goals/Policies (all are policies unless otherwise noted)
13 Infrastructure: Other	PW9416	Vision Zero Plan and Corridor Study	The purpose of study is to pinpoint factors contributing to traffic deaths and serious injuries, and to identify proven safety countermeasures to address those factors through education, engineering, enforcement, and evaluation in order to eliminate traffic fatalities within the City of Vallejo.	Citywide	Mobility, Transportation, & Connectivity	Safe Streets, Citywide Mobility	MTC-2.1 (Action A), MTC-2.4, MTC-2.7
14 Infrastructure: Transportation	PW9417	Traffic Calming Toolbox	This project is an update of the 2013 Traffic Calming Toolbox, which is a catalog of strategies (physical design and other measures) to improve safety for motorist, pedestrians and cyclists.	Citywide	Mobility, Transportation, & Connectivity	Safe Streets, Citywide Mobility	MTC-2.1 (esp. Action C), MTC-2.4, MTC-2.7
15 Infrastructure: Other	PW9420	Erosion Control	Installation of erosion control measures that will prevent the release of sediment/storm water into existing drainage systems.	Citywide	Community & People	Healthy Environment	CP-1.15
16 Infrastructure: Other	PW9421	Turner Parkway Improvements for Development of Cooke Property	Removal of a portion of the median and the construction of a 3-way intersection, to serve proposed residential development on Cooke Property. Includes pavement, signage, and striping on Turner Parkway from Admiral Callaghan Lane to Ascot Parkway.	Turner Parkway	Nature & Built Environment; Economy, Education, & Training; Mobility, Transportation, & Connectivity	NBE: Growth Management; EET: Stewardship of Public Assets MTC: Citywide Mobility	NBE-2.8, EET-1.8 (Action C), MTC-2.4 (Action A)
17 Infrastructure: Other	PW9422	Frontage Lane Traffic Signals for Development of Cooke Property	Installation of up to 3 3-way traffic signals and paving of one full travel lane at Cooke Property, to serve proposed Costco/retail development.	Admiral Callaghan Lane	Nature & Built Environment; Economy, Education, & Training; Mobility, Transportation, & Connectivity	NBE: Growth Management; EET: Stewardship of Public Assets, Business Development MTC: Citywide Mobility	NBE-2.5 (Action A), NBE-2.8, EET-1.8 (Action C), EET-3.2 (Action A), MTC-2.4 (Action A)
18 Infrastructure: Transportation	PW9701	Admiral Callaghan Widening	Widens Admiral Callaghan Lane from 2 lanes to 4 lanes from Redwood Parkway to Turner Parkway; includes Class 2 bike lanes.	Admiral Callaghan Lane	Nature & Built Environment; Economy, Education, & Training; Mobility, Transportation, & Connectivity	NBE: Growth Management; EET: Stewardship of Public Assets, Business Development MTC: Safe Streets, Citywide Mobility	NBE-2.5 (Action A), NBE-2.8, EET-1.8 (Action C), EET-3.2 (Action A), MTC-2.1 (Action B), MTC-2.4 (Action A)
19 Infrastructure: Transportation	PW9730	Citywide Road Diet Study	This project is to review which roadways in the City are good candidates for reducing the number of lanes from 4 lanes to 2 lanes.	Citywide	Mobility, Transportation, & Connectivity	Safe Streets, Citywide Mobility	MTC-2.1, MTC-2.4, MTC-2.7
20 Infrastructure: Transportation	PW9735	Highway Safety Improvement Program (HSIP) - 5 Intersections Imp	Install pedestrian crossing enhancements such as advanced pedestrian warnings and signs as well as Rectangular Rapid-Flashing Beacons (RRFBs) at five intersections.	Citywide	Mobility, Transportation, & Connectivity	Safe Streets, Citywide Mobility	MTC-2.1, MTC-2.4, MTC-2.7
21 Infrastructure: Transportation	PW9736	Highway Safety Improvement Program (HSIP) - 6 Pedestrian Imp	Install High-Intensity Activated Crosswalk beacon (HAWK) at six unsignalized pedestrian crossings.	Citywide	Mobility, Transportation, & Connectivity	Safe Streets, Citywide Mobility	MTC-2.1, MTC-2.4, MTC-2.7
					Vallejo General Plan 2040		

Attachment 4
FY19-20 General Plan-CIP Conformance Matrix

Category	Project ID	Project Name	Description	Location	Chapter	Topical Area	Applicable Goals/Policies (all are policies unless otherwise noted)
22 Infrastructure: Transportation	PW9763	Highway Safety Improvement Program (HSIP) - Sonoma Blvd Road Diet	This project will reduce the number of travel lanes on Sonoma Blvd, between Georgia St and Florida St, from four lanes down to two lanes. Turning lanes and loop detectors at the traffic signals will also be rearranged.	Sonoma Blvd, from Georgia St to Florida St	Mobility, Transportation, & Connectivity	Safe Streets, Citywide Mobility	MTC-2.1, MTC-2.4, MTC-2.7
23 Infrastructure: Transportation	PW9766	Sereno Drive	Sereno Drive improvements in front of Kaiser Hospital for roadway deterioration during the construction of a new wing to the Kaiser Permanente Hospital and a new parking garage, and several other smalling buildings.	Sereno Drive	Mobility, Transportation, & Connectivity	Citywide Mobility	MTC-2.6
24 Infrastructure: Marina	PWM06	Marina Dredging	This project provides ongoing dredging within the Marina to allow ingress and egress of vessels to and from berths and fueling docks.	Vallejo Municipal Marina - 42 Harbor Way	Nature & Built Environment; Mobility, Transportation, & Connectivity	NBE: Community Enhancing Uses; MTC: Waterways	NBE-4.1 (Action B), MTC-3.10 (Actions A and B)
25 Facilities: Other	PW9408	Electric Vehicle (EV) Chargers at Vallejo Station	Add Electric Vehicle (EV) chargers at the Vallejo Station Parking Garage.	485 Santa Clara Street	Mobility, Transportation, & Connectivity	Eco-mobility and Sustainable Transportation	MTC-2.13 (Action A)
26 Infrastructure: Other	PW9802	Bay Trail / Vine Trail Gap Closure	Construct Class I and Class II gap closure along the Bay Trail and Vine Trail regarding networks from Vallejo Ferry Terminal north to the City of American Canyon.	Wilson Ave to American Canyon	Mobility, Transportation, & Connectivity	Safe Streets, Citywide Mobility	MTC-2.1, MTC-2.4, MTC-2.7, MTC-3.4 (Action B)
38 Facilities: Water	WT7104	Green Valley Diversion Dam Repairs	Design and construct repairs to access infrastructure (bridges and stairs) at the Green Valley Diversion Dam. Background: Atlas fire burned bridges and other access infrastructure causing safety and access issues.	Green Valley	Community & People	Healthy Environment	CP-1.13 (Action A)
39 Facilities: Water	WT7105	Green Valley Water Treatment Plant Corrosion Control	Correction and prevention measures to mitigate corrosion issues with the Green Valley treatment plant to include painting/coating of surfaces	Green Valley	Community & People	Healthy Environment	CP-1.13 (Action A)
40 Facilities: Water	WT7106	Siebe and Rockville Tank Replacement	Replace both tanks within Green Valley system; tanks are steel, undersized, and in need of repair	Green Valley	Community & People	Healthy Environment	CP-1.13 (Action A)
41 Facilities: Water	WT7107	Mare Island Reservoir Disinfectant By-Product (DBP) Destruction Unit	Install a new disinfectant by-product destruction system, utilizing mixing and aeration.	Vallejo	Community & People	Healthy Environment	CP-1.13 (Action A)
42 Facilities: Water	WT7108	New Capitol Zone Pump Station	Build new Capitol Street pumping facility at Capitol and Eldorado streets. Site to be determined.	Vallejo	Community & People	Healthy Environment	CP-1.13 (Action A)
43 Facilities: Water	WT7109	New Enterprise Resource Planning Project (HTE Replacement)	Annual transfer to Finance Department to support new Enterprise Resource Planning (ERP)project (AKA HTE replacement) - City portion	Vallejo	Community & People	Healthy Environment	CP-1.13 (Action A)
44 Facilities: Water	WT7110	Pump Station Equipment Renovation	Replace various pumps in system that are underperforming based on need and/or energy efficiency study.	Vallejo	Community & People	Healthy Environment	CP-1.13 (Action A)
45 Facilities: Water	WT7111	Water Main Replacement FY19-20	Annual replacement of pipes in the distribution system.	Vallejo	Community & People	Healthy Environment	CP-1.13 (Action A), CP-1.15

**GENERAL PLAN 2040 POLICIES RELATED TO
CAPITAL IMPROVEMENTS, PUBLIC FACILITIES AND
INFRASTRUCTURE**

Chapter 3 – Community & People

POLICY CP-1.4 Active Recreation Facilities. Ensure all Vallejo residents are served by convenient and safe active recreation facilities that meet the needs of all ages, abilities, and interest groups.

- *Action CP-1.4A. Include active recreation opportunities for a range of ages and interests as considerations in planning and projects for the central waterfront and shoreline areas.*

POLICY CP-1.6 Active Transportation Network. Promote the health benefits of walking and bicycling by providing a convenient and safe network of bicycle paths and routes, sidewalks, pedestrian paths, and trails, including connections with major destinations such as civic facilities, educational institutions, employment centers, shopping, and recreation areas.

- *Action CP-1.6A. Identify problem locations in Vallejo regarding pedestrian/auto and bicycle/auto collisions, identify measures (e.g., traffic calming, improved street lighting) to reduce collisions, and develop a prioritized program for implementing identified measures.*
- *Action CP-1.6B. Support and expand Vallejo's Safe Routes to Schools program in collaboration with the VCUSD, Vallejo Police Department, Solano Public Health, and Solano Transportation Authority (STA).*
- *Action CP-1.6D. Develop guidelines for public and private projects that promote safe, convenient, and attractive bike and pedestrian facilities, including amenities to enhance bike and pedestrian activity, such as bicycle racks, lockers, street trees, public art, and street furniture.*

POLICY CP-1.7 Green Space. Promote community physical and mental health through provision and preservation of the urban forest, natural areas, and "green" infrastructure (i.e. best practices water management).

- *Action CP-1.7A. Seek funding to develop and implement an Urban Greening Plan that identifies needs, opportunities, projects, and potential funding, in collaboration with community partners.*
- *Action CP-1.7E. Continue to implement green infrastructure practices that draw upon natural processes to address storm water drainage and flood control and potentially add to Vallejo's network of green spaces.*

POLICY CP-1.13 Clean Water. Provide a safe, adequate water supply citywide.

- *Action CP-1.13A. Periodically assess the need to repair or replace aging water supply infrastructure, and incorporate upgrades and improvements into the Capital Improvement Program as needed.*
- *Action CP-1.13B. Develop a plan to upgrade and finance water infrastructure improvements.*

POLICY CP-1.15 Water Quality. Maintain and improve water quality in a way that provides public and environmental health benefits.

- *Action CP-1.15A. Require new development to incorporate site design, source control, and treatment measures to keep pollutants out of stormwater during construction and operational phases, consistent with City of Vallejo Municipal Ordinance.*
- *Action CP-1.15C. Consult with appropriate regional, State, and federal agencies to monitor water quality and address local sources of groundwater and soil contamination, including possible underground storage tanks, septic tanks, and industrial uses, as necessary, to achieve State and federal water quality standards.*

Goal CP-2. Safe City: Protect personal safety in Vallejo's neighborhoods and public spaces.

POLICY CP-2.1 Police Services. Provide responsive, efficient, and effective police services that promote a high level of public safety.

- *Action CP-2.1E. Periodically review response capabilities to determine potential need for additional law enforcement facilities, equipment, or personnel, and identify specific geographic areas requiring expanded services.*
- *Action CP-2.1F. Address the need for a new public safety facility site and building to replace the aging Police Department Facility through a feasibility study and seek out funding opportunities. Identify a suitable location centrally located within easy access to major thoroughfares and freeways.*

POLICY CP-2.3 Fire Prevention and Response Services. Ensure the provision of fire prevention and emergency response services that minimize fire risks and protect life and property.

- *Action CP-2.3A. Periodically review response times to gauge the need for additional VFD facilities, equipment, and personnel, and identify specific geographic areas of the city that may not be adequately served.*

POLICY CP-3.2 Neighborhood Focal Points. Promote school facilities that serve as neighborhood focal points where residents and families come together.

- *Action CP-3.2A. Work with VCUSD, private schools, public agencies, and community service providers to identify opportunities to collocate community facilities with schools, so that multiple services may be delivered from a single location.*

POLICY CP-3.4 Parks. Plan for and provide parkland and facilities to support Vallejo's recreational needs.

- *Action CP-3.4A. Maintain a standard of 4.25 acres of parkland per thousand residents and continue to require that new residential development make a fair share contribution to future parks development.*
- *Action CP-3.4B. Work with GVRD, VSFCD, and other community partners to identify potential sites for new parks, playgrounds, recreation centers, sports fields, skate parks, and other recreational facilities in underserved areas as well as in areas where population growth is anticipated. Collaborate to explore funding mechanisms for acquisition and maintenance of new parks and facilities.*

POLICY CP-3.5 Parks Maintenance. Maintain and improve parks and facilities in Vallejo.

- *Action CP-3.5A. Consider ways to increase funding for park maintenance, including a park impact fee applicable to commercial development.*

POLICY CP-3.6 Park Safety. Ensure that parks are designed and managed to maximize the personal safety of users and maintain the visibility of play areas.

- *Action CP-3.6B. Work with GVRD to periodically conduct CPTED audits of park facilities to identify and prioritize improvements that can enhance safety.*

Chapter 4 – Nature & Built Environment

Goal NBE-1. Beautiful City: Preserve and enhance the natural, historic, and scenic resources that make Vallejo special.

POLICY NBE-1.5 Scenic Vistas. Protect and improve scenic vistas, including views from Interstate 80 and State Route 37 in Vallejo.

POLICY NBE-1.7 Green Infrastructure. Encourage the installation of green infrastructure, including tools such as permeable pavement, rain gardens, constructed wetlands, grassy swales, rain barrels and cisterns, and green roofs, to treat stormwater, attenuate floods, increase groundwater recharge, and reduce urban heat islands.

POLICY NBE-1.9 Cultural Resources. Protect and preserve archaeological, historic, and other cultural resources.

POLICY NBE-2.4 Play to Strengths. Capitalize on Vallejo's maritime tradition, higher education presence, and historic downtown to keep and attract land use activities that contribute positive energy to the community.

- *Action NBE-2.4A. Continue to use the Mare Island Specific Plan to guide development and conservation on Mare Island and support activities that contribute to the economic and social well-being of the community.*

POLICY NBE-2.5 Regional Retail and Entertainment. Support a thriving mix of regional retail and entertainment uses near Interstate 80.

- *Action NBE-2.5A. Work with property owners in the Northgate Area to retain and attract businesses that cater both to local residents and regional shoppers, including through circulation and wayfinding improvements.*

POLICY NBE-2.8 Infill Development. Promote infill development targets vacant and underutilized sites for community-desired and enhancing uses that is compatible with surrounding uses.

POLICY NBE-2.9 Public Service Provision. Ensure that private development provides sufficient funding for infrastructure and public services to support the development.

- *Action NBE-2.9A. Require fiscal impact analyses, as appropriate, for development proposals in order to evaluate public facility needs and costs, and the revenue likely to be generated by that development.*
- *Action NBE-2.9B. Continue to facilitate establishment of assessment districts to finance and maintain public facility improvements.*
- *Action NBE-2.9C. Maintain and update a list of potential, proposed, and approved projects in the city, and report annually the number of housing units and the amount of non-residential development constructed or rehabilitated.*
- *Action NBE-2.9D. Periodically update nexus studies and adjust development impact fees as may be needed to ensure that there is sufficient funding for the infrastructure and public services needed to support growth.*
- *Action NBE-2.9E. Engage the Vallejo City Unified School District (VCUSD) in the review of major new residential development projects to ensure that adequate school facilities are or will be available to accommodate new students.*

POLICY NBE-4.1 Waterfront Focus. Prioritize public access and recreational and water-dependent uses along the waterfront while minimizing adverse effects on the natural environment.

- *Action NBE-4.1B. Investigate and provide access to places for in-water recreational activities and for commercial and recreational small crafts, such as water taxis, canoes, and kayaks.*

POLICY NBE-4.3 Trails. Support development and implementation of a comprehensive plan for trails that provides access to the waterfront.

- *Action NBE-4.3A. Facilitate development of a promenade and trail, along the waterfront or as close to the waterfront as feasible, extending from the Zampa Bridge in South Vallejo north to River Park and White Slough.*
- *Action NBE-4.3B. Identify priority scenic views and points of interest along the waterfront and potential connections to surrounding destinations.*
- *Action NBE-4.3C. Seek funding for infrastructure improvements, landscaping, and outdoor amenities to increase pedestrian, bike, and transit access to the water and build linkages to downtown Vallejo.*

POLICY NBE-4.5 Waterfront Stewardship. Manage commercial areas of the waterfront so as to contribute to the overall sustainable fiscal health of the City.

- *Action NBE-4.5A. Create a phased Waterfront Capital Improvement Program that identifies projects and estimates operational and maintenance costs.*

POLICY NBE-5.1 Event Readiness. Prepare sufficiently for major events to enable quick and effective response.

- *Action NBE-5.1E. Periodically update the City's Capital Improvement Program to include improvements that will expedite emergency response.*

POLICY NBE-5.4 Project Location and Design. Prohibit development in any area where it is determined that the potential risk from natural hazards cannot be mitigated to acceptable levels.

- *Action NBE-5.4D. Locate public facilities that are critical to health and safety (such as police and fire stations, and water and sewer facilities) so as to minimize potential impacts from hazards.*

POLICY NBE-5.6 Flood Control Planning. Protect the community from potential flood events.

- *Action NBE-5.6F. Work with FEMA to evaluate levees on the western side of Mare Island to enhance the embankments, as necessary.*

POLICY NBE-5.7 Design for Stormwater Control. Encourage new development and redevelopment to minimize the area of new roofs and paving.

- *Action NBE-5.7A. Provide informational materials that promote the use of permeable materials for driveways, streets, parking lots, sidewalks, and plazas.*
- *Action NBE-5.7B. Continue to manage and maintain City-owned storm drainage infrastructure to avoid flooding and reduce the negative effects of stormwater runoff.*

POLICY NBE-5.8 Dam Safety. Ensure that City-operated dams are properly maintained through regular inspections, and take precautions necessary to protect Vallejo properties from related flood hazards in the event of dam failure.

- *Action NBE-5.8A. Work with the California Division of Dams (CDOD) and California Office of Emergency Services (CalOES) in the update of dam inundation maps and Emergency Action Plans (EAPs), as needed, for the dams operated by the City of Vallejo.*

POLICY NBE-5.9 Sea Level Rise. Plan for sea level rise and participate in regional adaptation efforts for areas of Vallejo at risk from sea level rise.

- *Action NBE-5.9A. For City underground utilities, use materials that are more resistant to corrosion from saltwater intrusion.*
- *Action NBE-5.9B. Seek funding to develop and implement sea level rise adaptation strategies and projects.*

- *Action NBE-5.9C. In consultation with Solano County and the San Francisco Bay Conservation and Development Commission (BCDC), develop a Sea Level Rise Strategy that identifies properties and resources susceptible to sea level rise and includes protection and adaptation strategies, based on the latest sea level rise planning guidance from the State.*

Chapter 5 – Economy, Education, & Training

POLICY EET-1.1 Premier Manufacturing Site. Make Vallejo a premier regional site for manufacturing, including basic and advanced fabrication, clean-tech, and green-tech industries. Work with Solano Economic Development Corporation (EDC) to Action EET-1.1A attract manufacturers in sectors such as food and beverage, life-science, clean technology, green technology, and other industries that will provide high quality jobs.

- *Action EET-1.1B. Prioritize North Mare Island for development, such as a manufacturing use, including facilitating infrastructure investment and state and regional incentives for job creation.*

POLICY EET-1.3 Visitor Destination. Make Vallejo an important visitor destination in the Bay Area. Collaborate with Visit Vallejo to enhance the tourism economy, Action EET-1.3A including a multi-faceted strategy that includes arts, culture, history, lodging, and entertainment.

- *Action EET-1.3B. Promote Vallejo's rich naval heritage and support development of a naval tourist attraction on Mare Island.*

POLICY EET-1.8 Public Investments. Leverage public investments to enhance Vallejo's economic vitality, and invest resources in ways that ensure that Vallejo is a healthy, safe, and engaged community.

- *Action EET-1.8A. Continue to balance revenues with expenditures to maintain and enhance Vallejo's fiscal sustainability.*
- *Action EET-1.8B. Consider identifying and setting aside funds that can be used as local match funds to solicit grants and non-traditional funding for priority projects not otherwise feasible.*
- *Action EET-1.8C. Ensure that the Capital Improvement Plan identifies and prioritizes infrastructure needs to be supported by new development.*

POLICY EET-1.9 Municipal Services. Provide robust, high-quality municipal services and build revenue to achieve a self-sustaining model of funding.

- *Action EET-1.9A. Continue to partner with public agencies to enhance Vallejo's infrastructure, including active transportation and transit connections and facilities, and services needed for new development and investment.*

POLICY EET-1.10 Public Land. Improve City-owned land and properties to stimulate private investment in employment and high-quality commercial, residential, and mixed-use development.

- *Action EET-1.10D. Identify opportunities to co-locate public facilities to achieve economies of scale and create convenient neighborhood service centers for Vallejoans.*

POLICY EET-3.2 Local Business Retention. Retain existing businesses and encourage their expansion within Vallejo.

- *Action EET-3.2A. Continue implementing an active business retention and expansion program for existing businesses, recognizing that the majority of new local jobs are created among existing firms.*

POLICY EET-3.5 Fiber Optics. Establish a Municipal High-Speed Fiber Optic Network to support enhanced telecommunications capacity of the City.

- *Action EET-3.5A. Adopt a Fiber Optic Master Plan for Vallejo to galvanize the citywide traffic signal fiber network and provide service to public agencies, educational institutions, medical facilities, and businesses.*
- *Action EET-3.5B. Incorporate telecommunications conduit in all public infrastructure projects, where appropriate and feasible, affording connections to local area networks, including the City's Fiber Optic Network.*

POLICY EET-4.2 Responsible Development. Favor residential, commercial, and industrial development that can mitigate or avoid environmental impacts.

- *Action EET-4.2A. Continue to incorporate sustainable design elements such as solar panels and water efficient landscaping into the construction of City-owned and operated facilities.*

Chapter 6 – Mobility, Transportation, & Connectivity

POLICY MTC-1.3 First/Last Mile Connections. Provide enhancements to the local transit network that make it easier and more convenient to use regional transit.

- *Action MTC-1.3A. Pursue One Bay Area grants and other funding to better connect regional transit and the local bicycle and pedestrian network, including through physical infrastructure, wayfinding signage, and real-time information displays.*

POLICY MTC-2.1 Safety First. Prioritize pedestrian, bicycle, and automobile safety over traffic flow.

- *Action MTC-2.1A. Prepare a citywide Bicycle and Pedestrian Master Plan that builds on the 1998 Plan, identifies improvements needed to close gaps in the network and work toward a "Vision Zero" target for eliminating traffic fatalities and reducing non-fatal collisions.*
- *Action MTC-2.1B. Prioritize completion of sidewalk and bicycle projects listed in the Bicycle and Pedestrian Master Plan as City resources allow.*
- *Action MTC-2.1C. Establish a neighborhood traffic-calming program to involve residents in identifying issues on neighborhood streets and actions to address them.*

POLICY MTC-2.2 Education. Promote safety programs to educate all road users about risks and responsibilities.

- *Action MTC-2.2C. Prioritize school access improvements identified by the Vallejo Police Department (VPD) in the City's Capital Improvement Program for near-term action.*

POLICY MTC-2.4 Citywide Mobility. Maintain a transportation network that provides mobility for all ages and abilities and for all areas of the community.

- *Action MTC-2.4A. Annually update and prioritize the Capital Improvement Program list of roadway and transportation improvements needed to support all modes of travel in Vallejo.*

POLICY MTC-2.6 Pavement Condition. Improve street pavement condition in Vallejo, prioritizing neighborhood corridors and arterials.

- *Action MTC-2.6A. Target neighborhood corridors, commercial corridors, and arterial segments that have a pavement condition index (PCI) of 50 or less and enhance economic development opportunities as top priorities and seek funding for improvements.*

POLICY MTC-2.7 Complete Streets. Increase accessibility for and use of streets by pedestrians, bicyclists, and transit riders.

- *Action MTC-2.7A. Investigate preparing and refining a Complete Streets map, classifying and prioritizing streets for alternative modes of transport.*
- *Action MTC-2.7B. Seek funding to improve sidewalk conditions, including widening of substandard sidewalks and adding street trees and lighting.*
- *Action MTC-2.7D. Adopt the National Association of City Transportation Officials (NACTO) Urban Street Design Guide and Urban Bikeway Design Guide to direct future improvement projects.*
- *Action MTC-2.7E. Factor in bus operational and access needs when considering the location, planning, and design of site improvements, considering such factors as bus operational needs, proximity of building to streets, and provision of sidewalks, supporting an efficient, reliable, and safe transit system accessible to all.*

POLICY MTC-2.11 Sustainable Transportation. Ensure that circulation improvements can be operated and maintained within existing and future resource limitations.

- *Action MTC-2.11A. Annually review transportation projects in the City's Capital Improvement Program to ensure that near-term priorities are achievable given available resources.*

POLICY MTC-2.13 Alternative Fuel Vehicles. Utilize alternative fuel vehicles as much as feasible.

- *Action MTC-2.13A. Work with the Solano Transportation Authority (STA) and other partners to install electric vehicle charging stations in all City-owned parking facilities downtown and at major parking facilities and employment centers.*
- *Action MTC-2.13B. Work with public transportation agencies, such as the Solano Transportation Authority and Soltrans, to develop a strategy to implement a network of public and private alternative fueling stations, such as electric vehicle charging stations and stations providing compressed natural gas (CNG).*

POLICY MTC-3.1 Coordinated Transportation Planning. Ensure that improvements to the transportation network support a land use pattern that connects the community and facilitates travel among Vallejo's neighborhoods.

- *Action MTC-3.1A. Work with Caltrans, Solano County, Soltrans, and the Solano Transportation Authority to identify and seek funding for improvements that make intra-city travel easier, including for transit, bicycles, and pedestrians.*
- *Action MTC-3.1B. Synchronize improvements to the local street network with planned expansion of the County bicycle network and the regional trail system in Vallejo.*
- *Action MTC-3.1C. Involve residents, businesses, and other community members in choosing among options for street improvement projects to create a stronger sense of place and neighborhood ownership in the design of roads, streetscapes, and other transportation related facilities.*

POLICY MTC-3.4 Walking, Biking, and Rolling. Expand the local bicycle and trail network to provide safe, healthy, attractive options for non-motorized travel among destinations in Vallejo, including for wheelchair users.

- *Action MTC-3.4A. Where appropriate and feasible, convert underused City rights-of-way to bikeways along travel lanes, drainage canals, and rail corridors, to enhance connectivity.*
- *Action MTC-3.4B. Pursue public and private funding to expand and link the network of pedestrian and bicycle paths and facilities beginning in selected transit-oriented priority areas.*
- *Action MTC-3.4C. Regularly maintain key neighborhood connection routes to facilitate bicycle access, including through debris removal and street repair.*

POLICY MTC-3.5 Walkability. Promote a well-designed, interconnected, pedestrian-friendly environment in the Downtown/Waterfront District.

- *Action MTC-3.5A. Continue to improve the pedestrian realm connecting downtown with the waterfront and along the waterfront on both sides of the Mare Island Strait, consistent with the Waterfront Planned Development Master Plan and the Mare Island Specific Plan.*

POLICY MTC-3.7 Shared Streets. Facilitate access to and through the District by alternatives to the automobile.

- *Action MTC-3.7A. Establish shared streets within the Downtown/Waterfront District that accommodate bicycles and transit through provision of dedicated lanes where appropriate.*

POLICY MTC-3.9 Sufficient Parking. Provide for sufficient but not excessive parking.

- *Action MTC-3.9C Design parking lots, where feasible, to include clearly marked and shaded pedestrian pathways between transit facilities and building entrances.*
- *Action MTC-3.9D Develop a central parking facility, consistent with the Downtown Specific Plan.*

POLICY MTC-3.10 Boating. Support recreational boating in Vallejo and foster the development of commercial boating activities, including dinner cruises and water taxis.

- *Action MTC-3.10A. Operate the Municipal Marina in a financially viable manner.*
- *Action MTC-3.10B. Seek funding for marina operations and maintenance, including needed dredging within the existing harbor.*



DATE: May 4, 2020
TO: Planning Commission
FROM: Afshan Hamid, Planning Manager
SUBJECT: **COMPLIANCE REVIEW WITH SENATE BILL 743 GENERAL PLAN AMENDMENT FOR VEHICLE MILES TRAVELED**

RECOMMENDATION

After a public hearing, adopt Resolution 20-04 finding that the proposed General Plan Amendment interim approach for Vehicle Miles Travelled (VMT) is in conformance with the City of Vallejo's General Plan 2040, Senate Bill 743, California Air Resource Board and Office of Planning and Research.

REASONS FOR RECOMMENDATION

The City of Vallejo has contracted with Fehr & Peers a transportation consultant, to implement the State mandated Senate Bill 743 (SB 743) and California Environmental Quality Act (CEQA Guidelines 15064.3 (b)). Since July 2019, the consultant has met with staff on a regular basis to review and present relevant policies for greenhouse gas reduction, multimodal transportation, review of travel demand models, and methodology and threshold options aligned with the California Air Resources Board (CARB) and Office of Planning and Research (OPR)'s Technical Advisory on Evaluating Transportation Impacts in CEQA in order to achieve the state's greenhouse gas reduction goals. Based on the City's long term land use goals, staff is recommending an interim near term approach, Option 4 ("Interim VMT Evaluation Method") to comply with SB 743.

If approved, an interim policy will require a General Plan amendment. The interim policy will be in place until staff and a consultant work on the long term General Plan amendment to the Land Use and Mobility, Transportation and Connectivity sections. Typically, this policy does not require a General Plan amendment according to OPR, however staff recommends this as best practice to provide clarity to projects. Following this hearing, the City Council will conduct its own hearing and make a determination as to the interim policy prior to July 1, 2020.

BACKGROUND AND DISCUSSION

Senate Bill 743 (SB 743) was signed in 2013, with the intent to more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions (GHG). When implemented, traffic congestion shall not be considered a significant impact on the environment within (CEQA transportation analysis. July 1, 2020 is the statewide implementation date for compliance with SB 743.

SB 743 provides that aesthetic and parking impacts of a residential, mixed-use residential, or employment center project, on an infill site, within a transit priority area, shall not be considered significant impacts on the

environment. VMT reduction provides policy resiliency and support for GHG emission reductions overall by supporting reduced vehicle use, reduced energy consumption in buildings, preservation of natural and working lands, and reduced water consumption and conveyance from more compact land use planning. Further, lower VMT is associated with additional co-benefits such as placemaking (creation of quality public spaces) that leads to local economic development, overall economic growth, reduction in other air pollutant emissions and water pollution, reduction in traffic congestion, and improvements in safety and public health, among others.

As a whole the benefits of VMT streamlines projects that are near transit, infill housing, centrally located office, locally serving retail, transit projects, bike projects, pedestrian enhancements, livability enhancements, street safety improvements (road diets and street calming). Applying VMT will help build better walkable neighborhoods that have access to everyday needs. Summaries of the approaches for Vallejo are documented in each Fehr & Peers memo as follows:

- Exhibit A, 4.6.2020 Memo: Attachment 1 is an overview of the Threshold Options, along with the selected thresholds on page 2 and 3.
- Attachment 2, 1.31.2020 Memo: Page 11 are Options for Vallejo.

