

## **I-95 Corridor Coalition**

### **Mid-Atlantic Truck Operations Study**

Executive Summary



**I-95 CORRIDOR  
COALITION**

October 2009

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# Mid-Atlantic Truck Operations Study

## Executive Summary

Prepared for:

I-95 Corridor Coalition

Maryland Department of Transportation

New Jersey Department of Transportation

Pennsylvania Department of Transportation

Delaware Department of Transportation

Virginia Department of Transportation

New York State Department of Transportation

Sponsored by:

I-95 Corridor Coalition

Prepared by:

Cambridge Systematics, Inc.

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This report was produced by the I-95 Corridor Coalition. The I-95 Corridor Coalition is a partnership of state departments of transportation, regional and local transportation agencies, toll authorities, and related organizations, including law enforcement, port, transit and rail organizations, from Maine to Florida, with affiliate members in Canada. Additional information on the Coalition, including other project reports, can be found on the Coalition's web site at <http://www.i95coalition.org>.

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# Executive Summary

The objective of the Mid-Atlantic Truck Operations (MATOps) study is to identify and analyze major highway bottlenecks causing delay to trucks traveling on the Mid-Atlantic region's highway system and develop a consensus-based approach for reducing those delays and their economic costs.

The goal of the study is to help state departments of transportation (DOT), metropolitan planning organizations (MPO), and motor carriers develop capital, operating, and regulatory solutions that reduce delays at highway truck bottlenecks, set priorities for project funding, and implement improvements.

The study was sponsored by the I-95 Corridor Coalition, an alliance of transportation agencies, toll authorities, and related organizations, including public safety, from the State of Maine to the State of Florida, with affiliate members in Canada. The Coalition provides a forum for key decision and policy-makers to address transportation management and operations issues of common interest.

The MATOps study was conducted with oversight from a technical steering committee representing state transportation officials from the six Mid-Atlantic states – Maryland, New York, New Jersey, Pennsylvania, Virginia, and Delaware. The study benefited from review and advice from these officials as well as from the American Trucking Associations (ATA) and MPOs within the Mid-Atlantic region.

The MATOps study was motivated by the I-95 Corridor Coalition's Mid-Atlantic Rail Operations Study (MAROps), which examined rail choke points in the Mid-Atlantic region. The Coalition sought to expand the analysis to the region's highways to better assess the overall impact of bottlenecks on freight movement and the regional economy.

The MATOps project leverages research on national highway and truck bottlenecks conducted by the Federal Highway Administration. This research identified several hundred significant highway bottlenecks across the United States and made preliminary estimates of the hours of delay accrued by trucks traveling through these bottlenecks. Many of the major bottlenecks were in the Mid-Atlantic region.

The work undertaken in the MATOps study: 1) identifies the truck bottlenecks in the region, estimates the truck-hours of delay at each, and then develops detailed delay estimates for the five worst truck bottlenecks in each state; 2) describes the Mid-Atlantic economy, its growth industries, and commodities they ship and receive; 3) estimates the value and tonnage of the commodities caught in the truck bottlenecks as a proxy for the economic impact of the bottlenecks; 4) maps the commodity flows against truck freight bottlenecks and identifies "bottleneck strings" along the region's trade corridors; 5) reports

current bottleneck reduction strategies; and 6) recommends actions that the Coalition and its member agencies can pursue as the next steps in reducing truck bottleneck delays.

The study identifies 152 truck freight bottlenecks in the Mid-Atlantic region. Of these, 4 are among the top 30 bottlenecks in the nation. The study estimates that the 152 bottlenecks in the Mid-Atlantic region cause 19.6 million hours of truck delay annually. This translates into \$706 million in lost time, 35 million gallons of fuel burned, and 0.39 million tons of carbon dioxide emissions, the major component of greenhouse gases.

The five worst truck bottlenecks in each state, as shown in Figure ES-1, were studied in greater detail. (The State of Delaware identified 4 bottlenecks.) Based on an initial estimate of delay, these 29 bottlenecks were found to account for 47 percent of all truck-hours of delay accrued at bottlenecks across the Mid-Atlantic region. The annual impacts of these 29 bottlenecks alone were estimated at \$334 million in lost time, 16 million gallons of fuel burned, and 0.18 million tons of carbon dioxide emissions. Based on a refined estimate of delay developed from annual average observed roadway speeds, these 29 bottlenecks were found to have annual truck-hours of delay ranging from 8,000 to 1.1 million hours. Table ES-1 rank-orders the bottlenecks in descending order by observed truck-hours of delay. These costs are a substantial drain on the productivity of the region's economy, the energy security of the nation, and the health of the population.

Without concerted action, these costs will increase. The population of the region is projected to grow by 21 percent, and the size of the economy will more than double between 2005 and 2035. Without improvements to the freight transportation system that preserve capacity and reduce delays, the costs of feeding, housing, and clothing the population and the costs of supporting the region's growth industries will go up.

