



METROPOLITAN  
TRANSPORTATION  
COMMISSION

**Agenda Item 5a**  
Bay Area Metro Center  
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## *Memorandum*

TO: Operations Committee

DATE: May 4, 2018

FR: Executive Director

W.I. 1234

RE: Contract Amendments – On-Call Transportation Engineering and Planning Services: Innovative Deployments to Enhance Arterials (IDEA) Program: DKS Associates (\$150,000); Kimley-Horn & Associates, Inc. (\$210,000)

### **Summary**

This memorandum requests Committee approval for contract amendments with the following firms, in the specified amounts, to provide systems engineering services for the Innovative Deployments to Enhance Arterials (IDEA) Program: DKS Associates (\$150,000); and Kimley-Horn and Associates, Inc. (\$210,000).

### **Background**

The Bay Area has over 33,000 directional miles of arterials and local streets and approximately 11,000 traffic signals. Some major arterials carry heavy traffic and experience significant congestion during the weekday peak periods, which can lead to loss of productivity, unreliable travel for autos and transit vehicles, and increased safety issues for bicyclists and pedestrians.

Over the past 20+ years, MTC has provided technical assistance to cities/counties to implement low-cost, low-technology solutions by updating signal timing plans through the Program for Arterial System Synchronization (PASS). In 2014, MTC launched an experimental initiative – Next Generation Arterial Operations Program (NGAOP) – which implements technology-based strategies, such as adaptive traffic signals, transit signal priority, and real-time traffic monitoring – to modernize how cities/counties operate arterial signal systems. Through NGAOP, recipient agencies have seen improvements in travel time, traffic flow, and throughput.

Last year, MTC launched the IDEA Challenge Grant Program to implement cutting-edge arterial improvement projects that could benefit all modes. The IDEA Program includes two categories of projects: Category 1 deploys mature, commercially-available technologies; and Category 2 deploys new, higher-risk Connected and Automated Vehicle technologies. MTC awarded a total of \$13 million to 16 projects (10 Category 1 and 6 Category 2). A summary of the 16 projects is included in Attachment A. The focus of this memo is on six Category 1 projects that will deploy Automated Traffic Signal Performance Measures (ATSPMs) – a “fitness tracker” for signal systems that uses real-time big data to monitor system performance – enabling agencies to proactively make performance-based operations and maintenance decisions to increase safety or enhance operations.

### **Procurement Selection Process**

In February 2016, MTC issued a Request for Qualifications to pre-qualify firms to provide on-call transportation engineering and planning services to support various service categories through June 30, 2019, including:

- a) Freeway Active Traffic Management
- b) Travel Demand Management
- c) Connected Vehicles/Autonomous Vehicles and Advanced Technology
- d) Data Analytics and Performance Assessments
- e) Arterial Operations
- f) General Planning

On March 14, 2018, MTC issued a Request for Proposals and invited all 10 pre-qualified consultants to submit proposals to provide systems engineering support services for the six ATSPM projects, which are divided into two groups based on geography and size of project: four in Group A and two in Group B. MTC received proposals from two firms: DKS Associates for Groups A and B, and Kimley-Horn and Associates, Inc. for Group A only. A panel consisting of MTC staff performed a review and evaluation of the proposals based on each firm's qualifications and experiences of the team, approach to completing the work, price, cost effectiveness, and written communication, in descending order of importance. Based upon the evaluation, staff recommends the selection of Kimley-Horn and Associates, Inc. for Group A and DKS Associates for Group B. The table below provides the final ranking based upon panel evaluations:

Consultant	Ranking (Group A)	Ranking (Group B)
1. Kimley-Horn and Associates, Inc.	1	n/a
2. DKS Associates	2	1

Kimley-Horn and Associates, Inc. and DKS Associates are neither small businesses nor disadvantaged business enterprises and currently have no subcontractors for the work described in this memorandum.

### **Recommendation**

Staff recommends that the Committee authorize the Executive Director or his designated representative to negotiate and enter into contract amendments with DKS Associates for a not-to-exceed amount of \$150,000 and Kimley-Horn & Associates, Inc. for a not-to-exceed amount of \$210,000 for the above-described work.