Beginning July 1, 2020 the only acceptable way of determining the significance of transportation impact in CEQA environmental review documents are the methods listed in CEQA Guidelines Section 15064.3 along with CEQA Guidelines Appendix G. This change in the law means that transportation impacts must be measured by the increase in VMT. Up to now Vallejo and most jurisdictions have used Level Of Service (LOS), which measures capacity of street intersections, highway interchanges, and roadway segments to accommodate traffic in terms of the delay caused by additional traffic. VMT is a more complete description of environmental impacts, because it measures the door-to-door greenhouse gas impacts generated by drivers. VMT considers the total transportation impacts of a new project from when users get into a car to when they return to their point of origin. VMT impact assessment within CEQA will have several potential outcomes depending on the project:

- Project is screened from further analysis due to low VMT generation or other specific factors
- Project is evaluated for VMT impacts and is found to have less than significant impacts
- Project has a significant VMT impact but mitigates VMT to less than significant levels
- Project has a significant VMT impact, and mitigates VMT as feasible, however if VMT remains significant, then overriding considerations may apply

General Plan 2040:

The Propel Vallejo General Plan (General Plan 2040) advanced longstanding policies of growth management and environmental sustainability. It established a framework to enhance job growth and create great connected throughout Vallejo oriented towards neighborhoods, infill development, and catalyzing development in key opportunity areas. Like many cities in the Bay Area, Vallejo is in transition from auto oriented suburban development style to one with more connected neighborhoods and corridors that allow for opportunities for robust public life. Although some neighborhoods will still continue a more single family subdivision pattern, the General Plan also envisions development in places next to amenities (e.g. restaurants, grocery stores, parks, entertainment, etc.) and transit.

Consistent with SB 743, the General Plan 2040 provided plan objectives with a community wide inclusive process. As part of the overall objectives, the updates tied to planning and transportation were focusing future growth to foster a vibrant Downtown/Waterfront District, providing a balance of employment and housing opportunities locally, promoting infill development, focusing development and redevelopment near existing and planned transit facilities, strengthening and enhancing connections between neighborhoods. New measurements and tools are needed to enhance mobility and help realize the General Plan 2040's vision of a vibrant and livable city.

At the time of the General Plan 2040 adoption on August 29, 2017, the Final Environmental Impact Report (FEIR) analysis was based on Level of Service (LOS) as the primary tool (see General Plan 2040 Element 6). The General Plan 2040 also acknowledged the importance of VMT and included a number of policies to that effect. The General Plan 2040 policies for conformance are attached to this report.

Currently, the General Plan FEIR was certified using LOS for traffic impact assessments. Under FEIR, Section 3.9.1 Tiering for future projects, the EIR is a program level EIR and does not evaluate the impacts of specific, individual development that may be allowed under the proposed General Plan 2040 and Sonoma Boulevard Specific Plan. Any project currently requires a separate environmental review which can often mean cost and considerable time.

Planning Commission update January 6, 2020:

On January 6, 2020, the consultant Fehr & Peers provided an update to the Planning Commission as an informational presentation. In general, the Planning Commission was in support of the approach and requested further clarification on how a VMT threshold and approach would apply to typical projects. This report discusses the applications as well as the options.

Options for Implementation:

Since the Planning Commission meeting, the consultant has further analyzed and presented staff with four options for setting VMT thresholds for the City of Vallejo (see 4.6.2020 Memo, Exhibit A of Resolution). Vallejo as the lead agency must determine threshold setting given the baseline (existing condition). Vallejo will establish reductions from baseline levels thereby lowering future VMT generation. Additionally, another consideration in threshold setting is how to address cumulative VMT impacts and whether addressing them in General Plan 2040 FEIR is advantageous for streamlining review.

Briefly, the options for the City of Vallejo are described as follows:

Option 1: Rely on Office of Planning & Research (OPR) Technical Advisory MPO thresholds.

Option 2: Set thresholds consistent with City of Vallejo air quality, GHG reduction, and energy conservation goals.

Option 3: Set thresholds consistent with the General Plan 2040 or travel demand model future year VMT projections.

Option 4: Set thresholds based on baseline VMT performance.

Staff is recommending a near term interim approach using Option 4 (Interim VMT Evaluation Method) which will be forwarded to City Council for adoption by July 1, 2020.

Option 4 (Interim VMT Evaluation Method):

After evaluating several options, see matrix with pros and cons (see 4.6.2020 Memo, Exhibit A of Resolution 20-04), staff and the consultant are proposing a two- step approach with Option 4 for the near term and Option 3 for the long term. The Interim VMT Evaluation Method approach will comply with SB 743, and allow projects to move forward. The interim approach will apply a screening process (see Exhibit A), and if a project generates less than 1,080 VMT per day, is located in a transit priority area, or is a local serving retail, it is determined to be less than significant and is approved as long as it is consistent with the General Plan 2040 and the Zoning Code. For these types of projects, no VMT impact analysis is required. A project may still move forward if it does not pass the Interim VMT Evaluation Method screening test, if a VMT analysis shows that the project VMT and project effect on total VMT is no worse than the Citywide average, using the threshold metrics below. Finally, if the analysis demonstrates that VMT is increased, then mitigation measures to reduce the project VMT can be implemented. The Interim VMT Evaluation Method would allow projects to be assessed using the Solano-Napa Activity Based Model to evaluate VMT impacts (see Exhibit A, page 2). as follows:

- Threshold 1: Project Generated VMT (Residential and Office/Industrial Projects)
- Threshold 2: Projects Effect on VMT (Residential and Office/Industrial Projects)
- Threshold 3: Project-Generated VMT and Project's Effect on VMT (Retail Projects)
- Threshold 4: Project-Generated VMT and Project's Effect on VMT (Other Project Types)

The Interim VMT Evaluation Method would also develop a set of mitigation measures to address significant VMT impacts of land use development projects.

Citywide Approach, Option 3:

The second approach streamlines projects under CEQA Guidelines section 15183 for the entire City and will allow future projects to tier-off the General Plan FEIR, and therefore potentially reduce time. This is consistent with the General Plan 2040 Future Year VMT Projections (Attachment 3, 1.31.2020 Memorandum, page 17). This Section of the Guidelines relieves a project of additional environmental review if the environmental impact was addressed in the General Plan 2040 EIR and the project is consistent with the General Plan. The CEQA guidelines state:

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, ore 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.

This approach establishes a “VMT growth budget” that is associated with the General Plan 2040 and evaluates the long term population and growth projections with long-term transportation network. This evaluates a build out scenario and travel behavior input for the region. This VMT growth has already been planned and determined to be “acceptable” by Vallejo. This effort will require policies and implementation program designed to reduce VMT through transportation demand management (TDM). The advantage of this approach is streamlining projects for environmental review as long as they can demonstrate compliance with the thresholds and mitigation measures. Although this is a more comprehensive option, depending on the type of project it may still require analysis of individual project and LOS for non-CEQA purposes (such as maintaining desired City roadway network operations). Staff proposes this as a separate project that will be carried out after July 1, 2020 and the overall process will involve:

- General Plan amendment for Land Use (LU) and Mobility, Transportation, & Connectivity element (MTC).
- CEQA transportation impact analysis
- CEQA analysis to address the air quality and greenhouse gas impacts
- Update of the Environmental Impact Report for Land Use and Mobility, Transportation and Connectivity, Air Quality, Greenhouse Gas, and Energy impacts

As stated once the interim policy is adopted, staff will work on a more comprehensive long term General Plan 2040 amendment to provide clearance City wide to projects as long as they are within the thresholds and mitigations framework. This will allow for a more streamlined review of complex projects and certainty in the review process.

The comprehensive approach would require a CEQA consultant as well as a transportation consultant. Staff is also having early discussions regarding a comprehensive Climate Adaptation Plan (CAP), and where the two projects intersect and overlap (air quality and greenhouse gas), staff will evaluate efficiencies in analyzing both bringing to the Planning Commission and City Council at the same time.

Other Cities

Staff has reached out to several cities in Solano County to understand the VMT approach they are taking. Many cities contacted are still under the evaluation and analysis process. Vacaville is implementing the OPR guidelines and looking to push the envelope with those projects that are 50,000 square feet or less for streamlining. Dixon was contacted twice, however, they were unavailable due to the Covid-19 response. Additionally, staff reached out to the City of Pittsburg, and they are already implementing VMT for infill projects. City of Pittsburg is going through a comprehensive General Plan update and will implement VMT as part of the update.

FISCAL IMPACT

There is no fiscal impact associated with this item as staff has conducted all of the necessary analysis and findings for an interim proposal. The City Council will authorize specific funding sources and amounts as part

of the budget process for a future comprehensive General Plan 2040 update, or at the time of individual project approval.

ENVIRONMENTAL REVIEW

This action is exempt from the California Environmental Quality Act (CEQA) because it is not a project which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, pursuant to CEQA Guideline Section 15378, therefore no further review is required. CEQA review is conducted for individual projects at the time of project approval.

ATTACHMENTS

1.	Resolution 20-04
	Exhibit A 4.6.2020 Fehr & Peers Memo
	Exhibit B General Plan Conformance
2.	1.31.2020 Fehr & Peers Memorandum

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CITY OF VALLEJO PLANNING COMMISSION

RESOLUTION NO. PC 20-04

**A RESOLUTION OF THE PLANNING COMMISSION TO
AMEND THE GENERAL PLAN 2040**

BE IT RESOLVED by the Planning Commission of the City of Vallejo as follows:

I. GENERAL FINDINGS

WHEREAS, on September 27, 2013 Senate Bill (SB) 743 was passed by the State of California and provides that aesthetic and parking impacts of a residential, mixed-use residential, or employment center project, on an infill site, within a transit priority area, shall not be considered significant impacts on the environment; and

WHEREAS, on November 2017 with a January 2019 update, the California Air Resources Board (CARB) provided a 2017 Scoping Plan-Identified Vehicle Miles Travelled (VMT) Reductions and Relationship to State Climate Goals and reflects the new statewide greenhouse gas (GHG) emissions reduction goals called for in Senate (SB) 32 of 40 percent below 1990 GHG emission levels by 2030; and

WHEREAS, on 2018, CARB adopted more aggressive SB 375 targets as one measure to support progress toward its 2017 Scoping Plan goals, which aim to get Sustainable Communities & Climate Protection Program that plan to achieve, in aggregate, a 19 percent reduction in statewide per capita GHG emissions reductions relative to 2005 by 2035 from passenger vehicles; and

WHEREAS, on December 2018, the Office of Planning and Research (OPR) included two legislative intent statements to help guide OPR's VMT implementation advisory with new methodologies under the California Environmental Quality Act (CEQA) needed for evaluating transportation impacts that are better able to promote the State's goals of reducing GHG emissions and traffic-related air pollution, promoting the development of a multi-modal transportation system, and providing clean, efficient access to destinations. More appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

WHEREAS, on July 1, 2020, in compliance with CEQA requirements under SB 743, land use plans and land use projects will be required to analyze VMT as the metric.

WHEREAS, the City of Vallejo underwent an effort to comprehensively update the Vallejo General Plan (General Plan 2040) for the horizon period ending 2040; and

WHEREAS, on August 29, 2017, the City Council certified the Final Environment Impact Report (FEIR) for General Plan 2040 and adopted the General Plan 2040, and

WHEREAS, on November 7, 2017, July 24, 2018, and January 14, 2020 the City Council amended the General Plan 2040 Land Use Map inclusive of Planning Commission proposed modifications; and

WHEREAS, subsequent to the January 14, 2020 City Council meeting, staff identified minor Land Use Map Revisions that should be made to General Plan 2040; and

WHEREAS, on April 8, 2020, pursuant to Vallejo Municipal Code (VMC) Chapter 17.040.010 (C), the Planning Division gave notice of its intent to take action on the Project no earlier than May 4, 2020; and

WHEREAS, on May 4, 2020, the Planning Commission held a duly noticed public hearing to consider the amendments to General Plan 2040 related to establishing criteria for determining the significance of transportation impacts of projects and VMT thresholds; and

WHEREAS, all interested persons filed written comments with City Staff at or before hearing, all persons desiring to be heard were given an opportunity to be heard in this matter and all such verbal and written testimony was considered by the Planning Commission;

WHEREAS, the Planning Commission considered testimony, information and evidence, both written and oral provided at the public hearing, as well as other documents contained in the record of proceeding relating to the amendments to General Plan 2040, which are maintained at the offices of the City of Vallejo Planning Division, and after consideration of all pertinent plans, documents and testimony and project Information, declared their intent to approve the amendments to General Plan 2040 and forward a recommendation to City Council to adopt the amendments.

II. CALIFORNIA ENVIRONMENTAL QUALITY ACT FINDINGS

The proposed amendments to General Plan 2040 have been determined to be exempt from the CEQA pursuant to Section 15378 because it is not a project which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, therefore no further review is required. The proposal of an amendment to General Plan 2040 will not result in additional environmental impacts beyond those already analyzed and considered in the Final General Plan/Sonoma Blvd Plan Environmental Impact Report (FEIR) certified with the adoption of 2040 General Plan in August 2017. Any future project shall follow the attached guidelines and City Staff will generate CEQA findings as a case-by-case basis to determine whether or not additional environmental review is required.

III. FINDINGS RELEVANT TO THE APPROVING AMENDMENTS TO GENERAL PLAN 2040

1. The Planning Commission makes the following findings in support of the Amendments:

A. Senate Bill 743

The bill requires the OPR to prepare and submit to the Secretary of the Natural Resources Agency, and the secretary to certify and adopt, revisions to the guidelines for the implementation of CEQA establishing criteria for determining the significance of transportation impacts of projects within transit priority areas, exempt from CEQA residential, employment center, and mixed-use development projects meeting specified criteria. SB 743 legislative intent is as follows:

- (1) New methodologies under CEQA are needed for evaluating transportation impacts that are better able to promote the State's goals of reducing greenhouse gas emissions and traffic-related air pollution, promoting the development of a multimodal transportation system, and providing clean, efficient access to destinations.
- (2) More appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

SB 743 provides that aesthetic and parking impacts of a residential, mixed-use residential, or employment center project, on an infill site, within a transit priority area, shall not be considered significant impacts on the environment.

The General Plan 2040 provided plan objectives with a community wide inclusive process. As part of the overall objectives, the updates tied to planning and transportation were focusing future growth to foster a vibrant Downtown/Waterfront District, providing a balance of employment and housing opportunities locally, promoting infill development, focusing development and redevelopment near existing and planned transit facilities, strengthening and enhancing connections between neighborhoods.

General Plan 2040 Policy Findings: : Policy CP-1.6 Active Transportation Network, Action EET-1.9 Partner with public agencies, Policy EET-1.10 Public Land, Policy MTC-2.8 Transportation Demand Management, Action MTC-2.8 A Coordinate for other methods to reduce VMT, Action NBE-3.10 Attract a mix of uses, Policy NBE-3.12 Sonoma-Broadway District, Policy NBE-3.13 Neighborhood Character, Action NBE-3.14B Update City regulation for activating corridors, Action NBE-3.14D Sonoma Boulevard Specific Plan, Action NBE-4.1D Update City regulation for mixed-use.

The Interim VMT Evaluation Method will apply a screening process (see Exhibit A), and if a project generates less than 1,080 VMT per day, is located in a transit priority area, or is a local serving retail, it is determined to be less than significant and is approved as long as it is consistent with the General Plan 2040 and the Zoning Code. For these types of projects, no VMT impact analysis is required. A project may still move forward if it does not pass the Interim VMT Evaluation Method screening test, if a VMT analysis shows that the project VMT and project effect on total VMT is no worse than the Citywide average, using the threshold metrics below. Finally, if the analysis demonstrates that VMT is increased, then mitigation measures to reduce the project VMT can be implemented. The Interim VMT Evaluation Method would allow projects to be assessed using the Solano-Napa Activity Based Model to evaluate VMT impacts (see Exhibit A, page 2). as follows:

- Threshold 1: Project Generated VMT (Residential and Office/Industrial Projects)

- Threshold 2: Projects Effect on VMT (Residential and Office/Industrial Projects)
- Threshold 3: Project-Generated VMT and Project's Effect on VMT (Retail Projects)
- Threshold 4: Project-Generated VMT and Project's Effect on VMT (Other Project Types)

The Interim VMT Evaluation Method would also develop a set of mitigation measures to address significant VMT impacts of land use development projects.

B. California Air Resources Board

Provides information on what level of statewide VMT reduction, in the judgment of CARB staff, would promote achievement of statewide GHG emissions reduction targets that are approximately 14.3 percent lower than existing conditions, or rates of light-duty VMT per capita that are approximately 16.8 percent lower than existing conditions (either lower than the regional average or other appropriate planning context) could be, by virtue of their location and land use context, interpreted to be consistent with the transportation assumptions embedded in the CARB 2017 Scoping Plan and with 2050 State climate goals.

VMT reduction provides policy resiliency and support for GHG emission reductions overall by supporting reduced vehicle use, reduced energy consumption in buildings, preservation of natural and working lands, and reduced water consumption and conveyance from more compact land use planning. Further, lower VMT is associated with additional co-benefits such as placemaking (creation of quality public spaces) that leads to local economic development, overall economic growth, reduction in other air pollutant emissions and water pollution, reduction in traffic congestion, and improvements in safety and public health, among others.

General Plan 2040 Policy Findings: The proposed Interim VMT Evaluation Method ("Interim VMT Evaluation Method") meets the General Plan Action EET-4.2 Procurement Policies, Action MTC-2.8C TDM Strategies, Policy NBE-2.3 Compatible Design, Action NBE-2.3A Approval of Condition, Action NBE-2.3B Update regulations for moderate density and higher density, Policy NBE-2.5 Regional Retail and Entertainment, Policy NBE-2.8 Infill Development, Action NBE-2.8A, Action NBE-3.14 C Identify key intersections, Policy BE-3.10 Curtola Employment Center, Action NBE-3.10A Update regulations for Curtola Employment District, Policy NBE-3.14 Neighborhood Corridors, Action NBE-3.13B Continue to allow a mix of housing types, Action NBE-3.12A Explore opportunities for transit-oriented development, Action NBE-3.5D Explore opportunities for transit-oriented development, Policy NBE-2.7 Jobs-Housing Balance. The Interim VMT Evaluation Method streamlines infill projects, projects within a half mile of transit, local serving retail or similar type project and those that do not exceed the baseline VMT.

C. Office of Planning and Research

Recommended thresholds in the Final Adopted Text to the 2018 amendments and additions to the State CEQA Guidelines and the *Technical Advisory on Evaluating*

Transportation Impacts in CEQA, California Governor's Office of Planning and Research (OPR) (December 2018) with specific language as follows:

CEQA Guidelines Section 15064.3, (b) Criteria for Analyzing Transportation Impacts.

- (1) Land Use Projects. VMT exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.
- (2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.
- (3) Technical Advisory on Evaluating Transportation Impacts in CEQA (page 10), based on OPR's extensive review of the applicable research, and in light of an assessment by the California Air Resources Board quantifying the need for VMT reduction in order to meet the State's long-term climate goals, OPR recommends that a per capita or per employee VMT that is fifteen percent below that of existing development may be a reasonable threshold.

The proposed Interim VMT Evaluation Method approach (Option 4: Baseline VMT Performance Level) applies thresholds based on baseline VMT performance. In this interim approach future land use projects would be expected to perform no worse than existing land use projects and only projects that cause an increase in the rate of VMT generation would cause significant impacts. Since VMT will increase or fluctuate with population and employment growth, changes in economic activity, and expansion of new vehicle travel choices, expressing VMT measurement in an efficiency metric form allows for more direct comparisons to baseline conditions for land use projects, land use plans, and transportation projects. The proposed Interim VMT Evaluation Method will result in meeting the City goals and policies and the General Plan policies and will not result in significant transportation impacts for:

1. Small Infill Projects;
2. Local-Serving Retail or similar local serving use;
3. Transit supportive projects within half mile of the ferry terminal
4. Transit supportive projects within a half-mile of bus routes with headways of 15 minutes or less;
5. Affordable Projects supported by substantial evidence criteria of CEQA Guidelines Section 15064.7;
6. Transportation Projects that reduce or do not increase VMT..

General Plan 2040 Findings: The Interim VMT Evaluation Method meets the General Plan Policy CP-1.1 Retail Food Sources, CP-1.1B Updated City regulations for food deserts, Policy CP-1.6 Active Transportation Network, Policy EET-4.2 Responsible Development, Action EET-4.2B Consider adopting thresholds of significance, Action EET-3.4C, Policy NBE-2.7 Jobs-Housing Balance, MTC-2.8E include TDM improvements, Action NBE-2.7A Update City Regulations to ensure housing opportunities, Policy NBE-3.5 Variety of Housing, Policy NBE-3.1 Catalyst Projects in the Downtown and Waterfront, Policy NBE-2.6 Center for Arts and Creativity, Action NBE-2.6C Update City regulation for Arts and Creativity, Action NBE-2.6D Study feasibility for incentives. The Interim VMT Evaluation Method is consistent with the General Plan policies in that it allows transit supportive projects, local serving retail or similar type projects, small infill projects, and affordable projects that meet CEQA guidelines.

2. The Planning Commission finds that on the basis of the whole record before it, the City of Vallejo, as a local agency, acknowledges that the proposed amendments to the General Plan 2040 do not materially change the environmental analysis and findings included in the FEIR for General Plan 2040, nor will the proposals create any new significant impacts or worsen any significant impacts identified in the FEIR.
3. General Plan 2040 constitutes a comprehensive, long-term document capable of guiding the future development of the City.
4. General Plan 2040 meets all the requirements for such plans as contained in the Planning and Zoning Law (Government Code, sections 65300-65303.4) and other laws, and was prepared in accordance with the requirements of Government Code Sections 65350 through 65362.
5. The General Plan 2040, together with the previously adopted 2015 Housing Element, contain all of the seven elements required by Section 65303 of the Government Code; land use, circulation, housing, conservation, open space, noise and safety elements. Additionally, the General Plan 2040 includes elements for community health, arts and culture, historic resources, and economic development element.
6. The Goals, Policies, Actions and other relevant content contained in the General Plan 2040 are consistent with and do not conflict with applicable land use compatibility policies and criteria pursuant to Government Code Section 65302.3(a).
7. Attached hereto this Resolution as Exhibit A is the Evaluation Report to be incorporated as the General Plan 2040 Amendment to be held as an Exhibit to the General Plan 2040.

BE IT RESOLVED that the Planning Commission APPROVES the amendments to the General Plan 2040, as provided by Exhibits A attached to this resolution.

BE IT FURTHER RESOLVED that the Planning Commission recommends the amendments be forwarded to City Council for Adoption.

VI. VOTE

ADOPTED by the Planning Commission of the City of Vallejo, State of California, at a meeting on the 4th of May 2020, by the following vote to-wit:

AYES:

NOES:

ABSTAIN:

ABSENT:

ROBERT SHUSSEL, CHAIRPERSON
City of Vallejo Planning Commission

Attest:

AFSHAN HAMID, SECRETARY
City of Vallejo Planning Commission

Attachment: Exhibit A and Exhibit B

Memorandum

Date: April 6, 2020
To: Afshan Hamid, City of Vallejo
From: Ellen Poling, Fehr & Peers
Subject: **VMT Analysis Methodology and Significance Thresholds for City of Vallejo
Transportation Impact Assessment: Summary and Next Steps**

WC19-3631.00

I. Background

Fehr & Peers has been working with the City of Vallejo to develop a vehicle miles traveled (VMT) impact assessment methodology and thresholds of significance to comply with CEQA Guidelines adopted in response to Senate Bill 743 (SB 743), signed into law in September 2013. SB 743 states that automobile delay and level of service (LOS) shall no longer be considered a significant impact in CEQA analyses, and the updated CEQA Guidelines (adopted December 2018) state that VMT exceeding an applicable threshold may be considered a significant impact.

Lead agencies are responsible for defining methodologies and thresholds applicable to the unique conditions and considerations of their jurisdiction. These conditions and considerations include the agency's geographic and transportation context, greenhouse gas reduction goals as demonstrated in the agency's Climate Action Plan, interest in achieving the state's greenhouse gas reduction goals, and General Plan goals and policies related to land use mix, economic development, housing provision, and multimodal transportation network development and maintenance.

Our work to date has included the following tasks:

- Review of relevant policies related to greenhouse gas reduction, multimodal transportation, and VMT (memorandum dated October 28, 2019).
- Review of potential travel demand models for use in VMT analysis (memorandum dated October 28, 2019).



- Presentation of methodology and threshold options based on guidance in the Office of Planning and Research's *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018) and other research regarding VMT reductions needed to achieve the state's greenhouse gas reduction goals (memorandum dated January 31, 2020).

The January 31, 2020 memorandum presented four VMT threshold options for Vallejo to consider. These are summarized in **Attachment 1**, along with key considerations related to the basis for selection, technical methodologies, associated CEQA clearance process, and costs to implement.

The following sections describe City staff's recommended process, developed in consultation with Fehr & Peers, based on the information described above.

II. Selected Thresholds for Initial Use

After consideration and discussion of the options presented in the January 31, 2020 memorandum, City staff have determined that Option 4 in Attachment 1 is the appropriate threshold for Vallejo to adopt for use in the near term. The following steps would be taken to achieve compliance with SB 743 by the July 1, 2020 compliance date:

1. Define VMT impact thresholds for land use development projects as follows, along with a process, shown in **Attachment 2**, which includes options for screening out certain project types, where allowable, based on the guidance cited above. The Solano-Napa Activity Based Model would be used to evaluate VMT impacts.

Threshold 1: Project Generated VMT (Residential and Office/Industrial Projects)
Project-generated VMT per resident (for residential projects) or VMT per employee (for office/industrial projects) is no higher than the baseline citywide VMT per resident or VMT per employee.¹

Threshold 2: Project's Effect on VMT (Residential and Office/Industrial Projects)
The Project reduces or has no effect on the citywide total VMT under cumulative conditions.¹

Threshold 3: Project-Generated VMT and Project's Effect on VMT (Retail Projects)

¹ Note that Caltrans recently released a Draft VMT-Focused Transportation Impact Study Guide (February 28, 2020) which supports the use of the OPR *Technical Advisory* thresholds (which recommend a threshold of 15% below existing baseline VMT for residential and office projects). This means that CEQA documents reviewed by Caltrans containing less aggressive thresholds can be expected to be commented on by Caltrans. Development of substantial evidence for significance findings using the City's selected thresholds will therefore be important to explain the basis for the findings.



Retail projects that can be demonstrated to serve a local market (based on a market study or list of City-approved local serving uses) can be considered less than significant. Other retail projects would require a baseline and cumulative analysis with the travel demand model.

**Threshold 4: Project-Generated VMT and Project's Effect on VMT
(Other Project Types)**

VMT thresholds for other project types (for example, school, institutional, hotel, or cultural projects) would be developed using considerations unique to the individual project. The thresholds will incorporate the principles of Thresholds 1 – 3, i.e., projects that are not expected to generate VMT above a relevant baseline level and/or are expected to primarily serve a local market (City of Vallejo) would be considered to have a less than significant impact with respect to VMT.

2. Define a set of mitigation measures that can be used as appropriate to address potential significant VMT impacts of land use development projects. **Attachment 3** presents an overview of a range of measures that could be applied to Vallejo development projects to reduce VMT, along with effectiveness estimates based on available research to date. **Attachment 4** provides a more detailed description of three program-level mitigation approaches the City could consider. These approaches would require more time and effort to develop, but could result in more reliable and effective mitigation over the long term: development of a VMT mitigation fee program, participation in a VMT mitigation bank, or participation in a VMT mitigation exchange program.

The City will need to prepare findings to support the adoption of the above thresholds. The findings should address the City's priorities with respect to the array of City objectives related to housing, economic development, sustainability, environmental quality, and other considerations, as noted above.

If the City Planning Commission/City Council concur with this approach, Fehr & Peers will prepare a Transportation Impact Study Guidelines document that provides more detail on the VMT screening and analysis process and application of the thresholds, following the basic process shown in Attachment 2.

III. Citywide VMT Assessment Strategy

As discussed in the January 31, 2020 memo, one alternative approach to assessing VMT impacts is to conduct a CEQA analysis of the VMT associated with the City's General Plan, and use that evaluation to support analysis of individual projects subsequent to the General Plan-level evaluation. This is described as Option 3 in Attachment 1. If streamlined review of projects under CEQA Guidelines section 15183 is desired, the City would need to prepare a CEQA review of the



General Plan, as amended to incorporate policies and programs consistent with the selected VMT threshold, and make findings with regard to the significance of the VMT impacts of the General Plan. These findings must be based on substantial evidence, which would include the same considerations referenced above, i.e., the City's priorities with respect to competing objectives including Vallejo's geographic and transportation context, greenhouse gas reduction goals as demonstrated in the agency's Climate Action Plan, interest in achieving the state's greenhouse gas reduction goals, and General Plan goals and policies related to land use mix, economic development, housing provision, and multimodal transportation network development and maintenance.

This approach acknowledges that the City of Vallejo General Plan land use allocations and associated VMT have already been planned for and determined to be "acceptable" by the City. It also allows the City to plan VMT reduction strategies and programs in a more holistic, effective, and equitable manner than would be possible using project-by-project impact evaluations.

This process would require several steps and take 12 to 18 months to complete. It would be led by a planning/environmental consultant, given that several General Plan elements and EIR topic areas would be affected. The basic steps are listed below.

- A General Plan amendment or update would be prepared, including updating land use projections where appropriate to reflect current expectations with regard to future development, and new policies and programs supporting VMT reduction and specific VMT mitigation measures that would be required of new development in the Mobility Element.
- A CEQA transportation impact analysis would be conducted, including:
 - An update to the travel demand model to reflect the General Plan land use and validate the model to ensure it accurately reflects the VMT effects of the land use.
 - Calculation of VMT associated with the General Plan build-out.
 - Evaluation of the extent to which General Plan policies and programs supporting VMT reduction may reduce the projected VMT.
 - Consideration of additional mitigations to reduce VMT generation.
 - Documentation of the minimum VMT generation that can be achieved.
 - Development of findings with regard to impact significance relative to the City's VMT significance thresholds.
 - If VMT impacts are found to be Significant and Unavoidable with Mitigation, a Statement of Overriding Considerations would be required to certify the EIR.
- The CEQA analysis would also need to address the air quality and greenhouse gas impacts of the General Plan update to align with the updated VMT projections above, as well as other topic areas if identified during the Initial Study.



IV. Next Steps

Fehr & Peers will present the above recommendations at an upcoming Planning Commission meeting. Based on the direction from the Commission, we will proceed to develop the Transportation Impact Study Guidelines document, and will work with City staff to develop a scope of work for the process described in Section III, including consultation with planning/environmental firms as appropriate.

Attachments:

- 1 – VMT Threshold Options
- 2 – VMT Evaluation Process (Option 4)
- 3 – VMT Reduction Strategies
- 4 – VMT Mitigation Through Banks and Exchanges

Attachment 1: Overview of VMT Threshold Options

Threshold Option	Pros	Cons	CEQA Review Process	Technical Tools/Notes	Cost Considerations
Option 1: OPR Technical Advisory Guidance Land use projects measured against a VMT per capita or VMT per worker threshold of 15 % below baseline conditions. Residential projects: If exceeds 15% below existing baseline indicates significant transportation impact. Office projects: If exceeds 15% below existing baseline regional VMT per employee, then indicates a significant transportation impact. Retail projects: A net increase in total VMT may indicated a significant transportation impact.	Consistent with Technical Advisory guidance. Consistent with Caltrans <i>Draft VMT-Focused Transportation Impact Study Guide</i>, released February 28, 2020. The TISG recommends use of the OPR Technical Advisory thresholds.	Most projects would not be easily screened out and would require VMT analysis. OPR TA does not establish a level of VMT reduction for AQ and GHG. May create confusion in environmental documents. OPR TA does not directly reflect SB743 objectives. No numerical value tied to specific statewide values for objective or goal. State AQ and GHG may not align with lead agency expectations.	Each development project undergoes CEQA review; if the project cannot be screened out (due to location within a transit priority area, or other screening tests), a VMT impact analysis is performed. If VMT impacts cannot be mitigated to a less than significant level, an EIR must be prepared.	The Solano – Napa Activity Based Model would be used for VMT analysis. The model is not refined enough within Vallejo to allow location-based VMT screening. Further work could be performed to improve model performance, but location-based screening may not be achievable even with this effort.	Costs could be considerable if EIRs need to be prepared for most mid-sized and large projects outside ½ mile of the Vallejo Ferry Terminal and Transit Center.

