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RAILROAD REVENUE ADEQUACY

OPENING COMMENTS OF UNION PACIFIC RAILROAD COMPANY

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Union Pacific Railroad Company is filing these comments in response to the Board's Notice inviting interested parties to discuss the agency's methodology for determining railroad revenue adequacy and the possible use of a revenue adequacy constraint in regulating railroad rates. *See Railroad Revenue Adequacy*, EP 722 (STB served Apr. 2, 2014).[1]

As we discuss below in these Comments, the Board's methodology does not accurately reveal whether railroads are earning adequate revenues. It is backward-looking and provides no meaningful information about whether railroads' revenues are sufficient to attract and retain the capital needed to maintain and grow their networks. More importantly, a railroad's achievement in earning a particular level of revenue should not be a basis for constraining rates. Competitive market forces have fostered unprecedented private investment and service innovations in the rail industry since passage of the Staggers Act. These investments and innovations have produced tremendous benefits for shippers, and they are improving the financial condition of railroads, including Union Pacific. We urge the Board to allow competitive market forces to continue to drive railroad rate-setting, investments, and innovation. The Board should not impede railroads'

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[1] Union Pacific also endorses the comments and evidence filed by the Association of American Railroads in this proceeding and in Ex Parte No. 664 (Sub-No. 2).

market-based responses to growing and changing demands for rail transportation by adopting any rate constraint designed to artificially limit railroad returns to an amount deemed to be "adequate."

Part I explains how a rate constraint designed to limit railroad returns would lead to reduced investment in new capacity and the flight of capital from the railroad industry, to the detriment of the shipping public and the national economy. Part II shows that our improved financial condition is the result not of any exercise of market power, but of competitive conduct that benefits our customers. We also show that competition for all types of business has remained strong as our financial condition improves, and that we continue to invest and innovate to attract and retain traffic. This experience validates regulation based on competitive market principles. Part III explains that our financial condition must continue to improve in order for us to make the investments in growth that our customers are demanding. It shows that our financial performance lags behind the performance of comparable companies, our returns are not sufficient to attract the capital necessary to replace our assets, and the increasingly risky and costly nature of our investments makes the opportunity to earn market-based returns more important now than ever. Part IV explains why constraining individual rail rates in order to limit overall revenues would be contrary to sound public policy. We show that the existence of returns exceeding the cost of capital would not establish any need for increased rate regulation and that companies operating in competitive environments must have the opportunity to earn returns exceeding their cost of capital if they are to respond to market-based signals for investment.

Union Pacific's comments are supported by testimony from three witnesses who bring their knowledge and experience to bear on the issues raised by this proceeding.

- **Eric L. Butler**, Union Pacific's Executive Vice President - Marketing and Sales, describes how Union Pacific's past consolidations and network improvements help

the railroad provide better service and enhance competition; how we have been able to improve service and meet increasing and changing demands for service through huge capital investments, and why the cost of additional improvements to our network is rising; and how we improved our financial condition by competing for business. Mr. Butler also describes how we are continuing to invest and compete across all of our business groups.

- **Kevin M. Murphy**, the George J. Stigler Distinguished Service Professor of Economics in the Booth School of Business and the Department of Economics at The University of Chicago, applies economic analysis to conclude that the Board's current method of determining revenue adequacy based on book values of assets should not play any role in the regulation of freight rates and that regulating railroads based on revenue adequacy or any measure of overall profitability would distort investment decisions and harm shippers. Professor Murphy also concludes that Union Pacific's improved financial condition reflects procompetitive efforts to improve, expand, and maintain operations, which benefit shippers.

- **Ram Willner**, a Director with Berkeley Research Group, LLC, and formerly a professor at the Tuck School of Business at Dartmouth College and the Stern School at New York University, reviews Union Pacific's financial performance and concludes we are neither earning outsized returns nor returning unusual amounts of cash to our shareholders. Dr. Willner also explains from a financial perspective why regulation that limits railroad returns would reduce capital investment and drain funds from the railroad industry.

