

Gauging Growth

The Freight Rail Supply Chain
and Job-Creation Potential

BLUEGREEN
ALLIANCE



This report is also available at www.bluegreenalliance.org.

The BlueGreen Alliance www.bluegreenalliance.org is a national, strategic partnership between labor unions and environmental organizations dedicated to expanding the number and quality of jobs in the green economy.



Launched in 2006 by the United Steelworkers and the Sierra Club, this unique labor-environmental collaboration has grown to include the Communications Workers of America (CWA), Natural Resources Defense Council (NRDC), Service Employees International Union (SEIU), National Wildlife Federation (NWF), Laborers' International Union of North America (LIUNA), Union of Concerned Scientists (UCS), Utility Workers Union of America (UWUA), American Federation of Teachers (AFT), Amalgamated Transit Union (ATU), Sheet Metal Workers' International Association (SMWIA), United Auto Workers (UAW) and the United Food and Commercial Workers (UFCW). The BlueGreen Alliance unites more than 14 million members and supporters in pursuit of good jobs, a clean environment and a green economy.

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The authors would like to thank the following for their editorial and technical assistance:

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All photos courtesy of Association of American Railroads, unless otherwise noted.

Design: Kieran Daly and Parisa Damian of Winking Fish/www.winkingfish.com.

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EXECUTIVE SUMMARY

America is slowly but steadily recovering from a pronounced recession, which resulted in the loss of millions of American jobs across all sectors of the economy. While the country has sustained successive quarters of job growth, moving to a clean energy economy that is more energy efficient, produces more renewable energy and generates less pollution represents a significant opportunity to create more jobs and sustainable economic growth.

The freight rail industry can be a part of this transition, having demonstrated its green potential by making significant strides in efficiency, limiting pollution and creating and sustaining quality jobs. Economic models estimate for every billion dollars of freight rail capital investment about 7,800 green jobs are created or sustained, with nearly 20,000 total jobs supported throughout the domestic economy.

The rail industry has nearly doubled the amount of goods it has shipped without increasing fuel consumption over the past three decades, and creates a fraction of the pollution of other transport modes such as trucking and aviation. Its continued growth will generate green jobs, reduce dependence on foreign oil and contribute to solving climate change. As the U.S. economy gets back on track, freight movement will expand, requiring corresponding infrastructure investment. By growing capacity, the freight rail industry can seize significant opportunities to meet projected demand for shipping cargo, save energy, reduce pollution and create tens of thousands of new jobs throughout the economy.



Economic models estimate for every billion dollars of freight rail capital investment, about 7,800 green jobs are created or sustained, with nearly 20,000 total jobs supported throughout the domestic economy.

GAUGING GROWTH: THE FREIGHT RAIL SUPPLY CHAIN AND JOB CREATION POTENTIAL

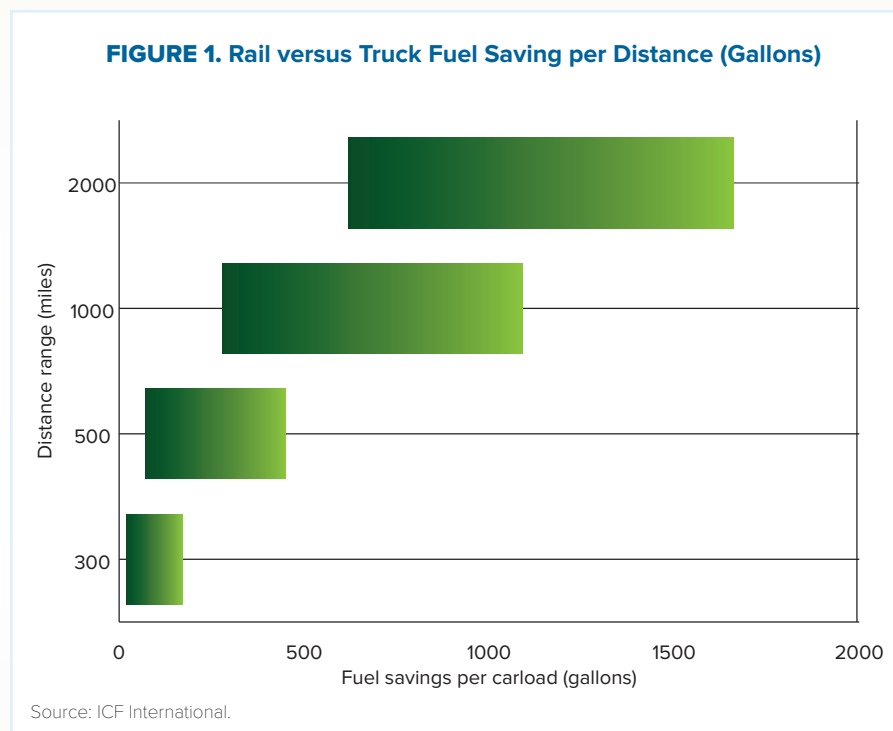
THE ECONOMY, ENERGY AND THE ENVIRONMENT

The American economy is showing signs of recovery from the steepest downturn since the Great Depression. With unemployment rates hovering around 9 percent as of May 2011, new approaches and investment are needed to get more Americans back to work and invigorate the U.S. economy.¹

However, at a time when we need to invest in the domestic economy, America sends more than \$1 billion each day to foreign countries to purchase oil. American imports of foreign oil have risen by nearly 40 percent since 1990, and currently imports supply the bulk (57 percent) of American oil use.²

Transportation, meanwhile, accounts for two-thirds of U.S. oil consumption, and fuels derived from oil currently drive nearly all transportation activity (94 percent).³ Within transportation, surface freight movement represents a considerable segment of energy usage, consuming more than 1 billion barrels of oil a year — the equivalent of the amount of oil we import from the Middle East and Venezuela annually.⁴

Corresponding with reliance on fossil fuels is the production of greenhouse gas pollution that contributes to climate change. Currently, transportation accounts for nearly a third of America's greenhouse gas emissions (GHGs), necessitating more efficient approaches across all transportation modes if the sector can become part of the solution for reducing our dependence on foreign oil and addressing the impacts of climate change.



Freight rail is a far more efficient mode of transporting bulk goods when ranked against trucking and aviation, especially over long distances, moving a ton of freight 484 miles per gallon of fuel consumed.⁵ On a per-ton basis, trucking uses on average four times the energy to transport freight versus rail.⁶ While trucks are necessary to carry goods over the “last mile” — from local and regional distribution centers to market — freight rail is the most efficient means of moving freight medium and long distances from ports and inland terminal centers.⁷ (See Figure 1)

Advances in locomotive and rail system efficiency have increased substantially in the past two decades, with the freight rail industry having increased its fuel economy 38 percent

since 1990, compared to 11 percent for trucks through the same period.⁸ American companies are developing and producing many of these pollution reducing and energy saving technologies here in the U.S. (as highlighted throughout this report), strengthening both our domestic economy and our global lead in advanced rail manufacturing processes.