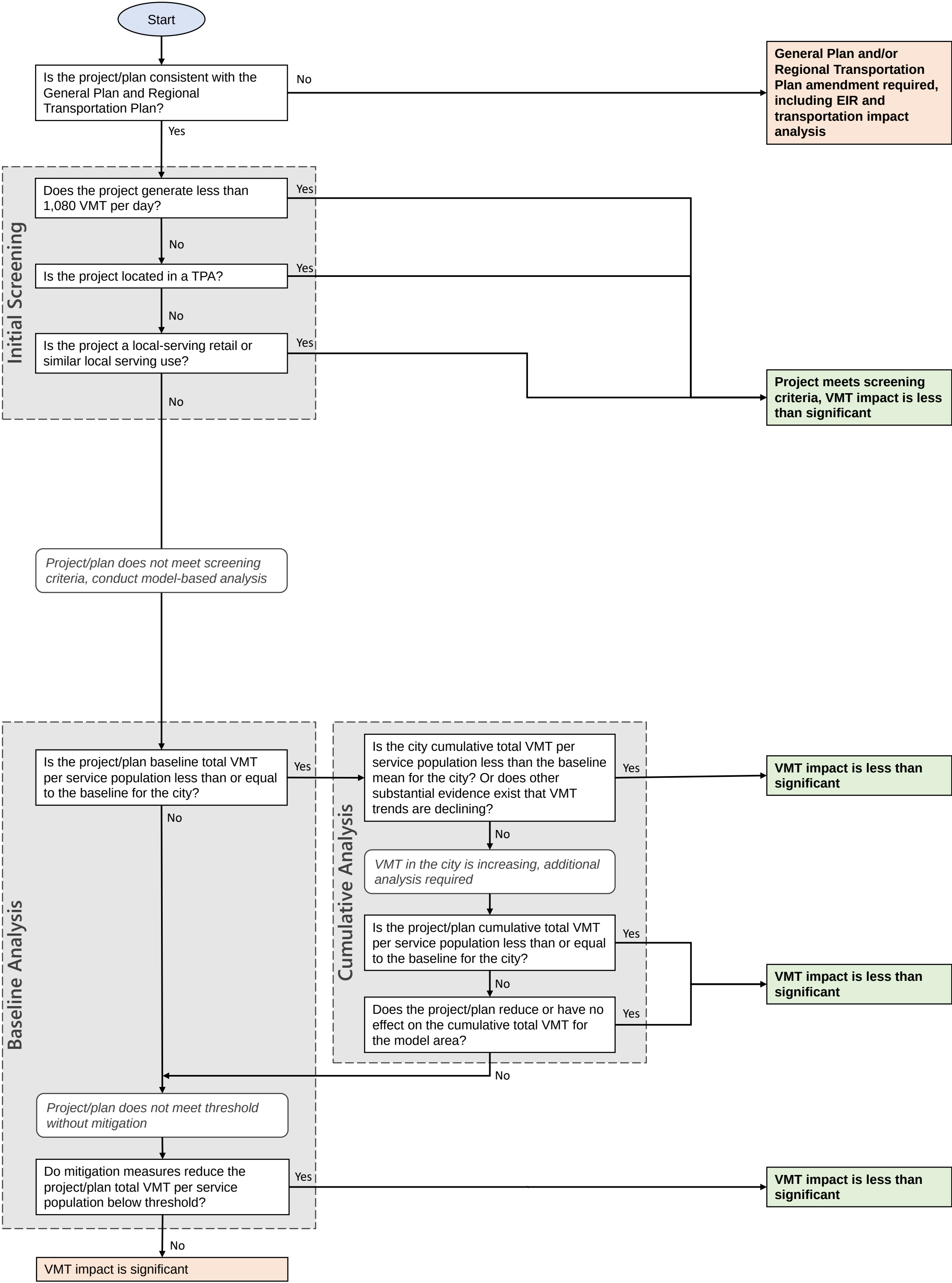
Option 2: Thresholds consistent with Air Quality, Greenhouse Gas, and Energy Conservation GHG Reduction Target is 80% below 1990 levels by 2050. CARB <i>2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals</i> gives updated VMT reductions to meet the state GHG emission reduction targets by 2050: • 14.3% reduction in total VMT per capita • 16.8 % reduction in light duty vehicle VMT per capita	When adopting or using thresholds of significance, lead agency must consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts. CARB meets the criteria for a public agency with expertise in emissions analysis. Thus these thresholds may be more defensible than the OPR Technical Advisory's 15% thresholds.	Same as for Option 1, plus: Not consistent with Caltrans <i>Draft VMT-Focused Transportation Impact Study Guide</i>, released February 28, 2020. The TISG recommends use of the OPR Technical Advisory thresholds.	Same as for Option 1.	Same as for Option 1.	Same as for Option 1.
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Option 3: General Plan VMT Budget A certain amount of VMT is forecasted to be generated by the General Plan buildout, as determined by the travel demand model. This VMT is considered already planned for and accepted in the General Plan, if cleared in an EIR on the General Plan.	CEQA guidelines section 15183 provides for streamlining projects where impacts have been cleared at a programmatic level.	Streamlining subsequent project CEQA reviews would not allow for provision of an updated “baseline plus project” analysis. Disruptive trends that may affect future VMT generation would not be captured in the General Plan clearance analysis (autonomous vehicles, changes in transportation network company operations, changes in online shopping practices fuel prices, etc.) Time and cost to prepare a General Plan amendment and EIR. Interim thresholds will need to be used while General Plan is amended and goes through environmental review.	Requires a General Plan amendment, with the Mobility Element stating VMT threshold policy and policies/programs supporting VMT reduction (such as TDM requirements for all projects), and clearly defined land use amounts and policies in the Land Use Element. An EIR would be prepared for the General Plan amendment, with VMT threshold analysis and findings. Statement of Overriding Considerations would be needed, and findings would need to cite City values with regard to VMT generation, economic development, resident quality of life, etc.	The Solano – Napa Activity Based Model would be updated to ensure it accurately reflects the city’s existing and General Plan build-out* land uses. It would also be improved to the extent possible to ensure accurate VMT forecasting. * Build-out is typically assessed for a reasonably foreseeable target year, such as 2040.	Cost to update the General Plan and prepare the EIR would be considerable (\$200,000 – 400,000). However, subsequent streamlined project clearance costs would be substantially reduced relative to preparing EIRs on each project.
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Option 4: Baseline VMT Performance Level Establish a baseline VMT per resident, VMT per employee or VMT per service population metric. Future land use projects would be expected to perform no worse than existing land use projects and only projects that cause an increase in the rate of VMT generation would cause significant impacts.	VMT per capita will fluctuate with population and employment growth, changes in economic activity, and expansion of new vehicle travel choices; this method allows for direct comparison to baseline conditions for land use projects and is a more feasible, and perhaps equitable, threshold for projects to meet.	Possibly less defensible than Options 1 or 2, as this threshold would not demonstrate as robust an effort to reduce VMT generation. Separate quantitative VMT may not be set for cumulative conditions unless VMT trends are increasing over time (but trends show that they are increasing, so a separate cumulative analysis may be needed). Qualitative assessment of a project's consistency with the RTP/SCS and General Plan may still be required for GHG analysis. Not consistent with Caltrans <i>Draft VMT-Focused Transportation Impact Study Guide</i>, released February 28, 2020. The TISG recommends use of the OPR Technical Advisory thresholds.	Same as Option 1; however, projects would be more likely to be found to have less than significant impacts, particularly if travel demand management and multi-modal design elements are incorporated into the projects or required as mitigation.	Same as Option 1.	In general, project CEQA clearance costs would be lower than for Options 1 and 2, although some projects may still require EIRs if VMT per capita, per employee, or per service population cannot be shown to be the same as or lower than the baseline, due to particular project characteristics.
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Source: Fehr & Peers, April 2020.

Attachment 2: VMT Evaluation Process



Attachment 3: Overview of VMT Reduction Strategies

This discussion summarizes Fehr & Peers' assessment of tools and research on the effectiveness of strategies to reduce vehicle miles of travel (VMT). The information in this discussion supports SB 743 implementation to determine potentially feasible VMT mitigation measures for individual land use projects in Vallejo upon formal adoption of the City's VMT policy.

The tools and research summarized here include information published in *Quantifying Greenhouse Gas Mitigation Measures* (CAPCOA, 2010), *SB 743 Implementation TDM Strategy Assessment* (Fehr & Peers, 2019), and SANDAG's *Mobility Management Toolbox* (SANDAG, 2019)¹. This discussion documents the information from these sources and identifies the VMT reduction strategies most suited for Vallejo given its suburban land use context. Additional reference material is attached and is described in more detail below.

An important consideration for the effectiveness of these VMT reduction strategies is the appropriate scale of implementation. The strategies described here include programmatic strategies (e.g., VMT impact fee programs, VMT exchanges, and VMT banks), city-scale transportation infrastructure strategies (e.g., expanding the transit or bicycle network), and project-level strategies (e.g., building site transportation demand management [TDM] strategies such as parking pricing and transit pass subsidies). The largest reductions in VMT (and resulting emissions) derive from regional policies related to land use location efficiency and infrastructure investments that support transit, walking, and biking. While there are many measures related to site design and building operations that can influence VMT and emissions, these measures typically have smaller effects on VMT reduction and are often dependent on final building tenants.

To caveat the information presented in this discussion, the existing tools and methods for quantifying VMT reduction are prone to a high margin of error due to insufficient data and research on this topic. Previous levels of certainty that existed with calculations of Level of Service (LOS) do not exist with calculations of VMT and the effectiveness of VMT reduction strategies. To provide substantial evidence for CEQA documentation, additional data and research is needed to understand the factors that influence VMT.

Review of Research and Tools

The CAPCOA 2010 report *Quantifying Greenhouse Gas Mitigation Measures* identifies 50 transportation measures for reducing VMT that can be implemented at the project level or the community level. To quantify the effects of these measures, CAPCOA created calculation methodologies to estimate how each strategy would change VMT. Fehr & Peers further refined these calculation methodologies in *SB 743 Implementation TDM Strategy Assessment* (Fehr & Peers, 2019) based on new academic research. The

¹ SANDAG refers to the San Diego Association of Governments.

matrix in **Attachment 2.A** summarizes the overall evaluation of the CAPCOA strategies and the refinements to the VMT calculation methodologies.

In response to growing congestion, SB 743 implementation, and Climate Action Plan (CAP) efforts, SANDAG developed the Mobility Management Toolbox (Toolbox). The toolbox helps local jurisdictions and developers evaluate and implement TDM strategies at the project and community level. The Toolbox consists of the following resources:

- *Mobility Management Guidebook* – This document describes more than 30 mobility management strategies that can be implemented at the project and community levels to mitigate transportation impacts and includes descriptions, implementation considerations, and key references available.
- *VMT Reduction Calculator Tool* – This tool is an Excel Spreadsheet that allows users to estimate the percent reduction in VMT resulting from more than 20 TDM strategies, which are organized into project/site-level strategies and community/city-level strategies.
- *VMT Reduction Calculator Tool Design Document* – This document provides the overall methodology, inputs, and data sources used to develop the VMT Reduction Calculator Tool.

In addition to the sources above, SANDAG also provides recommended applications for the Mobility Management Toolbox² as well as web-based user training videos³ that provide additional instructional guidance on how to use and update the VMT Reduction Calculator Tool.

Although the tools and research described above provide insight into the VMT reduction potential of TDM strategies, there remains a high degree of uncertainty regarding the effectiveness of TDM programs, both individually and in combination. This uncertainty is due to unknowns about the future tenants of project site buildings, how tenants will respond to VMT reduction strategies, and background conditions that influence travel behavior such as fuel prices. Therefore, while an individual tool may present a precise estimate of VMT reduction associated with each strategy, these estimates should be treated as the mid-point of a range of potential effectiveness. As such, different tools may provide different estimates of total VMT reduction based on assumptions around input variables and baseline conditions at the project or building site.

Recommended VMT Reduction Strategies

Of the strategies included in the tools and research described above, only a few strategies are likely to be effective in a suburban setting such as Vallejo. With Vallejo's land use context in mind, we reviewed each strategy's effectiveness and identified nine for more detailed review. These strategies are described in **Attachment 2.B** and are listed below. Strategies 1, 2, 3, and 4 represent project-scale mitigation, while

²<https://www.icommutesd.com/docs/default-source/planning/mobility-management-toolbox-applications-report.pdf?sfvrsn=2>

³<https://www.youtube.com/watch?v=lx3SPx9oIIU&list=PLm9w9mTQIGdZQwqxYXU1Wuy3tTrVKMDeD&index=1>

strategies 5, 6, 7, 8 and 9 represent community-scale mitigation that a single development project has limited ability to influence and thus may not be appropriate for project-scale mitigation. Please note that disruptive trends, including but not limited to, transportation network companies (TNCs), autonomous vehicles (AVs), internet shopping, and micro-transit may affect the future effectiveness of these strategies.

Project/Site Level Strategies

1. Increase diversity of land uses – This strategy focuses on inclusion of mixed uses within projects or in consideration of the surrounding area to minimize vehicle travel in terms of both the number of trips and the length of those trips. This strategy may not be feasible for smaller projects or projects subject to limited uses due to zoning such as single-family residential uses.
2. Increase density – This strategy focuses on increasing residential density within projects, which is associated with lower VMT per capita. Increased residential density in areas with high jobs access may have a greater VMT change than increases in regions with lower jobs access. This measure also applies at the city and community level, with neighborhoods of higher density typically having lower VMT per capita.
3. Increase transit accessibility – This strategy focuses on ensuring site design favors access to existing or planned transit stations and is commonly referred to as Transit-Oriented Development (TOD).
4. Encourage telecommuting and alternative work schedules – This strategy relies on effective internet access and speeds to individual project sites/buildings to provide the opportunity for telecommuting. The effectiveness of the strategy depends on the ultimate building tenants; this should be a factor in considering the potential VMT reduction, as tenants may change over time.

City/Community Level Strategies

5. Provide pedestrian network improvements – This strategy focuses on creating a pedestrian network within the project and connecting the project to nearby destinations. Projects in the City of Vallejo range in size, so the emphasis of this strategy for smaller projects would likely be the construction of network improvements that connect the project sites directly to nearby destinations. For larger projects, this strategy could focus on the development of a robust pedestrian network within the project itself. Alternatively, implementation could occur through an impact fee program or benefit/assessment district based on local or regional plans.
6. Provide traffic calming measures and low-stress bicycle network improvements – This strategy combines the CAPCOA research focused on traffic calming with new research on providing a low-stress bicycle network. Traffic calming creates networks with low vehicle speeds and volumes that are more conducive to walking and bicycling. Building a low-stress bicycle network produces a similar outcome. Implementation options are similar to those for providing pedestrian network improvements. One potential change in this strategy over time is that e-bikes (and e-scooters)

could extend the effective range of travel on the bicycle network, which could enhance the effectiveness of this strategy.

7. Implement market price public parking (on-street) – This strategy focuses on implementing a market based pricing strategy for on-street parking within central business districts, employment centers, and retail centers to encourage “park once” behavior. This measure deters parking spillover from project supplied parking to other public parking nearby, which undermine the vehicle miles traveled (VMT) benefits of project pricing. It may also generate sufficient area-wide mode shifts to justify increased transit service to the area.
8. Increase transit service frequency and speed – This strategy focuses on improving transit service convenience and travel time competitiveness with driving. While the City of Vallejo has fixed route bus service that could be enhanced, it is possible that new forms of low-cost, demand-responsive transit service could be provided. Given land use density in Vallejo, this strategy may be limited to traditional commuter transit where trips can be pooled at the start and end locations or require new forms of demand-responsive transit service. The demand-responsive service could be provided as subsidized trips by contracting to private transportation network companies (TNCs) or Taxi companies. Alternatively, a public transit operator could provide the subsidized service but would need to improve on traditional cost effectiveness by relying on TNC ride-hailing technology, using smaller vehicles sized to demand, and flexible driver employment terms where drivers are paid by trip versus by hour. Note that implementation of this strategy would require regional or local agency implementation, substantial changes to current transit practices, and would not likely be applicable for individual development projects. Additionally, this strategy is likely only effective in VMT reduction if it includes a pooling element to increase average vehicle occupancy.
9. Implement a car-sharing program – This strategy reduces the need to own a vehicle or reduces the number of vehicles owned by a household by making it convenient to access a shared vehicle for those trips where vehicle use is essential. Note that implementation of this strategy would require regional or local agency implementation and coordination and would not likely be applicable for individual development projects.

The VMT reduction strategies can be quantified using CAPCOA calculation methodologies, recent ARB research findings, or SANDAG’s VMT calculator. **Attachment 2.C** provides calculation methodologies for each of the mitigations provided above, along with their range of effectiveness.

Combining VMT Reduction Strategies

Each of the TDM measures described above can be combined with others to increase the effectiveness of VMT mitigation; however, the interaction between the various TDM measures is complex and sometimes counter-intuitive. Generally, with each additional measure implemented, a VMT reduction is achieved, but the incremental benefit of VMT reduction may diminish. To quantify the VMT reduction that results from combining TDM measures, the formula below can be applied absent additional knowledge or information:

$$\text{Total VMT Reduction} = (1 - P_a) * (1 - P_b) * (1 - P_c) * \dots$$

Where:

- P_x = percent reduction of each VMT reduction strategy

This adjustment methodology is simply a mathematical approach to dampening the potential effectiveness and is not supported by research related to the actual effectiveness of combined TDM strategies. The intent of including this formula is to include a mechanism for dampening to minimize the potential to overstate the VMT reduction effectiveness.

Another important consideration when combining TDM measures is whether a maximum VMT reduction should be applied based on the land use context. The CAPCOA methodology identifies VMT reduction maximums based on community types tied to land use context. The caps are applied at each step of the VMT reduction calculation (i.e., at the strategy scale, the combined strategy scale, and the global scale). However, these caps are not based on research related to the effectiveness of VMT reduction strategies in different land use contexts. The cap differences are largely based on VMT generation differences within different land use contexts and serves as a proxy for potential limits on VMT reduction strategy effectiveness. Analysts should carefully evaluate the use of these caps. For suburban jurisdictions such as Vallejo, CAPCOA identifies a global VMT reduction maximum of 15 percent. For more information on VMT reduction maximums, see **Attachment 2.D**, which contains an excerpt from the CAPCOA report describing the calculation of combined VMT reduction strategies.

As noted previously, additional data is needed to support and refine the above approach for quantifying the effects of combining VMT reduction strategies. Analysts should consider the available substantial evidence at the time a study is prepared to determine the most appropriate approach for CEQA review. We recommend conducting additional research into the effects of combining VMT reduction strategies, which may include the collection of measurable data from within Vallejo or cities of similar size and land use context.

Implementing VMT Reduction Strategies

Project or site-level VMT reduction strategies often involve increasing land use density, changing the mix of uses, or altering the transportation network. However, a potential limitation of these physical design changes is that they may result in a project that no longer resembles the original applicant submittal. CEQA is intended to disclose the potential impacts of a project and mitigate those impacts but has limitations with regards to using mitigation to fundamentally change the project. Therefore, these strategies may result in an inconsistency with the project description when applied on an ad hoc basis.

Another common strategy is to add a TDM program to the project as a condition of approval. While evidence exists that TDM programs can reduce VMT, their success depends on the performance of future building tenants that can change over time. Hence, an effective TDM mitigation program will often require ongoing monitoring and adjustment to ensure long-term VMT reduction is achieved. The cost to provide this monitoring may not be feasible for all projects.

In response to the limitations of focusing exclusively on site-level TDM strategies, new mitigation concepts are emerging that cover larger areas and rely on citywide programs to achieve VMT reductions. These mitigation concepts (or programs) are outlined below. As with all VMT mitigation, these programs require substantial evidence to document that the projects included in the programs would achieve the expected VMT reductions. Additionally, the discretionary action to adopt the program may require CEQA review.

1. VMT Impact Fee Program – This concept resembles a traditional impact fee program in compliance with the mitigation fee act and uses VMT as a metric. The nexus for the fee program would be a VMT reduction goal consistent with the CEQA threshold established by a lead agency for SB 743 purposes. The main difference from a fee program based on a metric such as vehicle LOS is that the VMT reduction nexus results in a capital improvement program (CIP) consisting largely of transit, bicycle, and pedestrian projects. These types of fee programs are time consuming to develop, monitor, and maintain but are recognized as an acceptable form of CEQA mitigation if they can demonstrate that the CIP projects will be fully funded and implemented. The City of Los Angeles is the first city in California to complete a nexus study for this type of program.
2. VMT Exchanges – This concept (along with VMT banks) borrows mitigation approaches from other environmental analysis such as wetlands. The concept relies on a developer agreement to implement a predetermined VMT-reducing project in exchange for the ability to develop a VMT-generating project. The projects may or may be located near each other. The concept requires a facilitating entity (such as the lead agency) to match the VMT generator (the development project) with the VMT-reducing project and ensure through substantial evidence that the VMT reduction is valid. This concept also requires a determination of the necessary time period to demonstrate a VMT reduction.
3. VMT Banks – This concept attempts to create a monetary value for VMT reduction (e.g., credits) that can be exchanged amongst individual projects. This program is more complicated than a simple exchange and would require more time and effort to set up and implement. Another key challenge of this program is determining how much VMT reduction is associated with each credit.

Table 1 compares the pros and cons of the above programs. As seen in Table 1, all of the program options have challenges.

TABLE 1: COMPARISON OF PROGRAMMATIC VMT REDUCTION STRATEGIES

Program Structure	Pros	Cons
Impact Fee Program	• Common practice • Accepted for CEQA mitigation • Adds certainty to development costs • Allows for regional scale projects	• Time consuming and expensive to develop and maintain • Requires strong nexus
Mitigation Exchange	• Limited complexity • Reduced nexus obligation	• Mismatch between mitigation need and mitigation projects • Unknown timeframe for mitigation life
Mitigation Bank	• Adds certainty to development costs • Allows for regional scale projects • Allows regional or state transfers	• Time consuming and expensive to develop and maintain • Requires strong nexus • Political difficulty distributing mitigation dollars/projects

Although implementation of these programs would require an upfront cost, they have several advantages over site-level TDM strategies:

- CEQA streamlining – These programs provide a funding mechanism for project mitigation and require significantly less monitoring to demonstrate that significant impacts are reduced to a less-than-significant level. Additionally, projects could be screened from completing a quantitative VMT analysis; or, if a quantitative VMT analysis is required, the cost would be somewhat less than the cost for analyzing LOS impacts.
- Greater VMT reduction potential – Since these programs coordinate citywide land use and transportation projects, they have the potential to result in greater VMT reduction potential than site-level TDM strategies applied on an ad hoc basis. Additionally, these programs expand the amount of feasible mitigation for reducing VMT impacts.
- Legal defensibility – The VMT reduction programs can help build a case for a nexus between a VMT impact and funding for capital improvement programs.

A General Plan update is a desirable time to identify and implement any preferred VMT reduction programs as it allows for coordination between land development, capital improvement projects, and funding programs.

ATTACHMENT 2.A – Comparison of CAPCOA Strategies Versus New Research Since 2010

TDM STRATEGY EVALUATION

Comparison of CAPCOA Strategies Versus New Research Since 2010

CAPCOA Category	CAPCOA #	CAPCOA Strategy	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New Information Since CAPCOA Was Published in 2010		
					New information	Change in VMT reduction compared to CAPCOA	Literature or Evidence Cited
Land Use/Location	3.1.1	LUT-1 Increase Density	0.8% - 30% VMT reduction due to increase in density	Adequate	Increasing residential density is associated with lower VMT per capita. Increased residential density in areas with high jobs access may have a greater VMT change than increases in regions with lower jobs access. The range of reductions is based on a range of elasticities from -0.04 to -0.22. The low end of the reductions represents a -0.04 elasticity of demand in response to a 10% increase in residential units or employment density and a -0.22 elasticity in response to 50% increase to residential/employment density.	0.4% -10.75%	Primary sources: Boarnet, M. and Handy, S. (2014). Impacts of Residential Density on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm Secondary source: Stevens, M. (2017). Does Compact Development Make People Drive Less? Journal of the American Planning Association, 83(1), 7-18.
Land Use/Location	3.1.9	LUT-9 Improve Design of Development	3.0% - 21.3% reduction in VMT due to increasing intersection density vs. typical ITE suburban development	Adequate	No update to CAPCOA literature; advise applying CAPCOA measure only to large developments with significant internal street structure.	Same	N/A
Land Use/Location	3.1.4	LUT-4 Increase Destination Accessibility	6.7%-20% VMT reduction due to decrease in distance to major job center or downtown	Adequate	Reduction in VMT due to increased regional accessibility (jobs gravity). Locating new development in areas with good access to destinations reduces VMT by reducing trip lengths and making walking, biking, and transit trips more feasible. Destination accessibility is measured in terms of the number of jobs (or other attractions) reachable within a given travel time, which tends to be highest at central locations and lowest at peripheral ones.	0.5%-12%	Primary sources: Handy, S. et al. (2014). Impacts of Network Connectivity on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm Handy, S. et al. (2013). Impacts of Regional Accessibility on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm Secondary source: Holtzclaw, et al. (2002.) Location Efficiency: Neighborhood and Socioeconomic Characteristics Determine Auto Ownership and Use – Studies in Chicago, Los Angeles, and Chicago. Transportation Planning and Technology, Vol. 25, pp. 1-27.

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Land Use/ Location	3.1.3	LUT-3 Increase Diversity of Urban and Suburban Developments	9%-30% VMT reduction due to mixing land uses within a single development	Adequate	1) VMT reduction due to mix of land uses within a single development. Mixing land uses within a single development can decrease VMT (and resulting GHG emissions), since building users do not need to drive to meet all of their needs. 2) Reduction in VMT due to regional change in entropy index of diversity. Providing a mix of land uses within a single neighborhood can decrease VMT (and resulting GHG emissions), since trips between land use types are shorter and may be accommodated by non-auto modes of transport. For example when residential areas are in the same neighborhood as retail and office buildings, a resident does not need to travel outside of the neighborhood to meet his/her trip needs. At the regional level, reductions in VMT are measured in response to changes in the entropy index of land use diversity.	1) 0%-12% 2) 0.3%-4%	1) Ewing, R. and Cervero, R. (2010). Travel and the Built Environment - A Meta-Analysis. Journal of the American Planning Association, 76(3), 265-294. Cited in California Air Pollution Control Officers Association. (2010). Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf Frank, L., Greenwald, M., Kavage, S. and Devlin, A. (2011). An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy. WSDOT Research Report WA-RD 765.1. Washington State Department of Transportation. Retrieved from: http://www.wsdot.wa.gov/research/reports/fullreports/765.1.pdf Nasri, A. and Zhang, L. (2012). Impact of Metropolitan-Level Built Environment on Travel Behavior. Transportation Research Record: Journal of the Transportation Research Board, 2323(1), 75-79. Sadek, A. et al. (2011). Reducing VMT through Smart Land-Use Design. New York State Energy Research and Development Authority. Retrieved from: https://www.dot.ny.gov/divisions/engineering/technical-services/trans-r-and-d-repository/C-08-29%20Final%20Report_December%202011%20%282%29.pdf Spears, S. et al. (2014). Impacts of Land-Use Mix on Passenger Vehicle Use and Greenhouse Gas Emissions- Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm 2) Zhang, Wengia et al. "Short- and Long-Term Effects of Land Use on Reducing Personal Vehicle Miles of Travel."
Land Use/ Location	3.1.5	LUT-5 Increase Transit Accessibility	0.5%-24.6% reduce in VMT due to locating a project near high-quality transit	Adequate	1) VMT reduction when transit station is provided within 1/2 mile of development (compared to VMT for sites located outside 1/2 mile radius of transit). Locating high density development within 1/2 mile of transit will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT. 2) Reduction in vehicle trips due to implementing TOD. A project with a residential/commercial center designed around a rail or bus station, is called a transit-oriented development (TOD). The project description should include, at a minimum, the following design features: • A transit station/stop with high-quality, high-frequency bus service located within a 5-10 minute walk (or roughly 1/4 mile from stop to edge of development), and/or • A rail station located within a 20 minute walk (or roughly 1/2 mile from station to edge of development) • Fast, frequent, and reliable transit service connecting to a high percentage of regional destinations • Neighborhood designed for walking and cycling	1) 0%-5.8% 2) 0%-7.3%	1) Lund, H. et al. (2004). Travel Characteristics of Transit-Oriented Development in California. Oakland, CA: Bay Area Rapid Transit District, Metropolitan Transportation Commission, and Caltrans. Tal, G. et al. (2013). Policy Brief on the Impacts of Transit Access (Distance to Transit) Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/transitaccess/transit_access_brief120313.pdf 2) Zamir, K. R. et al. (2014). Effects of Transit-Oriented Development on Trip Generation, Distribution, and Mode Share in Washington, D.C., and Baltimore, Maryland. Transportation Research Record: Journal of the Transportation Research Board. 2413, 45-53. DOI: 10.3141/2413-05
Land Use/ Location	3.1.6	LUT-6 Integrate Affordable and Below Market Rate Housing	0.04%-1.20% reduction in VMT for making up to 30% of housing units BMR	Weak - Should only be used where supported by local data on affordable housing trip generation.	Observed trip generation indicates substantial local and regional variation in trip making behavior at affordable housing sites. Recommend use of ITE rates or local data for senior housing.	N/A	"Draft Memorandum: Infill and Complete Streets Study, Task 2.1: Local Trip Generation Study." <i>Measuring the Miles: Developing new metrics for vehicle travel in LA.</i> City of Los Angeles, April 19, 2017.

