



RESEARCH NEED STATEMENT

Call for Projects 2015

Project Research Title: Traffic Queue Prediction (TQP) & Warning Systems

TDOT Sponsor Director: Brad Freeze

List TDOT Research Team Lead: Frank Horne

List TDOT Research Team Members: Said El Said, Michael Nichols, Don Gedge, Ray Hallavant, Mark Best

1. Define the problem or research requested. What is the goal/objective of the research?

The possibilities of slowed or stopped traffic increase as highway incidents, special events or road work activities occur without pre-planned traffic control. The goal of this research is to develop an automated system for predicting and identifying traffic queue backups for prompt motorist information applications and response for queue protection.

2. Is this research a continuation of a past or present project?

No Yes

If yes, provide current research project title, RES # and reason for the project continuation.

N/A

3. Describe anticipated benefits/expected deliverables.

Expected deliverables will identify and verify the sources by which motorists will receive early notification of lane closures, construction, maintenance, special events and roadway incidents that may cause slow or stopped traffic ahead; provide a predictive analytics tool for the occurrence of secondary incidents; and provide a realtime alert system for automating the detection of traffic queues.

4. What is your timeline for completion of the research?

1 year

5. List the anticipated tasks for this research.

- Provide a review of current and past literature from other public and private sources
- Determine appropriate data sources for realtime queue alert systems
- Analyze historical secondary incident data for the creation of a robust prediction model

6. Describe how the project results will be implemented?

The research will be used to upgrade TDOT's ability to provide early notice of traffic queues to the motoring public through traveler information systems, and in field operations. The predictive modeling tool will help TDOT manage Protect the Queue resources.

7. Will this study produce software, web page or other technology that will involve the Information Technology Division?

No Yes, please describe:

IT and ITS application should be resources considered for development and implementation of any TQP solutions.

8. Will training be provided to employees as a result of this research?

No Yes, please describe:

9. Will this research involve equipment or materials purchase?

No Yes, please describe:

10. Research must support the Long Range Transportation Plan Policy Recommendations **and/or** TDOT Operational Goals and/or Strategic Initiative. *(See attachments for additional information)*
Please indicate which categories the research will support:

Transportation Long Range Plan Policy Recommendations

(A) Accessibility

(B) Safety, Security, and Transportation Resilience

(C) Coordination, Cooperation, and Consultation

(D) Demographic and Employment Changes and Trends

(E) Freight Logistics and Planning

(F) Financial

(G) Mobility

(H) Travel Trends and System Performance

TDOT Operational Goals and/or Strategic Initiative

(A) Deliver transportation projects on schedule and within budget

(B) Maintain the state transportation system to protect the long term investment in our infrastructure assets

(C) Operate and manage Tennessee's transportation system to provide a high level of safety and service to our customers and workers

(D) Expanding mobility choices to maximize access

(E) Dramatically change the paradigm for delivery of transportation products and service to improve the efficiency and effectiveness of Tennessee's transportation network

11. Please explain how the research supports the Long Range Transportation Plan Policy Recommendations **and/or** TDOT Operational Goals and/or Strategic Initiative selected above:

Safety is a high TDOT priority. The Protect the Queue (PTQ) research will support the goal of safe and efficient work zone and highway incident management, thereby, enhancing mobility and reliability of an effective process for providing Tennessee's transportation system at the highest level possible.

For additional information, please contact:

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