I. A Rate Constraint Designed To Limit Railroad Returns Would Reduce Investment In Capacity And Encourage The Flight Of Capital From The Railroad Industry, To The Detriment Of Our Customers And The Nation As A Whole.

For a very long period, Union Pacific's returns were exceedingly poor. More recently, our financial condition has improved. This is not due to any exercise of market power, but to our success in adapting and responding to the highly competitive market environment ushered in by the Staggers Act. Thanks to many years of investment and innovation, we are delivering more service, and better service, more efficiently to our customers. This is an unambiguously positive development for the railroad, shippers, and the nation as a whole. It means we are in a stronger position to continue to improve service, attract new business, and invest the capital needed to address growing and changing demands for rail transportation.

The Board would halt or reverse this progress if it adopted a rate constraint designed to limit railroads' earnings artificially to their cost of capital. Unless we have the opportunity to earn market-based returns, which may substantially exceed our cost of capital, our investments will be severely curtailed. We operate in a highly competitive environment, where returns are not guaranteed. Our returns must be earned by providing service that delivers value to our customers, and even then, we are to subject economic, environmental, and regulatory forces beyond our control. As Professor Murphy explains, we cannot justify to ourselves or our shareholders the inherently risky investments required to grow our network and respond to ongoing transportation market changes unless the potential upside gain from those investments is high enough to offset the potential downside risk that the associated earnings will not cover the cost. If the potential upside is constrained by limits on overall company earnings, fewer investments will be made. Instead, we will have no choice but to return more cash to our shareholders, so they can invest the money in activities that provide a better risk/reward relationship.

Professor Murphy also explains that the opportunity to earn market-based returns has become even more critical in the current railroad environment. Our past investments helped us achieve substantial cost reductions, while capitalizing on a few strategic growth opportunities. Investing to reduce costs is less risky because it can increase our returns even if it produces little or no incremental revenue. Our current capacity investment opportunities are focused more on accommodating future traffic growth. These investments carry higher risks, because there is no guarantee that traffic will move at projected levels or projected rates over the time necessary to generate an acceptable return. In addition, our current investment opportunities are more costly relative to the potential benefits than in the past, because demand for our service is increasing in locations such as the Gulf Coast, where adding capacity is more expensive. Unless we have the

opportunity to earn market-based returns when we invest, projects will never make it off the drawing board.

The Board's annual revenue adequacy determinations overstate the extent to which railroads are earning revenues that approach or exceed their cost of capital because they focus on the wrong measure. Union Pacific is not currently earning economic returns that meet, let alone exceed, our cost of capital. As Professor Murphy explains, in the competition for corporate financing, the relevant measure of return on investment for investors is not return on the historical book value of a company's assets, but return on newly invested capital. Economic return is what guides investors – the investor's expected return if it provides funds for a firm to invest. Book values substantially understate our current cost of investment. The Board's current methodology based on book value thus greatly overstates the economic return we produce for investors. We must compete for capital with the vast number of other private firms, not only in the U.S., but worldwide, and we still lag most of these other firms.

But even if our returns, properly measured, exceeded our cost of capital, that still would not be a valid reason to constrain our rates. Companies that operate in competitive environments frequently earn returns that exceed their cost of capital. They earn higher returns by successfully pursuing strategies that benefit their customers and society. For example, we devote extensive resources to improving our reliability and customer service and to adding equipment and track capacity in anticipation of customer needs because we believe these improvements will allow us to earn substantial returns. Professor Murphy explains that the opportunity to earn higher returns is what drives companies to invest and innovate.

The Board should reaffirm that where rail rates are regulated, this regulation must be in accordance with competitive market principles. The issue should be whether individual rates are

above the competitive levels that would prevail in a contestable market. The issue remains the same, regardless of a railroad's overall earnings. There is no economic or policy justification for prescribing rates below competitive levels. And it would be contrary to the mandate of the Board's governing statute.