In recent years, railroads have implemented advanced monitoring systems to improve engineers' ability to drive at speeds that maximize fuel savings. Railroads have also invested in lighter freight cars and more efficient locomotives to reduce fuel consumption. These efficiency gains have allowed the freight rail industry to double the number of ton-miles traveled without increasing energy use over the last three decades. In 1980, freight rail transported 919 billion ton-miles of cargo; by 2008 this increased to 1.8 trillion ton-miles, and fuel consumption remained steady at nearly 4 billion gallons over those three decades.⁹ Additional strides in locomotive efficiency (i.e. diesel and hybrid systems), drivetrains, lighter materials, and improved logistics and controls hold potential to significantly reduce fuel consumption and particulate and GHG pollution. (See Figures 2 and 3)

Energy savings fostered by transporting freight via rail results in lower GHGs. While accounting for nearly half of total U.S. freight ton-miles, rail currently contributes only about 11 percent of freight-related carbon dioxide pollution.¹⁰ Furthermore, last year the U.S. Environmental Protection Agency proposed that shifting five percent of truck freight to freight rail would significantly contribute to reducing GHGs to levels that would help solve climate change.¹¹ (See Figure 4)

FREIGHT RAIL CREATES EMPLOYMENT THROUGHOUT THE ECONOMY

Coast to coast, the freight rail industry links commerce and helps drive the American economy. The freight rail industry is a significant economic engine, contributing nearly \$265 billion of total economic activity annually, and is supported directly and indirectly by about 1.2 million workers.¹² As such, the freight rail industry and its supportive sectors comprise a value-add to the economy, representing approximately 1 percent of the U.S. workforce that creates 2 percent of output within America's \$15 trillion economy.¹³

FIGURE 2. Rail Fuel Consumption versus Freight Volume

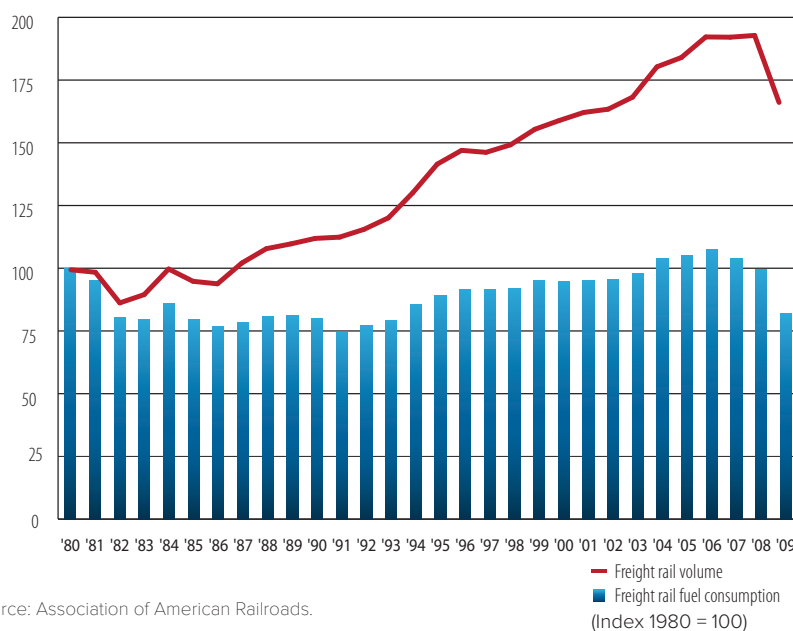


FIGURE 3. 2005 Petroleum-Based Fuel Usage by Transportation Mode (Millions of Gallons)

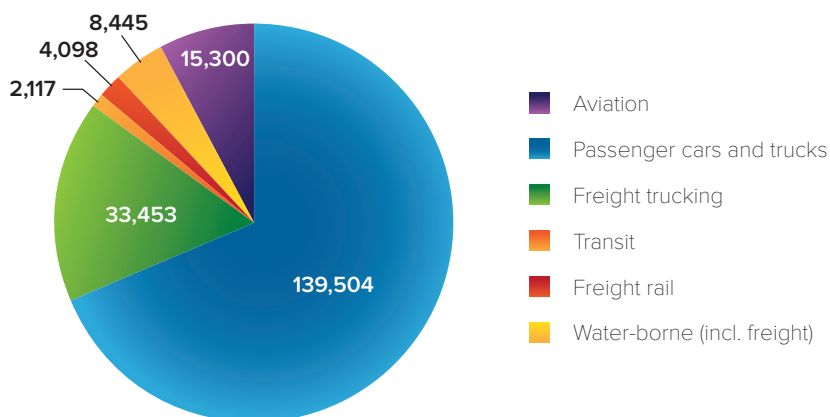
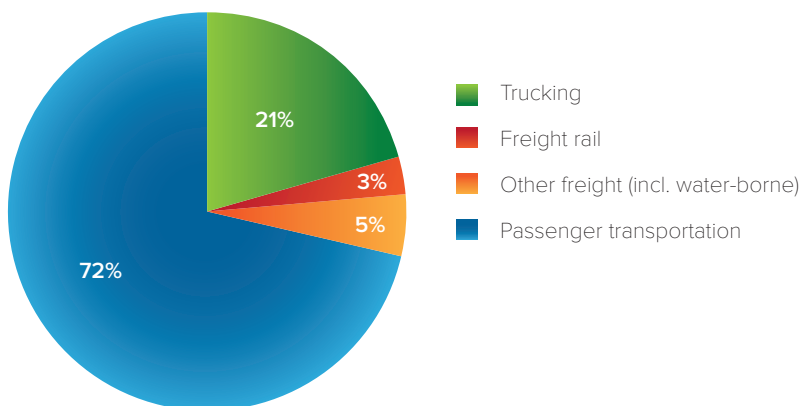
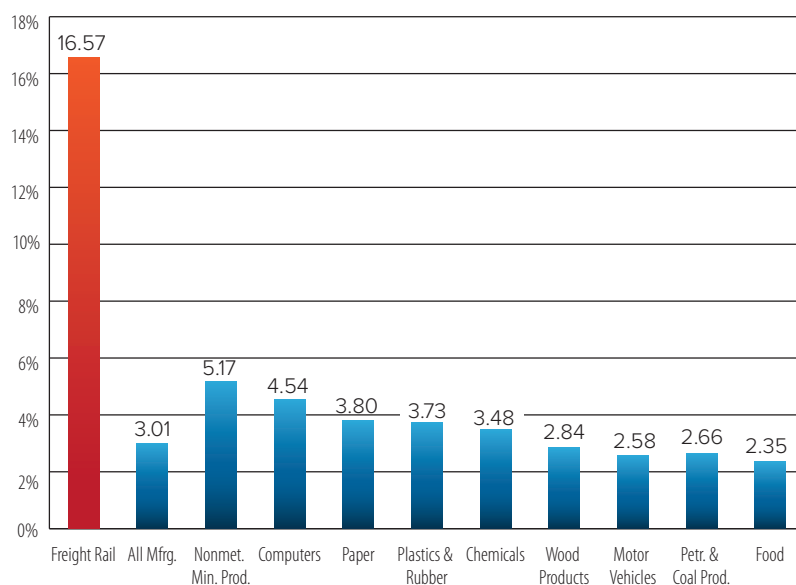


FIGURE 4. 2007 U.S. Transportation Greenhouse Gas Emissions by Mode



Source: U.S. Environmental Protection Agency.

