

NAVIGABLE WATERWAYS

2010 Report Card for Pennsylvania's Infrastructure

D+

Cargo shipped via inland ports and waterways is by far the most economical and environmentally friendly mode of transportation, versus rail or truck. Pennsylvania's waterways, which connect to the nationwide infrastructure network, were built over the last 150 years and are in a severe state of disrepair due to lack of maintenance and capital improvements funding over several decades. Commercial shippers are foregoing the cost-saving potential of shipping by waterway due to lack of reliability of the system, which threatens goods being delivered in a timely and scheduled way. The grade of D+ reflects the fact that none of Pennsylvania's locks rate an "A" for acceptable reliability, and unscheduled maintenance shutdowns are frequent. Also, while funds from the American Recovery and Reinvestment Act of 2009 (ARRA) improved some facilities, there is no long-term replacement strategy in place for aging infrastructure of waterways in the state. And while some progress has been made in the critical Delaware River dredging project, a catastrophic failure in our system of navigable waterways would have serious effects on public safety, the environment and economic activity.

BACKGROUND

Western Pennsylvania

The U.S. Army Corps of Engineers (USACE) owns, operates and maintains approximately 200 miles of navigable waterways and 17 navigation locks and dams on the Ohio, Allegheny and Monongahela Rivers in western Pennsylvania. The Port of Pittsburgh is the third busiest inland port in the nation and the 19th busiest port of any kind, down from 13th in 2006. At 38 million tons of cargo per year, it processes more tonnage than either the port of Philadelphia or St. Louis. The Pittsburgh port district encompasses a 12-county area in southwestern Pennsylvania and supports more than 200 river terminals and barge industry service suppliers. The port moves more than 38 million tons of cargo annually, which equates to \$800 million in benefit to the region. More than \$9 billion worth of goods moves along the waterways yearly through the Port of Pittsburgh District and 45,000 jobs in southwestern Pennsylvania are dependent upon the waterway transportation system. The life and success of the port is directly dependent on the efficient operation of the navigable waterway transportation system.

Inland waterway transportation is generally the least costly transportation mode. The average cost of moving cargo by barge in the Port of Pittsburgh district ranges between \$.005 and \$.01 per ton mile of cargo moved, compared to \$.05 for rail and \$.10 for trucking. Barge transportation is more energy efficient and environmentally friendly than rail or truck, which reduces overland congestion, accidents and noxious pollutant emissions. A typical Ohio River 15-barge tow has a 22,500 ton load capacity, which is the equivalent of 225 rail cars or 900 tractor trailer trucks. To move these 22,500 tons one mile requires 44 gallons of diesel fuel by barge, versus 111 gallons by rail and 381 gallons by truck.

Eastern Pennsylvania

The USACE maintains a 40-foot deep navigation channel in the Delaware River that extends 96.5 miles south from Allegheny Avenue in Philadelphia to deep water in the Delaware Bay. This channel is part of the “Philadelphia-to-the-Sea” navigation project, which serves three states—Pennsylvania, New Jersey and Delaware—and ties into other navigable waterways such as the Chesapeake and Delaware Canal, the Christina River and the Schuylkill River. The ports of Philadelphia; Camden, N.J.; and Wilmington, Del. are the second-largest deep water ports on the U.S. East Coast in terms of international waterborne cargo tonnage—they carried 82.4 million tons of cargo in 2004, comprising 29.9 percent of North Atlantic ports’ market share. The cargo is generally petroleum, with a mix of container and bulk products.

In 1981, a group of maritime representatives—including refineries, terminal operators, port authorities, railroads and the American Pilots’ Association—initiated a project to deepen the navigation channel to 45 feet. The Delaware River Port Authority (DRPA) expressed support of the federal feasibility study to deepen the channel in 1983 and, by 1989, had agreed to act as the local sponsor. Congress authorized the project in the Water Resources Development Act of 1992, at which time the USACE completed its feasibility report.

In 1998, Congress initially approved \$1.5 million in funding for the project and continued to appropriate funds throughout the construction. Actual dredging work began March 2010 after numerous legal challenges to the project. The USACE estimates the economic benefits of the deepening project over its 50-year life would be around \$30.1 million, while costs would be around \$22.3 million, meaning taxpayers would get around \$1.35 in economic benefits for every dollar spent. The economic impact on the Port of Philadelphia and Camden, N.J. region would be the addition of 54,000 jobs, 80 percent of which are non-refinery related, \$1.2 billion in business revenue, \$90 million in state and local taxes, and 75 percent of U.S. East Coast oil refining capacity, processing 1.1 million barrels of oil per day.

In addition to the increase in jobs and revenue, the deepening of the channel will have a positive environmental impact. It would reduce the lightering operations in Delaware Bay, improve security by reducing the amount of time that tankers spend in the Delaware Bay, and would provide a more efficient movement of crude oil, container petroleum product, steel and slag.

Most East Coast ports have been deepened or are in the process of having their channels deepened to more than 40 feet, which would make the Delaware River Channel the shallowest channel among competitive ports—a major competitive disadvantage.

CONDITIONS

Western Pennsylvania

The USACE has developed a system to measure system reliability for the navigation system structures, as unscheduled maintenance closures of the locks are most detrimental to the shipping industry and economic success of the port. Current condition assessment of the 17 locks in western Pennsylvania reveals that all are below an “A” rating, with the overall system averaging at 2.35—the equivalent of the letter grade of D+. Constrained funding over several decades for the maintenance of navigation projects has caused this decline in the reliability of the older locks in the system, some of which are 90 years old.