Union Pacific does not argue that we have a *right* to earn high returns, but we must have the *opportunity* to charge market-based rates and earn market-based returns. Prescribing rates below competitive levels would reduce and distort incentives for investment to the detriment of our customers and the U.S. economy. Prescribing below-market rates would reduce the expected returns on individual investments, thus making many potential socially beneficial investments unattractive. And, such prescriptions would suppress the market signals and incentives normally provided by increased demand. Shipper arguments that press for rate constraints based on a revenue adequacy concept are short-sighted. In the end, the effects will fall most heavily on those who depend on the rail network – the nation's shippers.

The wisdom of the Staggers Act was Congress's reliance on market forces both to motivate and to constrain railroad behavior. Regulating railroad rates based on earnings, rather than competitive market principles, would undermine the railroad industry's continuing efforts to provide a "safe, adequate, economical, efficient, and financially stable rail system" by setting rates in accordance with competition and the demand for services, thus dismantling the world that Congress envisioned when it enacted the Staggers Act.[2]

[2] Staggers Rail Act of 1980, Pub. L. No. 96-448, § 3, 94 Stat. 1897.

II. Union Pacific's Improved Financial Condition Results From Competitive Conduct That Has Benefited Customers, Validating Continued Regulation Based On Competitive Market Principles.

Union Pacific's improved financial condition, and the improved financial condition of the railroad industry generally, is an unambiguously positive development not only for railroads and their shareholders, but also for our customers and the nation as a whole. This development flows directly from the adoption of a regulatory framework based on competitive market principles and the many years of investment and innovation that followed. The Staggers Act gave railroads the opportunity to improve our financial condition by freeing us to compete for traffic and capital. Railroads were given pricing flexibility and the ability to restructure our networks to deliver better service, set market rates, reduce costs, and attract new business. Railroads embraced the opportunity. Capital began flowing back into the industry. Returns increased as railroads reduced costs, attracted more traffic, and began delivering greater value to customers. Investment continued to increase as railroads proved to the financial markets that we could succeed in a competitive environment and grow earnings.

Union Pacific's improved financial condition demonstrates the benefit of adhering to competitive market principles. As we show below, and in Mr. Butler's and Professor Murphy's statements, our improved financial condition reflects decades of investment and innovation to become more efficient and to deliver more service, and more valuable service, to our customers. We also show that we continue to operate in highly competitive markets, and we continue to invest and to compete vigorously to attract and retain traffic.

A. The opportunity to compete more effectively – not the exercise of market power – has allowed Union Pacific to earn higher returns.

Union Pacific's improved financial condition is the result of decades of investment and innovation to become a stronger competitor. For many decades, our returns – like those of the

railroad industry generally – were depressed. Since the 1980s, when we began to redesign our network, our investments and innovations have generated traffic growth, improved productivity, and increased the value of rail service to customers. This has combined to allow us gradually to achieve higher returns. Our returns have increased because we are successfully operating in a highly competitive environment. Indeed, as Professor Murphy shows, we have achieved faster growth in contribution – the portion of our revenue that generates the cash flow needed to fund our capital needs and provide shareholders with returns on their investments – from traffic that has been exempted from regulation, which is clearly competitive by definition, than from traffic that is potentially subject to regulation. As Professor Murphy explains, this is not the result you would expect to see if we were increasing our returns by exercising market power over traffic that lacks effective competition.

1. We have rationalized our network.

Union Pacific's progress towards improved financial condition was sparked when the Staggers Act freed railroads to respond to market forces. As the Board is well aware, before the Staggers Act, misguided policies that prevented the operation of market forces had produced a balkanized, inefficient national rail system. Inefficient routes were protected from competition, unprofitable lines were preserved, and innovation to improve service or cut costs was thwarted. Railroads could not earn adequate returns, so they had little incentive or ability to invest in their networks. They deferred spending on infrastructure, which caused large portions of the rail system to deteriorate. Money flowed out of railroading and into other, more promising ventures.