Almost all of the major bottlenecks - measured in truck-hours of delay - are in urban areas at interchanges on or adjacent to the I-95 corridor. Reducing the cost of truck freight delays and congestion along the I-95 corridor will have the greatest benefit to the freight system and the region's economy. The I-95 corridor bottlenecks should be the focus of future Coalition and member state efforts.

**Figure ES-1 Location of the Five Worst Truck Bottlenecks in Each State\***



\* The State of Delaware identified four bottlenecks

Source: Cambridge Systematics, Inc.

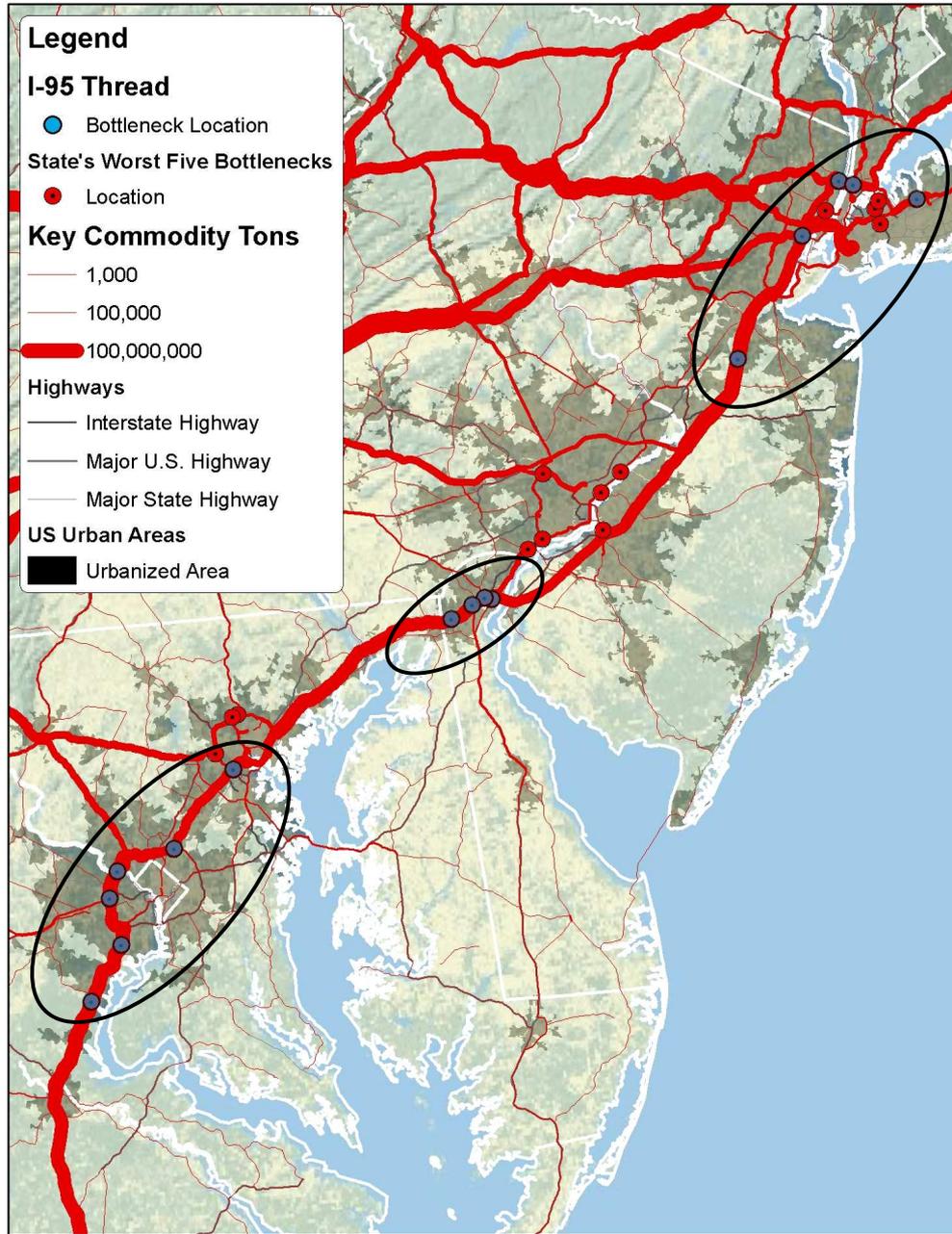
**Table ES-1 Five Worst Truck Bottlenecks in Each State\* Ranked by Observed Delay, 2006**

