

# CAPITOL RESEARCH

## ● ● ● TRANSPORTATION

## Green Freight Transportation

### Executive Summary

- Investment in the transportation system is not keeping pace with the expected growth in freight transportation in the coming decades. That is leading to rapid increases in congestion and delays along freight corridors as well as increases in transportation-related emissions that contribute to climate change.
- State governments have many opportunities to enact policies and support federal initiatives as well as industry efforts to make freight transportation greener.
- Freight transportation accounts for 9 percent of total greenhouse gas emissions. In terms of transportation-related greenhouse gas emissions, freight trucks account for 19.2 percent, marine vessels 5 percent and freight rail 2 percent. Over the last 20 years, greenhouse gas emissions from medium- and heavy-duty trucks increased 77 percent.
- Truck idling consumes nearly 1 billion gallons of diesel fuel annually and produces 11 million tons of CO<sub>2</sub>.
- A train can haul as much freight as 280 trucks and move a ton of freight an average of 457 miles on one gallon of diesel fuel. But, primarily due to decades of freight rail industry consolidation and the abandonment of rail lines, trucks are still the only available method for delivering freight for 80 percent of American communities.
- The U.S. currently lacks a national strategic freight program to provide dedicated federal funding to states, regions or ports to solve freight bottlenecks and improve freight operations. The American Recovery and Reinvestment Act with its TIGER (Transportation Investment Generating Economic Recovery) competitive grant program did fund nine freight rail projects, which will help get thousands of freight trucks off the road.
- Key strategies for reducing freight transportation's contribution to greenhouse gas emissions include: reducing the rate of fuel consumption to enhance vehicle efficiency, reducing congestion and delay, reducing the carbon content of fuel,



managing travel demand and expanding travel options.

- Strategies to reduce congestion and delay include: eliminating bottlenecks, improving traffic management, improving signal timing, implementing electronic toll collection and providing real-time traffic information.
- Freight-specific strategies for reducing growth in travel include: providing more modal options such as increased use of freight rail, coastal barge and short-sea shipping; alleviating freight-specific bottlenecks such as those near seaports and airports; reducing truck idling through anti-idling ordinances and truck stop electrification; and reducing the number of empty backhauls by trucks.
- Twenty-eight states and Washington, D.C., have maximum idling times for trucks. State government agencies can also help to promote and provide education on anti-idling practices. A number of federal and state programs also offer incentives and funding for idling reduction projects.
- Biodiesel blends and electricity will likely prove to be the most viable renewable and alternative fuels for the freight sector.
- Web-based tools that measure congestion on freight routes, electronic tolling and truck-only toll lanes could increase freight mobility and limit emissions.
- The U.S. will need to move 88 percent more





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freight by rail by 2035. That means railroads will have to expand and upgrade facilities to increase capacity and eliminate bottlenecks. Governments can assist with tax incentives for expansion projects and by forming public-private partnerships to share the risks.

- Although freight rail is much less of a contributor to greenhouse gas emissions than other modes, rail companies are replacing older equipment and experimenting with alternative fuels.
- Under a new federal regulation, regional transportation officials will now be able to apply to have specific waterways and individual projects designated as marine highways if they meet certain criteria. The Maritime Administration is working to identify rivers and coastal routes that could carry cargo and help establish a short-sea transportation network. They are also helping to identify potential freight and passenger markets along the routes.
- Other shipping and trucking initiatives include a voluntary truck replacement program at the Port of Charleston, a coalition formed in support of federal legislation to raise heavy truck weight limits, and a series of measures recommended by the American Trucking Associations.
- The U.S. Department of Transportation's proposed strategic plan and the proposed FREIGHT (Focusing Resources, Economic Investment, and Guidance to Help Transportation) Act under consideration in Congress could bring the country closer to a national strategic freight program. The multimodal approach of last year's American Recovery and Reinvestment Act could serve as a model.

