

CAPITOL RESEARCH

● ● ● TRANSPORTATION

Developing Freight Transportation Alternatives

In July 2011, Virginia began offering shippers a tax credit for moving shipping containers off the highways and onto the marine highways—designated short sea shipping channels that allow for the transport of small container vessels carrying cargo within the same continent—or railways. Other tax credits also are available for shippers that increase the number of employees or the volume of their shipments through Virginia ports.

These incentives are part of an effort by state officials to recharge the underperforming Port of Virginia, the third-largest container port on the East Coast. In addition to their potential to spur economic growth and create jobs, such efforts also have the added benefit of being good for the environment, since reducing the number of trucks on the road can help alleviate congestion and pollution. Removing some of those heavy trucks also may reduce wear and tear on the nation's overburdened, crumbling highways and reduce the amount of taxpayer dollars going to repair them.

U.S. Maritime Administrator David Matsuda said such incentives are needed because shipping companies that focus on quarterly profits have little incentive to make longer-term investments to help the environment.

“We should not be investing for the next quarter, but for the next generation,” Matsuda told *The Journal of Commerce* this year. “Marine highways won't happen overnight.”¹

Virginia's tax credit incentives are the product of three pieces of legislation passed by lawmakers and signed by Gov. Bob McDonnell in summer 2011:

- House Bill 2385/Senate Bill 1282 established a \$25 per 20-foot equivalent unit (an international shipping unit that measures cargo capacity) income tax credit for shippers electing to transfer their containers via barge or rail.
- House Bill 2531/Senate Bill 1481 established a \$50 per 20-foot equivalent unit income tax credit for manufacturers and distributors of manufactured goods that increase their port cargo volume by 5 percent in a single year. The 5 percent



requirement is waived for a major facility locating in Virginia that will import or export in excess of 25,000 20-foot equivalent units in its first year in the commonwealth.

- Senate Bill 1136 granted a \$3,000 income tax credit for every employee hired by a Virginia shipper that results from increased cargo moving through the port or an income tax credit of 2 percent of the cost of any capital improvement that facilitates increased cargo moving through the port.²

The tax credits put the Port of Virginia on par with its competitors in North Carolina and South Carolina, where tax credits have been offered to shippers to move freight through state-owned ports for more than three years.³ A website launched earlier this year by the North Carolina State Ports Authority promotes, among other things, the state tax credits



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available for inbound and outbound cargo. The website recently won two awards of excellence from the American Association of Port Authorities.⁴

Georgia also has a Port Tax Credit Bonus that is available to taxpayers who increase imports or exports through a state port by 10 percent over the previous or base year.⁵ A similar program in Louisiana, which the state legislature approved in 2008 to take effect in 2009, has had difficulty getting off the ground. The program offers Louisiana companies a tax break of \$5 for every ton of general cargo imported or exported through a state port. It’s been stalled as state economic officials continue to study whether the incentive would cost the state money and how much it would cost.⁶

Marine Highways

But it isn’t just U.S. coastal ports that are playing a role in making freight alternatives a reality. Inland waterways are as well.

“We have an inland port that is an intermodal facility right off the (Interstate) 81 corridor,” Virginia Secretary of Transportation Sean Connaughton told a group of state legislators at The Council of State Governments’ Transportation Policy Academy in October 2011. “We’re trying to intercept the trucks up near the Shenandoah Valley, so instead of them coming down onto I-95 or I-64 into the congested area in Hampton Roads, we get about 40,000 containers a year moved down from the inland port. ... That’s almost 80,000 truck trips we prevent from getting on our highways.”

The Virginia Port Authority also recently took over a formerly city-owned port in Richmond.

“We’re going to do the same thing there, but we’re going to use barges,” Connaughton said. “We have

right now a barge running once a week. We’re going to move that up to three times a week to get more trucks off the road.”

The barge service provides the state with a maritime alternative to the region’s busy interstates, I-64 and I-95.

The Port of Indiana on the Ohio River at Mount Vernon handles more than 4 million tons of goods each year. The port, which originally took up about 745 acres, has been expanded in recent years and now takes up close to 1,000 acres. In 2010, more than 2,000 loaded inbound or outbound barges used the port. Those barges can carry a lot of goods that would otherwise travel by truck.