TDM STRATEGY EVALUATION

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Neighborhood Site Enhancements	3.2.1	SDT-1 Provide Pedestrian Network Improvements	0%-2% reduction in VMT for creating a connected pedestrian network within the development and connecting to nearby destinations	Adequate	VMT reduction due to provision of complete pedestrian networks. Only applies if located in an area that may be prone to having a less robust sidewalk network.	0.5%-5.7%	Handy, S. et al. (2014). Impacts of Pedestrian Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Neighborhood Site Enhancements	3.2.2	SDT-2 Provide Traffic Calming Measures	0.25%-1% VMT reduction due to traffic calming on streets within and around the development	Adequate	Reduction in VMT due to expansion of bike networks in urban areas. Strategy only applies to bicycle facilities that provide a dedicated lane for bicyclists or a completely separated right-of-way for bicycles and pedestrians. Project-level definition: Enhance bicycle network citywide (or at similar scale), such that a building entrance or bicycle parking is within 200 yards walking or bicycling distance from a bicycle network that connects to at least one of the following: at least 10 diverse uses; a school or employment center, if the project total floor area is 50% or more residential; or a bus rapid transit stop, light or heavy rail station, commuter rail station, or ferry terminal. All destinations must be 3-mile bicycling distance from project site. Include educational campaigns to encourage bicycling.	0%-1.7%	Zahabi, S. et al. (2016). Exploring the link between the neighborhood typologies, bicycle infrastructure and commuting cycling over time and the potential impact on commuter GHG emissions. Transportation Research Part D: Transport and Environment. 47, 89-103.
Neighborhood Site Enhancements	3.2.3	SDT-3 Implement an NEV Network	0.5%-12.7% VMT reduction for GHG-emitting vehicles, depending on level of local NEV penetration	Weak - not recommended without supplemental data.	Limited evidence and highly limited applicability. Use with supplemental data only.	N/A	City of Lincoln, MHM Engineers & Surveyors, Neighborhood Electric Vehicle Transportation Program Final Report, Issued 04/05/05, and City of Lincoln, A Report to the California Legislature as required by Assembly Bill 2353, Neighborhood Electric Vehicle Transportation Plan Evaluation, January 1, 2008. Cited in: California Air Pollution Control Officers Association. (2010). Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf
Neighborhood Site Enhancements	3.4.9	TRT-9 Implement Car-Sharing Program	0.4% - 0.7% VMT reduction due to lower vehicle ownership rates and general shift to non-driving modes	Adequate	Vehicle trip reduction due to car-sharing programs; reduction assumes 1%-5% penetration rate. Implementing car-sharing programs allows people to have on-demand access to a shared fleet of vehicles on an as-needed basis, as a supplement to trips made by non-SOV modes. Transit station-based programs focus on providing the "last-mile" solution and link transit with commuters' final destinations. Residential-based programs work to substitute entire household based trips. Employer-based programs provide a means for business/day trips for alternative mode commuters and provide a guaranteed ride home option. The reduction shown here assumes a 1%-5% penetration rate.	0.3%-1.6%	Lovejoy, K. et al. (2013). Impacts of Carsharing on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm <i>Need to verify with more recent UCD research.</i>

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Parking Pricing	3.3.1	PDT-1 Limit Parking Supply	5%-12.5% VMT reduction in response to reduced parking supply vs. ITE parking generation rate	Weak - not recommended. Fehr & Peers has developed new estimates for residential land use only that may be used.	CAPCOA reduction range derived from estimate of reduced vehicle ownership, not supported by observed trip or VMT reductions. Evidence is available for mode shift due to presence/absence of parking in high-transit urban areas; additional investigation ongoing	Higher	Fehr & Peers estimated a linear regression formula based on observed data from multiple locations. Resulting equation produces maximum VMT reductions for residential land use only of 30% in suburban locations and 50% in urban locations based on parking supply percentage reductions.
Parking Pricing	3.3.2	PDT-2 Unbundle Parking Costs from Property Cost	2.6% -13% VMT reduction due to decreased vehicle ownership rates	Adequate - conditional on the agency not requiring parking minimums and pricing/managing on-street parking (i.e., residential parking permit districts, etc.).	Reduction in VMT, primarily for residential uses, based on range of elasticities for vehicle ownership in response to increased residential parking fees. Does not account for self-selection. Only applies if the city does not require parking minimums and if on-street parking is priced and managed (i.e., residential parking permit districts).	2%-12%	Victoria Transport Policy Institute (2009). Parking Requirement Impacts on Housing Affordability. Retrieved March 2010 from: http://www.vtpi.org/park-hou.pdf .
Parking Pricing	3.3.3	PDT-3 Implement Market Price Public Parking	2.8%-5.5% VMT reduction due to "park once" behavior and disincentive to driving	Adequate	Implement a pricing strategy for parking by pricing all central business district/employment center/retail center on-street parking. It will be priced to encourage park once" behavior. The benefit of this measure above that of paid parking at the project only is that it deters parking spillover from project supplied parking to other public parking nearby, which undermine the vehicle miles traveled (VMT) benefits of project pricing. It may also generate sufficient area-wide mode shifts to justify increased transit service to the area. VMT reduction applies to VMT from visitor/customer trips only. Reductions higher than top end of range from CAPCOA report apply only in conditions with highly constrained on-street parking supply and lack of comparably-priced off-street	2.8%-14.5%	Clinch, J.P. and Kelly, J.A. (2003). Temporal Variance Of Revealed Preference On-Street Parking Price Elasticity. Dublin: Department of Environmental Studies, University College Dublin. Retrieved from: http://www.ucd.ie/geep/research/workingpapers/2004/04-02.pdf . Cited in Victoria Transport Policy Institute (2017). Transportation Elasticities: How Prices and Other Factors Affect Travel Behavior. Retrieved from: http://www.vtpi.org/tdm/tdm11.htm Hensher, D. and King, J. (2001). Parking Demand and Responsiveness to Supply, Price and Location in Sydney Central Business District. Transportation Research A. 35(3), 177-196. Millard-Ball, A. et al. (2013). Is the curb 80% full or 20% empty? Assessing the impacts of San Francisco's parking pricing experiment. Transportation Research Part A. 63(2014), 76-92. Shoup, D. (2011). The High Cost of Free Parking. APA Planners Press. p. 290. Cited in Pierce, G. and Shoup, D. (2013). Getting the Prices Right. Journal of the American Planning Association. 79(1), 67-81.
Transit System	3.5.3	TST-3 Expand Transit Network	0.1-8.2% VMT reduction in response to increase in transit network coverage	Adequate	Reduction in vehicle trips due to increased transit service hours or coverage. Low end of reduction is typical of project-level implementation (payment of impact fees and/or localized improvements).	0.1%-10.5%	Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Transit System	3.5.4	TST-4 Increase Transit Service Frequency/Speed	0.02%-2.5% VMT reduction due to reduced headways and increased speed and reliability	Adequate	Reduction in vehicle trips due to increased transit frequency/decreased headway. Low end of reduction is typical of project-level implementation (payment of impact fees and/or localized improvements).	0.3%-6.3%	Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Transit System	3.5.1	TST-1 Provide a Bus Rapid Transit System	0.02%-3.2% VMT reduction by converting standard bus system to BRT system	Adequate	No new information identified.	Same	N/A

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Commuter Trip Reduction	3.4.1	TRT-1 Implement CTR Program - Voluntary	1.0%-6.2% commute VMT reduction due to employer-based mode shift program	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-2 Implement CTR Program - Required Implementation/Monitoring" or with CAPCOA strategies TRT-3.4.3 through TRT-3.4.9.	Reduction in vehicle trips in response to employer-led TDM programs. The CTR program should include all of the following to apply the effectiveness reported by the literature: • Carpooling encouragement • Ride-matching assistance • Preferential carpool parking • Flexible work schedules for carpools • Half time transportation coordinator • Vanpool assistance • Bicycle end-trip facilities (parking, showers and lockers)	1.0%-6.0%	Boarnet, M. et al. (2014). Impacts of Employer-Based Trip Reduction Programs and Vanpools on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Commuter Trip Reduction	3.4.2	TRT-2 Implement CTR Program - Required Implementation/Monitoring	4.2%-21.0% commute VMT reduction due to employer-based mode shift program with required monitoring and reporting	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-1 Implement CTR Program - Voluntary" or with CAPCOA strategies TRT-3.4.3 through TRT-3.4.9.	Limited evidence available. Anecdotal evidence shows high investment produces high VMT/vehicle trip reductions at employment sites with monitoring requirements and specific targets.	Same	Nelson/Nygaard (2008). South San Francisco Mode Share and Parking Report for Genentech, Inc.(p. 8) Cited in: California Air Pollution Control Officers Association. (2010). Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf
Commuter Trip Reduction	3.4.4	TRT-4 Implement Subsidized or Discounted Transit Program	0.3%-20% commute VMT reduction due to transit subsidy of up to \$6/day	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-1 Implement CTR Program - Voluntary" or "TRT-2 Implement CTR Program - Required Implementation/Monitoring."	1) Reduction in vehicle trips in response to reduced cost of transit use, assuming that 10 50% of new bus trips replace vehicle trips; 2) Reduction in commute trip VMT due to employee benefits that include transit 3) Reduction in all vehicle trips due to reduced transit fares system-wide, assuming 25% of new transit trips would have been vehicle trips.	1) 0.3%-14% 2) 0-16% 3) 0.1% to 6.9%	1) Victoria Transport Policy Institute. (2017). Understanding Transport Demands and Elasticities. Online TDM Encyclopedia. Retrieved from: http://www.vtpi.org/tdm/tdm11.htm 2) Carolina, P. et al. (2016). Do Employee Commuter Benefits Increase Transit Ridership? Evidence from the NY-NJ Region. Washington, DC: Transportation Research Board, 96th Annual Meeting. 3) Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Commuter Trip Reduction	3.4.15	TRT-15 Employee Parking Cash-Out	0.6%-7.7% commute VMT reduction due to implementing employee parking cash-out	Weak - Effectiveness is building/tenant specific. Research data is over 10 years old (1997).	Shoup case studies indicate a reduction in commute vehicle trips due to implementing cash-out without implementing other trip-reduction strategies.	3%-7.7%	Shoup, D. (1997). Evaluating the Effects of Cashing Out Employer-Paid Parking: Eight Case Studies. Transport Policy. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/research/apr/past/93-308a.pdf . This citation was listed as an alternative literature in CAPCOA.
Commuter Trip Reduction	3.4.14	TRT-14 Price Workplace Parking	0.1%-19.7% commute VMT reduction due to mode shift	Adequate - Effectiveness is building/tenant specific.	Reduction in commute vehicle trips due to priced workplace parking; effectiveness depends on availability of alternative modes. Workplace parking pricing may include: explicitly charging for parking, implementing above market rate pricing, validating parking only for invited guests, not providing employee parking and transportation allowances, and educating employees about available alternatives.	0.5%-14%	Primary sources: Concas, S. and Nayak, N. (2012). A Meta-Analysis of Parking Price Elasticity. Washington, DC: Transportation Research Board, 2012 Annual Meeting. Dale, S. et al. (2016). Evaluating the Impact of a Workplace Parking Levy on Local Traffic Congestion: The Case of Nottingham UK. Washington, DC: Transportation Research Board, 96th Annual Meeting. Secondary sources: Victoria Transport Policy Institute. (2017). Understanding Transport Demands and Elasticities. Online TDM Encyclopedia. Retrieved from: http://www.vtpi.org/tdm/tdm11.htm Spears, S. et al. (2014). Impacts of Parking Pricing on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Commuter Trip Reduction	3.4.6	TRT-6 Encourage Telecommuting and Alternative Work Schedules	0.07%-5.5% commute VMT reduction due to reduced commute trips	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-1 Implement CTR Program - Voluntary" or "TRT-2 Implement CTR Program - Required Implementation/Monitoring."	VMT reduction due to adoption of telecommuting. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed work weeks.	0.2%-4.5%	Handy, S. et al. (2013). Policy Brief on the Impacts of Telecommuting Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/telecommuting/telecommuting_brief120313.pdf

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Commuter Trip Reduction	3.4.7	1) TRT-7 Implement CTR Marketing 2) Launch Targeted Behavioral Interventions	0.8%-4.0% commute VMT reduction due to employer marketing of alternatives	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-1 Implement CTR Program - Voluntary" or "TRT-2 Implement CTR Program - Required Implementation/Monitoring."	1) Vehicle trips reduction due to CTR marketing; 2) Reduction in VMT from institutional trips due to targeted behavioral intervention programs	1) 0.9% to 26% 2) 1%-6%	1) Pratt, Dick. Personal communication regarding the Draft of TCRP 95 Traveler Response to Transportation System Changes – Chapter 19 Employer and Institutional TDM Strategies. Transit Cooperative Research Program. Cited in California Air Pollution Control Officers Association. (2010). Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf Dill, J. and Mohr, C. (2010). Long-Term Evaluation of Individualized Marketing Programs for Travel Demand Management. Portland, OR: Transportation Research and Education Center (TREC). Retrieved from: http://pdxscholar.library.pdx.edu/usp_fac 2) Brown, A. and Ralph, K. (2017.) "The Right Time and Place to Change Travel Behavior: An Experimental Study." Washington, DC: Transportation Research Board, 2017 Annual Meeting. Retrieved from: https://trid.trb.org/view.aspx?id=1437253
Commuter Trip Reduction	3.4.11	TRT-11 Provide Employer-Sponsored Vanpool/Shuttle	0.3%-13.4% commute VMT reduction due to employer-sponsored vanpool and/or shuttle service	Adequate - Effectiveness is building/tenant specific.	1) Reduction in commuter vehicle trips due to implementing employer-sponsored vanpool and shuttle programs; 2) Reduction in commuter vehicle trips due to vanpool incentive programs; 3) Reduction in commuter vehicle trips due to employer shuttle programs	1) 0.5%-5.0% 2) 0.3%-7.4% 3) 1.4%-6.8%	1) Concas, Sisinnio, Winters, Philip, Wambalaba, Francis, (2005). Fare Pricing Elasticity, Subsidies, and Demand for Vanpool Services. Transportation Research Record: Journal of the Transportation Research Board, 1924, pp 215-223. 2) Victoria Transport Policy Institute. (2015). Ridesharing: Carpooling and Vanpooling. Online TDM Encyclopedia. Retrieved from: http://vtpi.org/tdm/tdm34.htm 3) ICF. (2014). GHG Impacts for Commuter Shuttles Pilot Program.
Commuter Trip Reduction	3.4.3	TRT-3 Provide Ride-Sharing Programs	1%-15% commute VMT reduction due to employer ride share coordination and facilities	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-1 Implement CTR Program - Voluntary" or "TRT-2 Implement CTR Program - Required Implementation/Monitoring."	Commuter vehicle trips reduction due to employer ride-sharing programs. Promote ride-sharing programs through a multi-faceted approach such as: • Designating a certain percentage of parking spaces for ride sharing vehicles • Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles • Providing an app or website for coordinating rides	2.5%-8.3%	Victoria Transport Policy Institute. (2015). Ridesharing: Carpooling and Vanpooling. Online TDM Encyclopedia. Retrieved from: http://vtpi.org/tdm/tdm34.htm
Commuter Trip Reduction	3.4.10	TRT-10 Implement a School Pool Program	7.2%-15.8% reduction in school VMT due to school pool implementation	Adequate - School VMT only.	Limited new evidence available, not conclusive	Same	Transportation Demand Management Institute of the Association for Commuter Transportation. TDM Case Studies and Commuter Testimonials. Prepared for the US EPA. 1997. (p. 10, 36-38) WayToGo 2015 Annual Report. Accessed on March 12, 2017 from http://www.waytogo.org/sites/default/files/attachments/waytogo-annual-report-2015.pdf
Commuter Trip Reduction	3.4.13	TRT-13 Implement School Bus Program	38%-63% reduction in school VMT due to school bus service implementation	Adequate - School VMT only.	VMT reduction for school trips based on data beyond a single school district. School district boundaries are also a factor to consider. VMT reduction does not appear to be a factor that was considered in a select review of CA boundaries. VMT reductions apply to school trip VMT only.	5%-30%	Wilson, E., et al. (2007). The implications of school choice on travel behavior and environmental emissions. Transportation Research Part D: Transport and Environment 12(2007), 506-518.
Not Applicable - not a CAPCOA strategy	Not Applicable - not a CAPCOA strategy	Not Applicable - not a CAPCOA strategy	Not Applicable - not a CAPCOA strategy	Not Applicable - not a CAPCOA strategy	Bikeshare car trip substitution rate of 7-19% based on data from Washington DC, and Minneapolis/St. Paul. Annual VMT reduction of 151,000 and 57,000, respectively. Includes VMT for rebalancing and maintenance. VMT reduction of 0.023 miles per day per bikeshare member estimated for Bay Area bikeshare, utilizing Minneapolis/St. Paul	57,000-151,000 annual VMT reduction, based on two large US cities. VMT reduction of 0.023 miles per day per member, based on one large US city estimate.	Fishman, E., Washington, S., & Haworth, N. (2014). Bike share's impact on car use: Evidence from the United States, Great Britain, and Australia. Transportation Research Part D: Transport and Environment, 31, 13-20. TDM Methodology: Impact of Carsharing Membership, Transit Passes, Bikesharing Membership, Unbundled Parking, and Parking Supply Reductions on Driving. Center for Neighborhood Technology, Peter Haas and Cindy Copp, with TransForm staff, May 5, 2016.

ATTACHMENT 2.B – Relevant Strategies for Implementation in Vallejo (Due to Land Use Context)



TDM STRATEGY EVALUATION

Relevant Strategies for Implementation in Vallejo Due to Land Use Context

CAPCOA Category	CAPCOA #	CAPCOA Strategy	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New Information Since CAPCOA Was Published in 2010		
					New information	Change in VMT reduction compared to CAPCOA(1)	Literature or Evidence Cited
Land Use/Location	3.1.1	LUT-1 Increase Density	0.8% - 30% VMT reduction due to increase in density	Adequate	Increasing residential density is associated with lower VMT per capita. Increased residential density in areas with high jobs access may have a greater VMT change than increases in regions with lower jobs access. The range of reductions is based on a range of elasticities from -0.04 to -0.22. The low end of the reductions represents a -0.04 elasticity of demand in response to a 10% increase in residential units or employment density and a -0.22 elasticity in response to 50% increase to residential/employment density.	0.4% -10.75%	Primary sources: Boarnet, M. and Handy, S. (2014). Impacts of Residential Density on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm Secondary source: Stevens, M. (2017). Does Compact Development Make People Drive Less? Journal of the American Planning Association, 83(1), 7-18.
Land Use/ Location	3.1.3	LUT-3 Increase Diversity of Urban and Suburban Developments	9%-30% VMT reduction due to mixing land uses within a single development	Adequate	1) VMT reduction due to mix of land uses within a single development; 2) Reduction in VMT due to regional change in entropy index of diversity.	1) 0%-12% 2) 0.3%-4%	1) Ewing, R. and Cervero, R. (2010). Travel and the Built Environment - A Meta-Analysis. Journal of the American Planning Association, 76(3), 265-294. Cited in California Air Pollution Control Officers Association. (2010). Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf Frank, L., Greenwald, M., Kavage, S. and Devlin, A. (2011). An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy. WSDOT Research Report WA-RD 765.1. Washington State Department of Transportation. Retrieved from: http://www.wsdot.wa.gov/research/reports/fullreports/765.1.pdf Nasri, A. and Zhang, L. (2012). Impact of Metropolitan-Level Built Environment on Travel Behavior. Transportation Research Record: Journal of the Transportation Research Board, 2323(1), 75-79. Sadek, A. et al. (2011). Reducing VMT through Smart Land-Use Design. New York State Energy Research and Development Authority. Retrieved from: https://www.dot.ny.gov/divisions/engineering/technical-services/trans-r-and-d-repository/C-08-29%20Final%20Report_December%202011%20%28%29.pdf Spears, S. et al. (2014). Impacts of Land-Use Mix on Passenger Vehicle Use and Greenhouse Gas Emissions- Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm 2) Zhang, Wengia et al. "Short- and Long-Term Effects of Land Use on Reducing Personal Vehicle Miles of Travel."

TDM STRATEGY EVALUATION

Relevant Strategies for Implementation in Vallejo Due to Land Use Context

CAPCOA Category	CAPCOA #	CAPCOA Strategy	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New Information Since CAPCOA Was Published in 2010		
					New information	Change in VMT reduction compared to CAPCOA(1)	Literature or Evidence Cited
Land Use/ Location	3.1.5	LUT-5 Increase Transit Accessibility	0.5%-24.6% reduce in VMT due to locating a project near high-quality transit	Adequate	1] VMT reduction when transit station is provided within 1/2 mile of development (compared to VMT for sites located outside 1/2 mile radius of transit). Locating high density development within 1/2 mile of transit will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT. 2] Reduction in vehicle trips due to implementing TOD. A project with a residential/commercial center designed around a rail or bus station, is called a transit-oriented development (TOD). The project description should include, at a minimum, the following design features: • A transit station/stop with high-quality, high-frequency bus service located within a 5-10 minute walk (or roughly 1/4 mile from stop to edge of development), and/or • A rail station located within a 20 minute walk (or roughly 1/2 mile from station to edge of development) • Fast, frequent, and reliable transit service connecting to a high percentage of regional destinations • Neighborhood designed for walking and cycling	1] 0%-5.8% 2] 0%-7.3%	1] Lund, H. et al. (2004). Travel Characteristics of Transit-Oriented Development in California. Oakland, CA: Bay Area Rapid Transit District, Metropolitan Transportation Commission, and Caltrans. Tal, G. et al. (2013). Policy Brief on the Impacts of Transit Access (Distance to Transit) Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/transitaccess/transit_access_brief120313.pdf 2] Zamir, K. R. et al. (2014). Effects of Transit-Oriented Development on Trip Generation, Distribution, and Mode Share in Washington, D.C., and Baltimore, Maryland. Transportation Research Record: Journal of the Transportation Research Board. 2413, 45–53. DOI: 10.3141/2413-05
Neighborhood Site Enhancements	3.2.1	SDT-1 Provide Pedestrian Network Improvements	0%-2% reduction in VMT for creating a connected pedestrian network within the development and connecting to nearby destinations	Adequate	VMT reduction due to provision of complete pedestrian networks.	0.5%-5.7%	Handy, S. et al. (2014). Impacts of Pedestrian Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Neighborhood Site Enhancements	3.2.2	SDT-2 Provide Traffic Calming Measures	0.25%-1% VMT reduction due to traffic calming on streets within and around the development	Adequate	Reduction in VMT due to building out a low-stress bike network; reduction in VMT due to expansion of bike networks in urban areas.	0%-1.7%	1] California Air Resources Board. (2016). Greenhouse Gas Quantification Methodology for the California Transportation Commission Active Transportation Program Greenhouse Gas Reduction Fund Fiscal Year 2016-17. Retrieved from: https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ctc_atp_finalqm_16-17.pdf. 2] Zahabi, S. et al. (2016). Exploring the link between the neighborhood typologies, bicycle infrastructure and commuting cycling over time and the potential impact on commuter GHG emissions. Transportation Research Part D: Transport and Environment. 47, 89-103.
Neighborhood Site Enhancements	3.4.9	TRT-9 Implement Car-Sharing Program	0.4% - 0.7% VMT reduction due to lower vehicle ownership rates and general shift to non-driving modes	Adequate	Vehicle trip reduction due to car-sharing programs; reduction assumes 1%-5% penetration rate. Car sharing effect on VMT is still evolving due to TNC effects. UCD research showed less effect on car ownership due to car sharing participation and an uncertain effect on VMT.	0.3%-1.6%	Lovejoy, K. et al. (2013). Impacts of Carsharing on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm Clewlow, Regina R. and Mishra, Gouri Shankar. (2017). Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States. UC Davis, Institute of Transportation Studies. Research Report - UCD-ITS-RR-17-07.

TDM STRATEGY EVALUATION

Relevant Strategies for Implementation in Vallejo Due to Land Use Context

CAPCOA Category	CAPCOA #	CAPCOA Strategy	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New Information Since CAPCOA Was Published in 2010		
					New information	Change in VMT reduction compared to CAPCOA(1)	Literature or Evidence Cited
Parking Pricing	3.3.3	PDT-3 Implement Market Price Public Parking	2.8%-5.5% VMT reduction due to "park once" behavior and disincentive to driving	Adequate	Implement a pricing strategy for parking by pricing all central business district/employment center/retail center on-street parking. It will be priced to encourage park once" behavior. The benefit of this measure above that of paid parking at the project only is that it deters parking spillover from project supplied parking to other public parking nearby, which undermine the vehicle miles traveled (VMT) benefits of project pricing. It may also generate sufficient area-wide mode shifts to justify increased transit service to the area. VMT reduction applies to VMT from visitor/customer trips only. Reductions higher than top end of range from CAPCOA report apply only in conditions with highly constrained on-street parking supply and lack of comparably-priced off-street	2.8%-14.5%	Clinch, J.P. and Kelly, J.A. (2003). Temporal Variance Of Revealed Preference On-Street Parking Price Elasticity. Dublin: Department of Environmental Studies, University College Dublin. Retrieved from: http://www.ucd.ie/gpep/research/workingpapers/2004/04-02.pdf . Cited in Victoria Transport Policy Institute (2017). Transportation Elasticities: How Prices and Other Factors Affect Travel Behavior. Retrieved from: http://www.vtpi.org/tdm/tdm11.htm Hensher, D. and King, J. (2001). Parking Demand and Responsiveness to Supply, Price and Location in Sydney Central Business District. Transportation Research A. 35(3), 177-196. Millard-Ball, A. et al. (2013). Is the curb 80% full or 20% empty? Assessing the impacts of San Francisco's parking pricing experiment. Transportation Research Part A. 63(2014), 76-92. Shoup, D. (2011). The High Cost of Free Parking. APA Planners Press. p. 290. Cited in Pierce, G. and Shoup, D. (2013). Getting the Prices Right. Journal of the American Planning Association. 79(1), 67-81.
Transit System	3.5.4	TST-4 Increase Transit Service Frequency/Speed	0.02%-2.5% VMT reduction due to reduced headways and increased speed and reliability	Adequate	Reduction in vehicle trips due to increased transit frequency/decreased headway.	0.3%-6.3%	Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Commute Trip Reduction	3.4.6	TRT-6 Encourage Telecommuting and Alternative Work Schedules	0.07%-5.5% commute VMT reduction due to reduced commute trips	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-1 Implement CTR Program - Voluntary" or "TRT-2 Implement CTR Program - Required Implementation/Monitoring."	VMT reduction due to adoption of telecommuting	0.2%-4.5%	Handy, S. et al. (2013). Policy Brief on the Impacts of Telecommuting Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/telecommuting/telecommuting_brief120313.pdf

NOTES:

(1) For specific VMT reduction ranges, refer to the cited literature.

ATTACHMENT 2.C – Methodologies to Quantify VMT Reduction



Increase Diversity of Urban and Suburban Developments (Mixed Use)

Range of Effectiveness:

0 – 12% vehicle miles traveled (VMT) reduction due to a mix of land uses within a single development (Ewing and Cervero, 2010).

0.3 – 4% VMT reduction due to change in land use entropy index (i.e., land use mix) within a project's sphere of influence (Zhang).

Measure Description:

Having different types of land uses near one another can decrease VMT since trips between land use types are shorter and may be accommodated by non-auto modes of transport. For example, when residential areas are in the same neighborhood as retail and office buildings, a resident does not need to travel outside of the neighborhood to meet his/her trip needs. A description of diverse uses for urban and suburban areas is provided below (CAPCOA 2010, p. 162)

Urban:

An urban project is predominantly characterized by properties on which various uses, such as office, commercial, institutional, and residential, are combined in a single building or on a single site in an integrated development project with functional interrelationships and a coherent physical design. These mixed-use developments should encourage walking and other non-auto modes of transport from residential to office/commercial/institutional locations (and vice versa). The residential units should be within a quarter mile of parks, schools, or other civic uses. These projects minimize the need for external trips by including services/facilities for day care, banking/ATM, restaurants, vehicle refueling, and shopping (CAPCOA 2010, p. 162).

Suburban:

A suburban project has at least three of the following on site and/or offsite within a quarter mile: residential development, retail development, park, open space, or office. These mixed-use developments should encourage walking and other non-auto modes of transport from residential to office/commercial locations (and vice versa). These projects minimize the need for external trips by including services/facilities for day care, banking/ATM, restaurants, vehicle refueling, and shopping (CAPCOA 2010, p. 162).

Measure Applicability:

- Urban and suburban context
- Negligible impact in a rural context (unless the project is a master-planned community)
- Appropriate for mixed-use projects

Inputs:

The following information needs to be provided by the project applicant:

- Percentage of each land use type in the project

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Land Use} \times E_{\text{Diversity}}$$

(not to exceed 15% for non – work trips and 25% for commute trips)

Where:

$$\text{Land Use} = (\text{Land Use Index} - 0.15)/0.15 \text{ (not to exceed 500\% increase)}$$

$$\text{Land Use Index} = -a/\ln(6)$$

$$a = \sum_{i=1}^6 a_i \times \ln(a_i) \text{ (Song and Knaap, 2004)}$$

$$a_i = \text{Building floor area of land use } i / \text{total square feet of project land area}$$

- $a_1 = \text{Single family residential}$
- $a_2 = \text{Multifamily residential}$
- $a_3 = \text{Commercial}$
- $a_4 = \text{Industrial}$
- $a_5 = \text{Institutional}$
- $a_6 = \text{Park}$

$$E_{\text{Diversity}} = \text{Elasticity of VMT with respect to land use index} = 0.02 \text{ to } 0.08 \text{ [4]}$$

If land use a_i is not present, set a_i equal to 0.01

Discussion:

In the above calculation, a land use index of 0.15 is used as a baseline representing a development with a single land use. There are two separate maxima that should be noted: an effective cap of 500% on the allowable percentage increase of land use index and a cap of 15% and 25% on percent VMT reduction for non-work and commute trips, respectively. The 500 percent cap reflects the expected change in a land use index from 0.15 to 0.90, or from single use to a nearly equal balance of all six uses included in this method. The purpose for the 15% and 25% caps is to limit the influence of any single environmental factor (such as diversity). This emphasizes that community designs that implement multiple land use strategies (such as density, design, diversity, etc.) will show more of a reduction than relying on improvements from a single land use factor (CAPCOA 2010, p. 164).

The land use (or entropy) index measurement looks at the mix of land uses of a development. An index of 0 indicates a single land use while 1 indicates a full mix of uses. The preferred elasticity of VMT with respect to the land use mix index for Riverside County is 0.02, per work examining policy effects on VMT conducted by Salon et al for the Air Resource Board.

Example:

Sample calculations are provided below:

90% single family homes, 10% commercial

- $Land\ use\ index = - [0.9 \times \ln(0.9) + 0.1 \times \ln(0.1) + 4 \times 0.01 \times \ln(0.01)] / \ln(6) = 0.3$
- $Low\ Range\ \% VMT\ Reduction = (0.3 - 0.15) / 0.15 \times 0.02 = 2\%$

1/6 single family, 1/6 multi-family, 1/6 commercial, 1/6 industrial, 1/6 institutional, 1/6 parks

- $Land\ use\ index = - [6 \times 0.17 \times \ln(0.17)] / \ln(6) = 1$
- $High\ Range\ \% VMT\ Reduction\ (land\ use\ index = 1)$
- $Land\ use = (1 - 0.15) / 0.15 = 5.6\ or\ 566\%.$ Since this is greater than 500%, set to 500%
- $\% VMT\ Reduction = (5 \times 0.02) = 10\%$

References:

Ewing, R. and Cervero, R. (2010). Travel and the Built Environment - A Meta-Analysis. Journal of the American Planning Association, 76(3), 265-294. Cited in California Air Pollution Control Officers Association. (2010). Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: <http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf>

Frank, L., Greenwald, M., Kavage, S. and Devlin, A. (2011). An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy. WSDOT Research Report WA-RD 765.1. Washington State Department of Transportation. Retrieved from: <http://www.wsdot.wa.gov/research/reports/fullreports/765.1.pdf>

Nasri, A. and Zhang, L. (2012). Impact of Metropolitan-Level Built Environment on Travel Behavior. Transportation Research Record: Journal of the Transportation Research Board, 2323(1), 75-79.

Sadek, A. et al. (2011). Reducing VMT through Smart Land-Use Design. New York State Energy Research and Development Authority. Retrieved from: https://www.dot.ny.gov/divisions/engineering/technical-services/trans-r-and-d-repository/C-08-29%20Final%20Report_December%202011%20%282%29.pdf

Salon, D., Boarnet, M. G., Handy, S., Spears, S., & Tal, G. (2012). How do local actions affect VMT? A critical review of the empirical evidence. *Transportation research part D: transport and environment*, 17(7), 495-508

Song, Y., and Knaap, G., "Measuring the effects of mixed land uses on housing values." *Regional Science and Urban Economics* 34 (2004) 663-680.(p. 669)
http://urban.csuohio.edu/~sugie/papers/RSUE/RSUE2005_Measuring%20the%20effects%20of%20mixed%20land%20use.pdf

Spears, S. et al. (2014). Impacts of Land-Use Mix on Passenger Vehicle Use and Greenhouse Gas Emissions- Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: <https://arb.ca.gov/cc/sb375/policies/policies.htm>

Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association (CAPCOA), 2010. Chapter 3.1.3 Increase Diversity of Urban and Suburban Developments (Mixed Use).

Zhang, Wengia et al. "Short- and Long-Term Effects of Land Use on Reducing Personal Vehicle Miles of Travel."

Increase Residential Density

Range of Effectiveness:

0.4% – 10.75% VMT reduction due to increasing residential density

Measure Description:

Designing the Project with increased densities, where allowed by the General Plan and/or Zoning Ordinance reduces GHG emissions associated with traffic in several ways. Density is usually measured in terms of persons, jobs, or dwellings per unit area. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. This strategy also provides a foundation for implementation of many other strategies which would benefit from increased densities. For example, transit ridership increases with density, which justifies enhanced transit service.

The reductions in GHG emissions are quantified based on reductions to VMT. The relationship between density and VMT is described by its elasticity (CAPCOA 2010, p. 155). The range of reductions is based on a range of elasticities from -0.04 to -0.22. The low end of the reductions represents a -0.04 elasticity of demand in response to a 10% increase in residential units or employment density and a -0.22 elasticity in response to 50% increase to residential/employment density.

Measure Applicability:

- Urban and suburban context
 - Negligible impact in a rural context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Inputs:

The following information needs to be provided by the project applicant:

- Number of housing units per acre or jobs per job acre

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B \text{ [not to exceed 30\%]}$$

Where:

A = Percentage increase in housing units per acre or jobs per job acre = (number of housing units per acre or jobs per job acre – number of housing units per acre or jobs per job acre for typical ITE development) / (number of housing units per acre or jobs per job acre for typical ITE development). For small and medium sites (less than ½ mile in radius) the calculation of housing and jobs per acre should be performed for the development site as a whole, so that the analysis does not erroneously attribute trip reduction benefits to measures that simply shift jobs and housing within the site with no overall increase in site density. For larger sites, the analysis should address the development as several ½-mile-radius sites, so that shifts from one area to another would increase the density of the receiving area but reduce

the density of the donating area, resulting in trip generation rate decreases and increases, respectively, which cancel one another.

B = Elasticity of VMT with respect to density (from literature)

Detail:

- A: [not to exceed 500% increase]
 - If housing: $(\text{Number of housing units per acre} - 7.6) / 7.6$
 - If jobs: $(\text{Number of jobs per acre} - 20) / 20$
- B: -0.04 elasticity in response to a 10% increase in residential units or employment density and a -0.22 elasticity in response to 50% increase to residential/employment density

Discussion:

The VMT reductions for this strategy are based on changes in density versus the typical suburban residential and employment densities in North America (referred to as “ITE densities”). These densities are used as a baseline to mirror those densities reflected in the ITE Trip Generation Manual, which is the baseline method for determining VMT. There are two separate maxima noted in the fact sheet: a cap of 500% on the allowable percentage increase of housing units or jobs per acre (variable A) and a cap of 30% on % VMT reduction. The rationale for the 500% cap is that there are diminishing returns to any change in environment. For example, it is reasonably doubtful that increasing residential density by a factor of six instead of five would produce any additional change in travel behavior. The purpose for the 30% cap is to limit the influence of any single environmental factor (such as density). This emphasizes that community designs that implement multiple land use strategies (such as density, design, diversity, etc.) will show more of a reduction than relying on improvements from a single land use factor.

