



Strategic Advantages of Moving Mail by Rail

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Executive Summary

The U.S. Postal Service has a long and storied history of moving mail on rail dating from the very beginning of the railroad industry in the early 1800s. Mail was sorted on trains and Post Offices and processing facilities were located near rail stations. Many innovations and changes to rail, including the very development of intermodal rail, were closely tied to the movement of mail. However, today the Postal Service meets its surface transportation needs almost entirely by using trucks owned by highway contractors. In fact, in 2011 the Postal Service spent more than \$3.3 billion on highway contracts and only \$40 million on freight rail contracts. By contrast, postal competitors have greatly expanded their use of rail and have worked hard to realign their networks with the nation's railroads.¹

Many transportation users have noted the significant improvements in service, cost, and fuel efficiency that the freight rail industry has achieved since deregulation more than 30 years ago. In fact, intermodal rail service has improved to the point it can now provide service standards competitive with highway. Today, it is widely accepted as industry standard that rail is far more economical than highway for long-distance surface transportation.² Additionally, rail transportation is approximately four times more fuel efficient than trucking.

The U.S. Postal Service Office of Inspector General (OIG) Risk Analysis Research Center (RARC) found that by increasing its use of intermodal rail the Postal Service could save transportation costs, gain long-term strategic advantages, and still continue to meet existing service standards. While fully realizing all potential cost savings would take time and effort, some savings are achievable without changes to the current network. The modernization of the rail industry has made it a viable, cost-effective option for meeting some of the Postal Service's long-distance surface transportation needs. The rail industry's improved services, increased capacity, reduced exposure to fuel price volatility, and long-term outlook can also protect the Postal Service from strategic risks posed by its current reliance on the highway trucking industry.

¹ This paper discusses intermodal freight rail, not Amtrak's passenger rail service. The use of Amtrak to transport mail is beyond the scope of this paper. For a brief history of the Postal Service's past use of Amtrak to transport and sort mail, please see Appendix A.

² Chris Caplice, "Best of Both Worlds," *Inside Supply Management*, vol. 22, no. 9 (December 2011), p. 32. Shipments greater than 500 miles favor intermodal rail. Subscription required.

Key findings include the following:

- Intermodal rail has become an industry standard for efficient long-distance freight transportation and is a best practice that could cut postal transportation costs dramatically.
- The OIG estimates that in the short term, shifting a portion of mail volume to intermodal rail could yield cost savings of about \$100 million per year without changes to the Postal Service's network.
- By realigning its processing and transportation network and strategically recommitting to the use of intermodal rail, the Postal Service could save significantly more in the long run.
- Because railroad-owned logistics companies now work to facilitate the use of intermodal rail for its customers, moving to intermodal rail would be easier for postal management than in the past.
- Competitors such as UPS and FedEx have become major users of freight rail over the last decade just as the Postal Service has moved away from it. In fact, UPS is now the single largest user of intermodal rail service in the United States. J.B. Hunt, one of the Postal Service's largest highway trucking contractors, now earns about 60 percent of its revenues from intermodal rail operations.
- The rail industry has invested more than \$460 billion in capital improvements since deregulation in 1980 and continued to invest heavily even during the recent recession. Such private investment is under the industry's control and is greatly expanding the efficiency and capacity of the rail network. In contrast, highway improvements are largely outside of that industry's control and capacity is not expanding sufficiently to meet demand.
- The use of intermodal rail can contribute significantly to reducing greenhouse gas emissions and meeting the Postal Service's environmental goals.
- Because of its lesser sensitivity to fuel price increases, its stable labor capacity, and greater control of its own infrastructure, rail transportation has major, long-term strategic advantages over highway. The Postal Service could benefit now, and particularly into the future, by having intermodal rail play a larger role in its transportation mix.

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Strategic Advantages of Moving Mail by Rail

Background: Intermodal Rail and the Postal Service

A Rich History of Collaborative Development

The U.S. Postal Service (Postal Service) and the U.S. railroad industry have shared a history going back to the early 1800s. The Postal Service developed its transportation network around the railroads, linking the nation's major population and industrial centers. This created a critical infrastructure supporting communications and business transactions. Well into the mid-1900s, railroads provided valuable services to the Postal Service, including warehousing and sorting mail en route. This practice was an efficient, reliable, and cost-effective way to deliver written communications among the growing industrial and urban centers and to connect rural America. However, after World War II, the newly created Interstate Highway System spurred the rise of the trucking industry. With this new infrastructure, trucking proved to be more innovative, reliable, faster, and flexible than the railroads. As a result, the trucking industry became the dominant transportation mode for the Postal Service and the rest of the nation. Highlights of key historical events are shown in Table 1.

Table 1: Key Postal Service/Rail Industry Events

Year	Event
1800s+	Postal Service and railroads develop their operations around each other to provide widespread mail transportation throughout the country.
1950	United States develops Interstate Highway System. Spurs the rise of the trucking industry. Truckers begin competing with and replacing rail for postal business.
1980	Congress passes the Staggers Act. ³ Deregulates the rail transportation industry. Allows the railroads to invest in infrastructure and become rate competitive.
1983	Rails work with Postal Service to develop "Mail Trains," which provide fast and reliable scheduled intermodal service based on postal sort times.
1985	Mail Trains attract private package and trucking companies to use intermodal services and substantially increase rail business.
1990 - 1993	Railroads experience capacity constraints and major service disruptions. Postal Service accelerates shift from intermodal rail to trucking.
1994	Railroads increase investment in infrastructure projects to promote containerization and double stacking. Service improves but railroads do not gain postal business.
1997	Major rail mergers occur. System, labor, and integration problems create further service disruptions. Postal Service moves more intermodal business to trucking.

Source: Wilson Technologies, Association of American Railroads, and U.S. Postal Service.

³ Public Law 96-448.

Postal Service Laid the Groundwork for Modern Intermodal Rail in the 1980s

The Postal Service was once the country's largest user of intermodal rail.

To regain volume from the trucking industry, the freight railroads began investing in trailers, flat cars, and intermodal yards located in industrial centers near major postal facilities. Meanwhile, the Postal Service's business demanded a more standardized and reliable level of service. To meet their common needs, during the mid-to-late 1980s, the Postal Service and the freight railroads developed scheduled intermodal train services and integrated software and service information — major developments in logistical practices that are still used today.

