

**Questionnaire for:**

**Assessment of strategic plans and policy  
measures on Investment and Maintenance in  
Transport Infrastructure**

**Country:**

**United States of America**

## 1 INTRODUCTION

### With respect to freight railroads:

**Structure.** In the U.S., freight railroads are privately owned. In 2010, in addition to the 7 Class I freight railroad systems—systems with annual operating revenue of \$398.7 million or more—operating in the United States, there were 21 regional railroads (line-haul railroads operating at least 350 miles of road and/or earning revenue between \$40 million and the Class I threshold), and over 500 local railroads (line-haul railroads smaller than regional railroads).

Between 1990 and 2010, the Class I freight railroads averaged nearly 8 percent return on their net investment, up from the 2 percent average in the 1970s. The STB's cost of capital for the railroad industry averaged over 11 percent for this period.

**Productivity.** The railroads are responsible for maintaining their track, rights of way, and fleet of railcars and locomotives. Over the years, through mergers and rationalization of their plant, numerous low density or redundant lines have been abandoned or sold to smaller railroads. Since 1980, the Class I railroads have increased their traffic (ton-miles) by 84 percent (93 percent through 2008) while their network (miles of road owned) declined by 42 percent. This has increased traffic density by concentrating traffic over a smaller network. However, sustained increases in traffic (despite decline in 2009) seen since the turn of the decade have reversed the trends of the 80s and 90s; because of increased density, the railroads are now expanding capacity in their highest density corridors by double-tracking major routes.

Between 1981 (a few months after the Staggers Rail Act partially deregulated rail rates and services) and 2010, the railroads spent \$537 billion on capital and maintenance of their track and equipment. Capital expenditures nearly tripled, from \$3.6 billion in 1990 to \$9.8 billion in 2010 while the price level of railroad purchases of inputs rose by only 114 percent. Capital expenditures on roadway and structures tripled from \$2.6 billion in 1990 to \$7.9 billion in 2010, as railroads increased the percentage of rail weighing 130 pounds per yard or more from 50 percent of mileage in 1990 to 70 percent in 2010 to accommodate heavier loadings, such as increased coal shipments.

In terms of the capacity of railroad equipment, the industry reported that at the end of 2010 total horsepower of the railroad-owned locomotive fleet increased by 72 percent since the end of 1990 enabling the railroads to haul heavier trains, particularly trains moving coal out of the Powder River Basin, and high speed long distance intermodal trains. Of the 1,309,029 freight cars in service at the end of 2010, the majority was owned by car companies and shippers (809,544) followed by Class I railroads (397,730) and non-Class I railroads (101,755).

Between 1990 and 2010, freight railroads made major strides in improving productivity; revenue ton-miles per employee has more than doubled, from 4.8 to

11.2 million, as traffic increased and employment dropped.

*With respect to inland waterways and coastwise trade:*

It has become increasingly evident that the current system of freight transportation in the United States will be hard-pressed to meet the nation's future transportation needs with regard to maintaining national economic competitiveness, environmental sustainability, public safety, and emergency preparedness. Freight tonnage of all types, including exports, imports, and domestic shipments, is expected to grow 73 percent by 2035 from 2008 levels. Land-based infrastructure expansion opportunities are limited in many critical bottleneck areas due to geography or very high right-of-way acquisition costs, particularly in urban areas where surface traffic congestion is the most severe. In many locations, existing infrastructure is suffering from overuse and will place growing demands on scarce public and private resources simply to sustain it. Accordingly, traffic congestion will almost certainly worsen significantly if the reliance on road and rail is not reduced.

The nation's heavy reliance on truck transportation for the movement of domestic freight (two-thirds of all domestic freight tonnage was moved by truck in 2008) has also contributed to the nation's dependence on petroleum. Truck transportation uses significantly more fuel per ton-mile of freight moved than does water or rail. The U.S. Department of Energy (USDOE) reports that energy use by the transportation sector will continue to grow through the year 2035, and that freight trucks will account for the largest share (38 percent) of this growth.

The nation is committed to curbing its GHG emissions, of which transportation is second only to electricity generation as a source. USDOE projects that GHG emissions from all transportation sources will increase by 195 million metric tons (10 percent) as of 2035 compared to 2008, of which 59 percent of the increase will be attributable to growth in heavy truck emissions.

However, some of the projected growth in both truck energy consumption and GHG emissions is likely to be curtailed through a regulatory initiative recently announced by the President. In particular, the President directed EPA and USDOT to take steps to reduce GHG emissions and fuel consumption by developing the first-ever GHG and fuel economy standards for medium-and heavy-duty trucks, in an announcement made on May 21, 2010.