  
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Steve Heminger

### **Attachments:**

- Attachment A: IDEA Grant Awards
- Presentation

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**Attachment A**  
**IDEA Grant Awards**

	<b>Agency</b>	<b>Project Description</b>	<b>Project Budget (\$ million)</b>	<b>Grant Amount (\$ million)</b>
<b>Category 1 Projects</b>				
1	AC Transit	Deploy existing TSP, bus queue jump lanes	\$3.7	\$2.3
2*	Alameda (City)	Deploy ATSPM, pedestrian/vehicle detection	\$0.4	\$0.3
3*	Hayward	Deploy ATSPM	\$0.4	\$0.3
4	Oakland	Implement bicycle greenwave	\$0.4	\$0.3
5*	Pleasanton	Deploy ATSPM, data integration	\$0.4	\$0.3
6*	San Jose	Deploy ATSPM	\$2.2	\$1.4
7*	San Rafael	Deploy ATSPM	\$2.4	\$0.8
8*	San Ramon	Deploy ATSPM, fish-eye cameras	\$0.8	\$0.6
9	South San Francisco	Deploy ATSPM, variable lane assignment	\$0.7	\$0.5
10	Union City	Expand existing ASCT; deploy ATSPM, bike/ped detection	\$1.1	\$0.7
<b>Category 2 Projects</b>				
11	CCTA	Deploy advanced TSP, monitoring system	\$0.7	\$0.6
12	Dublin	Deploy SAV on city streets; deploy advanced bike/ped solutions	\$0.7	\$0.4
13	Emeryville	Deploy ATSPM, TSP, virtual bicycle detection technology	\$1.1	\$0.8
14	Los Gatos	Deploy ASCT, ATSPM, virtual bicycle detection application	\$1.1	\$0.7
15	VTA	Deploy electric AV – accessible to persons with disabilities	\$1.1	\$0.8
16	Walnut Creek	Deploy advanced TSP	\$0.9	\$0.7

\* The focus of this Agenda Item 5a

## REQUEST FOR COMMITTEE APPROVAL

### Summary of Proposed Contract Amendment

Work Item No.:	1234
Contractors:	DKS Associates Oakland, CA
Project Title:	IDEA Category 1 Systems Engineering
Purpose of Project:	To provide Systems Engineering support services for two Category 1 projects under the IDEA Program.
Brief Scope of Work:	Provide a streamlined approach to Systems Engineering for Automated Traffic Signal Performance Measures (ATSPM) deployments.
Project Cost Not to Exceed:	\$150,000 (this amendment) \$412,500 (total contract before this amendment); \$562,500 (total authorized contract after this amendment)
Funding Source:	CMAQ/STP = \$127,500 Local Match = \$22,500
Fiscal Impact:	Funding is included in the FY 2018-19 MTC budget.
Motion by Committee:	That the Executive Director or his designee is authorized to negotiate and enter into a contract amendment with DKS Associates to provide on-call transportation planning services as described above and in the Executive Director's memorandum dated May 4, 2018, and the Chief Financial Officer is directed to set aside \$150,000 for such contract amendment.
Operations Committee:	<hr/> Dave Cortese, Chair
Approved:	Date: May 11, 2018

## REQUEST FOR COMMITTEE APPROVAL

### Summary of Proposed Contract Amendment

Work Item No.:	1234
Contractors:	Kimley-Horn and Associates, Inc. Pleasanton, CA
Project Title:	IDEA Category 1 Systems Engineering
Purpose of Project:	To provide Systems Engineering support services for four Category 1 projects under the IDEA Program.
Brief Scope of Work:	Provide a streamlined approach to Systems Engineering for Automated Traffic Signal Performance Measures (ATSPM) deployments.
Project Cost Not to Exceed:	\$210,000 (this amendment) \$2,387,400 (total contract before this amendment); \$2,597,400 (total authorized contract after this amendment)
Funding Source:	CMAQ/STP = \$178,500 Local Match = \$31,500
Fiscal Impact:	Funding is included in the FY 2018-19 MTC budget.
Motion by Committee:	That the Executive Director or his designee is authorized to negotiate and enter into a contract amendment with Kimley-Horn and Associates, Inc. to provide on-call transportation planning services as described above and in the Executive Director's memorandum dated May 4, 2018, and the Chief Financial Officer is directed to set aside \$210,000 for such contract amendment.
Operations Committee:	<hr/> Dave Cortese, Chair
Approved:	Date: May 11, 2018