References:

Boarnet, M. and Handy, S. (2014). Impacts of Residential Density on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: <https://arb.ca.gov/cc/sb375/policies/policies.htm>

Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association (CAPCOA), 2010. Chapter 3.1.1 Increase Density

Stevens, M. (2017). Does Compact Development Make People Drive Less? Journal of the American Planning Association, 83(1), 7-18.

Increase Transit Accessibility

Range of Effectiveness:

- 1) 0 – 5.8% VMT reduction

VMT reduction when transit station is provided within 1/2 mile of development (compared to VMT for sites located outside 1/2 mile radius of transit). Locating high density development within 1/2 mile of transit will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT.

- 2) 0 – 7.3% VMT reduction

Reduction in vehicle trips due to implementing TOD. A project with a residential/commercial center designed around a rail or bus station, is called a transit-oriented development (TOD). The project description should include, at a minimum, the following design features:

- A transit station/stop with high-quality, high-frequency bus service located within a 5-10 minute walk (or roughly ¼ mile from stop to edge of development), and/or
- A rail station located within a 20 minute walk (or roughly ½ mile from station to edge of development)
- Fast, frequent, and reliable transit service connecting to a high percentage of regional destinations
- Neighborhood designed for walking and cycling

Measure Description:

Locating a project with high density near transit will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT. A project with a residential/commercial center designed around a rail or bus station, is called a transit-oriented development (TOD). The project description should include, at a minimum, the following design features:

- A transit station/stop with high-quality, high-frequency bus service located within a 5-10 minute walk (or roughly ¼ mile from stop to edge of development), and/or
- A rail station located within a 20 minute walk (or roughly ½ mile from station to edge of development)
- Fast, frequent, and reliable transit service connecting to a high percentage of regional destinations
- Neighborhood designed for walking and cycling

Measure Applicability:

- Urban and suburban context

- Appropriate in a rural context if development site is adjacent to a commuter rail station with convenient rail service to a major employment center
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Inputs:

The following information needs to be provided by the project applicant:

- Distance to transit station in project

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Transit} * B [\text{not to exceed } 30\%]$$

Where:

Transit = Increase in transit mode share = % transit mode share for project - % transit mode share for typical ITE development

% transit mode share for project (see Table)

Distance to transit Transit mode share calculation equation	Distance to transit Transit mode share calculation equation
(where x = distance of project to transit)	(where x = distance of project to transit)
0 – 0.5 miles $-50*x + 38$	0 – 0.5 miles $-50*x + 38$
0.5 to 3 miles $-4.4*x + 15.2$	0.5 to 3 miles $-4.4*x + 15.2$
> 3 miles no impact	

B = adjustments from transit ridership increase to VMT (0.67)

Discussion:

The purpose for the 30% cap on percent VMT reduction is to limit the influence of any single environmental factor (such as transit accessibility). This emphasizes that community designs that implement multiple land use strategies (such as density, design, diversity, transit accessibility, etc.) will show more of a reduction than relying on improvements from a single land use factor.

References:

- 1) Lund, H. et al. (2004). Travel Characteristics of Transit-Oriented Development in California. Oakland, CA: Bay Area Rapid Transit District, Metropolitan Transportation Commission, and Caltrans.

Tal, G. et al. (2013). Policy Brief on the Impacts of Transit Access (Distance to Transit) Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/transitaccess/transit_access_brief120313.pdf
- 2) Zamir, K. R. et al. (2014). Effects of Transit-Oriented Development on Trip Generation, Distribution, and Mode Share in Washington, D.C., and Baltimore, Maryland. Transportation Research Record: Journal of the Transportation Research Board. 2413, 45–53. DOI: 10.3141/2413-05

Encourage Telecommuting and Alternative Work Schedules

Range of Effectiveness:

0.2 – 4.5% commute VMT reduction.

Measure Description:

Encouraging telecommuting and alternative work schedules reduces the number of commute trips and therefore VMT traveled by employees. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed work weeks (CAPCOA 2010, p. 236).

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for retail, office, industrial, and mixed-use projects
- VMT reduction is dependent on the performance of individual building tenants and may change over time. On-going monitoring and adjustment is necessary to achieve sustained reductions in VMT.

Inputs:

The following information needs to be provided by the project applicant:

- Percentage of employees participating (1 – 25%)
- Telecommute elasticity (see discussion below)

Mitigation Method:

$$\% \text{ Commute VMT Reduction} = E_{\text{Telecommute}} * \text{Telecommute Delta}$$

Where:

$$\text{Telecommute Delta} = \% \text{ change in workers telecommuting with TDM Program}$$

$$E_{\text{Telecommute}} = \% \text{ change in VMT per } \% \text{ change in workers telecommuting}$$

$$E_{\text{Telecommute}} = 0.18 \text{ to } 0.90$$

Discussion:

Telecommute Delta and $E_{\text{Telecommute}}$ should consider the potential for building tenants to change over time. Higher values require the employer at the site to be known and unlikely to change over time. $E_{\text{Telecommute}}$ will be lower in places with higher non-drive alone mode share, and higher in places with more drive alone vehicle mode share.

References:

Handy, Tal, Boarnet. 2013. "Policy Brief on the Impacts of Telecommuting Based on a Review of the Empirical Literature."

https://www.arb.ca.gov/cc/sb375/policies/telecommuting/telecommuting_brief120313.pdf

Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association (CAPCOA), 2010. Chapter 3.4.6 Encourage Telecommuting and Alternative Work Schedules

Provide Pedestrian Network Improvements

Range of Effectiveness:

0.5 – 5.7% VMT reduction

Measure Description:

Providing pedestrian access at and near a project site encourages people to walk instead of drive, presuming that desirable destinations exist within walking distance of the project. This mode shift results in people driving less and thus a reduction in VMT. The pedestrian access network should internally link all uses and connect to all existing or planned external streets and pedestrian facilities contiguous with the project site. It should also minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation should be eliminated (CAPCOA 2010, p. 186).

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential, retail, office, industrial, and mixed-use projects
- Reduction benefit only occurs if the project has both pedestrian network improvements on site and connections to the larger off-site network. All calculations should incorporate the status of the network in the project's walkshed (i.e., within a ¼ mile radius).
- Desirable destinations external to the project site must be within walking distance (i.e., preferably within a ¼ mile and no greater than ½ mile).

Inputs:

The project applicant must provide information regarding pedestrian access and connectivity within the project and to/from off-site destinations. The change in sidewalk coverage should represent the share of quality sidewalk and pedestrian facilities available in the surrounding area; for instance, if one block-face of ten is missing sidewalks, the existing coverage is 90%. This measure is not effective in reducing VMT in locations with already fully-developed, high quality sidewalk networks.

Mitigation Method:

$$\% \text{ VMT Reduction} = E_{PedAccess} \times Sidewalk \text{ Delta}$$

Where:

$$E_{PedAccess} = \% \text{ Change in VMT per \% Increase in Sidewalk Coverage}$$

$$Sidewalk \text{ Delta} = \text{Assumed change in sidewalk coverage compared to background condition}$$

Detail:

$$E_{PedAccess} = 0.0 \text{ to } 0.14 \text{ (0.07 preferred in absence of other data)}$$

$$Sidewalk \text{ Delta} = 5\% \text{ to } 100\%$$

Discussion:

Pedestrian Access Elasticity varies at the local level and is dependent on many factors such as the urban form of the immediate area and population characteristics. When reliable studies are available and applicable to the project area, this elasticity should be calculated. Otherwise, 0.07 is recommended based on the range provided by Handy, S. et al.

References:

Handy, S. et al. (2014). Impacts of Pedestrian Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions – Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: <https://arb.ca.gov/cc/sb375/policies/policies.htm>

Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association (CAPCOA), 2010. Chapter 3.2.1 Provide Pedestrian Network Improvements.

Provide Traffic Calming Measures

Range of Effectiveness:

0 – 1.7% VMT reduction

Measure Description:

Providing traffic calming measures encourages people to walk or bike instead of using a vehicle. This mode shift results in a decrease in VMT. Project design should include pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways should be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, etc. (CAPCOA 2010, p. 190).

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects

Inputs:

The following information needs to be provided by the project applicant:

- Percentage of streets within project with traffic calming improvements
- Percentage of intersections within project with traffic calming improvements

Mitigation Calculation:

The VMT reduction is a function of the percentage of streets and intersections within the project with traffic calming improvements based on the following look up table.

% VMT Reduction		% of Streets with Improvements			
		25%	50%	75%	100%
% of Intersections with Improvements	25%	0.425%	0.425%	0.85%	0.85%
	50%	0.425%	0.85%	0.85%	1.275%
	75%	0.85%	0.85%	1.275%	1.275%
	100%	0.85%	1.275%	1.275%	1.7%

Discussion:

The table above allows the project applicant to calculate a VMT reduction estimate based on the project's street and intersection design with respect to traffic calming. The applicant should look at the rows on the left and choose the percent of intersections within the project which will have traffic calming improvements. Then, the applicant should look at the columns along the top and choose the percent of streets within the project which will have traffic calming improvements. The intersection cell of the row and column selected in the matrix is the VMT reduction estimate.

Though the literature provides some difference between a suburban and urban context, the difference is small and thus the lower VMT reduction estimate was used to be applied to all contexts. Rural context is not specifically discussed in the literature but is presumed to have little to no effect on VMT reduction due to the long-distances between trip origins and destinations.

Research by Zahabi, S. et al. attributes up to a 1.7% VMT reduction to traffic calming measures. The table above illustrates the range of VMT reductions based on the percent of streets and intersections with traffic calming measures implemented. CAPCOA 2010 used a range of 0.25% to 1% for VMT reduction. The VMT reductions were updated using the same methodology to allow for reductions up to 1.7%.

Because of the high potential for double-counting, caution should be used when combining this measure with "Provide Pedestrian Network Improvements."

References:

California Air Resources Board. (2016). Greenhouse Gas Quantification Methodology for the California Transportation Commission Active Transportation Program Greenhouse Gas Reduction Fund Fiscal Year 2016-17. Retrieved from: https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ctc_atp_finalqm_16-17.pdf.

Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association (CAPCOA), 2010. Chapter 3.2.2 Provide Traffic Calming Measures.

Zahabi, S. et al. (2016). Exploring the link between the neighborhood typologies, bicycle infrastructure and commuting cycling over time and the potential impact on commuter GHG emissions. Transportation Research Part D: Transport and Environment. 47, 89-103.

Implement Market Price Public Parking (On-Street)

Range of Effectiveness:

2.8% - 14.5% VMT reduction.

Measure Description:

Implement a pricing strategy for parking by pricing all central business district/employment center/retail center on-street parking. It will be priced to encourage park once" behavior. The benefit of this measure above that of paid parking at the project only is that it deters parking spillover from project supplied parking to other public parking nearby, which undermine the vehicle miles traveled (VMT) benefits of project pricing. It may also generate sufficient area-wide mode shifts to justify increased transit service to the area.

The VMT reduction applies to VMT from visitor/customer trips only. Reductions higher than top end of range from CAPCOA report apply only in conditions with highly constrained on-street parking supply and lack of comparably priced off-street parking.

Inputs:

The following information needs to be provided by the project applicant:

- Location of project site: low density suburb, suburban center, or urban location
- Percent increase in on-street parking prices (minimum 25% needed)

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Park\$} * B$$

Where:

$$\text{Park\$} = \text{Percent increase in on street parking prices (minimum 25\% increase)}$$

$$B = \text{Elasticity of VMT with respect to parking price}$$

Discussion:

The range of parking price increases should be a minimum of 25% and a maximum of 50%. The minimum is based on Moving Cooler discussions, which state that a less than 25% increase would not be a sufficient amount to reduce VMT. The case study looked at a 50% price increase, and thus no conclusions can be made on the elasticities above a 50% increase. This strategy may certainly be implemented at a higher price increase, but VMT reductions should be capped at results from a 50% increase to be conservative.

References:

Clinch, J.P. and Kelly, J.A. (2003). Temporal Variance Of Revealed Preference On-Street Parking Price Elasticity. Dublin: Department of Environmental Studies, University College Dublin. Retrieved from: <http://www.ucd.ie/gpep/research/workingpapers/2004/04-02.pdf>. Cited in Victoria Transport Policy

Institute (2017). Transportation Elasticities: How Prices and Other Factors Affect Travel Behavior. Retrieved from: <http://www.vtpi.org/tdm/tdm11.htm>

Hensher, D. and King, J. (2001). Parking Demand and Responsiveness to Supply, Price and Location in Sydney Central Business District. *Transportation Research A*. 35(3), 177-196.

Millard-Ball, A. et al. (2013). Is the curb 80% full or 20% empty? Assessing the impacts of San Francisco's parking pricing experiment. *Transportation Research Part A*. 63(2014), 76-92.

Shoup, D. (2011). *The High Cost of Free Parking*. APA Planners Press. p. 290. Cited in Pierce, G. and Shoup, D. (2013). Getting the Prices Right. *Journal of the American Planning Association*. 79(1), 67-81.

Increase Transit Service Frequency/Speed

Range of Effectiveness:

0.03 – 6.3% VMT reduction.

Measure Description:

This measure reduces transit-passenger travel time through reduced headways and increased speed and reliability. This makes transit service more attractive and may result in a mode shift from auto to transit which reduces VMT (CAPCOA 2010, p. 280).

Inputs:

The following information needs to be provided by the project applicant:

- Percentage reduction in headways (increase in frequency) for applicable transit routes
- Level of implementation
- Project setting: urban center, urban, suburban
- Existing transit mode share

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Headway} \times B \times C \times \text{Mode}$$

Where:

Headway = % reduction in headways

B = Elasticity of transit ridership with respect to increased frequency of service

C = Ratio of vehicle trips reduced to number of new transit riders

Mode = Existing transit mode share

Detail:

$$B = 0.50$$

$$C = 25\% \text{ to } 75\%$$

Discussion:

A 1% reduction in headways leads to 0.5% increase in transit ridership. This change is translated into a VMT reduction by applying a mode shift adjustment to account for new transit trips that do not represent displaced vehicle trips in addition to considering the existing transit mode share.

Variable C should be calculated based on local data. It is calculated by taking the length of an average transit trip within the sphere of influence of the project divided by the average vehicle trip length within the sphere of influence of the project.

References:

Handy, Lovejoy, Boarnet, Spears. 2013. "Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions." http://www.arb.ca.gov/cc/sb375/policies/transitservice/transit_brief.pdf

Litman, T. (2004). Transit price elasticities and cross-elasticities. *Journal of Public Transportation*, 7(2), 3.

Taylor, B. D., Miller, D., Iseki, H., & Fink, C. (2009). Nature and/or nurture? Analyzing the determinants of transit ridership across US urbanized areas. *Transportation Research Part A: Policy and Practice*, 43(1), 60-77.

Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association (CAPCOA), 2010. Chapter 3.5.4 Implement Transit Service Frequency/Speed

Implement Car-Sharing Program

Range of Effectiveness:

0.3 – 1.6% VMT reduction

Measure Description:

Implementation of a car-sharing program allows people to have on-demand access to a shared fleet of vehicles on an as-needed basis. VMT reduction occurs due to reductions in private vehicle ownership, lower convenience associated with indirect vehicle access, and the transparent cost of vehicle use. User costs are typically determined through mileage or hourly rates, with deposits and/or annual membership fees. The car-sharing program could be created through a local partnership or through one of many existing car-share companies. Car-sharing programs may be grouped into three general categories: residential- or citywide-based, employer-based, and transit station-based. Transit station-based programs focus on providing the “last-mile” solution and link transit with commuters’ final destinations. Residential-based programs work to substitute entire household-based trips. Employer-based programs provide a means for business/day trips for alternative mode commuters and provide a guaranteed ride home option (CAPCOA 2010, p. 245).

Measure Applicability:

- Urban and suburban context
- Negligible in a rural context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Inputs:

The following information needs to be provided by the project applicant:

- % reduction in car share member annual VMT
- Number of car share members per household

Mitigation Method:

$$\% \text{ VMT Reduction} = P_{\text{CarShare}} \times \text{Adoption Rate}$$

Where:

$$P_{\text{CarShare}} = \% \text{ reduction in car share member annual VMT}$$

$$\text{Adoption Rate} = \text{number of car share members per household}$$

Detail:

$$P_{\text{CarShare}} = 26.9 \text{ to } 37\%$$

$$\text{Adoption Rate} = 1\% \text{ to } 2\%$$

Discussion:

The applicant must consider the demand for car-shares in a community before calculating a VMT reduction. If a community cannot support the proposed number of cars deployed, VMT reduction may be overestimated.

The percent reduction in car share member annual VMT is dependent on characteristics of the community, its residents, and for what purposes the car-sharing program is to be used for. Analysts should consult the literature to understand how these variables affect the range of reductions prior to completing the calculation of VMT reduction.

References:

Clewlow, Regina R. and Mishra, Gouri Shankar, (2017). Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States. UC Davis, Institute of Transportation Studies. Research Report - UCD-ITS-RR-17-07.

Lovejoy, K. et al. (2013). Impacts of Carsharing on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: <https://arb.ca.gov/cc/sb375/policies/policies.htm>

Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association (CAPCOA), 2010. Chapter 3.4.9 Implement Car-Sharing Program

ATTACHMENT 2.D – CAPCOA Guidance on Combining VMT Reduction Strategies



Chart 6-2: Transportation Strategies Organization

Transportation Measures (Five Subcategories) Global Maximum Reduction (all VMT): urban = 75%; compact infill = 40%; suburban center or suburban with NEV = 20%; suburban = 15%					Global Cap for Road Pricing needs further study	
Transportation Measures (Four Categories) Cross-Category Max Reduction (all VMT): urban = 70%; compact infill = 35%; suburban center or suburban with NEV = 15%; suburban = 10%				Max Reduction = 15% overall; work VMT = 25%; school VMT = 65%;	Max Reduction = 25% (all VMT)	
Land Use / Location	Neighborhood / Site Enhancement	Parking Policy / Pricing	Transit System Improvements	Commute Trip Reduction (assumes mixed use) Max Reduction = 25% (work VMT)	Road Pricing Management	Vehicles
Max Reduction: urban = 65%; compact infill = 30%; suburban center = 10%; suburban = 5%	Max Reduction: without NEV = 5%; with NEV = 15%	Max Reduction = 20%	Max Reduction = 10%		Max Reduction = 25%	
Density (30%)	Pedestrian Network (2%)	Parking Supply Limits (12.5%)	Network Expansion (8.2%)	CTR Program Required = 21% work VMT Voluntary = 6.2% work VMT	Cordon Pricing (22%)	Electrify Loading Docks
Design (21.3%)	Traffic Calming (1%)	Unbundled Parking Costs (13%)	Service Frequency / Speed (2.5%)	Transit Fare Subsidy (20% work VMT)	Traffic Flow Improvements (45% CO2)	Utilize Alternative Fueled Vehicles
Location Efficiency (65%)	NEV Network (14.4) <NEV Parking>	On-Street Market Pricing (5.5%)	Bus Rapid Transit (3.2%)	Employee Parking Cash-out (7.7% work VMT)	Required Contributions by Project	Utilize Electric or Hybrid Vehicles
Diversity (30%)	Car Share Program (0.7%)	Residential Area Parking Permits	Access Improvements	Workplace Parking Pricing (19.7% work VMT)		
Destination Accessibility (20%)	Bicycle Network <Lanes> <Parking> <Land Dedication for Trails>		Station Bike Parking	Alternative Work Schedules & Telecommute (5.5% work VMT)		
Transit Accessibility (25%)	Urban Non-Motorized Zones		Local Shuttles	CTR Marketing (5.5% work VMT)		
BMR Housing (1.2%)			Park & Ride Lots*	Employer-Sponsored Vanpool/Shuttle (13.4% work VMT)		
Orientation Toward Non-Auto Corridor				Ride Share Program (15% work VMT)		
Proximity to Bike Path				Bike Share Program		
				End of Trip Facilities		
				Preferential Parking Permit		
				School Pool (15.8% school VMT)		
				School Bus (6.3% school VMT)		
	Note: Strategies in bold text are primary strategies with reported VMT reductions; non-bolded strategies are support or grouped strategies.					

Note: Strategies in bold text are primary strategies with reported VMT reductions; non-bolded strategies are support or grouped strategies.

Grouping of Strategies

Strategies noted as “grouped” are separately documented in individual Fact Sheets but must be paired with other strategies within the category. When these “grouped” strategies are implemented together, the combination will result in either an enhancement to the primary strategy by improving its effectiveness or a non-negligible reduction in effectiveness that would not occur without the combination.

Rules for Combining Strategies or Measures

Mitigation measures or strategies are frequently implemented together with other measures. Often, combining measures can lead to better emission reductions than implementing a single measure by itself. Unfortunately, the effects of combining the measures are not always as straightforward as they might at first appear. When more and more measures are implemented to mitigate a particular source of emissions, the benefit of each additional measure diminishes. If it didn't, some odd results would occur. For example, if there were a series of measures that each, independently, was predicted to reduce emissions from a source by 10%, and if the effect of each measure was independent of the others, then implementing ten measures would reduce all of the emissions; and what would happen with the eleventh measure? Would the combination reduce 110% of the emissions? No. In fact, each successive measure is slightly less effective than predicted when implemented on its own.

On the other hand, some measures enhance the performance of a primary measure when they are combined. This Report includes a set of rules that govern different ways of combining measures. The rules depend on whether the measures are in the *same* category, or different categories. Remember, the categories include: Energy, Transportation, Water, Landscape Equipment, Solid Waste, Vegetation, Construction, Miscellaneous Categories, and General Plans.

Combinations Between Categories: The following procedures must be followed when combining mitigation measures that fall in separate categories. In order to determine the overall reduction in GHG emissions compared to the baseline emissions, the relative magnitude of emissions between the source categories needs to be considered. To do this, the user should determine the percent contribution made by each individual category to the overall baseline GHG emissions. This percent contribution by a category should be multiplied by the reduction percentages from mitigation measures in that category to determine the scaled GHG emission reductions from the measures in that category. This is done for each category to be combined. The scaled GHG emissions for each category can then be added together to give a total GHG reduction for the combined measures in all of the categories.

For example, consider a project whose total GHG emissions come from the following categories: transportation (50%), building energy use (40%), water (6%), and other (4%). This project implements a transportation mitigation measure that results in a 10% reduction in VMT. The project also implements mitigation measures that result in a 30% reduction in water usage. The overall reduction in GHG emissions is as follows:

Reduction from Transportation: $0.50 \times 0.10 = 0.5$ or 5%

Reduction from Water: $0.06 \times 0.30 = 0.018$ or 1.8%

Total Reduction: $5\% + 1.8\% = 6.8\%$

This example illustrates the importance of the magnitude of a source category and its influence on the overall GHG emission reductions.

The percent contributions from source categories will vary from project to project. In a commercial-only project it may not be unusual for transportation emissions to represent greater than 75% of all GHG emissions whereas for a residential or mixed use project, transportation emissions would be below 50%.

Combinations Within Categories: The following procedures must be followed when combining mitigation measures that fall within the same category.

Non-Transportation Combinations: When combining non-transportation subcategories, the total amount of reductions for that category should not exceed 100% except for categories that would result in additional excess capacity that can be used by others, but which the project wants to take credit for (subject to approval of the reviewing agency). This may include alternative energy generation systems tied into the grid, vegetation measures, and excess graywater or recycled water generated by the project and used by others. These excess emission reductions may be used to offset other categories of emissions, with approval of the agency reviewing the project. In these cases of excess capacity, the quantified amounts of excess emissions must be carefully verified to ensure that any credit allowed for these additional reductions is truly surplus.

Category Maximum- Each category has a maximum allowable reduction for the combination of measures in that category. It is intended to ensure that emissions are not double counted when measures within the category are combined. Effectiveness levels for multiple strategies within a subcategory (as denoted by a column in the appropriate chart, above) may be multiplied to determine a combined effectiveness level up to a maximum level. This should be done first to mitigation measures that are a source reduction followed by those that are a reduction to emission factors. Since the combination of mitigation measures and independence of mitigation measures are both complicated, this Report recommends that mitigation measure reductions within a category be multiplied unless a project applicant can provide substantial evidence indicating that emission reductions are independent of one another. This will take the following form:

$$\text{GHG emission reduction for category} = 1 - [(1-A) \times (1-B) \times (1-C)]$$

Where:

A, B and C = Individual mitigation measure reduction percentages for the strategies to be combined in a given category.

Global Maximum- A separate maximum, referred to as a global maximum level, is also provided for a combination across subcategories. Effectiveness levels for multiple strategies across categories may also be multiplied to determine a combined effectiveness level up to global maximum level.

For example, consider a project that is combining 3 mitigation strategies from the water category. This project will install low-flow fixtures (measure WUW-1), use water-efficient irrigation (measure WUW-4, and reduce turf (measure WUW-5). Reductions from these measures will be:

- low-flow fixtures 20% or 0.20 (A)
- water efficient irrigation 10% or 0.10 (B)
- turf reductions 20% or 0.20 (C)

To combine measures within a category, the reductions would be

$$\begin{aligned}
 &= 1 - [(1-A) \times (1-B) \times (1-C)] \\
 &= 1 - [(1-.20) \times (1-.10) \times (1-.20)] \\
 &= 1 - [(0.8) \times (0.9) \times (.8)] \\
 &= 1 - 0.576 = 0.424 \\
 &= 42.4\%
 \end{aligned}$$

Transportation Combinations: The interactions between the various categories of transportation-related mitigation measures is complex and sometimes counter-intuitive. Combining these measures can have a substantive impact on the quantification of the associated emission reductions. In order to safeguard the accuracy and reliability of the methods, while maintaining their ease of use, the following rules have been developed and should be followed when combining transportation-related mitigation measures. The rules are presented by sub-category, and reference Chart 6-2 Transportation Strategies Organization. The maximum reduction values also reflect the highest reduction levels justified by the literature. The chart indicates maximum reductions for individual mitigation measures just below the measure name.

Cross-Category Maximum- A cross-category maximum is provided for any combination of land use, neighborhood enhancements, parking, and transit strategies (columns A-D in Chart 6-1, with the maximum shown in the top row). The total project VMT reduction across these categories should be capped at these levels based on empirical evidence.³ Caps are provided for the location/development type of the project. VMT reductions may be multiplied across the four categories up to this maximum. These include:

- Urban: 70% VMT
- Compact Infill: 35%
- Suburban Center (or Suburban with NEV): 15%
- Suburban: 10% (note that projects with this level of reduction must include a diverse land use mix, workforce housing, and project-specific transit; limited empirical evidence is available)

(See blue box, pp. 58-59.)

³ As reported by Holtzclaw, et al for the State of California.

As used in this Report, location settings are defined as follows:

Urban: A project located within the central city and may be characterized by multi-family housing, located near office and retail. Downtown Oakland and the Nob Hill neighborhood in San Francisco are examples of the typical urban area represented in this category. The urban maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average (assumed analogous to an ITE baseline) for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Central Berkeley	-48%
San Francisco	-49%
Pacific Heights (SF)	-79%
North Beach (SF)	-82%
Mission District (SF)	-75%
Nob Hill (SF)	-63%
Downtown Oakland	-61%

The average reflects a range of 48% less VMT/capita (Central Berkeley) to 82% less VMT/capita (North Beach, San Francisco) compared to the statewide average. The urban locations listed above have the following characteristics:

- Location relative to the regional core: these locations are within the CBD or less than five miles from the CBD (downtown Oakland and downtown San Francisco).
- Ratio or relationship between jobs and housing: jobs-rich (jobs/housing ratio greater than 1.5)
- Density character
 - typical building heights in stories: six stories or (much) higher
 - typical street pattern: grid
 - typical setbacks: minimal
 - parking supply: constrained on and off street
 - parking prices: high to the highest in the region
- Transit availability: high quality rail service and/or comprehensive bus service at 10 minute headways or less in peak hours

Compact infill: A project located on an existing site within the central city or inner-ring suburb with high-frequency transit service.

Examples may be community redevelopment areas, reusing abandoned sites, intensification of land use at established transit stations, or converting underutilized or older industrial buildings. Albany and the Fairfax area of Los Angeles are examples of typical compact infill area as used here. The compact infill maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Franklin Park, Hollywood	-22%
Albany	-25%
Fairfax Area, Los Angeles	-29%
Hayward	-42%

The average reflects a range of 22% less VMT/capita (Franklin Park, Hollywood) to 42% less VMT/capita (Hayward) compared to the statewide average. The compact infill locations listed above have the following characteristics:

- Location relative to the regional core: these locations are typically 5 to 15 miles outside a regional CBD
- Ratio or relationship between jobs and housing: balanced (jobs/housing ratio ranging from 0.9 to 1.2)
- Density character
 - typical building heights in stories: two to four stories
 - typical street pattern: grid
 - typical setbacks: 0 to 20 feet
 - parking supply: constrained
 - parking prices: low to moderate
- Transit availability: rail service within two miles, or bus service at 15 minute peak headways or less

Understanding and Using the Fact Sheets

As used in this Report, additional location settings are defined as follows:

Suburban Center: A project typically involving a cluster of multi-use development within dispersed, low-density, automobile dependent land use patterns (a suburb). The center may be an historic downtown of a smaller community that has become surrounded by its region's suburban growth pattern in the latter half of the 20th Century. The suburban center serves the population of the suburb with office, retail and housing which is denser than the surrounding suburb. The suburban center maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Sebastopol	0%
San Rafael (Downtown)	-10%
San Mateo	-17%

The average reflects a range of 0% less VMT/capita (Sebastopol) to 17% less VMT/capita (San Mateo) compared to the statewide average. The suburban center locations listed above have the following characteristics:

- Location relative to the regional core: these locations are typically 20 miles or more from a regional CBD
- Ratio or relationship between jobs and housing: balanced
- Density character
 - typical building heights in stories: two stories
 - typical street pattern: grid
 - typical setbacks: 0 to 20 feet
 - parking supply: somewhat constrained on street; typically ample off-street
 - parking prices: low (if priced at all)
- Transit availability: bus service at 20-30 minute headways and/or a commuter rail station

While all three locations in this category reflect a suburban "downtown," San Mateo is served by regional rail (Caltrain) and the other locations are served by bus transit only. Sebastopol is located more than 50 miles from downtown San Francisco, the nearest urban center. San Rafael and San Mateo are located 20 miles from downtown San Francisco.

Suburban: A project characterized by dispersed, low-density, single-use, automobile dependent land use patterns, usually outside of the central city (a suburb). Suburbs typically have the following characteristics:

- Location relative to the regional core: these locations are typically 20 miles or more from a regional CBD
- Ratio or relationship between jobs and housing: jobs poor
- Density character
 - typical building heights in stories: one to two stories
 - typical street pattern: curvilinear (cul-de-sac based)
 - typical setbacks: parking is generally placed between the street and office or retail buildings; large-lot residential is common
 - parking supply: ample, largely surface lot-based
 - parking prices: none
- Transit availability: limited bus service, with peak headways 30 minutes or more

The maximum reduction provided for this category assumes that regardless of the measures implemented, the project's distance from transit, density, design, and lack of mixed use destinations will keep the effect of any strategies to a minimum.

Global Maximum- A global maximum is provided for any combination of land use, neighborhood enhancements, parking, transit, and commute trip reduction strategies (the first five columns in the organization chart). This excludes reductions from road-pricing measurements which are discussed separately below. The total project VMT reduction across these categories, which can be combined through multiplication, should be capped

at these levels based on empirical evidence.⁴ Maximums are provided for the location/development type of the project. The Global Maximum values can be found in the top row of Chart 6-2.

These include:

- Urban: 75% VMT
- Compact Infill: 40% VMT
- Suburban Center (or Suburban with NEV): 20%
- Suburban: 15% (limited empirical evidence available)

Specific Rules for Subcategories within Transportation- Because of the unique interactions of measures within the Transportation Category, each subcategory has additional rules or criteria for combining measures.

❖ **Land Use/Location Strategies – Maximum Reduction Factors:** Land use measures apply to a project area with a radius of ½ mile. If the project area under review is greater than this, the study area should be divided into subareas of radii of ½ mile, with subarea boundaries determined by natural “clusters” of integrated land uses within a common watershed. If the project study area is smaller than ½ mile in radius, other land uses within a ½ mile radius of the key destination point in the study area (i.e. train station or employment center) should be included in design, density, and diversity calculations. Land use measures are capped based on empirical evidence for location setting types as follows:⁵

- Urban: 65% VMT
- Compact Infill: 30% VMT
- Suburban Center: 10% VMT
- Suburban: 5% VMT

❖ **Neighborhood/Site Enhancements Strategies – Maximum Reduction Factors:** The neighborhood/site enhancements category is capped at 12.7% VMT reduction (with Neighborhood Electric Vehicles (NEVs)) and 5% without NEVs based on empirical evidence (for NEVs) and the multiplied combination of the non-NEV measures.

