



# **Western Riverside Council of Governments Public Works Committee**

## **AGENDA**

**Thursday, September 9, 2021  
2:00 PM**

**Western Riverside Council of Governments  
3390 University Avenue, Suite 200  
Riverside, CA 92501**

**WRCOG'S OFFICE IS CURRENTLY CLOSED TO THE PUBLIC DUE TO COVID-19**

**BECAUSE OF THE CDC MANDATE, MEMBERS OF THE PUBLIC WILL ONLY BE ABLE TO  
ATTEND THIS MEETING VIRTUALLY VIA ZOOM**

**[Join Zoom Meeting](#)**

**Meeting ID: 848 7206 3975**

**Password: 090921**

**Dial in: (669) 900 6833 U.S.**

### **SPECIAL NOTICE – COVID-19 RELATED PROCEDURES IN EFFECT**

Due to the state and local State of Emergency resulting from the threat of Novel Coronavirus (COVID-19), Governor Newsom has issued Executive Order N-29-20 (issued March 17, 2020) in which Section 3 supersedes Paragraph 11 of Executive Order N-25-20 (issued on March 12, 2020). This order states that WRCOG does not need to make a physical location available for members of the public to observe a public meeting and offer public comment. The Order allows WRCOG to hold Committee meetings via teleconferencing and allows for members of the public to observe and address the meeting telephonically or electronically.

To follow the Order issued by the Governor, the Committee meeting scheduled for Thursday, September 9, 2021, at 2:00 p.m. will be held virtually, on the Zoom platform. Members of the public may submit public comments before or during the meeting, prior to the close of public comment to [snelson@wrcog.us](mailto:snelson@wrcog.us).

Any member of the public requiring a reasonable accommodation to participate in this meeting in light of this announcement shall contact Suzy Nelson 72 hours prior to the meeting at (951) 405-6703 or at [snelson@wrcog.us](mailto:snelson@wrcog.us). Later requests accommodated to the extent feasible.

The Committee may take any action on any item listed on the agenda, regardless of the Requested Action.

- 1. CALL TO ORDER (Mark Lancaster, Chair)**
- 2. PLEDGE OF ALLEGIANCE**
- 3. ROLL CALL**

#### **4. PUBLIC COMMENTS**

At this time members of the public can address the Committee regarding any items within the subject matter jurisdiction of the Committee that are not separately listed on this agenda. Members of the public will have an opportunity to speak on agenda items at the time the item is called for discussion. No action may be taken on items not listed on the agenda unless authorized by law. Whenever possible, lengthy testimony should be presented to the Committee in writing and only pertinent points presented orally.

#### **5. CONSENT CALENDAR**

All items listed under the Consent Calendar are considered to be routine and may be enacted by one motion. Prior to the motion to consider any action by the Committee, any public comments on any of the Consent Items will be heard. There will be no separate action unless members of the Committee request specific items be removed from the Consent Calendar.

##### **A. Summary Minutes from the August 12, 2021, Public Works Committee Meeting**

**Requested Action(s):**

1. Approve the Summary Minutes from the August 12, 2021, Public Works Committee meeting.

#### **6. REPORTS / DISCUSSION**

Members of the public will have an opportunity to speak on agenda items at the time the item is called for discussion.

##### **A. VMT Mitigation Activities - City of Riverside**

**Requested Action(s):**

1. Receive and file.

##### **B. TUMF Program Nexus Study Update**

**Requested Action(s):**

Recommend that the WRCOG Executive Committee do the following:

1. Direct staff to begin work on a TUMF Nexus Study update.
2. Direct staff to update the TUMF Administrative Plan to expand the TUMF-eligible project list to include Intelligent Transportation Systems (ITS) projects.
3. Direct staff to work with the Riverside County Transportation Commission and Riverside Transit Agency to evaluate options to mitigate VMT impacts from new development outside of the TUMF Nexus Study update.
4. Direct staff to begin work on an update of the Analysis of Development Impact Fees in Western Riverside County.

##### **C. Western Riverside County Energy Resilience Plan Activities Update**

**Requested Action(s):**

1. Receive and file.

#### **7. ITEMS FOR FUTURE AGENDAS ~ Members**

Members are invited to suggest additional items to be brought forward for discussion at future Committee meetings.

#### **8. GENERAL ANNOUNCEMENTS ~ Members**

Members are invited to announce items / activities which may be of general interest to the Committee.

**9. NEXT MEETING**

The next Public Works Committee meeting is scheduled for Thursday, October 14, 2021, at 2:00 p.m., in WRCOG's office located at 3390 University Avenue, Suite 200, Riverside, for Committee members. Members of the public are encouraged to attend this meeting virtually on the Zoom platform.

**10. ADJOURNMENT**

# Public Works Committee

## Minutes

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### 1. CALL TO ORDER

The meeting of the WRCOG Public Works Committee was called to order by Chair Sam Nelson at 2:00 p.m. on August 12, 2021, on the Zoom platform.

### 2. PLEDGE OF ALLEGIANCE

Chair Nelson led members and guests in the Pledge of Allegiance.

### 3. ROLL CALL

- City of Banning - Art Vela
- City of Beaumont - Jeff Hart
- City of Calimesa - Mike Thornton
- City of Eastvale - Jimmy Chung\*
- City of Hemet - Steve Loriso
- City of Jurupa Valley - Mike Myers
- City of Lake Elsinore - Yu Tagai
- City of Menifee - Nick Fidler
- City of Moreno Valley - Michael Wolfe
- City of Murrieta - Bob Moehling
- City of Norco - Sam Nelson (Chair)
- City of Riverside - Gil Hernandez
- City of Temecula - Patrick Thomas
- City of Wildomar - Jason Farig
- County of Riverside - Mark Lancaster
- March Joint Powers Authority - Lauren Sotelo
- Riverside County Transportation Commission - Jillian Guizado
- Riverside Transit Agency - Mauricio Alvarez\*

\*Arrived after roll call

### 4. PUBLIC COMMENTS

There were no public comments.

### 5. SELECTION OF PUBLIC WORKS COMMITTEE CHAIR, VICE-CHAIR, AND 2ND VICE-CHAIR FOR FISCAL YEAR 2021/2022

#### **Action:**

1. The Public Works Committee selected Mark Lancaster, County of Riverside, as Chair; Stuart

McKibbin, City of San Jacinto, as Vice-Chair; and Paul Toor, City of Jurupa Valley, as 2nd Vice-Chair.

(Calimesa / Murrieta) 17 yes; 0 no; 0 abstain; Item 5 was approved.

**6. CONSENT CALENDAR** – (Riverside / Temecula) 18 yes; 0 no; 0 abstention. Items 6.A was approved.

**A. Summary Minutes from the June 10, 2021, Public Works Committee Meeting**

**Action:**

1. Approved the Summary Minutes from the June 10, 2021, Public Works Committee meeting.

**7. REPORTS / DISCUSSION**

**A. 2021 TUMF Credit Agreement Template Update**

Cameron Brown, WRCOG Program Manager, presented an update to the TUMF Credit Agreement template. This revised template was provided to this Committee at its April 2021 meeting for review and comment. Since then, at the request of this Committee, the template was tabled in order for language to get clarified surrounding the selling of credits to other projects and the Right-of-Way requirements. As a reminder, by being added as the third party on the Agreement, WRCOG can verify the estimated TUMF obligation on a development and confirm the maximum amount of credit that can be given on the construction of a TUMF facility. Another positive to being added is that upon reconciliation of a credit agreement, whereas the developer shows all invoices for TUMF-eligible work and the development constructed, WRCOG can confirm the amount a developer can be repaid, and/or how much a developer owes on their project.

After further analysis, it was found that due to the complexity regarding the distribution of funding, it was decided that the provision would be removed from the template, and that WRCOG would continue to disallow the selling of credits to other projects.

The second issue was concerning the acquisition of Right-of-Way (ROW). The template states that to obtain credit for ROW acquisitions there would need to be an appraisal of the property, and the local jurisdiction would need to accept this appraisal. An idea was brought forward to change this language to allow for recent purchase costs to be used in place of an appraisal. After discussion internally with WRCOG staff and legal counsel, it was decided that the appraisal requirement would remain to properly account for ROW credits.

Next steps will include requesting a recommendation be forwarded to the Executive Committee for consideration at its July 2021 meeting.

**Action:**

1. Recommended that the Executive Committee approve the revised 2021 TUMF Credit Agreement Template.

(County / Beaumont) 17 yes; 0 no; 0 abstention. Item 6.A was approved. Representative from the City of Menifee did not respond.

## **B. Smart Streetlights Implementation Plan**

Daniel Soltero, WRCOG Program Manager, and Cecily Taylor with Michael Baker International (MBI), reported that together, WRCOG and MBI are developing a Smart Streetlights Implementation Plan to identify opportunities for member agencies and participants of the Regional Streetlight Program to utilize streetlights as smart city assets. To date, a Community Assessment has been completed which evaluates community "readiness" to start implementing smart technologies or infrastructure on streetlights. The survey showed that over 60% of respondents already provide WiFi at government buildings and most have completed an LED streetlight retrofit with plans to convert more. Additionally, the survey also showed that most respondents do not have a policy regarding data collection and use. Currently, a Peer Agency Review is taking place which analyzes how other public agencies deployed smart streetlight solutions. Online research and phone interviews with staff from the Cities of Atlanta, Columbus, Detroit, Kansas City, Las Vegas, Los Angeles, and San Diego has been conducted.

Key findings from this review include identifying program parameters and metrics, as well as establishing a business model so the technologies pay for themselves or recognize the expense to solve and identified issue or need.

### **Action:**

1. Received and filed.

## **C. Public & Partner Map-based Surveys for Upcoming Caltrans District 8 Active Transportation Plan**

Thanya Espericueta, Project Co-Lead with Caltrans, presented on the development of Caltrans District 8 Active Transportation Plan. The Plan is to identify bicycle and pedestrian improvements on and near State Highway Systems (SHS). Location-based needs are any location where existing infrastructure may have a gap or deficiency that creates a challenging or uncomfortable condition for people walking or biking along or across the SHS. These location-based needs will be documented so that they can be incorporated into future projects.

As part of the development, Caltrans shared its Public & Partner Map-based Survey on SHS Active Transportation needs. The Survey will be open until October 30, 2021, and Caltrans staff encourages members to participate on behalf of its jurisdiction.

### **Action:**

1. Received and filed.

## **D. TUMF CCI Implementation**

Cameron Brown reported that on July 7, 2021, the Executive Committee approved a Construction Cost Index (CCI) adjustment of 3% on all land uses. Member agencies participating in the TUMF Program must adopt a new TUMF resolution by October 2021 so that the new CCI fees can go into effect by January 1, 2022. Staff has emailed out a sample Resolution and draft Staff Report on which to for council / board meetings.

### **Action:**

1. Received and filed.

## **7. REPORT FROM THE DEPUTY EXECUTIVE DIRECTOR**

Chris Gray presented a plaque and thanked Committee member Sam Nelson for his leadership over this past fiscal year. WRCOG is aware of the rise in COVID cases and staff will let the Committee know if the meetings return to 100% virtual. At the next meeting, staff will be bringing a Nexus Study update to the Committee.

## **8. ITEMS FOR FUTURE AGENDAS**

There were no items for future agendas.

## **9. GENERAL ANNOUNCEMENTS**

Cameron Brown announced that a new Staff Analyst, Carlos Castellanos, has joined the WRCOG Transportation team.

Committee member Mike Myers announced that the City of Jurupa Valley had its ribbon cutting and gave a big shout out to the County of Riverside and RCTC for all their contributions.

## **10. NEXT MEETING**

The next Public Works Committee meeting is scheduled for Thursday, September 9, 2021, at 9:30 a.m., in-person at WRCOG's office and virtually on the Zoom platform.

## **11. ADJOURNMENT**

The meeting of the Public Works Committee adjourned at 3:01 p.m.



# Western Riverside Council of Governments Public Works Committee

## Staff Report

**Subject:** VMT Mitigation Activities - City of Riverside  
**Contact:** Nathan Mustafa, City of Riverside, Deputy Public Works Director,  
[nmustafa@riversideca.gov](mailto:nmustafa@riversideca.gov), (951) 826-2251  
**Date:** September 9, 2021

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**Requested Action(s):**

1. Receive and file.
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**Purpose:**

The purpose of this item is to present Vehicles Miles Traveled (VMT) mitigation activities of the City of Riverside.