FIGURE 5. Capital Expenditures as a Percentage of Revenue (Average 2000-2009)



Source: U.S. Census Bureau; Association of American Railroads.

Within the industry itself, capital investment in freight rail presents a significant opportunity for American job creation. In 2010, railroads spent approximately \$10 billion on infrastructure and equipment investment, and historically, the industry directs more than four times the average level of revenues into capital investment compared to other industrial sectors.¹⁴ (See Figure 5)

HOW MANY JOBS?

To estimate the types of jobs that are directly and indirectly created by investment in freight rail, this report uses a model that merges industrial data on input-output relationships with household-level data on demographic and labor market variables. This model builds on the methodology established in the 2010 BlueGreen Alliance/Economic Policy Institute report, "Full Speed Ahead: Creating Jobs Through Freight Rail Expansion." Results from this model indicate:

- \$1 billion of rail capital investment creates 7,800 green jobs, which are defined as jobs created in direct and supplier industries as a result of freight rail spending. These activities include:
 - Manufacturing – locomotives, freight railcars, shop machinery
 - Construction – rail roadway buildings, warehouses, grading
 - Iron and steel industries – rail and over-the-road track materials
 - Others – communications and computer support, timber for railroad ties, quarrying for rail ballast
- Rail capital investments create and sustain proportionately fewer low-wage jobs and more medium-wage jobs compared to the broader economy. They also provide a higher proportion of employment to workers without a college degree.
- Including re-spending effects, \$1 billion of rail investment could create anywhere between 12,300 to 26,600 total jobs throughout the U.S. economy.

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Alstom Transportation

Locations in U.S:

- Rochester, NY
- Hornell, NY
- Naperville, IL
- New Castle, DE
- Mare Island, CA
- New York, NY (headquarters)

Employees in the U.S.:

Approximately 700

Company Background

Alstom Transportation provides the U.S. freight and passenger rail industry with a range of products and services including rolling stock manufacturing and modernization, train life services (TLS) and transport information services (TIS), which includes signaling and other infrastructure systems such as switch machines, relays, track circuits, interlocking products, signals, onboard equipment and the Positive Train Control (PTC) family of products. Alstom's TLS group provides the material management and maintenance offerings for existing rail fleets. The company is devoted to quality and dedicated to achieving customer satisfaction by delivering quality products, on time and on budget, and preserving the environment by providing "Sustainable Mobility."

Alstom's 150,000 square foot facility in Rochester, New York has added approximately 100 employees over the last year and plans to hire about 100 more by the end of 2011.

Sustainability

Many of Alstom's sites, including its New Castle, Delaware TLS facility, use the LEED "Green Building" approach. LEED (Leadership in Energy and Environmental Design) is an internationally recognized certification system that provides building owners and operators with a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. These buildings provide healthier work and living environments, which contributes to higher productivity and improved employee health and comfort while reducing energy consumption.

Job Additions

Alstom's 150,000 square foot facility in Rochester, New York has added approximately 100 employees over the last year and plans to hire about 100 more by the end of 2011. Alstom has invested millions of dollars into the site, expanding its capacity to support that growth and strengthening its state-of-the-art manufacturing capabilities. From this site, Alstom provides signaling and control systems to North America's transit, commuter, and freight rail markets, includ-

ing vital safety systems that allow safe operations in mixed-use corridors.

Freight rail connection

Alstom's links to the freight rail industry include the supply of signaling and train control equipment through its TIS group, which operates from a state-of-the-art manufacturing headquarters in Rochester, New York. Today, Alstom is the leading supplier of Positive Train Control (PTC) signaling equipment for both freight and passenger rail. Alstom's TLS team also works to keep America's freight trains running smoothly through the application of condition-based maintenance approaches.

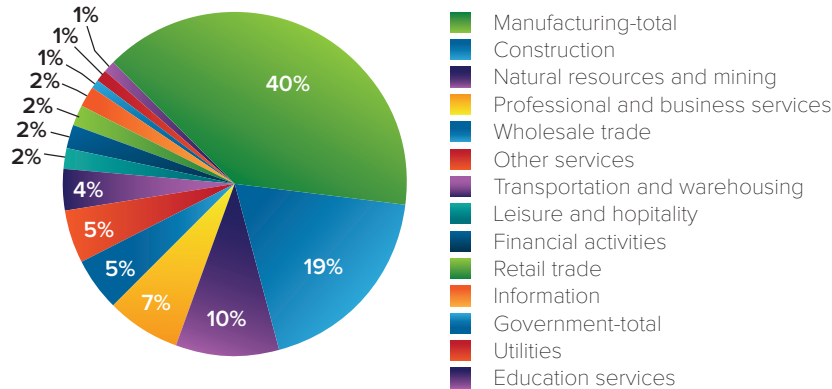
Union presence

International Union of Electronic, Electrical, Salaried, Machine and Furniture Workers-Communication Workers of America (IUE-CWA)

International Association of Machinists and Aerospace Workers (IAM)



Figure 6. Job Creation by Industry Resulting From Freight Rail Investment (per unit/dollar invested)



Source: Economic Policy Institute.

Calculating what mix of jobs would be supported by higher rail investments involves three steps. The first is translating a package of capital investment (based on actual 2008 freight rail capital expenditures, which include equipment and infrastructure) into spending flows that match up with one or more of the 202 industries in the Department of Labor's Bureau of Labor Statistics (BLS) 2008 nominal domestic employment requirements matrix.¹⁵

Second, these spending flows are equated into employment impact. The BLS matrix shows how demand in a given industry is supported by employment in both that industry (the direct job impact) and other "supplier" industries (the indirect job impact).

Construction industry spending has impacts outside of the BLS-defined industry as well. For example, \$1 billion in demand in any given industry would sustain jobs within that BLS-defined industry (the direct job impact), and also jobs in retail trade, healthcare, and a variety of other industries throughout the economy.¹⁶ (See Figure 6)

ADDITIONAL EMPLOYMENT IMPACT: INDUCED JOBS

Lastly, re-spending — or induced — jobs will also be created in the industries in which workers in the direct and indirect industries choose to spend their additional income. This can include anything from housing, education, food, recreation and other consumer and business spending made possible through rail-derived income. Because we cannot predict what types of purchases workers will make, it would be inappropriate to label the entire job impact as consisting of "green jobs."

The model only predicts direct and indirect job impact, but by applying a standard economic multiplier one can determine a rough estimate of the total job impact, one that includes re-spending effects.

Applying these economic multipliers suggest freight rail capital investments would produce anywhere from 12,300 to 26,600 total jobs (direct, indirect, and induced), generally estimated at 20,000 jobs per billion dollars of investment.¹⁷

WHAT KINDS OF JOBS?

