

# **THE I-95 CORRIDOR IN THE UNITED STATES: DRAWING BENEFITS FROM INTERMODALITY**

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## **ABSTRACT**

The Interstate 95 Corridor in the United States is 1,919 miles long and traverses 15 states, from the Canadian Border in Maine to the Southeast corner of the United States in Florida. The 15 states on the I-95 corridor also contain 31,000 miles of rail lines, both freight and passenger, 46 major seaports, and 103 commercial airports. If the states on the Corridor were a separate country it would constitute the second largest economy in the world. Population growth and economic growth have put an increasingly heavy burden on all modes of transportation. In response the I-95 Corridor was formed, initially as a means of coordinating on intelligent transportation systems initiatives across states lines. It has evolved into an institution that “provides a forum for key decision and policy makers to address transportation management and operations issues of common interest,” with a high priority for relieving congestion on the I-95 Interstate Highway by diverting freight to other modes. The I-95 Coalition has undertaken a number of studies to assess capacity and performance of its highway, rail, and maritime modes. The I-95 case is the leading example in the United States of a coordinated effort to address the transportation challenges arising from increasing congestion and constrained capacity in a large region.

## **INTRODUCTION**

For a number of reasons the I-95 Corridor is a significant case for the understanding of the challenges confronting transportation officials in the United States and elsewhere around the world.

1. The region served by the I-95 Corridor is old, large, growing, and important to the economy of the United States.
2. All modes of transportation in the I-95 region are experiencing congestion and capacity constraints.
3. A number of initiatives have been taken to analyze the transportation systems of the I-95 corridor and to identify projects that would produce significant regional benefits.
4. The I-95 Corridor Coalition is a pioneering organization for dealing with problems and objectives that cross state boundaries.
5. Other transportation corridors in the United States are looking to I-95 as a model.

This paper focuses on freight transportation but for all modes the infrastructure in the I-95 Corridor is shared by freight and passenger transportation. In the I-95 Corridor the rail and maritime systems are being looked to for relief of congestion on I-95 and the connected highways of the National Highway System.

## THE I-95 CORRIDOR

The Interstate 95 Corridor in the United States is 1,919 miles long and traverses 15 states, from the Canadian Border in Maine to the Southeast corner of the United States in Florida (Figure 1).

Figure 1 - I-95 Corridor—Maine to Florida



The 15 states on the I-95 corridor also contain 40,000 national highway system miles, 31,000 miles of rail lines, both freight and passenger, 46 major seaports, and 103 commercial airports. If the states on the Corridor were a separate country it would constitute the second largest economy in the world, with 40 percent of the U.S. GDP, 37 percent of all U.S. jobs, and 28 percent of all U.S. exports. The transportation system of the region accommodates movement of 565 million long-distance (>100 miles) trips and 5.3 billion tons of freight annually. At 256 persons per square mile, population density in the I-95 Corridor is over three times that of the United States in general.

The region hosts many of the nation's vital governmental, business, industrial, agricultural, entertainment, and recreational activities. In order for the nation to thrive, the transportation facilities that serve these activities must be managed and operated efficiently. Since many of the trips resulting from these activities, whether transporting freight or people, cross multiple state and local government jurisdictional boundaries, no single operating entity is responsible for the overall efficiency, safety, comfort, or cost of travel, or its effects on the environment.

## INTERMODAL TRANSPORTATION CHALLENGES IN THE I-95 CORRIDOR

In testimony before the National Surface Transportation Policy and Revenue Study Commission in November 2006, Neil Pederson, Chair of the I-95 Corridor Coalition said, "We are at the edge of a transportation crisis in the I-95 Corridor Coalition region. The demand for transportation has outstripped our ability to deliver new capacity, to unscramble congestion, and to ensure reliable freight and passenger trips. We have one of the most developed and sophisticated transportation networks in the world, but we have

not invested enough in the system to keep pace with economic growth and trade. We are at risk of choking our economy.”