**Background:**

The City of Riverside, along with many other California municipalities, has adopted thresholds of significance in relation to VMT in accordance with California Environmental Quality Act (CEQA) Guidelines. The City's thresholds and updated Traffic Impact Analysis Guidelines can be found at [www.riversideca.gov/traffic](http://www.riversideca.gov/traffic). In establishing its guidelines, the City sought to adhere closely to both guidelines provided to WRCOG member agencies by Fehr & Peers and to the guidance provided by the Governor's Office of Planning and Research.

The City has found that, as anticipated, the practical implementation of VMT thresholds can result in developments finding that the City may need to complete an Environmental Impact Report (EIR). This has largely held true in developments within the outlying areas of the City where VMT is higher. Mitigating VMT impacts can be difficult for developments which far exceed baseline VMT levels in the City. Riverside staff have reached out to other agencies and found that mitigation in the VMT era of CEQA has posed similar challenges across Southern California. When a development's VMT is much higher than baseline levels, mitigations found in the California Air Pollution Control Officers Association (CAPCOA) recommendations may not fully mitigate impacts. Similarly, the completion of off-site active transportation infrastructure or the purchase of transit passes becomes significantly costly when scaled to meet the needs of projects in high VMT areas.

The City is seeking to discuss its planned implementation of a mitigation bank or exchange to better serve the development community and help to expedite projects. The City is fortunate to have the assistance of two Randall Lewis fellows to move this effort forward. As the City takes its first steps to establish the mitigation bank / exchange it is interested to explore options with WRCOG member agencies.



**Prior Action(s):**

None.

**Fiscal Impact:**

This item is for informational purposes only; therefore, there is no fiscal impact.

**Attachment(s):**

None.



# Western Riverside Council of Governments Public Works Committee

## Staff Report

**Subject:** TUMF Program Nexus Study Update  
**Contact:** Chris Gray, Deputy Executive Director, [cgray@wrcog.us](mailto:cgray@wrcog.us), 951-405-6710  
**Date:** September 9, 2021

### **Requested Action(s):**

Recommend that the WRCOG Executive Committee do the following:

1. Direct staff to begin work on a TUMF Nexus Study update.
2. Direct staff to update the TUMF Administrative Plan to expand the TUMF-eligible project list to include Intelligent Transportation Systems (ITS) projects.
3. Direct staff to work with the Riverside County Transportation Commission and Riverside Transit Agency to evaluate options to mitigate VMT impacts from new development outside of the TUMF Nexus Study update.
4. Direct staff to begin work on an update of the Analysis of Development Impact Fees in Western Riverside County.

### **Purpose:**

The purpose of this item is to request permission from the Executive Committee to begin the Nexus Study update process.

### **Background:**

*WRCOG's Transportation Uniform Mitigation Fee (TUMF) Program is a regional fee program designed to provide transportation and transit infrastructure that mitigates the impact of new growth in Western Riverside County. TUMF Program participants, which includes all 19 jurisdictions in the subregion and March JPA, partakes in the Program through an adopted ordinance, collects fees from new development, and remits the fees to WRCOG. WRCOG, as administrator of the TUMF Program, allocates TUMF to the Riverside County Transportation Commission (RCTC), groupings of jurisdictions – referred to as TUMF Zones – based on the amounts of fees collected in these groups, the Western Riverside County Regional Conservation Authority (RCA), and the Riverside Transit Agency (RTA).*

The TUMF Program relies on a Nexus Study to draw a connection between the needs of the Program and the TUMF Program fee schedule. The Nexus Study identifies projects requiring mitigation from new development, determines what the cost of those projects will be, and what fees need to be assessed to fund these projects. Throughout the life of the TUMF Program, there has been a need to update this Nexus Study on a regular basis. WRCOG conducted the Nexus Study in 2002 and subsequent updates in 2005, 2009, 2011, 2015, and 2017.

## **Reasons for a Nexus Study Update**

1) **Best Practice:** It is considered a best practice to update the Nexus Study on a regular basis. Regular updates of Nexus studies ensure that the underlying data and assumptions that determine the fee are the most up to date. Nexus Studies which are regularly updated are also more legally defensible if challenged. Recognizing the benefits of regular updates to the Nexus Study, WRCOG's Executive Committee directed staff to prepare regular updates. This direction was memorialized in the TUMF Administrative Plan which states "WRCOG shall review the TUMF Program no less than every four (4) years after the effective date of the 2016 TUMF Program Ordinance."

2) **Underlying Growth Forecasts Have Changed:** Regular updates of the Nexus Study ensures that the TUMF Program reflects the best available information in terms of socioeconomic forecasts (population, households, and employees). The currently adopted Nexus Study uses forecasts which date back to 2016. In the fall of 2020, the Southern California Association of Governments (SCAG) released updated forecasts. The socioeconomic growth forecasts for the WRCOG subregion are a key input into the Nexus Study because the level of anticipated development has a direct impact on the fee calculation process.

Attached to this Staff Report (Attachment 1) is a table that displays the latest growth forecasts in terms of population, employment, and households within the WRCOG subregion. The latest projections estimate that the WRCOG subregion will continue to add population, similar to previous projections (37% for the adopted Nexus Study vs. 33% for the most recent growth forecasts). One significant difference is that SCAG is now projecting less employment growth (87% for the adopted Nexus Study vs. 46% for the most recent growth forecasts). Therefore, staff can conclude that there is a significant difference in the underlying growth forecasts which supports the idea of updating the Nexus Study.

3) **Travel Behavior has Changed:** When the previous Nexus Study was adopted in 2017, no one could have foreseen the changes a global pandemic would have on our daily lives. One significant area of change has been transportation. COVID-19 has impacted how people travel, when they travel, and where they travel to on a regular basis.

In some instances, COVID-19 accelerated trends which were already occurring. Many traditional retail centers were struggling as internet shopping and deliveries became increasingly routine. Prior to COVID-19's emergence, home deliveries per person doubled between 2009 and 2017. These deliveries are anticipated to double again within the next several years. The pandemic changed travel behavior even further because some residents of Western Riverside County were provided the opportunity to telecommute. For other commuters, COVID-19 caused a diversion from transit to personal vehicles. Given all of the above, staff can conclude that the assumptions regarding travel behavior which were incorporated into the 2017 Nexus Study have changed significantly.

4) **Updates to the Project List:** Since the adoption of the 2017 Nexus Study, WRCOG member agencies have completed a number of significant projects including but not limited to the I-15 / Cajalco Road Interchange, the I-215 / Scott Road Interchange, the extension of Clinton Keith Road, and the Foothill Parkway extension. Approximately 25 TUMF projects were completed since the completion of the previous Nexus Study. Updating the TUMF Nexus Study will allow for the removal of these completed projects from the Nexus Study and also provide an opportunity for a comprehensive update of the Roadway Network, which is a key element of the Nexus Study.

5) Opportunity to Add New Projects Types: In the past several months, WRCOG has been discussing the possibility of adding new project types to the TUMF Program. This idea has been brought to the Public Works Committee for discussion and has received some positive feedback. Currently, the only allowable TUMF project types are roadway widening, new roadways, interchanges, and grade separations / bridges.

It is important to note that WRCOG does not identify which facilities are included in the TUMF Nexus Study but instead relies on Program participants to recommend projects for inclusion in the TUMF Network. The TUMF Administrative Plan defines what is considered an eligible improvement, so any expansion or revision to eligible project types requires an update to the TUMF Administrative Plan. Additionally, any revision to the eligible project types would only take effect within an updated Nexus Study.

One reason for adding to the list of projects is that each WRCOG member agency has different transportation needs, particularly as we look to the next 20 years. For some member agencies, there is a significant need for new infrastructure as these agencies face large increases in population and employment. For these jurisdictions, there is a need for new roadways and for existing roadways to be widened to accommodate this growth. Other jurisdictions are likely to experience more gradual increases in population and employment with much of this growth occurring in in-fill locations. These more mature agencies may not require the same level of new roadway infrastructure. WRCOG has also received several requests from member agencies to consider additional categories of TUMF projects.

WRCOG is therefore proposing to add one type of project to the current list of eligible projects. This project type is the Smart Corridor, which reflects the implementation of Intelligent Transportation Systems (ITS) technology within an existing corridor.

1. ITS projects make use of improvements of electronics and communication to improve efficiency or safety of a roadway. Some common examples of ITS projects include signal synchronization, ramp metering, and changeable message signs. If approved, ITS projects would be identified in the Nexus Study at the request of a Program participant with funding allocated on a corridor of the TUMF network. To maintain the focus of the TUMF Program on new infrastructure, WRCOG would require any participating member to identify a future improvement as a "swap" to limit impacts on the overall Network cost.

6) Vehicle Miles Traveled (VMT) Mitigation: With the implementation of SB 743, as of July 1, 2020, development projects are now required to mitigate impacts to VMT in-lieu of providing additional roadway capacity to mitigate impacts under the California Environmental Quality Act (CEQA). This change means that payment of TUMF could no longer be used to mitigate project-related traffic impacts under CEQA. WRCOG conducted initial research on possible VMT Mitigation Program or Bank strategies for development projects in order for its VMT impacts to be mitigated. WRCOG assisted its member agencies in preparation of the implementation of SB 743 with guidance on meeting the requirements of the Bill. During this work, the issue of VMT mitigation was noted to be problematic. The main reason is that most land-use projects cannot implement transportation system improvements or directly influence the travel of their occupants. VMT is a function of the intensity of use, type of use, and location, so the main challenge is that VMT is ultimately a regional, not local, concern. WRCOG evaluated potential mitigation approaches and presented the research to the Public Works Committee (PWC) at its May 2021 meeting. Members of the PWC expressed interest for WRCOG to further pursue potential

mitigation approaches that each member agency may opt-in when available.

At this time, staff are not requesting to establish a program but looking for direction to work with partners at RCTC and RTA to evaluate potential opportunities of developing a regional or County-wide VMT mitigation program.

### **Coordination with Partner Agencies**

Prior to bringing a proposed Nexus Study update to WRCOG's committees, staff engaged partner agencies, primarily RCTC and RTA, regarding this update. Neither of these agencies expressed significant reservations regarding a Nexus Study update, though they would defer to WRCOG's committees. RCTC staff did express that it is considered a best practice to update Nexus studies for any fee program on a regular basis. RTA staff expressed comfort in continuing the existing process of identifying transit improvements and coordinating with WRCOG.

If WRCOG's Executive Committee authorizes staff to update the TUMF Nexus Study, staff will work closely with each of the participating agencies during the preparation of a Nexus Study. It should be noted that WRCOG maintains Memorandums of Understanding (MOU) with RCTC, RTA, and RCA regarding the administration of the TUMF Program, and no changes are anticipated to those MOUs with a Nexus Study update.

### **Update the Analysis of Development Impact Fees in Western Riverside County**

WRCOG has conducted an analyses of development impact fees in Western Riverside County in the past to increase regional understanding of development impact fees on new development in Western Riverside County. The first analysis was conducted in 2017, in conjunction with the last TUMF Nexus Study Update, and a subsequent analysis was conducted in 2019. WRCOG is proposing to conduct an analysis in conjunction with this proposed TUMF Nexus Study. The purpose of the analyses is to: (1) indicate the types and relative scale of the development impact fees placed on different land uses and (2) indicate the scale of fees relative to overall development costs. The analyses also provides helpful background information on the impact of the TUMF by placing TUMF in the context of the broader development impact fee structure, overall development costs, and other regional dynamics.

Once both the Planning Director and Public Works Committees provide input on this recommendation, this item will be brought to the Executive Committee at its October 2021 meeting for approval.

### **Prior Action(s):**

None.

### **Fiscal Impact:**

Transportation Department activities are included in the Agency's adopted Fiscal Year 2021/2022 Budget under the Transportation Department.