“One barge will be the equivalent to 60 semi-truck loads, or 15 or 16 railcars,” Port Director Phil Wilzbacher told *The (Evansville) Courier and Press* earlier this year. “That means that a 15-barge riverboat load will equal 900 trucks or well over 200 railcars.”

On the Mississippi River, where the design of locks and dams provide more room for barges to get through, those barge fleets can be as big as 40 railcars.⁷

In all, the Ohio River includes nearly 50 barge terminals through which goods such as coal and farm fertilizer pass.

Community and business leaders in the Cincinnati area also are studying the potential of the river as a freight corridor. A working group with representatives from area businesses, the Cincinnati Regional Chamber of Commerce and the Port of Greater Cincinnati Development Authority was formed to look at what should be done to prepare for new business opportunities that could come with an increase in river freight. The group hopes the river could provide an alternative to overburdened roads like I-75, the region’s main freight corridor.⁸

In a regional freight plan released in August 2011, the Ohio-Kentucky-Indiana Regional Council of Governments recommended an additional \$300,000 annually for the Port of Greater Cincinnati for new barge freight-related administrative staff. “The Port Authority can enhance the profile of regional waterway assets as a lever for economic development,” the plan found.

The plan predicts the Greater Cincinnati area will see a “tsunami of freight” over the coming decades, particularly following the 2014 completion of the expansion to the Panama Canal.⁹ That expansion is expected to triple the canal’s capacity, allowing more and larger ships to pass through. Cargo ships carrying imports from Asia will be able to reach U.S. ports on the East and Gulf coasts more easily. From those ports, goods will be put on river barges, trucks and trains to reach other parts of the country. The 13 leading ports in the United States have slated \$8.57 billion for terminal improvements and channel deepening projects in the next five years to prepare in part to accommodate the larger ships.¹⁰

But many believe the canal expansion, coupled with President Obama’s goal of doubling the nation’s exports over five years, make it crucial that inland ports and waterways not be neglected.

The Maritime Administration in 2010 identified and provided \$7 million in funding for corridor improvement projects and initiatives along 18 rivers and coastal routes around the country as part of a federal initiative known as the America's Marine Highway program. One of those routes is the California Green Trade Corridor, a project that, when complete, will move goods via marine highway from Stockton and West Sacramento to Oakland.

"Because freight traveling through the state is moved almost exclusively by truck or rail, the new waterway system will create transportation alternatives and reduce congestion and air emissions," Matsuda, the U.S. Maritime administrator, wrote in a November 2010 blog post. "Reducing congestion and greenhouse emissions is a priority for everyone at the U.S. Department of Transportation. At the Maritime Administration, we're doing our part by supporting the development of marine highways, which move cargo and passenger traffic from roadways to waterways."

The project received a \$30 million grant as part of the American Recovery and Reinvestment Act's TIGER (Transportation Investment Generating Economic Recovery) program. The elements of the project include:

- Constructing a cargo staging area and purchasing two cranes and a barge to support service at the Port of Stockton;
- Building a distribution center and purchasing a crane in West Sacramento where freight—mostly agriculture from California's Central Valley—can be repacked into larger containers for transport on water; and
- Installing power stations in the Port of Oakland, which will allow operators to shut down a ship's engines while in port, reducing air emissions.¹¹

According to a 2011 presentation by Port of Stockton officials, California's port system faces serious constraints to properly service international trade, in particular the export of agricultural products from the San Joaquin Valley. These include congestion, a lack of available land for expansion, and traffic problems and air pollution tied both to road transport, terminal and ship operations. Increasing the use of freight alternatives is expected to reduce fuel consumption in the region. While a freight-carrying truck can move one ton of cargo 60 miles on one gallon of fuel, a ship can carry that same amount of cargo 500 miles on a gallon of fuel, according to Port of Oakland data.¹²

Despite efforts like those in California and elsewhere, many believe the marine transportation system, like the rest of the nation's transportation infrastructure, is not ready to meet future demands.

