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MEETING OF THE

TRANSPORTATION CONFORMITY WORKING GROUP

REMOTE PARTICIPATION ONLY

Tuesday, March 22, 2022

10:00 a.m. – 12:00 p.m.

To Participate on Your Computer:

<https://scag.zoom.us/j/153963916>

To Participate by Phone:

Call-in Number: (646) 558-8656 or (669) 900-6833

Meeting ID: 153 963 916

PUBLIC ADVISORY

Given recent public health directives limiting public gatherings due to the threat of COVID-19 and in compliance with the Governor's recent Executive Order N-29-20, the meeting will be held telephonically and electronically.

If members of the public wish to review the attachments or have any questions on any of the agenda items, please contact Karen Calderon at (213) 236-1983 or via email at calderon@scag.ca.gov. Agendas & Minutes for the Transportation Conformity Working Group are also available at: <https://scag.ca.gov/transportation-conformity-working-group>

SCAG, in accordance with the Americans with Disabilities Act (ADA), will accommodate persons who require a modification of accommodation in order to participate in this meeting. SCAG is also committed to helping people with limited proficiency in the English language access the agency's essential public information and services. You can request such assistance by calling (213) 630-1402. We request at least 72 hours (three days) notice to provide reasonable accommodations and will make every effort to arrange for assistance as soon as possible.



TRANSPORTATION CONFORMITY WORKING GROUP

AGENDA

1. CALL TO ORDER AND SELF-INTRODUCTIONS

Paul Phan, TCWG Chair

2. PUBLIC COMMENT PERIOD

Members of the public desiring to speak on an agenda item or items not on the agenda, but within the purview of the TCWG, must use the “raise hand” function on your computer or dial *9 by phone and wait for the Chair to announce your name/phone number. Limit oral comments to 3 minutes, or as otherwise directed by the Chair. The Chair may limit the total time for comments to twenty (20) minutes.

3. CONSENT CALENDAR

3.1. December 7, 2021 TCWG Meeting Minutes

Attachment 3.1

3.2. January 25, 2022 TCWG Meeting Minutes – Deferred to April TCWG Meeting

3.3. February 22, 2022 TCWG Meeting Minutes – Deferred to April TCWG Meeting

4. INFORMATION ITEMS

4.1. RTP Update (10 minutes)

John Asuncion, SCAG

4.2. FTIP Update (10 minutes)

John Asuncion, SCAG

4.2.1. Status Update on OCTA TCA TCM Substitution (FTIP IDs 10254, ORA050 & ORA051)

Rongsheng Luo, SCAG

Attachment 4.2.1-1 Public Notice

Attachment 4.2.1-2 Draft OCTA TCM Substitution Report

4.3. EPA Update (10 minutes)

Karina O’Connor, EPA

4.4. ARB Update (10 minutes)

Nesamani Kalandiyur, ARB

4.5. Air Districts Update (10 minutes)

District Representatives

5. INFORMATION SHARING

6. ADJOURNMENT

The next meeting of the TCWG will be held on Tuesday, April 26, 2022 via teleconference and Zoom meeting only. Please submit PM Hot Spot Analyses of Interagency Review Forms for the next meeting to Rongsheng Luo, luo@scag.ca.gov, by Tuesday, April 12, 2022.



TRANSPORTATION CONFORMITY WORKING GROUP

Meeting Minutes

December 7, 2021

10:00 a.m. – 12:00 p.m.

The meeting was held via Zoom teleconference. A digital recording of the meeting is available for listening in SCAG's office.

Attendee List

SCAG Staff:

Asuncion, John
Calderon, Karen
Ekman, Annaleigh
Gutierrez, Pablo
Luo, Rongsheng
Martinez, Jennifer

Via Teleconference:

Acebo, Mervin
Aljabiry, Muhaned
Anderson, Kelsie
Arellano, Lexie
Bade, Rabindra
Blake, Michelle
Cacatian, Ben
Carpio, Wellvin
Delgadillo, Lucy
Espinoza Araiza, Erika
Garfio, Angel
Guizado, Jillian
Hendrawan, Kevin
Huddleston, Lori
Kahrs, Jacqueline
Kalandiyur, Nesamani
Lay, Keith
Lee, David
Lewis, David
Liptak, Zach
Lugaro, Julie
Miranda, Jude
Moran, Nohemi
O'Connor, Karina
Odufalu, Femi
Padres, Mary
Panuco, Isidro
Perucho, Julio
Phan, Paul
Sanchez, Lucas
Silverman, Sam
Simpson, James
Tavitas, Rodney
Vaughn, Joseph
Yoon, Andrew

FTA Region 9
Caltrans Headquarters
TCA
Caltrans Headquarters
Caltrans District 12
Caltrans District 11
Ventura County APCD
LA Metro
LA Metro
Caltrans Headquarters
OCTA
RCTC
CARB
LA Metro
Caltrans Headquarters
CARB
ICF
Caltrans District 8
RCTC
Dokken Engineering
Caltrans District 12
Caltrans District 12
SBCTA
US EPA Region 9
Caltrans District 8
Caltrans District 8
LA Metro
LA Metro,
Caltrans District 8
Caltrans Headquarters
Terry Hayes Associates
RCTC
Caltrans Headquarters
FHWA
Caltrans District 7



TRANSPORTATION CONFORMITY WORKING GROUP

MEETING SUMMARY

1. CALL TO ORDER AND SELF-INTRODUCTIONS

Paul Phan, TCWG Chair, called the meeting to order at 10:02 am.

2. PUBLIC COMMENT PERIOD

None.

3. CONSENT CALENDAR

- 3.1. August 24, 2021 TCWG Meeting Minutes
The meeting minutes were approved.
- 3.2. September 28, 2021 TCWG Meeting Minutes
The meeting minutes were approved.
- 3.3. October 26, 2021 TCWG Meeting Minutes
The meeting minutes were deferred to next TCWG Meeting.

4. INFORMATION ITEMS

- 4.1. Review of PM Hot Spot Interagency Review Forms (10 minutes)
 - **RIV151218:** It was determined that this project is not a project of air quality concern.
 - **LA99ITC101:** It was determined that this project is not a project of air quality concern.
 - **RIV190901:** It was determined that this project is not a project of air quality concern.
 - **Interim I-15 Stateline Project Description:** It was determined that this project is regionally significant.
- 4.2. Preliminary South Coast 2022 Air Quality Management Plan Appendix IV-C (15 minutes)
Rongsheng Luo, SCAG, presented an overview of the Preliminary South Coast 2022 Air Quality Management Plan Appendix IV-C. In response to a question, Rongsheng clarified that the Appendix IV-C including the TCM RACM Analysis was only for the South Coast Air Basin Ozone SIP portion of the 2022 AQMP pursuant to California Health and Safety Code Section 40460.
- 4.3. RTP Update
John Asuncion, SCAG, reported that Connect SoCal Amendment #1 to the RTP/SCS was approved by the Regional Council in November 2021 and federal approval is anticipated in late December 2021 or January 2022.
- 4.4. FTIP Update
John Asuncion, SCAG, reported the following:
 - 2021 FTIP Amendment and Administrative Modification were expected to continue as scheduled. SCAG staff were beginning to analyze the amendment and administrative modification that were due to SCAG on December 7, 2021.
 - 2023 FTIP submittals from the County Transportation Commissions were due to SCAG by January 6, 2022.
- 4.5. US EPA Update
Karina O'Connor, US EPA Region 9, reported the following:
 - US EPA had held two meetings with CARB to discuss outstanding issues and the waiver submittal timeline.
 - US EPA would have another meeting with CARB scheduled for the week of December 15th and expected the last waiver will be submitted by the end of December 2021.
 - US EPA scheduled meetings with Caltrans and FHWA in December 2021 to discuss the grace period for EMFAC2021.
 - US EPA had published an Error Correction Notice for the Western Mojave Ozone Plan published in October 2021 to correct errors in the budgets in the final rule. The corrected budgets were effective on November



TRANSPORTATION CONFORMITY WORKING GROUP

17, 2021.