The Staggers Act gave railroads the freedom and flexibility to improve their economic condition. Reforms encouraged railroads to consolidate operations, abandon under-used track, eliminate inefficient routes and interchanges, and extend single-line movements to produce higher densities and thus more efficient service. Equally important was the recognition that

railroads must be allowed to price based on the demand for their services. Contract rates largely replaced tariff rates. General rate increase proceedings and rate setting through rate bureaus that protected high-cost carriers and routes gave way to negotiations and individual carrier price documents.

Union Pacific's experience echoed the industry's. In the decades following passage of the Staggers Act, we invested heavily in rationalizing our network, eliminating inefficient routes and interchanges, improving our infrastructure, and increasing our productivity, especially in our yards and terminals. We passed along the majority of the benefits from this investment and increased productivity to our customers in the form of reduced rates, improved service, and access to new markets. Our customers continue to reap the benefits of this investment and increased productivity to this day.

Union Pacific's current system is the result of network rationalization encouraged by deregulation. We reconfigured six railroads to create a single, more efficient rail network that provides stronger competition and better service to customers. Since 1982, when we started to implement our consolidation with the Missouri Pacific and the Western Pacific, we have been building a network that maximizes single-line service and expedites customer shipments:[3]

- The *UP/MP/WP* merger enhanced competition and opened new markets by providing shippers with new, single-line access to the Pacific Northwest, northern and southern California, the Rockies and Plains States, the Midwest, and Gulf Coast ports. For example, export grain shippers gained greater flexibility to choose between West

[3] Single-line service means that movements originate and terminate on a single railroad. A basic premise of each agency decision approving railroad consolidations was that single-line service was superior to less efficient service provided via separate carriers using interchange. As the agency explained in one of its decisions: "Interchange operations can be eliminated, reducing both operating and overhead costs and transit time; transaction costs are reduced; and incentives to provide less than efficient service . . . are reduced. Thus, speed, reliability, and handling are enhanced." *See CSX Corp. – Control – Chessie System, Inc. & Seaboard Cost Line Industries, Inc.*, 363 I.C.C. 521, 553 (1980).

Coast and Gulf Coast ports and to access Mexican markets. The new system also became more competitive with motor carriers by combining routes to create more efficient run-through services. *See Union Pacific Corp. – Control – Missouri Pacific; Western Pacific*, 366 I.C.C. 462, 489-91 (1982).

- The *UP/MKT* merger enhanced competition by promoting single-line movements of grain and other products from points served by the Missouri-Kansas-Texas Railroad to Union Pacific-served Mexican gateways, points on the West Coast and in the Southwest, and Union Pacific-served ports. It also enhanced competition with other railroads and motor carriers by consolidating and rerouting traffic to create more efficient movements and faster, more frequent service in Texas, Kansas, and Oklahoma. *See Union Pacific Corp. – Control – Missouri-Kansas-Texas R.R.*, 4 I.C.C.2d 409, 429-31 (1988).

- The *UP/CNW* merger followed earlier transactions in which Union Pacific had helped bankroll Chicago & North Western's build-in to the Southern Powder River Basin, which dramatically expanded competition for coal shippers. The merger further enhanced competition by providing all shippers a more efficient, attractive option between the West Coast and Chicago, and between Upper Midwest points and markets in Kansas, Oklahoma, and Texas, and by providing lower cost, single-line service between CNW-served grain origins and Union Pacific-served destinations. *See Union Pacific Corp. – Control – Chicago & North Western Transportation Co.*, FD 32133, Decision No. 25, slip op. at 65-66 (ICC served Mar. 7, 1995).

