

A New Adaptive Technology Development & Deployment

**SHAW AVE/SR168**

Scope of Work

The ITS Project will

1. Develop NEW Adaptive Software Module:
New technology to address 10+ year old problem
 - CUBIC ITS INC will develop first-ever Adaptive Module for City's SynchroGreen Adaptive System to synchronize corridors at Caltrans ramps.
2. Deploy Connected Vehicle Detection:
New to region technology
 - State-of-the-art Vehicle-To-Everything (V2X) technology to monitor Caltrans FWY ramp traffic signals at pilot locations.

Locations & Cost

1. **New Adaptive Software SYNCHROGREEN Module** – Traffic Operations Center.

2. **Connected Vehicle (V2X) Detection** – Pilot Locations:

- Friant Road & SR41(Nees Avenue to Fresno Street) – Most congested location chosen for testing & integration.
- Shaw Ave & SR168 – Borders COF, Caltrans & Clovis chosen for multiple agency integration.

Cost for Next Generation ITS Adaptive System is \$5 million

Citywide Adaptive Locations: All locations with existing adaptive synchronization
(1) 41/Herndon Ave, (2) 41/99/Shaw Ave, (3) 168/Clovis Ave, (4) 41/99/Jensen Ave
(5) 180/Blackstone Ave/Abby Street.

Future Adaptive Locations: All future locations planned for adaptive synchronization
(1) 41/Bullard, (2) 41/Ashlan, (3) 41/Shields, (4) 41/McKinley, (5) 41/Divisadero, and numerous locations along SR 168 & SR180.

This Project will be the catalyst for several Next Generation ITS Projects for the region

Project Benefits

- Reduce Greenhouse Gas Emissions.
- Improve safety & reliability of the transportation system.
- Develop & Validate “Next Generation” adaptive technology.
- Introduce a new ITS Standard available for the region.

Environmental Benefits

- According to CalEnviroScreen 4.0, some of the most disadvantaged communities in California are located within the City of Fresno.
- The asthma rate in the project area is higher than 80% of the census tracts in CA.
- The Project will reduce emissions & delays, while improving travel times and overall safety.

Readiness & Experience

- ITS Program Operations & Maintenance is funded with \$1.5 million.
- Traffic Operations Center (TOC) is staffed with 8 dedicated staff.
- ITS Standards were published (2008).
- ITS Program has successfully designed, constructed, and synchronized 20 ITS corridors.
 - 8 additional ITS Projects are in design or in construction.
- The transportation network is complete, synchronizing ~400 signals.
- The fiber transportation network provides inter-connectivity to City of Fresno, County of Fresno, City of Clovis, and Caltrans.