4.6. CARB Update

Nesamani Kalandiyur, CARB, reported the following:

- CARB was working with US EPA staff on the approval for EMFAC 2021 and expected approval during the first quarter of 2022.
- CARB had submitted a few waiver requests to US EPA and was awaiting approval from CARB legal team to submit the final waiver request for the Omnibus Regulation to US EPA. CARB expected to submit the final waiver request by the end of December 2021.
- CARB planned to present on the Transportation Conformity Budget Development Process as part of the 2022 AQMP development in January 2022. More information on the date and time would be shared with the TCWG.

4.7. Air District Updates

Ben Cacatian, VCAPCD, reported that staff was working on their RACM analysis and expected a draft to be available in January 2022.

5. INFORMATION SHARING

None.

6. ADJOURNMENT

The meeting was adjourned at 10:48 a.m. The next TCWG meeting will be held on Tuesday, January 25, 2021 via teleconference and Zoom meeting only.

PUBLIC NOTICE

**Draft Orange County Transportation Authority (OCTA)
Transportation Control Measure (TCM) Substitution Report
(FTIP IDs 10254, ORA050 & ORA051)
Available for Public Review and Comment**

The Public Review and Comment period for the attached report commences on March 7, 2022 and concludes at 5:00 p.m. on March 22, 2022.

Please send written comments to:

Mr. Rongsheng Luo, Program Manager II

By Mail: SCAG
900 Wilshire Blvd., Suite 1700
Los Angeles, CA 90017

Or via email: luo@scag.ca.gov

If you have any questions, please contact Mr. Rongsheng Luo at (213) 236-1994 or luo@scag.ca.gov.

ORANGE COUNTY TRANSPORTATION AUTHORITY TRANSPORTATION CONTROL MEASURE SUBSTITUTION REPORT

I. Introduction

Transportation Control Measures (TCMs) are defined as transportation projects or programs that adjust trip patterns or otherwise modify vehicle use in ways that reduce air pollutant emissions. TCMs are included in the most recently approved applicable Air Quality Management Plan (AQMP)/State Implementation plan (SIP) as part of the overall control strategy to demonstrate a region's ability to come into attainment with the National Ambient Air Quality Standards (NAAQS). In the SCAG region, only two ozone nonattainment areas include TCMs in their AQMPs/SIPs: the South Coast Air Basin and the Ventura County portion of the South Central Coast Air Basin. TCM-type projects in these nonattainment areas are considered committed once they have funds programmed for right-of-way or construction in the first two years of an approved SCAG Federal Transportation Improvement Program (FTIP). When a committed TCM project cannot be delivered or will be significantly delayed, the substitution of the TCM project follows the process specified in the Federal Clean Air Act (CAA) Section 176(c)(8).

The Orange County Transportation Authority (OCTA) has requested that SCAG substitute three Transportation Corridor Agencies' (TCA) toll road expansion projects in the San Joaquin Hills Transportation Corridor (FTIP ID: 10254), the Eastern Transportation Corridor (FTIP ID: ORA050), and the Foothill Transportation Corridor-North (FTIP ID: ORA051) within Orange County with three new traffic signal synchronization projects along three corridors in Orange County: Portola Parkway, 1st Street, and Alton Parkway. As documented herein, the proposed TCM substitution is consistent with all federal requirements, including the Fixing America's Surface Transportation Act or FAST Act planning requirements and the U.S. Environmental Protection Agency's (EPA) Transportation Conformity Regulations.

II. TCM Substitution Process

The substitution process set forth in the FAST Act and the Transportation Conformity Regulations is included in the 2016 AQMP for the South Coast Air Basin and described in SCAG's 2021 FTIP Guidelines.

The County Transportation Commissions (CTCs) and/or project sponsors notify SCAG when a TCM project cannot be delivered or will be significantly delayed. SCAG and the CTCs then identify and evaluate possible replacement measures for individual substitutions in consultation with SCAG's Transportation Conformity Working Group (TCWG), which includes members from all affected jurisdictions, federal, state and local air quality agencies and transportation agencies.

Substitution of individual TCMs is provided for by the CAA Section 176(c)(8), under the following conditions:

"(i) if the substitute measures achieve equivalent or greater emissions reductions than the control measure to be replaced, as demonstrated with an emissions impact analysis that is consistent with the current methodology used for evaluating the replaced control measure in the implementation plan;

"(ii) if the substitute control measures are implemented-

"(I) in accordance with a schedule that is consistent with the schedule provided for control measures in the implementation plan; or

"(II) if the implementation plan date for implementation of the control measure to be replaced has passed, as soon as practicable after the implementation plan date but not later than the date on which emission reductions are necessary to achieve the purpose of the implementation plan;

"(iii) if the substitute and additional control measures are accompanied with evidence of adequate personnel and funding and authority under State or local law to implement, monitor, and enforce the control measures;

"(iv) if the substitute and additional control measures were developed through a collaborative process that included--

"(I) participation by representatives of all affected jurisdictions (including local air pollution control agencies, the State air pollution control agency, and State and local transportation agencies);

"(II) consultation with the Administrator; and

"(III) reasonable public notice and opportunity for comment; and

"(v) if the metropolitan planning organization, State air pollution control agency, and the Administrator concur with the equivalency of the substitute or additional control measures.”

In addition to the conditions above, the 2021 FTIP Guidelines specifies that the substitute project shall be in the same air basin, preferably located in the same geographic area and serving the same demographic subpopulation as the TCM being replaced.

A TCM substitution does not require a new conformity determination or a formal SIP revision. SCAG adoption of the new TCM with concurrence of the U.S. EPA and the California Air Resources Board (ARB) rescinds the original TCM and the substitution becomes effective.

III. Project Description

1. Three Committed TCM Projects to Be Substituted

The following three toll road expansion projects were previously committed by TCA as HOV lane alternative TCMs through SCAG’s 1998 Regional Transportation Improvement Program and continue as committed TCMs in SCAG’s current 2021 FTIP.

- 1) The San Joaquin Hills Transportation Corridor (SJHTC) Project (FTIP ID: 10254) is to construct one additional toll lane in each direction of the 15-mile SJHTC toll road between I-5 in San Juan Capistrano and the non-tolled portion of SR-73 in Irvine, plus climbing and auxiliary lanes, by December 31, 2022. For details of the project, see its 2021 FTIP project sheet on the next page:

OCTA
2021 Federal Transportation Improvement Program (\$000)

TIP ID: 10254		Implementing Agency: Transportation Corridor Agency (TCA)			
SCAG RTP Project #:	10254	Project Title (SJHTC) (1-5 IN SAN JUAN CAPISTRANO TO RTE 73 IN IRVINE) (15 MI)			
PPNO:		Project Description SAN JOAQUIN HILLS TRANSPORTATION CORRIDOR (SJHTC - SR 73). 15 MI TOLL RD BETWEEN 1-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, CONSISTENT WITH SCAG/TCA MOU 4/5/01. EXISTING 3 M/F EA DIR. 1 ADDITIONAL M/F EA DIR, PLUS CLIMBING & AUX LANES BY 2022.			
EA Number:					
IFAS #:					
System	Route	Postmile			
State Hwy	73	9.6 to 25.45			
Program Code	CAN69 - NEW HOV LANE(S)				
Environmental Document	FINAL ENVIRONMENTAL IMPACT REPORT - 06/01/2013				
Conformity Category	TCM Committed				
Total Estimate	\$351,188				
Air Basin	SCAB				
Project Completion Date	12/31/2022				
Current Implementation Status	ROW Acquisition - 02/29/2008				
Project Manager	David Lowe - (949) 754-3488				
Last Modified By	Heidi Busslinger on 03/05/2020				
Administrative Comments:	HBUSSLINGER CTC Only 03/05/2020				
Last Revised: Adoption 21-00 - APPROVED		Total Programmed			\$351,188