### **Attachment(s):**

[Attachment 1 - RTP SED Percent Growth 2016-2045](#)

[Attachment 2 - VMT Mitigation White Paper](#)

# Attachment 1

Population, Employment and  
Household Percent Growth by  
Jurisdiction

## Population, Employment and Household Percent Growth by Jurisdiction<sup>1</sup>

| Jurisdiction                                        | Population |         |                | Employment |         |                | Household |         |                |
|-----------------------------------------------------|------------|---------|----------------|------------|---------|----------------|-----------|---------|----------------|
|                                                     | 2016       | 2045    | Percent Growth | 2016       | 2045    | Percent Growth | 2016      | 2045    | Percent Growth |
| Banning                                             | 31,000     | 41,500  | 33.87%         | 10,900     | 16,100  | 47.71%         | 7,300     | 11,400  | 56.16%         |
| Beaumont                                            | 45,500     | 80,200  | 76.26%         | 14,200     | 25,100  | 76.76%         | 9,300     | 15,900  | 70.97%         |
| Calimesa                                            | 8,500      | 20,600  | 142.35%        | 3,400      | 10,400  | 205.88%        | 1,600     | 4,100   | 156.25%        |
| Canyon Lake                                         | 10,800     | 11,400  | 5.56%          | 3,900      | 4,200   | 7.69%          | 1,800     | 2,600   | 44.44%         |
| Corona                                              | 165,800    | 185,100 | 11.64%         | 46,900     | 52,400  | 11.73%         | 79,200    | 92,800  | 17.17%         |
| Eastvale                                            | 63,900     | 72,700  | 13.77%         | 16,300     | 18,500  | 13.50%         | 7,400     | 21,600  | 191.89%        |
| Hemet                                               | 81,500     | 124,000 | 52.15%         | 29,900     | 53,500  | 78.93%         | 21,700    | 40,200  | 85.25%         |
| Jurupa Valley                                       | 100,100    | 117,800 | 17.68%         | 25,300     | 31,800  | 25.69%         | 27,100    | 31,300  | 15.50%         |
| Lake Elsinore                                       | 61,500     | 111,600 | 81.46%         | 16,900     | 37,800  | 123.67%        | 14,000    | 24,900  | 77.86%         |
| Menifee                                             | 89,600     | 129,800 | 44.87%         | 30,500     | 51,200  | 67.87%         | 13,800    | 29,200  | 111.59%        |
| Moreno Valley                                       | 205,700    | 266,800 | 29.70%         | 52,700     | 76,200  | 44.59%         | 35,500    | 64,900  | 82.82%         |
| Murrieta                                            | 113,600    | 127,700 | 12.41%         | 34,500     | 42,300  | 22.61%         | 31,300    | 52,200  | 66.77%         |
| Norco                                               | 27,100     | 27,300  | 0.74%          | 7,100      | 7,100   | 0.00%          | 15,200    | 22,100  | 45.39%         |
| Perris                                              | 74,900     | 121,000 | 61.55%         | 17,200     | 33,800  | 96.51%         | 16,100    | 26,400  | 63.98%         |
| Riverside                                           | 325,300    | 395,800 | 21.67%         | 94,500     | 115,100 | 21.80%         | 145,400   | 188,700 | 29.78%         |
| San Jacinto                                         | 44,800     | 69,900  | 56.03%         | 14,000     | 25,000  | 78.57%         | 6,900     | 13,100  | 89.86%         |
| Temecula                                            | 110,300    | 138,400 | 25.48%         | 33,600     | 46,400  | 38.10%         | 56,400    | 71,600  | 26.95%         |
| Wildomar                                            | 35,400     | 55,200  | 55.93%         | 10,600     | 19,600  | 84.91%         | 6,500     | 11,200  | 72.31%         |
| Unincorporated County<br>(Western Riverside County) | 277,875    | 394,200 | 41.86%         | 85,200     | 135,675 | 59.24%         | 57,075    | 104,700 | 83.44%         |

<sup>1</sup> Data is from the SCAG Connect SoCal Plan (2045 Regional Transportation Plan/Sustainable Communities Strategy).

<sup>2</sup> Western Riverside County is 75% of total Unincorporated County projections.

# Attachment 2

## VMT Mitigation White Paper



APRIL 2020 | FINAL

# VMT Mitigation Through Fees, Banks, & Exchanges

UNDERSTANDING NEW  
MITIGATION APPROACHES

A WHITE PAPER PREPARED BY

FEHR & PEERS







# VMT MITIGATION THROUGH FEES, BANKS, AND EXCHANGES

## Understanding New Mitigation Approaches

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### **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 site to change travel behavior of tenants and visitors. TDM is most effective in urban areas where the site is accessible by 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 limited to personal vehicles. In both areas though, a program-based approach to mitigation can be more effective than project-site strategies. Programs can pool development mitigation contributions to pay for larger and more effective VMT reduction strategies that are not be feasible for individual projects. This paper outlines and compares multiple program types and then explains the implementation steps and key governance issues.

### **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**

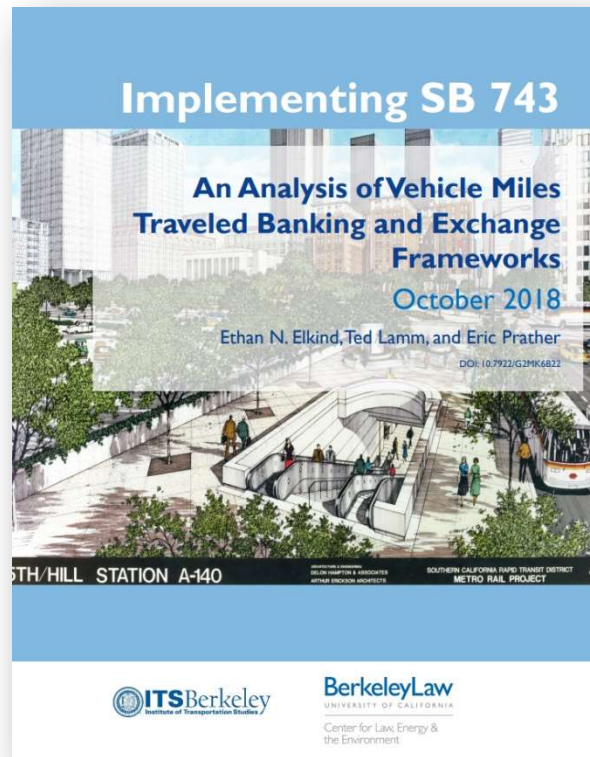


Without feasible mitigation, significant VMT impacts would be significant and unavoidable (SAU). Under these circumstances a project must prepare an environmental impact report (EIR) adding extra time and cost to environmental review compared to a negative declaration (ND). Program-based approaches may 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. A commonly accepted definition of 'additionality' has not yet been developed. One possible test of additionality is that the mitigation project is not included in the regional transportation plan (RTP). The RTP is a financially constrained plan so projects not included in the plan would not likely have been implemented within the typical cumulative timeframe.

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 also lowers their mitigation costs because the available and feasible mitigation would be more limited.



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

More details about exchanges and banks are explained in the framework document shown above 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.



## **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.

| <b>Table 1 – VMT Mitigation Program Type Comparison</b> |                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Program Type</b>                                     | <b>Pros</b>                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Cons</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Impact Fee Program                                      | <ul style="list-style-type: none"> <li>• Common and accepted practice</li> <li>• Accepted for CEQA mitigation</li> <li>• Adds certainty to development costs</li> <li>• Allows for regional scale mitigation projects</li> <li>• Increases potential VMT reduction compared to project site mitigation only</li> </ul>                                                                                                    | <ul style="list-style-type: none"> <li>• Time consuming and expensive to develop and maintain</li> <li>• Requires strong nexus</li> <li>• Increases mitigation costs for developers because it increases feasible mitigation options</li> <li>• Limited to jurisdictional boundary unless a regional authority is created</li> <li>• Uncertainty about feasibility and strength of nexus relationship between VMT and pedestrian, bicycle, and transit projects (especially in suburban/rural jurisdictions)</li> </ul> |
| Mitigation Exchange                                     | <ul style="list-style-type: none"> <li>• Limited complexity</li> <li>• Reduced nexus obligation</li> <li>• Expands mitigation to include costs for programs, operations, and maintenance</li> <li>• Allows for regional scale mitigation projects</li> <li>• Allows for mitigation projects to be in other jurisdictions</li> <li>• Increases potential VMT reduction compared to project site mitigation only</li> </ul> | <ul style="list-style-type: none"> <li>• Requires 'additionality'</li> <li>• Potential for mismatch between mitigation need and mitigation projects</li> <li>• Increases mitigation costs for developers because it increases feasible mitigation options</li> <li>• Unknown timeframe for mitigation life</li> <li>• Effectiveness depends on scale of the program</li> </ul>                                                                                                                                          |
| Mitigation Bank                                         | <ul style="list-style-type: none"> <li>• Adds certainty to development costs</li> <li>• Allows for regional scale projects</li> <li>• Allows for mitigation projects to be in other jurisdictions</li> <li>• Allows regional or state transfers</li> </ul>                                                                                                                                                                | <ul style="list-style-type: none"> <li>• Requires 'additionality'</li> <li>• Time consuming and expensive to develop and maintain</li> <li>• Requires strong nexus</li> <li>• Political difficulty distributing mitigation dollars/projects</li> </ul>                                                                                                                                                                                                                                                                  |

| Table 1 – VMT Mitigation Program Type Comparison |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                          |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Program Type                                     | Pros                                                                                                                                                                                                                            | Cons                                                                                                                                                                                                                                                     |
|                                                  | <ul style="list-style-type: none"> <li>• Expands mitigation options to include costs for programs, operations, and maintenance</li> <li>• Increases potential VMT reduction compared to project site mitigation only</li> </ul> | <ul style="list-style-type: none"> <li>• Increases mitigation costs for developers because it increases feasible mitigation options</li> <li>• Unknown timeframe for mitigation life</li> <li>• Effectiveness depends on scale of the program</li> </ul> |

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                                      | <ul style="list-style-type: none"> <li>• Pedestrian network expansion</li> <li>• Bicycle/Scooter network expansion (includes bike/scooter share stations)</li> <li>• Transit vehicles or facilities associated with service expansion</li> <li>• Roadway gap closures that reduce trip lengths (bridges)</li> </ul> |
| Mitigation Exchange                                     | <ul style="list-style-type: none"> <li>• All impact fee program project types</li> <li>• Private or institutional projects that reduce VMT</li> <li>• Transit service improvements and transit pass subsidies</li> </ul>                                                                                            |
| Mitigation Bank                                         | <ul style="list-style-type: none"> <li>• All impact fee program project types</li> <li>• All mitigation exchange project types</li> <li>• VMT reduction strategies associated with travel behavior changes</li> </ul>                                                                                               |



## 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                           |
| <p>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.</p> <ul style="list-style-type: none"><li>• How there is a reasonable relationship between the fee's use and the type of development project on which the fee is imposed.</li><li>• 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.</li><li>• 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.</li></ul> <p>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.</p> | <ul style="list-style-type: none"><li>• California Government Code §66000-66001</li></ul> |



**Table 3 – Potential VMT Mitigation Exchange/Bank Legal Requirements**

| Program Type/Legal Requirements                                                                                                                                                                                                                                                                                                       | Statutory Reference                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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. | <ul style="list-style-type: none"> <li>• Nollan v. California Coastal Commission, 483 U.S. 825 (1987)</li> <li>• Dolan v. City of Tigard, 512 U.S. 374 (1994)</li> </ul>                                           |
| 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.   | <ul style="list-style-type: none"> <li>• CEQA Statute (CA Public Resources Code 21000-21189)</li> <li>• CEQA Guidelines (CA Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387)</li> </ul> |
| 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)                                                                                                                                                                                     |
| 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 comply 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)                                                                                                                                                                                                      |



**Table 3 – Potential VMT Mitigation Exchange/Bank Legal Requirements**

| Program Type/Legal Requirements                                                                                                                                                                                                                                                                                                                                                                                                                      | Statutory Reference |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 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:<br><u>Implementing SB 743 An Analysis of Vehicles Miles Traveled Banking and Exchange Frameworks</u> , October 2018, Institute of Transportation Studies, U.C. Berkeley.<br><u>2019 California Environmental Quality Act (CEQA) Statute &amp; Guidelines</u> , Association of Environmental Professionals, 2019.<br><a href="http://leginfo.ca.gov/">http://leginfo.ca.gov/</a> <a href="http://ccr.oal.ca.gov/">http://ccr.oal.ca.gov/</a> |                     |

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 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.

