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Washington Monthly, July/August 2010

The Shipping News

Start moving freight by water again, and we'll use less oil, emit less carbon, cut highway traffic—and perhaps even save St. Louis.

By [Phillip Longman](#)



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Barging in: This vessel might look plain, but it's green, cheap, and essential to our future.
Photo: Walter Hodges

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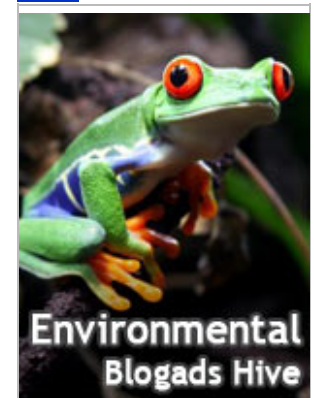
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Every four days, a 4,200-horsepower tugboat, having crossed the Gulf of Mexico from Brownsville, Texas, slips into the ship channel off Egmont Key at the mouth of Tampa Bay. The vessel pulls a single barge. On board are stacks of metal containers ranging in length from

twenty to fifty-three feet. Few of the bathers along the beaches of nearby Fort De Soto Park are likely to take much notice of such a routine sight, much less associate it with a green-energy future. But there is a connection, and it will help protect places like the Gulf floor from the sort of drilling that now threatens the region with environmental catastrophe.

The tug and barge are operated by a privately held company called SeaBridge Freight. If you hire SeaBridge to move a container between northern Mexico and the southeastern United States, a truck will pick the container up, and a truck will deliver it to its final destination. But rather than use a truck to make the entire journey, the company will load your container onto a barge and ship it across the Gulf of Mexico. This water route saves 690 miles of driving, takes no longer than trucking door to door, and consumes much less oil.

According to SeaBridge's president and CEO, Henry P. "Hank" Hoffman, a SeaBridge barge on a recent sailing carried containers loaded with 420,000 metric tons of cargo of all descriptions, from chilled orange juice to automobiles and mechanical assemblies. Making the run from Brownsville to Tampa Bay consumed 9,000 gallons of diesel fuel. If trucks had made the move, Hoffman notes, they would have consumed more than 53,000 gallons of diesel fuel. Needless to say, such conservation does wonders for a reduction in oil use.

Waterways used to be the most important avenues of transport in the United States. Today, however, only 4.7 percent of our current freight (as measured in ton-miles) moves by water, most of it low-value, bulky materials such as grain and coal. Compare this to the European Union, in which 40 percent of all domestic freight (also measured in ton-miles) moves by coastal shipping and inland waterways.

Boosting that abysmal market share, as a handful of companies like SeaBridge are trying to do, would require no sacrifice from the average American, and it would provide dramatic economic and environmental benefits. Barges use just over a quarter as much diesel fuel as a semitruck in moving a ton of freight. If only 30 percent of the freight that currently goes by truck went by barge instead, it would result in a reduction in diesel fuel consumption of roughly 4.7 billion gallons. This is equivalent to conserving more than 6 percent of the total end-use energy consumed by U.S. households, including heating, cooling, and lighting. To put it another way, the energy savings would be equivalent to turning off every household appliance in the state of Texas. Yet no one would have to do so much as turn down the air conditioner, ride a bike, or even install a fluorescent bulb.

It gets better. A rebirth of domestic water transportation would roll back the nation's reliance on trucks, the fastest growing source of U.S. greenhouse gas emissions. That's in addition to many incidental benefits, from boosting the Navy's sealift capacity to improving rescue efforts for disasters like Hurricane Katrina and the earthquake in Haiti. Moreover, by getting containers off trucks and onto a marine highway, it promises to make driving safer and faster for the rest of us, while also significantly reducing the need for highway repairs and new road construction.

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The case for using our waterways begins with plain geography. Writing in 1783, George Washington observed that he was increasingly taking “a more contemplative and extensive view of the vast inland navigation of these United States,” and that he “could not but be struck with the immense diffusion and importance of it.” The United States is unique among nations in being blessed not only with three extensive coastlines and abundant natural harbors but also with 25,000 miles of navigable lakes and inland waterways, thanks both to what Washington and his generation called “Providence” and to the investments made by subsequent generations of Americans in locks, levies, and other improvements.