Intermodal rail is a subset of freight rail service involving the coordinated use of two or more different modes of transportation. For this study, the term “intermodal rail” is used to describe the movement of containerized goods via rail on specific types of trains. This service takes advantage of the best features of both rail and trucking: the shipment travels via rail for most of the length of its trip, and is picked up at origin and dropped off at destination via truck. The railroads transport intermodal containers on trains with dedicated schedules and delivery commitments.⁴

As intermodal rail developed and modernized, the Postal Service became the largest user of intermodal rail service. This was widely acknowledged in the industry, as the fastest and most reliable intermodal trains during the mid to late 1980s were called “mail trains.”⁵

Rail Disruptions and Recovery through Investment in the 1990s

As the popularity of intermodal rail grew, the railroads were unprepared for the rapid growth that followed these improvements. They faced shortages of equipment, labor, locomotives, and facilities, shortages that gravely affected service reliability. As a result, the Postal Service, which had held more than \$100 million in contracts with each of the major Class 1 railroads,⁶ began to transfer large amounts of mail from rail to more reliable but expensive trucking.⁷

Some of these disruptions continue today, but the railroad companies have limited their impact on intermodal rail service. For example, many freight trains must travel through or near Chicago, where they share congested, intersecting rail lines with other freight

⁴ Wilson Technologies.

⁵ Association of American Railroads, “A Short History of U.S. Freight Railroads,” “Chronology of Railroading in America,” “Impact of the Staggers Rail Act of 1980,” “Mergers Have Led to more Efficient, Lower Cost U.S. Freight Railroads,” <http://www.aar.org/KeyIssues/Background-Papers.aspx>.

⁶ The Code of Federal Regulations defines Class 1 railroads as rail carriers with annual operating revenues of over \$250 million, adjusted for inflation using a formula from the Bureau of Labor Statistics. 49 CFR Part 1201, General Instructions 1-1.

⁷ Association of American Railroads, “A Short History of U.S. Freight Railroads,” “Chronology of Railroading in America,” “Impact of the Staggers Rail Act of 1980,” “Mergers Have Led to more Efficient, Lower Cost U.S. Freight Railroads,” <http://www.aar.org/KeyIssues/Background-Papers.aspx>.

trains, Amtrak passenger service, and local commuter rail service. This can cause significant delays, particularly as commuter traffic increases during rush hour.⁸

However, this congestion does not typically impact intermodal rail service as such. In Chicago, intermodal rail trains do not travel through the same rail yards, switches, and track intersections as other types of freight trains; they can instead run through the city without stopping. They are scheduled to run through Chicago during off-peak times for commuters, so commuter rail traffic does not tend to delay intermodal rail service. Additionally, railroads also give intermodal trains priority over other types of freight trains more generally, and will let an intermodal train that is stopped behind another type of freight train pass it. These factors help allow intermodal rail to achieve on-time performance levels of more than 90 percent, according to the rail industry.⁹

The rail industry has invested \$460 billion in capital improvements since 1980 on projects to increase capacity and improve service.

The rapid expansion of the freight rail industry and its series of mergers caused major disruptions, but freight rail continued to be a valued commodity. The industry has invested \$460 billion in capital improvements since 1980, funding that has exceeded 40 percent of revenues in some years.¹⁰ This investment has funded projects to widen tunnels, repair bridges, separate tracks, and replace intersections with underpasses and overpasses at key points — reducing congestion and improving service levels for many types of freight rail services. These investments have attracted attention from the federal government, as well as state and local governments, which have also helped fund some of these projects.¹¹

Private Sector Participation Fostered Intermodal Rail Modernization

While the Postal Service accelerated its shift away from rail transportation, two major U.S. transportation companies, United Parcel Service (UPS) and J.B. Hunt pressured the rail industry to make improvements. In exchange for increased volume, the railroads invested in new equipment, modern facilities, and skilled labor until acceptable service levels returned.¹² Although intermodal rail was becoming more attractive, the railroads faced further setbacks as a result of three major mergers and consolidations between 1997 and 1999. Issues with labor contracts, systems integration, and network planning caused further declines in railroad service and reliability. In response, the Postal Service transferred most of its remaining intermodal volume from rail to higher-cost trucking, nearly eliminating their residual contracts with the railroads.

While UPS and J.B. Hunt temporarily shifted some volume to highway, they remained major customers of intermodal rail. They continued working with the rail industry to

⁸ John Schwartz, "Freight Train Late? Blame Chicago," *New York Times*, May 7, 2012, <http://www.nytimes.com/2012/05/08/us/chicago-train-congestion-slows-whole-country.html>.

⁹ Service data provided by Norfolk Southern.

¹⁰ "High-speed Railroading," *The Economist*, July 22, 2010, <http://www.economist.com/node/16636101>.

¹¹ John Schwartz, "Freight Train Late? Blame Chicago"

¹² UPS and J.B. Hunt are logistics companies as well as transportation service companies. For the purposes of this paper, we discuss them as transportation service companies.

restore service and address problems related to the mergers. This collaboration helped the rail industry overcome these growing pains to become the modern industry standard for long-distance freight transportation. Some of the improvements made during this period included the increased use of standardized containers and achieving efficiencies through double-stacking, in which a container is stacked on top of another on a train car.

Figure 1 illustrates the efficiencies of a double-stack train compared to a mail truck.

Figure 1: A Single Mail Truck Compared to a Double-stack Train



Source: Wilson Technologies and Eric Rench.

Best in the World

The modernization of the rail industry and its high levels of capital investment have led the American freight rail industry to be “universally recognized...as the best in the world.”¹³ Intermodal service in particular has benefited from the billions of dollars spent on infrastructure improvements that allow double-stacking on more rail corridors. This has allowed more cargo to be transported on fewer trains, improving reliability and efficiency for all intermodal rail traffic.

The industry has also worked on improvements that make its services easier to use and to improve its customer service. Contracted highway transportation has been widely considered to be easier to use than intermodal rail, but the freight rail industry has made substantial progress toward addressing these concerns. For example, in past years, ordering intermodal rail service involved making a number of phone calls to different rail companies and drayage services to ensure that a particular shipment would be picked up, transported, and delivered on time. Additionally, rail transport requires more active management than highway as drayage, the conveyance of shipments to and from rail yards by truck, must be timed to coincide with cutoff times for scheduled train departures. However, more recently, rail companies have acquired wholly-owned

¹³ “High-speed Railroading,” *The Economist*

logistics subsidiaries that allow customers to order service with a single phone call, similar to ordering trucking service. These logistics subsidiaries also assist customers with scheduling drayage in time to meet these cutoff times.