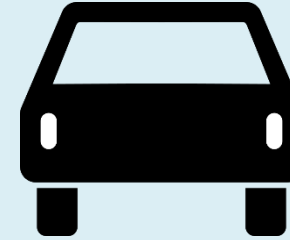
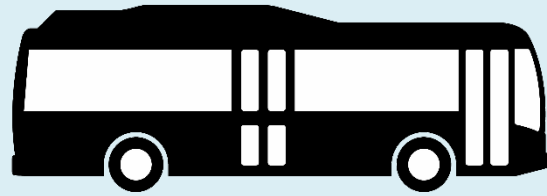


# **Innovative Deployments to Enhance Arterials (IDEA) Challenge Grant Program**



Metropolitan Transportation Commission  
Operations Committee Meeting  
May 11, 2018

# MTC's Arterial Operations Program (AOP)



- **Technical Assistance Program**

- Grant programs to provide technical and financial assistance to Bay Area agencies for signal coordination, technology and other operational improvement projects

- **Technology Transfer Seminars**

- Free, half-day or full-day, seminars held (twice) annually on arterial topics for traffic engineers, planners, consultants, with technical presentations by experts

- **Arterial Operations Committee (AOC)**

- Quarterly forum for State/County/Local transportation engineers & planners, consultants and vendors to develop solutions and guide the overall Program

# Evolution: Technical Assistance Program

MTC GRANT PROGRAM												TYPES OF PROJECTS														
Traffic Engineering Technical Assistance / Regional Signal Timing Programs (TETAP / RSTP)												• Signal timing coordination projects and traffic studies														
Program for Arterial System Synchronization (PASS)												• Signal timing coordination projects														
Next Generation Arterial Operations Program (NGAOP)												• Low-cost advanced technology-based projects, e.g., adaptive traffic signal systems, transit signal priority, real-time traffic monitoring														
Innovative Deployments to Enhance Arterials (IDEA)												• Mature, commercially-available technology-based projects • New, higher-risk Connected/Automated Vehicle technology-based projects														
FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
TETAP/ RSTP (17 yrs)																										
																	PASS (10+ yrs)									
																					NGAOP (3 yrs)					
																					IDEA (3-4 yrs)					



# Program for Arterial System Synchronization (PASS)

- Launched: FY 2011-12
- **Goals:** To provide technical assistance to re-time traffic signals and improve operations on arterials
- **Funding:** \$1.0 million annually
- **Types of projects:**
  - ✓ Time-of-Day Signal Coordination (weekday peaks, midday, weekends, holidays)
  - ✓ Incident Management Flush Plans



# NextGen Arterial Operations Program (NGAOP)

Pilot Launched: FY 2014-15

**Goals:** To implement low-cost, advanced technologies to improve arterial operations

**Funding:** \$9.0 million\*

## Types of projects:

- ✓ Adaptive Traffic Signals
- ✓ Transit Signal Priority
- ✓ Real-time Traffic Monitoring
- ✓ Bus Queue Jump Lanes



\* Jointly funded with MTC's Transit Performance Initiative Program

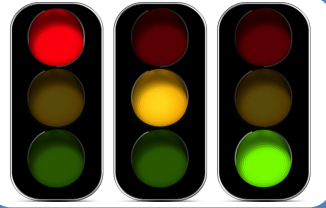
# Innovative Deployments to Enhance Arterials (IDEA)

- **Launched:** FY 2017-18
- **Goals:** To implement mature, advanced arterial solutions as well as emerging technologies to improve operations
- **Funding:** \$13.0 million
- **Types of projects:**
  - Traffic Signal Monitoring using Big Data
  - Adaptive Traffic Signals
  - Transit Signal Priority
  - Connected and Automated Vehicle Technologies



# Eligible Projects: IDEA Category 1

Mature,  
Commercially-  
Available  
Advanced  
Technologies



## Signal System Improvements:

- Automated Traffic Signal Performance Measures (ATSPM) ✓
- Adaptive Signal Systems ✓



## Bicycle or Pedestrian Improvements:

- Bicycle or pedestrian detection technology for real-time operations ✓
- Bicycle Green Waves ✓



## Transit Improvements for Arterials:

- Transit Signal Priority (TSP) Expansion ✓
- Queue Jump Lanes ✓



## Other Improvements:

- Emergency Vehicle Pre-emption (EVP) Expansion
- Dynamic Lane Assignment at Signalized Intersections ✓
- Coordination of Arterial Signals with Ramp Meters



# Eligible Projects: IDEA Category 2

## Connected and Automated Vehicle Technologies



### Next-Generation Bicycle or Pedestrian Improvements:

- Innovative Signal Priority for Active Travelers ✓
- Vulnerable Road User Protection ✓