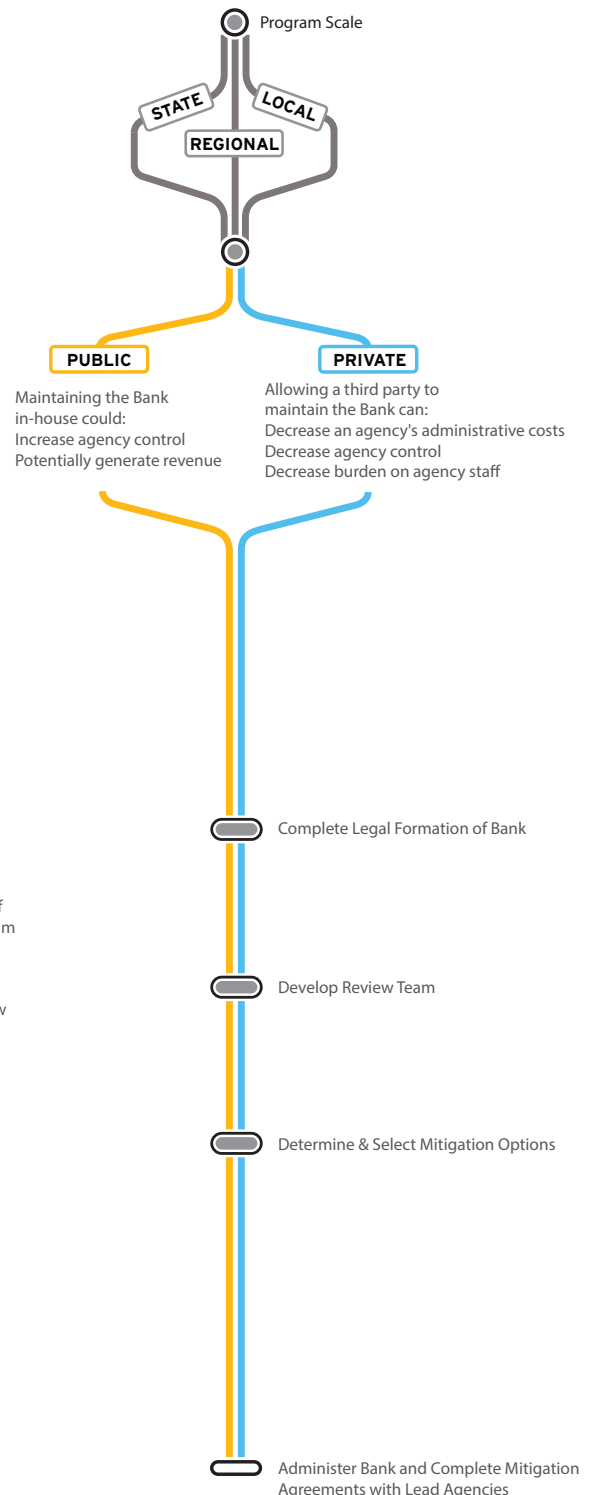
Banks must continue to prove that their mitigation options reduce VMT and that the reduction would not have occurred without the projects/programs.

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



## 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.

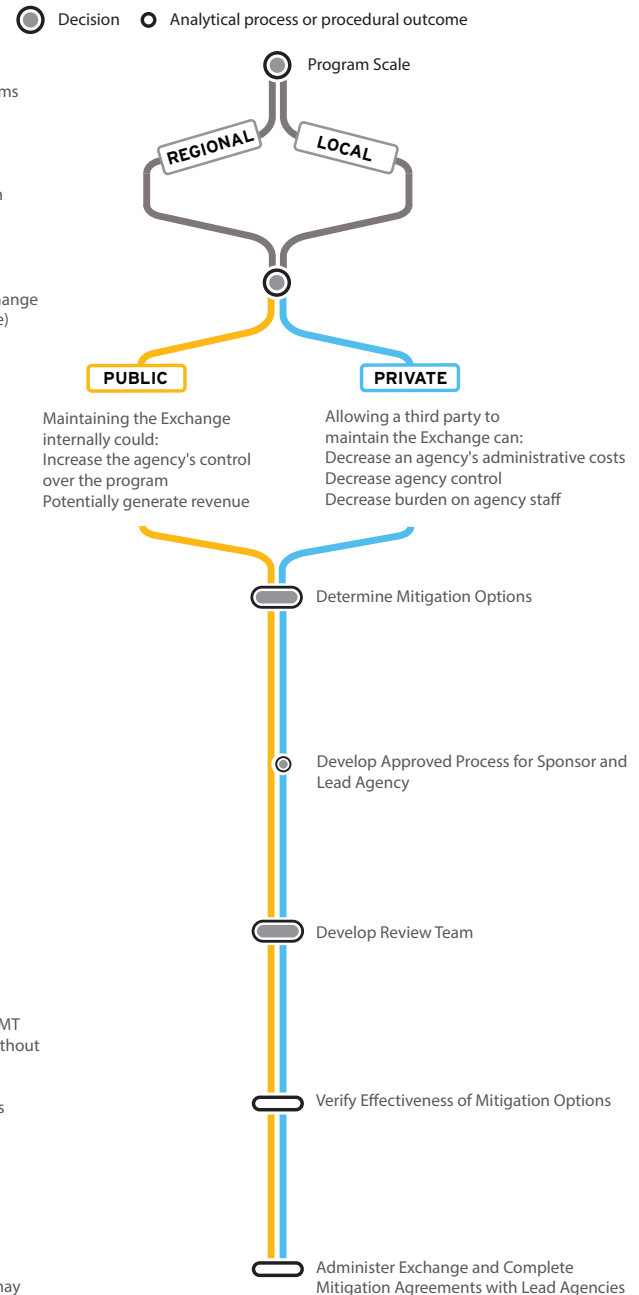
Because Exchanges can include programs/incentives as mitigation options, the Review Team must continually evaluate them to ensure the options are still effective and determine to what degree they reduce VMT.

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 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.

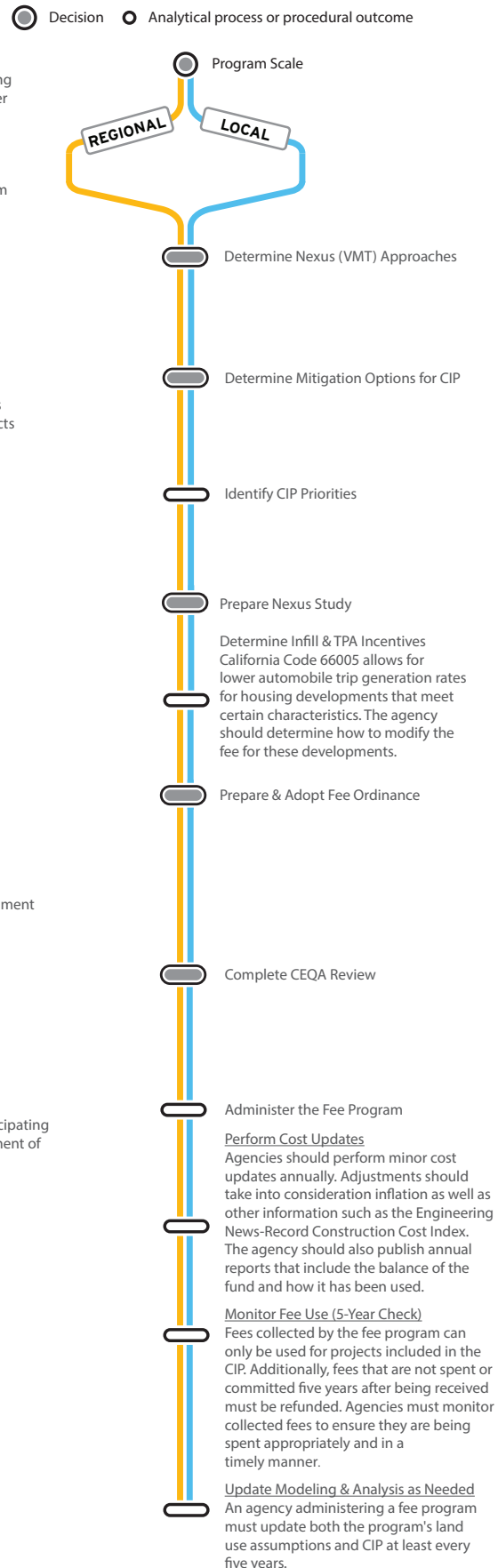
For a fee to be regularly imposed, it must be adopted as an ordinance.

- 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





## **PROGRAM EXAMPLES**

To help explain the different program types, it may be useful to consider some examples. The existing programs below range from an existing VMT-based impact fee program to programs that could be evolved into VMT mitigation banks or exchanges.

### **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 chose 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.

### **WRCOG Transportation Uniform Mitigation Fee (TUMF) Program**

(<http://www.wrcog.cog.ca.us/174/TUMF>)

Western Riverside County has the Transportation Uniform Mitigation Fee (TUMF) Program, implemented in 2003. While this program is tied to a vehicle LOS nexus, the foundation and structure of the program could be used to create a new VMT impact fee program similar to the Los Angeles example. The following summary describes the foundational elements of the TUMF and provides information about how to evolve the program for VMT impact mitigation purposes.

The TUMF funds critical county-wide transportation infrastructure to accommodate the traffic created by new population growth and commercial development throughout western Riverside County. It is a vital funding source that complements Federal, State, and local funding funds for improvements to roadways, interchanges, and transit facilities. The fee is uniformly assessed on new residential and non-residential development throughout the WRCOG region. Each of WRCOG's member jurisdictions and the March Joint Powers Authority (JPA) participate in the program.

WRCOG serves as the Program Administrator and has three main responsibilities. First, WRCOG leads the development of regular AB 1600 compliant Nexus Studies. These Studies identify needed the transportation facilities to be funded by the fee, identify future growth projections, and set the resulting



fee, which is then adopted by WRCOG's Executive Committee. The transportation projects included in the Nexus Study are identified through a collaborative process in which jurisdictions submit projects for consideration, which are then subject to an analysis process to verify that they meet applicable criteria. These two-step process ensures that the projects included in the Nexus Study reflect both local input and regional need. A similar process could be used to create a VMT reduction nexus and to select VMT reducing projects for either a separate VMT impact fee program or a modified TUMF that includes projects to achieve LOS and VMT reduction goals.

WRCOG's second responsibility is the collection and calculation of fees. WRCOG has developed a set of consistent fee calculation tools, which ensure that TUMF is calculated on a consistent basis for all projects, regardless of their location. Because there is a regional Nexus Study and a consistent fee calculation approach, WRCOG ensures that all projects of the same type pay the same fee, regardless of their location. In 2019, WRCOG completed work on an online fee payment system which expedites fee payments from project applicants.

The final responsibility of WRCOG is distributing funds collected from each agency and using those monies to fund transportation projects. Project identification and prioritization is led by the local agencies who meet to decide how much funding to provide to each project. Local agencies are grouped into geographic sub areas known as TUMF Zones. Each TUMF Zone is allocated a budget of anticipated revenues, which are then distributed through a consensus-based approach. WRCOG then provides reimbursements to each agency as work occurs. WRCOG's facilitates this process and also reviews invoices to ensure that funds in a manner which is consistent with program requirements.

## 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 rewards users with redeemable miles for their commute and travel. The redeemable miles can be exchanged for exclusive experiences, products and services with vendors including Ray-Ban, Illy, Audible, and Rockport. Miles app users automatically earn miles for daily travel and receive 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 types 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.





### Expanded Public Agency Telecommute Bank

With increased telecommuting during the COVID-19 shelter-in-place order, public agencies may decide to permanently expand their telecommuting offerings to employees. When making that decision, these agencies could 'bank' the commute VMT savings from each employee into a mitigation program. The agency would then have the option to allocate the VMT savings to individual development or transportation projects. The allocation process could be gifted, auctioned, or offered at a fixed price. WRCOG could function as an umbrella facilitator for this type of program with responsibility for collecting and organizing the VMT savings into a single 'bank' and then disposing of the savings to individual projects as mitigation subject to all the program expectations outlined above.