Today, it is impossible to account for why most U.S. cities sprang up where they did without considering the role played by access to navigable waters. By 1825, completion of the Erie Canal connected New York harbor to the Great Lakes, and soon a great trade of cordwood, flour, and wheat flowing east, and manufactured goods and imported foods flowing west, enabled New York City to surpass Philadelphia as the nation’s largest and richest city. By 1840, more than 500 steamboats plied the Ohio-Mississippi-Missouri river system, opening up the bustling new frontier of river towns described by Mark Twain. The most strategically located of these grew into great cities like St. Louis and Minneapolis-St. Paul. Of the country’s top twenty-five metropolitan areas today, twenty-one are either on coastal harbors (such as New York, Boston, Los Angeles, and Seattle) or on broad inland waterways (such as Chicago, Pittsburgh, and Little Rock).

Well into the twentieth century, the U.S. still made extensive use of coastal and inland water shipping. As late as 1958, the Coastwise Steamship Company picked up rolls of newsprint from mills at Port Angeles and Camus, Washington, delivering them up and down the Pacific coast. Into the 1960s, trucks, trains, and automobiles moving between Michigan and Wisconsin still used an extensive fleet of ferries to cross Lake Michigan rather than take the long way through congested Chicago.

For the past fifty years or so, however, the U.S. has barely made use of its natural competitive advantage in domestic water transportation. This might seem like the inevitable by-product of progress. In reality, though, the decline of domestic water transportation was neither inevitable nor progressive. By the late nineteenth century, railroad barons captured control of many canals and coastal shipping companies and did their best to put them out of business. While this contributed to the decline of the maritime industry, the most important factor was the long post-World War II era of cheap energy and a rapidly expanding, deeply subsidized interstate highway system. As the price of trucking became artificially low, new factories and warehouses came to be built without regard to water access, thereby accelerating the move away from fuel-efficient ships and barges. But now that extended period of secure, abundant oil and open, well-maintained interstates has ended. So, too, has our innocence of the environmental damage and threats to human health. This makes it high time to tackle the waste and inefficiency that pervades the 10 percent of U.S. gross domestic product involved in freight logistics.

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Today, most high-value freight moves by truck. For trips of under 500 miles, this makes sense. Trucks are fast and convenient. But most of our trucks are traveling distances of thousands of miles. To take just one example, 58 percent of the large trucks moving through the junction of I-90 and I-290 near Buffalo, New York, are on trips of more than 500 miles. Together, these long-haul trucks are responsible, according to the Federal Highway Administration, for creating 367,000 hours of delay each year at this single choke point alone.

As soon as trucks are deployed for long hauls, the disadvantages pile up. For one thing, trucks are wasteful. If you're hauling a ton of freight by truck, a gallon of fuel will only move it 155 miles. Haul it by railroad, and a gallon will take it 413 miles. Haul it by towed barge, and a gallon will carry it a full 576 miles.

Trucks are also by far the dirtiest form of ground transportation. A tugboat plying inland waters can typically move a ton of freight more than 51,000 miles before emitting one ton of greenhouse gas. A truck, by contrast, releases nearly three times as much greenhouse gas over the same distance. (In fact, trucks are the economy's fastest growing source of greenhouse gas emissions. While greenhouse gas emissions from cars rose only 3.3 percent between 1990 and 2006, the amount spewing from medium and heavy trucks, which have increased in number and sit longer in traffic, increased 77 percent.) That's not even factoring in other emissions, such as cancer-causing nitrous oxides found in diesel exhaust, most of which comes from trucks. According to the Environmental Protection Agency, this pollution contributes to the premature death of 21,000 Americans a year.

When truck-related deaths don't come from pollution, they come from crashes. For every ton of freight they haul one mile, trucks have a fatality rate that is six times that of railroads and 155 times that of inland barges. Some 5,000 Americans die each year in collisions involving trucks.

Finally, trucks cause serious damage to the nation's highways, for which the rest of us pay. According to the latest available estimate from the Federal Highway Administration, the pavement damage caused by a forty-ton semitruck barreling down an urban interstate came to forty-one cents per mile in 2000, while the tolls and taxes its owner paid came to only nine cents per mile.

It's not just our interstates that suffer. State roads like New Jersey's Route 31 and Interstate 81 through the once tranquil Shenandoah Valley are inundated with truckers desperate to avoid I-95. Despite what may be many years of moribund economic growth in the wake of the Great Recession, freight tonnage on I-95 is projected to double over the next thirty years. Even the biggest fan of trucking knows this isn't sustainable.

So what do we do about our freight logjams? Adding more and more new lanes is, of course, one way to alleviate the problem. But routes such as I-95 are built on top of some of the country's most densely developed real estate. Just to widen I-95 to six lanes between New Haven and the Rhode Island border would cost \$1 billion, while also causing

additional construction-related delays for years.