## Green Freight Transportation

The Florida Department of Transportation projects that daily heavy-duty truck miles on state roads will increase by 527 percent by 2050. Unfortunately, as is true across much of the country, investment in the transportation system is not keeping pace with that kind of expected growth in travel, which is leading to rapid increases in congestion and delay. For example, between 1995 and 2005, while the number of lane-miles on the Florida Interstate Highway System increased 1.1 percent annually, the state's population increased 2.3 percent annually, daily vehicle miles traveled increased 3.5 percent annually and delays increased 6.1 percent annually. With congestion and delay comes an increase in transportation-related emissions that contribute to climate change. Among the reasons the state is seeing such increases in personal and freight travel is rapid population growth resulting in more people and businesses sending and receiving freight.<sup>1</sup>

Florida is not alone. The American Trucking Associations predicts:

- By 2020, the U.S. trucking industry will move 3 billion more tons of freight than hauled today. To meet this demand, the industry will put another 1.8 million trucks on the road.
- By 2030, for every two trucks now on the road, one more will be added, 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 41 percent and freight carried by rail will increase 38 percent. The number of trucks on the road will also double.<sup>2</sup>

One factor expected to have a huge impact on the number of trucks on the road in the near-term is the expansion of the Panama Canal, which will be completed in 2014. A new set of locks under construction will double the canal's capacity and allow larger ships to pass through. Some of the extra cargo on those ships will eventually end up on trucks departing from Atlantic Coast and Gulf Coast ports to traverse the nation's roadways.

With additional trucks and travel, it's more important than ever to consider the potential impact—and the impacts of other modes of cargo and freight movement—on the environment. State governments have many opportunities to enact policies, get behind federal initiatives and support industry efforts to make freight transportation greener.

## The Environmental Impact of Freight Transportation

Medium- and heavy-duty freight trucks, rail and marine vessels together account for 9 percent of total greenhouse gas emissions, which contribute to and exacerbate climate change.<sup>3</sup> Freight trucks account for 19.2 percent of all transportation-related

greenhouse gas emissions. Marine vessels involved in international and domestic shipping contribute 5 percent and freight rail just 2 percent. Decreasing fuel efficiency for trucks and steadily increasing demand for freight trucking over the last 20 years increased greenhouse gas emissions from medium- and heavy-duty trucks by 77 percent.<sup>4</sup>

The last 20 years have also seen an increase in the number of bottlenecks, which cause trucks to idle and emit more greenhouse gas than they would otherwise in a more smoothly functioning transportation system. According to the American Association of State Highway and Transportation Officials, known as AASHTO, the top 10 highway interchange bottlenecks cause more than a million truck-hours of delay per year.<sup>5</sup> In addition, freight is the fastest-growing source of greenhouse gas emissions from the transportation sector due to the rapid increase in the number of miles the vehicles travel as a result of consumer demand for goods.<sup>6</sup>

According to the Environmental Protection Agency, idling burns approximately one gallon of diesel fuel per hour<sup>7</sup> and each gallon of diesel consumed results in 22.2 pounds of CO<sub>2</sub> released into the atmosphere.<sup>8</sup> The Federal Highway Administration estimates that truck and rail transport consume about 35 billion gallons of diesel fuel each year, and truck idling consumes almost 1 billion gallons of diesel fuel annually and emits an estimated 11 million tons of CO<sub>2</sub>.<sup>9</sup>

Strategies to reduce fuel consumption and increase fuel efficiency must play an important role in reducing freight transportation's impact. A train can haul as much freight as 280 trucks and move a ton of freight an average of 457 miles on one gallon of diesel fuel.<sup>10</sup> While rail is the most efficient form of freight transportation and generates the least emissions, trucks are the only available method for delivering freight for 80 percent of American communities.<sup>11</sup> The passage of the Staggers Act in 1980, which deregulated the freight rail system, brought with it freight rail industry consolidation, cuts to track mileage and the abandonment of many rural rail branch lines.<sup>12</sup> And with freight trucking expected to continue to grow exponentially even as freight rail grows, there is an urgent need to increase capacity and reduce delays on the nation's roadways.<sup>13</sup>

Ports—where thousands of trucks, mile-long trains and enormous ships come together on a daily basis—produce significant impacts to the air, water and land. Heavy-duty diesel engines, which power not only ships, trucks and trains but also cargo-handling equipment at ports, emit pollutants that create smog and pose increased health risks from asthma, lung cancer and cardiovascular disease. Water quality is impacted by port activities and byproducts including dredging (underwater excavation to keep waters navigable), the runoff of stormwater, and the leaking of toxic chemicals from ships. The contamination of marine life and ecosystems and the depletion of oxygen in the water around ports are among the impacts. The Natural Resources Defense