### **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 says 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.

## **GOVERNANCE**

Governance for a VMT mitigation program is another important part of assessing program feasibility for a particular agency. The definition of governance for the purposes of this assessment includes the following three components.

1. Who makes program decisions?
2. How are decisions made?
3. Who is accountable for decisions?

These questions are answered below based on WRCOG serving as the specific agency that would implement and operate the VMT mitigation program. Since the answers will vary depending on the exact type of mitigation program, WRCOG was asked about specific program types of most interest. In response, three program options were identified.

- **Modified TUMF** – This option involves a modification to the existing TUMF where a new VMT reduction nexus is added. This change would allow the creation of two separate capital improvement programs (CIP) with their own separate fee schedules. A roadway capacity CIP would be retained for the LOS nexus component of the program and a new VMT mitigation CIP would be created. Some of the existing projects in the TUMF CIP are VMT reducing such as transit, bicycle, and pedestrian projects. These would be moved to the new VMT mitigation CIP presuming they are consistent with the new VMT reduction nexus requirement. If changes are limited to this new accounting and nexus approach, impact fees would remain relatively stable.

This option also allows for new VMT reducing projects to be added to the VMT mitigation CIP. The more projects that are added, the greater the potential VMT reduction, but also the greater the impact fees. Under this option, the TUMF would continue to serve a mitigation program for land use development projects. No mitigation would be available through the program for transportation infrastructure projects that generate new VMT.



- New VMT Impact Fee Program – This option involves creating a new VMT impact fee program focused solely on achieving VMT reduction through the CIP projects. The CIP would largely consist of active transportation and transit projects where sufficient evidence exists to demonstrate a VMT reduction nexus. The program would also be targeted exclusively for land use development project mitigation.
- New VMT Mitigation Exchange – This option is the most flexible in terms of offering VMT mitigation for both land use and transportation infrastructure projects. The program would identify VMT reduction projects that could be either fully funded or directly implemented by land use project applicants or transportation project sponsors. The type of project could include capital projects similar to those mentioned above for the impact fee programs plus TDM strategies or activities that reduce VMT. TDM often involves information development and dissemination and actions that change travel behavior. Since these do not qualify as capital projects, they are typically excluded from impact fee programs. As long as these strategies or activities have a clear nexus to VMT reduction, they would qualify for the VMT mitigation exchange project list. By covering VMT mitigation for transportation projects (i.e. roadway capacity projects causing induced vehicle travel impacts), more agencies could participate in the program and more VMT reduction could be delivered.

These options do not include a mitigation bank. As explained above, banks are more complex and require more effort to create, operate, and maintain without current evidence showing that the higher investment would necessarily produce greater VMT reduction than an impact fee program or exchange.

### **Who makes program decisions?**

The simple answer to this question is that WRCOG makes the decisions, but that is not precise enough to fully understand what individuals or groups of individuals are authorized to make different types of decisions. WRCOG was formed through a [joint powers agreement](#) (JPA) is composed of all 18 incorporated Cities, Riverside County, Eastern and Western Municipal Water Districts, the Morongo Band of Mission Indians, and the Riverside County Superintendent of Education. The main decision-making body of WRCOG is the Executive Committee which is comprised of elected officials from each of WRCOG's member agencies and meets monthly to discuss policy issues and consider recommendations from WRCOG's Technical Advisory Committee (TAC), primarily comprised of the region's City Managers.

### **How are decisions made?**

Any decision related to the implementation of any option identified above would ultimately be made by the Executive Committee after discussions, input, and voting has occurred at the various policy committees. On-going operation of the program would occur at the Executive Director, Transportation & Planning Director, and Public Works Committee (PWC) levels. Decisions and informational items are first brought to the Public Works and or Planning Directors Committee (PDC). Recommendations are then brought forth to the TAC. Following this would be the Administration & Finance Committee (AFC) who



provide budget and finance overview, which is comprised of a smaller group of elected officials who are also members of the Executive Committee. The final decision recommendations are lastly brought to the Executive Committee who make the final determination.

Once a program is established, WRCOG staff would oversee the program with input from WRCOG's member agencies, primarily through WRCOG's existing committee structure.

### Who is accountable for decisions?

The WRCOG organization described above is transparent with an emphasis on a streamlined approach to decision-making. For day-to-day decision making, responsibility and accountability lies with the Executive Director and the Transportation & Planning Director. Major decisions are reserved for the Executive Committee since it has sole authority to adopt and amend by-laws for the administration and management of the JPA.

The table below summarizes the governance expectations above.

| Type of Program             | Who Makes Program Decisions?                                                                                                                                                                             | How Are Decisions Made?                                                                                                                                                                                                                                                              | Who is Accountable?                                                                                                                             |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Modified TUMF Program       | <u>Creation of the program</u> - WRCOG Executive Committee<br><br><u>Operation of the program</u> - WRCOG Executive Committee, Executive Director, Transportation & Planning Director, AFC, TAC, and PWC | Decisions can originate from questions at any level of the agency, member agency, or the public. These are then resolved at the PWC, PDC, TAC, AFC or Transportation & Planning Director level for day-to-day operations and the Executive Committee for more significant decisions. | Executive Director and Transportation & Planning Director for day-to-day operations and the Executive Committee for more significant decisions. |
| New VMT Impact Fee Program  |                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                      |                                                                                                                                                 |
| New VMT Mitigation Exchange |                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                      |                                                                                                                                                 |

### Advancing Implementation

Advancing one of the three options above would begin with a formal proposal by WRCOG staff at the PWC where informative discussions, presentations, and options would be explored. With the recommendation of the PWC it would then advance to the other policy committees in the following order.

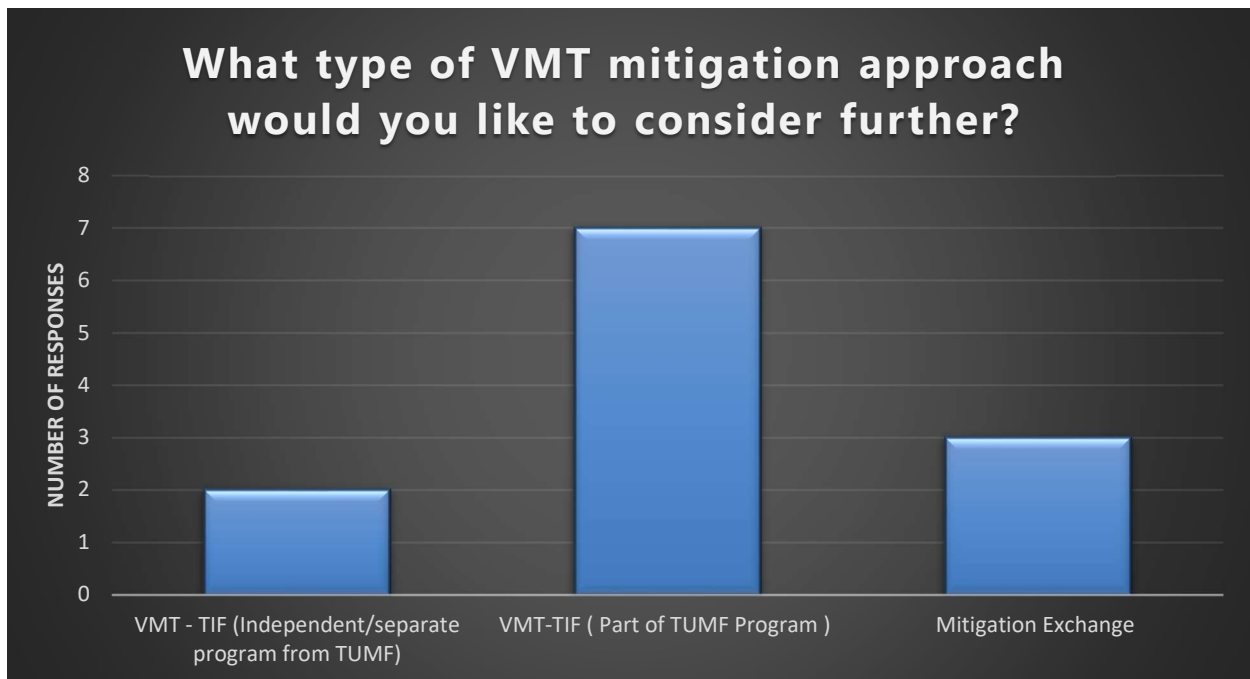
- TAC
- AFC
- Executive Committee



Prior to implementing any new Program, WRCOG would need to develop a concrete proposal for recommendation. Given WRCOG’s experience, this proposal should address each item below.

- The exact structure to be implemented (bank, exchange, or fee).
- The relationship between this program and other WRCOG programs.
- Program governance, which would likely be modeled after existing WRCOG programs like TUMF.
- Supporting documentation related to this proposal such as any quantification methods related to VMT reductions and other applicable items.

WRCOG Staff conducted a survey of its member agencies late in 2019 and early in 2020 to gauge their interest in either a VMT mitigation fee or exchange. The survey results are provided below. Based on the survey responses, it appears that a majority of our local agencies prefer a fee-based approach, though there is support for an exchange as well.





Based on that positive feedback, there appears to be merit in advancing a mitigation program. The next steps would generally focus on increased socialization of this concept and conceptual program development. Specific tasks WRCOG should undertake would include but not be limited to the following items.

- Convening a meeting with the Riverside County Transportation Commission (RCTC) and Riverside Transit Agency (RTA) to discuss this concept in greater detail.
- Identify at least two options for either a fee-based approach and an exchange, which would include an evaluation of their use for mitigating development and infrastructure projects.
- A review of the latest guidance from OPR and Caltrans regarding VMT impacts and the applicability of this type of program or programs to address any issues they have raised as SB 743 is implemented.
- Coordination with the upcoming TUMF Nexus Study update to ensure that the Nexus Study scope of work provides the necessary information for this type of program.





A WHITE PAPER PREPARED BY  
**FEHR & PEERS**



APRIL 2020 | FINAL





# Western Riverside Council of Governments Public Works Committee

## Staff Report

**Subject:** Western Riverside County Energy Resilience Plan Activities Update  
**Contact:** Daniel Soltero, Program Manager, [dsoltero@wrcog.us](mailto:dsoltero@wrcog.us), (951) 405-6738  
**Date:** September 9, 2021

### **Requested Action(s):**

1. Receive and file.

### **Purpose:**

The purpose of this item is to provide an activity update on the Western Riverside County Energy Resilience Plan.

### **Background:**

*In November 2019, the Bay Area Council announced the California Resilience Challenge (CRC) is a statewide effort led by businesses and a diverse range of partners that provides grants for local governments to build climate resiliency and to support a shared vision for a resilient California in the face of increasing climate threats. On February 3, 2020, the Executive Committee adopted a resolution authorizing WRCOG's submittal of a proposal to the CRC 2020 Grant Program to develop a Western Riverside County Energy Resiliency Plan to address local energy resiliency against power outage impacts on the subregion's power supply for critical facilities maintained and operated by member agencies. In April 2020, the Bay Area Council, through the CRC, awarded WRCOG a \$200,000 grant to develop the Plan to build resiliency against power shutoffs and/or power issues at subregional critical facilities by developing a blueprint for energy resiliency technologies, projects, and strategies for member agencies. The duration of the CRC grant is through December 2022 at which time the Plan is expected to be complete. On February 8, 2021, WRCOG entered into an agreement with AECOM to develop the Western Riverside County Energy Resiliency Plan.*

### **Western Riverside County Energy Resiliency Plan**

The purpose of the Western Riverside County Energy Resiliency Plan is to assess subregional critical facilities and identify feasibility of implementing future microgrids and/or other energy resiliency solutions to maintain power supply during environmental events that cause power outages or power issues. To determine if microgrids or other energy resiliency solutions are viable, an in-depth technical feasibility study will be conducted at three critical facilities across the subregion. The results from the feasibility study will be extrapolated and generalized to be applicable at similar critical facilities across the subregion. Additionally, the Plan will contain an implementation framework consisting of the technical feasibility study of the three critical facilities, as well as a financing plan that will identify available funding opportunities for member agencies to implement projects identified through the Plan.