Janet Kavinoky of the U.S. Chamber of Commerce wrote about the subject in a 2010 op-ed piece for the organization America's Marine Highways:

"The lack of a coordinated strategy, a backlog of needs and lack of predictable investment levels, and deteriorating project delivery performance, creates uncertainty about the marine transportation system's

overall ability to reliably, safely and efficiently transport goods to international and domestic markets, which translates to under utilization."¹³

Kavinoky says the United States suffers from the lack of an overall national freight strategy like other countries have.

"(Canadian officials) decided they were going to become the gateway into North America for freight from the Pacific," she said at CSG's Transportation Policy Academy. "They invested in (The Port of) Prince Rupert. They invested in (The Port of) Vancouver. And they basically cleared a path to Chicago. They did highway and transit and rail and water improvements all along the corridor so they could move freight very efficiently. We don't do that here."

Moreover, despite a lot of talk in the U.S. about freight corridor development and intermodal investment, Kavinoky said she doesn't hold much hope the federal government will show leadership on developing such a national freight strategy.

"It's really going to come down to the states deciding together that they're going to make those investments and doing state-by-state partnerships to make that happen," she said.

Freight Rail

Partnerships also may prove important in improving the rail sector as a freight alternative. In the aforementioned Ohio-Kentucky-Indiana freight plan, analysts said the region suffers from major rail bottlenecks that create conflict between the two major Class I rail operators, Norfolk Southern and CSX, which share track rights and must carefully coordinate daily operations to minimize delays. The plan goes on to say the status quo of communication between railroads and local public officials is not acceptable, and they must engage to resolve public-private conflicts and develop projects that will improve freight transportation in the region.

The plan cites an exemplary partnership in the Chicago area, where the Chicago Region Environmental and Transportation Efficiency—known as CREATE—program was formed to address regional rail issues. CREATE united the six freight railroads in that area, Amtrak, commuter rail agencies, and local and state elected officials. The partnership developed a comprehensive program of freight infrastructure projects to improve safety, reduce conges-





A freight train can move a ton of freight an average of 484 miles on a single gallon of fuel. That's close to four times as far as it could move by truck.

tion for both passenger and freight rail, and provide environmental benefits. CREATE has successfully applied for federal grants and leveraged private dollars to fund the improvements.¹⁴

Elsewhere, in October and November 2011, the Missouri Department of Transportation conducted a series of public meetings to gather input on the development of a statewide rail plan to help guide decisions on freight and passenger rail over the next 20 years. Officials say the plan will be used “to pursue critical federal funds for planning and construction of rail projects, and to prioritize investments that improve movement of people and goods, expand connections between all modes of transportation and support long-term economic growth in Missouri.”¹⁵

Missouri ranks 10th in the nation for the most rail miles in a state. In 2009, freight rail carried the equivalent of nearly 22 million trucks that would have added to traffic on Missouri roads.

Missouri DOT officials plan to take recommendations obtained during the public meetings, identify critical infrastructure improvements, prioritize projects, quantify benefits provided by new rail projects, identify funding strategies to support new rail initiatives and create the state rail plan by spring 2012.¹⁶

In January 2011, the Colorado Department of Transportation began working on a statewide freight- and passenger-rail plan. Officials said the plan, a final version of which is also due in 2012, will guide investments for future rail needs and determine ways to enhance passenger- and freight-rail development to support economic growth and environmental sustainability.¹⁷

According to a draft vision statement: “The Colorado rail system will improve the movement of

freight and passengers in a safe, efficient, coordinated and reliable manner. In addition, the system will contribute to a balanced transportation network, cooperative land use planning, economic growth, a better environment and energy efficiency. Rail infrastructure and service will expand to provide increased transportation capacity, cost effectiveness, accessibility and intermodal connectivity to meet freight and passenger market demands through investments which include public-private partnerships.”¹⁸

As states seek alternatives to trucks for the movement of freight, rail likely will be a key player in some parts of the country. According to the Association of American Railroads:

- A freight train can move a ton of freight an average of 484 miles on a single gallon of fuel. That's close to four times as far as it could move by truck.
- A train can take the load of 280 or more trucks off the road. That's like removing 1,100 cars from the road for every freight train.
- On average, each ton-mile of freight moved by rail rather than highway reduces greenhouse gas emissions by 75 percent. A ton-mile is a unit of freight transportation equivalent to a ton of freight moved one mile.
- On average, freight trains are four times more fuel-efficient than trucks.
- If only 10 percent of the long-haul freight currently moved by highway switched to rail, national fuel savings would exceed 1 billion gallons a year and greenhouse gas emissions would fall by 12 million tons.¹⁹