Council reported in 2004 that ports were among the most poorly regulated sources of pollution in the United States.<sup>14</sup> But ports on both the East and West coasts have in recent years instituted emissions reduction programs for trucks, marine vessels and locomotives, and port authorities are now working with the U.S. Environmental Protection Agency, local air boards and tenants to curb emissions beyond existing regulatory requirements.<sup>15</sup>

### Need for National Strategic Freight Plan

But the trucking, rail and shipping industries face significant challenges in trying to opt for the greenest path. For one thing, no national freight program exists to provide dedicated federal transportation money to states, regions or ports to spend on solving freight bottlenecks and improving operations at ports and intermodal facilities and along freight corridors. Freight rail projects generally are not eligible for traditional federal transportation program dollars.

Stephen Lee Davis, of the Washington, D.C.-based advocacy coalition Transportation For America, describes the problem this way in a blog: "If a port is congested or wants to expand, there's little available federal money to spend directly on rail or any other mode. Your choices are highways or highways. When a state or port does spend to improve operations, there is no accountability to make sure they're actually reducing port/freight congestion, moving freight faster, or reducing air pollution in surrounding communities—a significant issue of environmental justice."<sup>16</sup>



**A train can haul as much freight as 280 trucks and move a ton of freight an average of 457 miles on one gallon of diesel fuel.**

As part of the 2009 American Recovery and Reinvestment Act, the federal government awarded nine grants for freight rail projects under the Transportation Investment Generating Economic Recovery program, or TIGER, competitive grant program, which attracted \$40 worth of applications for every dollar available. As for the environmental impact, the grant recipients included several freight rail projects that will take thousands of trucks off the road.<sup>17</sup> A \$105 million TIGER grant will help build two Southern freight centers for the Crescent Corridor Intermodal Freight Rail Project, a 2,500-mile, 13-state overhaul of Norfolk Southern's freight rail lines between the Gulf Coast and the Northeast. That project alone is expected to replace 1.3 million long-range truck trips annually and allow freight and passenger rail to no longer share the same track, giving freight rail more movement options and allowing greater speeds for passenger rail. Another \$100 million went to the Chicago Region Environmental and Transportation Efficiency program which among other things, is helping to untangle Chicago's bottlenecked rail networks. Another \$98 million grant will help the CSX Corporation double



## Some are betting that rail in particular will be a big part of the country's economic future.

its cargo capacity on the National Gateway Freight Rail Corridor, a public-private infrastructure initiative aimed at improving rail connections between mid-Atlantic seaboard ports and Midwest distribution centers.<sup>18</sup>

Still, questions remain about the future for trucking and how rail and waterways can move more goods around the country in a greener way. Some are betting that rail in particular will be a big part of the country's economic future. Last November in the middle of a deep downturn in the railroad industry, the world's second-richest man, Warren Buffett, raised some eyebrows when he paid \$34 billion for the Burlington Northern Santa Fe Corp. While some

questioned the prudence of investing in what some saw as an outmoded and declining industry, it may prove to be a shrewd move. The *Los Angeles Times* reported earlier this year that the Fort Worth, Texas-based company has already invested hundreds of millions of dollars to beef up its Southern California operations in recent years in order to carry cargo that comes into West Coast ports from Asia. The volume of that inbound cargo—more than 40 million container loads in 2009—has made it cost-prohibitive to haul all those goods over congested U.S. highways. Buffett could find himself in exactly the right place to benefit from a resurgence in freight rail that is expected to occur in the coming years to help bring that cargo to U.S. markets. Likewise, state governments might be wise to take a cue from the Oracle of Omaha and invest in improvements to rail infrastructure.

Rail companies and ports themselves have sought to upgrade facilities in recent years to become more multi-modal and to provide a nearly seamless transition from cargo ship to freight train to truck or any combination of those. Investment in such upgrades may be able to decrease the number of trucks and the amount of time they spend either idling in traffic or waiting to play their part in the global supply chain producing emissions in the process.<sup>19</sup>

## Strategies to Green Freight Transportation

With more trucks on the road in Florida, state officials are considering how to make freight transportation greener. In 2007, Florida Gov. Charlie Crist's Action Team on Energy and Climate Change completed phase I of the state's climate change action plan. The plan lists a number of key strategies for the state can work on or is already working on for reducing transportation's contribution to greenhouse gas emissions, including:

- Reducing the rate of fuel consumption by enhancing vehicle efficiency;
- Reducing congestion and delay on the transportation system;
- Reducing the carbon content of fuel so fewer emissions are generated for each gallon of fuel consumed;
- Reducing the growth rate in travel by managing travel demand; and
- Expanding options for travel by means other than single-occupant vehicles, and changing land use patterns.