❖ **Parking Strategies – Maximum Reduction Factors:** Parking strategies should be implemented in one of two combinations:

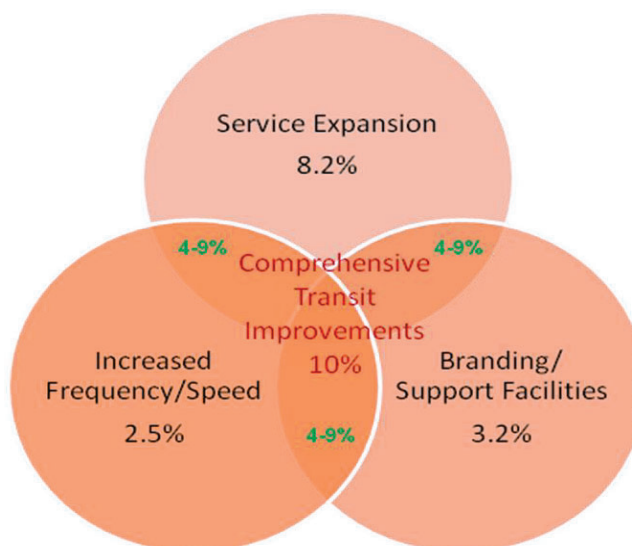
- Limited (reduced) off-street supply ratios plus residential permit parking and priced on-street parking (to limit spillover), or
- Unbundled parking plus residential permit parking and priced on-street parking (to limit spillover).

⁴ As reported by Holtzclaw, et al for the State of California. Note that CTR strategies must be converted to overall VMT reductions (from work-trip VMT reductions) before being combined with strategies in other categories.

⁵ As reported for California locations in Holtzclaw, et al. “Location Efficiency: Neighborhood and Socioeconomic Characteristics Determine Auto Ownership and Use – Studies in Chicago, Los Angeles, and San Francisco.” *Transportation Planning and Technology*, 2002, Vol. 25, pp. 1–27.

Note: The reduction maximum of 20% VMT reflects the combined (multiplied) effect of unbundled parking and priced on-street parking.

- ❖ **Transit System Strategies – Maximum Reduction Factors:** The 10% VMT reduction maximum for transit system improvements reflects the combined (multiplied) effect of network expansion and service frequency/speed enhancements. A comprehensive transit improvement would receive this type of reduction, as shown in the center overlap in the Venn diagram, below.



- ❖ **Commuter Trip Reductions (CTR) Strategies – Maximum Reduction Factors:** The most effective commute trip reduction measures combine incentives, disincentives, and mandatory monitoring, often through a transportation demand management (TDM) ordinance. Incentives encourage a particular action, for example parking cash-out, where the employee receives a monetary incentive for not driving to work, but is not punished for maintaining status quo. Disincentives establish a penalty for a status quo action. An example is workplace parking pricing, where the employee is now monetarily penalized for driving to work. The 25% maximum for work-related VMT applies to comprehensive CTR programs. TDM strategies that include only incentives, only disincentives, and/or no mandatory monitoring, should have a lower total VMT reduction than those with a comprehensive approach. Support strategies to strengthen CTR programs include guaranteed-ride-home, taxi vouchers, and message boards/marketing materials. A 25% reduction in work-related VMT is assumed equivalent to a 15% reduction in overall project VMT for the purpose of the global maximum; this can be adjusted for project-specific land use mixes.

Two school-related VMT reduction measures are also provided in this category. The maximum reduction for these measures should be 65% of school-related VMT based on the literature.

- ❖ Road Pricing/Management Strategies – Maximum Reduction Factors: Cordon pricing is the only strategy in this category with an expected VMT reduction potential. Other forms of road pricing would be applied at a corridor or region-wide level rather than as mitigation applied to an individual development project. No domestic case studies are available for cordon pricing, but international studies suggest a VMT reduction maximum of 25%. A separate, detailed, and project-specific study should be conducted for any project where road pricing is proposed as a VMT reduction measure.

Additional Rules for Transportation Measures- There are also restrictions on the application of measures in rural applications, and application to baseline, as follows:

- ❖ Rural Application: Few empirical studies are available to suggest appropriate VMT reduction caps for strategies implemented in rural areas. Strategies likely to have the largest VMT reduction in rural areas include vanpools, telecommute or alternative work schedules, and master planned communities (with design and land use diversity to encourage intra-community travel). NEV networks may also be appropriate for larger scale developments. Because of the limited empirical data in the rural context, project-specific VMT reduction estimates should be calculated.
- ❖ Baseline Application: As discussed in previous sections of this report, VMT reductions should be applied to a baseline VMT expected for the project, based on the Institute of Transportation Engineers' 8th Edition *Trip Generation Manual* and associated typical trip distance for each land use type. Where trip generation rates and project VMT provided by the project Applicant are derived from another source, the VMT reductions must be adjusted to reflect any "discounts" already applied.

Range of Effectiveness of Mitigation Measures

The following charts provide the range of effectiveness for the quantified mitigation measures. Each chart shows one category of measures, with subcategories identified. The charts also show the basis for the quantification, and indicate applicable groupings. IMPORTANT: these ranges are approximate and should NOT be used in lieu of the specific quantification method provided in the fact sheet for each measure. Restrictions on combining measures must be observed.

JANUARY 2020 | DRAFT

VMT Mitigation Through Banks and Exchanges

UNDERSTANDING NEW MITIGATION APPROACHES

A WHITE PAPER PREPARED BY

FEHR & PEERS





VMT MITIGATION THROUGH BANKS AND EXCHANGES

Understanding New Mitigation Approaches

BACKGROUND

On September 27, 2013, Governor Jerry Brown signed SB 743 into law and started a process intended to fundamentally change transportation impact analysis as part of CEQA compliance. These changes include elimination of *auto delay*, *level of service (LOS)*, and *other similar measures of vehicular capacity or traffic congestion* as a basis for determining significant impacts. Instead, transportation impacts will be determined based on changes to vehicle miles of travel (VMT). This change essentially shifts the focus of analysis from impacts to drivers through higher delays to the impact of driving itself.

Lead agencies making the transition to VMT are realizing the challenges of using the new metric especially when it comes to mitigating significant VMT impacts. Reducing VMT from land use projects and land use plans has traditionally been accomplished through transportation demand management (TDM) strategies. These strategies include modifying a project's land use characteristics (i.e., density) and incorporating vehicle trip reduction programs at the project site to change travel behavior of tenants and visitors. TDM is most effective in urban areas where a project site is accessible through multiple travel modes (i.e., walking, bicycling, transit, and vehicle) offering similar travel times and convenience. Conversely, TDM strategies are less effective in lower density suburban and rural areas where modes are generally limited to personal vehicles. In these types of areas, a program-based approach to mitigation may be more effective than project-site only strategies. Under a program-based approach, development mitigation contributions can be pooled to pay for VMT reduction strategies that would not be feasible for individual projects to implement.

PROGRAM CONCEPTS

The concept of a 'program' approach to impact mitigation is not new and has been used for a variety of technical subjects including transportation, air quality, greenhouse gases, and habitat. Transportation impact fee programs have been used to help mitigate cumulative level of service (LOS) impacts. What is new are how to use impact fee programs for VMT impacts and alternative programs called Mitigation Exchanges and Banks. Absent new program-level mitigation options, suburban and rural lead agencies will have limited feasible mitigation options for project sites.

**For CEQA purposes, feasible means
"capable of being accomplished in a
successful manner within a reasonable
period of time, taking into account
economic, environmental, legal, social,
and technological factors."**

- CEQA Guidelines Section 15364



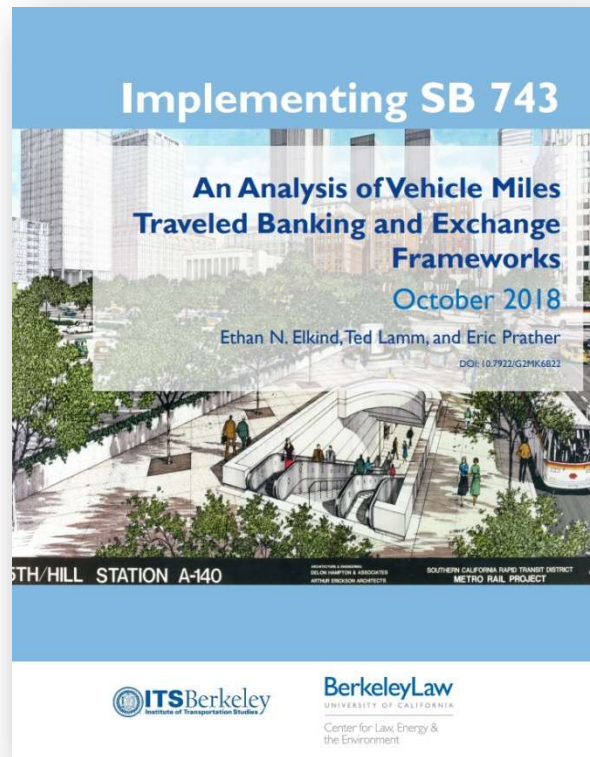
Without feasible mitigation, significant VMT impacts would be significant and unavoidable (SAU). Under these circumstances a project must prepare an environmental impact report (EIR) adding extra time and cost to environmental review compared to a negative declaration (ND). Program-based approaches may be able to overcome the limitation of project-site only mitigation. Three specific concepts as described below have been identified for the purposes of this white paper.

- **VMT-based Transportation Impact Fee program (VMT-TIF)** – The first program concept is a traditional impact fee program in compliance with the mitigation fee act. The nexus for the fee program would be a VMT reduction goal consistent with the CEQA threshold established by a lead agency for SB 743 purposes. The City of LA is the first in California to complete a nexus study for this type of program. The main difference from a fee program based on a metric such as vehicle level of service (LOS) is that the VMT reduction nexus results in a capital improvement program (CIP) consisting largely of transit, bicycle, and pedestrian projects. These types of fee programs are time consuming to develop, monitor, and maintain but are recognized as an acceptable form of CEQA mitigation if they can demonstrate that the CIP projects will be fully funded and implemented.
- **VMT Mitigation Exchange** – In simple terms, the Exchange concept relies on a developer agreeing to implement a predetermined VMT reducing project or proposing a new one. The project may be located in the vicinity of the project or elsewhere in the community, and possibly outside the community. The Exchange needs to have a facilitating entity that can match the VMT generator (the development project) with a VMT reducing project or action. The facilitating entity could be the lead agency or another entity that has the ability to provide the match and to ensure through substantial evidence that the VMT reduction is valid. A key unknown with this approach is the time period for VMT reduction. For example, how many years of VMT reduction are required to declare a VMT impact less than significant?
- **VMT Mitigation Bank** – A Mitigation Bank attempts to create a monetary value for VMT reduction such that a developer could purchase VMT reduction credits. The money exchanged for credits could be applied to local, regional, or state level VMT reduction projects or actions. Like all VMT mitigation, substantial evidence would be necessary that the projects covered by the Bank would achieve expected VMT reductions and some form of monitoring may be required. This is more complicated than a simple exchange and would require more time and effort to set up and implement. The verification of how much VMT reduction is associated with each dollar or credit would be one of the more difficult parts of the program.



With both Exchanges and Banks, another important test is that the VMT reduction would not have occurred otherwise such that mitigation program creates 'additionality'. This means that additional VMT reduction will occur above and beyond what would have occurred without the program. For any program to qualify as a CEQA mitigation program, the discretionary action to adopt the program may require CEQA review. This conclusion is based on the *California Native Plant Society v. County of El Dorado* where the court found that payment of fee does not presumptively establish full mitigation of a discretionary project. A separate CEQA review of the program is necessary to satisfy the duty to mitigate imposed by CEQA. Decision makers should also realize that absent a VMT reduction program, developers would likely be limited to only project site mitigation. While this may be less effective, it may also limit their mitigation costs because the available and feasible mitigation would be more limited.

More details about Exchanges and Banks are explained in the framework document shown at right and available at the cited web link. This white paper expands on the framework to accomplish two objectives. The first objective is to compare the pros and cons of exchanges and banks to a traditional impact fee program. Since impact fee programs have already been established as feasible CEQA mitigation, they serve as a benchmark against which to compare other program concepts. The second objective is to outline the implementation steps associated with creating an exchange or bank to help identify key implementation questions or issues that could affect their feasibility.



<https://www.law.berkeley.edu/research/clee/research/climate/transportation/vehicle-miles-traveled/>

PROGRAM ASSESSMENT (Pros/Cons)

Table 1 below outlines the pros and cons of approach VMT mitigation through an impact fee program, exchange, or bank. This assessment is intended to highlight some of the key differences between each program concept.

Table 1 – VMT Mitigation Program Type Comparison

Program Type	Pros	Cons
Impact Fee Program	• Common and accepted practice • Accepted for CEQA mitigation • Adds certainty to development costs • Allows for regional scale mitigation projects • Increases potential VMT reduction compared to project site mitigation only	• Time consuming and expensive to develop and maintain • Requires strong nexus • Increases mitigation costs for developers because it increases feasible mitigation options • Limited to jurisdictional boundary unless a regional authority is created • Uncertainty about feasibility and strength of nexus relationship between VMT and pedestrian, bicycle, and transit projects (especially in suburban/rural jurisdictions)
Mitigation Exchange	• Limited complexity • Reduced nexus obligation • Expands mitigation to include costs for programs, operations, and maintenance • Allows for regional scale mitigation projects • Allows for mitigation projects to be in other jurisdictions • Increases potential VMT reduction compared to project site mitigation only	• Requires 'additionality' • Potential for mismatch between mitigation need and mitigation projects • Increases mitigation costs for developers because it increases feasible mitigation options • Unknown timeframe for mitigation life • Effectiveness depends on scale of the program
Mitigation Bank	• Adds certainty to development costs • Allows for regional scale projects • Allows for mitigation projects to be in other jurisdictions • Allows regional or state transfers • Expands mitigation options to include costs for programs, operations, and maintenance • Increases potential VMT reduction compared to project site mitigation only	• Requires 'additionality' • Time consuming and expensive to develop and maintain • Requires strong nexus • Political difficulty distributing mitigation dollars/projects • Increases mitigation costs for developers because it increases feasible mitigation options • Unknown timeframe for mitigation life • Effectiveness depends on scale of the program



To better understand potential program differences, Table 2 contains a comparison of the VMT mitigation projects or actions that each program type could fund or implement. The information for an impact fee program is more certain than for exchanges or banks. Fee programs have been used in practice for decades and have been vetted through court decisions. While banks and exchanges do exist for other environmental mitigation purposes such as wetlands preservation and habitat conservation, these applications have largely focused on protecting fixed land amounts versus reducing a metric that fluctuates over time and may vary in value depending on economic conditions.

Table 2 –VMT Mitigation Projects and Actions Comparison	
Program Structure	Project Types that Reduce VMT
Impact Fee Program	• Pedestrian network expansion • Bicycle/Scooter network expansion (includes bike/scooter share stations) • Transit vehicles or facilities associated with service expansion • Roadway gap closures that reduce trip lengths (bridges)
Mitigation Exchange	• All impact fee program project types • Private or institutional projects that reduce VMT • Transit service improvements and transit pass subsidies
Mitigation Bank	• All impact fee program project types • All mitigation exchange project types • VMT reduction strategies associated with travel behavior changes

IMPLEMENTATION STEPS

This section addresses the second objective noted above to outline the implementation steps associated with creating an exchange or bank to help identify key implementation questions or issues that could affect their feasibility. The starting point for these steps begins with identifying the potential statutory or legal requirements that could govern or influence program creation. These are highlighted in Table 3 and build on the research previously done by U.C. Berkeley in the document referenced above. Since specific statutes do not exist specific to VMT exchanges and banks, U.C. Berkeley used a proxy based on conservation programs established under the California Fish & Game code. 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 as noted in the U.C. Berkeley document, having state-wide templates for their development could help establish clear standards and expectations for program designs.



Table 3 – Potential VMT Mitigation Exchange/Bank Legal Requirements

Program Type/Legal Requirements	Statutory Reference
Transportation Impact Fee Program	
1. Mitigation Fee Act – Intended to create a program that allows individual development projects to pay for all or portion of the cost to implement public facilities necessary to support the project. Public facilities are generally limited to capital projects. The nexus study for the program must demonstrate how there is a reasonable relationship between the following. • How there is a reasonable relationship between the fee’s use and the type of development project on which the fee is imposed. • How there is a reasonable relationship between the need for the public facility and the type of development project on which the fee is imposed. • How there is a reasonable relationship between the amount of the fee and the cost of the public facility or portion of the public facility attributable to the development on which the fee is imposed. The fees may not be applied to existing deficiencies or the maintenance and operation of an improvement. As such, clear standards should exist about the physical and operational performance expectations for each model of travel included in the program.	• California Government Code §66000-66001
2. Constitutional – Court decisions have placed limits on what level of mitigation can be expected of land use development projects. The limits largely require 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.	• Nollan v. California Coastal Commission, 483 U.S. 825 (1987) • Dolan v. City of Tigard, 512 U.S. 374 (1994)
3. CEQA – For mitigation to be imposed, a significant impact must occur. Impacts stem from changes to the baseline environment caused by the project. The significance of those impacts is determined by the lead agencies choice of thresholds. This limits mitigation to increment of VMT change that occurs above the threshold.	• CEQA Statute (CA Public Resources Code 21000-21189) • CEQA Guidelines (CA Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387)
VMT Mitigation Exchange or Bank	
1. An explanation of the VMT mitigation purpose of and need for the bank or exchange.	• Fish & Game Code §1852(c)(1)



Table 3 – Potential VMT Mitigation Exchange/Bank Legal Requirements

Program Type/Legal Requirements	Statutory Reference
2. The geographic area covered by the bank or exchange and rationale for the selection of the area, together with a description of the existing transportation and development dynamics that provide relevant context for the development of the bank or exchange.	•§1852(c)(2)
3. The public transit and VMT reduction opportunities currently located within the bank or exchange area.	•§1852(c)(3)
4. Important residential and commercial communities and transportation resources within the bank or exchange area, and an explanation of the criteria, data, and methods used to identify those important communities and resources.	•§1852(c)(4)
5. A summary of historic, current, and projected future transportation stressors and pressures in the bank or exchange area, including economic, population growth and development trends.	•§1852(c)(5-6)
6. Provisions ensuring that the bank or exchange will be in compliance with all applicable state and local legal and other requirements and does not preempt the authority of local agencies to implement infrastructure and urban development in local general plans.	•§1852(c)(7)
7. VMT mitigation goals and measurable objectives for regional transportation resources and important mitigation elements identified in the plan that address or respond to the identified stressors and pressures on transportation within the bank or exchange area.	•§1852(c)(8)
8. VMT mitigation projects, including a description of specific projects that, if implemented, could achieve the mitigation goals and objectives, and a description of how the mitigation projects were prioritized and selected in relation to the mitigation goals and objectives.	•§1852(c)(9)
9. Provisions ensuring that the bank or exchange plan is consistent with and complements any local, regional or federal transportation or congestion management plan that overlaps with the bank or exchange area, a summary of any such plans, and an explanation of such consistency.	•§1852(c)(10-11)
Sources: <u>Implementing SB 743 An Analysis of Vehicles Miles Traveled Banking and Exchange Frameworks</u>, October 2018, Institute of Transportation Studies, U.C. Berkeley. <u>2019 California Environmental Quality Act (CEQA) Statute & Guidelines</u>, Association of Environmental Professionals, 2019. http://leginfo.ca.gov/ http://ccr.oal.ca.gov/	



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. To explore this issue further, annotated flow charts were developed for each program concept. These flow charts are presented on the following pages and allow a reviewer to quickly surmise the differences and similarities associated with creating, operating, and maintaining these programs.

VMT Impact Fee

Implementation

Step 1 Determine Scale/Scope

Step 2 Determine Nexus (VMT)

Step 3 Determine & Propose Mitigation Options

Step 4 Prepare & Approve Nexus Study

Step 5 Prepare & Adopt Fee Ordinance

Step 6 Complete CEQA Review for the Program

Step 7 Administer the Program

Considerations

To create a regional program requires all participating agencies to adopt the program. Programs with larger scopes:

- *Decrease administrative costs
- *Decrease local authority
- *Increase efficiency and effectiveness of the program

An agency must determine its VMT reduction goal before it can show the relationship between new development and that goal.

The CIP develops a list of capital improvement projects necessary to reduce VMT consistent with its desired goal. The agency should prioritize the projects so they are constructed in a logical order.

The prioritization process should consider:

- *Equity
- *Timeliness
- *Cost
- *Modal Preference (Walking/Biking/Transit)
- *Stakeholder/Community Input

Agencies must demonstrate that the projects in the fee program contribute to VMT reduction. The agency must also show that the fees are related and proportional to new development.

Fees should take into account the delay in the time when fees are collected and when they are used.

For a fee to be regularly imposed, it must be adopted as an ordinance.

The ordinance must include:

- *Reason for the fee
- *The relationship between the fee and new development
- *Methodology used in developing the fee
- *Projects to be included in the CIP

California courts have ruled that in order for a fee program to serve as acceptable CEQA mitigation, the program itself must first be reviewed in an EIR.

For Regional Impact Fee Programs ensure that participating agencies have adopted the program such that payment of fees is considered a feasible mitigation measure.

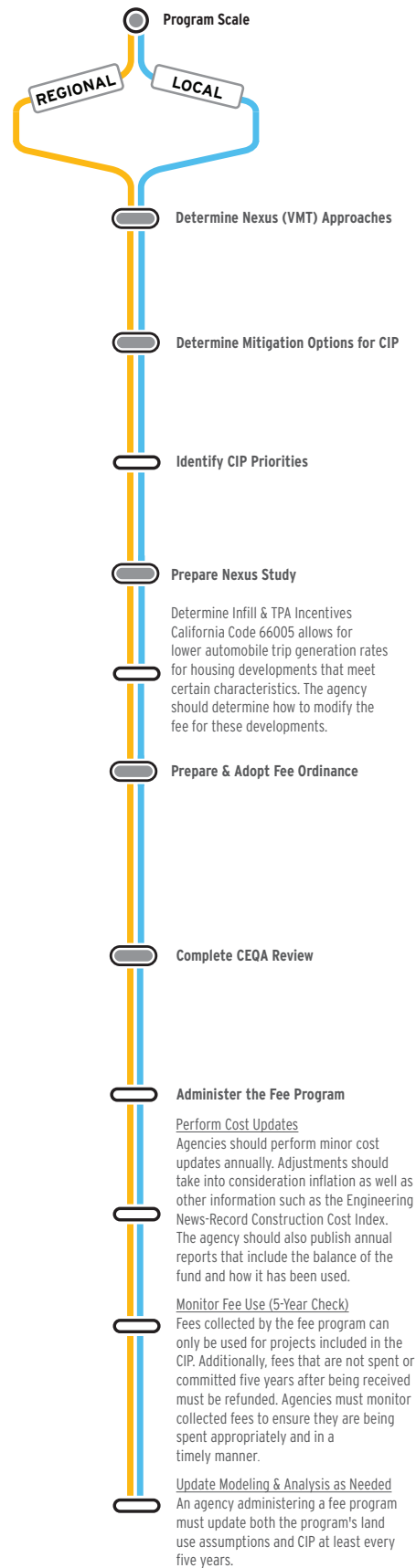
Procedural Flowchart



Decision



Analytical process or procedural outcome



VMT Exchange

Implementation

Step 1 Determine Scale/Scope

Step 2 Determine Sponsor

Step 3 Determine & Propose Mitigation Options

Step 4 Develop Review Team

Step 5 Administer Exchange

Considerations

To create a regional program requires all participating agencies to adopt the program. Programs with larger scopes can:

- *Decrease administrative costs
- *Decrease local authority
- *Increase efficiency and effectiveness of the program

The organizational components of a mitigation Exchange will depend on the type of sponsor (public or private) mitigation options, and matching process between mitigation options and projects.

If the sponsor is a public agency, they will develop a list of options developers can choose from to mitigate the VMT generated by their development.

If the developer wants to propose their own mitigation exchange, they must get it approved by the sponsor and lead agency.

The Exchange should have a Review Team to verify mitigation effectiveness and additionality based on substantial evidence. The team could consist of third-party representatives. The team reviews the mitigation list and verifies that the options reduce VMT and that the reductions would not have occurred without the project, program, or incentive.

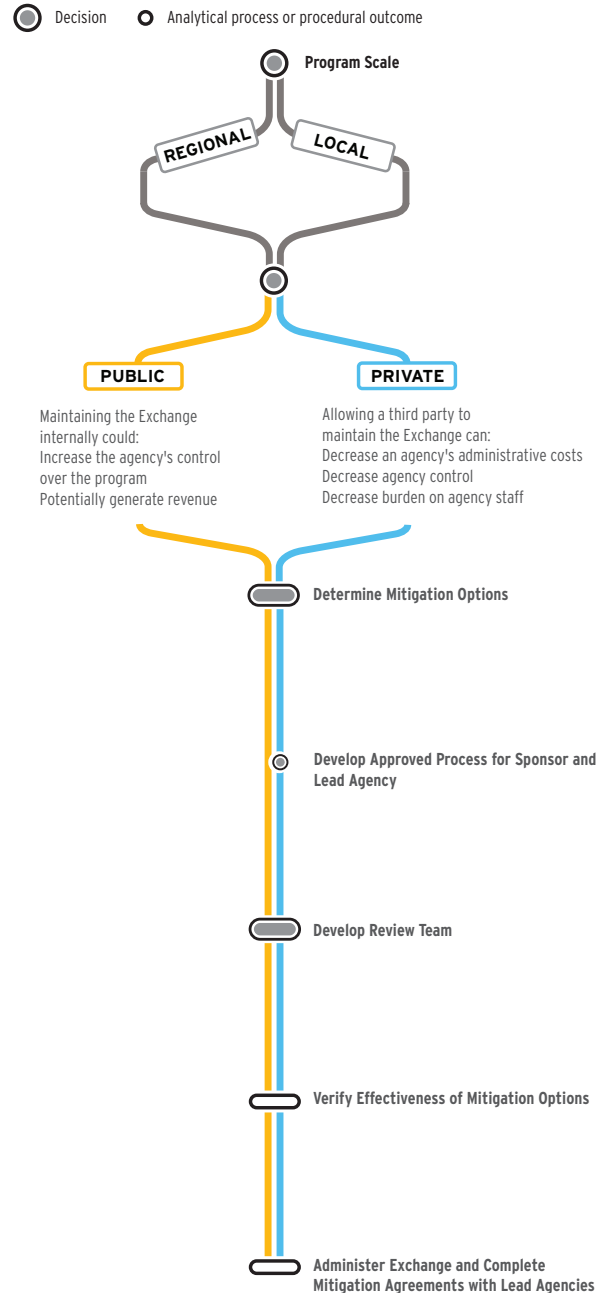
Because Exchanges can include programs/incentives as mitigation options, the Review Team must continually evaluate them to ensure the options are still effective and determine to what degree they reduce VMT.

The public agency/entity sponsoring an Exchange may not always be the lead agency on a project. In this situation the Sponsor should develop an agreement with the lead agency that allows the Exchange's mitigation options to be considered an acceptable mitigation measure for the EIR.

Exchanges must continue to prove that their mitigation options reduce VMT and that the reduction would not have occurred without the projects/programs.

CEQA review of the Exchange creation may be required to be considered as a formal mitigation program.

Procedural Flowchart



VMT Bank

Implementation

Step 1 Determine Scale/Scope

Step 2 Determine Sponsor

Step 3 Formally Establish Bank & Review Team

Step 4 Determine & Prioritize Mitigation Options

Step 5 Administer Bank

Considerations

There are advantages and disadvantages to creating a Bank with a larger scale/scope. However, multiple agencies must be willing to accept the Bank's mitigation options for a state or regional Bank to be feasible. Larger regions can:

- *Decrease costs associated with running the Bank
- *Decrease local authority over mitigation options
- *Increase efficiency and effectiveness of the program

There are a few organizational components to consider when creating a mitigation Bank. These elements include:

*Administrative - The Bank must perform several administrative functions such as collecting fees, managing information, answering questions, and other business operations.

*Technical - There is a significant amount of technical work needed to initially and continually prove the mitigation options reduce VMT and that the reductions would not have occurred without the programs. The Bank also needs to show the fees it receives are related and proportional to new development.

*Accounting - The Bank requires a thorough accounting system to track collected fees and to ensure fees are being handled according to CEQA and other legal guidelines. This includes payments for implementing VMT reduction projects.

Agencies should consider their ability to perform these roles when deciding whether the Bank should be run internally or by a third party.

The entity creating the Bank must legally formalize its creation. If the intent is for the Bank to be used by multiple agencies, this may require a joint powers authority or equivalent.

A review team should be used to verify the effectiveness of mitigation options based on substantial evidence. This team could be internal to the entity creating the bank or an independent third party.

Potential third party entities that could function as a review team include public agencies such as those listed below.

- *Caltrans - local office
- *ARB
- *CalEPA

The Bank Sponsor creates a list of mitigation options. The Review Team evaluates the list to ensure it complies with relevant requirements. The Sponsor should consider the following elements when prioritizing options:

- *Equity
- *Timeliness of Implementation
- *Cost

Mitigation options can include:

- *Infrastructure projects
- *Programs/incentives (Unlike infrastructure projects, programs/incentives are ongoing activities. Because programs/incentives must be continually maintained to be effective, agencies should consider if developers must pay for them indefinitely.

The public agency or entity sponsoring a Bank may not always be the lead agency on a project. In this situation the Sponsor should develop an agreement with the lead agency that allows the Bank's mitigation options to be considered an acceptable mitigation measure for the EIR.

Banks must continue to prove that their mitigation options reduce VMT and that the reduction would not have occurred without the projects/programs.

CEQA review of the Exchange creation may be required to be considered as a formal mitigation program.

Procedural Flowchart



Decision



Analytical process or procedural outcome





PROGRAM EXAMPLES

To help explain the different program types, it may be useful to consider some examples. While no VMT mitigation exchanges or banks currently exist, the examples below could function as one with appropriate modifications to comply with the implementation steps noted above.

City of Los Angeles Westside Mobility Plan Transportation Impact Fee Program

(<https://planning.lacity.org/eir/CoastalTrans/deir/pdfs/tiafeestudy.pdf>)

The City of Los Angeles developed the first impact fee program that relies on a VMT reduction nexus. The westside previously relied on LOS-based impact fee programs but as the area matured and new laws like SB 743 emerged, the City choose to shift their nexus. This shift changed the nature of the CIP from largely roadway capacity expansion projects to more transit, bicycle, and pedestrian infrastructure projects. A key benefit of this approach as noted above is that once the fee program is in place, administration of the program is limited to construction cost updates and complying with state reviews to ensure that funding is being appropriately used to construct and implement the CIP projects. No further verification of CIP effectiveness is required.

Miles

(<https://www.sacrt.com/apps/miles-get-rewarded-for-your-commute-travel/>)

The City of Sacramento, Sacramento Regional Transit, and Sacramento State partnered with [Miles](#), a new app that will reward you miles for all of your commute and travel. Miles app users automatically earn miles for daily travel and are rewarded bonus miles for green trips (walk, bike, carpool or transit). Sacramento residents are also eligible to complete special challenges to earn additional rewards. While this program was not set up as an VMT mitigation exchange or bank, it could evolve into one.

The purpose of rewarding green trips and the special challenges is to influence user behavior to reduce vehicle trips and VMT. With some additional accounting of user travel behavior before and after using the app, enough substantial evidence could be created to provide the VMT reduction verification described above and noted in the flow charts. The program already has administrative functions developed and established relationships between the partner agencies. Some of the unknowns at this time are listed below.

- cost of the program on a per user basis
- amount of VMT reduction that is achieved for a typical user
- how a developer could contribute to the program to sponsor additional users
- stability or permanency of VMT reductions dependent on 'challenges'



In addition to the Miles program, other similar vendors exist such as Luum (<https://luumbenefits.com/>) and Metropia (<https://www.metropia.com/>). These type of app-based vendors could evolve to offer Exchange or Bank type mitigation options if they can comply with the various requirements outlined in the implementation steps and identified in the U.C. Berkeley white paper cited above.