Growth of Intermodal Rail

Between 1980 and 2006, the volume of freight carried by intermodal rail *more than quadrupled* from 3 million containers and trailers to more than 12 million containers and trailers. The use of intermodal rail now represents a key strategic advantage for three of the largest transportation companies in the world. Today, UPS has major contracts with all Class 1 railroads,¹⁴ and it transports most ground shipments that travel over 600 miles by intermodal rail. In fact, UPS is now the largest single user of intermodal rail in the country.¹⁵ FedEx also has major intermodal contracts with all Class 1 railroads. While J.B. Hunt was founded purely as a trucking company, today almost 60 percent of its revenue comes from its intermodal rail segment. Further, the company has fundamentally adjusted its strategy to make intermodal rail the key element of its business model. In fact, the company increased its fleet of intermodal containers by 19 percent in 2011 alone.¹⁶ As J.B. Hunt is one of the Postal Service's largest highway contractors and has its own optimization model to determine transportation mode, it is possible that it may already be shipping some mail via rail. In 2011, the freight railroads carried more than 14 million intermodal containers and trailers,¹⁷ a figure expected to grow in 2012.

UPS is now the largest single user of intermodal rail in the United States.

Postal Service Management Reluctant to Recommit to Intermodal Rail

In contrast, the Postal Service has virtually no intermodal programs, and has instead committed to expensive highway trucking. Thus, the Postal Service's competitors and contractors have taken advantage of the low-cost, reliable infrastructure that the Postal Service helped to create, but has since abandoned. The OIG conducted interviews with rail company managers that indicated rail companies are interested in speaking with the Postal Service about the opportunity to carry mail again and would work with the Postal Service to test and gradually transition as necessary.¹⁸

As highway transportation has become the nearly exclusive form of surface transportation for the Postal Service, memories of delays during the period it used intermodal rail may have led to a strong bias toward maintaining the status quo.¹⁹ Postal

¹⁴ Please see Appendix B for more information about UPS and its collaboration with the freight rail industry.

¹⁵ Wilson Technologies.

¹⁶ J.B. Hunt Transport Services, Inc., *2011 Annual Report*, [https://ww2.jbhunt.com/INET/webcontent.nsf/0/FCCDDC9728D74245862579C200676940/\\$File/JBHT%202011%20Annual%20Report.pdf](https://ww2.jbhunt.com/INET/webcontent.nsf/0/FCCDDC9728D74245862579C200676940/$File/JBHT%202011%20Annual%20Report.pdf).

¹⁷ Intermodal Association of North America, "Intermodal Market Trends & Statistics Report," 2011, https://www.intermodal.org/statistics_files/stats1.shtml.

¹⁸ OIG interviews with managers from Norfolk Southern Thoroughbred Direct, March 15, 2012.

¹⁹ Please see Appendix C for a summary of some of the Postal Service's perceived barriers to using intermodal rail and our responses.

operations are so heavily dependent on highway that any move toward greater use of rail would require a change in culture and a departure from current practices. The Postal Service would also require some expertise in rail management in order to shift significant mail volume to intermodal rail, expertise it currently lacks. Adding rail management to the Postal Service's operational practices may require effort even with assistance from the railroads' logistics management subsidiaries. However, with attention to processing times in plants as well as transit times on rail or highway, the Postal Service can meet its service standards with intermodal rail on many lanes at a much lower cost.

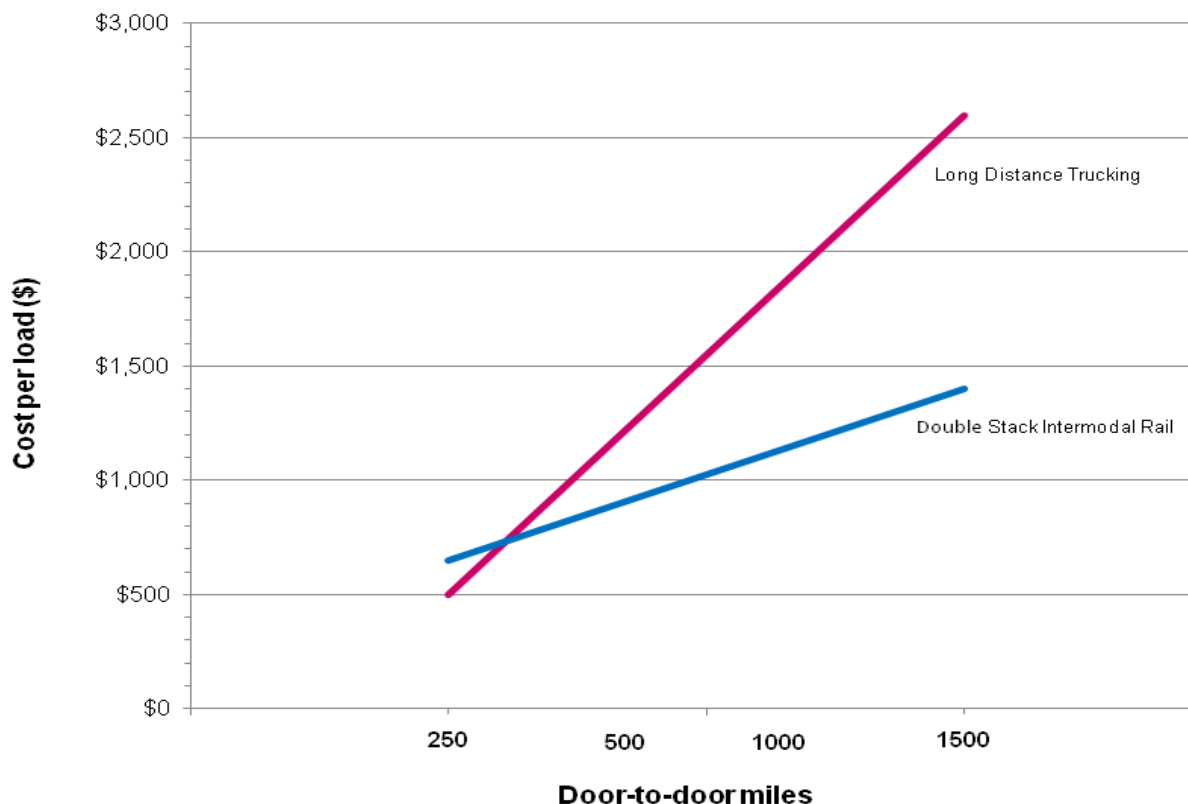
Financial Analysis

Overview

Industry data show that using rail rather than highway transportation can yield savings of up to 50 percent.²⁰ Calculating the exact savings for a given shipment of cargo involves the length of the trip, the availability of rail lanes, and many other factors. Figure 2 below shows an analysis of average cost by trip length and highlights an inflection point of about 300 miles, where rail starts being less costly than trucking. Industry practice, however, tends to prefer trucking for transportation distances less than 500 miles. It is also important to note that the benefit of rail over trucking increases as distance traveled increases because rail costs are more fixed and less variable than highway. In addition to the potential savings per load of cargo, intermodal rail can be much less costly for some customers because it can be purchased one way at a time instead of in round trips.

²⁰ Thomas R. Brown and Anthony B. Hatch, "The Value of Rail Intermodal to the U.S. Economy," Strategic Directions LLC, September 19, 2002, <http://intermodal.transportation.org/Documents/brown.pdf>.