The report also lists strategies the state department of transportation and regional and local transportation agencies are developing and implementing to reduce congestion and delay, including:

- Eliminating or alleviating physical bottlenecks, which account for about 40 percent of all delays nationwide;
- Improving the response to and management of traffic around crashes and other incidents;
- Improving traffic management in construction work zones and during special events;

- Improving signal timing;
- Implementing electronic toll collection and open road tolling so vehicles do not need to stop at toll plazas; and
- Providing real time traffic information to enable drivers to make informed decisions about where, when and how to travel.

While many of these strategies can apply to both freight transportation and personal transportation, the action team also offered a number of freight-specific strategies that deal with reducing growth in travel. Among them:

- Providing modal options such as freight rail, coastal barge and short sea shipping (the movement of freight along the same coastline without crossing an ocean);
- Alleviating freight specific bottlenecks, such as on the connectors between highways and seaports and airports;
- Reducing truck idling through anti idling ordinances, truck stop electrification and expanded truck parking; and
- Reducing the number of empty backhauls by trucks.<sup>20</sup>

## Reducing Greenhouse Gas Emissions from Trucks

Because trucks provide the major portion of freight transportation’s contribution to greenhouse gas emissions, reducing their impact will require a wide variety of strategies and accompanying policies. A 2007 guidebook on best practices for greenhouse gas reductions in freight transportation prepared by researchers at North Carolina State University offered 33 potential best practices applicable to trucks divided among 11 subgroups including:

- reduced fuel use and emissions during extended idling,
- improved truck air conditioning systems,
- reduced aerodynamic drag,
- reduced tire rolling resistance,
- hybrid propulsion,
- weight reduction,
- improved transmission efficiency,
- improved diesel engine efficiency,
- reduced accessory load,
- modified driver operational practices, and
- alternative fuels.

Under these subgroups, the guidebook recommends numerous emission-reducing truck modifications, which can help reduce emissions. States can require these modifications. For example, states can work with truck stops and other facilities to ensure that off-board electrification systems are available to truck drivers. Truck sleeper cabs contain a small living environment with sleeping accommodations so long distance truck drivers, who are required to take rest stops, don’t have to stay at a hotel. Such



compartments require heating, ventilation or air conditioning, often have small appliances such as refrigerators and microwave ovens, and have electrical outlets to support TVs and computers. Conventionally, the diesel-fueled base engine of the truck supplies the power requirements for the sleeper cab during driver rest time; the engine runs under extended idling conditions for continuous periods of many hours. A number of anti-idling techniques have been introduced, the objective of which is to avoid use of the base engine during extended idle by substituting alternative sources of HVAC and electricity during rest stops. Some techniques involve installation and operation of on-board systems, while others require connecting the truck to a “shore-based” facility at a truck stop or other location.<sup>21</sup>

Twenty-eight states and Washington, D.C., all have maximum idling times for trucks in one or more municipalities.<sup>22</sup> In addition to establishing idling regulations and associated fines, state government agencies can help to promote and provide education on anti-idling practices. In the Washington, D.C., Metro area, the Maryland Department of the Environment and other agencies have launched a campaign to promote idle reduction as a way for bus and truck drivers to reduce fuel costs, control diesel emissions, avoid fines, protect the environment and help improve public health.<sup>23</sup>

Vermont’s Department of Environmental Conservation provided grant funding for a program to develop idle reduction policies with diesel fleet operators. The agency is also working with the American Lung Association, which is providing operators with a toolkit that explains the myths and realities associated with truck idling, the health effects of diesel exhaust, the cost-savings achieved with idle reduction policies and sample model policies.<sup>24</sup>

About 17 states are particularly active in offering grants or loans for the purchase of idling reduction equipment or truck stop electrification.<sup>25</sup>