Rail investments tend to create quality employment opportunities. Relative to the overall economy, a disproportionately small amount of these jobs are low-wage, with more jobs created in the middle of the wage distribution. Over the past few decades hourly wage inequality has risen dramatically, becoming the single largest impediment to raising the living standards of average American workers. Much (though far from all) of this rise in wage inequality is attributable to the de-unionization of the general workforce and growing wage advantage afforded to those with a college degree, factors also perpetuated in part by the loss of manufacturing jobs in the economy.¹⁸ The rail industry has held the line in preserving the advantages of these better-paying, unionized jobs — rail employees, the majority of which are unionized, earn on average 30 percent more than the mean U.S. annual income and 74 percent more than workers in the transportation sector as whole.¹⁹

In addition, the economic model²⁰ developed for this report suggests jobs throughout the economy that support the freight rail industry tend to be slightly more unionized when compared with the total U.S. economy (13 percent for industries directly or indirectly supporting the freight rail industry, versus 12 percent for the economy as a whole), a condition that often confers higher benefits and greater job security to workers. Finally, a much larger share of these jobs are available to the 70 percent of workers without a four-year college degree.²¹



Freight rail jobs, key to reducing carbon and saving energy in the transportation sector, meet the standard of 'green' jobs.

FREIGHT RAIL JOBS = GREEN JOBS

Green jobs are those jobs which help achieve goals to reduce climate impact, save energy, encompass waste reduction and recycling, conserve water, lower carbon pollution, produce renewable energy, recycle resources and goods and remediate environmental problems. Freight rail jobs, key to reducing carbon and saving energy in the transportation sector, meet this standard.

This assertion is reinforced by emerging standards of economists and labor market analysts who are at the beginning stages of codifying working — and workable — definitions of green jobs.

The transition to a low-carbon economy is a dynamic process and green jobs will evolve along an ever-improving continuum. To date, perhaps the most comprehensive labor market analysis of green jobs has been developed by authors writing on behalf of the Occupational Information Network (O*NET), which prepared a 2009 report for the U.S. Department of Labor entitled “Greening of the World of Work.” This report analyzes

the impact of the growing green economy on occupational requirements and on the broader systems of industrial and occupational categorization used by workforce and economic developers to track industry demand for specific occupations, as well as the wages earned and skills required by workers in those occupations. The report goes on to define twelve broad industry sectors that meet this definition. One of those sectors is transportation, which is defined as follows:

This green economy sector covers activities related to increasing efficiency and/or reducing the environmental impact of various modes of transportation, such as trucking, mass transit, freight rail, and water.

“Greening of the World of Work” thus contextualizes green jobs within the systems used for industry and occupational analysis and clearly identifies rail jobs as part of the categorization they offer for green occupations.

Building on this work, the BLS is in the process gathering data about green jobs in order to develop a definition of green industries and green jobs that is comprehensive and robust

enough to serve as the basis for future policy-making and labor market analysis.

While BLS is not clear at their present stage of analysis about how high up the supply chain, or how broadly, to label manufacturing industries as green, the list does include Railroad Rolling Stock Manufacturing (#336510) as a proposed green industry.

Furthermore, supporting industries that lay the foundation of freight rail infrastructure play a large part in contributing to transportation efficiency, and as such, could meet the standards as currently proposed. These existing occupations — such as construction trades that lay track and build supporting infrastructure and rail equipment manufacturers — generate and sustain employment based mostly, if not entirely, on capital investments that enhance freight rail efficiency.

Freight rail and supporting industry jobs are green jobs, and the emerging consensus suggest this will be the case as the definition is further refined. Labor market analysts, advocates, workforce and economic development practitioners can all build on this foundation.

THE FREIGHT RAIL SUPPLY CHAIN

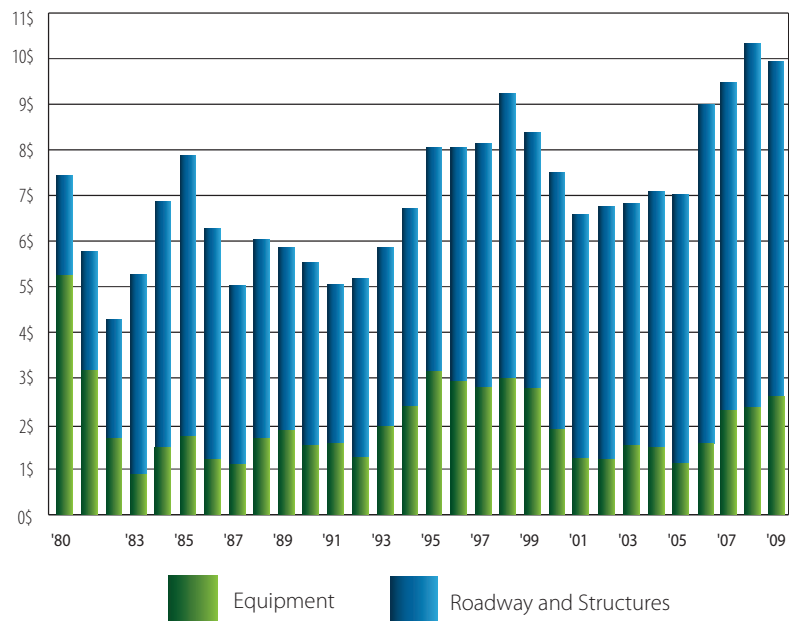
In previous decades, the U.S. economy has experienced a marked shift away from goods-producing (natural resources, mining, construction, and manufacturing) and towards service-producing jobs. From 1979 to 2009 the share of goods-producing jobs fell from 28 percent of total non-farm employment to 15 percent.²² Despite the American workforce growing by over half during that period, in 2007, before the recession, there were 26 percent fewer goods-producing jobs in the U.S. than there were in 1979.²³

Investing in America's rail system offers the opportunity to offset this decline. America's freight rail networks, comprising more than 140,000 miles of track, move nearly 2 trillion ton-miles of freight annually.²⁴ Unlike most other modes of freight transport, capital improvements across the entirety of the network are almost exclusively funded through industry revenue. Overall, the freight rail industry has invested \$460 billion in revenues back into capital needs and expansion since 1980. These investments have continued through the recent economic downturn; in 2010, Class I railroads (the seven major national freight railroads, and Amtrak, which own and operate the majority of U.S. rail track) spent nearly \$10 billion on capital improvements, to include \$1.9 billion on rolling stock and equipment and \$7.9 billion on roadway and structures.²⁵ (See Figure 7)

The freight rail industry spends on average approximately 17 percent of its revenues into capital needs and expansion — nearly four times the level of other manufacturing activities. Supporting this investment is an array of activities spanning the goods-producing sectors, such as construction for laying track, erecting support and maintenance facilities, and manufacturing, from producing steel for track to building components, vehicles, and electronics. These activities are dispersed throughout the country, beyond the traditional centers of manufacturing in the Northeast and Midwest, creating economic and employment impacts that benefit small towns and medium and large cities alike, across the breadth of the U.S. economy. (See Figure 8)

