

Georgia Department of Transportation

**Statewide Connected Vehicle
Deployment
Experience and Plan**

**2018 AASHTO CTE Annual
Meeting
CAV Roundtable**

“Interoperability is a myth.”

Blaine Leonard, UDOT

Program Objectives

Primary goal: Develop back-end infrastructure, network components, and business processes to support broad vehicle to infrastructure applications that is broadcast-medium agnostic, scalable, and sustainable.

Secondary goal: Begin broad installation of roadside units and equipped vehicles to facilitate applications that improve safety and mobility.

Primary Application Spaces:



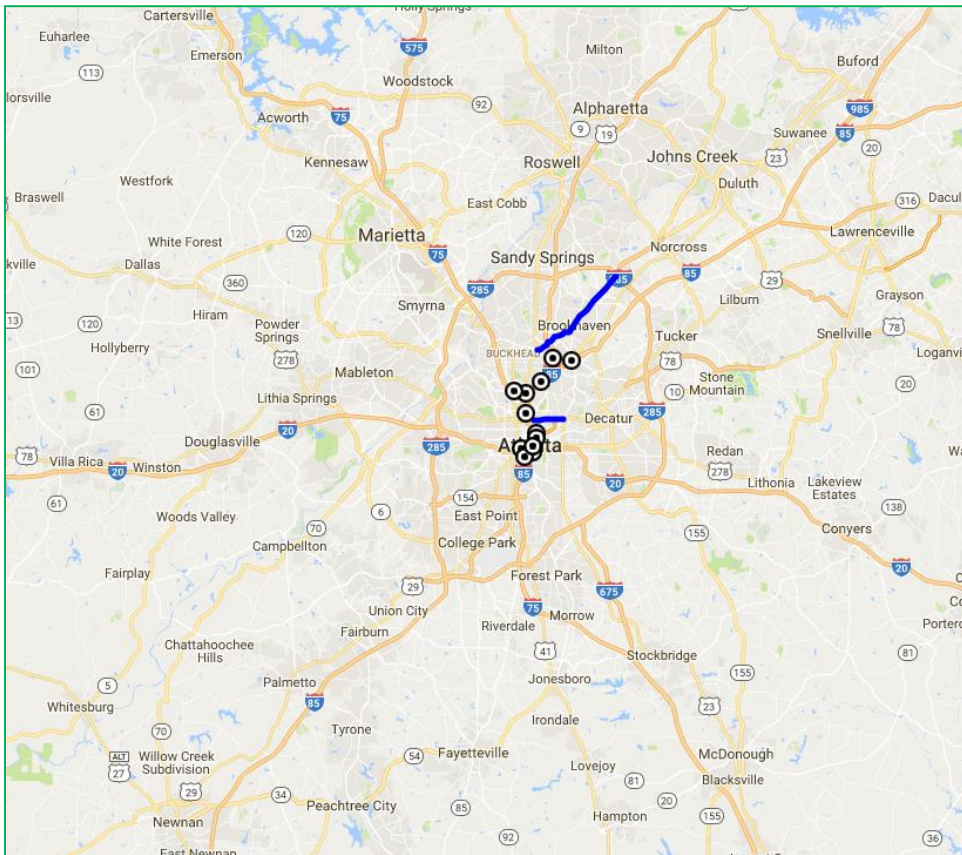
Safety

Mobility

Freight

Partnerships

Deployment

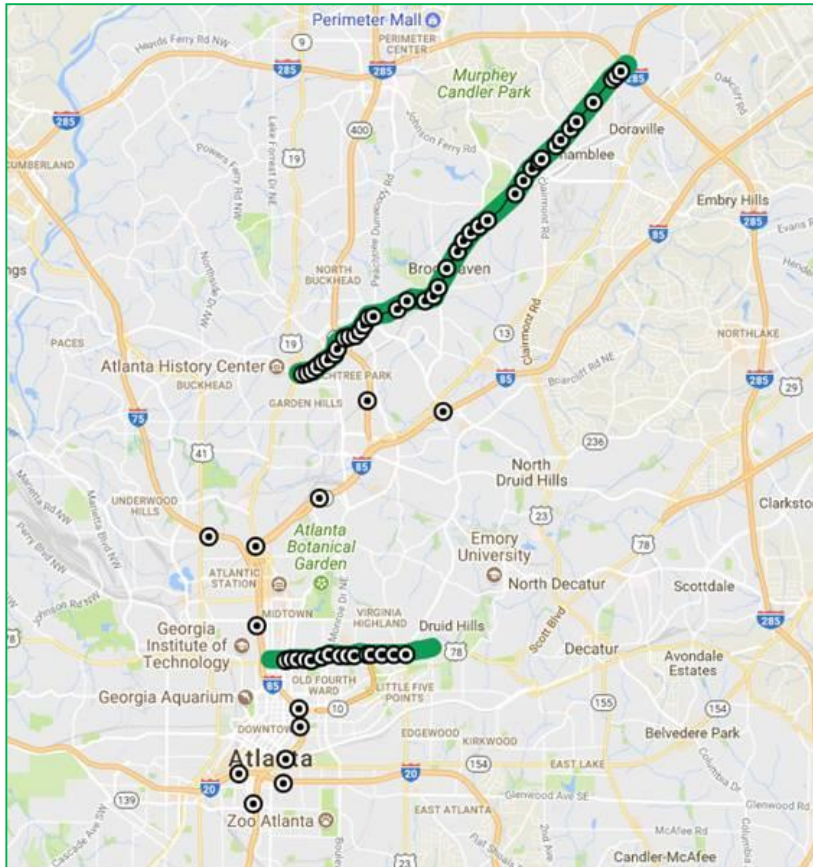


Phase 1 - Pilot

June 2018

- SR 141 (Peachtree) from SR 9 to I-285
- SR 8 (Ponce de Leon) from Peachtree to SR 42
- 54 traffic signals
- 12 ramp meters
- Signal Phasing and Timing (SPaT)
 - Red light warning
 - Pedestrian in signalized crosswalk
 - Phase termination/next signal phase
 - Green-band speed