Elaborating on current conditions Pederson focused on “major highway bottlenecks and rail choke points that cause tens of thousands of hours of delay each day, week, and year to commuters, business travelers, truckers, the railroads, and shippers and receivers.” He stressed that the principle obstacles to action are not analysis, design, and engineering, but institutions and investment dollars. “We are not addressing these projects,” said Pederson, “because—while the benefits are local, regional, and national—their costs are so high they cannot be funded by a single state. Most of these projects are hugely complex and costly. Few states and transportation agencies have the money to tackle them. And even fewer have a way to share the costs and risks with other states.”

Between 1970 and 2004, the total population of the I-95 region increased by over 30 million, or 38 percent. The New York–Northern New Jersey metro area alone grew by 1.6 million while the Washington–Baltimore region added nearly a million new residents. Not only is the population growing but more people are taking more trips, over three-quarters of them on the region’s highway system. As a result, annual vehicle miles of travel (VMT) within the region has been increasing rapidly and currently exceeds 550 billion, representing a 140 percent increase since 1970.

Truck movements are significant—over 195 billion ton-miles of the region’s freight moved by truck in 1997, over 70 percent of the overall ton-miles in the region. One result of these trends has been increasing congestion on the region’s highway system. In addition, the region’s transportation system is being affected by growth in freight volumes in other areas and changing logistics patterns. Post-9/11 security requirements, the rise of China as a major trading partner, and the continued use of just-in-time logistics practices have changed the ways in which shippers and manufacturers use the transportation system to transport goods to major distribution, warehousing, and population centers in the region. Taken together, these trends can have key mobility, economic vitality, and community/environmental impacts.

Figure 2 displays the highway system of the region, the forecast growth between 2005 and 2035, and the truck freight bottlenecks in 2004.

Figure 3 provides a parallel picture of the I-95 Corridor freight rail system—showing the major rail lines, forecast growth from 2005 to 2035, and the major chokepoints and congested segments.

Figure 4 offers a side-by-side display of the truck-freight chokepoints, the rail chokepoints, and the tonnage of the major ports in the I-95 region. Combined these systems, built over the three previous centuries, constitute the region’s circulatory system for passenger and freight transportation. Given the density of the region’s transportation systems, their age, condition, and the fact that they are embedded in the oldest region of the country, the challenge is to maintain the circulation necessary for continued vitality and growth. The details of that challenge have been developed through a number of analyses of the I-95 Corridor’s transportation systems.