### Connected Vehicle:

- Multi-Modal Intelligent Transportation Signal Systems (MMITSS) ✓



### Connected Vehicle:

- Driving Optimization ✓



### Connected Vehicle:

- Integrated Dynamic Transit Operations (IDTO) ✓

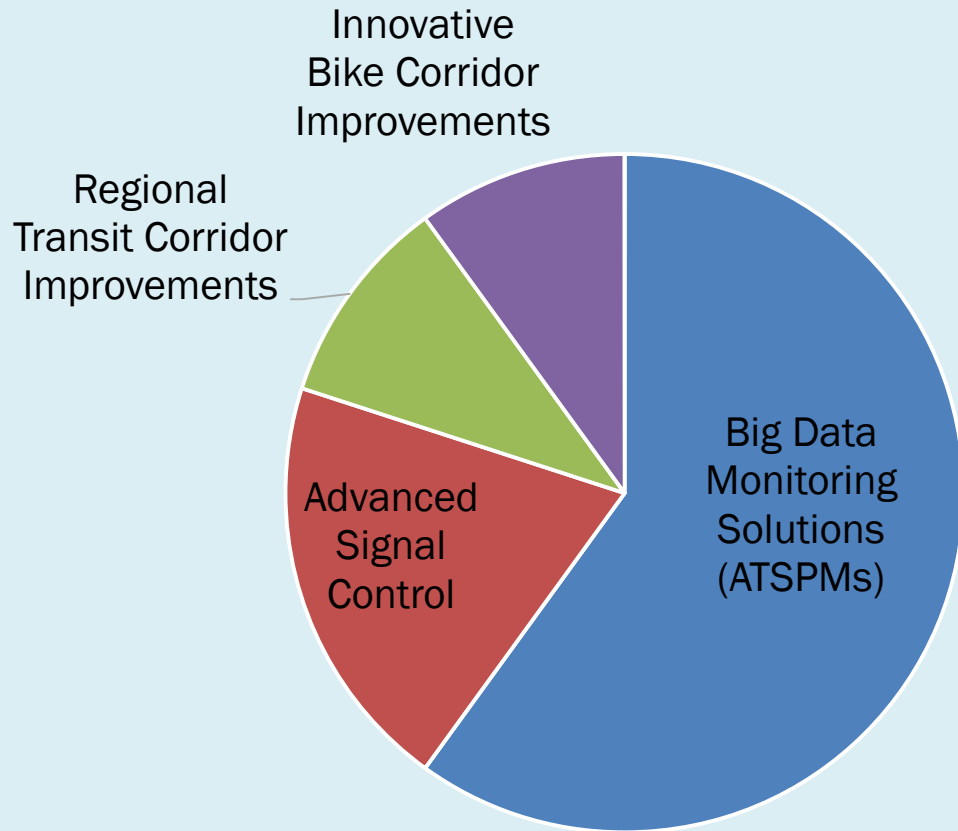


### Connected and Automated Vehicles (CAV):

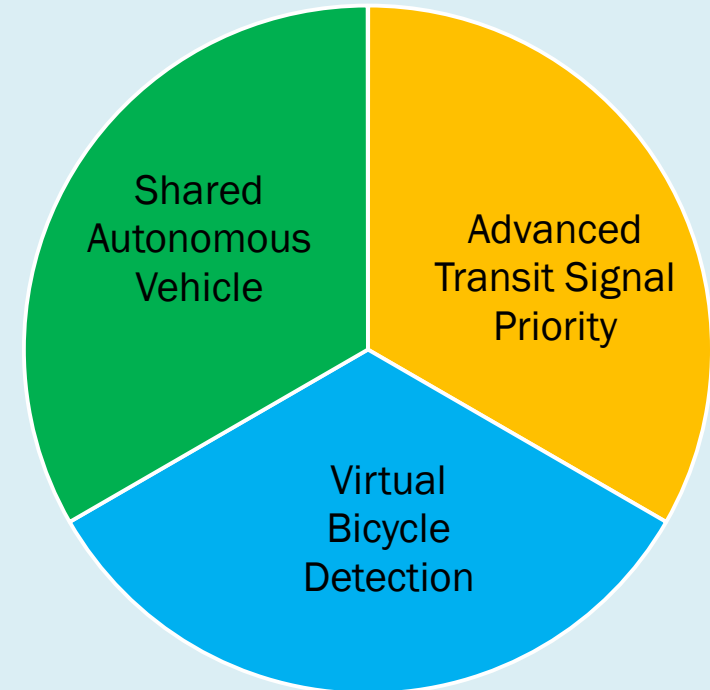
- Shared Autonomous Vehicle (SAV) deployments ✓
- Eco-driving
- Collision avoidance