Figure 2: Intermodal Rail vs. Long-Distance Trucking Cost Per Load



Source: Mechanical Database, [http://mechdb.com/index.php/Rail vs truck industry](http://mechdb.com/index.php/Rail%20vs%20truck%20industry). Modified.

Given these advantages, it is reasonable to assume that the Postal Service could save money today by converting some of its volume to rail. If it were to realign its logistics network to better match rail infrastructure, it could expect far greater savings. Such changes could take years to implement and would require changes to the Postal Service's transportation skills and culture. However, many other businesses, large and small, now enjoy long-term cost savings because they have made this strategic shift. In fact, rail has become the industry standard method for the long-distance transportation of goods in the United States.

OIG Cost Savings Model

In addition to the long-term savings potential, RARC created a simple proof-of-concept financial model. This model estimates how much the Postal Service could save by using rail instead of highway transportation today without changes to the Postal Service's network. The analysis concluded that under the current network, about \$100 million in annual savings could be realized by converting specific transportation lanes from highway to rail. The analysis examined the current, major transportation links for ground products as they are now configured and compared the costs of rail shipment versus

highway contract shipment for each and summarized the total savings.²¹ The rail industry provided cost estimates for rail and the Postal Service's current data provided the highway contract information. Going forward, a redesigned postal network, more aligned with the nation's rail infrastructure, could produce far greater savings, but a precise estimate of this long-term potential was beyond the scope of the OIG's analysis.

Currently, the Postal Service pays highway carriers for round-trip transportation. This can create nearly empty backhaul trips because of imbalances in the direction of mail flow. Because rail transportation is billed in one-way segments, about 18,000 annual backhaul trips totaling more than 35 million miles could potentially be eliminated by using rail transportation, which alone could save the Postal Service more than \$65 million per year.

Round-trip highway transportation contracts can cause backhauls that one-way rail transportation avoids.

Highway transportation is particularly sensitive to changing diesel fuel prices — significantly more so than rail transportation.²² This difference leaves highway transportation comparatively more vulnerable to rising fuel prices. If diesel fuel prices were to rise from the current price of about \$4 per gallon, the model's estimated savings would likewise continue to grow.²³

Other Potential Savings Opportunities

The model's scope included only existing long-haul highway transportation between Network Distribution Centers (NDCs), representing only \$545 million of the \$1.168 billion in costs allotted by the Postal Service to the transportation of Standard Mail, Package Services, and Periodicals.²⁴ The OIG's analysis indicates that the Postal Service could save about \$100 million per year, or about 18 percent, by moving this mail volume from highway to intermodal rail. Additional savings could be realized with any of the following measures, which were not studied:

- Processing mail in locations closer to rail – Drayage, or conveying shipments to and from the rail yards by truck, accounts for a very large portion of intermodal rail costs.²⁵ Processing mail closer to rail yards would reduce these costs, but a more extensive model would be necessary to estimate the potential cost savings.
- Examining other surface transportation – There may be additional savings across other transportation lanes between non-NDC facilities or by adjusting the NDC network.
- Designing products for rail – Intermodal rail could provide an opportunity for new mail products specifically designed to be carried on it.

²¹ For more detail regarding this model, please refer to Appendix D.

²² OIG analysis. Rail cost data provided by Norfolk Southern.

²³ Energy Information Administration, "Short-term Energy Outlook," May 8, 2012, <http://www.eia.gov/forecasts/steo/realprices/>.

²⁴ Postal Service Cost Segments and Components, FY 2011.

²⁵ Edward K. Morlok and Lazar N. Spasovic, "Approaches For Improving Drayage in Rail-Truck Intermodal Service," National Center for Transportation and Industrial Productivity, August 18, 1994, http://www.transportation.njit.edu/nctip/final_report/approaches_for_improving_drayage.pdf.

Future Trends Suggest a Need for Rail

Capital Investment

Despite a recession, the freight railroad industry invested \$10.7 billion in capital improvements in 2010 and \$12 billion in 2011.²⁶ With demand for freight transportation projected to nearly double from 19.3 billion tons in 2007 to 37.2 billion tons in 2035, the freight railroads project that they will spend \$121 billion to \$148 billion in capital expenditures to meet the rising demand.²⁷ This represents a future capital investment rate of 17 percent of the industry's revenue and shows the industry's intention to devote significant resources to support future growth. This investment in new equipment and infrastructure to support such things as double-stacking can help intermodal rail meet the anticipated demand for freight transportation with high levels of performance.

Over the same period, the trucking industry has spent little on capital investments. Sales volumes of major trucks, tractors, and trailers over the past several years have declined. In February 2009, Class 8 tractor sales hit a 17-year low.²⁸ In addition, the trucking industry's profit margins are falling at least partially because of costs associated with its reliance on the increasingly congested highway infrastructure. In 2010, congestion on America's highways cost the trucking industry \$23 billion in delays and fuel costs.²⁹

Most importantly, the trucking industry does not directly pay for highway improvements or have control over the expansion of its infrastructure. While that may add to the profitability of the industry, it means that the quality and capacity of its routes are mostly beyond its control. About 70 percent of highway construction and maintenance costs are paid with funds from fuel taxes. The federal excise tax on diesel fuel has remained at 24.4 cents per gallon since 1993. This tax is not indexed to inflation.³⁰ In 1993, diesel fuel cost an average of \$1.11 per gallon, so the excise tax made up 22 percent of the total price of diesel fuel. As of May 2012, diesel fuel costs an average of \$4.06 per gallon.³¹ This means that the federal excise tax now comprises only six percent of the price of diesel fuel, much less than one-third of what it comprised in 1993. Even with this erosion in value, federal excise taxes on fuel must still support the majority of

²⁶ Association of American Railroads, *Great Expectations 2011*, <http://www.aar.org/GreatExpectations.aspx>.

²⁷ Statement of C. Wick Moorman, President and Chief Executive Officer, Norfolk Southern Corporation, Norfolk, VA, Hearing before the Subcommittee on Select Revenue Measures, Ways and Means Committee, U.S. House of Representatives, July 23, 2009, <http://www.gpo.gov/fdsys/pkg/CHRG-111hhr63001/pdf/CHRG-111hhr63001.pdf>.

²⁸ "Class 8 sales hit 17-year low," *Transport Topics*, February 23, 2009. The National Highway Traffic Safety Administration defines Class 8 tractors as trucks with gross vehicle weight ratings (weight of the vehicle plus the maximum limit of its cargo capacity) over 33,000 pounds. These include all tractor trailer trucks of the type commonly used to move mail and other cargo by highway. 49 CFR Part 565.15.

