



METROPOLITAN
TRANSPORTATION
COMMISSION

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Arterial Operations Committee (AOC)

10:15 A.M. – 12 P.M., Tuesday, September 8, 2015

(10:00 – 10:15 A.M. Networking Time)

Conference Room 171

Metropolitan Transportation Commission

101 Eighth Street, Oakland, CA 94607

Chair: Donald Shupp, WP Signal

Vice-Chair: Obaid Khan, City of Dublin

Staff Liaison: Linda Lee, MTC

Ganesh Karkee, MTC

For more information, please visit the Arterial Operations website at http://www.mtc.ca.gov/services/arterial_operations/

Meeting Agenda

1. Introductions (Donald Shupp)

- *Meeting Notes from July 14, 2015**
- *Other Business**
- *Member Reports/Updates*

2. New Technologies for Arterial Operations

- *NextGen Arterial Operations Program Project Status (Lin Zhang, MTC)**
- *Connected Vehicles Update – National Policies and Initiatives (Virginia Lingham, MTC)**

3. AOP Task Force (Saravana Suthanthira, ACTC)*

- *Summary of Meetings held on July 28 and August 25, 2015*

4. Featured Presentation

- *Connected Vehicle Concept Scenarios for the SF Bay Area (Virginia Lingham, MTC)*
This presentation will explore multimodal Connected Vehicle deployment concepts that show potential to improve address the region's safety, mobility, and environmental needs. A discussion will follow on the anticipated impact of Connected Vehicle technologies to local agencies.

5. Adjournment (Donald Shupp)

- *Next Meeting: Tuesday, November 10, 2015 @ 10:15 A.M.*

*Attachment included

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Arterial Operations Committee
Notes from July 14, 2015 meeting

1. Introductions

- Obaid Khan (City of Dublin), Vice-Chair, chaired the meeting. Meeting called to order at 10:20 A.M. in Conference Room 171 of the Joseph P. Bort MetroCenter. All members introduced themselves. Meeting notes from May 12, 2015 were reviewed and approved without any changes.
- Mike Schagrin (Schagrin Consulting) mentioned that he and Patrick Brunett (Cohda Wireless) will be meeting with MTC staff later in the afternoon to share information about DSRC technologies. Linda said anyone from the AOC is welcome to join the meeting.
- Aaron Elias (Kittelson) mentioned that an updated Highway Capacity Manual (HCM) is expected to be released early next year, which will focus on reliability. He also mentioned that a Planning and Preliminary Engineering Applications Guide to the HCM for planning applications is coming out soon.

2. Program for Arterial System Synchronization (PASS)

- Ganesh Karkee (MTC) provided the benefit summary for the PASS FY 13/14 projects. The performance measures used to evaluate the PASS projects include travel time savings, fuel consumption savings, and emission reductions. He reported that there were 555 signals in the PASS FY 13/14 cycle, which resulted in a combined benefit-cost ratio of 67:1. He asked AOC members to provide feedback on the summary factsheet by July 31, 2015. He said in the previous PASS cycles, FY 10/11 through FY 12/13, there were approximately 350 signals per cycle. The PASS FY 13/14 cycle received approximately 50% more funding than the previous cycles, which allowed us to retime more signals.
- Ganesh said there are 12 projects consisting of a total of 319 signals in the PASS FY 14/15 cycle. The new timing plans have been implemented, fine-tuned, and after studies completed for 11 projects. The draft reports are being reviewed by stakeholders. The new timing plans for the remaining one project will be implemented in Fall 2015.
- Lin Zhang (MTC) provided updates on the PASS FY 15/16 cycle of projects and consultant contracts. There were nine project applications, but only eight of them were recommended for funding, with a total of 19 qualified corridors. The total estimated cost for these projects would be \$900,000, including \$195,000 local matching funds and a contingency of \$39,000. Lin said MTC received seven Statement of Qualifications from consultants in response to MTC's Request for Qualifications to provide technical services for the new fiscal year. He said a review panel consisting of MTC and Caltrans staff recommended four consultants. All recommend projects, consultants, and associated funds were approved by the MTC Operations Committee on July 10, 2015.
 - There was a discussion about application tiers, consultant contracts, etc. for the PASS FY 15/16 cycle. Vamsi Tabjulu (TJKM) asked about the number of corridors that are suited for Tier 1. Lin said there were five corridors qualified for Tier 1.
 - Obaid asked about the duration for the PASS FY 15/16 consultant contracts. Lin said the consultant contracts would be valid for one year, with an option to extend for one additional year.
 - Ananth Prasad (County of Santa Clara) asked about whether the new tiered system is a pilot or a permanent part of the PASS Guidelines. He said the County of Santa Clara might not be able to apply due to lack of matching funds. Linda Lee (MTC)

Arterial Operations Committee
Notes from July 14, 2015 meeting

said the new tiered system will be discussed with the AOP Task Force to determine if changes are necessary.