Metro Transit Pass Subsidy

Metro is the Los Angeles County mobility provider. One of the programs they currently offer is a transit pass subsidy with a couple of unique elements that may qualify it as a VMT mitigation exchange. Metro offers student and employee transit passes under their U-pass and E-pass programs. These are transit passes for students and employees in LA County that are unique because instead of a physical transit pass card, the pass comes in the form of an RFID chip with an antenna that sticks to an existing student or employee identification badge. This type of chip allows the transit agency to charge for trips when they are made, which is more cost-effective for schools and employers. The registration form for obtaining the pass includes a survey about current travel behavior and data such as the distance between home and school or work for the applicant. By tracking how individual travel behavior changes from this baseline condition over time, LA Metro can produce aggregate statistics about the effect on transit ridership and VMT.

The second unique component of the program is that Metro allows anyone to 'sponsor' these passes for a particular school or employer. As such, they are entertaining the concept of using the program as an SB 743 VMT Mitigation Exchange. Developers could purchase U- or E-passes and could use the Metro performance data to estimate the VMT reduction per pass. LA Metro is working with LA DOT and SCAG on a pilot concept this year to formalize the program. As part of this white paper development, we asked Metro if developers/agencies outside Los Angeles County could participate. The reason for this request is that VMT mitigation dollars spent on Metro transit passes may be more effective than the same dollars spent in other communities. Whether local communities would be willing to allow mitigation dollars across borders will likely depend on a variety of factors but knowing that it is feasible on the Metro end is an important first feasibility question. Metro replied that their work has not progressed sufficiently to answer this question yet.

IMPLEMENTATION RISKS

As explained above, VMT exchanges or banks come with unique requirements such as the 'additionality' test and ongoing verification that make them more challenging to implement than a conventional transportation impact fee program. However, exchanges and banks offer the ability to include program-



type strategies directed at changing travel behavior that are not available in a conventional impact fee program. Given these tradeoffs, we assessed whether other risks could influence the choice of program.

One risk that stood out was related to current legal challenges to the use of carbon offsets that are based on similar concepts. In a recent legal case, the Sierra Club, Center for Biological Diversity, and Cleveland National Forest Foundation, Climate Action Campaign, Endangered Habitats League, Environmental Center of San Diego, and Preserve Wild Santee challenged the County of San Diego over the use of carbon offsets to achieve GHG reduction goals in the County's climate action plan. The court petition is available at the link below.

- <https://www.biologicaldiversity.org/programs/urban/pdfs/San-Diego-CAP-Petition-for-Writ-of-Mandate.pdf>

The California Attorney General's (AG's) office has also weighed in on this court case. According to a November 11, 2019 Los Angeles Times article, "California say San Diego County could undermine state's greenhouse gas plan", the AG's office filed an amicus brief. The article reported the following about the AG's brief.

In a strongly worded amicus brief recently submitted to the 4th District Court of Appeal in San Diego, Becerra argued that the county's offset strategy would "perpetuate current sprawling development patterns, which will impede the ability of the region and state to reach their long-term climate objectives."

"Without significant [vehicle miles traveled] reductions across the state, California simply will not be able to achieve its [greenhouse gas] reduction targets," the 33-page document said.

The state does not appear to support reducing GHG emissions from land use development without those reductions coming from fundamental local land use and transportation network changes. The risk is that lower density suburban and rural parts of the state would continue their sprawling patterns leading to more VMT and emissions. If the state maintains this position, it could also be used to argue against the creation of VMT mitigation exchanges and banks that attempt to offset VMT increases. To minimize this risk, the mitigation options offered by exchanges and banks could be applied only after project site mitigation has been exhausted and should attempt to offer additional mitigation within the same area or community.



A WHITE PAPER PREPARED BY

FEHR & PEERS



JANUARY 2020 | DRAFT



General Plan Conformance Policies and Actions

Mobility, Transportation, & Connectivity

Policy MTC-2-8 Transportation Demand Management. Decrease dependence on single-occupant vehicles by increasing the attractiveness of other modes of transportation.

Action MTC-2.8 A Coordinate with employers and transit agencies to encourage and promote the use of shuttles, carpools, vanpools, transit passes, variable work hours, telecommuting, and other methods to reduce vehicle miles travelled (VMT).

Action MTC-2.8C As part of the site plan approval process, require development to provide services from a menu of transportation demand management (TDM) strategies that will reduce VMT.

Action MTC-2.8E As part of the General Plan annual review, include discussion of the progress of TDM improvements and programs, based on establishing methods for monitoring progress.

Community & People

Policy CP-1.1 Retail Food Sources. Strive to ensure that all households in Vallejo have easy access to retail sources of affordable healthy food, including organic options, such as full-service grocery stores, ethnic food markets, produce markets, and convenience stores.

Action CP-1.1B Updated City regulations and explore incentives to attract a full service grocery store to South Vallejo and to any other identified "food deserts".

Policy CP-1.6 Active Transportation Network. Promote the health benefits of walking and bicycling by providing a convenient and safe network of bicycle paths and routes, sidewalks, pedestrian paths, and trails, including connections with major destinations such as civic facilities, educational institutions, employment centers, shopping, and recreation areas.

Economy, Education, and Training

Action EET-1.9A Continue to partner with public agencies to enhance Vallejo's infrastructure, including active transportation and transit connections and facilities, and services needed for new development and investment.

Policy EET-1.10 Public Land. Improve City-owned land and properties to stimulate private investment in employment and high quality commercial, residential, and mixed-use development.

Action EET-3.4C Evaluate underperforming corridors and retail centers, and develop a strategy to introduce a mix of uses that reduce vacancy and improve appearance.

Policy EET-4.2 Responsible Development. Favor residential, commercial, and industrial development that can mitigate or avoid environmental impacts.

Action EET-4.2B Consider adopting thresholds of significance for environmental review of proposed developments under the California Environmental Quality Act

Action EET-4.2C Assess how the City's procurement policies and employee commute modes and patterns could contribute to greenhouse gas reductions, and offer programs to mitigate potential impacts.

Nature & Built Environment

Policy NBE-2.3 Inviting, Compatible Design. Promote attractive development that is compatible with surrounding uses.

Action NBE-2.3A Continue to utilize development approval conditions to achieve compatibility between nearby uses and scale and style of buildings, and to establish limitations on activities that could create potential adverse effects.

Action NBE-2.3B Update City regulations to specify standards for moderate density, higher density, and mixed-use development that address quality of development and adequate transition to adjacent lower-density residential uses.

Policy NBE-2.5 Regional Retail and Entertainment. Support a thriving mix of regional retail and entertainment uses near Interstate 80.

Policy NBE-2.6 Center for Arts and Creativity. Attract more artists and entrepreneurs to live and work in Vallejo.

Action NBE-2.6C Update City regulations to allow and encourage art studios, galleries, community art spaces, and performing arts and nightlife venues in appropriate locations.

Action NBE-2.6D Study the feasibility of offering incentives for development that provides affordable opportunities for housing and studio spaces for artists and creative workers in the Downtown/Waterfront District.

Policy NBE-2.7 Jobs-Housing Balance. Match the levels of employment and housing opportunities locally.

Action NBE-2.7A Update City regulations to ensure housing opportunities in close proximity to employment centers and transit, including near the Ferry Terminal and Vallejo Transit Station.

Policy NBE-2.8 Infill Development. Promote infill development targets vacant and underutilized sites for community-desired and enhancing uses that is compatible with surrounding uses.

Action NBE-2.8A Identify sites suitable for redevelopment; work with property owners to promote economically feasible and community-desired uses that enhance and are compatible with the existing urban fabric.

Policy NBE-3.1 Catalyst Projects. Accelerate investment in the Downtown/Waterfront that will generate prosperity throughout Vallejo.

Policy NBE-3.5 Variety of Housing. Attract and encourage higher-density residential development that offers a range of housing options throughout the downtown area, including market rate housing, flexible work-live units, as well as student and senior housing.

Action NBE-3.5D Explore opportunities for transit-oriented development with major landowners, developers, and public agencies, including Water Emergency Transportation Authority (WETA) and SolTrans.

Policy NBE-3.10 Curtola Employment center. Strengthen and grow the employment cluster directly south of the downtown area.

Action NBE-3.10A Update City regulations to allow for accessory and secondary activities that support the local workforce in the Curtola Employment District such as banks, cafes, printers, and office supply stores.

Action NBE-3.10B Attract a mix of uses, such as multi-family housing, student housing, or a corporate educational campus, to the City-owned south waterfront site that support the vitality of the Curtola Employment Center.

Policy NBE-3.12 Sonoma-Broadway District. Foster a mixed-use employment district well-served by transit in the area surrounding Kaiser Permanente and SolTrans properties.

Action NBE-3.12A Explore opportunities for transit-oriented development (i.e., Urban Village) near the Sereno Transit Center in collaboration with SolTrans and adjacent property owners.

Policy NBE-3.13 Neighborhood character. Preserve the character of existing single-family residential neighborhoods.

Action NBE-3.13B Continue to allow a mix of housing types along the interconnected linear street grid that contributes to the charm and walkability for Vallejo's central residential neighborhoods, where appropriate.

Policy NBE-3.14 Neighborhood Corridors. Connect the community with mixed-use corridors that function as neighborhood main streets for adjacent residential areas.

Action NBE-3.14B Update City regulations to incorporate standards for activating corridors, including standards for the placement of doors and windows.

Action NBE-3.14C Identify key intersections, other locations, and catalyst sites along neighborhood corridors and work with property owners to facilitate development of urban villages at these locations with shops, services, and housing.

Action NBE-3.14D Use the Sonoma Boulevard Specific Plan to guide development and redevelopment along the Central Corridor.

Action NBE-4.1D Update City regulations to emphasize mixed-use development along the central waterfront, on the east side of Mare Island Way that enhance connections between downtown and the waterfront.

Memorandum

Date: January 31, 2020
To: Afshan Hamid, City of Vallejo
From: Ellen Poling, Mackenzie Watten and Dhruvi Kothari, Fehr & Peers
Subject: **VMT Analysis Methodologies and Significance Thresholds for City of Vallejo
Transportation Impact Assessment**

WC19-3631.00

I. Introduction

The purpose of this memorandum is to review options for vehicle-miles traveled (VMT) analysis methodologies, significance thresholds, and mitigation measures to comply with new California Environmental Quality Act (CEQA) requirements under Senate Bill (SB) 743. The options are focused on land use plans and land use projects, which will be required to be analyzed using VMT as of July 1, 2020. A brief discussion of VMT assessment for transportation projects (roadway widenings, bicycle and pedestrian improvements, etc.) is provided at the end of the memo.

In considering VMT assessment methodology and threshold options, it is important to note that the City of Vallejo – indeed, all lead agencies under CEQA – has discretion to define impact analysis methods and significance thresholds that balance the City’s policies and priorities with regard to mobility, land use development, greenhouse gas reduction, air quality, and energy conservation. Legal challenges to project CEQA reviews may also be a consideration for the City. Thus, while much of this memorandum describes the guidance provided by SB 743, the updated CEQA Guidelines, and other resources, the City of Vallejo ultimately must choose the methods, thresholds and mitigation options that reflect the City’s priorities and objectives. This memorandum provides an overview of the available guidance, followed by recommendations for the City to consider, based on Fehr & Peers current understanding of best practices.

It is also important to understand that the implementation of SB 743 is just beginning across the state. Current CEQA practices have developed over many decades, as a result of a large body of case law and periodic updates to the CEQA guidelines. Because SB 743 represents a shift in



transportation analysis approach, CEQA practitioners do not yet have those resources to guide our understanding or interpretation. CEQA generally emphasizes disclosure and transparency, and we are attempting to apply those same concepts to SB 743 implementation by taking a thorough and systematic approach to this technically complicated subject.

The following topics are covered below:

- II. VMT Measurement
- III. VMT Thresholds
- IV. Recommendations for Vallejo

II. VMT Measurement

This section explains how VMT may be estimated and forecasted.

VMT can be measured in a variety of ways depending on whether the intent is to capture the *amount of vehicle travel generated by a project* (i.e., number of vehicle trips multiplied by their corresponding trip lengths) or *a project's effect on VMT within a defined study area*. Project effect information is more meaningful for VMT analysis because land use projects and land use plans often influence the vehicle travel associated with neighboring land uses. VMT is a preferred metric for environmental effects because it captures how a project influences the environment related to fuel consumption and emissions while also serving as an indicator of potential impacts to pedestrians, bicyclists, transit riders, and travel safety. Low VMT generating areas typically have higher mode splits for walking, bicycling, and transit. These areas also typically benefit from a reduced incidence and severity of vehicle-vehicle, vehicle-pedestrian and vehicle-bicycle collisions due to less vehicle travel and lower travel speeds.

VMT growth associated with land use and transportation projects is part of adopted regional transportation plans (RTPs) and general plans. These plans typically consider the acceptability of VMT growth at a cumulative or programmatic level through the effect that VMT growth has on air quality and greenhouse gas (GHG) emissions. VMT reductions may be achieved at the project level especially through TDM strategies, which are not fully accounted for in regional level travel forecasting models, including MCOG's.

Although VMT is focused on vehicle travel, the goal of reducing VMT-per-capita rates leads to an emphasis on the effects of development patterns (e.g., land use mix and density) together with pedestrian, bicycle, and transit infrastructure. These factors have an impact on the number and length of vehicle trips. Efforts to reduce VMT may also include TDM strategies that encourage more efficient forms of travel or vehicle use.



Considering the above, jurisdiction-wide or project VMT can be expressed in a number of ways:

Total VMT Metric

- Daily total VMT – All VMT generated by trips with at least one trip end in the jurisdiction (or project) for a typical weekday. VMT related to trips passing through the jurisdiction is excluded from the calculation.

Efficiency VMT Metrics (VMT per person)

- Daily home-based VMT per resident – VMT generated by residents of households within the jurisdiction (or project) with at least one trip end at a dwelling unit for a typical weekday.
- Daily home-based work VMT per worker – VMT generated by workers within the jurisdiction (or project) traveling between work and home for a typical weekday.
- Daily total VMT per service population – All VMT generated by residents and workers within the jurisdiction for a typical weekday.

A project's effect on the larger area's total VMT (say the City of Vallejo, Solano County, or the entire Bay Area) can be determined through the use of a travel demand model such as the Solano-Napa Activity Based Model or the Metropolitan Transportation Commission (MTC) Travel Demand Model. The efficiency metrics can also be determined with a travel demand model, and compared to a baseline for purposes of impact assessment (this is discussed in Section III).

It should be noted that estimates of current VMT and forecasts of future VMT are inherently dependent on the methodology and travel demand model tool used. These estimates and forecasts may not account for recent changes in travel associated with internet shopping, increases in economic activity, increases in vehicle travel due to transportation network companies (TNCs) such as Uber and Lyft, or future trends such as autonomous vehicles (AVs). Current expectations about the influence of these missing factors is that vehicle travel is likely to increase over time as the human driving function is reduced or eliminated, operating and parking costs are reduced, and access to a variety of vehicle types becomes more ubiquitous.

III. VMT Thresholds

A. Background on CEQA Thresholds

Establishing thresholds requires complying with the new statutes added by SB 743 as well as guidance contained in CEQA Guidelines Sections 15064, 15064.3, and 15064.7. The excerpts below highlight the amendments to the two CEQA Guidelines Sections that were certified by the California Natural Resources Agency at the end of 2018, with an effective date of April 2019.



§ 15064. Determining the Significance of the Environmental Effects Caused by a Project.

(a) Determining whether a project may have a significant effect plays a critical role in the CEQA process.

(1) If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, the agency shall prepare a draft EIR.

(2) When a final EIR identifies one or more significant effects, the lead agency and each responsible agency shall make a finding under Section 15091 for each significant effect and may need to make a statement of overriding considerations under Section 15093 for the project.

(b) **(1)** The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban area may be significant in a rural area.

(2) Thresholds of significance, as defined in Section 15064.7(a), may assist lead agencies in determining whether a project may cause a significant impact. When using a threshold, the lead agency should briefly explain how compliance with the threshold means that the project's impacts are less than significant. Compliance with the threshold does not relieve a lead agency of the obligation to consider substantial evidence indicating that the project's environmental effects may still be significant.

Source: *Final Adopted Text for the 2018 Amendments and Additions to the State CEQA Guidelines*. California Natural Resources Agency (page 8), <http://resources.ca.gov/ceqa/>



§ 15064.7. Thresholds of Significance.

(a) Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant.

(b) Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. Thresholds of significance to be adopted for general use as part of the lead agency's environmental review process must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence. Lead agencies may also use thresholds on a case-by-case basis as provided in Section 15064(b)(2).

(c) When adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

(d) Using environmental standards as thresholds of significance promotes consistency in significance determinations and integrates environmental review with other environmental program planning and regulation. Any public agency may adopt or use an environmental standard as a threshold of significance. In adopting or using an environmental standard as a threshold of significance, a public agency shall explain how the particular requirements of that environmental standard reduce project impacts, including cumulative impacts, to a level that is less than significant, and why the environmental standard is relevant to the analysis of the project under consideration. For the purposes of this subdivision, an "environmental standard" is a rule of general application that is adopted by a public agency through a public review process and that is all of the following:

(1) a quantitative, qualitative or performance requirement found in an ordinance, resolution, rule, regulation, order, plan or other environmental requirement;

(2) adopted for the purpose of environmental protection;

(3) addresses the environmental effect caused by the project; and,

(4) applies to the project under review.

Source: *Final Adopted Text for the 2018 Amendments and Additions to the State CEQA Guidelines*. California Natural Resources Agency (pages 14-15), <http://resources.ca.gov/ceqa/>

In summary, this guidance emphasizes the need for substantial evidence to support the thresholds used to determine when a project will cause an unacceptable environmental condition or outcome. For SB 743, the specific outcome of focus is the change a project will cause in VMT. Since VMT is already used to determine air quality, energy, and GHG impacts as part of CEQA



compliance, the challenge for lead agencies is to answer the question, “What type or amount of change in VMT constitutes a significant impact for transportation purposes?” Without federal or state laws governing VMT expectations for public agencies, the CEQA Guidelines Section 15064.3(b)(1) allows lead agencies the discretion to select their own thresholds for land use projects and allow for differences in thresholds based on context such as urban versus suburban areas. This suggests that the values placed on the natural or human environment can vary across lead agencies and can be used to inform the threshold choice.

B. OPR Advisory VMT Threshold Recommendations

SB 743 includes the following two legislative intent statements, which were used to help guide OPR’s VMT implementation advisory, including recommended thresholds.

- *New methodologies under the California Environmental Quality Act are needed for evaluating transportation impacts that are better able to promote the state’s goals of reducing greenhouse gas emissions and traffic-related air pollution, promoting the development of a multimodal transportation system, and providing clean, efficient access to destinations.*
- *More appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.*

To support these legislative intent statements, threshold recommendations are found in the Final Adopted Text to the 2018 amendments and additions to the State CEQA Guidelines and the *Technical Advisory on Evaluating Transportation Impacts in CEQA*, California Governor’s Office of Planning and Research (OPR) (December 2018). Specific excerpts and threshold highlights are provided below.

CEQA Guidelines Section 15064.3

(b) Criteria for Analyzing Transportation Impacts.

(1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

(2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the



appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

Technical Advisory on Evaluating Transportation Impacts in CEQA (page 10)

Based on OPR's extensive review of the applicable research, and in light of an assessment by the California Air Resources Board quantifying the need for VMT reduction in order to meet the State's long-term climate goals, OPR recommends that a per capita or per employee VMT that is fifteen percent below that of existing development may be a reasonable threshold.

These (and the other) threshold recommendations in the *Technical Advisory* rely on the following evidence associated with the state's GHG reduction goals and targets in combination with environmental case law.

- Assembly Bill 32 (2006) requires statewide greenhouse gas reductions to 1990 levels by 2020 and continued reductions beyond 2020.
- Senate Bill 32 (2016) requires at least a 40 percent reduction in greenhouse gas emissions by 2030.
- Pursuant to Senate Bill 375 (2008), the California Air Resources Board establishes greenhouse gas reduction targets for metropolitan planning organizations (MPOs) to achieve based on land use patterns and transportation systems specified in Regional Transportation Plans and Sustainable Community Strategies. Current targets for the largest metropolitan planning organizations range from 13% to 16% reductions by 2035.
- Executive Order B-30-15 (2015) sets a GHG emissions reduction target of 40 percent below 1990 levels by 2030.
- Executive Order S-3-05 (2005) sets a GHG emissions reduction target of 80 percent below 1990 levels by 2050.
- Executive Order B-16-12 (2012) specifies a GHG emissions reduction target of 80 percent below 1990 levels by 2050 specifically for transportation.
- Senate Bill 391 requires the California Transportation Plan to support 80 percent reduction in GHGs below 1990 levels by 2050.
- The California Air Resources Board Mobile Source Strategy (2016) describes California's strategy for containing air pollutant emissions from vehicles and quantifies VMT growth compatible with achieving state targets.
- The California Air Resources Board's 2017 Climate Change Scoping Plan Update: The Strategy for Achieving California's 2030 Greenhouse Gas Target describes California's



strategy for containing greenhouse gas emissions from vehicles and quantifies VMT growth compatible with achieving state targets.

- The Caltrans Strategic Management Plan (2015) calls for a 15 percent reduction in VMT per capita compared to 2010 levels by 2020.

Lead agencies should note that the OPR recommended VMT thresholds are almost exclusively based on GHG reduction goals. While this is one of the SB 743 legislative intent objectives, a less clear connection is made to the other legislative intent objectives to encourage infill development and promote active transportation. SB 743 [Section 21099(b)(1)] also makes it explicit that criteria for determining the significance of transportation impacts shall promote “...*the reduction of greenhouse gas emissions, the development of multimodal networks, and a diversity of land uses.*” If GHG impacts are already being adequately addressed in another CEQA section, then more evidence may be desired about VMT threshold relationships to the transportation evaluation.

Another important distinction within the *Technical Advisory* is how projects within different land use contexts are treated. The general expectation that a 15 percent reduction below that of existing development may be reasonable is proposed for projects within urban areas of metropolitan planning organizations (MPOs). However, a wide variation in land use density, mix of uses, transit availability, and multi-modal transportation infrastructure exists between and even within jurisdictions in any MPO, including the counties and cities that make up the MTC MPO. The intent of threshold setting is to determine what change in VMT would constitute a significant impact considering the expectations set forth in the SB 743 statute language and the associated CEQA Guidelines. While land use context is a valid consideration when setting thresholds so are these expectations.

The *Technical Advisory* also makes specific VMT threshold recommendations for analyzing the impact of project generated VMT on baseline conditions but also recommends that VMT analysis consider a project’s long-term effects on VMT and whether the project is consistent with the applicable RTP. These recommendations raise key questions for lead agencies, as addressed in the next section.

C. Lead Agency Discretion in Setting VMT Thresholds

Until SB 743, the CEQA Guidelines Section 15064.7 allowed lead agencies the discretion to select their own transportation metrics and thresholds although substantial evidence was required to support their decisions. For metrics, SB 743 takes the choice of metric away by requiring VMT. As to thresholds, additional questions have arisen as listed below.

- Question 1: Do lead agencies have discretion to set a different VMT threshold than recommended by OPR?
- Question 2: Do lead agencies need to establish VMT thresholds for cumulative impacts?



- Question 3: Do lead agencies need to use the same VMT methodology for setting thresholds and for conducting project VMT forecasts?

The first two questions require a legal perspective and were assessed by Remy Moose Manley (RMM) as part of the Western Riverside Council of Governments (WRCOG) SB 743 Implementation Pathway project. Their full opinion is available as part of the WRCOG documentation at <http://www.fehrandpeers.com/wrcog-sb743/> while a summary of their findings is presented below.

Question 1: Do lead agencies have discretion to set a different VMT threshold than recommended by OPR?

Setting a threshold lower than the 15-percent reduction recommended by OPR in their *Technical Advisory* is likely legally defensible, so long as the threshold is supported by substantial evidence. The substantial evidence is critical in the threshold setting process and should explain why the OPR-recommended threshold is not appropriate for the lead agency and why another threshold was selected. This evidence will be the basis for supporting the recommended threshold and should carefully consider the definition of substantial evidence contained Section 15384 of the CEQA Guidelines. This opinion considers the fact that the 15-percent reduction is not included in the statute or the updated CEQA Guidelines; rather it is only included in OPR's *Technical Advisory*. However, it is unknown how much weight future courts may give OPR's *Technical Advisory* since this is where OPR complies with Section 21099(b)(1) to develop recommendations for significance criteria.

The revisions to the CEQA Guidelines only include statements about what land use project types and locations may be presumed to have a less than significant VMT impact. Additional evidence allowing for a lower threshold (i.e., less than 15 percent) is also found in the discussion above about the recognition of land use context influencing VMT performance.

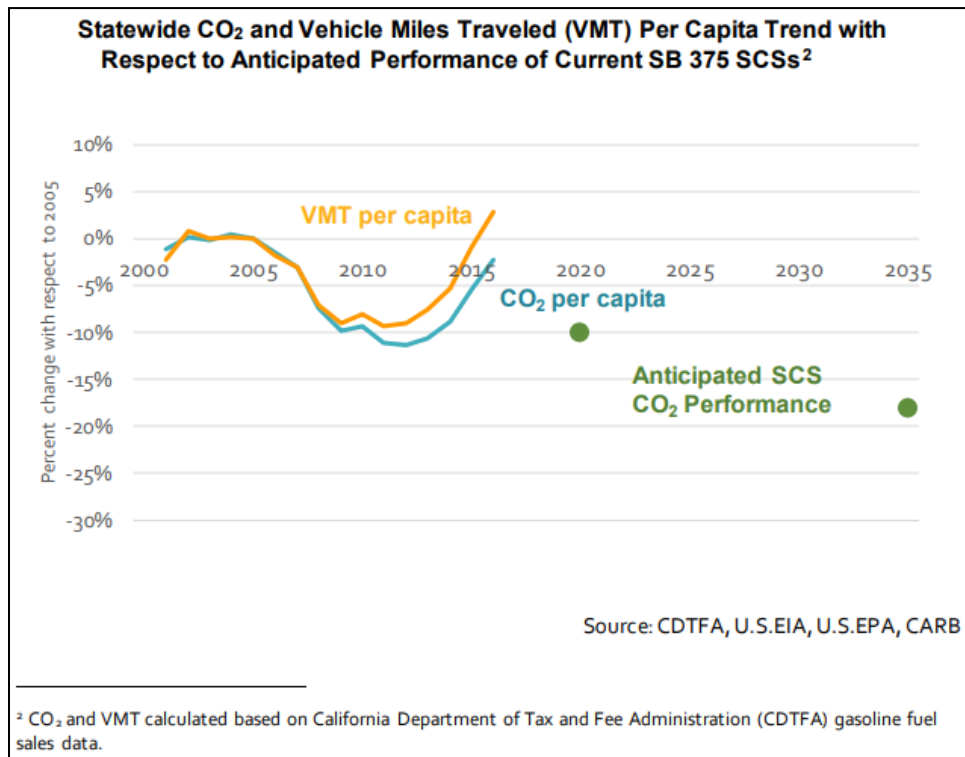
Question 2: Do lead agencies need to establish VMT thresholds for cumulative impacts?

Lead agencies should address VMT impacts in the cumulative context. The CEQA Guidelines (and the case law) are clear that consideration of cumulative impacts is key to CEQA compliance. That said, a separate quantitative threshold may not be required if the threshold applied for project-specific impacts is cumulative in nature. VMT thresholds based on an "efficiency" form of the metric, such as VMT per capita, can address project and cumulative impacts, similar to the way that some air districts assess impacts related to pollutants and GHGs. Since VMT is a composite metric that will continue to be generated over time, a key consideration for cumulative scenarios is whether the rate of VMT generation gets better or worse in the long-term. If the rate is trending down over time consistent with expectations for air pollutants and GHGs, then the project level analysis may suffice. However, the trend direction must be supported with substantial evidence.



This creates a potential issue for cumulative VMT impact assessment because VMT rates in California have been increasing, in direct conflict with regional transportation plan/sustainable communities strategy (RTP/SCS) projections showing declines. **Figure 1** shows recent VMT per capita trends from the 2018 Progress Report -- California's Sustainable Communities and Climate Protection Act, California Air Resources Board, November 2018. This evidence could be used to justify the need for separate cumulative analysis to verify a project's long-term effects.

Figure 1: California VMT Trends



Source: 2018 Progress Report California's Sustainable Communities and Climate Protection Act, California Air Resources Board, 2018

For some projects, measuring project-generated VMT will only tell part of the impact story. Measuring the "project's effect on VMT" may be necessary to fully explain the project's impact especially under cumulative conditions. This occurs because of the nature of discretionary land use decisions. Cities and counties influence land supply through changes to general plan land use designations and zoning for parcels. These changes rarely, if ever, influence the long-term amounts of regional population and employment growth. Viewed through this lens, a full disclosure of VMT effects requires capturing how a project may influence the VMT generated by the project and nearby land uses. Also, some mitigation strategies that improve walking, bicycling, or transit to/from the project site can also reduce VMT from neighboring land uses (for example,



installing a bike share station on the project site would influence the riding behavior of project residents and those living and working nearby).

Question 3: Do lead agencies need to use the same VMT methodology for setting thresholds and for conducting project VMT forecasts?

Lead agencies need to use consistent methods when forecasting VMT for threshold setting and project analysis to ensure an apples-to-apples comparison for identifying potential impacts. The project team has confirmed through case study comparisons that failure to comply with this *Technical Advisory* recommendation can lead to erroneous impact conclusions. This is an important finding since the *Technical Advisory* also accepts that VMT analysis can be performed using sketch planning tools. Off-the-shelf sketch planning tools for VMT analysis do not contain trip generation rates or trip lengths consistent with local and regional travel forecasting models. These models are the most likely source for citywide and region-wide VMT estimates used in setting thresholds, because sketch planning tools cannot produce these aggregate-level VMT metrics. The *Technical Advisory* partially recognizes this issue by recommending that sketch planning tools use trip lengths consistent with the models used to produce thresholds, but it does not include a similar recommendation for trip generation rates. Both input variables - trip lengths and trip generation rates - need to be consistent with the travel forecasting model to produce accurate project impact analysis results.

D. Options for Vallejo

So how should lead agencies approach VMT threshold setting given their discretion? Since an impact under CEQA begins with a change to the existing environment, a starting point for potential thresholds would be the baseline (i.e., existing condition) VMT, VMT per capita, VMT per employee, or VMT per service population. Since VMT would normally be expected to increase or fluctuate with population and employment growth, changes in economic activity, and expansion of new vehicle travel choices (i.e., Uber, Lyft, Chariot, autonomous vehicles, etc.), expressing VMT measurement in an efficiency metric form allows for more direct comparisons to baseline conditions for land use projects, land use plans, and transportation projects. Establishing a threshold such as baseline VMT per service population would be essentially setting an expectation that future land uses will perform like existing land uses.

If VMT performance expectations start with baseline conditions, lead agencies can establish reductions from baseline levels thereby lowering future VMT generation. How much of a reduction may depend on the values placed on vehicle use and its associated effects on mobility, economic activity, and environmental consequences. Working towards higher reductions in VMT becomes possible as the land use context changes to urban areas with higher densities and high-quality transit systems.



While OPR has developed specific VMT impact threshold recommendations for project-related impacts, current practice has not sufficiently evolved where a clear line can be drawn between “acceptable” and “unacceptable” levels of VMT change for the sole purpose of determining a significant transportation impact. Until SB 743, VMT changes were viewed through an environmental lens that focused on the relationship of VMT to fuel consumption and emissions. For transportation purposes, VMT has traditionally been used to evaluate whether land use or transportation decisions resulted in greater dependency on vehicle travel. Determining whether a portion of someone’s daily vehicle travel is unacceptable or would constitute a significant transportation impact is generally not clear to lead agencies.

Another consideration in threshold setting is how to address cumulative VMT impacts and whether addressing them in the General Plan EIR is advantageous for streamlining the review of subsequent land use and transportation projects given CEQA relief available through SB 375 or CEQA Guidelines Section 15183. This section of the Guidelines relieves a project of additional environmental review if the environmental impact was adequately addressed in the general plan EIR and the project is consistent with the general plan (see below).

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 Vallejo, addressing transportation VMT impacts in the General Plan EIR could be useful in understanding how VMT reduction should be balanced against other community values when it comes to setting new VMT impact thresholds for SB 743.

Given this information, the City of Vallejo has at least four options for setting VMT thresholds.

- Option 1: Rely on OPR *Technical Advisory* MPO thresholds



- Option 2: Set thresholds consistent with City of Vallejo air quality, GHG reduction, and energy conservation goals
- Option 3: Set thresholds consistent with the General Plan or travel demand model future year VMT projections
- Option 4: Set thresholds based on baseline VMT performance

Each of these options is discussed below.