- 2) The Eastern Transportation Corridor (ETC) Project (FTIP ID: ORA050) is to contract two additional toll lanes in each direction of the 26.4-mile ETC toll road that connects SR-91 to I-5 via SR-261 and SR-133, plus climbing and auxiliary lanes. For details of the project, see its 2021 FTIP project sheet below:

OCTA
2021 Federal Transportation Improvement Program (\$000)

TIP ID: ORA050		Implementing Agency: Transportation Corridor Agency (TCA)			
SCAG RTP Project #:	ORA050	Project Title (ETC) (RTE 241/261/133) (FROM RTE 91 TO SR 241/FTC-N AND I-5) (26.4 MI)			
PPNO:		Project Description EASTERN TRANSPORTATION CORRIDOR (ETC- SR 241/261/133) 26.4 MI TOLL ROAD CONNECTS SR 91 to I-5 via SR 261 and SR 133, CONSISTENT WITH SCAG/TCA MOU 4/05/01. EXISTING 2 M/F EA DIR. 2 ADDITIONAL M/F IN EA DIR, PLUS CLIMBING AND AUX LANES BY 2022.			
EA Number:					
IFAS #:					
System	Route	Postmile			
State Hwy	241	38.8 to 12.4			
Program Code	CAN69 - NEW HOV LANE(S)				
Environmental Document	FINAL ENVIRONMENTAL IMPACT STATEMENT - 09/23/1994				
Conformity Category	TCM Committed				
Total Estimate	\$631,902				
Air Basin	SCAB				
Project Completion Date	12/31/2022				
Current Implementation Status	Engineering/Plans, Specifications and Estimates (PS&E) - 03/11/2008				
Project Manager	David Lowe - (949) 754-3488				
Last Modified By	Heidi Busslinger on 03/05/2020				
Administrative Comments:	HBUSSLINGER CTC Only 03/05/2020				
Last Revised: Adoption 21-00 - APPROVED		Total Programmed			\$631,902

- The Foothill Transportation Corridor-North (FTC-N) Project (FTIP ID: ORA051) is to construct two additional toll lanes in each direction of the 12.7-mile FTC-N toll road between Oso Parkway and the ETC, plus climbing and auxiliary lanes. For details of the project, see its 2021 FTIP project sheet below:

OCTA
2021 Federal Transportation Improvement Program (\$000)

TIP ID: ORA051			Implementing Agency: Transportation Corridor Agency (TCA)			
SCAG RTP Project #: ORA051			Project Title (FTC-N) (OSO PKWY TO ETC) (12.7MI)			
PPNO:			Project Description FOOTHILL TRANSPORTATION CORRIDOR-NORTH (FTC-N - SR 241). 12.7 MI TOLL ROAD BETWEEN OSO PKWY AND ETC, CONSISTENT WITH SCAG/TCA MOU 4/05/01. EXISTING 2 M/F IN EA DIR. 2 ADDITIONAL M/F, PLS CLIMBING & AUX LANES BY 2022.			
EA Number:						
IFAS #:						
System	Route	Postmile				
State Hwy	241	13.8 to 26.5				
Program Code CAN69 - NEW HOV LANE(S)						
Environmental Document FINAL ENVIRONMENTAL IMPACT STATEMENT - 03/30/1990						
Conformity Category TCM Committed						
Total Estimate \$269,045						
Air Basin SCAB						
Project Completion Date 12/31/2022						
Current Implementation Status Engineering/Plans, Specifications and Estimates (P&E) - 11/17/2011						
Project Manager David Lowe - (949) 754-3488						
Last Modified By Heidi Busslinger on 03/05/2020						
Administrative Comments: HBUSSLINGER CTC Only 03/05/2020						
Last Revised: Adoption 21-00 - APPROVED						
			Anup Kulkarni (akulkarni@octa.net) Total Programmed \$269,045			

Although all scheduled to be completed by December 31, 2022, the three committed TCM projects will be delayed significantly due to TCA’s 2018 Capital Improvement Program adopted on June 14, 2018. As a result, the OCTA has initiated the TCM substitution process.

2. Proposed Three Substitute Projects

The following three proposed traffic signal synchronization projects (SSPs) are new TCM-type projects that are not in either SCAG’s 2020 RTP/SCS or 2021 FTIP, and therefore are eligible as TCM substitute projects. Upon successful completion of the proposed TCM substitution, these substitute projects will be processed into SCAG’s 2020 RTP/SCS and 2021 FTIP as committed TCMs.

- The Portola Parkway SSP will implement synchronization of 31 traffic signals along 7.6 miles of Portola Parkway between Paloma Parkway and Plano Trabuco Road. Through select upgrades to key equipment including Advanced Traffic Controllers (ATC), communications, and detection, the Portola Parkway SSP will improve traffic congestion by optimizing travel times along the Portola Parkway corridor. Three agencies will participate in and \$2.9 million from Measure M2 and local funds will be available for the implementation of the project.
- The 1st Street/Bolsa Avenue SSP will implement synchronization of 55 traffic signals along 13.1 miles of 1st Street between Bolsa Avenue and Newport Avenue. Through select upgrades

to key equipment including Advanced Traffic Controllers (ATC), communications, and detection, the 1st Street/Bolsa Avenue SSP will improve traffic congestion by optimizing travel times along the 1st Street corridor. Five agencies will participate in and \$3.9 million from Measure M2 and local funds will be available for the implementation of the project.

- 3) The Alton Parkway SSP will implement synchronization of 50 traffic signals along 12.8 miles of Alton Parkway between Red Hill Street to Portola Parkway. Through select upgrades to key equipment including Advanced Traffic Controllers (ATC), communications, and detection, the 1st Street/Bolsa Avenue SSP will improve traffic congestion by optimizing travel times along the Alton Parkway corridor. Two agencies will participate in and \$3.8 million from Measure M2 and local funds will be available for the implementation of the project.

Together, the three proposed substitution projects will coordinate 136 signalized intersections by ten agencies to improve traffic congestion along over 33 miles of roadway in Orange County. A total of \$10.6 million will be available from Measure M2 and local funds to implement these projects. All the three projects will be completed by December 31, 2022.

3. Map of Existing TCMs and Proposed Substitute Projects

The map on the next page shows the location of the three existing committed TCM projects and the three proposed substitute projects.