- David Kobayashi (VTA) asked whether agencies could provide in-kind match in lieu of cash. Linda said that while it was considered initially, it was later dropped since the Program is underfunded and, therefore, cash matches were needed.

3. Next Generation Arterial Operations Program (NextGen AOP)

- Lin provided an update on the NextGen AOP. As a reminder, the four projects are: AC Transit, LAVTA/Dublin, Fremont, and Santa Clara County. The Systems Engineering analyses (Phase 1) are ongoing. User Needs Assessments have been completed for all four projects. The ongoing tasks include: a draft Systems Engineering Management Plan for the AC Transit project; Concept of Operations for the LAVTA/Dublin project; final System Requirements for the Fremont project; and a final Verification Plan for the County of Santa Clara project. Phase 2 (procurement of systems, design, and evaluation) will begin upon the completion of Phase 1.
 - Vamsi asked whether work in the subsequent phases will be assigned to different consultants. Linda said MTC will use consultants from the on-call bench established for the Freeway Performance Initiative program. It was noted that some of the tasks would not be led by MTC, but by the project sponsors. Under these circumstances, other agencies would procure their own consultants.

4. Tech Transfer Seminar

- Lin discussed the upcoming Tech Transfer Seminar, which is scheduled for September 30, 2015, 12:30-4:30 PM. An online survey was sent to all AOC members with three potential topics for the seminar. The potential topics were: Active Traffic Management (ATM) for Arterials, Connected Vehicle/Autonomous Vehicles, and Traffic Signal Asset Management. He said 64 people responded to the online survey. Based on the results, ATM for Arterials was selected as the topic for the upcoming seminar. He said a flyer with brief descriptions of the proposed presentations will be prepared and sent out several weeks before the seminar.
 - Vamsi suggested that it would be difficult to cover seven topics in an afternoon session and suggested that some topics be removed. He and Ananth also suggested moving some topics up in the agenda, before the break. Lin said these suggestions would be considered while finalizing the agenda.
 - Lin also said the presentation titles were tentative, and some of the titles could change. The I-80 ICM presentation will focus on the arterial management component of the project.

5. AOP Task Force

- As the Chair of the Task Force, Saravana Suthanthira (ACTC) briefly described the composition of the Task Force, which includes representatives from MTC, Caltrans, CMA, Cities, Transit agency, Consultant, and a Vendor/Supplier. The main focus of the Task Force will be on the technical assistance program, as well as other issues. The first meeting of the Task Force was held on June 30, 2015. A summary of the meeting minutes was distributed at the meeting (and attached here). Future meetings will be held monthly for the next four months (July through October). In the upcoming meetings, the main focus of discussion will be on: AOP's mission statement, future Program expenditure plans, other funding opportunities, PASS eligibility requirements, the Bay

Arterial Operations Committee

Notes from July 14, 2015 meeting

Area Signalized Intersection System (BASIS) database, and Technology Transfer Seminars.

- David asked whether the Task Force meeting minutes can be sent to the AOC members. Saravana said the meeting minutes can be sent out to all AOC members.
- Linda said recommendations from the Task Force will be presented to the larger AOC meeting for review and comments before the recommendations are approved.
- Saravana said the Task Force should not only consider a 5-year funding plan, but also a longer-term plan.
- Obaid said there would be overlaps in some of the discussion items.
- Vamsi said the Task Force recommendations can be incorporated to the next funding cycle.
- Ananth suggested that the Task Force look into the new matching fund requirements of the PASS guidelines and determine if any adjustments can be made.

6. Featured Presentation

- There were two presentations this month:
 - Virginia Lingham (MTC): “Bay Area Connected Vehicle Pilot Pursuits and Planning.”
 - Thomas Bauer’s (Traffic Technology Services): “Personal Signal Assistant – Connected Vehicle Technology from Concept to Reality.”
- Both of these presentations have been posted on the MTC’s Arterial Operations Committee website.

7. Adjournment

- The meeting adjourned at 12 P.M. The next meeting will be held on Tuesday, September 8, 2015.

