

Paper Abstract

Freight Bottlenecks on Highways: Implications for Urban and National Freight Transportation Policy

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The last several decades have witnessed steady growth in the demand for freight transportation in the United States, driven by economic expansion and global trade. But freight transportation capacity, especially highway capacity, is expanding too slowly to keep up with demand. The effects of growing demand and limited capacity are felt as congestion, upward pressure on freight transportation prices, and less reliable trip times as freight carriers struggle to meet delivery windows.

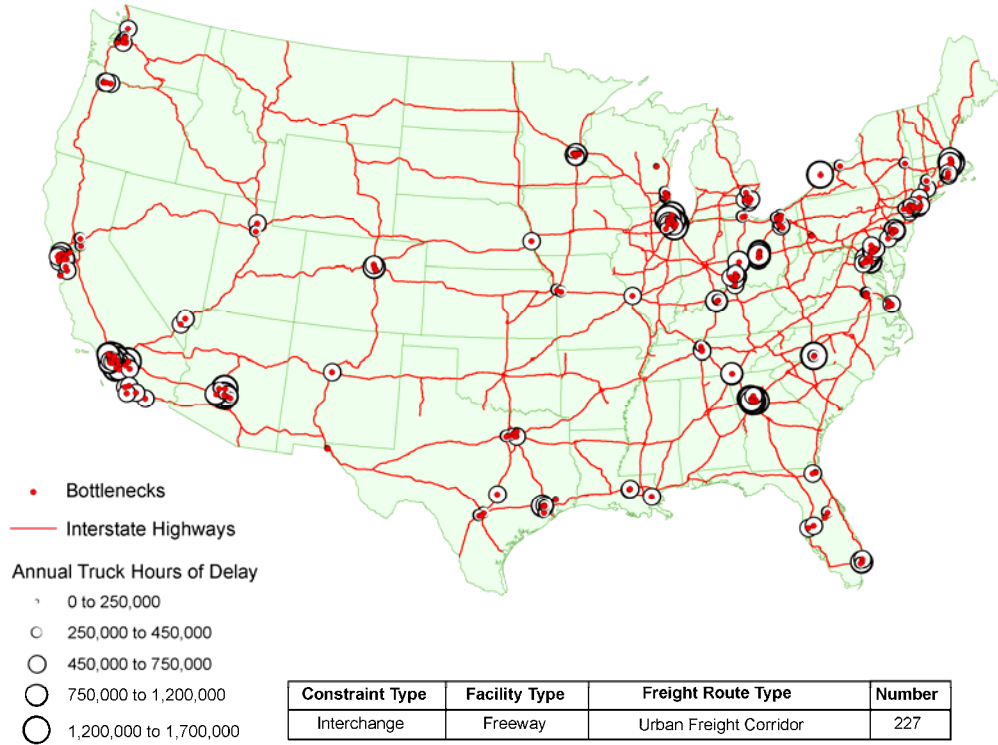
Freight congestion problems are most apparent at bottlenecks on highways: specific physical locations on highways that routinely experience recurring congestion and traffic backups because traffic volumes exceed highway capacity. Bottlenecks are estimated to account for about 40 percent of vehicle hours of delay. Bottlenecks on highways that serve high volumes of trucks are “freight bottlenecks.”

This paper reports on research commissioned by the Federal Highway Administration to identify and quantify, on a national basis, highway bottlenecks that delay trucks and increase costs to businesses and consumers. Of the four major types of bottlenecks analyzed, urban Interstate highway interchange bottlenecks account for the most truck hours of delay, estimated at about 124 million hours annually in 2004. The direct user cost associated with these bottlenecks is about \$4 billion per year. These highway interchange bottlenecks delay metropolitan and local truck traffic, but they also delay national and international truck flows because they sit astride many of the key intersections of the nation’s long-haul and transcontinental freight corridors. See Figure 1.

Freight bottlenecks will become increasingly problematic in the future as the U.S. economy grows and generates more demand for truck freight shipments. If the U.S. economy grows at a conservative annual rate of 2.5 to 3 percent over the next 20 years, domestic freight tonnage will almost double and the volume of freight moving through the largest international gateways may triple or quadruple. Without new strategies, congestion at freight bottlenecks on highways may impose an unacceptably high cost on the nation’s economy and productivity.

The paper examines the implications of the research findings about freight bottlenecks for urban and national transportation programs and policies, including the need to monitor truck delay at urban Interstate interchange bottlenecks and their cumulative effects along metropolitan and national freight corridors; the need to refocus highway improvement and operations programs on highway interchange bottlenecks; and the need to develop new institutional strategies for coordinating federal, state, local, and private-sector initiatives to reduce congestion delays.

Figure 1. Major Highway Interchange Bottlenecks for Trucks



Source: Cambridge Systematics, Inc.

Figure 1 shows the location of highway interchange bottlenecks for trucks. The bottleneck locations are indicated by a solid dot. Most are located at urban Interstate highway interchanges. The size of the open circles accompanying each dot indicates the relative annual truck hours of delay associated with the bottleneck.