Deployment

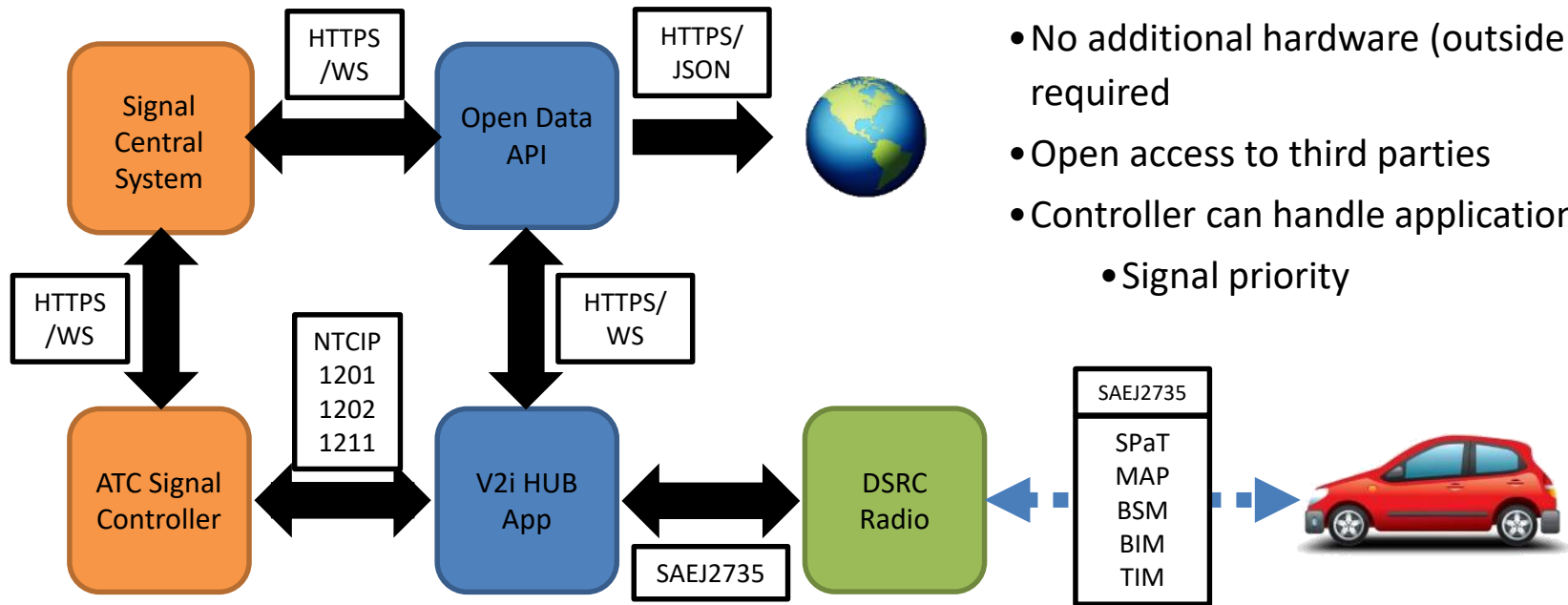


Phase 1 - Pilot

June 2018