Figure 2 - Highway System, Truck Flows, Bottlenecks in the I-95 Region

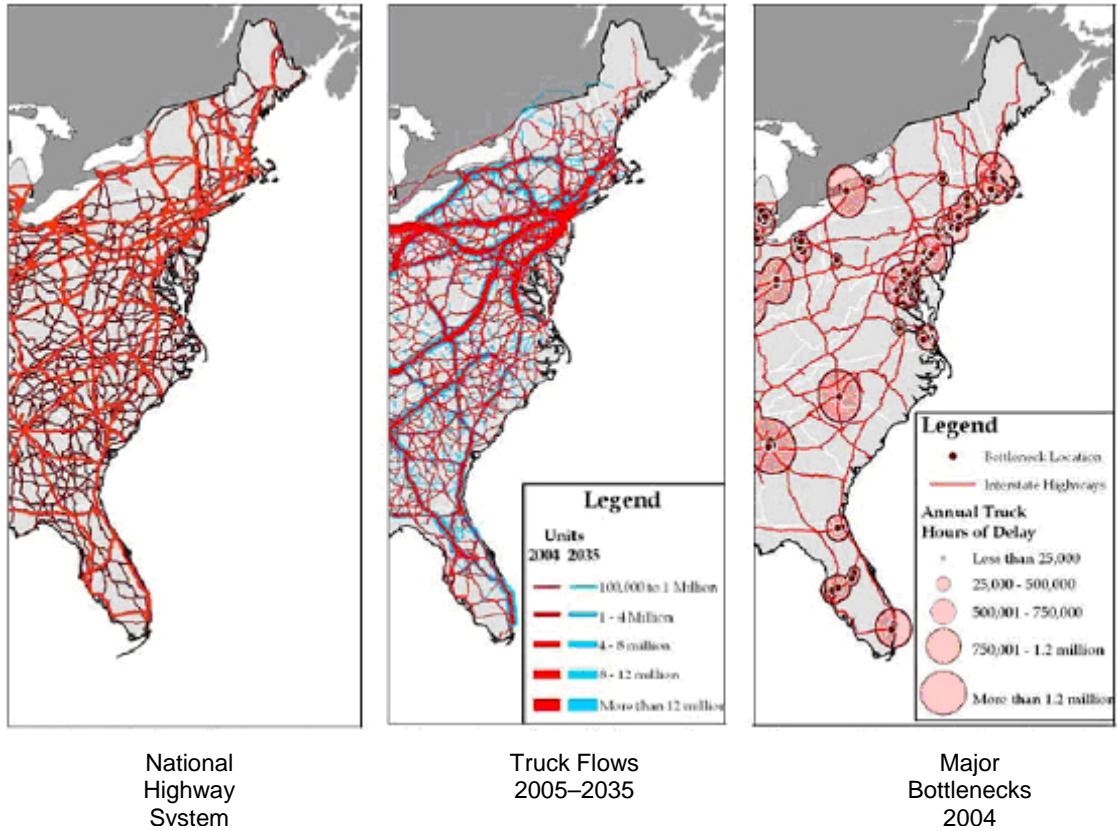


Figure 3 - Major Rail Lines, Container and Railcar Flows, and Choke Points in the I-95 Region

