



Reducing Freight Congestion

Developing a Freight Congestion Mitigation Program

Exploratory Advanced Research . . . Next Generation Transportation Solutions



The volume of freight moved in the United States has more than tripled over the past 25 years and will continue to rise, according to the American Association of Port Authorities and the American Association of Railroads. Reducing freight and general traffic congestion is the goal of “Advanced Integration of Private Sector Freight Information with Public Sector Traffic Information to Reduce Metropolitan Congestion,” a Federal Highway Administration (FHWA) Exploratory Advanced Research (EAR) Program study awarded to Science Applications International Corporation (SAIC).

Increased Congestion

With international trade expected to increase at record levels over the next decade, severe delays near ports and congestion on metropolitan highways and arterials will ultimately lead to many other negative regional effects on air quality, noise, and safety in addition to the negative economic impact brought about by freight delays. Although freight movements via trucks represent only a small portion of total traffic volumes on the Nation’s highways, because of their size and performance characteristics they generally have significantly greater effects on congestion, road wear, and air quality compared to most vehicles.

Freight Information System

As part of an ongoing initiative to address freight congestion, FHWA is developing public-private partnerships and testing innovative solutions. An existing research project in place is the Cross-Town Improvement Project (C-TIP) which is developing freight information systems in the

Greater Kansas City region that can share transportation, logistics, and trade information between public and private sectors. It is also developing architecture to allow trucking companies to plan trips using real-time traffic and congestion information.

C-TIP aims to tackle some of the deficiencies in information sharing and business practices that have led to a significant amount of empty trucks and repositioning movements throughout the region. These wasted trips generate little or no revenue for carriers and contribute to congestion and other issues. C-TIP utilizes the following features to address these problems:

- Adoption of a collaborative dispatch model—allows freight railroads and dray carriers to easily identify load matching opportunities.
- Integration of in-cab smart phone application—provides real-time traffic and routing information.
- Development of an open source architecture package—provides real-time driver location data and a wireless communications platform.

Integrating Systems

The primary goal of the SAIC project is to produce a system design and architecture document that will provide the basis for future deployment of an integrated freight congestion mitigation system. This study involves integrating systems that have never before been integrated into a collaborative transportation management solution. This will include systems from the private sector (e.g., rail terminal gate automation systems, freight electronic data interchange communications, and trucking company dispatch and communication systems) and public sector transportation management systems (e.g., arterial and highway real-time traffic information, real-time event and hazard information, and emergency operations information). The project is intended to be flexible, scalable, and repeatable. The results will be



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applicable to any region or metropolitan area where significant volumes of intermodal load transfers occur.

Deployment and Evaluation

Following a 4-month deployment period in Kansas City, an initial evaluation quantified regional time savings and emissions reductions with C-TIP. The initial evaluation report highlighted some of the many benefits of implementing C-TIP, including a carbon monoxide emissions reduction of 10 percent and greenhouse gas reduction of 8 percent.¹ To assess the scalability of the technology, the evaluation also included a theoretical Chicago C-TIP deployment. This larger scale analysis indicated travel time savings of 5 to 10 percent per trip for cross-town dray movements and a 15-percent daily reduction in bobtail trucks. The evaluation, which began in October 2010, also assessed non-quantitative factors, such as software usability and overall viability in a commercial trucking environment.

Improved Productivity and Efficiency

“This study is perfectly aligned with the ongoing EAR Program effort to develop innovative operations solutions to reduce traffic congestion,” says Randy Butler of FHWA’s Office of Freight Management and Operations. “The goal here is to revolutionize the conduct of intermodal freight transportation movements in metropolitan areas and provide the community with sufficient information to reduce unproductive truck trips and maximize the use of existing capacity.” Butler concludes, “The positive C-TIP experience we have had so far indicates an exciting opportunity for future FHWA research projects to be based more on emerging applications being developed by the private sector.”

¹ Cross-town Improvement Project Evaluation Report, Cambridge Systematics, Inc., Austin, TX, 2011

EXPLORATORY ADVANCED RESEARCH



What Is the Exploratory Advanced Research Program?

FHWA’s Exploratory Advanced Research (EAR) Program focuses on long-term, high-risk research with a high payoff potential. The program addresses underlying gaps faced by applied highway research programs, anticipates emerging issues with national implications, and reflects broad transportation industry goals and objectives.

To learn more about the EAR Program, visit the Exploratory Advanced Research Web site at www.fhwa.dot.gov/advancedresearch. The site features information on research solicitations, updates on ongoing research, links to published materials, summaries of past EAR Program events, and details on upcoming events. For more information, contact David Kuehn at FHWA, 202-493-3414 (david.kuehn@dot.gov), or contact Terry Halkyard at FHWA, 202-493-3467 (terry.halkyard@dot.gov).

Learn More

For more information on this EAR Program project, contact Randy Butler, FHWA Office of Freight Management and Operations, at 202-366-9215 (email: randy.butler@dot.gov).