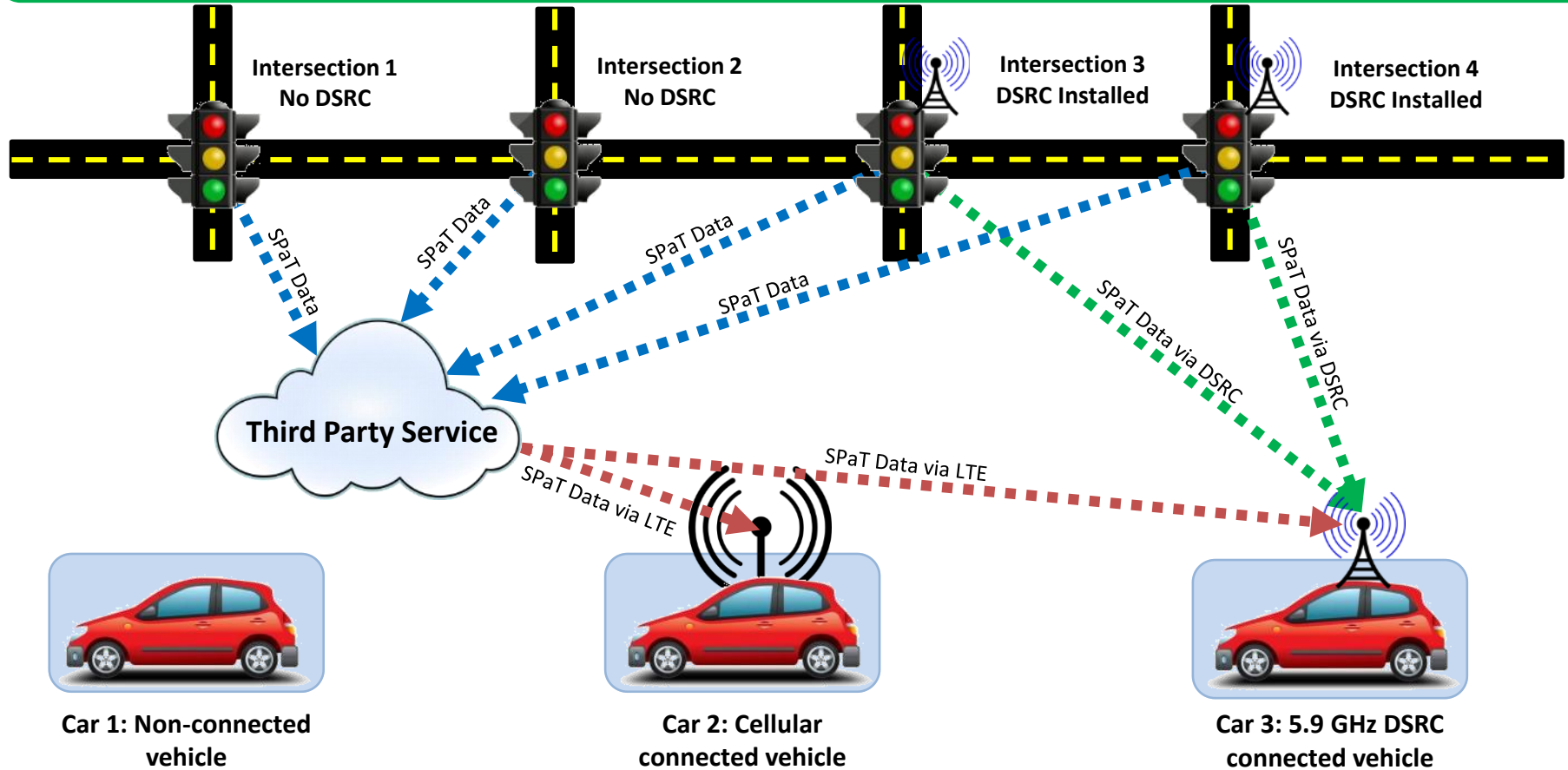
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GDOT CV Architecture