IV. Compliance with TCM Substitution Requirements

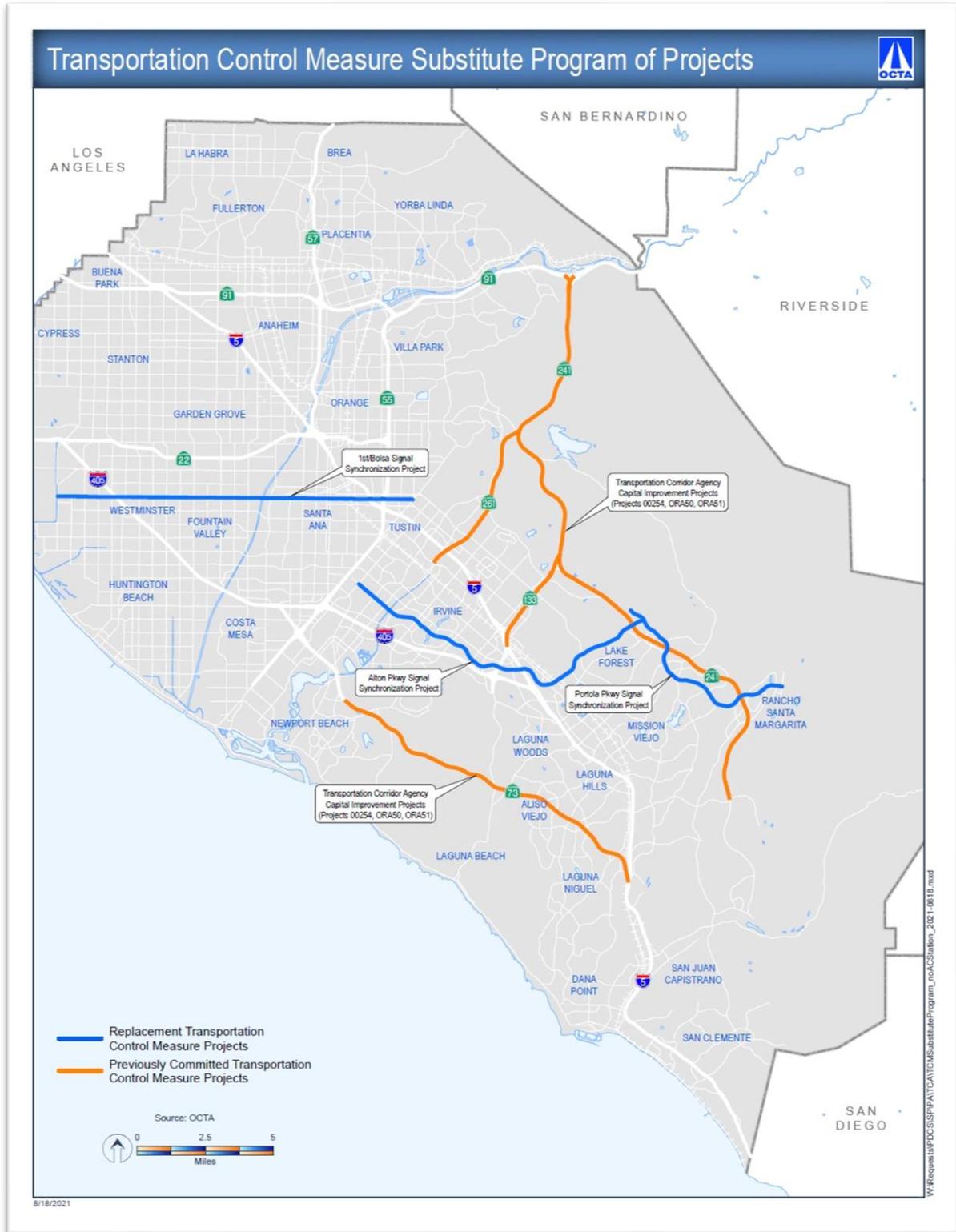
As documented in detail below, the proposed TCM substitution demonstrates meeting all TCM substitution requirements.

1. Interagency Consultation

The proposed TCM substitution was presented by OCTA staff at SCAG's publicly noticed TCWG meeting for initial interagency consultation on August 24, 2021. A revised TCM substitution analysis was presented to TCWG again on February 22, 2022. Comments received have been addressed in this TCM substitution report. This TCM substitution report will be released for a 15-day public review period from March 7 through March 22, 2022. A status update will be provided to TCWG on March 22, 2022. All comments received will be addressed and incorporated into the final TCM substitution report as appropriate.

2. Equivalent Emissions Reduction

OCTA staff has analyzed and compared the emissions reduction benefits of the three TCA toll road expansion TCM projects and the three proposed TCM substitute projects, and concluded that the replacement projects provide equal or greater emission reductions (see Appendix). SCAG staff has reviewed and concurred with both the methodology and the results of the analysis.



3. Similar Geographic Area.

All the three committed TCM projects and the three proposed substitute TCM projects are located within the Orange County portion of the South Coast Air Basin.

4. Full Funding.

Full funding has been identified by OCTA and will come from Measure M2 and other local funds (for matching M2) for the three proposed substitute TCM projects. In addition, full funding will be programmed and committed for the three proposed substitute projects when these projects are processed into SCAG's 2020 RTP/SCS and 2021 FTIP upon completion of the TCM substitution process.

5. Similar Time Frame.

The proposed substitute TCM projects are scheduled to be completed by December 31, 2022, consistent with the schedule of the three TCM toll road expansion projects.

6. Timely Implementation.

The proposed substitution is the means by which the obstacle to the implementation of the three TCA's TCMs is being overcome. The replacement projects will be monitored through subsequent TCM Timely Implementation Reports that SCAG releases for public review and submits for federal approval.

7. Legal Authority.

The OCTA has the legal authority and personnel to implement and operate the substitute projects.

8. Agency Review and Adoption.

The final TCM substitution analysis is scheduled to be brought to SCAG's Energy and Environment Committee (EEC) on April 7, 2022 for recommendation to SCAG's Regional Council for adoption on May 5, 2022. Upon adoption by the Regional Council, the TCM substitution will be forwarded to ARB and U.S. EPA for concurrence. Adoption by the Regional Council and concurrence from U.S. EPA and ARB will rescind the original TCM projects and the new measures will become effective.

9. Programming of the Substitute TCMs.

After conclusion of the TCM substitution process including adoption by SCAG's Regional Council and concurrence of ARB and EPA, the substitute TCMs will be processed as committed TCMs into the conforming FTIP.

Appendix

OCTA TCM Substitution Request

Proposed Transportation Control Measure Substitution of Three Toll Road Capital Improvement Projects (FTIP Project IDs: 10254, ORA050, & ORA051) with Three New Traffic Signal Synchronization Projects

Introduction

The Transportation Corridor Agencies (TCA) previously committed to three toll road capital improvement projects along portions of TCA facilities within Orange County: the San Joaquin Hills Transportation Corridor (FTIP Project ID: 10254); the Eastern Transportation Corridor (FTIP Project ID: ORA050); and the Foothill Transportation Corridor-North (FTIP Project ID: ORA051). These three projects are included as committed TCM's in the Southern California Association of Governments' (SCAG) 2020 RTP/SCS (Connect SoCal), 2021 FTIP, and SCAQMD's 2016 South Coast AQMP/Ozone SIPs. Below are the summary project descriptions of these three committed TCMs. Their 2021 FTIP project sheets including detailed project information are included in **Attachment A**.

- The San Joaquin Hills Transportation Corridor (SJHTC, SR-73) is a 15-mile managed toll facility between Interstate 5 (I-5) in San Juan Capistrano and the non-tolled portion of the SR-73 in Irvine. Planned improvements include one (1) additional tolled lane for mixed flow traffic in each direction, plus climbing and auxiliary lanes by 2022.
- The Foothill Transportation Corridor-North (FTC-N, SR-241) is a 12.7-mile managed toll road between Oso Parkway and the Eastern Transportation Corridor. Planned improvements include two (2) additional tolled lanes for mixed flow traffic in each direction, plus climbing and auxiliary lanes by 2022.
- The Eastern Transportation Corridor (ETC, SR- 241/261/133) is a 26.4-mile managed toll road that connects SR-91 to I-5 via SR-261 and SR-133. Planned improvements include two (2) additional tolled lanes for mixed flow traffic in each direction, plus climbing and auxiliary lanes by 2022.

Note that all the existing TCA facilities and the three TCA capital improvement TCM projects are tolled lanes, open to all vehicles, and without discounts to HOVs. In addition, all the three TCA committed TCMs would add toll capacity and are in the TCM category of HOV lanes and their pricing alternatives.

Based upon TCA's 2018 Capital Improvement Program, adopted on June 14, 2018, these committed TCMs will be delayed beyond the scheduled completion dates. Three substitute TCM projects (a combined 33 miles of new signal synchronization projects) are now proposed as a replacement TCM to the previously committed projects.

Description of Proposed Substitute Projects

Orange County Transportation Authority (OCTA) is proposing substitute projects as a replacement to the three previously committed TCMs. The proposed substitute projects consist of three signal synchronization projects spanning approximately 33 miles of roadway and coordinating 136 signalized intersections. The projects involve nearly 10 agencies and have budgets of approximately \$10,600,000. The proposed substitute projects will improve traffic congestion by optimizing travel times on these high-volume corridors. The table below shows the three corridors and the respective details.

