

Monroe County Traffic Signal Preemption Study

Scope of Work

A. Objective

To investigate the future implementation of hardware and software that will enable upgrades and deployment of cellular/Global Positioning System (GPS) Emergency Vehicle Preemption (EVP) and Transit Signal Priority (TSP) at Monroe County traffic signals.

B. Background

The primary objective of assigning priority to vehicles at a traffic signal is to optimize safety for all transportation users, balanced with the need to reduce delay and minimize congestion. Cloud-based emergency vehicle preemption and transit signal priority systems consider traffic operations along the overarching corridor route and utilize artificial intelligence to implement optimal green time to priority vehicles. This process minimizes interference with conflicting approaches at a traffic signal.

Currently, the Monroe County Department of Transportation (MCDOT) operates and maintains a robust signal priority program spanning four agencies and 403 traffic signal locations. The program is locally administered at the traffic signal location utilizing optical components for signal priority. These legacy optical signal priority systems are labor and cost intensive in administration, implementation, and maintenance needs. Each traffic signal location requires optical priority detectors, associated wiring, cabinet configuration, and vehicles to be equipped with optical systems.

A plan for future cloud-based EVP and TSP deployments will serve as the blueprint for understanding the feasibility and implementation strategy best suited to meet community needs. Potential stakeholders who will benefit from this project include, but are not limited to, the Regional Transit Service (RTS), fire departments, ambulance services, and law enforcement agencies across the county. These stakeholders provide essential services to the community that are time sensitive and involve utilization of the transportation network that create safety optimization opportunities at traffic signals.

Transitioning to a holistic cloud-based system has numerous potential benefits, primarily the improvement of safety and efficiency along an entire corridor. This approach better balances the needs of all transportation users versus the current practice of signal prioritization decisions occurring at individual traffic signal locations. Further potential benefits include, but are not limited to, a reduction in emergency response times, improved safety of field staff, centralized monitoring and reporting of signal operations for agencies, reduced administrative costs and oversight, and a return on investment over legacy systems cost. Successful completion of this project will position involved agencies to apply for implementation funding through the federal Strengthening Mobility and Revolutionizing Transportation (SMART) grant program.

C. Tasks

The Monroe County Traffic Signal Preemption Study will be accomplished through the successful completion of the following tasks:

1. Establish a Steering Committee of representatives from stakeholder agencies impacted by the daily operational need for traffic signal prioritization in Monroe County, New York. Stakeholders will include, but are not limited to, the Monroe County Department of Transportation (MCDOT), the New York State Department of Transportation (NYSDOT), the Genesee Transportation Council (GTC), Regional Transit Service (RTS), Rochester Fire Department (RFD), Rochester Police Department (RPD), Monroe County Sheriff's Office (MCSO), Ridge Road Fire District (RRFD), Irondequoit Fire District (IFD), North Greece Fire District (NGFD), Strong Memorial Hospital, Highland Hospital, Rochester General Hospital, and Unity Hospital.
2. Develop and issue a Request for Proposals (RFP). The Steering Committee will review and comment on the RFP before it is released. The Steering Committee will evaluate consultant proposals and select a preferred consultant, or consultant team, to complete tasks 3 through 8 below.
3. Under the steering committee's direction, the consultant will develop an inventory of priority corridors including all MCDOT signal locations, existing TSP and EVP hardware for each stakeholder agency, integrable signal priority cloud system(s), asset investment allocation, staffing needs, and a gap analysis of network communications deficiencies.
4. The consultant will identify and document the steps required for the process of transitioning from optical TSP and EVP systems to cloud-based TSP and EVP systems. This evaluation will include, but not be limited to, capital investment requirements, operational costs, legacy maintenance needs, administrative efficiencies, and unforeseen return on investment.
5. The consultant will develop a business concept that identifies the safety and efficiency benefits of cloud-based TSP and EVP systems over the current optical signal priority for vulnerable road users, underserved populations, and community diversity. This business concept will include a construction/implementation cost estimate and share split between MCDOT, RTS, and the RFD.
6. The consultant will identify emerging TSP and EVP systems that incorporate local non-intrusive detection with central cloud-based services for GPS geo fencing, vehicles, and vulnerable users.
7. The consultant will combine the outcomes of Tasks 3-6 to produce a Draft Active Transit Signal Priority Plan (ATSPP) for Steering Committee review.
8. Review and update the Draft ATSPP to produce a Final Active Transit Signal Priority Implementation Plan (ATSPP), including an Executive Summary and associated technical appendices, with identified funding source(s) for multiyear project needs.

D. Products

1. Steering Committee meeting materials (agendas, presentations, handouts, etc.).
2. Draft Active Transit Signal Priority Plan (ATSP) in electronic (PDF and MS Word) formats.
3. Final Active Transit Signal Priority Implementation Plan (ATSPIP) in electronic (PDF and MS Word) formats.
4. GIS files and associated data for all maps.

E. Public Participation Plan

Per the GTC Public Participation Policy, this project is classified as a Technical/Data Collection Project. Accordingly, no public input activities are required or will be undertaken.

F. Schedule

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| 1. Scope of work approved | April 2023 |
| 2. Consultant selection completed | October 2023 |
| 3. Project initiation meeting | November 2023 |
| 4. Inventory hardware and equipment | November-December 2023 |
| 5. Research solutions | January-February 2024 |
| 6. Review best practices | March 2024 |
| 7. Develop priorities | April-May 2024 |
| 8. Develop cost estimates/share splits | May-June 2024 |
| 9. Develop an implementation plan | July 2024 |
| 10. Draft report completed | August 2024 |
| 11. Final report completed | September 2024 |
| 12. Financial closeout | October 2024 |

G. Project Budget

Sources of Funds		Uses of Funds	
	<u>FY 2023-24</u>		<u>FY 2023-24</u>
<u>Federal Funds</u>		<u>GTC</u>	
FHWA	\$81,000	Staff	\$0
FTA	0	Contractual	0
Subtotal	\$81,000	Subtotal	\$0
<u>Matching Funds</u>		<u>Other Agency</u>	
State (In-kind)	\$0	Staff	\$0
Local (In-kind)	0	Contractual	90,000
Local (Cash)	9,000	In-kind Exp.	0
Subtotal	\$9,000	Subtotal	\$90,000
<u>Total</u>	<u>\$90,000</u>	<u>Total</u>	<u>\$90,000</u>