Improving the Efficiency of Freight Shipping

From an efficiency standpoint, policy efforts aimed at moving more freight off trucks make a great deal of sense. According to a 2011 Government Accountability Office study, the costs of freight trucking that are not passed on to the consumer are at least six times greater than the equivalent rail costs and at least nine times greater than the equivalent waterways costs. The GAO study factors in externalized costs passed on to society like congestion, pollution and traffic accidents as well as public costs such as infrastructure maintenance.

Although the GAO study did not recommend specific policy actions, it said policy changes— including changes in public spending and tax and regulatory changes—that align prices with marginal costs (the cost to society of one additional unit of service) on a shipment-by-shipment basis would provide the greatest economic benefit. Under the status quo, since the price of a freight shipment does not reflect externalized costs, one mode of freight transportation may have a cost advantage over the others that distorts competition.

“As a consequence, the nation could devote more resources than needed to higher cost freight modes, an inefficient outcome that lowers economic well-being,” the GAO found. “Inefficient public investment decisions can result when all construction and other

fixed costs are not passed on to the beneficiaries of that investment.”

Costs per individual shipment can vary based on specific characteristics, such as the geography and population density of the shipment’s route and the fuel efficiency of the specific vehicle carrying it. But such precisely targeted policy changes can also result in high administrative costs. Less targeted policy changes, GAO said, can change the overall distribution of freight across modes, but may provide fewer benefits. Such policy changes include charging user fees based on average costs, subsidizing more efficient alternatives, or broadly applying safety or emissions reductions goals.

The GAO study notes that policymakers have their work cut out for them as “the current configuration of transportation infrastructure can limit the shifting of freight among modes.”

Ultimately increasing investment in developing these freight alternatives will be required to balance the playing field.²⁰

But America’s highways, railroads, ports, waterways and airports require investment well beyond current levels just to maintain their current performance, to say nothing of improving their performance. And as we’ve seen, the need to move significantly more freight across the country is expected to increase dramatically in the years ahead as a result of developments like the Panama Canal expansion.

A 2010 report by the American Association of State Highway and Transportation Officials (AASHTO) offered the following projections, which illustrate the importance of developing freight alternatives:

- By 2020, the U.S. trucking industry will move 3 billion more tons of freight than they haul today and have another 1.8 million trucks on the road to handle the load.
- By 2030, for every two trucks now on the road, an additional one will be right behind them, carrying the expected growth in food deliveries, goods and manufacturing equipment.
- By 2050, overall freight demand will double, from 15 billion tons today to 30 billion tons. Freight carried by trucks will increase from today’s quantities by 41 percent and 38 percent for rail. The number of trucks on the road compared to today will also double.
- By 2015, the widening of the Panama Canal may shift significant volumes of goods from West Coast ports to Gulf and Atlantic Coast ports. These ports may not be deep enough for larger vessels or may not have adequate road or rail capacity to meet the new international trade demands.

But AASHTO also reports the current capacity of roads, rails and seaports is already not keeping pace with demand. Congestion around urban interstate interchanges is a significant problem. The top 10 highway interchange bottlenecks in the country cause more than a million truck-hours of delay per year, costing \$19 billion overall. The aging of freight infrastructure is a key concern as well. More than half the



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240 locks funded by the U.S. Army Corps of Engineers are more than 50 years old and have exceeded their economic design lives.