Detail on the Replacement Projects					
Arterials	Project Intersections	Project Miles	Participating Agencies	Approximate Project Cost	Fund Sources
1 st Street / Bolsa Avenue	55	13.1	5	\$3,900,000	Measure M2 and Local Funds
Alton Parkway	50	12.8	2	\$3,800,000	Measure M2 and Local Funds
Portola Pkwy/ Santa Margarita Pkwy	31	7.6	3	\$2,900,000	Measure M2 and Local Funds
<i>Summary</i>	<i>136</i>	<i>33.5</i>	<i>10</i>	<i>\$10,600,000</i>	<i>Measure M2 and Local Funds</i>

The proposed substitute projects will be implemented by December 2022. Current funding, as part of Measure M2 and local city matching funds, will be used for these three signal synchronization projects. Project descriptions are listed below and a map of the locations of both the committed and substitute projects is in **Attachment B**. Note that these proposed substitute TCM projects are not in the SCAG's 2021 FTIP yet but will be amended into the 2021 FTIP upon completion of the TCM substitution.

1. Portola Parkway Signal Synchronization Project (SSP)

The Portola Parkway SSP implements optimized signal timing between Paloma Parkway to Plano Trabuco Road (7.6 miles). The project includes select upgrades to key equipment including Advanced Traffic Controllers (ATC), communications, and detection.

2. 1st Street/Bolsa Avenue SSP

The 1st Street/Bolsa Avenue SSP implements optimized signal timing between Bolsa Avenue to Newport Avenue (13.1 miles). The project includes select upgrades to key equipment including ATC, communications, and detection.

3. Alton Parkway SSP

The Alton Parkway SSP implements optimized signal timing between Red Hill Street to Portola Parkway (12.8 miles). The project includes select upgrades to key equipment including ATC, communications, and detection.

Compliance with TCM Substitution Requirements

- **Equivalent Emissions Reduction:** OCTA has analyzed the emissions reduction benefits of both the substitute projects and the previously committed TCM projects. The substitute projects will provide equivalent emission reductions. OCTA used the OCTA's Orange County Transportation Analysis Model (OCTAM), ARB's Emission Factors (EMFAC2017) model, and ARB's Automated Cost-effectiveness Calculation Tool for the analysis of the previously committed and proposed substitute alternatives. The following three sections document the OCTAM Model Information, the Emissions Analysis Methodology, and the Emissions Analysis Findings.
- **Similar Geographic Area:** The proposed substitute projects and the previously committed TCM projects are both located in the Orange County portion of the South Coast Air Basin.
- **Full Funding:** Current funding is available for the proposed substitute projects as documented under the previous section Description of Proposed Substitute Projects.
- **Similar Time Frame:** The proposed substitute projects will be operational by December 2022, equivalent to the schedule of the previously committed TCM projects.
- **Timely Implementation:** The proposed substitution is the means by which the obstacles to implementation of previously committed TCM projects is being overcome.
- **Legal Authority:** OCTA has the legal authority and personnel to implement and operate the proposed substitute projects.

OCTAM Model Information

OCTAM is a four-step (trip generation, trip distribution, mode choice, and trip assignment), trip-based travel demand model built on the TransCAD platform. The current model version 5.0 uses 2010 Census data and the SCAG household travel survey to help calibrate the model. The assumptions used in the current model for future forecasting are based on demographic projections from Orange County Projections 2018 and the SCAG 2020 RTP/SCS.

OCTAM forecasts travel demand with a base year of 2016 and a future forecast year of 2045. It is consistent with SCAG's regional travel demand model as it incorporates the most recent approved socio-economic data for Orange County and the surrounding region at the time it was developed.

Automated Cost-effectiveness Calculation Tool

Applied with ARB's latest emission factor tables, the Automated Calculation Tool enables staff and decision-makers to quantify the cost-effectiveness of proposed projects in terms of cost per pound (or ton) of pollutants reduced. These tools are used to evaluate projects and to report on both the CMAQ and the Motor Vehicle Registration Fee Program.

This automated Access database program includes methods for traffic signal coordination and other project categories (cleaner on- and off-road vehicle purchases and re-powers; cleaner street sweepers; new bus service operations; vanpool and shuttle service; bicycle facilities; telecommunications; and ridesharing and pedestrian facilities). The tool and the emission factor tables are available at the following ARB site: <https://ww2.arb.ca.gov/resources/documents/congestion-mitigation-and-air-quality-improvement-cmaq-program>. See **Attachment C** for the 2045 input and output summaries for the three-signal synchronization applications.

Emissions Analysis Methodology

The emissions were calculated for the previously committed TCM projects and the proposed substitute projects. A multi-step approach was used that combined the OCTAM, EMFAC, and the CMAQ Toolkit. This methodology was developed with the guidance of CARB staff to better estimate the emissions reduction from signal synchronization improvements. The following process was used:

Step 1: Obtain daily vehicle miles traveled (VMT) and speed data for freeways and arterials from OCTAM for both with and without the previously committed in forecast year 2045. The coding of the alternatives was consistent with OCTAM modeling practice and used the 2020 RTP/SCS network. **Attachment D** includes additional modeling details and summary of modeling files. **Attachment E** includes 2045 OCTAM model output summary statistics for Orange County.

Two alternatives were modeled using OCTAM. The previously committed TCA TCM projects as described earlier were modeled in an alternative referred to as the "TCA TCM Projects" analysis. The second alternative did not include either the previously committed TCM projects or the proposed substitute TCM projects.

The OCTAM forecasts were post-processed using the National Cooperative Highway Research Program (NCHRP) 255 process. This process provides a standard methodology to refine forecasted volumes on links based on a combination of base year traffic counts, base year model estimates, and forecasted model estimates using

incremental adjustments. The output of the travel demand model and post-processing includes loaded link information, intrazonal travel speeds, and intrazonal travel volumes for all time periods for the alternatives.

Note that the additional toll lanes are part of the existing toll road management and are only available to drivers willing to pay a toll. The projects were programmed and budgeted in the 2019 FTIP Consistency Amendment #19-12.

Step 2: The Emission Factors (EMFAC2017) model was developed by the California Air Resources Board and is used throughout California to calculate emission from motor vehicles, such as passenger cars and heavy-duty trucks, operating on freeways and local roads for typical summer, winter, and annual conditions. EMFAC model outputs include total emissions for all criteria pollutants for all Orange County.

A spreadsheet tool has been created to modify EMFAC input data to reflect the results of OCTAM runs. The tool was run for the base year and forecast year 2045 using the extracted information from Step 1 as input to update the VMT and vehicle speed data needed by EMFAC. Both the “TCA TCM Projects” and the “With No Projects” alternatives were modeled in EMFAC. This process was performed multiple times for the modeled alternatives in order to analyze conditions for summer, winter, and averaged annual timeframes.

Step 3: For the emission reductions from the implementation of the three signal synchronization projects, the Automated Calculation Tool was applied to account for signal synchronization benefits. The Tool was run three times to analyze each signal synchronization project separately.

To estimate future-year volumes for the input, observed Average Annual Daily Traffic and peak-hour volumes were factored up using growth factors derived from OCTAM. For each corridor, base year and future year model volumes were obtained for a typical segment to estimate the growth.

The before and after speed emission factors are from Table 4 of ARB’s Emission Factor Tables (November 2021) (<https://ww2.arb.ca.gov/sites/default/files/2022-01/Cost%20Effectiveness%20Tables%202021%20%28revised%29.pdf>).

The Automated Calculation Tool estimated emission reductions for each of the three signal synchronization projects. These numbers were summed together to derive the total emissions reduction from the “Proposed TCM Substitute Projects.”

Step 4: Compare the emissions output from Steps 2 and 3 between the alternatives to identify the emissions-related improvements from the proposed substitute TCM projects.

Note that interpolation of travel activity data between base year 2016 and forecast year 2045 (horizon year) results were used to estimate the emissions for interim year 2022 (completion year) and 2037 (2015 8-hour ozone standard attainment year).

Emissions Analysis Findings

The projected emissions from the previously committed TCM projects were compared with those of the proposed substitute projects using the methodology described in the previous section. The results demonstrate that the proposed substitute TCM will yield less than or equivalent amounts of emissions compared with the previously committed TCM for all criteria pollutants for all milestone years. Emissions of all applicable criteria pollutants (Ozone – ROG & NO_x, CO, PM_{2.5}, and PM₁₀) for the three forecast years (2022, 2037, and 2045) are summarized in the tables below.