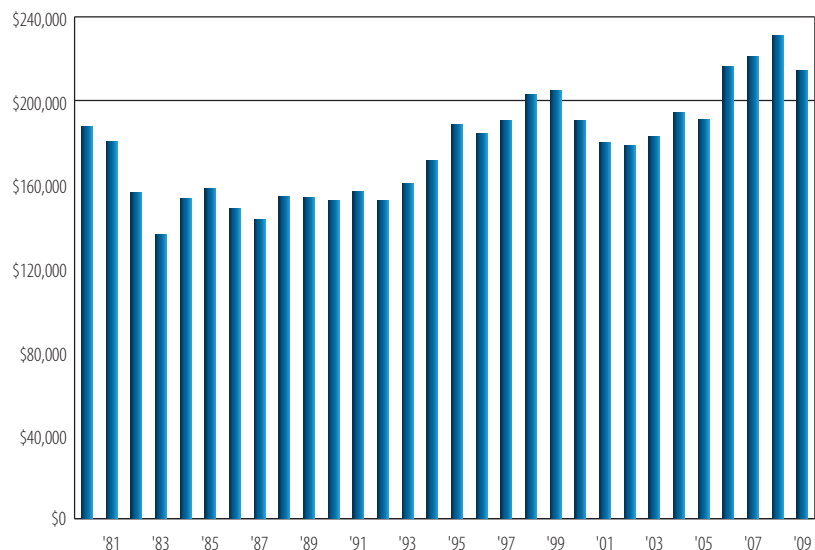
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Figure 7. Class I Railroad Capital Spending (\$ in Billions, Inflation Adjusted, 2009 Dollars)



Source: Association of American Railroads.

Figure 8. Class I Railroad Capital Spending per Mile of Railroad (Inflation Adjusted, 2009 Dollars)



Source: Association of American Railroads.

ArcelorMittal Steelton

Location of facilities:

Steelton, PA (rail)

Other major U.S. operations include:

Indiana - Burns Harbor, East Chicago, New Carlisle

Illinois - Riverdale, Chicago (headquarters)

Ohio - Cleveland, Columbus, Shelby, Marion, Warren

Pennsylvania - Coatesville, Conshohocken

West Virginia - Weirton

Number of employees:

Steelton - approximately 650

USA - approximately 21,000



The ArcelorMittal Steelton plant is capable of producing approximately one million tons of raw steel, such as this newly-processed rail, annually.

Company background

ArcelorMittal Steelton was originally founded in 1867 to roll rail for the expanding Pennsylvania Railroad. Today, ArcelorMittal Steelton is one of only three rail producers in North and South America. Capable of producing approximately 1 million tons of raw steel annually, the facility produces steel rails, specialty blooms, special quality bars and large diameter forging-quality ingots to serve the rail transportation, forging and re-rolling industries, cold-drawing and other industrial applications markets.

ArcelorMittal Steelton is part of ArcelorMittal, the world's leading steel company with more than 285,000 employees and operations in more than 60 countries. As a global leader, the company is positioned to shape the future of its sector in terms of economic model and social and environmental responsibilities.

In the United States, ArcelorMittal operates 21 major integrated, finishing and mining facilities and employs about 21,000 men and women. ArcelorMittal is the largest steel producer in North

America and the largest integrated steel producer in the United States.

Product lines within the U.S. include flat, long and tubular products, producing slabs, hot and cold rolled coils, coated steel, plates, tin mill products, bars, blooms, billets, ingots, wire, rail, pipes and tubes. Markets served include tin, automotive, appliance, rail, construction, infrastructure and bridges, energy, and oil and gas.

Company expansion

In February 2010, ArcelorMittal Steelton announced a \$54 million reheat furnace project that will reheat steel to a rolling temperature in a manner that is more time and energy efficient than current technology, resulting in significant cost and quality improvements. The furnace is expected to marginally increase annual capacity.

The reheat furnace and related equipment installation will be an important part of a strategic upgrade, improving the competitive position and energy efficiency of Steelton. This project will

enhance Steelton's position to meet the needed improvements in rail infrastructure and will support the growth of high-speed passenger service in the U.S.

Currently, the reheat furnace project is in the engineering and design layout phase. ArcelorMittal is developing time-tables consistent with the project scope and are in the process of requesting bids for various aspects of the project. They expect to break ground and begin construction in mid-2011. ArcelorMittal Steelton remains on track to have the reheat furnace project in operation in 2012.

ArcelorMittal Steelton is also in the process of adding a new product section to serve the tram rail/street car market, positioning ArcelorMittal Steelton as the only U.S. manufacturer of tram rail. The product is in the final development phase and will be available in mid-2011.

Sustainability

ArcelorMittal Steelton uses a proprietary in-line rail head hardening process to produce premium rail for the freight and transit rail markets. Premium rail is about

50 to 60 BHN (Brinell Hardness scale) harder than standard rail. That increase in hardness leads to more sustainable rails that will resist abrasive wear much better than standard rail, lasting up to twice as long as standard strength rail in track with high degrees of curvature.

The production process for premium rail is a sustainable process. Having an in-line head hardening operation means that no additional heat input is required; the temperature of the steel as it comes from the mill is all of the heating required. The in-line operation is able to approximately keep pace with the mill, allowing Steelton to produce premium rail all day long, with only about a five-to-seven-minute break in-between heat lots. The rails are treated through an environmentally-benign process without any harmful emissions.

ArcelorMittal is committed to operating in a responsible way with respect to the health and safety of its employees, contractors and the communities in which we operate. They are also committed to the sustainable management of the environment and finite resources, and have taken a lead role in tackling the global climate change challenge, working to develop breakthrough steelmaking technologies and solutions that will reduce GHG pollution. Specifically, ArcelorMittal has committed to reducing the amount of CO₂ emitted in the steelmaking process by eight percent globally, setting an emission reduction target of 170 kg per ton of steel produced by 2020.

According to the American Iron and Steel Institute, the North American steel industry has made significant strides to protect the environment by:

- Reducing overall energy consumption per ton of steel produced by 33 percent since 1993;
- Reducing GHG emissions by more than 25 percent from 1994 through 2003;
- Reducing volume of air contaminants by more than 70 percent and total air and water discharge by 69 percent from 1994 thru 2003; and
- Collecting and reusing steelmaking byproducts such as coke oven and steelmaking gases for fuel and heat generation.

Additionally, ArcelorMittal USA has identified ways to reduce and reuse energy, one of the most costly inputs in the steel-making process. ArcelorMittal's energy management system in our offices and facilities seeks to:

- Save money and increase the sustainability of operations
- Reduce greenhouse gas emissions
- Protect the environment and natural resources

Last month, ArcelorMittal USA earned its fourth consecutive ENERGY STAR award (a joint U.S. Environmental Protection Agency/Department of Energy program), recognizing the company's commitment to reducing energy intensity at their U.S. operations. Over the past two years, they have achieved more than \$22.7 million in ongoing annual energy savings through energy savings projects. ArcelorMittal is the only steel company to be named an ENERGY STAR Partner of the Year. ArcelorMittal Steelton played a significant role in achieving this distinction.

Freight rail connection

ArcelorMittal is both a supplier of rail and a customer of the railroads in the United States. ArcelorMittal Steelton supplies rail to the railroad while the majority of ArcelorMittal's U.S. operations utilize the railroads for the transportation of incoming raw materials and equipment and outgoing product to customers.