Since the 2006 *Report Card for Pennsylvania's Infrastructure*, individual instances of near complete failure of major navigation facility components have occurred. For example, in November 2008 the Pittsburgh District was required to undertake urgent measures when severe erosion was discovered at Allegheny River Lock and Dam 6 during an underwater inspection of the dam. A dam failure and loss of pool at Allegheny Lock and Dam 6 would have serious implications for the region, including commercial navigation, severe water quality degradation, loss of hydropower and destruction of one of the largest wetlands in the region.

Eastern Pennsylvania

The Delaware River Deepening Project has been delayed for a variety of environmental, economic and political reasons. While numerous and exhaustive studies have been conducted by the USACE, environmental groups fear that dredging the native river bottom will re-suspend contaminants into the water column and that it will puncture an aquifer contaminating the groundwater in Pennsylvania and New Jersey. There is also concern that a majority of the 33 million cubic yards of material to be dredged would be deposited in upland disposal areas in New Jersey.

In spite of these delays and lawsuits, in February 2010, the USACE gave a dredging contractor the green light to begin deepening the Delaware River shipping channel an additional five feet and work began this March. Environmental groups opposing the \$300-million, 102.5-mile project have petitioned the Third Circuit Court of Appeals to stay a federal judge's order that permitted deepening to begin in a 12-mile section of river off Delaware; however, the environmental group's requested stay was denied and it appears the project will move forward.

FUNDING ISSUES 2010

Western Pennsylvania

President Obama's Fiscal Year 2011 budget includes \$110.4 million in new federal funding for the Pittsburgh District's Civil Works Program. The allocated funds will help improve the reliability of the region's inland waterways navigation system, enhance the environment and reduce the risk of flooding in the Upper Ohio River Valley.

The budget allocates \$11.5 million for ongoing rehabilitation work at Emsworth Locks and Dams on the Ohio River, where the USACE is working to stabilize two high-risk dams by replacing failing dam gates and fixing severe erosion. The Emsworth dams create a stable pool of water that provides Pittsburgh's scenic riverfront.

The budget also consists of \$749,000 to fund the Upper Ohio River Navigation Study, which is considering long-term solutions for maintaining safe, reliable, efficient and environmentally sustainable navigation on the Upper Ohio River at Emsworth, Dashields and Montgomery locks and dams. These three facilities are the smallest locks remaining on the Ohio River and all are showing significant signs of structural and operational degradation, increasing the risk of failure, which could halt navigation for up to one year. The study also looks at opportunities to improve upper Ohio River aquatic ecosystems.

The budget directs \$2 million to the long-delayed Lower Monongahela River Project, where the USACE is now using ARRA funds to complete construction of river and guard walls at Charleroi Locks and Dam. Funding for \$112 million of possible work at Charleroi was restricted due to depletion of available non-federal cost-share funds. The Pennsylvania Inland Waterways Trust Fund (IWTF) pays for half of the nation's major lock and dam construction and rehabilitation

projects, but its 20 cent-per-gallon tax on diesel fuel used by the tow industry does not generate enough revenue to match federally budgeted funds. Work at Charleroi may halt when ARRA funds run out in 2011.

More than \$53 million was included in the budget to maintain and operate the district's navigation system of 23 locks and dams. Other funds totaling \$352,000 were directed to support the district's operation and maintenance of its three flood reduction projects at Johnstown and Punxsutawney, Penn., and Elkins, W.Va., and its inspection of 80 local federal and non-federal flood reduction projects.

POLICY OPTIONS

The nationwide inland waterways network includes nearly 11,000 miles. Federal user fees are assessed on commercial shipping through an excise tax on diesel fuel. Commercial waterway operators on these designated waterways pay a fuel tax of 20 cents per gallon, which is deposited in the IWTF. The IWTF, which was created in 1978, funds half the cost of new construction and major rehabilitation of the inland waterway infrastructure. However, the IWTF is severely depleted—the remaining balance of the IWTF at the end of FY2009 for new obligations was \$14.3 million.

Currently, the USACE has \$180 million per year available for lock repairs—half comes from the IWTF revenues and half comes from congressional appropriations. With an average rehabilitation cost of \$50 million per lock, the current level allows the USACE to fully fund only two or three lock projects each year. Forty-seven percent of all locks maintained by the USACE were classified as functionally obsolete in 2006. Assuming that no new locks are built within the next 20 years, by 2020, another 93 existing locks will be obsolete—rendering more than eight out of every 10 locks now in service outdated.

President Obama's Fiscal Year 2011 budget proposes to replace the current excise tax on diesel fuel with a new funding mechanism that will raise the revenue needed to meet the authorized non-federal cost-share of inland waterways capital investments in a way that is more efficient and more equitable than the fuel tax. The proposal would preserve the landmark cost-sharing reform established by Congress in 1986, while supporting inland waterways construction, expansion, replacement and rehabilitation work.

RECOMMENDATIONS

The Pennsylvania sections of the ASCE recommend that the state take the following measures. First, they should create a predictable and reliable source of maintenance funding for the locks and dams owned and operated by the Pittsburgh District Corps of Engineers in western Pennsylvania, including modifications to the IWTF as required; they should proceed with the deepening of the Delaware River ship channel in eastern Pennsylvania to accommodate the world fleet's newer, larger ships; and they should follow the recommendations of the Upper Ohio River Navigation Study and begin the planning, designing and funding authorization processes developed for rapid implementation of these new facilities in western Pennsylvania.

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- ASCE Policy Statement 218: [Improvement and Maintenance of Ports, Harbors and Waterways \(PS 218\)](#)