

MOTOR CARRIER FLOWS AND INCIDENT MANAGEMENT

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Research Development and Technology Program

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PURPOSE OF THE PROJECT

Tennessee has a substantial amount of truck shipments, but some of them are delayed due to unexpected incident-induced traffic congestion with large economic consequences. The purpose of this study is to focus on delay-inducing large-scale incidents and accidents, and mitigating the impacts of incident-related congestion on freight movements. The main strategies will focus on more effectively using statewide Advanced Traveler Information Systems (ATIS) to provide customized information facilitating truck diversions. More broadly, this project will focus on leveraging the opportunity provided by Intelligent Transportation Systems to effectively manage large-scale incidents. The objectives are to understand the current situation regarding large-scale incidents in Tennessee and collect information describing truck driver behaviors, correlating their behaviors with incident, roadway, and trip characteristics. Next, truck diversions will be modeled and consequent outcomes will be evaluated under various disruption scenarios. The project will develop ATIS strategies that can disseminate information customized to truck drivers, supporting their route diversion decisions. The study will also quantify benefits (reduced congestion costs and enhanced reliability) from appropriate truck diversion schemes.

SCOPE AND SIGNIFICANCE OF THE PROJECT

Route diversion is a key strategy for avoiding unexpected delays due to large-scale incidents/accident. The US DOT Alternate Route Handbook (2006) (Pub. No. FHWA-HOP-06-092) recommends careful planning when diverting traffic to alternate routes as a temporary response to incidents, facilitating increased mobility and improved travel time reliability. The scope of the project will be limited to major highways and large-scale incidents or crashes in Tennessee. Large-scale incidents are defined as those with durations greater than 2 hours but less than 24 hours, with substantial lane blocking and traffic queues. This project is significant due to its timeliness in dealing with the statewide incident-induced traffic congestion issues and addressing the need to facilitate freight movement through trucks. They should be able to choose better routing options when encountering large-scale incidents/accidents when they occur along major highway corridors. The expected benefits include:

- Reduction in truck and non-truck delays through appropriate diversion schemes when large-scale incidents/accidents occur.
- Accomplishment of TDOT's strategic objectives that include dealing with incident-induced congestion and related improvements in highway level of service, freight distribution, lower overall delays, and improved reliability.

- Greater customer satisfaction through more customized traveler information on Tennessee roadways, i.e., potential improvements in TDOT’s SmartWay system.

EXPECTED OUTCOMES

The overall outcome of the study is a traveler information system that can support more informed decision-making by trucks when disruptive large-scale incidents occur. The provision of more customized information to truck drivers who carry freight will enhance their ability to avoid disruptive incidents, improving their mobility and travel time reliability. The study itself will generate useful information about existing practices for diverting trucks in response to large-scale incidents implemented by State DOTs and past research on incident management practices in Tennessee and nationally. Information from various databases will be integrated to analyze large-scale incidents and accidents in Tennessee, helping determine feasible alternate routes for major corridors that can be used by trucks, e.g., interstate exits for alternate routes, and feasibility of using the alternate route for large trucks with constraints such as bridge clearance and avoidance of school zones. The study will also conduct interviews with TDOT staff for identifying key operational issues pertaining to large-scale crashes and truck diversions. Corridors will be prioritized to identify roadway segments that have higher risk of large-scale truck-involved crashes and potential for diversion strategy implementation, e.g., use of flashing alarms, fixed or flexible message signs, alternative route mileage information. The study will quantify the potential for diverting trucks that are going to be delayed due to incidents and how best to disseminate customized roadway information to truck drivers through the TDOT SmartWay and other systems. The study will assess the role of ATIS in mitigating the negative effects of incidents, and develop an evaluation mechanism for quantifying the benefits (monetary and qualitative) related to mobility and travel time reliability.

TIME PERIODS AND STATUS OF THE PROJECT

The proposed period for this research project is approximately 12 months after receiving the fully executed contract. The project will start in October, 2016. Table 1 shows the proposed schedule and deliverables. A project kickoff meeting is being scheduled with TDOT.

Table 1: Proposed Schedule and Deliverables

	OCT-2016	NOV-2016	DEC-2016	JAN-2017	FEB-2017	MAR-2017	APR-2017	MAY-2017	JUN-2017	JUL-2017	AUG-2017	SEP-2017
<u>LITERATURE REVIEW & DATA ACCESS</u>												
1 TDOT’s Incident Mgt practices												
2 Incidents and route diversions												
3 Appropriate data sources												
<u>ANALYSIS</u>												
4 Data integration												
5 Route diversion analysis												
<u>ATIS DEVELOPMENT & EVALUATION</u>												
6 ATIS customization for users												