USDOT reports that approximately 5,000 fatalities per year were associated with heavy truck crashes over the last two decades (fatalities fell to just over 4,200 in 2008, however). Whereas USDOT, other agencies, and the industry are working hard to improve the safety of heavy vehicles, there are inherent dangers caused by the mixed operation of light and heavy vehicles in the same traffic streams. Our transportation system's current reliance on land-based transportation modes also creates potential safety problems involving the movement of hazardous materials through urban and residential areas. Although both water and land-based systems are vulnerable to major disruptions due to damage to key structures such as bridges

and channels caused by natural or manmade disasters, the redundancy created by Marine Highways can help mitigate the disruptive impact of those events.

America's Marine Highway offers a cost-effective means to improve the economic efficiency, environmental sustainability, public safety and security, and resiliency of our transportation system. It also employs ships and mariners, providing jobs in peacetime and human and capital resources to deploy in time of war or natural disaster. Demand for ships to operate on Marine Highway corridors will also provide new business at the nation's commercial shipyards.

To date, the potential of America's Marine Highway to mitigate problems in the surface transportation system is not being met. As of December 2010, MARAD, which administers the America's Marine Highway program for USDOT, was monitoring only 32 Marine Highway and related domestic waterborne freight services that move containers and trailers. These and other marine transportation services moved approximately 2.05 million twenty-foot equivalent units (TEU) of loaded domestic containers and trailers in 2008, of which just 11 percent (by weight) were moved in the contiguous domestic trades that compete with land-based transportation modes. These 230,000 TEU compare to 3.85 million intermodal domestic rail container movements (consisting of containers and trailers ranging from 20 to 53 feet in length) in 2008; highway domestic-only movements, which are difficult to measure accurately, would be much higher. USDOT believes that the full benefits of America's Marine Highway can only be realized if they are recognized, correctly valued, and facilitated within a comprehensive national freight strategy.

*With respect to the seaway:*

The Department's Saint Lawrence Seaway Development Corporation (SLSDC) is a wholly owned U.S. government corporation, created in 1954 to construct, operate and maintain the U.S. portion of the St. Lawrence Seaway between the Port of Montreal and Lake Erie. The SLSDC is responsible for the operations and maintenance of the two U.S. Seaway locks in Massena, N.Y., and vessel traffic control in areas of the St. Lawrence River and Lake Ontario. The SLSDC coordinates its activities with its Canadian counterpart, The St. Lawrence Seaway Management Corporation, particularly with respect to rules and regulations, overall day-to-day operations, traffic management, navigation aids, safety, environmental programs, operating dates, and trade development programs. The unique binational nature of the Seaway System requires 24-hour, year-round coordination between the two Seaway entities.

The binational Great Lakes St. Lawrence Seaway System is the international shipping gateway to the Great Lakes, connecting the heartland of North America with the world. The waterway directly serves an eight-state, two-province region that accounts for 23 percent of the U.S. gross domestic product (GDP), 50 percent of North America's manufacturing and services industries, and is home to nearly one-quarter of the continent's population. In fact, maritime commerce on the Great Lakes Seaway System impacts 227,000 U.S. and Canadian jobs with associated benefits of \$34 billion in annual business revenue from transportation firms and \$14 billion in annual wages and salaries, and provides U.S. industries with approximately \$3.6 billion in annual transportation cost savings compared to the next least expensive mode of transportation. Over its history, the St. Lawrence Seaway has handled more than 2.6

billion metric tons of cargo valued in excess of \$375 billion. The SLSDC remains dedicated to promoting the economic and environmental benefits of the marine mode, attracting new cargoes to the Seaway, and leveraging technology to enhance the system's performance and safety.

Commercial transportation on the Great Lakes Seaway System serves as competition to other maritime trade routes as well as other transportation modes, which benefits both nations in lowering consumer prices of finished goods and raw materials, and reducing roadway and railway congestion. Each Seaway-size vessel carries approximately 25,000 metric tons, the equivalent of 870 semi-trucks.