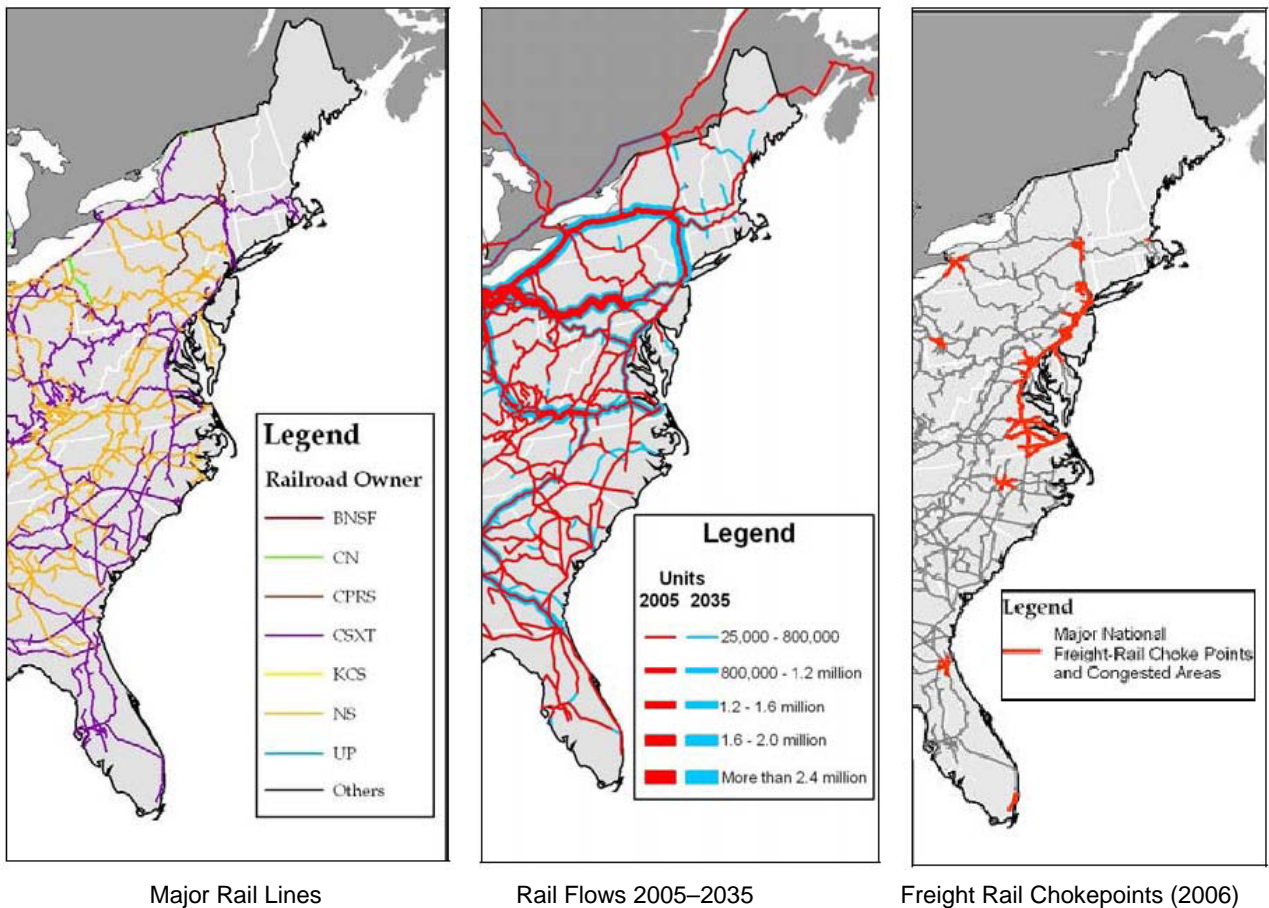
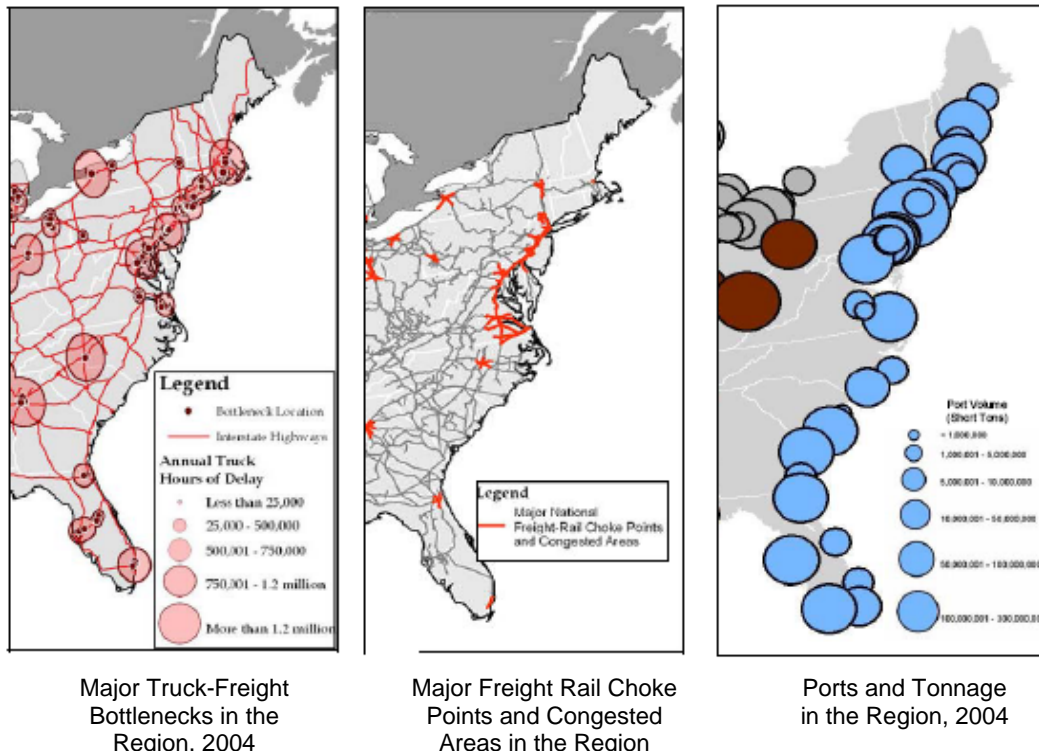