## Soy biodiesel can reduce lifecycle greenhouse gas emissions by nearly 60 percent over petroleum diesel.

### Alternative Fuels in Freight Transportation

Alternative fuels have the potential to reduce consumption of petroleum-based fuels and thereby reduce greenhouse gases. Alternative fuels, primarily for freight trucking and to a lesser extent for rail and marine vessels, include: biodiesel, compressed and liquefied natural gas, electricity and hydrogen.<sup>26</sup> There is not much diversity in the freight sector for renewable fuels as most of it relies on diesel. However, a B20 blend (biodiesel 20 percent, diesel 80 percent) is possible without any modification to trucks, and higher blends (such as B80) are likely to require only modest changes.<sup>27</sup> In addition, the current pipeline infrastructure is already suitable for B20 blends, according to the U.S. Department of Transportation. Soy biodiesel can reduce lifecycle greenhouse gas emissions by nearly 60 percent over petroleum diesel.<sup>28</sup>

Some alternative fuels—such as biodiesel and ethanol—are also renewable and thereby have the added benefit of reducing reliance on foreign oil. The federally mandated Renewable Fuel Standard 2 requires 36 billion gallons of renewable fuel to be produced by 2022<sup>29</sup>, and will likely spur the rise of alternative fuels (though primarily in the passenger sector).

Some renewable fuels such as cellulosic ethanol will require building new pipeline infrastructure to bring them to market. Likewise, for electric vehicles, charging infrastructure will need to be built.

But some fuel alternatives may also simply be more suited to freight than others. According to a U.S. Department of Transportation study, natural gas would not provide significant greenhouse gas benefits in heavy-duty vehicles or the off-road sector, since it would primarily displace diesel fuel rather than gasoline.<sup>30</sup> And hydrogen is more of a long-term option that will require significant federal

involvement and subsidies and is therefore not a state-recommended path. Therefore, biodiesel or electricity will likely be the most viable alternative fuels in the freight sector.

### State Regulations and Initiatives Affecting Freight Transportation

States have other options to drive greenhouse gas emissions reductions. California adopted several regulations to mitigate greenhouse gas emissions, including the low carbon fuel standard, which requires the reduction of the carbon content of diesel (and gasoline) by 10 percent by 2020. Also, the California heavy-duty greenhouse gas regulation requires model year 2011 tractors and trailers (53-foot) to be equipped with EPA SmartWay technology.<sup>31</sup> SmartWay is a series of technologies and modifications that increase efficiency and reduce emissions. They include such things as low rolling resistance tires and idle reduction technologies. Emissions reductions from such retrofits are expected to yield greenhouse gas reductions on the order of 10 to 15 percent.<sup>32</sup>

The Northeast Diesel Collaborative—a joint effort to reduce diesel emissions between state environmental agencies, EPA regional offices and private sector companies—reports that, in addition to anti-idling regulations, the Maine Public Utilities Commission's Efficiency Maine Program has made 46 low-interest loans to small long-haul truckers to help them buy Auxiliary Power Units, reducing idling and helping them stay in business.<sup>33</sup>

Finally, retrofitting trucks to utilize clean diesel (or ultra low sulfur diesel) would significantly reduce emissions. Rhode Island lawmakers introduced legislation to create a diesel emissions reduction fund that would retrofit state-owned heavy-duty vehicles.<sup>34</sup> The Diesel Technology Forum also reports that Washington requires a percentage of diesel sales be comprised of biodiesel fuel.<sup>35</sup> Since biodiesel produces less greenhouse gases than diesel, this measure is another method to mitigate emissions.

### Increasing Mobility for Freight

Traffic backups on some of the nation's busiest roads are a key contributor to congestion and the emissions that all those idling trucks and automobiles produce.

But some new tools and strategies may increase mobility in freight transportation and limit those emissions. The Federal Highway Administration this year introduced a tool to help freight carriers strategically choose their routes to avoid congested areas. State and local transportation agencies can also use the information to pinpoint congestion-relief needs and prioritize their highway investments accordingly. The Web-based tool, which is called FPMweb (for Freight Performance Measures) measures operating speeds for trucks at any given place and point in time along 25 interstate highways that are considered significant freight routes.<sup>36</sup>

