

TSPLOST 2023 Project Submission

Transportation & Public Works Department (T&PW)

September 8th, 2021

Smart City Transportation Technology Project



Smart City Transportation Technology Project

Summary of need:

- ACC's traffic signals operate time of day plans that are based on expected traffic. Those plans must be updated as traffic patterns change and cannot adapt to unexpected conditions
Locations: College Station Road, Lexington at Barnett Shoals, Prince Avenue and Milledge Avenue
- Without connectivity, a technician must visit a site to diagnose and remediate signal issues or monitor traffic conditions for temporary revisions which will change with intersection volume
- By not leveraging technology, capacity improvements and safety features will continuously be reduced with the increase of roadway users utilizing interactive autonomous vehicle systems

Project Request:

- Project Costs: \$6.67 million
- Program/Project Management: \$380,000
- Public Art: \$51,000
- Total Request: \$7.1 million



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Project Description:

- Implement fiber optic connectivity to create a network of traffic signals and devices which provide a connection to the Traffic Control Center
- Implement emerging technologies like adaptive traffic signal systems, V2I (Vehicle to Infrastructure) communication, preemption for emergency and transit vehicles, and intelligent vehicle detection technology with the use of cameras for vehicle/pedestrian/bicycle detection. The data collected by this technology is used to determine the need for future intersection improvements

Project Justification:

- Improve safety and operations of the existing network through technology
- Prepare for the future of transportation
- Avoid or delay major capacity improvement projects (roadway widening)

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Possible Project Elements:

- Fiber Installation/Connectivity: major foundation of the other project elements
- Adaptive Traffic Signal Systems: intelligent traffic control systems that can adjust to actual conditions as traffic volumes increase or during special events. For example:
 - Twilight Criterium
 - Christmas parade event
 - Classic Center events
 - UGA finals/graduation/football games/ACC school breaks
- Travel Time Detection Systems: track actual travel times on major corridors to identify deficiencies, trends, and emergency events
- Advanced Vehicle Detection Systems: use of video and infrared detection to provide accurate detection along with vehicle volume data for adaptive traffic operations
- CCTV Cameras: To observe traffic conditions, diagnose signal failures, and notification of emergency situations
- Emergency/Transit Preemption: signal equipment to facilitate improved travel times for emergency responders and increase transit efficiency

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Budget Impacts:

- More effective use of General Fund Operating Budgets
- General Fund Capital Upgrade Fiber Optic Expansion (c0704) savings:
 - FY16: \$30,000
 - FY18: \$30,000
 - FY20: \$30,000

The \$30,000 provided only enough funds to install less than .5 miles of fiber every other year. FY22 did not receive any funding from the General Capital for Fiber Optic Expansion.

Community Impact:

- Enhanced operations of transportation network
- More responsive resolutions to incidents and equipment malfunctions
- Delayed capacity improvement projects (roadway widening)

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Impacts of Not Funding:

- Inability to evaluate and improve transportation network, travel times will continue to increase
- Failure to leverage technology to meet emerging needs of connected vehicles will impact volumes and safety of all roadway users
- Delayed resolution to incidents and signal malfunctions, increase to operating budget for vehicles and staff time.
- Higher costs and dedicated staff time for contracted and in-house traffic studies

Closing the Equity Gap

- Allows for an improved interaction with residents to human services
- Encourages greater use of active, sustainable transportation. This technology benefits all roadway users including pedestrians, bicycles, vehicles and transit passengers who can access the smart road equipment on cellular devices
- Improves access to the workplace
- Improves safety for all residents through incident reduction and emergency response times

M&C Strategic Commitments

- This project strongly supports 10 of the 14 project selection criteria
- This project will protect the investment of the community
Transportation Infrastructure reducing traffic congestion, time spent traveling, improving access to public facilities, increased use of the public Transit System, improves air quality and promotes Alternative Vehicle use

Triple Bottom Line Impact

- Economic

- Connected vehicle technology allows for an improved interaction with residents to human services, encourages greater use of sustainable transportation, improves access to jobs, reduces freight truck delivery/congestion, improves safety through alternative transportation detection, incident reduction and uses smart logistics to provide real-time traffic information for improved commuter mobility

- Social Well-Being

- Smart road intelligence can provide safety by regulating the speed of our connected vehicles and implementing warning systems, but also transmit real time data and share information across the network, making it simpler and quicker to get around, to find parking, to commute effectively and communication with other wayfinding. Installation of the fiber network is the foundation for providing the technology to create a smart city network service

- Environment

- Transportation technology allows for a reduction in emissions, time spent traveling on the roadway and delivery of supplies for business sustainability

Questions