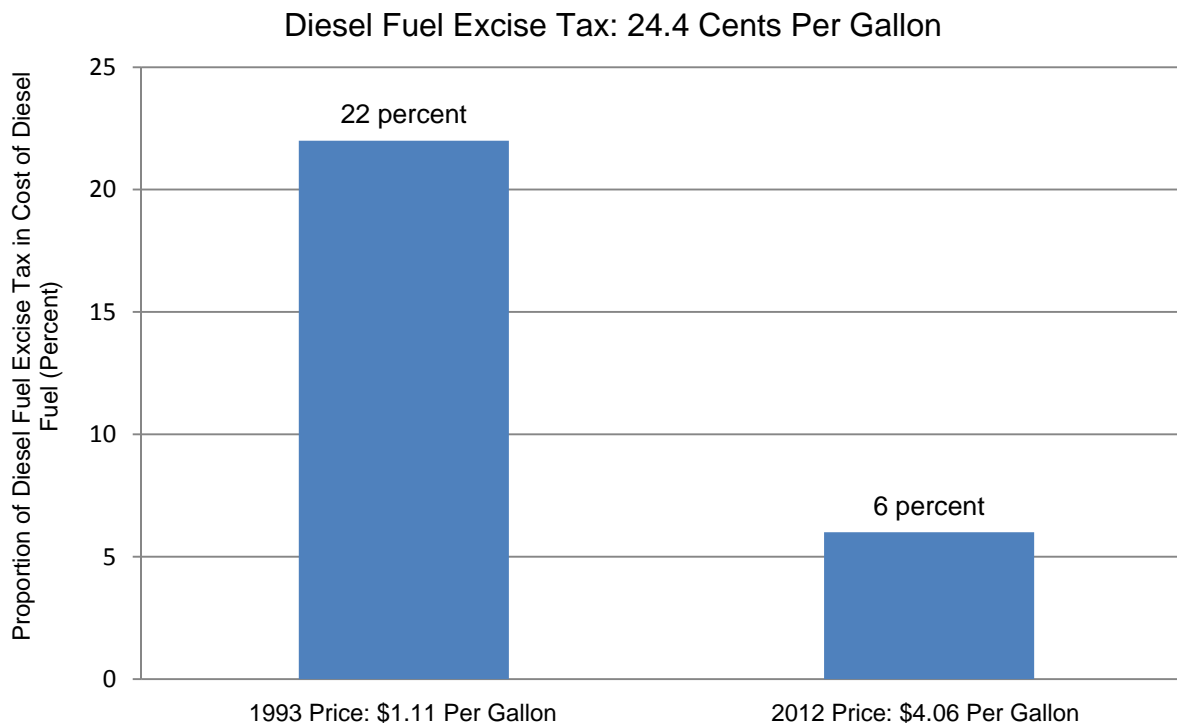
²⁹ Texas Transportation Institute, *2011 Urban Mobility Report*, September 2011, <http://tti.tamu.edu/documents/mobility-report-2011.pdf>.

³⁰ U.S. Department of Transportation, "Highway History," www.fhwa.dot.gov/infrastructure/gastax.cfm. The Omnibus Budget Reconciliation Act of 1993 increased the gasoline tax from 14.1 to 18.4 cents per gallon. This 4.3-cent increase was directed entirely to the U.S. Treasury general fund for deficit reduction. The Taxpayer Relief Act of 1997 redirected the 4.3-cent increase to the Highway Trust Fund.

³¹ Energy Information Administration, "Short-term Energy Outlook," May 8, 2012, <http://www.eia.gov/forecasts/steo/realprices/>. Prices are given in nominal dollars to demonstrate how inflation has eroded these excise taxes.

highway construction and maintenance costs, costs that have grown significantly since 1993. See Figure 3 below for a chart comparing fuel taxes since 1993.

Figure 3: Inflation Has Eroded Purchasing Power of Fuel Tax Revenue



Source: Energy Information Administration. Nominal dollars.

The remaining costs are borne by federal and state general fund receipts, bonds, and various taxes. While the president's budget proposal for fiscal year (FY) 2013 would authorize \$305 billion in road and bridge improvements over six years,³² Congress last approved a budget in April 2009 and has funded the U.S. government with short-term extensions since then.³³ These include a bill passed in July 2012 that would keep highway funding at current levels for 27 months.³⁴ Tight state and federal budgets may restrict resources available for highway construction and maintenance, and the political processes for budget authorization and appropriations may not direct available transportation resources to projects most critical for the trucking industry. While government investment does help support the growth of the rail industry to some extent, it is essential to the efficient operation of the trucking industry. Current trends suggest that this dependence could be a serious problem going forward. It seems likely that this

³² The White House Blog, "2013 Transportation Budget: What It Means for You," February 14, 2012, <http://whitehouse.gov/blog/2012/02/14/2013-transportation-budget-what-it-means-you>.

³³ 111th Congress, S.CON.RES.13, <http://hdl.loc.gov/loc.uscongress/legislation.111sconres13>.

³⁴ 112th Congress, H.R. 4348, <http://hdl.loc.gov/loc.uscongress/legislation.112hr4348>.

lack of investment in highway infrastructure may increasingly hurt the performance of highway transportation in coming years.

Workforce Trends Impact Stability and Reliability of Service

While both the railroad and trucking industries faced labor reductions during the recent recession, projections indicate that future demand will require increases to the workforces of each industry. The railroad industry appears ready to meet its coming workforce requirements, while the trucking industry may have difficulty doing so. This represents a long-term strategic risk for the Postal Service that it may be able to manage by shifting some mail volume to intermodal rail.

Railroad Industry Workforce

The Federal Railroad Administration predicts that in the next 25 years, as population levels increase, the rail network can expect to ship 400 million additional tons of freight. In 2010, rail employment was up 5.2 percent, bringing rail employment up to 175,000 employees. The railroads added an additional 10,000

employees in 2011, and will need to keep employment levels rising by 3 to 5 percent annually to keep up with demand, retirement, and attrition.³⁵ The industry appears well positioned to do so. One reason for this is that railroad employees are well compensated. According to U.S.

government data, in 2009 full-time railroad employees earned wages averaging \$81,563 per year and benefits of \$25,522 per year, a total average annual compensation of \$107,085.³⁶

Two railroad crew members can move 180 intermodal trailer loads about 300 miles on a single shift.

Railroad companies will need to increase the size of their workforces, but will have less trouble doing so than trucking companies. Freight railroads require fewer crew members than the trucking industry; two railroad crew members can operate a train that can move 180 trailer loads 300 miles on a single shift. Additionally, rail companies report a low level of employee turnover, around 6 percent.³⁷ With its attractive annual salary and benefits, smaller workforce requirements, and low turnover, the freight railroad industry is equipped to recruit, hire, and sustain a qualified workforce well into the future.