# IDEA Grant Awards by Project Type

Category 1 (10 projects)



Category 2 (6 projects)

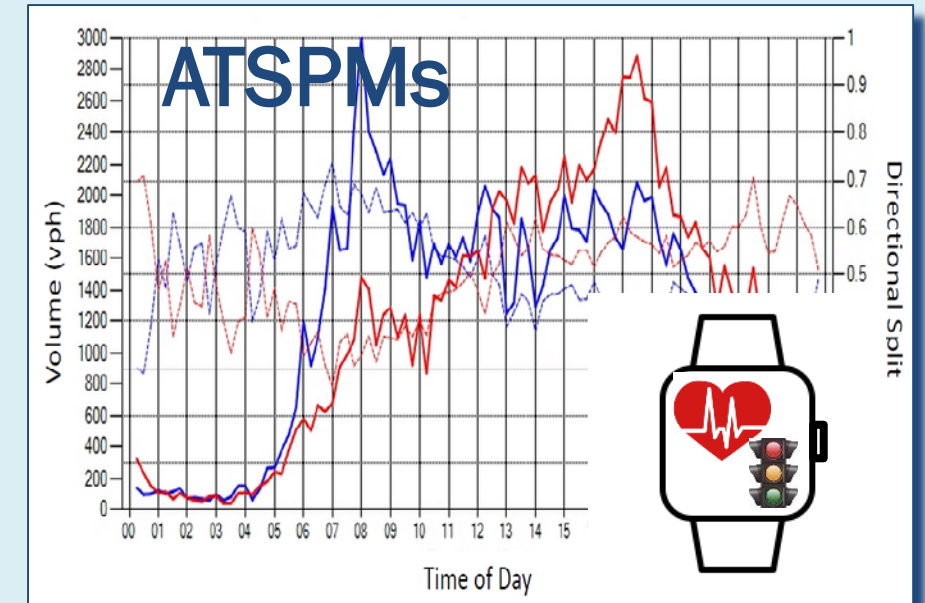
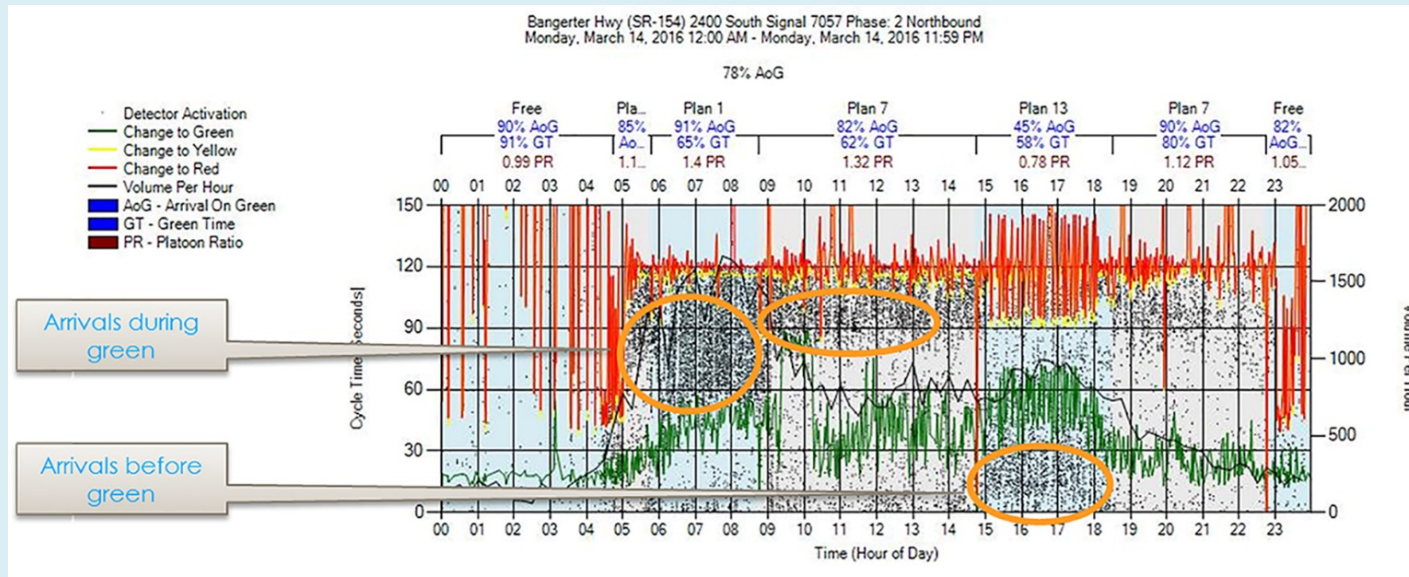