### 1.1 Infrastructure

*The United States has 25,320 miles (40,749 km) of navigable channels. Below are data on the number of commercial waterway facilities:*

Great Lakes:	647
Inland:	1,949
Ocean:	5,588
Lock chambers:	238

Infrastructure – The distance of the Great Lakes St. Lawrence Seaway System, from the Atlantic Ocean to the westernmost port (Duluth, Minn.), is 2,038 nautical miles (2,342 statute miles). The maximum vessel sailing dimensions to transit the U.S. and Canadian St. Lawrence Seaway locks are: 740 ft. length; 78 ft. beam (width); 26 ft., 6 in. sailing draft (depth); and 116.5 ft. height above water.

### 1.2 Performance

Performance – The SLSDC programs and activities are principally focused on the Department's "Economic Competitiveness" performance measure of meeting the 99 percent or better goal for U.S. Seaway sector availability. The SLSDC is directly responsible for ensuring the safe, efficient, and secure passage of commercial vessels through the binational St. Lawrence Seaway, and it has consistently maintained a 99 percent availability rate.

## 2 MAJOR PROJECTS AND FUNDING

Starting in 2009, the SLSDC initiated its multi-year U.S. Seaway Asset Renewal Program (ARP) for its navigation infrastructure and facilities. The ARP projects and equipment address various needs for the two U.S. Seaway locks, the Seaway International Bridge, maintenance dredging, operational systems, and Corporation facilities and equipment. The start of the program marked the first time in the Seaway's 50-year history that a coordinated effort to repair and modernize the U.S. Seaway infrastructure had taken place. As a repair and modernization program, the ARP does not change lock dimensions or channel depths.

Unlike many of the other lock-based waterway systems in the world, which have twinned locks to ensure continued operations in the event of a lock failure, the St. Lawrence Seaway is a single-lock system. A delay or shutdown at any one of the 15 U.S. or Canadian Seaway locks would cause system-wide delays. In 1985, a lock wall failure at the Canadian Welland Canal caused 53 commercial vessels to be trapped in the Seaway System for 24 days at a cost to the shippers at that time of more than \$24 million (\$50 million in 2011 dollars). The ARP program is vital to ensuring system availability and the flow of goods.

The Canadian government has also begun addressing the asset renewal needs of its 13 Seaway locks, eight of which are more than 75 years old (located at the Welland Canal). Many of the lock-related ARP improvements will parallel activities underway at the Canadian Seaway locks. Over the last seven years, the U.S. and Canadian governments have invested \$500 million in renewing the Seaway's infrastructure.

Strategic Plans – SLSDC's ARP Five-Year Capital Investment Plan (FYs 2013-2017) – [http://www.greatlakes-seaway.com/en/pdf/SLSDC\\_Asset\\_Renewal\\_Plan2013.pdf](http://www.greatlakes-seaway.com/en/pdf/SLSDC_Asset_Renewal_Plan2013.pdf)

### For Airport Projects (Development and Maintenance)

Funding for airport capital comes from five major sources: Federal Airport Improvement Program (AIP) grants, Passenger Facility Charges (PFC), airport bonds, state and local grants, airline rates and charges, and other airport revenues such as rental car fees and airport concessions. Airports vary in their reliance on these sources of funds. Generally, large-hub airports are self-sufficient through their collection of Passenger Facility Charges, while medium and small hub airports are more dependent on AIP funding.

#### Federal AIP Grants

The AIP provides federal grants for airport development. AIP funding is spent on projects that support aircraft operations such as runways, taxiways, aprons, noise abatement, land purchase, safety or emergency equipment, and some maintenance (rehabilitation and reconstruction such as pavement resurfacing) but AIP cannot be used for routine maintenance-type projects such as crack-sealing, temporary patching, grouting, re-marking, etc.). The funds obligated for the AIP are drawn from the Airport and Airway Trust Fund. The trust fund is financed by taxes on domestic and international airline travel, domestic cargo transported by air, or mail transported by air, and various aviation fuel taxes. The Federal Aviation Administration (FAA) allocates most AIP grants on the basis of (1) a legislated apportionment formula, tied to the number of passengers an airport enplanes in the case of primary airports, and

(2) set-aside categories earmarked for specific types of airports and projects. (For more information, go to <http://www.faa.gov/airports/aip/>)

### Passenger Facility Charges

The PFC program allows the collection of PFC fees up to \$4.50 (\$18.00 per round trip) for every enplaned passenger at commercial airports. Airports use these fees to pay debt financing costs and to fund FAA-approved projects that enhance safety, security, or capacity; reduce noise; or increase air carrier competition. Like AIP funding, PFC funds cannot be used for routine maintenance-type projects (e.g., crack-sealing, temporary patching, grouting, re-marking, etc.). Airports must apply to FAA for approval of both the collection of the fees and the specific projects that the money will pay for. Airports must provide notice to the carriers serving the airport prior to collection of the PFCs and the airport must consult with airlines serving the airport prior to using PFC funds to finance infrastructure investments. (For more information, go to <http://www.faa.gov/airports/pfc/>)