Trucking Industry Workforce

Based on freight projections and current market share, by 2035 the trucking industry will carry an additional 2.1 billion tons each year. This will require 131.3 million additional truck trips each year representing an increase of 20 billion vehicle miles, 315 billion ton miles, and requiring an additional 258,000 drivers, a demand the trucking industry is unlikely to be able to meet.³⁸

³⁵ Association of American Railroads, *Great Expectations 2011*.

³⁶ Ibid.

³⁷ Figure provided by Norfolk Southern.

³⁸ U.S. Department of Transportation, Federal Railroad Administration, "National Rail Plan: Moving Forward," September 2010, http://www.fra.dot.gov/downloads/NRP_Sept2010_WEB.pdf.

The work environment for the long-haul truck driver is harsh. Extended driver training programs, low wages, long stretches of driving in poor weather conditions, and few or no retirement benefits result in high turnover rates and driver shortages. In 2011, the turnover rate for drivers of large fleets grew to 75 percent, up from 69 percent in 2010.³⁹ The median pay for long-haul drivers also rose to \$21.81 per hour or \$45,370 annually.⁴⁰ In addition, new regulations to improve safety reduce potential working hours and increase required downtime between shifts, reducing income potential for commercial drivers and the industry's productivity.⁴¹ Further, many drivers now require Transportation Worker Identification Credentials (TWIC) from the Transportation Security Administration (TSA) to access secure port facilities, a requirement planned to expand to include government installations, rail yards, and other facilities. Industry executives have predicted that as this takes effect, TWIC requirements will disqualify up to 20 percent of the existing driver workforce.⁴²

While rail has become the preferred choice for long-distance transportation, trucking will always have an important role. Trucking is notably more cost effective over shorter distances than intermodal rail, and short-haul drivers can make several round trips per day on a given route while still being able to return to their homes at the end of a shift. This makes them much easier to recruit and retain; short-haul drivers have a much lower turnover rate than long-haul drivers. These factors leave the trucking industry well placed to continue to meet the demand for short-haul transportation, such as drayage between plants and transportation facilities or routes up to about 500 miles in length. However, trucking remains ill prepared to handle the expected growth in long-distance transportation.

Lower Fuel Consumption Makes Railroads Less Vulnerable to Fluctuating Fuel Prices

Over the past 40 years, fuel price volatility has been one of the most difficult factors to manage in the transportation industry. An analysis of fuel prices clearly shows that they have led to sharp increases in the operating costs of U.S. ground transportation.⁴³ Both the freight railroad and trucking industries have experienced a doubling of fuel costs since the late 1990s. Based on a worst case scenario, the industries could face a quadrupling of prices by 2020. The Department of Energy forecasts the price of diesel and other fuels, but geopolitical factors and other potential shocks to the market could cause unexpected spikes in fuel costs.

³⁹ "Driver Turnover Rises in First Quarter," Heavy Duty Trucking Magazine, June 23, 2011, http://www.truckinginfo.com/maintenance/news-detail.asp?news_id=74028&news_category_id=6.

⁴⁰ University of Memphis Center for Intermodal Freight Transportation Studies (CIFTS), Freight Mobility Publication, Spring 2010. http://www.memphis.edu/cifts/pdfs/Examining_Driver_Turnover.pdf.

⁴¹ Tim Cama and Eric Miller, "DOT Keeps 11 Hour Limit in Updated HOS Rules," *Transport Topics*, December 22, 2011.

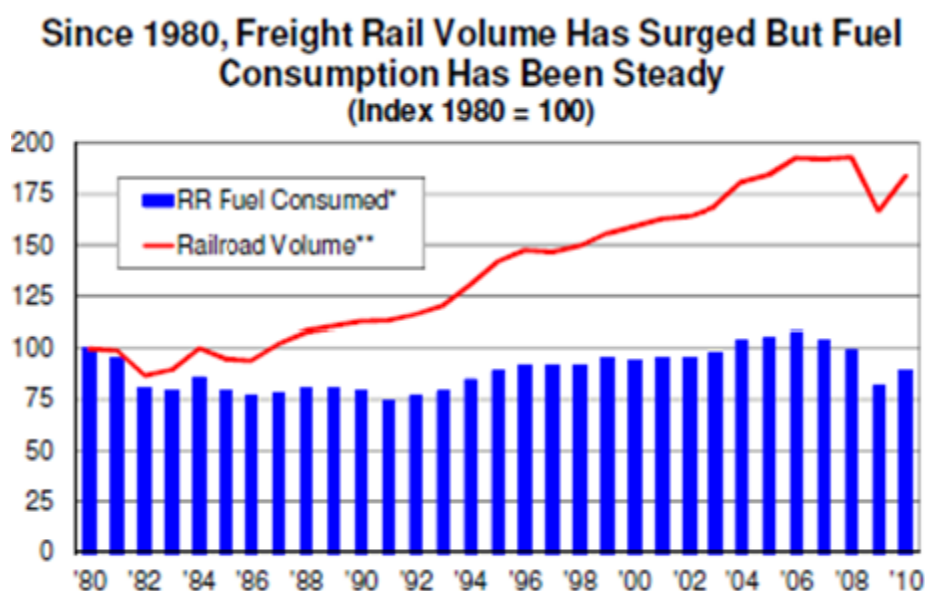
⁴² Transportation Security Administration, "Frequently Asked Questions," www.tsa.gov/what_we_do/layers/twic/twic_faqs.shtm.

⁴³ U.S. Maritime Administration, U.S. Department of Transportation, *Impact of High Oil Prices on Freight Transportation: Modal Shift Potential*, October 2008, http://www.marad.dot.gov/documents/Modal_Shift_Study_-_Technical_Report.pdf.

However, rail companies are much better positioned to cope with such cost increases, as trains can move much more cargo with a given amount of fuel than trucks. Comparing fuel consumption in terms of ton miles carried per gallon, railroads were able to move one ton of cargo an average of 484 miles with one gallon of diesel fuel. This is four times more efficient than trucking.⁴⁴

Rail transportation's fuel efficiency makes fuel a much smaller proportion of rail companies' operating costs, allowing the railroads to manage the cost of increased fuel consumption despite rising prices for diesel fuel. As shown in Figure 4, the industry's fuel consumption has remained steady even as freight rail volume has surged.

Figure 4: Stability of Rail Fuel Consumption



Source: Association of American Railroads.

Fuel prices impacts are much bigger in the trucking industry than in the freight railroad industry because the price of diesel fuel is a larger portion of a truck trip. In 2005, the average price of diesel fuel was \$2.40 per gallon and the full cost of highway transportation was approximately \$1.75 per mile, including labor and equipment costs. Fuel comprised approximately 46 percent of that cost. Today the average price of diesel fuel is \$4.06 per gallon and the estimated cost to run a truck is \$2.28 per mile, an increase of almost 24 percent.⁴⁵

⁴⁴ Association of American Railroads, "Overview of American Railroads," March 20, 2011.