Arterial Operations Committee

Attendees from meeting on Tuesday, July 14, 2015

#	Name	Agency	Phone No.	E-Mail
1	Aaron Elias	Kittelson	510.433.8077	aelias@kittelson.com
2	Allen Chen	St. Francis Elec.	510.695.0582	achen@sfe-inc.com
3	Ananth Prasad	SCL County	408.494.1342	ananth.prasad@rda.sccgov.org
4	Brian Sowers	Kimley-Horn	925.398.4862	brian.sowers@kimley-horn.com
5	David Huynh	Iteris	510.423.0742	dxh@iteris.com
6	David Kobayashi	VTA	408.321.5892	david.kobayashi@vta.org
7	David Mahama	DKS	510.267.6613	dcm@dksassociates.com
8	Denis Wu	W&S Solutions	925.895.6380	Denis.wu@wu-song.com
9	Donya Amiri	Fremont	510.494.4757	DAmiri@Fremont.gov
10	Ganesh Karkee	MTC	510.817.5625	gkarkee@mtc.ca.gov
11	Jia Hao Wu	W & S Solutions	925.413.8983	jiahao.wu@wu-song.com
12	Katherine Mertz	Sensys	510.326.9796	kmertz@sensysnetworks.com
13	Lin Zhang	MTC	510.817.5616	lzhang@mtc.ca.gov
14	Linda Lee	MTC	510.817.5825	llee@mtc.ca.gov
15	Maria Tribelhorn	DKS		maria@dksassociates.com
16	Mike Schagrin	Schagrin Consulting	703.577.5826	mike@schagrin-consulting.com
17	Obaid Khan	Dublin	925.833.6634	obaid.khan@dublin.ca.us
18	Patrick Armijo	Western P Signal	562.441.1776	armijo@wpsignal.com
19	Patrick Brunett	Cohda Wireless		patrick.brunett@cohdawireless.com
20	Rich Shinn	Iteris	925.872.0834	RJS@iteris.com
21	Rob Sprinkle	Santa Rosa	707.543.3817	rsprinkle@srcity.org
22	Ryan Marquez	Pacifica		marquezz@ci.pacifica.ca.us
23	Sam Morrissey	Iteris	213.802.1724	smg@iteris.com
24	Saravana Suthanthira	Alameda CTC	510.208.7426	ssuthanthira@alamedactc.org
25	Thomas Bauer	TTS	503.530.8487	thomas.bauer@traffictechservices.com
26	Vamsi Tabjulu	TJKM	510.325.3462	vtabjulu@tjkm.com
27	Virginia Lingham	MTC	510.817.5826	vlingham@mtc.ca.gov



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Memorandum

TO: Arterial Operations Committee (AOC)

DATE: July 14, 2015

FR: Linda Lee, MTC

CC: AOP Task Force

RE: AOP Task Force – June 30, 2015 Meeting Summary

The Arterial Operations Program (AOP) Task Force Members are:

Category	Name	Affiliation
MTC	Linda Lee	MTC
State	David Man	Caltrans
CMA/County	Saravana Suthanthira	ACTC
City 1 (large urban)	Lily Lim-Tsao	San Jose
City 2 (medium suburban)	Rafat Raie	Walnut Creek
City 3 (small suburban)	Obaid Khan	Dublin
Transit	Barrow Emerson	SamTrans
Consultant	Brian Sowers	Kimley-Horn
Vendor/Supplier	Ron Hernandez	Econolite

The AOP Task Force held its first meeting on June 30, 2015. This memo provides a summary of the key discussion items:

- Saravana Suthanthira was designated as the Task Force Chair.
- Background and purpose for the Task Force was provided for context:
 - The AOP includes four initiatives: AOC, Technical Assistance Programs, Technology Transfer Seminars, and the Bay Area Signalized Intersection System (BASIS).
 - Past and present Technical Assistance Programs include TETAP, RSTP, PASS, and NextGen AOP, with each having slightly different program guidelines.
 - The AOP was created over 20 years ago, but has not changed much over the last 12 years.
 - The purpose of the Task Force is to redefine the Program to make it more relevant with current technologies and better plan for the future of transportation.

- Based on the discussions from the group, activities the Task Force will take on are as follows (in no particular order):
 - Review the current mission statement, goals and objectives – The Task Force will review and revise, if necessary, the current mission statement, goals and objectives to ensure they make sense and are relevant to today’s environment.
 - Develop a 5-year expenditure plan (FY17/18 to FY21/22) – The Task Force will determine an appropriate mix of projects (e.g., time-of-day signal coordination, ITS-based strategies, Connected Vehicles, transit, multi-modal, etc.) and develop a 5-year (and possibly a 10-year) expenditure plan for inclusion in the Plan Bay Area update.
 - Determine the future of BASIS – Originally developed as a needs assessment tool for assessing funding needs for the RTP, the Task Force will revisit the purpose/need and consider modifying the data set, as it is currently too broad and the data is difficult to collect, populate, and maintain.
 - Research funding options – The Task Force will research funding opportunities that can support arterial improvements. Such funding alternatives should not only include new sources, but also existing MTC funding programs, where there may be overlaps, e.g., Transit Performance Initiative, Local Street and Roads, etc.
 - Review new PASS eligibility requirements – The Task Force will review the PASS project eligibility requirements (reliever routes, high transit services, high growth cities with respect to jobs/housing) from the recent FY15/16 cycle to determine if modifications are needed.
 - Review focus of Technical Transfer Seminars – The Task Force will consider establishing educational goals that could include the latest technologies in arterial improvements.
- Task Force will meet monthly over the next four months. The next meeting is scheduled for July 28, 2015