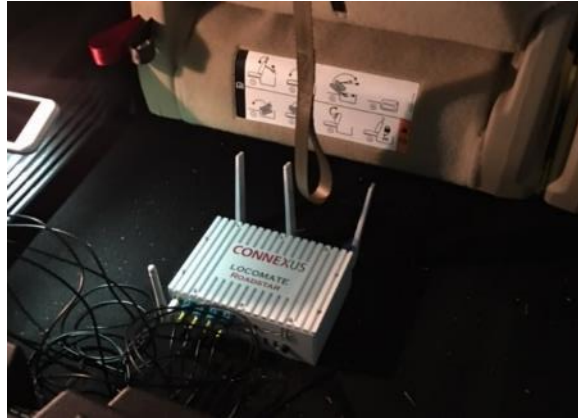


- CV Application resides on signal controller
- No additional hardware (outside of RSU) required
- Open access to third parties
- Controller can handle application
 - Signal priority




Multiple Broadcast Channels



Phase 1 Deployment



MAXTIME CV

-  Search
-  Home
-  Status
- Connected Devices
- SPaT Message

Connected Devices Status

☐ Show All Devices

Device	Device Type	Peer ID	Connection Status
1	MaxTime	1	Connected
2	RSU 4.1 SPAT UDP	2	Connected
3	RSU 4.1 MAP UDP	3	Connected
4	RSU 4.1 TIM UDP	4	Connected

Phase 1 Deployment

Red light warning



Safety for drivers – alerts of inability to safely clear intersection

Pedestrian in crosswalk



Safety for drivers and pedestrians – turning vehicles have additional awareness of other users

Phase service remaining



Efficiency for drivers – alert drivers for safe intersection passage or efficient stopping

Green speed for coordinated signals



Efficiency for drivers – inform drivers of the optimal driving speed through coordinated signals to minimize stops

ACTIVE DSRC IN METRO ATLANTA

- SR 141 (Peachtree) – 39 intersections
- SR 8 (Ponce de Leon) – 15 intersections
- North Ave – 22 intersections (Renew)



Lessons Learned

- “Interoperability is a myth.” – Blaine Leonard, UDOT
- Do as much testing and configuration as you can before putting in field
 - “The controller is ready for SPaT.” - 2015
 - “The controller needs this version of software or higher.” – 2018
 - Controller manufacturer fixes their software, but the radio manufacturer provides no support
 - “Modifying” the radio to be able to operate
 - Can the controller handle the load of traffic control AND CV applications?
- Limited fleet
- Ramp meters