Figure 4 - Bottlenecks, Choke Points, Congestion All Modes



## ANALYSIS

Under the auspices of the I-95 Corridor Coalition all modes of transportation within the Corridor have been analyzed. These analyses include the following:

- Highway Bottlenecks Study—Analysis currently in progress will identify the passenger and freight highway bottlenecks that are most severely impacting regional, long-distance travel in the Coalition region.
- Mid-Atlantic Truck Operations Study (MATOps)—Will provide a detailed analysis of truck movements through the Mid-Atlantic region.
- Mid-Atlantic Rail Operations Study (MAROps)—An examination of rail system performance through the Mid-Atlantic Rail Operations Study (MAROps), involving five states (Delaware, Maryland, New Jersey, Pennsylvania, and Virginia), and three railroads (Amtrak, CSX Transportation, and Norfolk Southern).
- Northeast Rail Operations Study (NEROps)—The Coalition is studying the rail network in New York and the New England states (Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island). The NEROps study is describing the current and future demand for freight and passenger rail service in the region as well as examining the current and planned supply of freight and passenger rail service.
- Southeast Rail Operations Study (SEROps)—The Southeast Rail Operations Study (SEROps) is completing the rail picture in the Coalition region by identifying and describing key rail issues, activities, and initiatives as well as the trends and issues affecting freight movements and freight and passenger rail transportation in the Southeastern states (North Carolina, South Carolina, Georgia, and Florida).

- Short-Sea and Coastal Shipping Options Study—Provided to state DOTs and MPOs a better understanding of how short-sea shipping fits within local, statewide, and regional transportation systems. One of the key outcomes was a preliminary identification of commodity types and general traffic lanes that could be amenable to short-sea shipping operations.

The most substantial and notable of these analyses has been the Mid-Atlantic Rail Operations Study (MAROpS) The study identified over 70 major rail choke points within the Mid-Atlantic rail system. These included:

- Antiquated and undersized bridges and tunnels.
- Lack of capacity on critical segments of freight and passenger lines.
- Inadequate vertical clearances for double-stack container traffic on freight mainlines
- Inadequate connections between rail lines. Congested grade crossings, stations, yards, and terminals.
- Outmoded and inadequate information and control systems.

Over a two-year period, the MAROps participants defined a 20-year, \$6.2 billion program of rail improvements aimed at improving north-south rail transportation for both passengers and freight in the Mid-Atlantic region and helping reduce truck traffic on the region's overburdened highway system. In a follow-up study in 2004, the benefits from the MAROps program improvements were estimated at \$12.8 billion—about a 2-to-1 benefit-cost ratio. The benefits included:

- \$2.9 billion in direct shipper benefits due to reduced freight transportation costs;
- \$6.3 billion in direct savings due to reduced highway congestion for vehicles still on the road—\$0.8 billion for trucks, \$0.7 billion for work-related auto trips, and \$4.8 billion for non-work auto trips; and
- \$3.7 billion in indirect economic benefits generated throughout the economy by these transportation savings.

Phase II of MAROps will provide further detail and explanation of the degree and extent of benefits to the MAROps States and the region, and the remainder of the United States.

The I-95 Corridor is the most analyzed transportation corridor in the United States. However, there are major obstacles to carrying out the conclusions and recommendations of the analyses. The two most significant are the multiple governmental jurisdictions through which corridor traffic flows and the size and complexity of the financing needs. The organization that has been most active in addressing these challenges is the I-95 Corridor Coalition.

## **THE I-95 CORRIDOR COALITION**

The I-95 Corridor Coalition came together informally in the early 1990s, initially as a means of coordinating responses to major highway incidents with consequences across jurisdictional boundaries. During the 1990s, the focus of the Coalition's program evolved from studying and testing intelligent transportation systems (ITS) technologies to a broader perspective that embraced integrated deployments and coordinated operations.