Program for Arterial System Synchronization (PASS) FY 14/15 Cycle - Project Status Update (As of 8/28/2015)

#	County	Project Sponsors (# of signals)	# of Signals			Project Corridors (# of signals)	Project Services and Plans	GPS Clocks				Consultant	Project Status*
			Local	Caltrans	Total			Controller	Local	Caltrans	Total		
1	Alameda	Oakland (36), Caltrans (5)	36	5	41	14th St (14), Oak St (8), 98th Ave (19)	Weekday (AM/Midday/PM); Weekend (one period)	170E (26), 170 (5), 2070 (1)	28	4	32	Advantec	4B
2	San Mateo	South San Francisco (17), Caltrans (21)	17	21	38	E Grand Ave (6); Airport Blvd (5); S Airport Blvd (6); ECR/Chestnut/Westborough (21)	Weekday (AM/Midday/PM) (38); Weekend (Midday/PM) (21)	170E (2) and NEMA (8)	10	0	10	Advantec	4B
3	Alameda	Alameda County (9), Caltrans (3)	9	3	12	Castro Valley Blvd (10); Strobridge Ave (2)	Weekday (AM/Midday/PM)		0	0	0	DKS	4B
4	San Mateo	San Bruno (7), San Mateo County (1), Caltrans (7)	8	7	15	San Bruno Ave	Weekday (AM/Midday/PM)	170 (3), EPAC 300 (1); Naztec 2070 (1)	3	2	5	DKS	4B
5	Solano	Suisun City (10), Caltrans (3)	10	3	13	Sunset Ave (5), Walters Ave (5), SR 12 (3)	Weekday (AM/Midday/PM); Turning Movement Analysis (Sunset/Railroad Ave)		0	0	0	DKS	3B
6	Contra Costa	Walnut Creek (54), Caltrans (8)**	54	8	62	Citywide	Weekday (AM/Midday/PM) (62); Weekend (AM/Midday/PM) (27)		0	0	0	DKS	4B
7	Contra Costa	Antioch (8), Caltrans (2)	8	2	10	Somersville Rd	Weekday (AM/Midday/PM)		0	0	0	KHA	4B
8	Alameda	Fremont (4), Caltrans (4)	4	4	8	Auto Mall Pkwy	Weekday (AM/Midday/PM)		0	0	0	KHA	4B
9	Alameda	Union City (12), Hayward (5), Caltrans (2)	17	2	19	Whipple Rd (14), Dyer St (5)	Weekday (AM/Midday/PM)	2070 (2), Econolite (1)	1	2	3	KHA	4B
10	Contra Costa	Walnut Creek (21), Contra Costa County (3)***, Caltrans (3)**	23	4	27	Treat Blvd/Main St (9); Ygnacio Valley Rd (18)	Traffic Responsive (27) [Ygnacio-18, Treat-9]		0	0	0	KHA	4B
11	Contra Costa	Concord (53)	53	0	53	Ygnacio Valley Rd (11); Downtown (18); Clayton Rd (13); Monument Blvd (11)	Weekday (AM/Midday/PM) (20); Weekday (AM/PM) (9); Weekend (two peaks) (24); Actelis EADs Copper based (10)		0	0	0	TJKM	4B
12	Contra Costa	San Ramon (19), Caltrans (2)	19	2	21	E Crow Canyon Rd (8), W Crow Canyon Rd (5), Alcosta Blvd (8)	Weekday (AM/Midday/PM) (18); Weekday (AM/PM) (3); School (AM/PM) (3); Weekend (two peaks) (18)		0	0	0	TJKM	4B
Total			258	61	319				42	8	50		

*3B = Revised Recommendations Report; 4B = Final Project Report with Benefit-Cost Analysis.

**Signals are operated and maintained by the City of Walnut Creek.

(#) Indicates the number of signals.