Year 2022

Emission Reductions (Summer) - Ozone (Kilograms/Day)

	TCA TCM Projects	Proposed TCM Substitute Projects
ROG	- 0.4	- 0.7
NOx	- 0.1	- 3.4

Emission Reduction (Winter) - Carbon Monoxide, Nitrogen Dioxide (Kilograms/Day)

	TCA TCM Projects	Proposed TCM Substitute Projects
CO	- 9.7	- 21.7

Emission Reductions (Annual) - PM₁₀, PM_{2.5} (Kilograms/Day)

	TCA TCM Projects	Proposed TCM Substitute Projects
ROG	- 0.5	- 0.7
NOx	- 0.1	-3.4
PM10	0.0	0.0
PM2.5	0.0	- 0.1

Year 2037

Emission Reductions (Summer) - Ozone (Kilograms/Day)

	TCA TCM Projects	Proposed TCM Substitute Projects
ROG	- 1.5	- 2.4
NOx	- 0.3	- 11.7

Emission Reductions (Winter) - Carbon Monoxide, Nitrogen Dioxide (Kilograms/Day)

	TCA TCM Projects	Proposed TCM Substitute Projects
CO	- 33.7	- 75.7

Emission Reductions (Annual) - PM₁₀, PM_{2.5} (Kilograms/Day)

	TCA TCM Projects	Proposed TCM Substitute Projects
ROG	- 1.5	- 2.4
NOx	- 0.4	- 11.8
PM10	0.0	0.0
PM2.5	0.0	- 0.2

Year 2045

Emission Reductions (Summer) - Ozone (Kilograms/Day)

	TCA TCM Projects	Proposed TCM Substitute Projects
ROG	- 2.0	- 3.3
NOx	- 0.4	- 16.2

Emission Reductions (Winter) - Carbon Monoxide, Nitrogen Dioxide (Kilograms/Day)

	TCA TCM Projects	Proposed TCM Substitute Projects
CO	- 46.7	- 104.6

Emission Reductions (Annual) - PM₁₀, PM_{2.5} (Kilograms/Day)

	TCA TCM Projects	Proposed TCM Substitute Projects
ROG	- 2.0	- 3.3
NOx	- 0.4	- 16.2
PM10	0.0	0.0
PM2.5	- 0.1	- 0.2

Attachments

- A. 2021 FTIP Project Sheets of the Three Previously Committed TCM Projects (10254, ORA050, & ORA051)
- B. Map of the Three Previously Committed TCM Projects (10254, ORA050, & ORA051) and the Proposed Substitution Projects
- C. Automated Calculation Tool Input/Output Files
- D. Additional Modeling Details and Summary of OCTAM Files
- E. 2045 OCTAM Model Output Summary Statistics for Orange County

ATTACHMENT A

2021 FTIP PROJECT SHEETS

OCTA

2021 Federal Transportation Improvement Program (\$000)

TIP ID: 10254		Implementing Agency: Transportation Corridor Agency (TCA)			
SCAG RTP Project #:	10254	Project Title (SJHTC) (1-5 IN SAN JUAN CAPISTRANO TO RTE 73 IN IRVINE) (15 MI)			
PPNO:		Project Description SAN JOAQUIN HILLS TRANSPORTATION CORRIDOR (SJHTC - SR 73), 15 MI TOLL RD BETWEEN 1-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, CONSISTENT WITH SCAG/TCA MOU 4/5/01. EXISTING 3 M/F EA DIR. 1 ADDITIONAL M/F EA DIR, PLUS CLIMBING & AUX LANES BY 2022.			
EA Number:					
IFAS #:					
System	Route	Postmile			
State Hwy	73	9.6 to 25.45			
Program Code	CAN69 - NEW HOV LANE(S)				
Environmental Document	FINAL ENVIRONMENTAL IMPACT REPORT - 06/01/2013				
Conformity Category	TCM Committed				
Total Estimate	\$351,188				
Air Basin	SCAB				
Project Completion Date	12/31/2022				
Current Implementation Status	ROW Acquisition - 02/29/2008				
Project Manager	David Lowe - (949) 754-3488				
Last Modified By	Heidi Busslinger on 03/05/2020				
Administrative Comments	HBUSSLINGER CTC Only 03/05/2020				
Last Revised: Adoption 21-00 - APPROVED		Total Programmed: \$351,188			

OCTA

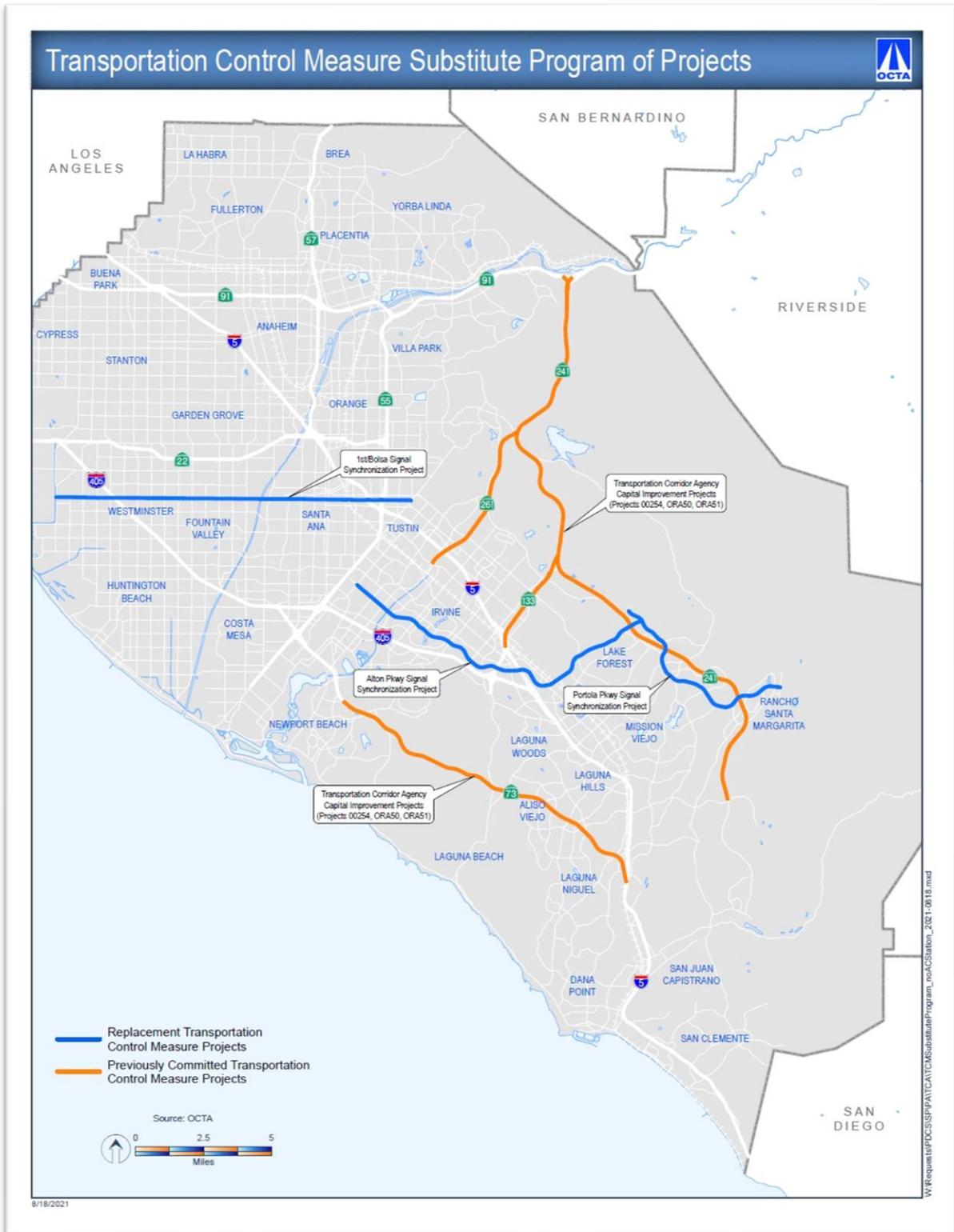
2021 Federal Transportation Improvement Program (\$000)