Since February 2021, staff have been coordinating with member agencies to gather a list of proposed facilities that can be considered for the Plan. Through this outreach, staff are requesting pertinent information including the type of facility, its general or specialized purpose, frequency of use by the public, and general information on historical or frequent power outages. This list of subregional critical facilities will provide perspective on the types of facilities to focus on and identify which are the most common across the subregion. As more information and data is gathered, the subregional facilities will be further assessed and prioritized based on a variety of factors, including each facility's criticality to its community, replicability across the subregion, technical compatibility, as well as its vulnerability to power outages. The goal is to overlay a variety of data to help prioritize the subregional facilities and identify three sites for the technical feasibility study that will provide the most impact to its community and is most compatible for implementation. Member agencies that do not provide facility data will still be included in the Plan, albeit with default data from common critical facilities such as fire station, police station, or community center. To date, 10 member agencies have submitted their facility data to WRCOG; however, staff are still seeking facility data from the below member agencies:

- City of Calimesa
- City of Canyon Lake
- City of Hemet
- City of Lake Elsinore
- City of Norco
- City of Perris
- City of San Jacinto
- County of Riverside
- Eastern Municipal Water District
- Riverside County Superintendent of Schools

During this data gathering phase of the Plan, staff believe it is important to identify existing and similar resilience plans or projects to gain perspectives on best practices, barriers, and general insight on energy resiliency planning. Additionally, it is important to identify and understand regional vulnerabilities that can result in power outages, such as wildfires, drought, extreme heat, and extreme storm events.

As such, Raimi + Associates and AECOM collaborated on a literature review of existing plans and assessments such as CAPtivate and Resilient IE, the City of Berkeley's Energy Assurance Transformation Project Report, CalAdapt, and the Emergency Management, Disaster Preparedness, and General Plan Safety Elements from each WRCOG member agency.

Key findings from the literature review are that resilience measures (energy efficiency, load management, PV, energy storage) have been implemented at facilities owned by local governments, school districts, and community-based non-profits (Attachment 1). Most of the examples are of solar plus storage serving individual buildings. Several studies have been completed that address ways to link multiple buildings into a larger microgrid. Regulatory constraints and associated costs have been barriers to microgrid implementation. Good candidates are locations with large parcels owned by a single entity, such as civic centers, schools, or corporate campuses. Examples of current energy resilience projects were presented with a discussion of the associated positive and negative attributes.

Additionally, staff have held three workshops for member agencies as part of the outreach and engagement tasks of the Plan. The first workshop was held on April 29, 2021, to introduce the project to WRCOG members and other stakeholders, provide background on the subject of energy resiliency

based on a review of literature and case studies, and conduct an initial discussion about the project goals and objectives. The initial findings from the first workshop show that many of WRCOG members have facilities that have been impacted in the last year by power outages. Members would like the Plan to focus on public safety facilities, such as police and fire stations, and water infrastructure such as water wells, pump stations, and sewers.

The second workshop was held on July 29, 2021, to revisit the goals and objectives, and coordinate with members to identify key resilience issues and community resilience needs. Members identified resilience issues in their communities such as vulnerable populations including seniors and people dealing with homelessness, as well as infrastructure that is impacted by high wind events, wildfires, and drought, such as water wells and communications towers. Additionally, the following three goals of the Plan received the highest priority votes from the attending members:

- Result in replicable examples of how energy resilience can be implemented
- Consistent access to electricity for all critical public safety community facilities
- Fundamental health and safety services are available at critical public and private facilities for all members of the community

The third workshop was held on August 18, 2021, to discuss the characteristics of critical facilities, as well as the prioritization logic in regards to facility vulnerability towards physical and social factors. To date, staff have collected data on over 59 facilities across nine member agencies with the most common facility types including Community / Recreation / Senior Centers, Police & Fire Stations, Water Pump / Lift Stations, Water / Wastewater Treatment Plants, and Emergency Operation Centers. The physical vulnerabilities being considered in the assessment include climate threats such as extreme heat, wildfire, flood, and earthquakes; public safety power shutoffs (PSPS), building system conditions, and infrastructure gaps such as availability of backup generators. The social vulnerabilities being considered are based on a matrix developed by the Center for Disease Control (CDC) Agency for Toxic Substances and Disease Registry (ATSDR). The CDC / ATSDR Social Vulnerability Assessment matrix includes social factors including socioeconomic status, household composition and disabilities, minority status and language, as well as housing and transportation. A preliminary assessment based on data received to date shows census tracts within a two mile radius of critical facilities in the Cities of Banning, Moreno Valley, and Riverside have higher overall vulnerability to the social and physical factors being considered.

Going forward staff will continue to coordinate with member agencies to fill data gaps on critical facilities in order to complete the prioritization logic and arrive at a final and prioritized list of critical facilities. Staff are also planning a fourth workshop in late September or October 2021, which is dependent on receiving facility data from member agencies, to discuss the technical study that will be completed on three critical facilities across the subregion to identify feasibility of implementing energy resilience strategies.

**Prior Action(s):**

**September 1, 2021:** The Administration & Finance Committee received and filed.

**July 15, 2021:** The Technical Advisory Committee received and filed.

**Fiscal Impact:**

This item is for informational purposes only; therefore, there is no fiscal impact.

**Attachment(s):**

Attachment 1 - Draft Annotated Bibliography WRCOG Energy Resilience Plan

# Attachment 1

## Western Riverside County Energy Resilience Plan - Draft Annotated Bibliography & Database

# WESTERN RIVERSIDE COUNTY ENERGY RESILIENCE PLAN WRCOG Annotated Bibliography and Database

1. Van Dyke, Katie, Marna Schwartz, Kenneth Teeter-Moore, Feliz Ventura, and Sadhika Kumar. City of Berkeley. 2018. *Berkeley Energy Assurance Transformation (BEAT) Final Project Report: Advancing Clean Energy Microgrid Communities in an Urban Context*. California Energy Commission. Publication Number: CEC-500-2019-014 <https://ww2.energy.ca.gov/2019publications/CEC-500-2019-014/CEC-500-2019-014.pdf>

**Summary:** The City of Berkeley explored how to design a clean energy microgrid community to serve key municipal building sand to improve community resilience by maintaining essential city functions during a major power outage. The report found that microgrids are technologically feasible but regulatory and financial barriers make them difficult to build including ownership of distribution lines across buildings and rights of ways, metering issues, and tariff complications. Utility energy demand decreased 40% for each prototype microgrid design.

**Relevance:** The report explores the process, constraints, and key lessons learned in developing the City of Berkeley's microgrid design and identifies opportunities for future developments to advance the deployment of clean energy microgrid communities. It provides guidelines for building selection, technologies, finance options, permitting options, regulatory parameters, tariffs, ownership and operation.

#### Key Findings:

- Cost is prohibitive
- Complications with utility over rights of way and infrastructure maintenance

**Tags:** Microgrid, resilience, solar energy, battery storage, clean energy microgrid community (CEMC), backup power

2. Wildan. City of Culver City's Microgrid Feasibility Report, March 2019. <https://culver-city.legistar.com/LegislationDetail.aspx?ID=3885136&GUID=889533CA-1E20-4B09-B42A-103F1B4B4DCC&Options=&Search=>

**Summary:** This project explored three microgrid options for resilient emergency shelters. Each scenario assumes that the sites implement certain energy efficiency and electrification measures first, to minimize the generation and storage capacity needed to meet the sites' annual electrical needs. Implementation costs range from \$2.5-5.1 million. NEM Aggregation (NEM-A) allows SCE customers to over-generate renewable energy at one site (generating account) and use the corresponding bill credit to discount the bill of an adjacent site's (benefitting account) meter.

Relevance: Project studied microgrid options for a senior center and veterans building that serve as emergency shelters. The systems are designed with solar + storage to offset 85%-119% of electricity use. The microgrid project is part of the City's smart city initiative.

Key Findings:

- Payback is estimated to be 17-22 years for the system
- Consolidate meters on site to a single meter for the microgrid
- A microgrid controller must be selected that has the capacity to respond quickly and be fully integrated into the system

Tags: microgrid, resilience, payback, GHG reduction, battery storage, solar, funding, NEMA-A, smart city

3. *Carter, David, Jim Zoellick and Marc Marshall. Schatz Energy Research Center, Humboldt State University. 2019. Demonstrating a Secure, Reliable, Low-Carbon Community Microgrid at the Blue Lake Rancheria. California Energy Commission. Publication Number: CEC-500-2019-011.*

Summary: This project demonstrates a secure, reliable, low-carbon community microgrid at the Blue Lake Rancheria, a federally recognized tribal government and Native American community adjacent to Blue Lake (Humboldt County). The project shows the feasibility of integrating renewable energy with battery storage, a microgrid controller, and controllable loads into a single microgrid. The microgrid supports an American Red Cross evacuation center and a six-building campus. The microgrid includes 420 kW of solar photovoltaics, and a 500 kW/950 kWh battery energy storage system. The microgrid is connected to the PG&E distribution grid. Energy savings to the Blue Lake Rancheria was about \$160,000-\$200,000 annually. GHG reductions are estimated to be 159-175 MTCO<sub>2</sub>e annually. The total project cost \$6.3 million.

Relevance: This project was undertaken by a tribal government and supports an evacuation center and 6 building campus. It was tested by a grid outage and successfully islanded and the microgrid supported facilities did not blackout. Testing and commissioning a microgrid is a major component of the installation timeline.

Key Findings:

- When islanded, the electrical power generation on the microgrid must exactly match the electrical loads on the microgrid
- Incorporated Siemens microgrid management system
- Project was engineered and managed by Humboldt State University SERC
- Microgrid utility interconnection processes are especially complex, and establishing a collaborative relationship with the utility is essential in any microgrid project - PG&E compliance milestones and inspections

Tags: Microgrids, distributed energy resources, climate change mitigation, battery energy storage system, tribal government, critical facility, GHG reduction, energy resilience, university partnership, microgrid management system

4. *City of San Diego's Draft Municipal Energy Strategy, Strategy 4: Support Resiliency and Grid Stability.*  
[https://www.sandiego.gov/sites/default/files/draft\\_municipal\\_energy\\_strategy\\_final\\_0.pdf](https://www.sandiego.gov/sites/default/files/draft_municipal_energy_strategy_final_0.pdf).



Summary: The Municipal Energy Strategy includes Municipal building improvements that will reduce energy use and GHG emissions while improving infrastructure, security, workplace environments, indoor air quality, and more. Strategies and actions include: optimizing energy use through the deployment of smart, efficient and clean energy technologies; policies to ensure new municipal construction and major renovation projects lead by example; education and engagement of City staff and community members; and decarbonizing the City's municipal building portfolio and fleet. the Municipal Energy Strategy will be followed by an Implementation Plan. The existing municipal building stock is expected to last long into the future and new construction will be limited. To achieve the municipal GHG reductions the City must leverage the existing building portfolio.

Relevance: San Diego's facility portfolio varies greatly in purpose and energy use. For example, recreation centers and wastewater pump stations function differently. Departments of parks and rec, public utilities, and transportation and stormwater use the most energy. Implementing resiliency and grid stability strategies is projected to decrease municipal energy use by 5.5%.

Key Findings:

- Strategies include: reducing energy consumption, increasing on-site renewable generation, zero emissions buildings, supporting resiliency and grid stability, engaging and educating staff and the community
- Potential for energy saving performance contracts (ESPCs) to finance improvements
- San Diego Climate Equity Index:  
[https://www.sandiego.gov/sites/default/files/2019\\_climate\\_equity\\_index\\_report.pdf](https://www.sandiego.gov/sites/default/files/2019_climate_equity_index_report.pdf)
- successfully implemented solar + storage Power Purchase Agreement (PPA)
- Planning to install a grid-interactive efficient building (GEB) pilot program. GEBs are an energy efficient buildings with connected, smart, distributed energy resources (DERs) that are integrated

Tags: municipal buildings, GHG reduction, strategies, clean energy, resiliency, CCA, energy reduction, ESPCs, financing, GEBs

5. *Vladberg, Anna and Robin Meidhof. 2020. Southern California Edison Company's (U338-E) Resiliency Proposal and Response to Administrative Law Judge's Ruling. Filing R.19-09-009.*  
<https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442463846>

Summary: SCE proposes microgrid pilot project to build resiliency during PSPS events. Microgrid selection criteria: high frequency of PSPS events, areas that can safely be remain energized during a PSPS event (e.g. underground lines or above ground lines not in a high fire risk area), areas without other mitigation solutions, other criteria (e.g. number of low income customers, total number of customers, total load, required grid modifications to enable a microgrid).