Metropolitan Transportation Commission (MTC)

Tech Transfer Seminar

Active Traffic Management (ATM) Strategies for Arterials

When:	Wednesday, September 30, 2015, 12:30-4:30 PM
Where:	MTC Auditorium, 101 Eighth Street, Oakland, CA 94607
Cost:	FREE (<i>Registration Required</i>)
Registration Info:	Please register online before 5 PM, Friday, September 25, 2015 by visiting this link: http://mtctechtransferseminar.eventbrite.com
Audience:	Traffic engineers (public & private sectors), transportation planners, program managers, students and others interested in the seminar topics

Active Traffic Management (ATM) includes a set of traffic management and control strategies to dynamically manage congestion based on prevailing and predicted traffic conditions. This seminar will focus on the ATM strategies for arterials. Following an overview, several ATM strategies for arterials will be explored in detail, including bicycle and pedestrian detection and operations at intersections, adaptive signal control systems, active parking management, and the arterial operations component under the I-80 Integrated Corridor Mobility (ICM) project. A brief description of each topic is provided below. The agenda for this seminar is shown on the last page.

1. State of the Practice: Active Traffic Management for Arterials

This presentation provides an overview of the National Cooperative Highway Research Program (NCHRP) Synthesis 447, which documents the state of the practice associated with designing, implementing, and operating ATM on arterials. Of particular interest to this study was strategies used to actively manage traffic and congestion on arterials; situations and operating conditions in which ATM strategies have been successfully and unsuccessfully deployed on arterials; and system and technology requirements associated with implementing the strategies. Of secondary interest to this study was information on institutional issues associated with implementing ATM for arterials; maintenance and operations requirements associated with implementing these strategies; and the benefits and costs associated with implementing these strategies.

Speaker: Aaron Elias (Kittelson & Associates, Inc.)

2. Bicycle Detection and Differentiation at Signalized Intersections

Signal timing that is set correctly for cars is often deficient for bicyclists. California passed AB 1581 several years ago, requiring bicycle detection at new or upgraded intersections. This requirement has greatly altered how the detection industry, and engineers, view bicyclists at intersections. This presentation will describe the various detection methods that are currently used to differentiate bicycles from vehicles in mixed flow conditions at intersections. By differentiating bicycles, special signal timings can be applied to increase green time for those

bicyclists when present, allowing them more time to cross the intersection, and improving safety. Several local agency examples will be presented, including operational usage and lessons learned.

Speakers: **Mike Montoya** (Iteris, Inc.); **Jaime Rodriguez** (City of Palo Alto)

3. Sensors and Safety Measures for Pedestrians in Crosswalks

A micro-radar sensor that can detect pedestrians has been deployed at a crosswalk test site in Danville, CA. This presentation will describe the micro-radar sensor technology and its performance in detecting and differentiating between pedestrians and vehicles in the crosswalk. Potential safety applications based on field measurements have been evaluated and will be presented. Next steps to enhancing pedestrian detection and improving safety will also be discussed.

Speaker: **Christopher Flores** (Sensys Networks, Inc.)

4. Adaptive Signal Control – How Does It Work?

While adaptive signal control is a well-accepted active traffic management strategy for arterials in many countries, it is still considered a nascent technology in the USA. There is an increasing number of adaptive traffic signal offerings from vendors across the country, some being self-contained systems offered by specialist companies, others being additions to traditional central signal systems. Some adaptive installations have shown outstanding benefits, while many have yielded mediocre results and left agencies with disappointed expectations. This presentation will describe the various types of adaptive systems; explain their underlying principles, capabilities and limitations; explain how to identify and clearly define your needs, objectives and requirements for adaptive control of an arterial; and describe the various methods of procurement that are suitable for purchasing an adaptive signal system. This presentation will also discuss appropriate methods for evaluating adaptive signal performance, and how to critically review vendors' claims.

Speaker: **Kevin Fehon** (DKS Associates)

5. SFpark: Circle Less, Live More

SFpark was a federally-funded, internationally-recognized demonstration of a new approach to managing parking, using better information (including real-time data to monitor and communicate parking availability), customer-oriented wayfinding and service branding, and demand-responsive parking pricing to help make parking easier to find and street operations safer and more efficient. The SFpark project collected an unprecedented library of data to enable a thorough evaluation of its effectiveness; harnessing that data, the San Francisco Municipal Transportation Agency (SFMTA) evaluated the SFpark pilot project to see how effectively this approach to managing parking delivered the expected benefits. Find out how the pilot was carried out, what the SFMTA learned from the pilot, and what's next for SFpark and San Francisco.