TIP ID: ORA050		Implementing Agency: Transportation Corridor Agency (TCA)			
SCAG RTP Project #:	ORA050	Project Title (ETC) (RTE 241/261/133) (FROM RTE 91 TO SR 241/ETC-N AND I-5) (26.4 MI)			
PPNO:		Project Description EASTERN TRANSPORTATION CORRIDOR (ETC - SR 241/261/133) 26.4 MI TOLL ROAD CONNECTS SR 91 TO I-5 via SR 261 and SR 133, CONSISTENT WITH SCAG/TCA MOU 4/05/01. EXISTING 2 M/F EA DIR. 2 ADDITIONAL M/F IN EA DIR, PLUS CLIMBING AND AUX LANES BY 2022.			
EA Number:					
IFAS #:					
System	Route	Postmile			
State Hwy	241	38.8 to 12.4			
Program Code	CAN69 - NEW HOV LANE(S)				
Environmental Document	FINAL ENVIRONMENTAL IMPACT STATEMENT - 09/23/1994				
Conformity Category	TCM Committed				
Total Estimate	\$631,902				
Air Basin	SCAB				
Project Completion Date	12/31/2022				
Current Implementation Status	Engineering/Plans, Specifications and Estimates (PS&E) - 03/11/2008				
Project Manager	David Lowe - (949) 754-3488				
Last Modified By	Heidi Busslinger on 03/05/2020				
Administrative Comments	HBUSSLINGER CTC Only 03/05/2020				
Last Revised: Adoption 21-00 - APPROVED		Total Programmed: \$631,902			

OCTA
2021 Federal Transportation Improvement Program (\$000)

TIP ID: ORA051		Implementing Agency: Transportation Corridor Agency (TCA)																																																																																													
SCAG RTP Project #: ORA051 PPNO: EA Number: IFAS #:		Project Title (FTC-N) (OSO PKWY TO ETC) (12.7MI)																																																																																													
System Route Postmile State Hwy 241 13.8 to 26.5		Project Description FOOTHILL TRANSPORTATION CORRIDOR-NORTH (FTC-N - SR 241), 12.7 MI TOLL ROAD BETWEEN OSO PKWY AND ETC, CONSISTENT WITH SCAG/TCA MOU 4/05/01. EXISTING 2 M/F IN EA DIR. 2 ADDITIONAL M/F, PLS CLIMBING & AUX LANES BY 2022.																																																																																													
Program Code CAN69 - NEW HOV LANE(S)		<table border="1"> <thead> <tr> <th>Fiscal Year</th> <th>Revenue Source</th> <th>Engineering</th> <th>Right of Way</th> <th>Construction</th> <th>Total Revenue</th> </tr> </thead> <tbody> <tr><td>06/07</td><td>PVT - Private</td><td>\$700</td><td></td><td></td><td>\$700</td></tr> <tr><td>07/08</td><td>PVT - Private</td><td>\$1,850</td><td></td><td>\$100</td><td>\$1,950</td></tr> <tr><td>08/09</td><td>PVT - Private</td><td>\$1,570</td><td></td><td>\$6,000</td><td>\$7,570</td></tr> <tr><td>09/10</td><td>PVT - Private</td><td>\$313</td><td></td><td></td><td>\$313</td></tr> <tr><td>10/11</td><td>PVT - Private</td><td></td><td></td><td>\$34,492</td><td>\$34,492</td></tr> <tr><td>11/12</td><td>PVT - Private</td><td>\$20</td><td></td><td></td><td>\$20</td></tr> <tr><td>12/13</td><td>PVT - Private</td><td></td><td></td><td>\$36,166</td><td>\$36,166</td></tr> <tr><td>13/14</td><td>PVT - Private</td><td></td><td></td><td>\$36,166</td><td>\$36,166</td></tr> <tr><td>15/16</td><td>PVT - Private</td><td></td><td></td><td></td><td>\$0</td></tr> <tr><td>16/17</td><td>PVT - Private</td><td></td><td></td><td></td><td>\$0</td></tr> <tr><td>17/18</td><td>PVT - Private</td><td></td><td></td><td>\$50,556</td><td>\$50,556</td></tr> <tr><td>18/19</td><td>PVT - Private</td><td></td><td></td><td>\$50,556</td><td>\$50,556</td></tr> <tr><td>19/20</td><td>PVT - Private</td><td></td><td></td><td>\$50,556</td><td>\$50,556</td></tr> <tr><td></td><td></td><td>\$4,453</td><td>\$0</td><td>\$264,592</td><td>\$269,045</td></tr> </tbody> </table>				Fiscal Year	Revenue Source	Engineering	Right of Way	Construction	Total Revenue	06/07	PVT - Private	\$700			\$700	07/08	PVT - Private	\$1,850		\$100	\$1,950	08/09	PVT - Private	\$1,570		\$6,000	\$7,570	09/10	PVT - Private	\$313			\$313	10/11	PVT - Private			\$34,492	\$34,492	11/12	PVT - Private	\$20			\$20	12/13	PVT - Private			\$36,166	\$36,166	13/14	PVT - Private			\$36,166	\$36,166	15/16	PVT - Private				\$0	16/17	PVT - Private				\$0	17/18	PVT - Private			\$50,556	\$50,556	18/19	PVT - Private			\$50,556	\$50,556	19/20	PVT - Private			\$50,556	\$50,556			\$4,453	\$0	\$264,592	\$269,045
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Last Revised: Adoption 21-00 - APPROVED		Anup Kulkarni (akulkarni@octa.net) Total Programmed: \$269,045																																																																																													

ATTACHMENT B



ATTACHMENT C

Automated Calculation Tool Input/Output Files - 2045

1. Alton Parkway

Days (D):	250	operating days per year	Default is 250 (all weekdays)
Length (L) of congested roadway segment:	12.80	miles	Length of roadway impacted by the project.
Traffic volume during congested period (Congested Traffic):	21,000	trips per day	
Annual Project VMT (VMT):	67,200,000	annual miles	VMT = (D) * (L) * (Congested Traffic)

Emission Factors Use measured "before" and "after" average speeds. If speeds are unknown, average traffic speed can be estimated using the segment length and a travel time for vehicles passing through the segment. Speed = Length/Time.

Before Speed Factor		After Speed Factor	
ROG Factor:	0.05	0.03	grams per mile
NO_x Factor:	0.33	0.25	grams per mile
PM2.5 Factor:	0.00	0.00	

Emission Factors depend on before-project and after-project average traffic speeds. To select emission factors for various speeds, refer to Emission Factors, Table 4. The emission factors in Table 4 can also be interpolated.

Before Speed Factor		After Speed Factor	
CO Factor:	1.24	1.03	grams per mile

CO factor can be entered for Los Angeles and Imperial counties ONLY for CMAQ projects targeted at CO hot spots. All other projects enter zero. CO is not requested for MV Fee projects. See Emission Factors Menu, Table 4.

<i>Emission Reductions</i>		pounds per year	kilograms per day
Reductions in Reactive Organic Gases (ROG):	1,480	1.84	For Caltrans Staff Use ONLY The calculation divides CO by 7 Less than 0.5 pounds shows as zero
Reductions in Nitrogen Oxides (NO_x):	5,921	7.37	
Reductions in Particulates (PM2.5):	74	0.09	
Reductions in Carbon Monoxide (CO):	2,220	2.76	
TOTAL EMISSION REDUCTIONS:	9,695	12.07	

Annual Emission Reductions in pounds per year (ROG, NO_x, CO, and PM2.5) = (0.5)*(VMT) * [(Before Speed Factor) - (After Speed Factor)]/454

Daily Emission Reductions in kilograms per day (ROG, NO_x, CO, and PM2.5) = Annual Emission Reductions in pounds per year / (2.2 * 365)

2. Portola Parkway

Days (D):	<input type="text" value="250"/>	operating days per year	Default is 250 (all weekdays)
Length (L) of congested roadway segment:	<input type="text" value="7.60"/>	miles	Length of roadway impacted by the project.
Traffic volume during congested period (Congested Traffic):	<input type="text" value="24,000"/>	trips per day	
Annual Project VMT (VMT):	<input type="text" value="45,600,000"/>	annual miles	VMT = (D) * (L) * (Congested Traffic)

Emission Factors Use measured "before" and "after" average speeds. If speeds are unknown, average traffic speed can be estimated using the segment length and a travel time for vehicles passing through the segment. Speed = Length/Time.