INNOVATE →

← REPLICATE

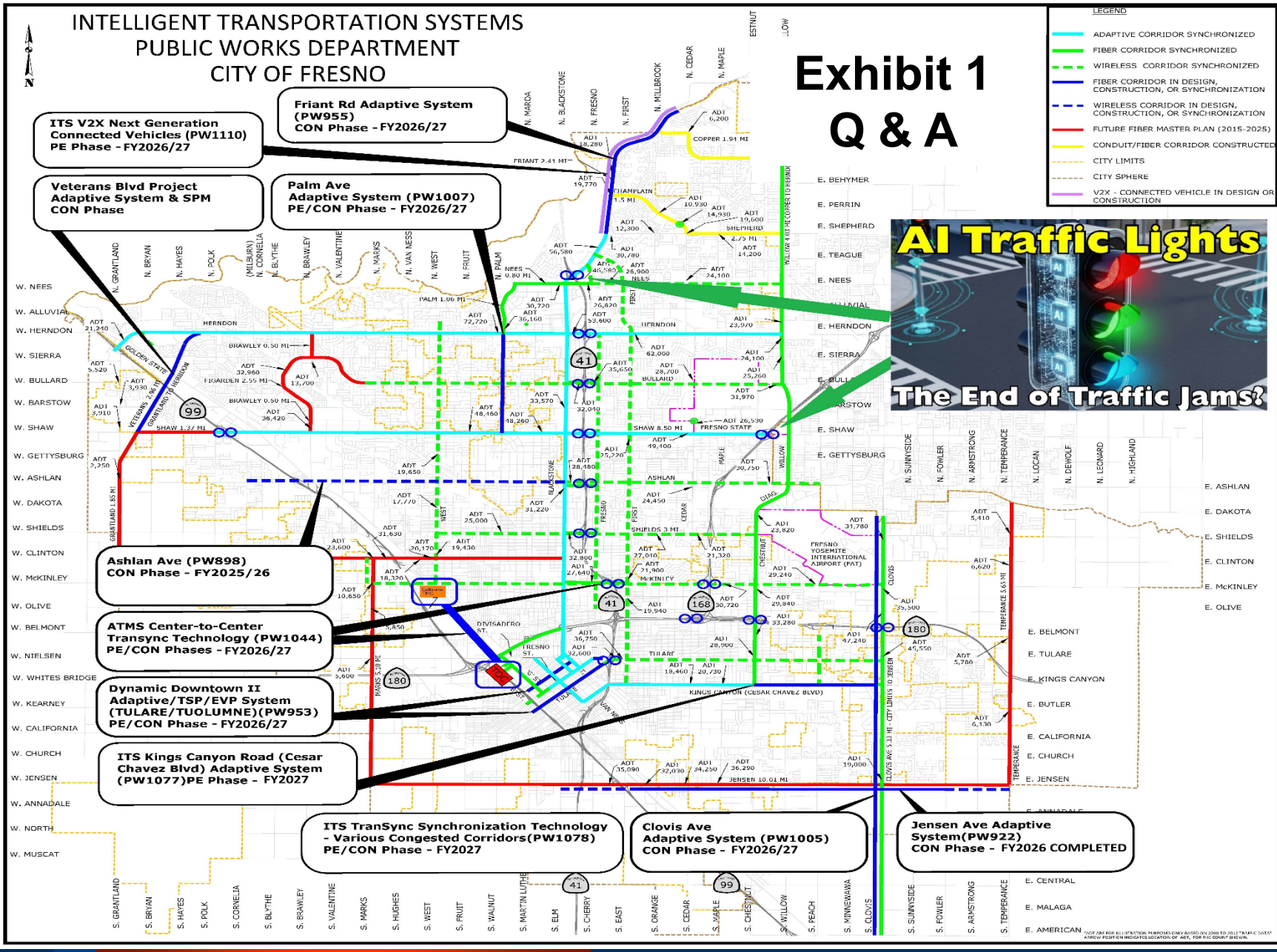
Innovation & Replication

- The Next-Generation ITS Project is an applied Research, Development & Deployment for SYNCHROGREEN Adaptive Module and Connected Vehicle Detection System.
- This ITS Project will help solve the Caltrans and City/regional systems integration and interoperability for synchronization.
- This ITS Project will establish Standards & Specifications which are shared regionally.

INTELLIGENT TRANSPORTATION SYSTEMS PUBLIC WORKS DEPARTMENT CITY OF FRESNO

Exhibit 1 Q & A

- LEGEND**
- ADAPTIVE CORRIDOR SYNCHRONIZED
 - FIBER CORRIDOR SYNCHRONIZED
 - WIRELESS CORRIDOR SYNCHRONIZED
 - FIBER CORRIDOR IN DESIGN, CONSTRUCTION, OR SYNCHRONIZATION
 - WIRELESS CORRIDOR IN DESIGN, CONSTRUCTION, OR SYNCHRONIZATION
 - FUTURE FIBER MASTER PLAN (2015-2025)
 - CONDUIT/FIBER CORRIDOR CONSTRUCTED
 - CITY LIMITS
 - CITY SPHERE
 - V2X - CONNECTED VEHICLE IN DESIGN OR CONSTRUCTION