Speaker: **Andy Thornley** (San Francisco Municipal Transportation Agency)

6. I-80 ICM: I Got Off the Freeway, Now What?

The I-80 Integrated Corridor Mobility (ICM) project consists of several different traffic management elements on the freeway and adjacent arterials that are integrated into a seamless system for managing congestion. These elements include Lane Use Signs, Variable Speed Signs, Variable Message Signs, and Adaptive Ramp Metering on the freeway; and Trailblazer Signs, CCTV cameras, and traffic signal modifications on the arterials. This presentation focuses on the arterial aspects of the project and how these elements will provide incident management tools on surface streets and benefit the overall transportation network.

Speaker: **Randy Durrenberger & Brian Sowers** (Kimley-Horn & Associates, Inc.)



Metropolitan Transportation Commission (MTC)

Tech Transfer Seminar

Active Traffic Management (ATM) Strategies for Arterials

Wednesday, September 30, 2015, 12:30-4:30 PM

MTC Auditorium, 101 Eighth Street, Oakland, CA 94607

AGENDA

<i>12:30 – 1:00 PM</i>	<i>Check-in & Social Time</i>
1:00 – 1:10 PM	Welcome
1:10 – 1:35 PM	I. State of the Practice: Active Traffic Management for Arterials (Aaron Elias, <i>Kittelson & Associates, Inc.</i>)
1:35 – 2:00 PM	II. Bicycle Detection and Differentiation at Signalized Intersections (Mike Montoya, <i>Iteris, Inc.</i> ; Jaime Rodriguez, <i>City of Palo Alto</i>)
2:00 – 2:25 PM	III. Sensors and Safety Measures for Pedestrians in Crosswalks (Christopher Flores, <i>Sensys Networks, Inc.</i>)
<i>2:25 – 2:40 PM</i>	<i>Q&A</i>
<i>2:40 – 2:55 PM</i>	<i>Break</i>
2:55 – 3:20 PM	IV. Adaptive Signal Control – How Does It Work? (Kevin Fehon, <i>DKS Associates</i>)
3:20 – 3:45 PM	V. SFpark: Circle Less, Live More (Andy Thornley, <i>SFMTA</i>)
3:45 – 4:10 PM	VI. I-80 ICM: I Got Off the Freeway, Now What? (Randy Durrenberger & Brian Sowers, <i>Kimley-Horn & Associates, Inc.</i>)
<i>4:10 – 4:30 PM</i>	<i>Q&A</i>

NextGen Arterial Operations Program Project Status

#	Key Deliverable	NextGen AOP Projects			
		AC Transit	LAVTA/ Dublin	City of Fremont	County of Santa Clara
1	1a. Draft SEMP	Completed	Completed	Completed	n/a
	1b. Final SEMP	Completed	Completed	Completed	n/a
2	2a. Draft User Needs Report	Completed	Completed	Completed	Completed
	2b. Final User Needs Report	Completed	Completed	Completed	Completed
3	3a. Draft ConOps	Completed	Completed	Completed	n/a
	3b. Final ConOps	*	*	Completed	n/a
4	4a. Draft System Requirements	*	*	Completed	Completed
	4b. Final System Requirements	*	*	Completed	Completed
5	5a. Draft Verification Plan	*	*	Completed	Completed
	5b. Final Verification Plan	*	*	*	Completed
6	6a. Draft Procurement Document	*	*	*	n/a
	6b. Final Procurement Document	*	*	*	n/a

**Deliverables to be completed later.*



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Memorandum

TO: Arterial Operations Committee (AOC)

DATE: September 1, 2015

FR: Virginia Lingham, MTC

W. I.: 1224

RE: Connected Vehicles Update – National Policies and Initiatives

Background

At the national level, a significant amount of activity has been taking place within the Connected Vehicle Program, which is a multimodal initiative that aims to enable safe, interoperable, and networked wireless communications among vehicles, infrastructure, and personal communications devices to improve safety, mobility, and the environment. MTC and the State of California Department of Transportation (Caltrans) have participated in the national connected vehicle effort since its inception as a research program in 2004, including launching one of the nation's first connected vehicle test beds along El Camino Real in Palo Alto and surrounding cities. MTC continues to partner with Caltrans and other agencies across the state to support the roll out of connected vehicles technologies.

MTC understands that it is important to raise awareness and engage its local stakeholders about the national connected vehicle initiatives, decisions, and milestones in order to see successful deployments here in the Bay Area. One of the ways MTC can meet this objective is through regular updates to the Arterial Operations Committee.

Key Milestones

The following milestones are help note the progress the national Connected Vehicle Program has made and the milestones that are anticipated in the future.