Relevance: SCE's microgrid pilot program may be a potential partnership opportunity for WRCOG. It will also share lessons learned about accelerating microgrid development. One of the proposed project sites is in Cabazon, Riverside County where there are 3 water/wastewater facilities being considered.

Key Findings:

- EPIC III Smart City Demonstration Project: SCE is looking to partner with a city to deploy a front-of-the-meter microgrid that supports a significant portion of the city's essential facilities (e.g., fire and police stations, community and senior centers, and emergency shelters)
- Solar + Storage Resiliency Pilot at San Jacinto High School: large behind-the-meter solar and storage system to provide partial resiliency and islanding capability for the customer and community, by operating as an emergency shelter through the Red Cross. 928 kW PV and 400 kW storage system

Tags: microgrid, pilot, SCE, PSPS, selection criteria, water facilities, wastewater facilities, partnerships, emergency shelter

#### 6. *San Jose Community Microgrids*

<https://www.publicpower.org/periodical/article/san-jose-plans-bolster-resilience-with-microgrids>

Summary: City of San Jose is using \$500,000 of state wildfire related funds to plan for and finance a first round of microgrid projects. City staff is developing a plan so critical facilities in the city can have local generation — solar, fuel cells and storage to provide vital services during power outages. The initial priorities are for residential shelters where people can plug in electric medical devices and can charge their phones as well as fire stations and water pollution control plants. The ultimate micro grid project is estimated to cost up to \$1 billion.

Tags: microgrid, financing, wildfire funding

#### 7. *Santa Barbara Schools Microgrid Projects*

<https://microgridknowledge.com/santa-barbara-solar-microgrids/>

Summary: Public private partnership power purchase agreement between school district and Engie who will design, build, operate the microgrids. Project will be 5 MW solar and 5 MWh battery storage and except to save \$7.8 million in electricity costs over the project's lifetime. Project will be online in January 2022.

Tags: microgrid, power purchase agreement, partnership, school district, cost savings, solar, battery storage

8. *Federico, Felicia, Stephanie Pincetl, Eric Fournier, Eric Porse, Yating Chuang, Magali Delmas, Rhianna Williams, Craig Perkins, Marc Costa, and David Diaz. 2019. Accelerating Advanced Energy Community Deployment Around Existing Buildings in Disadvantaged Communities. California Energy Commission. Publication Number: CEC-500-2019-010.*

<https://ww2.energy.ca.gov/2019publications/CEC-500-2019-010/CEC-500-2019-010.pdf>

Summary: Southern California's worst performing (pre-1978) buildings are often concentrated in disadvantaged communities, where residents have the fewest resources to complete energy retrofits themselves. This pilot project of an advanced energy community provides residents with access to energy efficiency and renewable energy technologies to reduce energy costs and GHG emissions and realize health benefits. The Avocado Heights/Bassett advanced energy community design provides locally generated, GHG-free electricity from community solar and storage to offset electricity

consumption of participants who “opt in” through an enrollment system. Participants also benefit from various in-home upgrades.

**Relevance:** The project pilot site is an unincorporated area of Los Angeles County, which is predicted to experience more than 40 additional days of extreme heat per year by 2050. The advanced energy community design and financing approach aims to address longstanding structural and programmatic barriers, including high levels of renters and lower-income and limited-English-speaking residents. Community engagement involved a yearlong program of outreach about the project plan and education on energy issues. The project developed a solar prioritization tool to meet multiple energy planning goals, such as local energy system resilience, community-scale zero-net electricity, grid reliability, and prioritized investments in disadvantaged communities.

**Key Findings:**

- Success driven by a collaborative team of a local government, community-based organization, an energy design firm, and an academic institution
- Utilized the LA Energy Atlas and state-of-the-art data analytics and tools including meter-based energy data
- Barriers to existing building energy retrofits include low income, renter, limited-English speaking populations, lack of data, lack of community engagement, and inadequate financing strategies
- The community solar installation is a 5.9 MW system designed to serve 410 homes, 19 multifamily properties, and 7 schools. The design also incorporates EV charging infrastructure
- Project cost = \$26 million
- The project is projected to reduce electricity consumption by 21% and GHG emissions by 64% over 25 years
- The question remains about whether existing virtual net-energy metering programs would support such an approach in IOU territories (e.g. SCE’s Rule 21 prevents DER generation in excess of the site’s historical consumption)
- Project website: <https://www.advancedenergycommunity.org/>

**Tags:** advanced energy community, disadvantaged community, unincorporated county, collaboration, university partnership, advanced energy community, energy efficiency, rooftop PV, existing buildings, barriers, community engagement

9. Lou, Zach, Raval, Amee, Young, Marguerite, and Sam Appel. (2020). *Resilience Before Disaster*, Asian Pacific Environmental Network.  
<http://apen4ej.org/wp-content/uploads/2020/10/Resilience-Before-Disaster-FINAL-UPDATED.pdf>

**Summary:** State policy should enable community driven resilience strategies that can be achieved at scale. Resilience Hubs and fostering In-Home Resilience are two scalable models that are grounded in a community-level approach. The RYSE Center in Richmond, CA is a youth-governed community center that is being transformed into an energy resilience hub. The project will include community solar and storage and be capable of islanding as a microgrid. Additional resilience measures include: emergency supplies, integration with local government, raising community awareness, and education and training.

**Relevance:** Resilience Hubs are physical institutions that offer space for community members to gather, organize, and access resilience-building social services on a daily basis, and provide response and

recovery services in disaster situations. This report provides a table of resilience hub models by type of institution/building.

Key Findings:

- Networks of Resilience Hubs can comprehensively deliver local programs and public services to meet community-identified resilience needs.
- A regionally integrated and collaborative planning approach to community resilience would engage all stakeholders and produce more equitable outcomes.
- Local governments need increased staffing to implement resilience measures and to equitably allocate resources, provide services, and facilitate local resilience networks.

Tags: equity, EJ, barriers, resilience hubs, resilience hub networks, regional, institution, school, community center, place of worship, public housing, youth, engagement

10. *Resilience Hubs: Shifting Power to Communities and Increasing Community Capacity*, Urban Sustainability Directors Network, 2018.

Summary: Resilience hubs leverage established, familiar, and trusted community-managed facilities that are used year-round as neighborhood centers for community-building activities. Resilience Hubs can enhance community resilience in an equitable way while reducing GHG emissions and improving local quality of life. They are intended to be supported by local government and other partners but led and managed by community members, community-based organizations, and/or faith-based groups. The report outlines how public or private facilities can be enhanced to support residents and coordinate communication and resources before, during, and after disruption. In addition to providing shelter and electricity, each Resilience Hub should maintain a supply of and provide access to freshwater and resources such as food, ice, refrigeration, charging stations, basic medical supplies, and other supplies needed in the event of an emergency. The guidance document outlines the features that should be included in a resilience hub, the process for developing one, and key design configurations.

Relevance: Resilience hubs can be established at civic buildings like community centers and recreation centers or can be established on private facilities with the help of local government.

Key Findings:

- Ensure community leaders and community based organizations are involved from the very beginning of the process and have an element of ownership over the site is critical.
- The amount of food, water, and supplies to have at each site will depend on neighborhood size and the number of people likely to utilize the site
- The power backup system should be designed for an outage of up to 72 hours
- Resilience hub features like solar and storage should provide benefits during non-emergency periods through energy savings or energy cost management.

Tags: Resilience hub, battery storage, battery backup, islandable, emergency, community engagement, equity

11. *Planning for an Energy Resilient Future: Energy Project Models and Lessons Learned*, ACEEE Summer Study, 2020.

<https://www.energy.gov/sites/prod/files/2020/10/f79/planning-for-energy-resilient-future.pdf>

Summary: This paper lays out various federal funding opportunities, showcases innovative energy projects that integrate energy efficiency measures and renewable technology into disaster preparedness and emergency planning in ways that align with Federal funding from FEMA and HUD. The study described energy sector is crosscutting, e.g. when a critical public facility needs less energy to function, it also needs less backup generation on-site to operate when the grid goes down. The study focuses on three Federal programs, FEMA's Building Resilient Infrastructure and Communities (BRIC); U.S. Department of Housing and Urban Development (HUD)'s Community Development Block Grant Mitigation (CDBG-Mit); and U.S. Department of Energy (DOE)'s State Energy Program (SEP). Both CDBG-DR and CDBG-Mit can play a role in increasing the energy efficiency and renewable energy investments to mitigate against power outages.

One example is the Florida SunSmart Schools and Emergency Shelters Program, started in 2010, that resulted more than a megawatt of solar power installed across 118 schools (approximately 10 kW per school) that are designated as emergency shelters throughout the state. Programs run through state energy offices, such as the California Energy Commission can also provide funds to explore or expand energy efficiency measures that increase resilience, such as the CEC EPIC program support for microgrids. The study concludes by noting that to further integrate energy efficiency and renewable plus storage technologies into pre-disaster mitigation plans and projects, there is a potential opportunity to convene stakeholders across federal, state, and local levels.

Relevance: Shows connection between energy efficiency and resilience. Identifies the potential for Federal agencies and both established and new funding streams to support local resilience investments.

Key Findings:

- Both FEMA and HUD are providing funding for mitigation, in addition to the traditional approach to funding recovery.
- The FEMA BRIC program could be a viable funding source for future resilience hubs. The CDBG program is another option.
- Florida added modest PV systems to schools designated as emergency shelters to provide basic services.

Tags: Mitigation, efficiency, FEMA, BRIC, HUD, CDBG, State Energy Program, schools, multi-jurisdiction

*12. US DOE Better Buildings. (2019). How Distributed Energy Resources Can Improve Resilience in Public Buildings: Three Case Studies and a Step-by-Step Guide.*

<https://www.energy.gov/sites/prod/files/2019/10/f67/distributed-energy-resilience-public-buildingsv2.pdf>

Summary: This report describes two microgrid assessment tools: 1) the Distributed Energy Resources Customer Adoption Model (DER-CAM), developed by the Lawrence Berkeley National Laboratory (LBNL), and 2) the Renewable Energy Integration and Optimization (REopt) Lite web tool, which offers a subset of features from the full REopt model developed by the National Renewable Energy Laboratory (NREL). They provide high-level assessments of the size and cost of onsite DERs and the ability to power critical loads during specified outage periods. These tools also estimate the optimal combination of energy efficiency, renewable energy, and energy storage to reduce the system costs and provide energy savings.

**Relevance:** Two free tools, REopt Lite and DER-CAM, can help stakeholders around the country explore how energy efficiency scenarios combined with other DERs can meet resilience needs at their critical facilities. Report includes step-by-step user guides.

**Key Findings:**

- Energy efficiency and DERs can bring value to public facilities (e.g. resilience) in addition to energy and cost savings, which can improve the value proposition of potential DER investments.

**Tags:** microgrid, DER, benefits, energy efficiency, DER-CAM, REopt Lite, US DOE, assessment

13. Carter, David, Jim Zoellick and Marc Marshall. Schatz Energy Research Center, Humboldt State University. 2019. Demonstrating a Secure, Reliable, Low-Carbon Community Microgrid at the Blue Lake Rancheria. California Energy Commission. Publication Number: CEC-500- 2019-011. <https://www2.energy.ca.gov/2019publications/CEC-500-2019-011/CEC-500-2019-011.pdf>

**Summary:** This project demonstrates a secure, reliable, low-carbon community microgrid at the Blue Lake Rancheria, a federally recognized tribal government and Native American community adjacent to Blue Lake in Humboldt County. The microgrid supports an American Red Cross evacuation center and a six-building campus. The project shows the feasibility of integrating renewable energy with battery storage, a microgrid controller, and controllable loads into a single microgrid. The microgrid includes 420 kilowatts of solar photovoltaics, and a 500 kW/950 kilowatt-hour (kWh) battery energy storage system. The microgrid is connected to the Pacific Gas and Electric distribution grid at 12.5 kilovolts through a computer-controlled circuit breaker and is designed to operate autonomously. Energy savings to the Blue Lake Rancheria was about \$160,000 in 2017 and beginning in 2018 will increase to nearly \$200,000 annually. In October 2017, a nearby fire caused a grid outage. The microgrid successfully islanded and kept the microgrid facilities from experiencing a blackout.