Advances in tolling may also help to relieve some of the traffic. All-electronic and open road tolling are becoming much more common around the country as standard toll booths with the accompanying traffic tie-ups are phased out. Some states are providing separate lanes for trucks on toll roads. The nation's first truck-only toll lanes will be built as part of a \$650 million project that received Recovery Act funding to link Interstate 4 and the Selmon Crosstown Expressway toll road in the Ybor City area of Tampa, Fla. The historic neighborhood is often congested with trucks on the way to and from the Port of Tampa. More than 12,000 commercial trucks come through the area every day. The new connector will be an elevated exchange that provides a more direct access route between the two roadways with separate truck lanes.<sup>37</sup> They won't be the last such lanes either. Texas broke ground in August on 10 miles of truck toll lanes that will provide a link to the Port of Brownsville. The truck tollway—State Highway 550 as it's called—will be built in the median of an existing road with help from \$34 million in Recovery Act funds.<sup>38</sup> And a study done for the departments of transportation in Missouri, Illinois, Indiana and Ohio recently found the best alternative for revamping the congested, aging Interstate 70 across those states is to rebuild it with truck-only lanes.<sup>39</sup>

## Moving More Freight to Railroads

While trucking is the primary method to deliver freight, some freight delivery can and likely should be shifted to rail in the years ahead for substantial greenhouse gas savings.

According to the Department of Transportation, America will need to move 88 percent more freight by rail by 2035. To accomplish that goal, railroads say they will need to expand. If they're not able to do so, a third of all freight rail corridors will be at, or over, capacity within that same time frame. Traffic on the nation's roads, meanwhile, will continue to increase, resulting in more fuel spent, more lost time and more emissions produced.<sup>40</sup>

Most railroads are in the process of adding passing lanes, double tracks and new signals in order to increase capacity, reduce congestion and eliminate chokepoints. But according to Norfolk Southern, state governments can play a role in facilitating those improvements. The railroad says tax incentives for rail capacity expansion projects and more public-private partnerships with state and local governments would allow them to make upgrades faster and allow greenhouse gas reductions to accrue sooner.<sup>41</sup>

Based on data from the American Association of State Highway and Transportation Officials, for each 1 percent of long-haul freight currently moving by truck that moved by rail instead, fuel savings in the U.S. would be approximately 111 million gallons per year, and annual greenhouse gas emissions would fall by 1.2 million tons.<sup>42</sup>

However, as previously mentioned, trucks are cur-

rently the only available mode for freight movement for most communities around the U.S. That means it will take a significant investment at all levels of government and from the industry itself if rail is to be a significant player in freight transportation going forward.

## Railroad Fuel Efficiency Efforts

Even though railroads are the most efficient method of freight transport, and contribute only modest amounts of greenhouse gas emissions, efforts are underway to improve on that efficiency. These efforts include modifications to locomotives as well as the rail infrastructure itself, straightening curves and polishing rails to reduce drag, for example.

Burlington Northern Santa Fe Railway reports it is using low-torque wheel bearings that require less energy to pull railcars and locomotives. The company also increased the length of its trains to help conserve more fuel.<sup>43</sup> And Burlington Northern Santa Fe Railway has been testing low-emissions liquefied natural gas at a handful of its switch yards.<sup>44</sup>

CSX is replacing older switch engines in yards with two to three smaller, ultra clean diesel GenSet



units that activate when needed (rather than idling for extended periods of time). The result: 24 percent CO<sub>2</sub> emissions benefits.<sup>45</sup> The states of Texas and California have incentive programs to upgrade or replace older yard engines with either GenSet or hybrid ones.<sup>46</sup>

Line-haul locomotives, which carry freight long distances, are responsible for the majority of emissions from rail (90 percent).<sup>47</sup> Steps to replace older locomotives with newer, more efficient ones may also serve to further reduce greenhouse gas emissions. Norfolk Southern last year unveiled an experimental electric locomotive.<sup>48</sup>

## Moving More Cargo on the Water

In addition to efforts to move more freight by train, there are also initiatives to move more by waterway. LaHood, the U.S. transportation secretary, in April announced a new regulation under which regional transportation officials will be able to apply to have specific transportation corridors—and even individual projects—designated as marine highways if they meet certain criteria. Those projects will then receive preferential treatment for future federal assistance.



In announcing the “America’s Marine Highway” program, LaHood told a conference of transportation professionals, “For too long, we’ve overlooked the economic and environmental benefits that our waterways and domestic seaports offer as a means of moving freight in this country. Moving goods on the water has many advantages: It reduces air pollution; it can help reduce gridlock by getting trucks off our busy surface corridors.”