Date	Milestone	Note
2003	National VII Program Formed by USDOT, AASHTO, and Automakers	
2004	VII Test Bed in Palo Alto Becomes Operational	Supports CV research initiatives.
2008	VII Proof-of-Concept in Michigan and California Completed	Demonstrates CV technologies in specific use case scenarios.
2011	VII Program Renamed to Connected Vehicle Program	
2013	Ann Arbor Safety Pilot Model Deployment Completed	Results intended to support the NHTSA decision regarding connected vehicle communications for safety.
2014	NHTSA Issues Advance Notice of Proposed Rulemaking for Light Vehicles V2V Communications	Additional research is needed before the final decision is made.
2015	V2I Deployment Coalition Formed	Includes a broad membership from AASHTO, ITS America, ITE.

<i>Anticipated Milestones in Italics Below</i>		
Date	Milestone	Note
2015	<i>FHWA V2I Deployment Guidance Released</i>	
2015	<i>NHTSA Issues Rulemaking for Light Vehicles V2V Communications</i>	
2016	<i>General Motors Releases V2V Technology</i>	<i>Voluntarily adding V2V communications in select vehicle models.</i>
2017	<i>Security Credentialing and Management System Finalized</i>	<i>The SCMS encompasses all technical, organizational, and operational aspects of the V2V security system that is needed to support trusted, safe/secure V2V communications and to protect driver privacy appropriately.</i>
2017	<i>NHTSA Issues Rulemaking for Heavy Vehicles</i>	
2017	<i>First Wave of FHWA's Connected Vehicle Pilot Deployment Projects Operating</i>	
2019	<i>Second Wave of FHWA's Connected Vehicle Pilot Deployment Projects Operating</i>	
2020	<i>First Mandated Connected Vehicles Available to the Public</i>	<i>Estimated time to market after the NHTSA issued its rulemaking on V2V communications for light vehicles.</i>

AASHTO: American Association of State Highway and Transportation Officials

ITE: Institute of Transportation Engineers

NHTSA: National Highway Traffic Safety Administration

VII: Vehicle Infrastructure Integration

V2I: Vehicle to Infrastructure

V2V: Vehicle to Vehicle

Get Involved

- ❖ Webinar: "Connected Vehicle Workforce" - Sept 10, 2015 1:00 p.m.
- ❖ Webinar: "Next Generation Traveler Information System" - Sept 23, 2015 10:00 a.m.
- ❖ Conference: ITS California Annual Meeting, Los Angeles, CA – Sept 21-23, 2015

Stay Connected

For more information about Connected Vehicles topics visit:

- www.its.dot.gov/landing/cv.htm
- www.dot.ca.gov/research/operations/one_california
- www.safercar.gov/v2v/
- www.itsa.org/industryforums/connectedvehicle
- www.transportationops.org
- www.pcb.its.dot.gov/t3_archives.aspx



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Memorandum

TO: Arterial Operations Committee (AOC)

DATE: September 1, 2015

FR: Linda Lee, MTC

CC: AOP Task Force

RE: AOP Task Force – August 25, 2015 Meeting Summary

The AOP Task Force held a meeting on August 25, 2015. This memo provides a summary of the key discussion items:

- The meeting opened with a few discussion items from the group:
 - It was suggested that the “Arterial Operations Committee (AOC)” be renamed as the “Arterial Operations Working Group (AOWG)”, since the AOC is more of a working group. Unlike current MTC standing committees, the AOC does not have any approval authority. The role of the AOC is similar to that of the Local Streets & Roads Working Group (LS&RWG), which provides a forum to share information. The LS&RWG reports to the Partnership Technical Advisory Committee. Similarly, MTC staff will explore the option for the AOWG to also report to this Committee. It was suggested that the new name be effective in 2016.
 - The group made a minor revision to the AOP mission statement that was developed at the July meeting. The final mission statement is:
“To improve multimodal mobility and safety by providing assistance to public agencies in their management and operations of the Bay Area’s arterials.”
- Program Goals and Objectives were discussed –
 - Based on the final Needs Assessment that was developed at the July meeting, draft Program Goals and Objectives were developed and discussed. Attached is a summary of the final Program Goals and Objectives.
- Long-range planning-level investment strategy for the current Plan Bay Area update was discussed –
 - As MTC begins the planning process to update the agency’s Regional Transportation Plan (RTP) (referred to as “Plan Bay Area 2040”), it released a “Call for Projects” at the end of April 2015 for agencies to submit projects for inclusion in the RTP update. As with all

previous RTPs, MTC will be submitting an application for its package of regional operations projects, which includes the Arterial Operations Program.

- MTC staff presented two different AOP funding options for discussion – Traditional (Option 1), which would have a heavier emphasis on traditional signal coordination; and Technology (Option 2), which would focus on advanced technologies related to arterial operational improvements (see attached).
 - After some discussion, the Task Force recommended the Technology option (with a 25-year funding level of approximately \$106 million), since deploying advanced technologies is where the industry is headed. This would translate to approximately \$4 million per year, which is about twice the level as previous years. It should be noted that the specific percentage distribution between the different initiatives would be flexible. This initial recommendation would still need to be discussed internally by MTC staff.
- The next AOP Task Force meeting is September 22, 2015. The Task Force meetings will be extended to the end of the year.