# Example Category 1 Project

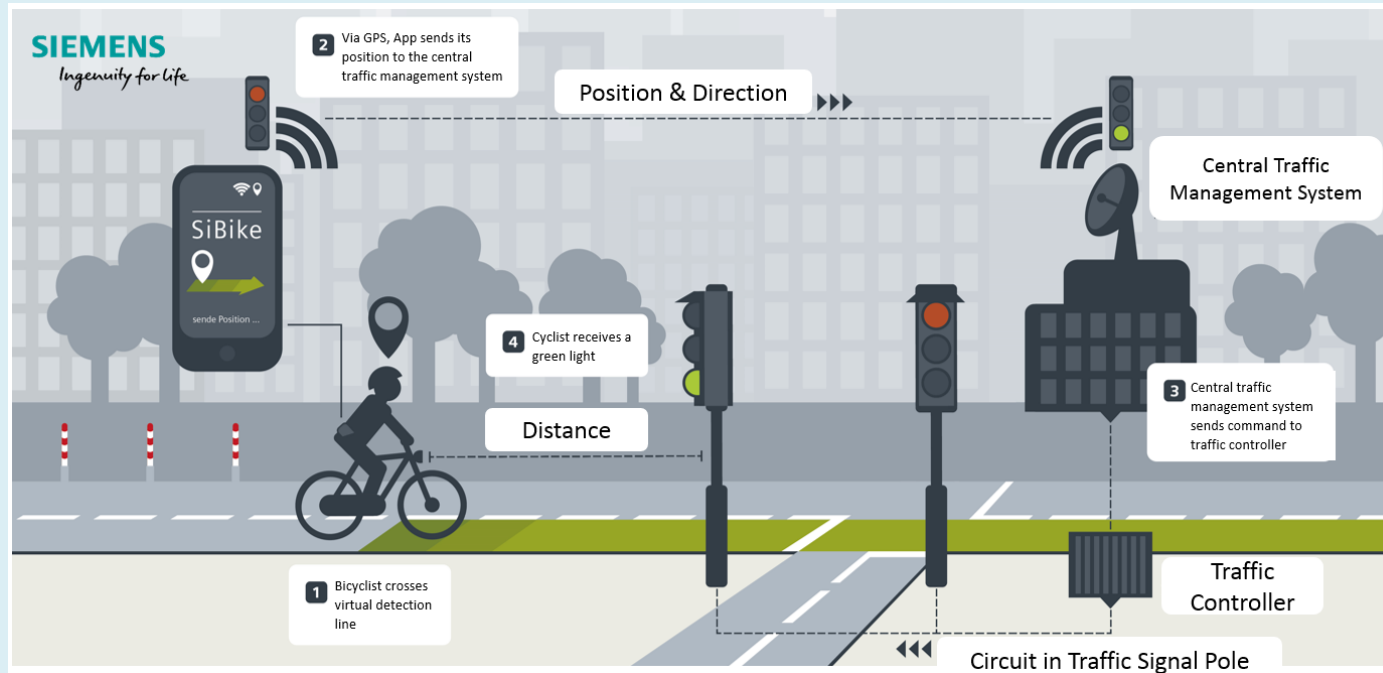
## Automated Traffic Signal Performance Measures (ATSPMs):

- A “fitness tracker” to cost-effectively monitor traffic signal system performance
- Uses “big data” to track numerous performance metrics



# Example Category 2 Projects

## Virtual Detection of Bicycles at Intersections



## Connecting Automated Vehicles to Traffic Signal Systems



# Grant Awards

- 10 Category 1 projects
- 6 Category 2 projects

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Acronyms: Adaptive Signal Control Technology (ASCT), Automated Traffic Signal Performance Measures (ATSPM), Automated Vehicle (AV), Shared Autonomous Vehicle (SAV), Transit Signal Priority (TSP)

