

Project: Identifying Cost-Effective, High-Return, and Quickly Implementable Improvements to Address Freight Congestion and Mobility Constraints in Tennessee

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Project Purpose

Freight traffic demand is receiving ever-increasing attention as the expected growth will overburden existing infrastructure, causing increased congestion, higher delays, air emissions, and operational costs, among others. Furthermore, evolving technologies, growing demand, changing business practices, shifting patterns of e-commerce, are creating safety, security, environmental, and other adverse effects of transportation system performance. Improvements to the freight transportation system are often complicated and expensive. Both public and private-sector agencies often try to find operational improvements, or other low-cost and quickly implementable ways to address congestion and mobility constraints. The constraints can be categorized as three types: Physical, Operational, and Regulatory. Physical constraints related to geometry and infrastructure conditions limit the freight systems' operational and free-flow characteristics (example: interchange, rail sidings, highway geometry). Operational constraints refer to practices, processes, events, or occurrences that constrain optimal throughput and efficient operating conditions (example: inefficient signal time, inappropriate terminal gate operations, inappropriate speed limit etc.). Regulatory constraints refer to federal, state or local regulations that pose restrictions on freight movement (hour of service rule, truck lane restriction, HAZMAT routes etc.). The FAST Act clearly recommends preservation and improvement of the infrastructure by adopting state of good repair techniques and implementing cost effective transportation projects. In a constrained and scarce budget era, the key question that remains to be addressed is how to design low cost, high return and quickly implementable improvement options to address freight congestion and mobility constraints. Tennessee has heavy freight traffic, and identifying projects that are low in cost, have a higher rate of return, and that are quickly implementable would provide significant value to both public and private sector stakeholders.

Goals and Objectives

(1) Define low cost, high rate of return, and quickly implementable project alternatives, (2) Develop criteria for assessing low-cost and quickly implementable improvement by projects (by freight mode) (3) Develop a methodology that both the public and private sectors can use to identify, categorize, and evaluate these alternatives, (4) Demonstrate the rate of return of suggested project improvements by using case studies in TN.