Railroads are also an important option. [See “Back on Tracks,” *Washington Monthly*, January/February 2009.] But, after years of downsizing, the nation’s rail system today lacks the capacity to handle much more traffic than it already does, particularly if that traffic is going to move fast enough to be time competitive with trucks. Moreover, along many corridors, moving freight by rail competes with another important objective: restoring and improving America’s high-speed passenger network. (The main reason why Amtrak is so frequently late is delay caused by freight trains.)

The single most effective option that remains, then, is our vast network of waterways—if we just care to use them. Not only would they save money and fuel; they would even, in some cases, save time. For example, a single truck driver moving a container from Boston to Orlando can make the trip legally in no less than fifty-four hours, given speed limits and mandatory thirteen-hour rest periods each day. By contrast, in just thirty-three hours, a container can be taken by truck from Boston to the port of New London, then placed onto a high-speed coastal freighter and shipped to the port of Charleston, and finally trucked from Charleston to Orlando, according to Stephen P. Flott, founder of SeaBridge, who has testified before Congress in support of the idea and may yet bring it to fruition.

To make this sort of thing happen is easier than it might sound. At its peak, truck traffic on I-95 was 32,000 trailers a day. With only thirty-three ships put into service, each capable of carrying 300 fifty-three-foot containers, the number of trailers on I-95 could be reduced by a third. The price tag wouldn’t be prohibitive, either. At \$50 million a ship, it would cost just \$3.3 billion.

Better yet, because crafts plying coastal and inland waters are shallow draft, they could operate out of minor, neglected harbors like New London or New Bedford, Massachusetts. With today’s so-called “Roll-on/Roll-off” ships (RoRos), cranes aren’t even necessary. Drivers just roll their trucks on board, and, if they want to, travel along with their rig, thereby satisfying their mandatory rest requirements as they float past such major choke points as the Boston-to-Washington megalopolis before taking to the road again to reach their final destination.

Nevertheless, despite all the inherent advantages of a marine highway system, market forces still aren’t causing it to spring into existence. There are a few reasons for this.

One is that, in the midst of global recession, the current cost of energy is slightly too low to create the necessary critical mass for an upsurge in shipping. According to a study prepared for the U.S. Maritime Administration, even a minimal rise in energy prices would dramatically increase the cost of trucking while only marginally affecting the cost of water transport. For example, when crude oil costs \$55 per barrel, the cost of moving a forty-foot container one mile by truck is about \$1.75. But if crude oil goes up to \$91 a barrel, the trucking cost jumps to \$2.28 per mile. And if oil reaches \$157 a barrel, the trucking cost jumps up to \$3.24.

By comparison, even if oil is at \$157 a barrel, the cost of moving that same container one mile by barge is only twenty-eight cents, less than a tenth of the trucking cost.

One entrepreneur who is very aware of such calculations is Stephen J. Pepper, founder of Humboldt Maritime Logistics. Pepper is trying to start a service that would allow shippers to move containers by barge from the port of Oakland up and down the Pacific coast. At current fuel prices, he says, such a service is cost competitive with trucks, but only barely so. With even a modest uptick in fuel prices, though, the numbers would shift dramatically in favor of barge over truck.

Another reason that the maritime highway isn't farther along is that ill-considered public policies are working against it. Some of the wrongheaded ideas are obvious, such as tax rates on trucks that are too low to cover the cost of the damage they do to roads. Others are more obscure, but equally significant.

One important case in point is the so-called "harbor maintenance tax." Originally pushed by the Reagan administration, it requires that shippers pay a tax on their cargo value each time their freight passes through a U.S. harbor. The thought was that the money raised by this tax would go toward the cost of dredging and otherwise maintaining deep channel harbors. Instead, most of it has gone to finance the government's overall budget deficits. Worse still is the mechanism for how the tax is collected. Suppose that Federal Express wanted to save on fuel costs by using a truck ferry to move its container traffic between Windsor, Ontario, and Detroit, Michigan. Because of the harbor tax, the company would have to determine the value of each parcel in each container and collect from its owner a harbor tax of \$1.25 per \$1,000 of cargo value. This would not only be an administrative nightmare; it would also add up to serious money. If the total value of the cargo in a container came to \$500,000, the total harbor tax due would be \$625. By contrast, if the container traveled by truck over the more than eighty-one-year-old, highly congested Ambassador Bridge between Windsor and Detroit, no tax would be due, and the toll would be only \$3.25 per axle.