Arterial Operations Program

Goals and Objectives



Program Goals and Objectives

Goals	Objectives
<p>Goal 1 (Regional/Multi-jurisdictional): Promote regional benefits, support institutional coordination, and ensure consistency and operational efficiency along major corridors crossing multiple jurisdictions</p>	<ol style="list-style-type: none"> 1. Support institutional coordination between agencies by facilitating the implementation of policies and practices to expand communications for arterial systems, coordinate and share operations, implement advanced technologies, monitor performance and share data. 2. Establish a framework to identify priority corridors that support regional travel 3. Support projects that coordinate freeway and arterial operations to minimize impacts 4. Establish tools that can be used to assess signal timing needs and performance for planning purposes
<p>Goal 2 (Technical Assistance Program): Support local agencies in their efforts to improve multimodal mobility and safety along major corridors</p>	<ol style="list-style-type: none"> 1. Establish a technical assistance program that uses consultant services procured and administered by MTC 2. Provide technical assistance for projects that provide corridor-level mobility improvements

Program Goals and Objectives (cont'd)

Goals	Objectives
<p>Goal 3 (Arterial Operations Committee): Provide a forum for sharing information, discussing and developing solutions to shared issues, and guiding the overall Program</p>	<ol style="list-style-type: none"> 1. Establish a forum (AOC) and hold bi-monthly meetings 2. Include technical presentations at AOC meetings to share knowledge, experiences, and solutions 3. Organize Technical Transfer Seminars 4. Coordinate industry-focused technical workshops and/or training classes 5. Form task forces, on an as-needed basis, to address specific Program issues
<p>Goal 4 (Technology): Encourage integration of advanced technologies aimed at improving arterial management and operations for all modes</p>	<ol style="list-style-type: none"> 1. Select projects that integrate advanced technologies and strategies, e.g., adaptive traffic signal operations, transit signal priority, active traffic management, Connected Vehicle, etc. 2. Provide a forum (e.g., AOC meetings) for industry leaders to share information about emerging technologies 3. Provide regular updates to the AOC on National/State policies, rulemaking, or legislation related to Connected, Automated, or Autonomous Vehicles that can affect local government



Program Goals and Objectives (cont'd)

Goals	Objectives
Goal 5 (Funding): Advocate for additional resources to support the goals of the Program	<ol style="list-style-type: none"><li data-bbox="989 367 1894 505">1. Increase awareness, during the development of the RTP, of the importance of arterial operations on regional system performance<li data-bbox="989 505 1894 570">2. Develop a framework for project selection criteria<li data-bbox="989 570 1894 675">3. Institute challenge grant concepts, where regional dollars can be matched by State/local dollars<li data-bbox="989 675 1894 870">4. Seek synergies with other regional programs, such that funds can be leveraged to provide cross-cutting benefits (e.g., Transit Performance Initiatives Program, Local Streets & Roads Program, etc.)<li data-bbox="989 870 1894 967">5. Seek funding opportunities related to integrating parallel arterial improvements with larger freeway projects



**Plan Bay Area 2040: Arterial Operations Program
Initial Draft Proposals (8/25/2015) - Subject to Change**

Funding Focus: Traditional

Initiative	% Distribution	25-Year Cost Estimates	Annual Costs
Signal Coordination (PASS)	60%	\$ 47,000,000	\$ 1,880,000
NGAOP without TSP	15%	\$ 22,000,000	\$ 880,000
NGAOP with TSP	10%	\$ 16,000,000	\$ 640,000
Connected Vehicle infrastructure	10%	\$ 7,000,000	\$ 280,000
Other ATM strategies (e.g., bike/ped)	5%	\$ 2,000,000	\$ 80,000
Total	100%	\$ 94,000,000	\$ 3,760,000

Funding Focus: Technology

Initiative	% Distribution	25-Year Cost Estimates	Annual Costs
Signal Coordination (PASS)	25%	\$ 19,000,000	\$ 760,000
NGAOP without TSP	20%	\$ 29,000,000	\$ 1,160,000
NGAOP with TSP	25%	\$ 39,000,000	\$ 1,560,000
Connected Vehicle infrastructure	25%	\$ 17,000,000	\$ 680,000
Other ATM strategies (e.g., bike/ped)	5%	\$ 2,000,000	\$ 80,000
Total	100%	\$ 106,000,000	\$ 4,240,000