While AASHTO recommends expanding the capacity of the Interstate Highway System, it also says a national multimodal strategic freight plan and funding for intermodal connectors are needed. These connectors are often roads used by truckers to travel between major highways and the nation’s ports, rail terminals and air cargo hubs. In addition, AASHTO recommends increased collaboration between states and railroads on public-private partnerships and federal investment tax credits to finance improvements to the freight rail network. The association suggests tapping the federal Harbor Maintenance Trust Fund to finance seaport dredging projects and the Federal Inland Waterway Trust Fund to finance lock and dam construction and maintenance projects.²¹

Rising fuel prices and an increasing volume of freight traffic in 2011 have given railroads opportunities to increase their role in the shipment of consumer products and they have seized them. Union Pacific and CSX both have increased their investment in intermodal shipping, in which goods are moved easily in 53-foot boxes from ship to truck to train. But intermodal freight transport works best when time is not necessarily of the essence. While it may make sense to move goods like appliances by slow-moving barge or rail for part of their journey, it makes much less sense to transport the latest trendy fashions or fresh produce. Those modes normally can’t complete the last link in the supply chain either, namely getting the shipment of goods to individual stores. So trucks have an important role to play in freight transport and likely will for many years to come.²²

“Freight railroads are doing a lot to take trucks off the highways for the long haul,” transportation reporter Don Phillips wrote in *Trains Magazine* in February 2011. “However, the vast majority of trucks



are used in short-haul or local delivery and are not subject to rail competition. Even if all the current projects to enhance long-haul freight rail service could magically be completed today, auto drivers would hardly notice that the railroads were hauling lots more freight. That's because the economy will keep growing and the number of long-haul truck trailers will grow both on rail and on the highway."²³

Developing a Freight Plan and Vision

In the absence of a national multimodal strategic freight plan, some states and regions are clearly looking at how to move forward on their own to develop freight alternatives.

When Pennsylvania's Transportation Funding Advisory Commission issued its final report in 2011, among the panel's recommendations was the development of a "comprehensive freight movement plan for the commonwealth." Although regional freight movement studies had been completed in several areas of the state, no comprehensive study for rail freight and trucks had ever been undertaken.

The commission recognized the widening of the Panama Canal will have major implications for the Delaware River and the Port of Philadelphia, which are expected to see greater cargo volumes. Port operations in Pittsburgh, Erie, Marcus Hook, Penn Manor and Chester will also require upgrades because they haven't had "consistent, dedicated state funding for their operation and improvement," the commission said.

"As a result many maintenance and upgrade projects have been deferred. Port needs, however, can only be delayed so long before they threaten the very operation of the port itself," the commission's report found.

The commission's recommendation goes on to address several potential benefits to a statewide freight

movement assessment.

"A statewide study would consider all modes, including capacity enhancements such as the use of longer combination vehicles (tractor-trailers with two or more trailers that may exceed 80,000 pounds gross vehicle weight)," the report said. "The study would quantify needs, prioritize projects, identify potential sources of funding for necessary investments and quantify the economic opportunity (job creation) of this critical facet of Pennsylvania's transportation system. The resulting targeted improvements in freight logistics and infrastructure will lead to increasing the speed and efficiency with which freight moves into, out of and through the state—ultimately benefitting our economy and all transportation flow."²⁴

For states and regions looking for additional specific guidelines to follow in creating a freight plan, the Federal Highway Administration in 2011 issued a "Statewide Freight Plan Template." According to the template, integrating freight in statewide transportation plans and/or developing a separate statewide freight plan has become increasingly important due to several factors, including:

- Increasing globalization and a corresponding economic dependence on expanding supply chains and transportation reliability.
- Recognition by business leaders at all levels that efficient freight transportation is a key factor in economic competitiveness and vitality.
- Heightened awareness that investment from both the private and public sectors is needed, if not required, to meet increasing freight transportation demands.
- Increasing demands for transportation among both passenger and freight interests, which creates stress on the transportation system that results in congestion and bottlenecks in key locations that are detrimental to productivity.

The template describes the major topic areas most freight plans should address and even includes some sample strategies. Among the strategies mentioned in the area of congestion management, for example, are these:

- Building freight villages—grouping together freight land uses in order to provide the sufficient infrastructure and accommodate the needs of commercial vehicles;
- Design and construction of truck-only facilities; and
- Promoting extended hours for ports, warehouses and consignees to allow truckers to operate in less congested conditions.²⁵

With a promising post-Panama Canal expansion era beckoning, the competition is heating up among ports, railroads and trucking companies as well as with our Canadian neighbors. And with so many freight infrastructure needs still out there, states are realizing now is the time to do whatever they can to carve out a piece of that future with whatever resources and alternatives are available.

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