⁴⁵ Ibid.

Both the railroad and trucking industries are addressing fuel consumption as a means to stay cost competitive, but rail transportation remains far more fuel efficient. This fuel efficiency can save the Postal Service on transportation costs as well as reduce its environmental impact. The stability of the freight railroad industry's diesel fuel consumption helps insulate it from this risk.

Environmental Impacts

In the Postal Service's 2010 Sustainability Report, Postmaster General Patrick Donahoe stated, "By eliminating waste and reducing the energy and fuel we use, we lower our carbon footprint, and drive our costs down." The Postal Service's goal is to reduce greenhouse gas emissions 20 percent by FY 2020.⁴⁶ Simply by moving mail volume to rail, the Postal Service could make substantial progress toward these important goals.

Freight railroads and the trucking industry are both committed to improving environmental sustainability. Large corporations such as Caterpillar, Peterbilt, UPS, and J.B. Hunt are demanding that their vendors and suppliers have and practice carbon emission reduction programs. Although the trucking industry is developing new, more fuel efficient and "cleaner" engines and trucks, a more immediate solution has been the use of intermodal rail in transportation supply chains. Because railroads are four times more fuel efficient than trucks, moving freight by rail reduces greenhouse gas emissions by 75 percent.⁴⁷

*Moving freight by rail
instead of truck reduces
greenhouse gas emissions
by 75 percent.*

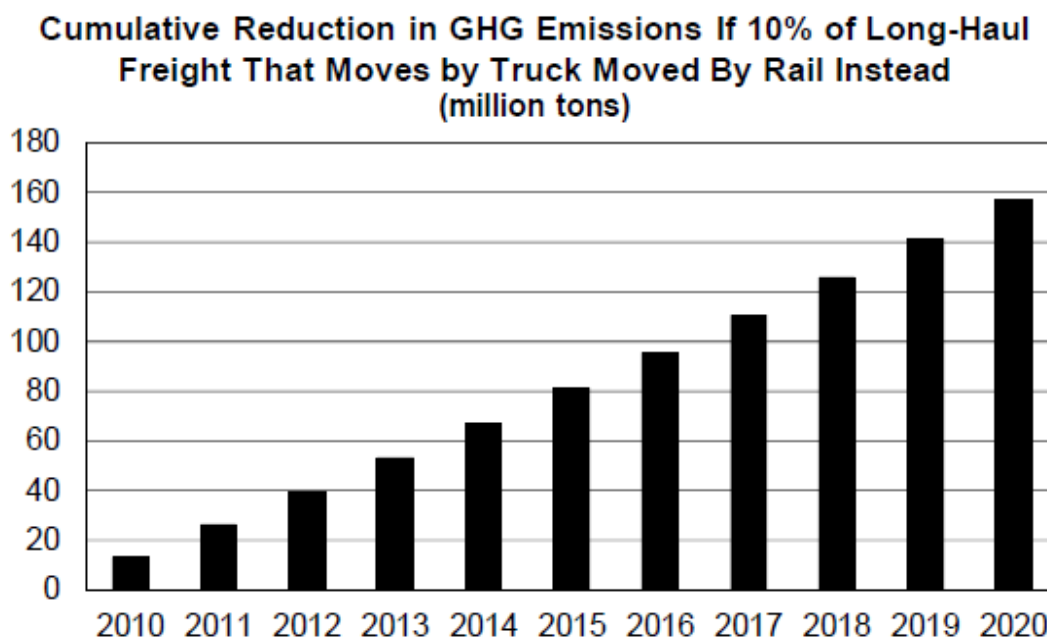
As shown in Figure 5, if just 10 percent of long-haul freight now moving by truck were transferred to the railroads, annual greenhouse gas emissions would fall by more than 12 million tons, equal to taking two million cars off the road or planting 280 million trees. Cumulative reductions through 2020 would be around 160 million tons.⁴⁸

⁴⁶ U.S. Postal Service, "Sustainability 2010 Report," page 2. <http://about.usps.com/what-we-are-doing/green/report/2010/assets/downloads/asr-2010.pdf>.

⁴⁷ Association of American Railroads, "Freight Railroads Help Reduce Greenhouse Gas Emissions," November 2011, <http://www.aar.org/~/media/aar/Background-Papers/Freight-RR-Help-Reduce-Emissions.ashx>.

⁴⁸ Ibid.

Figure 5: Greenhouse Gas Emission Reductions



Source: Association of American Railroads.

Conclusions and Policy Options

Intermodal rail is a sensible option for helping the Postal Service reduce its expenses, improve environmental sustainability, and make itself less vulnerable to potential future shocks in highway transportation costs, service, and capacity — all while maintaining its service standards. While we recognize and are sensitive to the concerns that moved it away from rail over the years, we suggest that the Postal Service consider taking steps to make rail a more important part of its transportation operations. These steps could include one or more of the following:

- Incorporate intermodal rail into existing surface transportation options in the current network. Our analysis demonstrates the potential for cost savings in existing transportation lanes. The Postal Service could immediately start achieving cost savings and realizing rail's other benefits by shifting some mail volume to intermodal rail and becoming more acquainted with the current state of the rail industry.
- The Postal Service could work to align its processing and surface transportation network with the country's rail infrastructure instead of highway. This would be a long-term strategy involving much planning and implementation work over a number of years, but the potential benefits could be very large. Indeed, the

Postal Service's major competitors and highway contractors have already made this shift.

- To fully take advantage of the potential benefits and help manage the transition to rail, the Postal Service could seek outside expertise or develop it in house. Such expertise would help the Postal Service to wisely manage its expenses, develop a strategy, and balance the respective benefits of both highway and intermodal rail as part of its transportation mix.

Given the Postal Service's current financial position, it must explore every aspect of its business model to identify and implement practices that reduce costs while continuing to meet its mandates and provide ratepayers with high-quality service. The Postal Service also must consider the long-term, strategic risks as it plans the future of its transportation network — and intermodal rail can be a viable option for helping to mitigate those risks.

Appendices

Appendix A The Postal Service and Amtrak

The National Railroad Passenger Corporation (Amtrak) was created by the U.S. Government in 1972 following the passage of the Rail Passenger Service Act in 1970. Mail service was part of Amtrak's original charter, and Amtrak began to provide transportation service to the Postal Service shortly after its formation. Because Amtrak had rights to run on any railroad line, it was able to offer the Postal Service a truck-competitive service that connected all of its Bulk Mail Centers (BMCs) and Area Distribution Centers (ADCs). Amtrak passenger trains run at speeds faster than freight trains (up to 80 to 90 miles per hour, compared with up to around 50 miles per hour for freight rail), so it was able to provide 3-day coast-to-coast service as well as time-competitive service from Richmond to Boston in the northeast corridor. This enabled Amtrak not only to handle Standard Mail, Periodicals, and Packages, but also compete with teams of truck drivers and air service on Priority and First-Class Mail.