Before Speed Factor		After Speed Factor	
ROG Factor:	<input type="text" value="0.05"/>	grams per mile	<input type="text" value="0.04"/>
NOx Factor:	<input type="text" value="0.34"/>	grams per mile	<input type="text" value="0.29"/>
PM2.5 Factor:	<input type="text" value="0.00"/>	grams per mile	<input type="text" value="0.00"/>

Emission Factors depend on before-project and after-project average traffic speeds. To select emission factors for various speeds, refer to Emission Factors, Table 4. The emission factors in Table 4 can also be interpolated.

Before Speed Factor		After Speed Factor	
CO Factor:	<input type="text" value="1.10"/>	grams per mile	<input type="text" value="0.96"/>

CO factor can be entered for Los Angeles and Imperial counties ONLY for CMAQ projects targeted at CO hot spots. All other projects enter zero. CO is not requested for MV Fee projects. See Emission Factors Menu, Table 4.

Emission Reductions

	pounds per year	kilograms per day
Reductions in Reactive Organic Gases (ROG):	<input type="text" value="502"/>	<input type="text" value="0.63"/>
Reductions in Nitrogen Oxides (NOx):	<input type="text" value="2,511"/>	<input type="text" value="3.13"/>
Reductions in Particulates (PM2.5):	<input type="text" value="50"/>	<input type="text" value="0.06"/>
Reductions in Carbon Monoxide (CO):	<input type="text" value="1,004"/>	<input type="text" value="1.25"/>
TOTAL EMISSION REDUCTIONS:	<input type="text" value="4,068"/>	<input type="text" value="5.07"/>

For Caltrans Staff Use ONLY

The calculation divides CO by 7

Less than 0.5 pounds shows as zero

Annual Emission Reductions in pounds per year (ROG, NOx, CO, and PM2.5) = (0.5)*(VMT) * [(Before Speed Factor) - (After Speed Factor)]/454

Daily Emission Reductions in kilograms per day (ROG, NOx, CO, and PM2.5) = Annual Emission Reductions in pounds per year/ (2.2 * 365)

3. 1st Street Bolsa

Days (D):	<input type="text" value="250"/>	operating days per year	Default is 250 (all weekdays)
Length (L) of congested roadway segment:	<input type="text" value="13.10"/>	miles	Length of roadway impacted by the project.
Traffic volume during congested period (Congested Traffic):	<input type="text" value="18,000"/>	trips per day	
Annual Project VMT (VMT):	<input type="text" value="58,950,000"/>	annual miles	VMT= (D) * (L) * (Congested Traffic)

Emission Factors Use measured "before" and "after" average speeds. If speeds are unknown, average traffic speed can be estimated using the segment length and a travel time for vehicles passing through the segment. Speed = Length/Time.

Before Speed Factor		After Speed Factor	
ROG Factor:	<input type="text" value="0.04"/>	grams per mile	<input type="text" value="0.03"/>
NO_x Factor:	<input type="text" value="0.29"/>	grams per mile	<input type="text" value="0.22"/>
PM2.5 Factor:	<input type="text" value="0.00"/>	grams per mile	<input type="text" value="0.00"/>

Emission Factors depend on before-project and after-project average traffic speeds. To select emission factors for various speeds, refer to Emission Factors, Table 4. The emission factors in Table 4 can also be interpolated.

Before Speed Factor		After Speed Factor	
CO Factor:	<input type="text" value="1.10"/>	grams per mile	<input type="text" value="0.96"/>

CO factor can be entered for Los Angeles and Imperial counties ONLY for CMAQ projects targeted at CO hot spots. All other projects enter zero. CO is not requested for MV Fee projects. See Emission Factors Menu, Table 4.

<i>Emission Reductions</i>		pounds per year	kilograms per day
Reductions in Reactive Organic Gases (ROG):	<input type="text" value="649"/>	<input type="text" value="649"/>	<input type="text" value="0.81"/>
Reductions in Nitrogen Oxides (NO_x):	<input type="text" value="4,545"/>	<input type="text" value="4,545"/>	<input type="text" value="5.66"/>
Reductions in Particulates (PM2.5):	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.00"/>
Reductions in Carbon Monoxide (CO):	<input type="text" value="1,298"/>	<input type="text" value="1,298"/>	<input type="text" value="1.62"/>
TOTAL EMISSION REDUCTIONS:	<input type="text" value="6,492"/>	<input type="text" value="6,492"/>	<input type="text" value="8.09"/>

For Caltrans Staff Use ONLY

The calculation divides CO by 7

Less than 0.5 pounds shows as zero

Annual Emission Reductions in pounds per year (ROG, NO_x, CO, and PM2.5) = (0.5)*(VMT) * [(Before Speed Factor) - (After Speed Factor)]/454

Daily Emission Reductions in kilograms per day (ROG, NO_x, CO, and PM2.5) = Annual Emission Reductions in pounds per year/ (2.2 * 365)

ATTACHMENT D**Additional Modeling Details and Summary of OCTAM Files**

OCTAM was used to develop future 2045 forecasts of VMT by speed bin. The following provides details on the modeled alternative:

- TCA TCM – Previously committed project alternative 2045
 - With the three committed TCA TCM projects (10254, ORA050, & ORA051) coded into the transportation network
- No Build – Removal of previously committed project alternative 2045
 - With the three TCA TCM projects removed

The highway network for each scenario includes the input scenario assumptions. The four fixed-format binary files in the asn-LVOL subdirectories contain the post-processed forecast outputs.

Key data fields in the TransCAD Geographic File (TCMBase.DBD and TCMTCARepNB.DBD):

- AB_LN/BA_LN: Number of lanes in the AB/BA directions
- AB_LVOL/BA_LVOL: Post-processed forecast volumes in the AB/BA directions

The modeling output files are attached to this correspondence. Each scenario is packaged in a separate zip file:

- TCMTCA.zip – TCA TCM
- TCMNoBuild.zip – No Build

The forecast outputs were post-processed per the NCHRP-255 approach. EMFAC2017 was then used to forecast emissions using VMT by speed bin from the two OCTAM runs.

ATTACHMENT E**2045 OCTAM Model Output Summary Statistics for Orange County
Previously Committed versus No Build**

	Committed Projects	No Build
Total Population	3,534,620	3,534,620
Household Population	3,488,505	3,488,505
Total Dwelling Units	1,154,416	1,154,416
Employment	1,980,433	1,980,433
Total Vehicle Hours of Delay	465,247	474,375
Daily Vehicle Hours Traveled	2,511,972	2,522,018
Daily Vehicle Miles Traveled	83,745,416	83,743,858
Daily Peak Vehicle Hours Traveled	1,620,755	1,630,908
Daily Peak Vehicle Miles Traveled	47,069,400	47,070,444
Total Person Hours of Delay	634,437	646,885
Daily Person Hours Traveled	3,425,470	3,439,169
Daily Person Miles Traveled	114,200,070	114,197,945
Daily Peak Person Hours Traveled	2,180,856	2,194,518
Daily Peak Person Miles Traveled	63,335,670	63,337,075
Avg. Spd. - Arterials Peak	25.0	25.0
Avg. Spd. - Arterial AM Pk Period	24.2	24.2
Avg. Spd. - Arterial PM Pk Period	25.7	25.6
Avg. Spd. - All Facilities Peak	31.6	31.3
Avg. Spd. - All Facilities - AM Pk Period	30.6	30.3
Avg. Spd. - All Facilities PM Pk Period	32.3	32.1