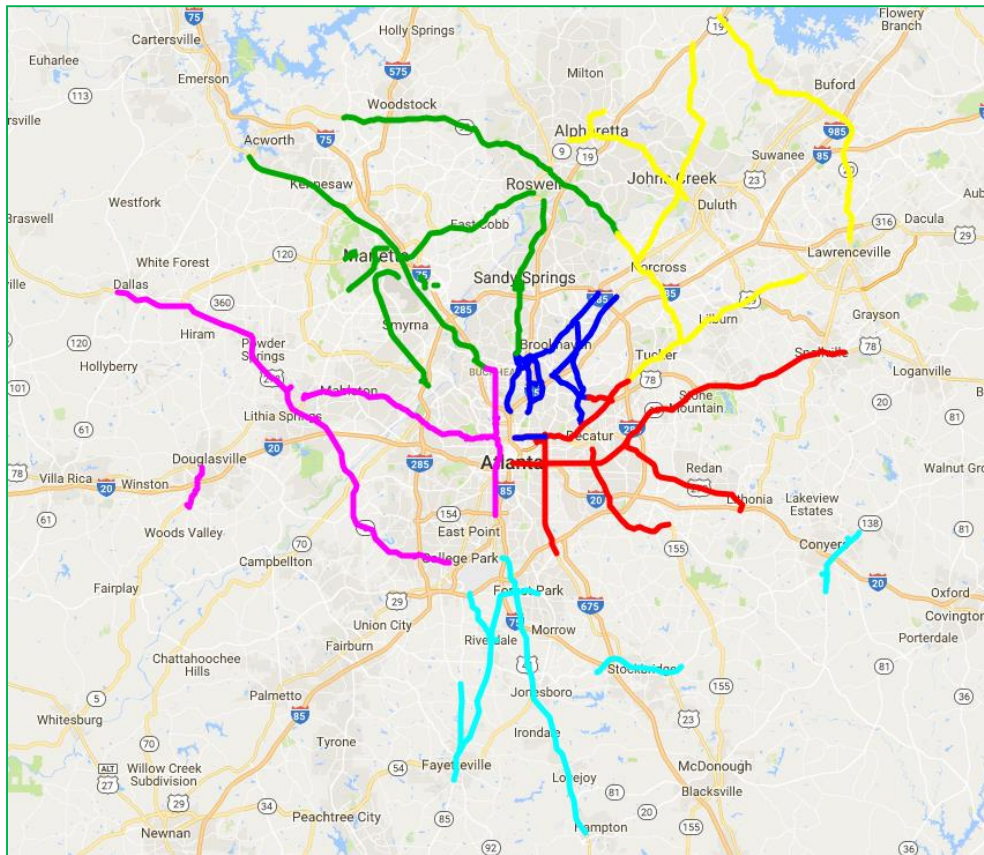
Phase 2 Deployment

Scalable
Deployment
Strategy

- Communications
- ATC Signal Controller
- DSRC Radio

**Broad
deployment
potential in
Georgia**

Phase 2 Deployment



Phase 2 – RTOP

June 2020

- 1,700 traffic signals in metro Atlanta
- 185 ramp meter locations
- Safety applications
- Signal applications
 - Red light warning
 - Pedestrian in signalized crosswalk
 - Phase termination/next signal phase
 - Green-band speed
- Road and traffic conditions information

Deployment Timeline

FY 2018

- CV SPaT Pilot deployment operational by June 2018
- Leverage broadband P3 procurement to encourage/accelerate deployment

FY 2019

- 50% 5.9 GHz DSRC deployment at RTOP intersections
- Open data platform operational by December 2018 for cellular based applications (LTE)
- Pilot safety applications operational by December 2018