### Airport Bonds

Because airport sponsors in the United States are nearly always local or state governments or a special public authority, the form of debt is often a tax-exempt bond. The three most common types of bonds are: 1) General Obligation Bonds. These bonds are issued with the "full faith and credit" of the issuing government or special district entity such as an airport authority. Full faith and credit means that the airport sponsor provides an unconditional pledge to pay the interest and principal over the life of the bond. 2) Airport Revenue Bonds. These bonds are secured by a pledge of an airport's revenues. The issuer pledges to make scheduled payments on the interest and principal over the life of the bond to the extent that the airport has sufficient revenue to make the payments. 3) Special Facility Revenue Bonds. These bonds are secured by a pledge of revenue from a particular airport facility. Special facility bonds are used to finance specific projects, such as a terminal building, often on behalf of a single airline tenant. The security is the stream of rental income the airport receives from the tenant.

### State and Local Grants

Nearly all states provide financial assistance to airports, primarily in the form of grants as matching funds for AIP grants or as separate state grants. States fund their grant programs through a variety of sources, including aviation fuel and aircraft sales taxes, highway taxes, bonds, and general fund appropriations.

### Airport Revenues

Airports receive revenues from a variety of sources. Airport "aeronautical" revenues include sources such as landing fees, terminal rentals, apron charges, fixed based operator revenue, cargo and hangar rentals, fuel flowage fees, fuel taxes retained by the airport, and reimbursements for security. Nonairline "passenger-dependent" revenue sources include auto parking, food and beverages, retail, advertising, and rental car fees. Airports receive rents for use of airport property such as manufacturing, warehousing, hotels, offices, retail, or other ancillary land uses. For FAA (includes infrastructure maintenance).

The FAA is funded primarily by the Airport and Airway Trust Fund (AATF), which receives revenues from a series of excise taxes paid by users of the national airspace

system, associated with purchases of airline tickets and aviation fuel, as well as the shipment of cargo. The General Fund, which comes from general tax revenues, is also used to pay for approximately thirty percent of the FAA's annual budget, stemming in part from an acknowledgement of the economy-wide benefits that civil aviation provides and encourages. The largest source of excise tax revenues are the taxes from transportation of passengers. Taxes from transportation of persons include the domestic passenger ticket tax, domestic flight segment fees, and taxes on mileage awards (frequent flyer tax). The next largest tax revenue sources are the international passenger arrival and departure fees.

The AATF provides the funding for airport improvement (AIP mentioned above), facilities and equipment, and research, engineering, and development; it also provides partial funding of operations. In fiscal year 2011 the General Fund provided 31 percent of FAA's funding, all of which went to cover the remaining cost of operations.

For more information, go to

[http://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/aatf/](http://www.faa.gov/about/office_org/headquarters_offices/apl/aatf/)

*For inland waterways and coastwise trade:*

On August 11, 2010, U.S. Transportation Secretary Ray LaHood identified 18 marine corridors, eight projects, and six initiatives for further development as part of "America's Marine Highway Program." In addition, the Department's Maritime Administration (MARAD) made available \$7 million for which these projects will be able to compete through a Notice of Funding Availability.

The Marine Highway Program was fully implemented in April 2010 through publication of a Final Rule in the Federal Register (<http://edocket.access.gpo.gov/2010/pdf/2010-7899.pdf>). The Secretary's designations were made pursuant to the Final Rule, as required by the Energy Independence and Security Act of 2007.

**Marine Highway Corridors:** These all-water routes consist of 11 Corridors, four Connectors and three Crossings that can serve as extensions of the surface transportation system. These corridors identify routes where water transportation presents an opportunity to offer relief to landside corridors that suffer from traffic congestion, excessive air emissions or other environmental concerns and other challenges. Corridors are generally longer, multi-state routes whereas Connectors represent shorter routes that serve as feeders to the larger Corridors. Crossings are short routes that transit harbors or waterways and offer alternatives to much longer or less convenient land routes between points. By designating these Marine Highway Corridors, Connectors and Crossings, Secretary LaHood is taking the first step to focus public and private efforts to use the waterways to relieve landside congestion and attain other benefits that waterborne transportation can offer in the form of reduced greenhouse gas emissions, energy savings and increased system resiliency. Please click on this link to view the Marine Highway Corridors, Connectors and Crossings: [Click here for Marine Highway Corridor Descriptions](#)