ArcelorMittal constantly evaluates various modes of transportation including rail, waterborne vessels and trucks. Typically, in most applications, rail and waterborne vessels have more economic and environmental benefits than trucks due to their ability to transport large bulk volumes in a single move at both long and short distances.

Union presence

Approximately 14,650 U.S. employees, or nearly 70 percent of ArcelorMittal's total U.S. workforce, are represented by the United Steelworkers (USW). At ArcelorMittal Steelton, approximately 86 percent of the total 650 employees are represented by USW Local 1688.



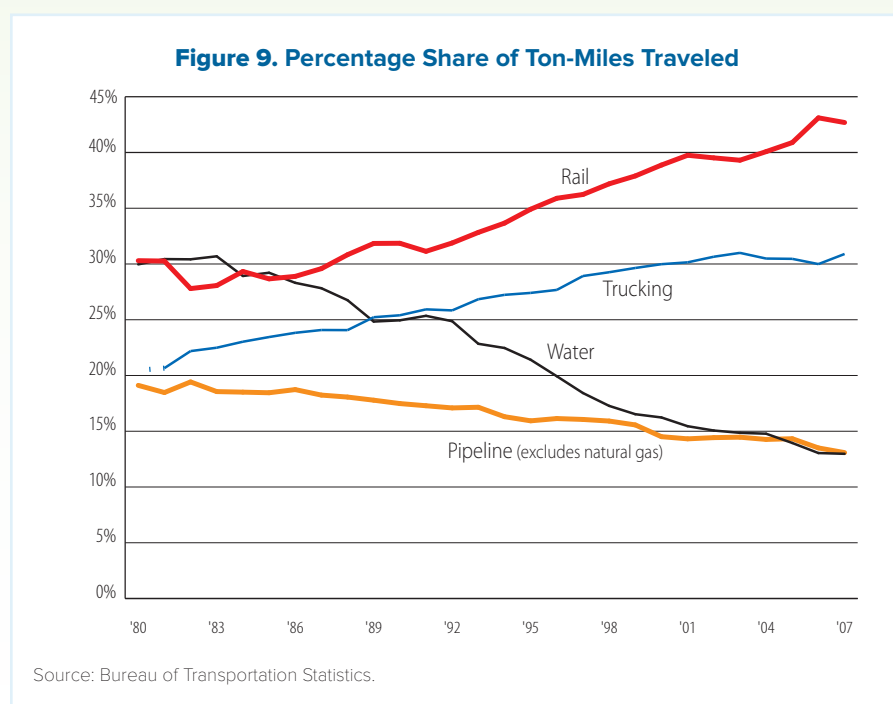
In August 2009, ArcelorMittal Steelton served as a regional example of the American Recovery and Reinvestment Act (ARRA) in action. U.S. Representative Tim Holden (center), together with management from the Southeastern Pennsylvania Transportation Authority (SEPTA) and ArcelorMittal Steelton, recognized a train rail order from SEPTA for a modernization project, which resulted from federal stimulus funding. The entire community benefits when regional improvement projects include locally-made steel and other materials.

In March 2010, President Barack Obama announced a goal of reversing the decline of goods-producing industries and doubling the value of American exports by 2015. Such an undertaking, which could create 2 million new American jobs, would also ideally prompt expansion of the freight rail system to move more goods, with the added benefit of creating jobs in the manufacture of the rolling stock and machinery requisite to grow the American rail network. Already, the rebounding economy is creating demand for freight rail services and facilitating growth in other sectors — for example, an improving auto market has led to growth in the delivery of auto parts and vehicles, with carloads carrying these goods increasing by 27 percent from December 2008 to December 2010. Transport of clean energy machinery and components, such as oversized parts for wind turbines, require specialized transport services uniquely supplied by rail shippers. Shipment of biofuels is facilitated by high-volume container transport provided via rail. And other sectors of the economy benefit from the cost effective mode of transport for bulk goods, such as agricultural products, raw materials, and pharmaceuticals for domestic consumption and export. As the economy grew over the past few years, the efficiency and effectiveness of rail transport was reflected in higher revenues across all sectors of goods shipped, totaling more than \$50 billion in 2010.

FREIGHT RAIL'S ROLE IN THE ECONOMY

As the economy goes, so goes rail. Already, the industry is preparing itself for increased demand for freight service, spending nearly \$10 billion in maintaining and upgrading the rail network last year, and in 2011, this investment is expected to reach \$12 billion, as the economy rebounds and the freight rail industry primes itself to deliver goods for export and to the marketplace in a growing economy.

By 2015, freight tonnage carried by rail is expected to increase by 20 percent over levels seen in 2009, and projections estimate



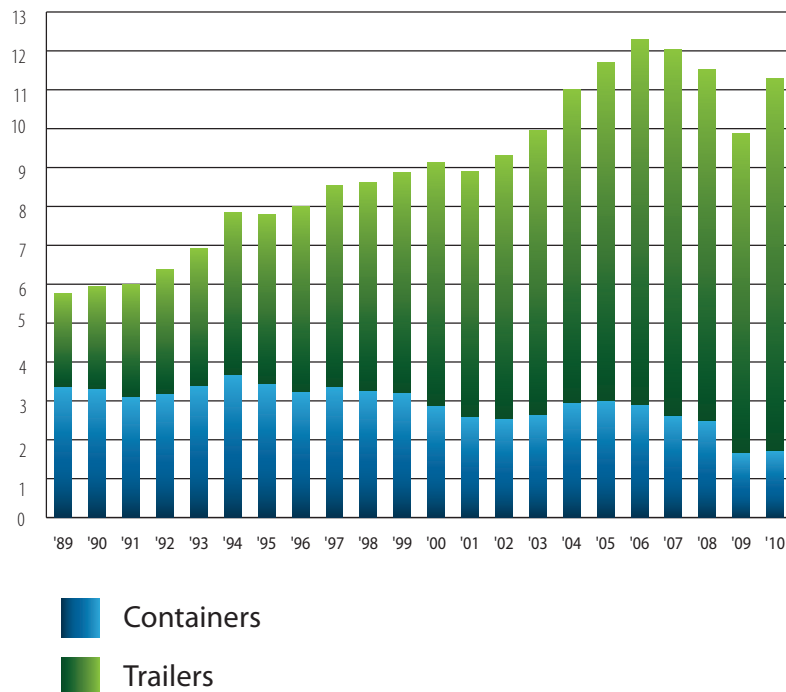
average annual growth in tonnage between 3 to 4 percent through 2040.²⁶ Already, rail accounts for nearly half of all ton-miles of cargo in the U.S. (about 43 percent) and has been increasing share against pipeline and water-borne transport, and holding steady with over-the-road trucking. (See Figure 9)

Freight rail is a far more efficient mode of transporting bulk goods when ranked against trucking and aviation, especially over long distances. On a per-ton basis, trucking uses on average two to four times the energy to transport freight versus rail.²⁷ While trucks are necessary to carry goods over the “last mile” — from local and regional distribution centers to market — freight rail is the most efficient means of moving freight medium and long distances from ports and inland terminal centers.²⁸