**Relevance:** Riverside County includes several tribal nations, primarily in the eastern portion of the County. The project shows the benefits of working with tribal communities in creating microgrids, as issues related to jurisdictional boundaries and regulations are slightly different and may allow for greater flexibility and innovation.

**Key Findings:**

- Establishing a grid-connected micro grid that combines PV and battery storage to serve multiple buildings is feasible with currently available technologies.
- The microgrid was demonstrated to both reduce ongoing energy costs and to provide the desired islanded resilience function when a grid outage was caused by a fire.

**Tags:** Microgrids, distributed energy resources, climate change mitigation, battery energy storage system, low-inertia, island-mode, microgrid controller, microgrid management system, critical facility, load sharing, seamless islanding transition, droop control, PV curtailment, microgrid interconnection process.

14. Redwood Coast Airport MicroGrid

<http://schatzcenter.org/docs/RCAREM-factsheet-20200122.pdf>

**Summary:** The Redwood Coast Airport (RCA) Renewable Energy Microgrid will provide clean electricity to Humboldt County and maintain electricity service in the event of a natural disaster or other

emergency. The county airport serves 50,000 flights per year, including commercial, private, and emergency medical flights, while the adjacent Coast Guard air station provides search and rescue for 250 miles of rural coastline. Since roads into Humboldt County are frequently closed by fires and slides, energy security at the regional airport is crucial. In the event of a grid outage, the airport microgrid will allow flight service and rescue operations to continue without interruption.

The RCA microgrid will support 20 electric accounts including the airport and Coast Guard station. RCEA (the regional CCA) will own the two photovoltaic (PV) arrays and battery storage. The larger PV array will be DC-coupled to the battery system, and will allow RCEA to generate renewable power to sell on the wholesale market. The smaller array will directly offset utility costs for the airport, in return for land leased to the project. The battery system will allow solar energy to be discharged during the evening peak of energy use, while simultaneously fulfilling a storage requirement mandated by the State of California.

This is the first multi-customer microgrid in the Pacific Gas & Electric service territory and project will provide a test bed for the policies, tariff structures, and operating procedures necessary to integrate microgrids into California's electric grid. The microgrid consists of:

- 2.2 MW photovoltaic array DC-coupled with a 2.2 MW, 8.8 MWh battery storage system
- 320 kW net-metered photovoltaic system
- microgrid control system that will interface with the utility power distribution control center

Key Findings: Pending project implementation

Tags: Microgrids, distributed energy resources, battery energy storage system, microgrid controller, microgrid management system, critical facility, seamless islanding transition, microgrid interconnection process.

## Additional Resources

### **Clean Energy Group Resilient Power Project**

<https://www.cleangroup.org/ceg-projects/resilient-power-project/>

### **Urban Sustainability Directors Network Resilience Hub**

<http://resilience-hub.org/>

### **Western Riverside County Community Vulnerability Profiles**

<https://wrcog.us/DocumentCenter/View/8020/WRCOG-Member-Community-Vulnerability-Profiles>

### **CAPTivate**

[https://sgc.ca.gov/resources/docs/20180208-CaseStudy\\_CAPtivateAHealthyWesternRiversideCounty.pdf](https://sgc.ca.gov/resources/docs/20180208-CaseStudy_CAPtivateAHealthyWesternRiversideCounty.pdf)

### **ResilientIE**

<https://www.wrcog.us/285/Resilient-IE>



## **Western Riverside Adaptation and Resiliency Strategy: Part 1, Vulnerability Assessment**

[https://wrcog.us/DocumentCenter/View/7478/Western-Riverside-Adaptation-and-Resiliency-Strategy\\_Vulnerability-Assessment](https://wrcog.us/DocumentCenter/View/7478/Western-Riverside-Adaptation-and-Resiliency-Strategy_Vulnerability-Assessment)

## **CalAdapt**

<https://cal-adapt.org/>

## **Cal EnviroScreen 4.0**

<https://oehha.ca.gov/calenviroscreen/report/draft-calenviroscreen-40>

## **WRCOG Member Agency Emergency Management, Disaster Preparedness, and General Plan Safety Elements**

- [City of Banning](#) (LHMP, 2017)  
<http://banning.ca.us/DocumentCenter/View/5100/2017-LHMP-FINAL?bidId=>  
<http://banning.ca.us/141/Disaster-Preparedness>
- [City of Beaumont](#) (LHMP, 2012)  
<https://beaumontca.gov/DocumentCenter/View/29599/Beaumont-LHMP-?bidId=>
- [City of Calimesa](#) (2012)  
<http://www.cityofcalimesa.net/Forms/Calimesa%20LHMP%20-%202012%20Version.pdf>
- [City of Canyon Lake](#) (LHMP, 2017)  
[http://www.cityofcanyonlake.org/vertical/Sites/%7B914485A7-E93B-4BFA-A369-593050FBB784%7D/uploads/Local\\_Hazard\\_Mitigation\\_Plan\\_-\\_June\\_2017.pdf](http://www.cityofcanyonlake.org/vertical/Sites/%7B914485A7-E93B-4BFA-A369-593050FBB784%7D/uploads/Local_Hazard_Mitigation_Plan_-_June_2017.pdf)
- [City of Corona](#)  
<https://www.coronaca.gov/government/departments-divisions/fire-department/emergency-preparedness/disaster-preparedness-emergency-information>
- [City of Eastvale](#) (LHMP, 2018)  
<https://www.eastvaleca.gov/home/showdocument?id=12085>  
<https://www.eastvaleca.gov/government/community-development/emergency-management>
- [City of Hemet](#) (Safety Element)  
[https://www.hemetca.gov/DocumentCenter/View/5331/6\\_Public-Safety\\_web5142019?bidId=](https://www.hemetca.gov/DocumentCenter/View/5331/6_Public-Safety_web5142019?bidId=)  
<https://www.hemetca.gov/87/Emergency-Services-Safety>
- [City of Jurupa Valley](#) (LHMP 2018)  
[https://www.jurupavalley.org/DocumentCenter/View/990/2018-Local-Hazard-Mitigation-Plan\\_Jurupa-Valley?bidId=](https://www.jurupavalley.org/DocumentCenter/View/990/2018-Local-Hazard-Mitigation-Plan_Jurupa-Valley?bidId=)
- [City of Lake Elsinore](#) (LHMP, 2012)  
<http://www.lake-elsinore.org/home/showdocument?id=11134>  
<http://www.lake-elsinore.org/city-services/sign-up-for/emergency-preparedness>

- [City of Menifee](https://www.cityofmenifee.us/DocumentCenter/View/12397/Local-Hazard-Mitigation-Plan-LHMP?bidId=) (LHMP, 2008)  
<https://www.cityofmenifee.us/DocumentCenter/View/12397/Local-Hazard-Mitigation-Plan-LHMP?bidId=>
- [City of Moreno Valley](http://www.moval.org/city_hall/departments/fire/pdfs/mv-eop-0309.pdf) (Emergency Operations Plan, 2009)  
[http://www.moval.org/city\\_hall/departments/fire/pdfs/mv-eop-0309.pdf](http://www.moval.org/city_hall/departments/fire/pdfs/mv-eop-0309.pdf)
- [City of Murrieta](https://www.murrietaca.gov//DocumentCenter/View/714/Emergency-Operations-Plan-Basic-Plan-PDF) (Emergency Operations Plan, 2017)  
<https://www.murrietaca.gov//DocumentCenter/View/714/Emergency-Operations-Plan-Basic-Plan-PDF>
- [City of Norco](http://www.norco.ca.us/civicax/filebank/blobdload.aspx?BlobID=24754) (LHMP, 2017)  
<http://www.norco.ca.us/civicax/filebank/blobdload.aspx?BlobID=24754>
- [City of Perris](https://www.cityofperris.org/home/showdocument?id=370) (LHMP, 2013)  
<https://www.cityofperris.org/home/showdocument?id=370>
- [City of Riverside](https://riversideca.gov/fire/sites/riversideca.gov.fire/files/fire/pdf/Riverside%202018%20LHMP%20County%20Revised%20APA.pdf) (LMP, 2018)  
<https://riversideca.gov/fire/sites/riversideca.gov.fire/files/fire/pdf/Riverside%202018%20LHMP%20County%20Revised%20APA.pdf>
- [City of San Jacinto](https://www.sanjacintoca.gov/UserFiles/Servers/Server_10384345/File/City%20Government/Community%20Development/Planning/General%20Plan/008_PublicSafetyElement.pdf) (Safety Element, 2006)  
[https://www.sanjacintoca.gov/UserFiles/Servers/Server\\_10384345/File/City%20Government/Community%20Development/Planning/General%20Plan/008\\_PublicSafetyElement.pdf](https://www.sanjacintoca.gov/UserFiles/Servers/Server_10384345/File/City%20Government/Community%20Development/Planning/General%20Plan/008_PublicSafetyElement.pdf)
- [City of Temecula](https://temeculaca.gov/DocumentCenter/View/2698/Local-Hazard-Mitigation-Plan) (LHMP, 2017)  
<https://temeculaca.gov/DocumentCenter/View/2698/Local-Hazard-Mitigation-Plan>
- [City of Wildomar](https://cityofwildomar.org/UserFiles/Servers/Server_9894739/File/How%20Do%20I/Information%20About/Emergency%20Preparedness/City%20of%20Wildomar%20-%20LHMP%20-%20Rev.%2010.22.13.pdf) (LHMP, 2012)  
[https://cityofwildomar.org/UserFiles/Servers/Server\\_9894739/File/How%20Do%20I/Information%20About/Emergency%20Preparedness/City%20of%20Wildomar%20-%20LHMP%20-%20Rev.%2010.22.13.pdf](https://cityofwildomar.org/UserFiles/Servers/Server_9894739/File/How%20Do%20I/Information%20About/Emergency%20Preparedness/City%20of%20Wildomar%20-%20LHMP%20-%20Rev.%2010.22.13.pdf)
- [County of Riverside](https://www.rivcoemd.org/Portals/0/FINAL%20PUBLIC%20VERSION%20Riv_Co_%202018%20Multi%20Jurisdictional%20Local%20Hazard%20Mitigation%20Plan.pdf) (LHMP, 2018)  
[https://www.rivcoemd.org/Portals/0/FINAL%20PUBLIC%20VERSION%20Riv\\_Co\\_%202018%20Multi%20Jurisdictional%20Local%20Hazard%20Mitigation%20Plan.pdf](https://www.rivcoemd.org/Portals/0/FINAL%20PUBLIC%20VERSION%20Riv_Co_%202018%20Multi%20Jurisdictional%20Local%20Hazard%20Mitigation%20Plan.pdf)
- [Eastern Municipal Water District](https://www.emwd.org/sites/main/files/file-attachments/draft_hazard_mitigation_plan9.pdf?1537391059) (LHMP, 2017)  
[https://www.emwd.org/sites/main/files/file-attachments/draft\\_hazard\\_mitigation\\_plan9.pdf?1537391059](https://www.emwd.org/sites/main/files/file-attachments/draft_hazard_mitigation_plan9.pdf?1537391059)
- [Western Municipal Water District](https://www.wmwd.com/Archive/ViewFile/Item/1679) (LHMP, 2017)  
<https://www.wmwd.com/Archive/ViewFile/Item/1679>
- [Riverside County Superintendent of Schools](https://www.rcoe.us/home/showpublisheddocument?id=1556) (LHMP, 2018)  
<https://www.rcoe.us/home/showpublisheddocument?id=1556>