**Marine Highway Projects:** The Secretary has also selected eight Marine Highway Projects for designation under the program. These projects represent new or expanded Marine Highway Services that offer promise of public benefit and long-term sustainability without future Federal operational support. These projects will receive preferential treatment for any future federal assistance from the Department. The



projects will help start new businesses or expand existing ones to move more freight or passengers along America's coastlines and waterways. The services have the potential to reduce air pollution and traffic congestion along surface corridors as well as provide jobs for skilled mariners and shipbuilders. The projects were selected from among 35 applications from ports and local transportation planning agencies received by MARAD.

Marine Highway Grants: Sponsors of Marine Highway Projects are eligible to compete for a share of up to \$7 million in Marine Highway Grants. Please click on the attached Notice of Funding Availability for additional information concerning Marine Highway Grants: [Click here for Guidance on applying for Marine Highway Grants.](#)

Marine Highway Initiatives: In addition to Projects, the Secretary has selected six applications that, while not developed to the point of proposing specific services and routes required of Project designation, they offer promise of potential in the future. While not eligible to compete for upcoming Marine Highway Grants, these "Marine Highway Initiatives" will receive support from the Department of Transportation in the form of assistance in further developing the concepts through conduct of research, market analysis and other efforts to identify the opportunities they may present. [Please click on this link to view the Marine Highway Initiatives: Click here for Marine Highway Initiative Descriptions.](#)

The Final Rule (MARAD-2010-0035) for America's Marine Highway Program was published April 9, 2010. The Solicitation of Applications for Marine Highway Projects was published in the Federal Register on April 15, 2010.

### **3 STRATEGIC PLANS**

Here are links to various aviation reports in response to this question. These links could also be used to our response to question no 2.

National Plan of Integrated Airport Systems FY2011-2015

[http://www.faa.gov/airports/planning\\_capacity/npas/reports/media/2011/npas\\_2011\\_narrative.pdf](http://www.faa.gov/airports/planning_capacity/npas/reports/media/2011/npas_2011_narrative.pdf)

Capital Investment Plan (FY2013-2017)

[http://www.faa.gov/air\\_traffic/publications/cip/files/FY13-17/FY13-17\\_CIP\\_Complete\\_March\\_2012.pdf](http://www.faa.gov/air_traffic/publications/cip/files/FY13-17/FY13-17_CIP_Complete_March_2012.pdf)

National Aviation Research Plan (2012)

[http://www.faa.gov/about/office\\_org/headquarters\\_offices/ang/offices/ac\\_td/research\\_planning/narp/media/pdf/2012%20NARP-WEB.pdf](http://www.faa.gov/about/office_org/headquarters_offices/ang/offices/ac_td/research_planning/narp/media/pdf/2012%20NARP-WEB.pdf)

Destination 2025

[http://www.faa.gov/about/plans\\_reports/media/Destination2025.pdf](http://www.faa.gov/about/plans_reports/media/Destination2025.pdf)

NextGen Implementation Plan (2012)

[http://www.faa.gov/nextgen/implementation/media/NextGen\\_Implementation\\_Plan\\_2012.pdf](http://www.faa.gov/nextgen/implementation/media/NextGen_Implementation_Plan_2012.pdf)

## **4 ASSESSMENT METHODOLOGY**

U.S. Seaway Asset Renewal Program (ARP) baseline project estimates were developed by the SLSDC using four criteria, as applicable: (1) historical costs for similar work completed previously by the SLSDC; (2) consultation with the U.S. Army Corps of Engineers (USACE) for similar work it completed at other U.S. locks; (3) consultation with the SLSMC for similar work it completed at the Canadian Seaway locks; and (4) utilization of data from RSMeans®, which serves as North America's leading supplier of construction cost information. Since the start of the ARP, estimates for outyears have been revised based on either actual bids for similar ARP work and/or more complete designs.

The Seaway ARP supports the engineering considerations highlighted in the November 2007 binational Great Lakes St. Lawrence Seaway Study. The study evaluated the infrastructure needs of the U.S. and Canadian Great Lakes Seaway System and assessed the economic, environmental, and engineering implications of those needs pertaining to commercial navigation. During its work on the study, the SLSDC measured its infrastructure assets using a USACE-based lock criticality index to better identify and prioritize maintenance and replacement needs. The results of the initial index were used to develop the ARP.