Overall, the U.S. Department of Transportation projects total U.S. freight movement to increase by 60 percent by 2040, from 16.9 billion tons to 27.1 billion tons.²⁹ This will require constant investment in freight rail capital and infrastructure, at higher levels than seen in recent years in order to keep

pace with increased demand for transport, and ideally, a greater share of ton-miles that would represent a shift toward the higher efficiency and reduced fuel consumption for long-distance shipping made possible through rail transport. An estimated additional \$1 to \$2 billion of annual capital investment will be required to keep pace with growing demand for shipping in the years to come.³⁰ Strengthening our freight rail networks through expansion would create new synergies across freight modes and allow freight rail to capitalize on the growing intermodal market, which transports about 12 million intermodal (ship, train and truck-compatible) containers each year. Intermodal represents the fastest growing segment of rail traffic, nearly doubling containers carried since 1990. Given the long-distance transport efficiencies of freight rail, this represents a huge opportunity for increasing market share and delivering additional energy savings versus other surface modes. (See Figure 10)

**FIGURE 10. Container and Trailer Traffic via Freight Rail
(Millions of Containers and Trailers)**



Source: Association of American Railroads.

Intermodal movement on freight rail increased nearly 9 percent between 2010 and 2011. While part of this is on account of the recovering economy, rail investments resulting in better service and improved hub efficiency, highway congestion, increased fuel costs, and boxcar conversions are paving the way for freight rail to capture a larger market intermodal share as well.³¹

Many of the rail industry's intermodal expansion efforts are focused on traffic to and from ports serving international trade and directly impact America's ability to compete in the global economy. Traffic in these high-volume corridors will continue to grow, and could be overburdened as economic growth and trade outpace infrastructure investment. Improving freight rail's intermodal market share and port connectivity will play a crucial part of in achieving the President's National Export Initiative by enhancing the nation's ability to export.³²

Progress Rail Services

Locations:

90 facilities in the U.S., in addition to Canada, Mexico and Brazil

Employees in the U.S.:

Approximately 3,000

Company Background

Progress Rail Services (a Caterpillar subsidiary) delivers sustainable, and efficient solutions for the railroad and steel industries. For over 25 years, Progress Rail has been on the forefront of sustainable development by reusing materials, conserving energy, and limiting environmental impact.

Progress accomplishes this through three core business practices:

- **Recycling:** by collecting old, worn materials, the company is able to reduce harmful effects on the environment and provide quality goods by reprocessing and repurposing materials into new, useable products.
- **Reconditioning:** The company gathers items not suitable for current use and recondition them to suit present needs, thereby foregoing the need to harvest precious, raw materials to make new products.
- **A Philosophy of Sustainability:** The company operates with a sustainability philosophy of “doing more with less,” whether it is the components repurposed or the new, more efficient locomotive products the company introducing.

Freight rail connection

Progress Rail serves both the railroad and steel industries by disassembling older, end-of-life railcars and components, determining which parts may be reused, then reconditioning reusable parts for resale purposes. Any leftover material is recycled and then sold to steel companies. There, the old material is reprocessed and made into new steel. A portion of that steel is used by various consumers, such as Progress’s parent

company, Caterpillar, to build equipment and used by other companies to build infrastructure. With its acquisition of Electro-Motive Diesel, Progress Rail will continue to strengthen its sustainable operations through the production of advanced, low-emission locomotives and fuel-efficient engines.

Sustainability

Progress Rail’s two main business units – Engineering and Track Services (ETS) and Locomotive and Railcar Services (LRS) – are both committed to sustaining resources. ETS focuses on rail infrastructure, and collects or purchases various components, then reconditions, reshapes and resells those items to customers. Progress also extends the useful life of rail by re-welding it in their facilities or on location.

Progress

LRS recycles and reconditions in several ways, including reconditioning and recycling most railcar and locomotive components. LRS also uses Caterpillar’s enhanced electronics and engine system integration to develop the next level of environmentally-friendly locomotives, relying on advanced technology engines that will reduce fuel consumption by as much as 40 percent, and reduce emissions by 90 percent. Progress Rail’s processes also give new life to oil pumps, auxiliary generator drive assemblies, cam shafts, oil pans and other components — which are then employed to produce locomotives that meet or exceed government guidelines for environmental protection. This recycling of railroad products and other recyclables,

along with the deployment of new fuel- and reduced emissions locomotives, not only saves thousands of gallons of diesel fuel and significantly reduces GHG pollution — it also saves thousands of kilowatts of energy. Together with Caterpillar’s engine solutions, Progress Rail’s assortment of reconditioned components can power trains that will deliver cleaner transportation for years to come.

Another example of how Progress Rail promotes sustainability is through recycling operations, which process an array of scrap materials for use by steel mills. State-of-the-art shredders use large, rotating magnets to separate precious reusable metals and deliver them to separate transport vehicles. One shredder can process 240,000 pounds of material per hour — totaling 480 million pounds per year. On a whole, Progress Rail has the capability to process 1 to 1.2 million tons of scrap per year. Progress Rail has reduced the amount of material taken to landfills by approximately 75 percent, and continues to invest in new technology to reduce that number even further.

Union Presence:

International Union, United Automobile, Aerospace and Agricultural Implement Workers of America (UAW)

International Association of Machinists and Aerospace Workers (IAM)

Brotherhood Railway Carmen Division, Transportation Communications International Union (BRC)

International Brotherhood of Teamsters (Teamsters)



Caterpillar/Electro-Motive Diesel’s new generation of diesel locomotives will reduce fuel consumption by as much as 40 percent and reduce emissions by 90 percent.

CONCLUSION

The development of transcontinental rail is an investment that has had manifold benefits which helped enable America to become and maintain status as the world's leading economic power for more than a century. In the 21st century, rail's eminence as an economic engine has the potential to be as great, and also produce significant energy savings, reduce pollution, move cargo across the country efficiently as part of a balanced multi-modal freight network, and will create tens of thousands of green jobs and thousands more throughout the economy given current and projected re-investment throughout the network.

Rail has met growing demand for freight movement while remaining efficient, cost effective, and increasingly less energy intensive and polluting. Increased rail utilization will help form a truly balanced transportation network that achieves higher efficiencies among passenger and freight modes, fostering an infrastructure platform that makes America more competitive in the global economy. Merely maintaining share within a growing freight market would forego the significant opportunities presented by rail's demonstrated ability to reduce oil dependence, achieve system and vehicle efficiencies to reduce pollution, as well as to create and sustain quality employment throughout the economy.

Freight rail expansion would create tens of thousands of quality green jobs and induce overall employment and economic growth throughout America's goods-producing industries and supply chain. Furthermore, freight rail has already demonstrated its ability to achieve significant efficiencies resulting in lower fuel use and reduced pollution; increased investment would advance this progress, which has doubled the overall industry's efficiency in a few decades.

The rail industry still faces challenges as the American economy gathers steam coming out of the recent recession. There is current debate as to whether additional rail regulation would enhance the delivery of a variety of rail services. However, given the ability of the rail industry to leverage private capital to maintain and upgrade the rail network, additional regulation could have a negative impact on the significant level of re-investment seen historically and in recent years. Less investment means fewer jobs and infrastructure ill-prepared for what is expected to be massive growth in demand for freight transport over the next few decades.