FY 2020

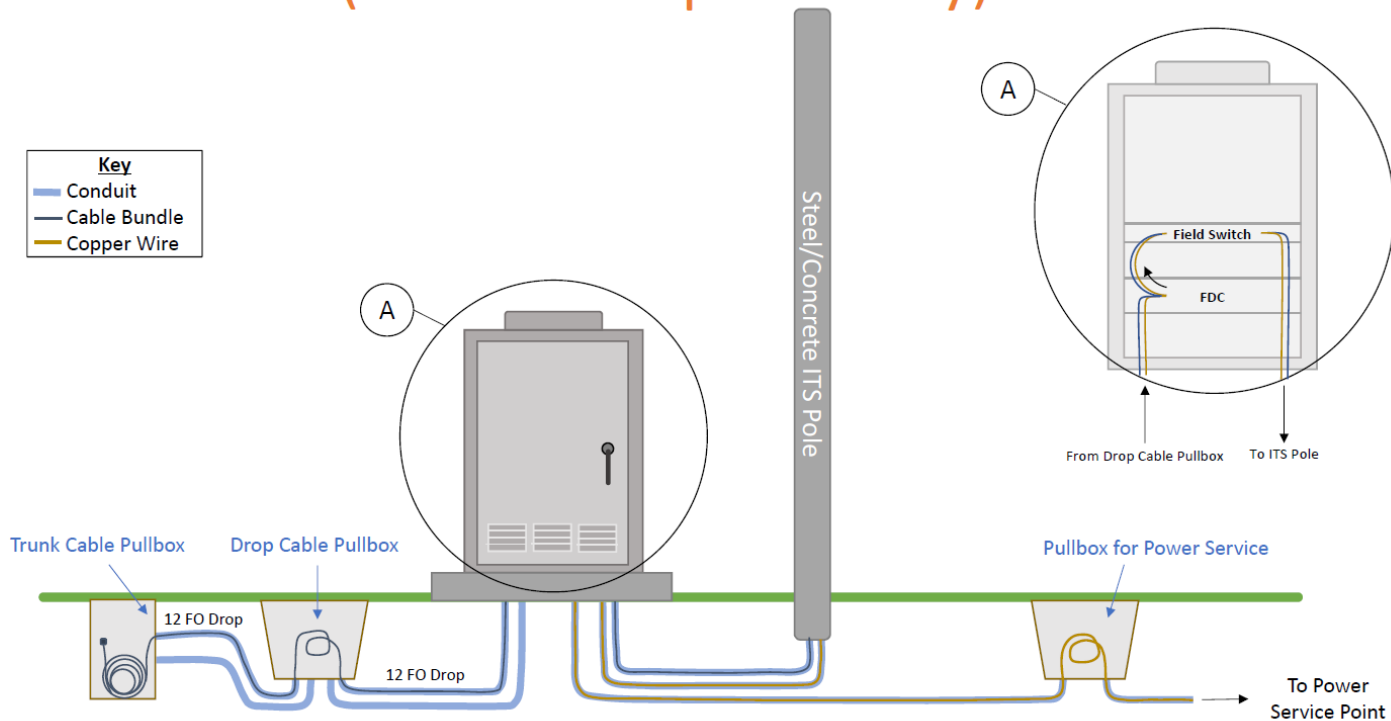
- 100% 5.9 GHz DSRC deployment at RTOP intersections
- Being 5.9 GHz DSRC deployment at signalized intersections on state routes through local partnerships
- Proactive deployment of CV safety applications based on data
- Systemic deployment of CV safety applications
- Install 5.9 GHz DSRC at existing freeway locations with available communications

FY 2021+

- 100% 5.9 GHz DSRC deployment at signalized intersections on state routes
- Proactive deployment of CV safety applications based on data
- Integration of connected vehicle applications into department business processes
- Begin 5.9 GHz DSRC freight network deployment
- Interstate coverage with 5.9 GHz DSRC via Broadband P3

Broadband P3

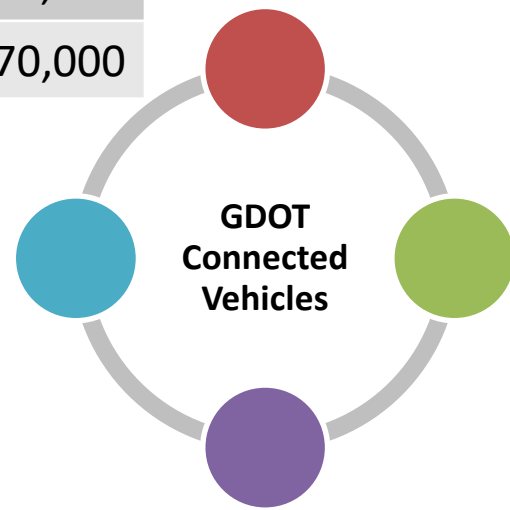
Demarcation (Partner Responsibility)



Deployment

Phase 2 - RTOP	FY 2018	FY 2019	FY 2020
Roadside Unit & Deployment	-	\$ 1,320,000	\$ 2,420,000
Software (Statewide)	\$ 2,000,000	-	-
On-board Units	-	\$ 550,000	\$ 550,000
TOTAL	\$ 2,000,000	\$ 1,870,000	\$ 2,970,000

- 1,700 Roadside units with deployment at \$2,000 per location
- Software provided as statewide license - \$200 per intersection for full statewide deployment (beyond Phase 2)
- On-board units offered to accelerate consumer adoption





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