NEXT GENERATION INTELLIGENT TRANSPORTATION SYSTEMS



PW1044 - Cubic ITS Inc C2C & TranSync Center-to-Center ITS Software Development Project (COF-TOC to Caltrans-TMC) will interconnect COF-ATMS (Cubic) access to Caltrans-ATMS (Transcore), allowing COF ATMS to view virtual Caltrans Signals TMDD Digital Data (Cycle Length, Splits, Offsets, TSP/EVP, Ped Calls) within ATMS much like COF signals can be viewed on ATMS.

NEW Measure C Project request is to incorporate (Research, Develop, Test, Beta Test, Implement) Caltrans Ramp Signals (B & C)

- (1) TMDD Digital Data into Synchro Green Adaptive System.
- (2) Iteris V2X System (Video/Radar) live corridor data (queueing, counts, speeds) into Synchro Green Adaptive System.
- (3) Ideally, Synchro Green Next-Gen AI module should continually attempt to synchronize in real time between COF Signals (A&D) incorporating virtual Caltrans Ramp Signals (B&C) Digital & Live date.

NEXT GENERATION INTELLIGENT TRANSPORTATION SYSTEMS



**PUBLIC WORKS DEPARTMENT
INTELLIGENT TRANSPORTATION SYSTEMS PROGRAM**

VICINITY MAP & PROPOSED PROJECT LOCATIONS DETAILS

FRIANT ROAD & SR41 (NEES AVENUE TO FRESNO STREET)



SHAW AVENUE & SR168 (CHESTNUT AVENUE TO SR168 RAMPS)



**PUBLIC WORKS DEPARTMENT
INTELLIGENT TRANSPORTATION SYSTEMS PROGRAM**

**ITS PROJECTS HISTORY
(DESIGN, CONSTRUCTION & SYNCHRONIZATION)**

	CITY	FIP	Status
1 Clovis Ave	PW510	FRE090106	Completed
2 Shaw Ave 99-41	PW439	FRE070107	Completed
3 Shaw Ave 41-169	PW509	FRE090133	Completed
4 Ashlan Ave (Blackstone - Peach)	PW626	FRE110133	Completed
5 First Street	PW638	FRE110132	Completed
6 CUSD - Fiber to 17 Schools	PW641	CUSD Funding	Completed
7 Central Valley Independent Network Project	PW653	CVIN Funding	Completed
8 Bullard Ave	PW617	FRE110131	Completed
9 McKinley Ave	PW622	FRE110135	Completed
10 Niles Ave	PW623	FRE110134	Completed
11 Friant-Niles-Palm	PW549	LSTMP198- FRE90137	Completed
12 Willow Ave	PW542	FRE090109	Completed
13 Shields Ave	PW550	LSTMP057- FRE90137	Completed
14 Tulare Street	PW624	FRE110136	Completed
15 West Ave	PW636	FRE110130	Completed
16 Downtown Fresno & Van Ness	PW689	FRE130034	Completed
17 Adaptive Hemdon	PW743	FRE150029	Completed
18 Adaptive Shaw West	PW742	FRE150030	Completed
19 Adaptive Abby - Blackstone (Divisadero - McKinley)	PW809	LSTMP546	Completed 2025
20 Adaptive Blackstone - Friant (McKinley to Shepherd)	PW810	LSTMP545	Completed 2025
21 Adaptive Ventura - Kings Canyon (Van Ness to Chestnut)	PW811	LSTMP546	Completed 2025
22 Dynamic Downtown Adaptive, TSP, Video Detection	PW879	Measure C New Technology	Completed 2025
23 ITS Jensen Ave Adaptive Synchronization	PW922	FRE090137	Completed 2026
24 Ashlan Ave (Blackstone - Cornelia)	PW898	LSTMP645	In Construction FY2027
25 ITS Friant Road Adaptive Synchronization	PW955	CMAQ	In Construction FY2027
26 ITS Clovis Ave Adaptive Synchronization	PW1005	CMAQ	In Construction FY2027
27 Dynamic Downtown 2 (Adaptive, TSP, EVP, Video Detection)	PW953	MC New Tech & CMAQ	Construction Phase FY2027
28 ITS Palm Ave Adaptive Synchronization	PW1007	CMAQ	Construction Phase FY2027
29 ITS Center-To-Center (C2C), City/Caltrans ATMS Systems	PW1044	MC New Technology	Design Phase FY2027
30 ITS Transync Synchronization Technology Tools	PW1078	Carbon Reduction Program	Design Phase FY2027
31 ITS Cesar Chavez / KC Blvd Adaptive Synchronization	PW1077	CMAQ	Design Phase FY2027
32 ITS Connected Vehicles Safety Technology (CV-V2X)	PW1110	MC New Technology	Design Phase FY2027
33 Proposed Adaptive System Module Development AND CenterToCenter (C2C) AND Connected Vehicle CV-V2X Systems	Proposed	Proposed MC New Tech	