Marine highway advocates also complain bitterly about a piece of legislation called the Jones Act. Originally passed in the 1920s, the Jones Act requires all ships used in domestic service to be built by domestic shipyards. The rationale for retaining this policy has been that the U.S. needs a shipbuilding industry to support the needs of the U.S. Navy—a consideration that has merit. But building a commercial ship in the U.S. today typically costs twice as much as building it in South Korea. This isn't because of the difference in labor costs; it's because South Korea builds so many ships for world markets that it can use highly standardized, assembly-line processes that achieve vast economies of scale, much as the U.S. did in building the famous "Liberty Ships" of World War II.

But here a win-win solution exists—one that doesn't disturb the Jones Act but still allows water transportation a fair shot at the competition. The Navy, it turns out, is very interested in seeing a surge in shipbuilding, and it may even be willing to help pay for it. During the 1980s and '90s, when America's merchant marine was fading, the Navy spent \$6 billion acquiring

ships it could use for transporting troops and supplies around the world. Today, many of these ships are nearing the end of their service life, and the Navy would like to have new RoRo ships suitable for off-loading tanks, trucks, and other vehicles in shallow, often undeveloped harbors.

The Navy could, of course, just put out bids to have its fleet of aging RoRos and other freighters replaced. But that would compete with the cost of modernizing its submarine fleet and other aging warships. How much better it would be, says Jonathan D. Kaskin, who directs the Navy's Strategic Mobility and Combat Logistics Division, if the United States once again had a robust merchant marine fleet plying domestic waters—a fleet whose ships could quickly be leased by the Navy if they were needed for emergency service?

“A commercial ship is fully capable of meeting our military [sealift] requirements except for minor enhancements,” says Kaskin. Better yet, he notes, if the U.S. developed a marine highway system, the cost of shipbuilding overall would go down. “I see the marine highway as an option,” Kaskin says, “and there may be resources that the Department of Defense could devote to it.” Just as Eisenhower could not sell the country on the value of interstate highways without pointing to their military purpose, national security needs may be just what is needed to get the marine highway system moving.

In April 2010, Secretary of Transportation Ray LaHood announced his support for a “Marine Highway Initiative,” stating that, “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.” The funding available for this initiative, however, is a mere gesture—just \$7 million in grants, plus \$58 million in one-time stimulus money. Meanwhile, the president’s budget for 2011 calls for \$41 *billion* in highway spending. The Obama administration does not seem to get the full range of opportunity that domestic water transport offers for advancing the national interest across the board. So let’s try to envision the virtuous cycles that would be set in motion by reviving our waterways.

One virtuous cycle would begin in 2015. That is when a project to widen the Panama Canal is scheduled to be completed. It will allow today’s super-large oceangoing vessels to fit through the canal and travel directly between Asia and both the Gulf and Atlantic coasts of the United States. Today, containers traveling from Asia typically move through West Coast ports and are then trucked or carried by rail to inland destinations. But containers moving on mega-ships through the Panama Canal could be off-loaded in ports such as Houston or New Orleans, where, thanks to the Mississippi River system, they could be hauled to cities like St. Louis, Minneapolis, and Pittsburgh by low-cost, energy-efficient barge. Or they could travel to deepwater ports such as Newark and be trans-loaded onto smaller coastal ships serving destinations up and down the eastern seaboard.

In another virtuous cycle, barges would beget barges. That is to say, as the volume of coastal and inland water transport increased, so too would its time competitiveness with trucks. Today, once a week, a new service known as 64 Express moves containers up and down the James River

between the port of Hampton Roads and Richmond, Virginia. Only those who can afford to wait currently use it. But many more companies would use the service if it ran more frequently. With containers from Asia flowing directly into Hampton Roads, that's exactly what would happen.

Meanwhile, today's diesel-powered tugboats and coastal ships could become even cleaner by converting to natural gas, as has already been done on a limited scale. Unlike trucks, ships don't require a vast fueling network, since they have the space to carry large tanks of natural gas on board. If trucks at the same time became relegated to mostly short-haul service, this would make it more practical for them to convert to natural gas as well.

And we can imagine a final virtuous cycle coming into play. As the economic and environmental case for domestic water transport increased, land-use patterns would change. More factories and warehouses would spring up in places that offer easy access to navigable waters, whether it was in East St. Louis's once thriving but long troubled real estate along the Mississippi River, or Cleveland's squandered waterfront property along Lake Erie, where today just about the only remaining economic activity occurs in a deeply subsidized sports stadium on the weekends. As banal as talk of barges and freighters might at first seem, the rebirth of domestic water transport promises a much stronger and sustainable America—one that uses, and lives in harmony with, the bounty of waterways that first made it great.



Phillip Longman is a senior research fellow at the New America Foundation and the author (with Ray Boshara) of *The Next Progressive Era: A Blueprint for Broad Prosperity*.



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