The Maritime Administration is also working to identify rivers and coastal routes that could carry cargo more efficiently in order to help bypass congested roads and reduce emissions. A 2007 law requires the U.S. Department of Transportation to “establish a short sea transportation program and designate short sea transportation projects to mitigate surface congestion.”

Following on the heels of \$58 million in economic recovery grants for projects to support the start-up or expansion of marine highway services, a competitive grant program this summer made available \$7 million for additional marine highway projects.<sup>49</sup> The Maritime Administration is assisting the sponsors of funded projects in developing marine transportation services and identifying potential freight and passenger markets.<sup>50</sup>

## Other Green Initiatives in Freight

The shipping and trucking industries also have numerous initiatives in place to try to decrease the environmental impact of the supply chain. Among them:

- The Port of Charleston has committed to reduce emissions by launching a voluntary truck replacement program to replace 85 percent of pre-1994 trucks calling on port terminals by January 1, 2014.<sup>51</sup>
- Shipping and trucking groups joined forces recently in support of federal legislation to raise heavy truck weight limits to 97,000 pounds. Since a weight limit increase could mean fewer trucks on the road, manufacturers, retailers and truckers all claim that bigger trucks can be “greener trucks.” But highway safety advocates oppose lifting the 19-year old 80,000-pound weight limit for tractor-trailers, fearing it would lead to more crashes. Some local and state government officials also oppose allowing heavier or longer trucks because of the potential damage they may cause to roads and bridges, which they already can’t afford to maintain properly.<sup>52</sup> Proponents point out that six-axle rigs are common in Canada and that many other countries have heavier truck weight limits than the United States without additional safety concerns. Spreading the increased weight over six axles rather than five may also lessen the chances of additional pavement damage.<sup>53</sup>
- The American Trucking Associations has committed to a list of what it says are practical and achievable measures designed to reduce the carbon emissions of trucks. It recommends:
  - Enacting a national speed limit not to exceed 65 miles per hour. Bringing speed limits down for trucks would save 2.8 billion gallons of diesel fuel in a decade and reduce CO<sub>2</sub> emissions by 31.5 million tons.
  - Improving highway infrastructure to decrease idling while trucks are stuck in traffic and incentives for new technology to help reduce idling during rest periods in truck sleeper compartments.
  - That shippers and carriers join the Environmental Protection Agency’s SmartWay Transport Partnership Program, the goal of which is to look beyond the fuel economy of individual vehicles to increase the amount of cargo moved per gallon of fuel for the whole fleet with the use of new management techniques and technologies. Partners in SmartWay are required to develop a three-year program to achieve the goal, monitor their progress and report to EPA.
  - Establishing a 20-year program to improve the nation’s highway infrastructure and reduce congestion, focused initially on fixing critical bottlenecks. In addition, they recommend truck-only corridors, which would permit carriers to further increase the use of more productive vehicles.
  - Introducing truck fleet combination changes as ways to reduce emissions, relieve congestion and conserve fuel. The trucking industry contends that increased volumes of freight can be moved with less fuel and fewer emis-



sions by using a smaller number of large trucks rather than a larger number of small trucks. A reduction of 294.7 million tons of CO<sub>2</sub> could be achieved, the industry says.

Setting national fuel economy standards for medium- and heavy-duty trucks that reduce fuel consumption if they do not compromise the performance of the vehicles. The trucking industry reports they are already working with operators to come up with ways to improve average fuel consumption through various engineering innovations, driving techniques, investment in the latest truck engines, aerodynamic features, and lightweight design options.<sup>54</sup>

## Federal Policy & the Future of Freight Transportation

Adopted and proposed changes in federal policy aimed at making freight transportation greener may also impact both industry and state governments in the years ahead.