Option 1: Rely on OPR Technical Advisory MPO thresholds

The first option is to simply rely on the threshold recommendations contained in the OPR *Technical Advisory*. As noted above, the general expectation is that land use projects should be measured against a VMT per capita or VMT per worker threshold of 15 percent below that of baseline conditions (i.e., existing development). Specific VMT thresholds for residential, office (work-related), and retail land uses are summarized below.

- Residential projects – A proposed project exceeding a level of 15 percent below existing (baseline) VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as regional VMT per capita, a citywide VMT per capita, a city sub-area VMT per capita, or a travel demand model traffic analysis zone (TAZ) VMT per capita.
- Office projects – A proposed project exceeding a level of 15 percent below existing (baseline) regional VMT per employee may indicate a significant transportation impact. Existing VMT per employee may be measured similar to those listed above.
- Retail projects – A net increase in total VMT may indicate a significant transportation impact.

For land use plans (i.e., a general plan, policy area plan, or specific area plan), a significant impact would occur if the respective thresholds above were exceeded in aggregate. This means that new population and employment growth combined with the planned transportation network would need to generate future VMT per capita or VMT per worker that is less than 85 percent of the baseline value to be considered less than significant. Land use projects and land use plans would also need to be consistent with the City General Plan, which in turn would need to be consistent with Plan Bay Area, the Bay Area's RTP/SCS.

A potential limitation of the OPR recommendations is that the substantial evidence used to justify the thresholds is largely based on the state's air quality and GHG goals. Three issues arise from this reliance.

1. The OPR recommended threshold does not establish a level of VMT reduction that would result in the state meeting its air quality and GHG goals, according to the *California Air*



- Resources Board 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals* (2019). This may create confusion with air quality and GHG impact analysis in environmental documents, which should already address the influence of VMT.
2. The OPR recommended thresholds do not directly reflect expectations related to the other SB 743 objectives related to statewide goals to promote public health through active transportation, infill development, multimodal networks, and a diversity of land uses. Recommending a reduction below baseline levels is consistent with these objectives, but the numerical value has not been tied to specific statewide values for each objective or goal.
 3. State expectations for air quality and GHG may not align with local/lead agency expectations. Using state expectations for a local lead agency threshold may create inconsistencies with local city or county general plans.

Option 2: Set Thresholds Consistent with City of Vallejo Air Quality, GHG reduction, and Energy Conservation Goals

This option sets a threshold consistent with City of Vallejo air quality, GHG reduction, and energy conservation goals. This approach requires that the City's air quality and GHG reduction goals in the General Plan and Climate Action Plan comply with the legislation and associated plans described above:

- GHG at 2000 levels by 2010
- GHG at 1990 levels by 2020
- GHG 80 percent below 1990 levels by 2050

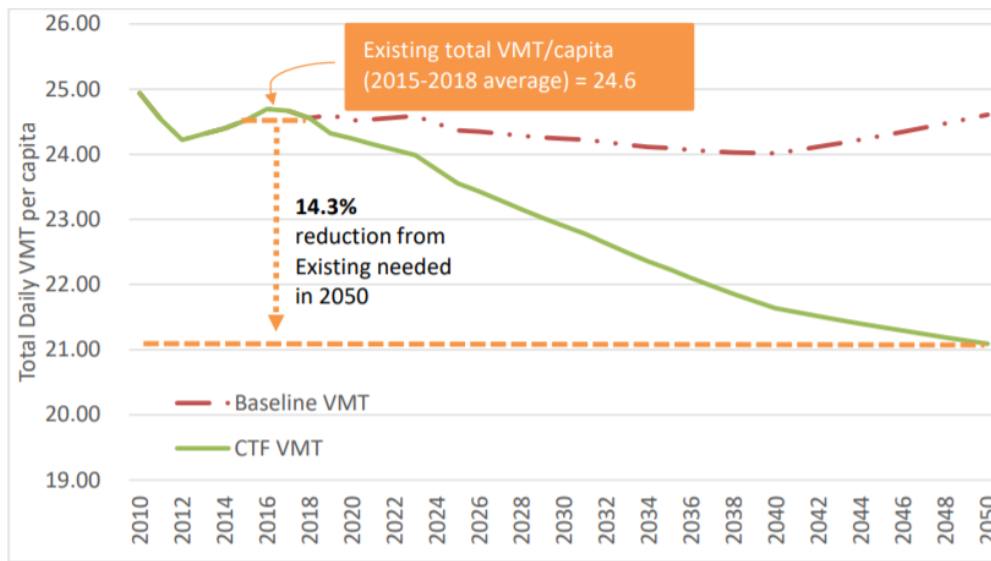
SB 32 expanded on these goals and added the expectation that the state should reach 40 percent below 1990 levels by 2030, followed by SB 391 requirements for the California Transportation Plan to support 80 percent reduction in GHGs below 1990 levels by 2050. With respect to the land use and transportation sectors, SB 375 tasked the California Air Resources Board (ARB) with setting specific GHG reduction goals through the RTP/SCSs prepared by MPOs.

The ARB *Scoping Plan* and *Mobile Source Strategy* (2016) provides analysis related to how the state can achieve the legislative and executive goals, while the Caltrans *Strategic Management Plan* and *Smart Mobility Framework* provide supportive guidance and metrics. An important recognition of the ARB *Scoping Plan* and *Mobile Source Strategy* is that the initial SB 375 targets were not aggressive enough. The ARB *2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals* document provides updated information on VMT reductions needed to meet the State's GHG emission reduction targets by 2050. This document identifies two specific thresholds to meet these targets, a 14.3-percent reduction in total VMT per capita, and a 16.8-percent reduction in light-duty vehicle VMT per capita (refer to **Figures 2 and 3** for



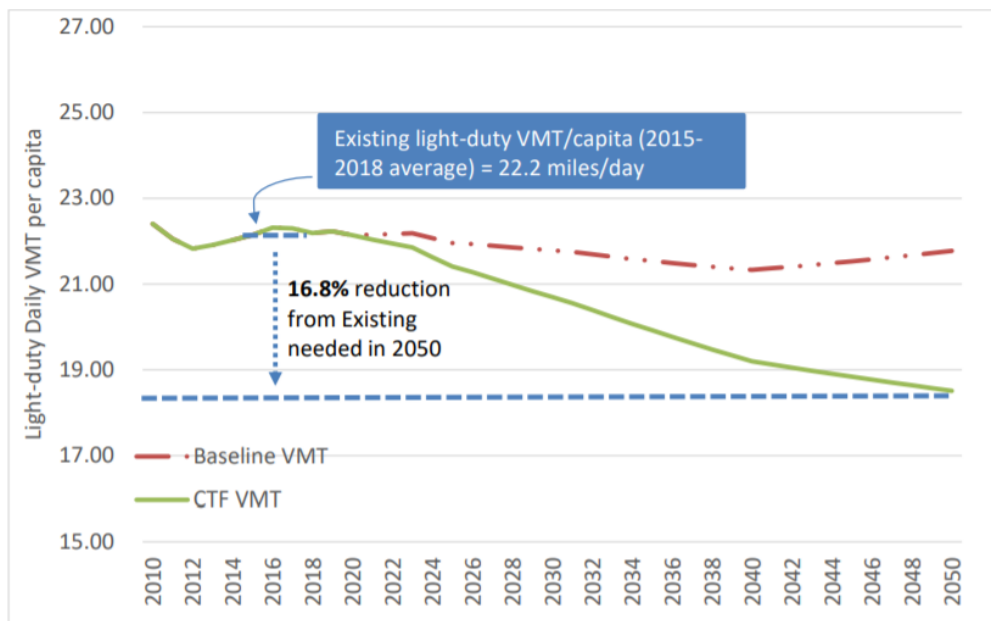
illustratives of these goals). While this evidence is tied largely to the state's emission reduction goals, the proposed VMT reductions associated with this approach to thresholds would be supportive of multimodal networks, infill development, and greater land use diversity.

Figure 2: Statewide Total VMT/Capita



Source: 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals, ARB (pg. 10)
https://ww2.arb.ca.gov/sites/default/files/2019-01/2017_sp_vmt_reductions_jan19.pdf

Figure 3: Statewide Light-Duty VMT/Capita





Source: 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals, ARB (pg. 11)
https://ww2.arb.ca.gov/sites/default/files/2019-01/2017_sp_vmt_reductions_jan19.pdf

One benefit of relying on ARB or other state agencies for a threshold recommendation is the CEQA Guidelines provision in Section 15064.7(c) highlighted below.

§ 15064.7. Thresholds of Significance.

(a) ~~Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects.~~ A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant.

(b) ~~Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects.~~ Thresholds of significance to be adopted for general use as part of the lead agency's environmental review process must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence. Lead agencies may also use thresholds on a case-by-case basis as provided in Section 15064(b)(2).

(c) When adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

Source: Final Adopted Text for the 2018 Amendments and Additions to the State CEQA Guidelines. California Natural Resources Agency (p. 14) <http://resources.ca.gov/ceqa/>

ARB meets the criteria of being a public agency and having noted expertise in the areas of VMT and emissions analysis. Further, the recommended threshold values above were developed in specific consideration of SB 743 requirements.

One other agency threshold to consider is Caltrans. The Local Development-Intergovernmental Review (LD-IGR) Branch at Caltrans (<https://dot.ca.gov/programs/transportation-planning/office-of-smart-mobility-climate-change/local-development-intergovernmental-review>) has responsibility to reduce potential adverse impacts of local development on the state transportation system. As part of its responsibilities, each district branch performs reviews of CEQA environmental documents for local land use projects. These reviews include providing expectations for transportation impact analysis such as metrics and thresholds. Caltrans has published initial guidance related to SB 743 implementation.

- *Local Development – Intergovernmental Review Program Interim Guidance*, Caltrans, November 9, 2016 (referenced at <https://dot.ca.gov/programs/transportation->



[planning/office-of-smart-mobility-climate-change/sb-743](https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2019_12_09_qa.pdf), website updates have limited document availability)

An important part of the Caltrans guidance are the following expectations for thresholds and impact findings related to VMT.

A. Comment on Vehicle Miles Traveled associated with the project.

Reviewers should comment on vehicle miles traveled resulting from the land use project, applying local agency thresholds or absent those, thresholds recommended ~~by the most recent draft of in OPR's adopted~~ CEQA Guidelines ~~and~~ or OPR's approved Technical Advisory. If an assessment of VMT is not presented, Caltrans should request it be presented. Though SB 743 clarifies requirements for transportation analysis, a VMT analysis is already needed to meet other CEQA requirements.¹ Methods for assessing VMT should be compared to the methods recommended in the OPR's approved Technical Advisory. Where methods are not consistent with the recommendations in the Technical Advisory, Caltrans should comment on those methods. Where the project exhibits less than threshold VMT, Caltrans comments should acknowledge the project's transportation efficiency. Where the project exhibits greater than threshold VMT, Caltrans should request mitigation. Examples of mitigation measures are included in the OPR Technical Advisory. Contact ~~the~~ Caltrans SB 743 Program Implementation Manager, Alyssa Begley, for assistance with VMT calculation.

Source: *Local Development – Intergovernmental Review Program Interim Guidance*, Caltrans (2016)

When Caltrans reviews CEQA documents, they may function as a reviewing agency or a responsible agency. In a responsible agency role, Caltrans has approval authority over some component of the project such as an encroachment permit for access to the state highway system. Comments from Caltrans should be adequately addressed, and special attention should be paid to those comments when Caltrans serves as a responsible agency because an adequate response may be required to obtain their required approval. The interim guidance above does not endorse the *Technical Advisory* recommendations for thresholds; it only requires IGR staff to "comment" on VMT analysis.

Caltrans recently documented on their SB 743 website (https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2019_12_09_qa.pdf) that they have selected VMT as their CEQA transportation impact metric for projects on the state highway system and that they support use of OPR's recommended thresholds for land use projects. This statement did not indicate which specific threshold values Caltrans supports so lead agencies should clarify threshold expectations for local land use projects of concern to Caltrans until formal guidance has been adopted.

Option 3: Set Thresholds Consistent with the General Plan Future Year VMT Projections

VMT is a composite metric that is created as an output of combining a community's long-term population and growth projections with its long-term transportation network (i.e., the general



plan). Other variables are also in play related to travel behavior, but land use changes and transportation network modifications are the items largely influenced or controlled by cities and counties. As such, each jurisdiction already has a "VMT growth budget". This is the amount of VMT that is forecast to be generated from the jurisdiction's General Plan and the jurisdiction's buildout scenario assumptions combined with other travel behavior inputs for the region as captured in the travel forecasting model. This VMT growth has already been planned for and determined to be "acceptable" by the jurisdiction. Regional and state agencies also use the general plan growth as part of their plans and environmental impact analysis. This level of VMT could serve as the basis of a VMT threshold expressed as a VMT growth budget or as a VMT efficiency metric based on the future year VMT per capita, VMT per employee, or VMT per service population.

Potential limitations of this approach relate to the lack of a "baseline plus project" analysis and travel forecasting model sensitivity. If the City's General Plan were to include policies or implementation programs designed to reduce VMT through transportation demand management (TDM) strategies, the available regional travel demand models do not include these effects. Further, the current models do not capture major disruptive travel trends such as TNCs, AVs, and internet shopping. Including baseline and baseline plus project analysis could help capture some of these effects to the extent they are already influencing travel behavior.

Selection of this option does not eliminate the need to analyze the impacts of individual development projects. If streamlined review of projects under CEQA Guidelines section 15183 is desired, the City would first need to prepare a CEQA review of the General Plan, as amended to incorporate policies and programs consistent with the selected VMT threshold, and make findings with regard to the significance of the VMT impacts of the General Plan. These findings must be based on substantial evidence reduction policies and programs, and

Option 4: Set thresholds based on a baseline VMT performance level

As noted above, an impact under CEQA begins with a change to the existing or baseline environment. There are a range of approaches to using this starting point for VMT impact analysis. At one end of the spectrum is "total daily VMT" generated under baseline conditions. Setting this value as the threshold for a jurisdiction basically creates a budget where any increase would be a significant impact. Alternatively, the baseline VMT per capita, VMT per employee, or VMT per service population could be used to establish an efficiency metric basis for impact evaluation. Using this form of VMT would mean that future land use projects would be expected to perform no worse than existing land use projects and only projects that cause an increase in the rate of VMT generation would cause significant impacts. Since VMT will increase or fluctuate with population and employment growth, changes in economic activity, and expansion of new vehicle travel choices (i.e., Uber, Lyft, Chariot, autonomous vehicles, etc.), expressing VMT



measurement in an efficiency metric form allows for more direct comparisons to baseline conditions for land use projects, land use plans, and transportation projects.

Under this option, a separate quantitative VMT threshold may not be set for cumulative conditions unless VMT trends are increasing over time. At a minimum, a qualitative assessment of a project's consistency with the RTP/SCS and General Plan may still be included, depending on whether that analysis is already being conducted for the purposes of GHG impact analysis. In general, projects should avoid jeopardizing the air quality conformity and GHG reduction performance of other relevant plans.

Selecting Thresholds

Absent federal or state laws mandating VMT reduction goals from local agencies, VMT goals that the lead agency sets should be consistent with adopted plans. Adopting a VMT threshold is a discretionary action and should be consistent with the General Plan in particular. The City of Vallejo has expressed values related to VMT reduction through policies and actions in its General Plan and Climate Action Plan. Therefore, threshold(s) which include VMT reduction is/are likely to be most appropriate. The City should also reconcile how the selected threshold(s) contribute to state goals for GHG and air quality mentioned above and discuss how it is helping to meet these goals.

Regardless of the specific threshold a lead agency selects, they will still need to consider other substantial evidence related to VMT impacts when analyzing specific projects and making VMT impact significance determinations. This includes information such as the OPR and ARB VMT thresholds, the AB 32 scoping plan, and the *2018 Progress Report - California's Sustainable Communities and Climate Protection Act* progress report on SB 375. How a lead agency considers this information may vary depending on their specific approach to CEQA and their sensitivity to project opposition and legal risk. Potential reactions range from simple acknowledgement to fundamental changes in impact significant determination as outlined below.

- Consider the information, disclose/acknowledge it as other evidence, but do not change the VMT impact significance findings.
- Change the impact significance finding based on this other evidence and mitigate the impact to the extent feasible.

E. Screening

Analysis of smaller, less complex projects can be simplified by using screening criteria. The OPR *Technical Advisory* suggests that screening thresholds may be used to identify when land use projects should be expected to cause a less-than-significant impact without conducting a detailed study. The following screening thresholds may be considered for Vallejo:



- Projects consistent with an RTP or General Plan that generate less than 1,080 VMT per day. This screening level of VMT is based on the CEQA exemptions allowed for projects up to 10,000 square feet as described in CEQA Guidelines Sections 15303. The *Technical Advisory* estimates such projects would generate approximately 110 daily trips. Applying the average trip length for the City of Vallejo from the 2012 California Household Travel Survey, 9.8 miles, results in the daily VMT screening threshold of 1,080 VMT/day.
- Residential and office projects that are located in areas that generate below-threshold VMT that incorporate similar features (i.e., density, mix of uses, transit accessibility).
- OPR also notes that local-serving retail projects, typically less than 50,000 square feet, improve retail destination proximity and thus shorten trips and reduce VMT. If defined in local zoning codes, lead agencies may use this definition to screen such projects. However, OPR also notes that lead agencies should also consider any project-specific information, such as market studies or economic impacts analyses, that might bear on customers' travel behavior. Such studies may be particularly relevant when retail projects larger than 50,000 square feet are evaluated.
- Projects located in Transit Priority Areas (TPAs). TPAs are defined as areas within one-half mile of a major transit stop. Major transit stops are typically defined as rail stations or ferry terminals served by bus transit, or transit stops on bus routes with headways of 15 minutes or less.

Screening of projects may also be conducted by considering the location of a project with respect to local VMT generation as compared to the citywide average VMT generation. If a project's location is in a lower-than-average VMT-generating area, and is similar to the uses in that area, it may be considered to have a less than significant impact on VMT depending on the threshold selected.

Other screening criteria, such as for affordable residential projects, may be developed, but would need to be supported by substantial evidence criterion of CEQA Guidelines Section 15064.7, thus considering data, facts, research, and analysis.

If a project qualifies for screening, VMT may still be calculated for other analysis purposes such as air quality, greenhouse gases, and energy. One acceptable method is to multiply the project's service population by the VMT per service population rate for the zone where its parcel(s) are located. If change in VMT by speed bin (speed categories, i.e. over 65 mph, 55 – 65 mph, etc.) is desired, then the model should be updated to incorporate the project and determine this output.



IV. Recommendations for Vallejo

This section provides recommended metrics and thresholds for the City of Vallejo, based on the considerations discussed above. These recommendations are based on a presumption that future travel behavior will be consistent with recent travel behavior. Disruptive trend changes including transportation networking companies (TNCs) such as Uber and Lyft, lower fuel prices, and public availability of autonomous vehicles (AVs) may change future travel behaviors, resulting in future VMT differing from current forecasts. As these trends evolve, models will need to be updated to reflect them.

Two measures and thresholds are specified, for Project VMT and Project Effect on VMT. Both thresholds must be met to make a finding of a less than significant impact. However, screening tests can be performed for certain project types that may lead to a less than significant impact finding without detailed analysis. A flowchart summarizing the recommended process for project evaluation is provided in **Attachment 1** at the end of this section, and **Attachment 2** shows how different project types would be evaluated with this process.

This section also presents an option that the City may be interested in pursuing, in which the City's planned land uses and transportation infrastructure in the General Plan would be analyzed with respect to VMT impacts in an EIR, mitigated to the extent feasible, and found significant and unavoidable, with a statement of overriding considerations to provide clearance of the General Plan land use and transportation at the General Plan level. This would allow subsequent projects that are consistent with the General Plan to be cleared with respect to VMT transportation impacts based on the General Plan EIR.

A short discussion of how transportation projects that Vallejo may undertake can be evaluated with respect to VMT impacts is also presented at the end of this section.

A. VMT Metric 1: Project-Generated VMT

Metric: Daily total VMT per service population

Fehr & Peers recommends that project-generated VMT be measured as total VMT generated by a project divided by the project's service population. Service population should include the residents and employees associated with a project. Daily total VMT per service population is an efficiency metric. Since VMT will increase or fluctuate with population and employment growth, changes in economic activity, and expansion of new vehicle travel choices, expressing VMT measurement as an efficiency metric allows for more direct comparisons to baseline conditions for land use projects and plans.



- Threshold Option 1: X percent below the citywide average baseline VMT per service population
- Threshold Option 2: Less than or equal to the citywide average baseline VMT per service population

A specific reduction percentage ("X"), or simply requiring new development to perform no worse than the baseline citywide average, may be selected by the City of Vallejo based on key factors such as the City's setting (as noted in CEQA Guidelines Section 16064(b)(1)), evidence related to VMT performance, and the City's values related to VMT reduction. Additional considerations can include related goals pertaining to reducing air quality impacts, reducing greenhouse gas emissions, or improving energy efficiency. The City's demonstrated goals related to development location/form and multi-modal transportation infrastructure, as documented in adopted specific plans, may also inform the selection of the threshold. Based on all of these considerations, a threshold which includes VMT reduction is likely to be most appropriate and defensible; however, as noted in the introduction to this memo, the City retains the discretion to define impact analysis methods and significance thresholds that balance the City's policies and priorities with regard to mobility, land use development, greenhouse gas reduction, air quality, and energy conservation.

For each project or plan that does not meet the screening criteria discussed further below, a project analysis baseline year (typically when the project application is made, or the Notice of Preparation is filed) should be determined by interpolating between the model base and future years. This interpolation acknowledges the growth and associated VMT in the City's adopted General Plan. Alternatively, if little growth is expected between the existing condition and when the project would be completed, the model base year may be used as the baseline year.

In all cases, the project or plan should be consistent with the City of Vallejo General Plan and the MTC Regional Transportation Plan. There are multiple options for determining consistency, but the project effect analysis methodology presented below allows for a quantitative determination that is likely important for other environmental impacts including air quality and greenhouse gases.

If the City's VMT per service population is decreasing over time, i.e. the model indicates that City of Vallejo cumulative VMT per service population in the cumulative year is less than in the base year, this analysis is sufficient. If VMT per service population in the city is increasing, the project VMT per service population should be calculated for the cumulative year and compared to the same threshold calculated for the base year.



B. VMT Metric 2: Project Effect on VMT

Metric: Total VMT

The effect of the project on model-wide total VMT measured across the network should also be evaluated if VMT per service population in the subregion is increasing over time and cumulative year project VMT per service population does not meet the threshold determined for the base year. Typically, this analysis includes the VMT disaggregated by speed bin for each of the following scenarios to be used as an input to air quality, GHG, and energy consumption impact analyses:

- Base year
- Base year plus project
- Cumulative year
- Cumulative year plus project

The project effect on VMT can then be calculated by the difference for each pair of scenarios (base year and cumulative year).

- Threshold: Cumulative total VMT for the model area is reduced or unchanged with addition of the project

(This test will also provide evidence of consistency with the RTP and general plan presuming they are both accurately represented in the regional model.)

The project should also not increase the total VMT for the model area and should not change the total VMT by speed bin such that the emissions or energy consumption would increase with the project.

C. Methodology: Use the SNABM Travel Demand Model to Analyze VMT (Preliminary Recommendation)

The Solano-Napa Activity Based Model (SNABM) was reviewed, along with the MTC Travel Demand Model, for its performance in Solano County and the City of Vallejo in a prior technical memorandum. While the model does not meet all the standard validation criteria, its level of network and land use detail for Vallejo, and key VMT-related metrics such as auto mode share and trip lengths, compare well to the 2012 California Household Travel Survey findings. Fehr & Peers believes the SNABM will likely provide the most reasonable estimates of VMT for the City of Vallejo. However, we are still working with both models to resolve certain technical issues, and will have a more definitive recommendation when this work is complete.



VMT per service population or resident should be estimated to one decimal place. Further precision is beyond the accuracy of the models.

D. Screening: Implement Screening Criteria to Simplify Analysis When Possible

Analysis of certain projects, based on their size, expected interaction with local uses, or location, can be simplified by using screening criteria. If a project meets any of the following criteria, it may be presumed to cause a less-than-significant VMT impact without further study. This presumption is not a “safe harbor” but is subject to other substantial evidence verifying the presumption.

- The project generates less than 1,080 VMT per day and is consistent with the Vallejo General Plan and the Regional Transportation Plan.
- The project is a local-serving retail project less than 50,000 square feet (larger retail projects may also qualify due to distance from other population centers) and is consistent with the Vallejo General Plan and the Regional Transportation Plan.
- The project is a residential or work-related land use, located in a TAZ or TAZ group with similar land uses and travel demand characteristics, and the TAZ/TAZ group VMT per service population is equal to or less than x % below the citywide mean (or alternatively equal or less than the citywide mean). The project should also be consistent with the Vallejo General Plan and the Regional Transportation Plan.
- The project is a residential-related land use and the TAZ or TAZ group home-based VMT per resident is equal to or less than x % below the citywide mean (or alternatively equal or less than the citywide mean). The project should also be consistent with the Vallejo General Plan and the Regional Transportation Plan.
- The project is a work-related land use and the TAZ or TAZ group home-based work VMT per employee is equal to or less than x % below the citywide mean (or alternatively equal or less than the citywide mean). The project should also be consistent with the Vallejo General Plan and the Regional Transportation Plan.

To simplify the determination if a project meets the last two criteria, the baseline total weekday VMT per service population, home-based VMT per resident, and home-based-work VMT per employee for each TAZ, and for the city as a whole, can be calculated. TAZs and TAZ groups with a result x% below the citywide mean (or alternatively equal to or less than the citywide mean) can then be identified and mapped for use by planning department staff.

E. Option for General Plan EIR Coverage of Land Use and Transportation Projects

Rather than analyzing VMT for each proposed land use or transportation project individually, Vallejo may choose to complete VMT impact analysis as part of the General Plan EIR and make



specific use of CEQA Guidelines Section 15183, as noted above. Setting a threshold for the General Plan itself and analyzing VMT impacts in the General Plan EIR could exempt projects consistent with the general plan from further VMT impact analysis. The City may adopt a threshold that is based on substantial evidence, use it in the General Plan EIR, determine if VMT impacts are significant, mitigate to the extent feasible, and adopt a statement of overriding considerations if determined to be appropriate. The City as lead agency can then tier off the General Plan EIR for projects consistent with the General Plan without doing additional VMT impact analysis.

F. Transportation Projects: Jurisdiction Discretion

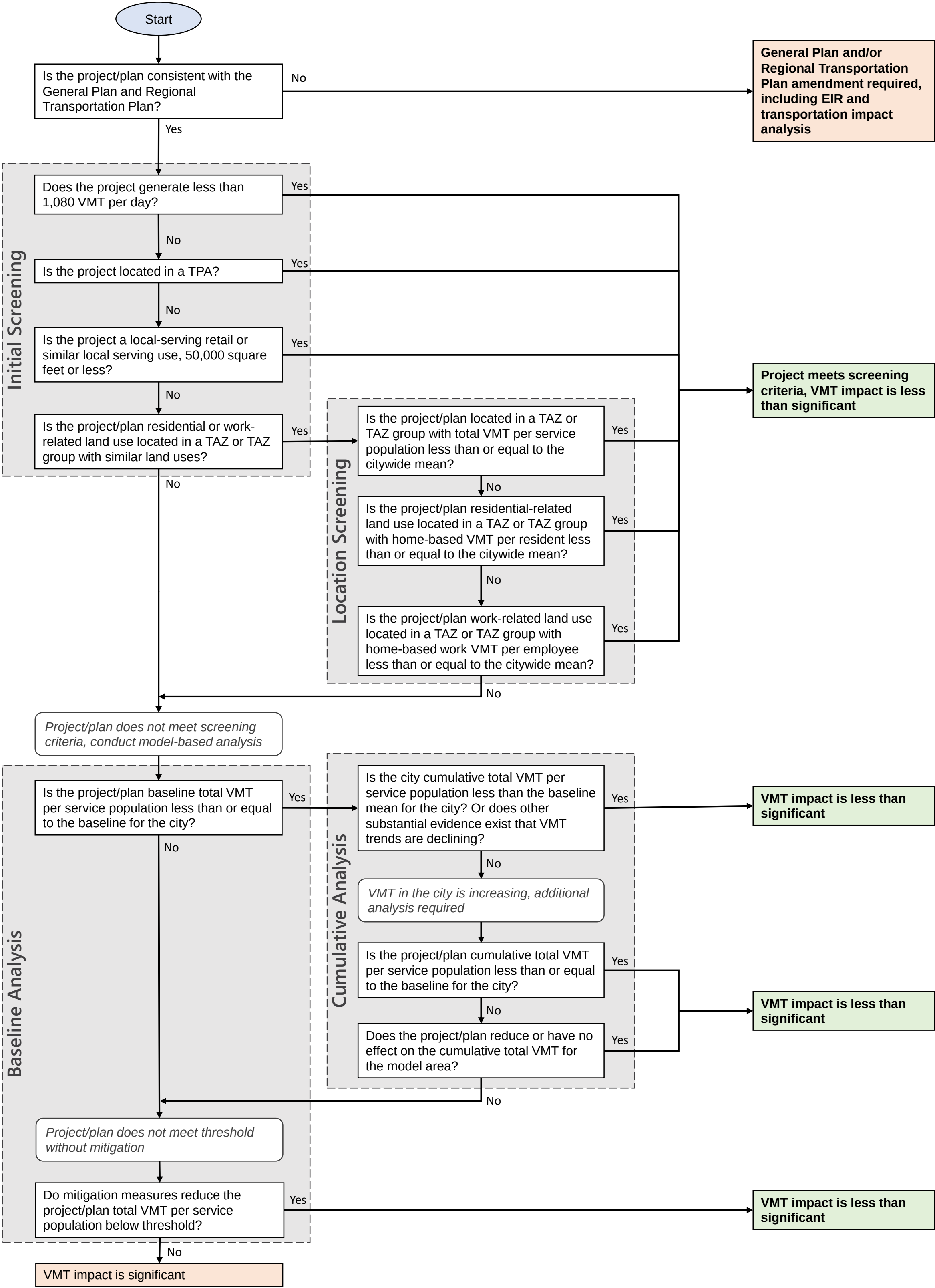
For transportation projects, lead agencies have the discretion to select their own metrics for all modes. Lead agencies can consider retaining current practices such as using LOS thresholds as identified in the General Plan but should evaluate whether use of LOS still complies with the new CEQA Guidelines expectations in Sections 15064.3, 15064, and 15064.7. Lead agencies that do not choose VMT will still need VMT as an input to air quality, GHG, and energy impact analysis. For transportation projects that increase roadway capacity, the VMT estimates and forecasts will also need to include induced travel effects that lead agencies may not have included in past practice. If VMT is used as the metric, transit (except for on-demand transit) and active transportation projects may be considered to have less than significant impact.

We look forward to discussing these recommendations with City staff.

Attachments:

- 1 – VMT Evaluation Process
- 2 – VMT Impact Assessment for Different Project Types

Attachment 1: VMT Evaluation Process



NOTE: This process chart reflects a City threshold of the baseline, as opposed to x% below the baseline. The City may choose a different threshold.

Attachment 2: VMT Impact Assessment for Different Project Types

Project Type	Location	CEQA Document	VMT Assessment Step	Substantial Evidence
- Small office or residential projects - Local-serving retail (generally <50,000 sf)	Citywide	IS	Initial Screening	Best to provide additional evidence, such as market study, jobs/housing balance, location within a specific plan, PDA, PPA, etc.
Projects within ½ mile of the Ferry Terminal and adjacent Downtown Transit Center; and other Transit Priority Areas if and when created.	See left	IS	Initial Screening	See above.
Larger residential or employment-oriented projects (office/industrial)	Locations with VMT generation rates that are the same as or lower than citywide average	IS	Location Screening	See above; also must demonstrate that near-by similar uses exist.
Larger residential or employment-oriented projects (office/industrial)	Locations with VMT generation rates that are higher than citywide average	IS/MND or EIR	Baseline and Cumulative Analysis	Must provide substantial evidence, which will consist of the actual analysis, plus other City goals and policies supporting the project and demonstration that maximum feasible VMT-reducing mitigation measures have been identified.
Larger retail projects	Locations with VMT generation rates that are higher than citywide average	IS/MND or EIR	Baseline and Cumulative Analysis	See above. Other evidence could include a market study showing the need for the retail and the extent to which it fills local needs, including employment as well as retail needs.
Other project types (schools, performance/event centers, etc.)	Citywide	IS/MND or EIR	Baseline and Cumulative Analysis	Substantial evidence should be tailored to the project type, and can include City policies and demonstrated need for the project.

Source: Fehr & Peers, 2020.