As America moves full speed ahead to a clean energy economy, freight rail's crucial role in that transition can be expanded through sound policy choices that maximize economic, employment and environmental benefits made possible through this historically critical mode.



Freight rail expansion would create tens of thousands of quality green jobs and induce overall employment and economic growth throughout America's goods-producing industries and supply chain.

ENDNOTES

- 1 Regional and State Employment and Unemployment Summary, U.S. Department of Labor Bureau of Labor Statistics, May 2011.
- 2 United States Energy Profile, U.S. Energy Information Agency (U.S. EIA), 18 August 2009; *How Dependent Are We on Foreign Oil?* U.S. EIA, 23 April 2009.
- 3 U.S. Primary Energy Flow by Source and Sector, *2009 Annual Energy Review*, U.S. EIA, August 2010.
- 4 U.S. Imports by Country of Origin, U.S. EIA, April 2010; *Energy Consumption by Mode of Transportation*, Table 4-6, National Transportation Statistics, Bureau of Transportation Statistics (BTS), September 2009.
- 5 Railroad Rate Studies, U.S. Department of Transportation Surface Transportation Board, 2009; *The Environmental Benefits of Moving Freight by Rail*, Association of American Railroads (AAR), April 2011.
- 6 “Comparative Evaluation of Rail and Truck Fuel Efficiency on Competitive Corridors,” ICF International (for the Federal Railroad Administration), November 2009.
7. Combination Truck Fuel Consumption and Travel, Table 4-14; Class I Rail Freight Fuel Consumption and Travel, Table 4-17; and U.S. Ton-Miles of Freight, Table 1-26a, *National Transportation Statistics*, BTS, 2008-2009.
- 8 Railroad Rate Studies.
- 9 *Transportation for Tomorrow*, National Surface Transportation Policy and Revenue Commission, December 2007.
- 10 Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009, U.S. Environmental Protection Agency (U.S. EPA), April 2011.
- 11 EPA Analysis of the Transportation Sector Greenhouse Gas and Oil Reduction Scenarios, U.S. EPA, 10 February 2010.
- 12 Capital Spending — R-1 Schedule 330, Column (e), Final Demand Multipliers, U.S. Department of Commerce, Regional Input-Output Modeling System (RIMS) II.
- 13 Current-dollar and “Real” GDP, Bureau of Economic Analysis, April 2011.
- 14 RIMS II.
- 15 Nominal dollar based domestic employment requirements in 2008, Bureau of Labor Statistics, 10 December, 2009.
- 16 Freight rail investment economic model developed by the Economic Policy Institute in May 2010. Demographic and labor market data from the U.S. Census Bureau’s Current Population Survey (CPS) are factored to calculate the share of each industry’s employment by relevant categories (gender, race, ethnicity, wage levels, etc.), referencing data from 2005 and 2007 to ensure the largest sample size possible. A “crosswalk” approach matches up the CPS data on demographic and labor market variables with the BLS data on industry input-output relationships. This crosswalk (available upon request) matches up both the CPS and the BLS industry codes to a third classification system, the NAICS, that maps onto both the CPS and BLS data. By then multiplying the number of jobs created in each industry (either through direct spending or through supplier effects) by industry demographic shares and then summing these up across industries, we get the total number of jobs in each category (both direct and supplier jobs) that are created through a given amount of infrastructure spending.
- 17 Economic multipliers are estimated by looking at historical data and attempting to link a single policy change with their economic impact. As such, estimates produced by this modeling should be considered guides rather than direct measures since all other variables are held constant (in order to isolate the policy effect) and also compensate for the fact that most policy changes are themselves responses to economic conditions. For these reasons, multiplier estimates tend to vary widely.
- 18 Since 1979, unionization rates have fallen by more than half, from 27 percent of the workforce to 12.3 percent. Also, college workers earned wages that were 50 percent higher than those of non-graduates (holding other worker characteristics constant), while by 2007 that advantage had risen to 80 percent. Research by DiNardo, John, Nicole M. Fortin, and Thomas Lemieux, “Labor market institutions and the distribution of wages, 1973-1992: A Semi-Parametric Approach,” *Econometrica*. Vol. 64, September 1996, pp. 1001- 1044.
- 19 2010 rail wages versus U.S., transportation occupations (mean hourly wage and annual income), Bureau of Labor Statistics, April 2011
- 20 On multiplier models: a semi-parametric approach using an economic output multiplier to calculate re-spending jobs produces only a rough estimate. Implicit in this calculation is the assumption that the ratio of economic output to jobs — or, in other words, worker productivity — is the same in the broader economy (in which direct and indirect workers are re-spending their incomes) as it is in those direct and indirect industries. If, for example, productivity were lower in the re-spending industries compared to the direct and indirect industries, it would suggest that the economic multipliers actually understate the re-spending job impact.
- These estimates are based on currently existing patterns of employment across sectors. As such, the final results suggest how many and what kinds of jobs would be created within the economy. However, to the extent that new investments are aimed at transforming the economy or labor market, the results are not precisely indicative of the true impact. For example, policy restrictions on the kinds or quality of jobs created and specific policy targeting of job creation would lead to different outcomes than estimated here. The numbers presented here compose an estimated baseline for policy makers to consider.
- 21 While the majority of railroad employees are unionized, these workers are part of a subset of transportation and warehousing occupations, which only make up four percent of industries directly and indirectly supporting the freight rail industry as reported by the Bureau of Labor Statistics.
- 22 National Industry-Specific Occupational Employment and Wage Estimates, Bureau of Labor Statistics, May 2009.
- 23 *The State of Working America 2008/2009*, Larry Mishel, Jared Bernstein, and Heidi Shierholz/ Economic Policy Institute. Ithaca, N.Y.: ILR Press (an imprint of Cornell University Press), 2009, pg. 184.
- 24 U.S. Ton-Miles of Freight, Table 1-46a, *National Transportation Statistics*, BTS, 2008-2009.
- 25 Analysis of Class I Railroads, American Association of Railroads, 2011
- 26 Freight Analysis Framework 3 Network Database and Flow Assignment: 2007 and 2040, Federal Highway Administration, May 2011.
- 27 “Comparative Evaluation of Rail and Truck Fuel Efficiency on Competitive Corridors,” ICF International (for the Federal Railroad Administration), November 2009.
- 28 Combination Truck Fuel Consumption and Travel, Table 4-14, Class I Rail Freight Fuel Consumption and Travel, Table 4-17, *National Transportation Statistics*, BTS, 2011.
- 29 Freight Analysis Framework 3.
- 30 *National Rail Freight Infrastructure Capacity and Investment Study*, Cambridge Systematics, September 2007.
- 31 *Rail Time Indicators: A Review of Key Economic Trends Shaping Demand for Rail Transportation*, Association of American Railroads, June 2011
- 32 *National Rail Plan: Moving Forward, A Progress Report*, Federal Railroad Administration, September 2010

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