Intelligent Transportation Systems



Traffic Operations Center

PUBLIC WORKS DEPARTMENT

CITY OF FRESNO

Intelligent Transportation Systems

Operations & Maintenance – Today!



ITS Program

Funded (\$1.5 mil for O&M)



Operations &
Maintenance

Staffed with 7 Dedicated
ITS Staff



ITS Standards

Published (2008)



ITS Wireless Standards

Published (2009)



Traffic Synchronization

Underway!

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Traffic Synchronization (Fiber) 2007-2012

- ✓ Herndon Ave Synchronized Willow to Golden State
- ✓ Blackstone Ave Synchronized Olive to Herndon
- ✓ Kings Canyon Synchronized Downtown to Chestnut
- ✓ Chestnut Ave Synchronized Kings Canyon to Shields
- ✓ Clovis Ave Synchronized Shields to American
- ✓ Shaw Ave Synchronized SR168 – SR 99

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Traffic Synchronization (Wireless) 2013-2018



- | | |
|---|-------------------------------------|
| ✓ First Street | Nees to Ventura |
| ✓ Nees Ave | Palm to Willow |
| ✓ Bullard Ave | Marks to Willow |
| ✓ Ashlan Ave | Blackstone to Peach |
| ✓ McKinley Ave | SR 99 to Clovis Ave |
| ✓ West Ave | Herndon to McKinley |
| ✓ Shields Ave | West Ave to Chestnut |
| ✓ Tulare Ave | C Street to Clovis Ave |
| ✓ Willow Ave | Ashlan to Shepherd |
| ✓ Palm-Nees-Friant | Herndon to Shepherd |
| ✓ Downtown Fresno St.
& Van Ness Ave | Divisadero to G Street & to Ventura |

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Traffic Synchronization 2020-2025

Adaptive Signal Control Technology (ASCT)



 Herndon Ave ASCT	Synchronized
 Shaw Ave ASCT	Synchronized
 Friant-Blackstone/Abby ASCT	Synchronized
 Dynamic Downtown I ASCT/TSP	Synchronized
 Jensen Ave ASCT	Synchronized

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Traffic Synchronization 2019-2025

Adaptive Signal Control Technology (ASCT)



Friant Road **ASCT**

In Construction



Ashlan Avenue **TOD**

In Construction



Clovis Ave **ASCT**

In Construction



Palm Ave **ASCT**

Construction Phase



Dynamic Downtown II

Construction Phase

ASCT / TSP / EVP / I2V / SPM

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NEW Traffic Synchronization Technologies

 Ventura-Kings Canyon ASCT	Design Phase
 Connected Vehicles V2X	Design Phase
 TranSync Technology	Design Phase
 ATMS Center To Center	Design Phase
 Freeway Crossings Adaptive	<i>Proposed</i>