The EPA and U.S. Department of Transportation in October proposed the first national standards to reduce greenhouse gas emissions and improve the fuel efficiency of heavy-duty trucks. Such vehicles were previously excluded from America's corporate average fuel economy guidelines. The standards would set a goal of up to a 20 percent reduction in CO<sub>2</sub> emissions and fuel consumption by the 2018 model year for combination tractor trucks (better known as semis), which are used in freight transport. Combined with standards for other trucks, including heavy-duty pickup trucks, vans and construction vehicles, the standards are predicted to reduce greenhouse gas emissions by about 250 million metric tons and save 500 million barrels of oil over the lives of the vehicles produced within the program's first five years. The proposed standards are subject to a 60-day comment period.<sup>55</sup>

The U.S. Department of Transportation in April released a draft of its strategic plan for the 2010 through the 2015 fiscal years. The plan, which includes a strategic goal of environmental sustainability, outlines a number of strategies the department plans to take to reduce carbon emissions, improve energy efficiency and reduce dependence on oil, including:

“Reducing the carbon footprint and pollutants emitted by the freight transportation system, by improving the fuel efficiency and environmental performance of freight vehicles and also by expanding opportunities for shifting freight from less fuel-efficient modes to more fuel-efficient modes—air to trucks, trucks to rail, and rail to water.”<sup>56</sup>

U.S. Sens. Frank Lautenberg, Patty Murray and Maria Cantwell earlier this year introduced legislation called the FREIGHT Act (Focusing Resources, Economic Investment, and Guidance to Help Transportation) that would “direct the federal government to develop and implement a strategic plan to improve

the nation's freight transportation system and provide investment in freight transportation projects.” The goals of the legislation include reducing congestion and delays and making freight transportation more efficient and better for the environment. Specifically, it would seek to reduce national freight transportation-related carbon dioxide by 40 percent by 2030 and reduce freight transportation-related air, water and noise pollution and impacts on ecosystems and communities on an annual basis. The act would create a new competitive grant program for freight-specific infrastructure projects, including port infrastructure improvements, freight rail capacity expansion projects, and highway projects that improve access to freight facilities.<sup>57</sup> The legislation and its multimodal approach immediately faced opposition from the American Trucking Associations, which suggested the new policy would short-change the nation's highways. “Highways, which carry more than 68 percent of the nation's freight, would not be eligible for funding beyond very limited connectors to freight terminals,” an ATA statement said.<sup>58</sup> The American Association of State Highway and Transportation Officials (AASHTO) had concerns about the focus of the legislation as well. “The freight transportation network—all modes—is a system that cannot function without adequate highway capacity,” wrote AASHTO Executive Director John Horsley in an August blog post. “In 2005, 92.5 percent of freight by value moved by truck. Over the next 20 years, even after as high a proportion of long-haul freight as feasible has been shifted from truck to rail, the percentage of freight by value carried by truck is expected to increase to over 94 percent. Highway improvements are essential.”<sup>59</sup> Supporters of the bill said it was not anti-truck or anti-highway but it was intended to make the entire system work better across the board.<sup>60</sup> Horsley also said any freight bill should recognize the partnership role of states in meeting freight transportation needs; should include support for multi-state freight corridor planning organizations; and should create a state freight transportation program with revenues from the Highway



Trust Fund.<sup>61</sup> As of this writing, the legislation has been introduced in both the House and Senate and referred to committee. Its prospects were uncertain (as with authorization, finding a funding source is a key issue) but supporters said the legislation was flexible enough to be a stand-alone bill or to become a piece of future surface transportation authorization legislation.<sup>62</sup>

The American Recovery and Reinvestment Act has already gone down the multimodal route, helping to break down traditional barriers between different kinds of infrastructure projects. The stimulus even allowed money funneled through the Federal Highway Administration to be used on port projects. AAS-HTO officials said they support more of this kind of flexibility in using federal transportation dollars. “We must view transportation holistically—as a fully functioning and integrated system and not simply individual modes,” Gerald Nicely, commissioner of the Tennessee Department of Transportation, told *The Waterways Journal* in April.<sup>63</sup>

## Conclusion

Clearly many strategies exist to reduce greenhouse gas emissions from the freight transportation sector. At the macro level, increasing capacity and eliminating congestion on both roads and rail are the big-ticket items for governments to consider. But there are many smaller initiatives and approaches as well that, when combined, can have a big impact, from enacting anti-idling ordinances to promoting alternative fuels to establishing truck only toll lanes. State governments can also look to provide support for industry initiatives aimed at greening freight transportation. Finally, officials would be wise to keep an eye on the nation’s capital as the federal government in the coming months and years seeks to establish a national strategic freight program and set the agenda for meeting the needs of the 21st century economy. State governments play an important role in that decision-making process and in ensuring a green future for freight transportation.



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