Interchange	ST	Annual Peak Period Truck Delay OBSERVED (Hrs)	Rank
I-95 at NY-9A**	NY	1,121,000	1
I-95 at NJ-4**	NJ	759,000	2
NJ-495 at NJ-3	NJ	392,000	3
I-678 at Grand Central Parkway	NY	195,000	4
I-70 at I-695	MD	190,000	5
I-678 at Cross Island Parkway	NY	176,000	6
I-95 at VA-7100	VA	175,000	7
I-78 at I-95	NJ	174,000	8
I-95 at PA-90	PA	168,000	9
I-695 at I-95 (S.)	MD	141,000	10
I-95 at I-495	MD	138,000	11
I-495 at I-66	VA	136,000	12
I-495 at American Legion Bridge	VA	133,000	13
I-76 at I-476	PA	124,000	14
I-95 at I-476	PA	123,000	15
I-495 at Exit 33	NY	113,000	16
I-95 at VA-234	VA	106,000	17
I-83 at I-695	MD	106,000	18
I-678 at NY-25A	NY	105,000	19
I-695 at I-83 and MD-25	MD	101,000	20
I-95 at US-322	PA	93,000	21
I-295 at I-76 and NJ-42	NJ	93,000	22
I-95 at DE-141	DE	70,000	23
I-95 at DE-896	DE	54,000	24
I-95 at DE-1	DE	52,000	25
I-295 at US-13 and US-40	DE	51,000	26
I-95 at Academy Road	PA	46,000	27
I-264 east of I-64	VA	34,000	28
I-95 at NJ-32 and NJ-612	NJ	8,000	29

\* The State of Delaware identified four bottlenecks; \*\* Bottlenecks at I-95 at NJ-4 and I-95 at NY-9A are the west and east approaches, respectively to the George Washington Bridge.

Most of the major bottlenecks along the Mid-Atlantic trade corridors are strung closely together. Many medium- and long-distance truck moves using these corridors encounter one or more strings of bottlenecks depending on their route and the time of day. An improvement to a single bottleneck within these strings will reduce delays at that bottleneck, but will often shift the congestion to the next downstream bottleneck. To achieve significant reductions in truck delay and improve freight flows along the Mid-Atlantic trade corridors, strings of bottlenecks must be considered and managed as a whole. Figure ES-2 identifies three I-95 trunk-line bottleneck strings. Each bottleneck in the string is marked with a blue dot and each individual string is indicated by a black oval. The string is defined by a red-line that indicates freight flows, in tons, on the region's highways.

Figure ES-2 I-95 Trunk Line Bottleneck Strings



The strings of bottlenecks span two and sometimes three states as well as multiple jurisdictions within metropolitan areas. This means that planning, funding, and implementing improvements to reduce delay and congestion must be done on a cooperative basis. This will require continuing efforts to build and sustain coalitions among Federal, state, and local agencies, and with the private sector. Finally, while the scan of professional practice identified a broad spectrum of capital, operating, and regulatory solutions that could be applied to freight bottlenecks, the state of practice in dealing with major freight bottlenecks is not well developed. Major freight bottlenecks are often regarded as too big to tackle – because of their technical, institutional, and funding complexities – and, therefore, put off for the future.

However, the Mid-Atlantic region cannot afford to ignore the mounting demand for freight transportation and the consequences of inaction. The region needs policies and programs to address the capacity and performance needs of its freight transportation system. The consequence of transportation failure – failing to keep up with growth and trade, failing to fix major truck bottlenecks, failing to fix major rail chokepoints, and failing to provide adequate access to the nation’s ports and international trade gateways – will be higher costs and slower economic growth, which will compound the problems created by the recent recession.

Based on the findings and conclusions of the study, the I-95 Corridor Coalition and its member agencies may wish to consider the following actions:

- Select a high-priority bottleneck string.
- Conduct a detailed examination of the bottlenecks within the string, including examination of the physical, operational, and institutional factors that may cause them. A further analysis of commodity flows may provide insight about the bottlenecks that have the most economic impact to the region. Commodities can be disaggregated by industry, and value-hours of delay and ton-hours calculated for each commodity/industry group, to provide a more precise assessment of economic impact.
- Work with the Mid-Atlantic states to identify a portfolio of cost-effective strategies to reduce truck- and commodity-hours of delay across the string of bottlenecks.
- Provide the information to the Mid-Atlantic states to assist the appropriate member states in undertaking projects to address these bottlenecks, including projects that may be applicable for planning and implementation funding under the Federal Projects of National and Regional Significance (PNRS) program (or new programs that emerge from the surface transportation authorization).
- In parallel with the development of the bottleneck string program, examine how other improvements to the Mid-Atlantic rail and marine transportation

systems might help relieve truck pressure at the bottlenecks and elsewhere on the highway network.

The Coalition also may wish to:

- Examine truck bottlenecks in the Northeast and Southeast regions to complete a picture of bottlenecks and bottleneck strings in the I-95 Corridor region.
- Continue work with the FHWA, member states, motor carrier associations, and motor carriers on traffic count and fleet speed data programs. These activities could generate better performance data, which could be used to more quickly and accurately identify bottlenecks, track delay trends, estimate economic impacts, and set priorities for improvements.