By 1994 Amtrak had more than \$100 million in annual business with the Postal Service providing nationwide transportation and mail sorting services. Beginning in 1998, Amtrak began expanding its high-speed boxcar and roadrailer services to include a program called Carload Express, made available to nonpostal customers. This service was used to ship a variety of consumer goods including perishables.⁴⁹ The rapid growth of this nonpostal business created congestion problems that slowed down and delayed Amtrak's network, hurting its service-sensitive core passenger service.

Citing service, profit, and management issues, in 2004 Amtrak senior management decided not to renew any of Amtrak's non-passenger contracts and focus solely on its core passenger transport business. Amtrak has since sold or retired many of its boxcars and roadrailer, and now uses its mail sorting facilities for baggage and material storage. While there is the potential for mutual benefit, it would take both investment in equipment and renewed interest from Amtrak's management for it to revive mail transportation in the future.⁵⁰

⁴⁹ Roadrailer are trailers with two sets of wheels: one set of metal train wheels and one set of rubber truck wheels. This type of trailer can run on both rail and highway.

⁵⁰ Information in this appendix was gathered from rail industry experts, including interviews with Amtrak managers.

Appendix B UPS and Intermodal Rail — A Collaborative Success

By the mid-1980s, UPS began shifting package and document transportation from trucking to rail. By 1990, UPS was the dominant shipping customer of all the Class 1 railroads, shipping trailers on more than 20 intermodal trains every day.

In 1992, UPS worked with Conrail and the Santa Fe Railroad to build UPS's largest consolidation facility and joint intermodal rail yard in Willow Springs, Illinois, 17 miles southwest of Chicago. Completed in 1995, this 186-acre rail yard allowed UPS to transfer more than 950 trailers between the rail yard and its sort center each day without using public roads.

"We have an interactive electronic system," explains Michael Johl, UPS's community relations manager. "The railroads are part of the whole UPS chain. They understand that every package in every trailer on every train that they move for us is guaranteed. We work in partnership to make that happen."

Today, the Willow Springs intermodal rail yard is the second busiest rail yard in the country, handling more than 770,000 trailers per year. It has also attracted other transportation companies such as truckload carriers J.B. Hunt and Schneider Transport, as well as less-than-truckload carriers Yellow Freight and ABF Truck lines.⁵¹

⁵¹ Wilson Technologies.

Appendix C Perceived Barriers to Change

During the project, the OIG conducted interviews with Postal Service surface transportation managers at Headquarters and in the field. Interviewees identified potential barriers to intermodal rail conversion, summarized and addressed below.

Perceived Barrier	Response
Mail is often lumped together and rail might require operational changes to segregate mail classes in trailer loading	Yes, however rail service is most suited to Standard Mail and Packages where future growth is projected
Strict rail cutoff times limit the loading window and can create partial trailer loads	Loading to meet rail cutoffs can be overcome by rescheduling, and partial trailer loads can fill as Standard Mail and Package volumes grow
Trucking industry is better equipped to provide trailers for NDC daily use and peak seasons	Eastern railroads have a fleet of more than 32,000 containers and access to thousands of private ocean containers, all located at rail terminals within 25 miles of selected NDCs
Rail consolidations have limited the number of choices and service options	Instead of 14 smaller financially unstable railroads, there are now 6 stable Class 1 railroads that offer larger terminals with more capacity, faster service, and more frequent intermodal schedules
Rail schedules are much slower than trucks and cannot meet mail service standards	Modern transcontinental intermodal trains run within hours of single-driver trucks. Although they cannot satisfy First-Class and Priority Mail schedules, they can meet service standards for Standard Mail and Packages in many lanes with appropriate operational planning
The Postal Service is no longer a large-volume shipper and therefore the railroads are no longer interested in its business and will no longer provide discounts or prime transportation services	The railroads have expressed an interest in working with the Postal Service and have told the OIG that they are willing to commit to ship mail loads on the same trains as their premium customers (UPS, FedEx, J.B. Hunt)
Railroads are no longer interested in managing drayage, trailer pools, and multiple connections between the different railroads	Most major railroads have wholly-owned logistics groups that make ordering services from the railroads, including drayage, very similar to ordering trucks
Rail service does not operate on major holidays	While rail yards and terminals close on major holidays, freight rail trains continue service every day of the year

Source: Wilson Technologies; OIG analysis; and interviews with postal managers/employees, rail experts, and railroad employees.

Appendix D Financial Analysis Model

- 1) The study collected highway transportation data including the volumes of inter-NDC mail traffic from the Transportation Information Management Evaluation System (TIMES) for a period between October 4, 2010, and April 4, 2011.
 - 2) Using this data, we compiled a list of Tier 2 and Tier 3 NDC origin/destination combinations (e.g., Jersey City to Los Angeles, San Francisco to Pittsburgh).
 - 3) The analysis calculated road distance from the origin facility to the destination facility by using PC Miler (a road mileage utility). The inputs into this system are the origin and the destination five-digit ZIP codes.
 - 4) The total number of trips across each lane was counted along with the average daily trips per lane. This included empty backhaul trips from highway transportation, which must be purchased in roundtrips.
 - 5) The cost for existing highway transportation was calculated by multiplying the number of miles from step 3 by the rate per highway mile of \$1.85. This rate was calculated as follows:
 - a) Filtered highway contract data for the lanes of interest;
 - b) The cost of those lanes was weighted by the number of daily trips;
 - c) Weighted costs were multiplied by the mileage (total daily mileage);
 - d) An average of this weighted sum was taken. The average contract cost (driver and truck, without fuel) for each trip in the lanes of interest was \$1.05 per mile.
 - e) Estimated fuel costs by assuming fuel use of 5 miles per gallon and a diesel price of \$4 per gallon, an approximation of reported diesel prices from the Energy Information Administration.⁵²
- The sum of these figures creates an estimated highway transportation cost of \$1.85 per mile. Although the Postal Service's standard rate per highway mile is \$1.80 per mile, we used the rate of \$1.85 per mile because it reflects the weighted average of the particular lanes of interest more accurately.
- 6) A major Class 1 rail company provided estimates of the cost of intermodal rail shipments and this was compared to the estimate of current highway costs.

⁵² U.S. Energy Information Administration, "Gasoline and Diesel Fuel Update," May 14, 2012, <http://www.eia.gov/petroleum/gasdiesel/>.