The Coalition's perspective expanded from a concentration on highways to one that encompasses all modes of travel and focuses on the efficient transfer of people and goods between modes. Coalition membership has broadened over the years, reflecting the depth and application of Coalition projects. Recent Coalition work plans include projects that

involve regional passenger and freight movements analysis, long distance trip planning on public transportation modes, port access, and international border crossing security. Within the Coalition region this has led to an expansion of the number and types of agencies that participate in Coalition projects and activities, including transit agencies and metropolitan planning organizations. Today the I-95 Corridor Coalition is an institution that provides a forum for key decision and policy makers to address transportation management and operations issues of common interest and importance for both passenger and freight movement.

In the United States the separation of powers between the national government and the state governments, the traditional arrangements for generating and distributing public revenues for transportation investment, and the mix of public and private infrastructure results in a poor fit between the public institutions and the multi-state flows of freight. Figure 6 offers one portrayal of the challenge, showing the single state of California on the West Coast and the population equivalent of five states (of the total of 16) within the I-95 Corridor. Having to coordinate among many states to address the kinds of issues that elsewhere might be addressed within one state makes a difficult job even more difficult.

A major freight investment in one state may have benefits for that state but significant benefits for the efficiency of the corridor system not in one or more other states. Identifying needed projects, planning a program of investment, and making investments that benefit a region are formidable challenges.

Figure 6 – One State—Multi-State



The I-95 Coalition has recognized the importance of establishing the institutional and financial approaches needed to implement the improvements that will eliminate regional bottlenecks and choke points. Representatives from the financial community, state and regional transportation agencies, the rail and trucking industry, and others have discussed the potential financing mechanisms for major, multi-state transportation projects.

There is widespread agreement on the need to find new ways to finance transportation improvements and new ways to coordinate investments across state lines and across

public and private organizations. There is a consensus that approaches are needed to evaluate who benefits from large, expensive projects of national significance and determine a way that costs can be borne proportionally by those who benefit.

One of the many ideas that has been advanced is a “value-added” assessment, applied each time goods or products are moved on the transportation system. The movement of the good or product to a different location makes that good or product more valuable to the entity receiving it. If a “value-added” assessment could be collected based on the cost of transportation of the good or product, the economic beneficiary of the transportation of the good or product could more equitably be charged for the cost of the transportation system that was used to transport the good or product. This would be a type of sales tax and would be similar to the value-added tax in Europe, but based on the value added only as a result of the transportation of the good or service. The revenues from this charge would be dedicated to financing improvements in the transportation system.

Confronting and overcoming the institutional and financing obstacles will be key to improving the performance of the multimodal transportation system in the I-95 Corridor, which in turn will blaze the trail for other regions in the United States.

## **CONCLUSION**

The I-95 case is the leading example in the United States of a coordinated effort to address the transportation challenges arising from increasing congestion and constrained capacity in a large multi-state, multimodal region. The transportation systems of the I-95 Corridor are important in their own right but the efforts underway to address their needs have implications and potential benefits that transcend one region’s borders. Getting answers to the questions being addressed in the I-95 Corridor will be important for the Corridor but will also be important for many other places in the United States and around the world.

- How can the capacity and performance of a regional freight transportation system be analyzed and measured?
- How can specific investments that will improve regional system performance be identified and prioritized?
- How can the gap between national and state institutions for transportation planning and investment be filled?
- How can the amount of capital needed for a regional transportation investment program be generated and managed?

Finding the right answers to these questions and putting them into action will heavily influence future freight and passenger mobility as well as the economic competitiveness of the I-95 Corridor region.

## **RESOURCES**

Much of this paper is based on materials produced by the I-95 Corridor Coalition and may be accessed at <http://www.i95coalition.org/>.

As background, readers may also wish to consult the following reports issued by the American Association of State Highway and Transportation ([www.transportation.org](http://www.transportation.org)).



- *The AASHTO Freight Rail Bottom Line Report, 2003*
- *The AASHTO Freight Transportation Bottom Line Report, 2007 (forthcoming)*
- *Future Needs of the U.S. Surface Transportation System, 2007*
- *American Freight Crisis, 2007 (forthcoming)*