- The *UP/SP* merger dramatically enhanced competition by providing unprecedented opportunities for improved routings and new single-line service across the Western U.S. The merger also significantly enhanced competition by giving BNSF Railway Company ("BNSF") access to broad portions of Union Pacific's network through more than 4,000 miles of trackage rights, which created new single-line opportunities for BNSF's existing shippers, and which ensured that every shipper that was served prior to the merger by Union Pacific and Southern Pacific, but by no other railroad, retained two-carrier service. *See Union Pacific/Southern Pacific Merger*, 1 S.T.B. 233, 252-53, 381 (1996).

Union Pacific reduced costs and improved service by systematically eliminating interchanges between component carriers, developing transportation plans and blocking plans that allowed traffic to bypass yards, abandoning or redeploying redundant rail lines, closing or repurposing yards that were no longer needed, and consolidating rail-car fleets. Thousands of shippers enthusiastically supported these transactions, recognizing that our mergers would increase competition by creating more single-line service, shorter routes, faster transit times,

lower costs, and many other significant efficiencies. Mr. Butler provides specific examples of these competition-enhancing benefits in his statement.

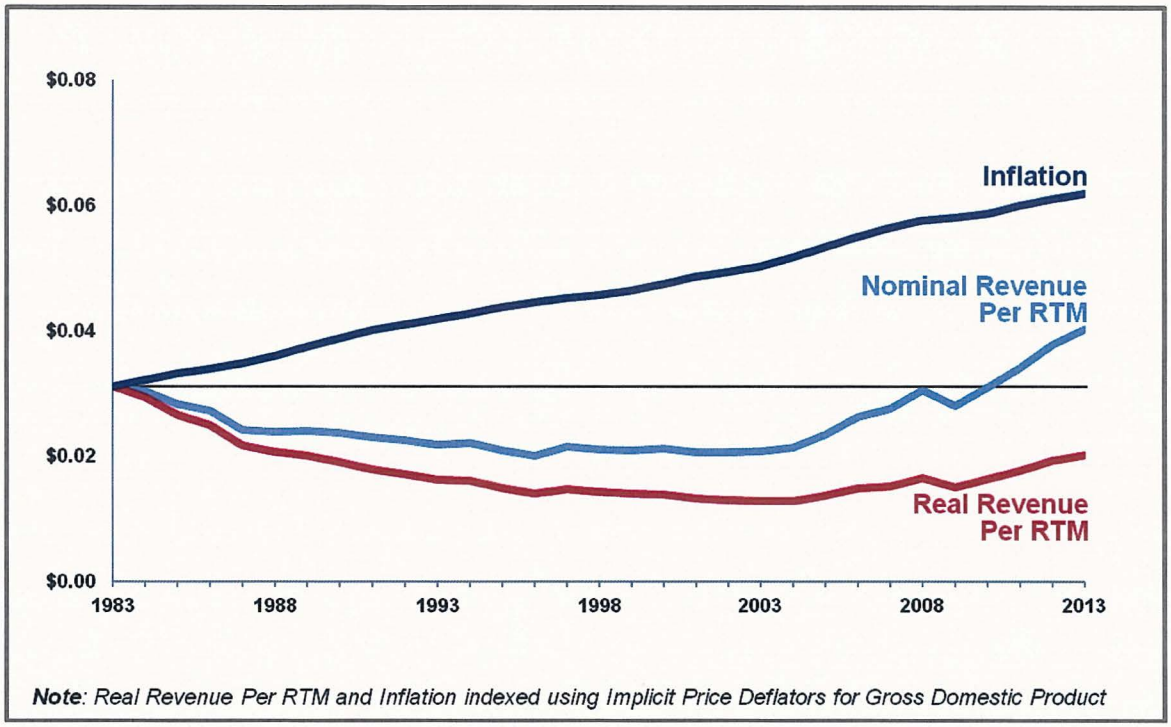
Claims that mergers are responsible for increases in rail rates have no basis in fact. Mergers helped *reduce* rates by increasing efficiency and enhancing rail competition. Some mergers created entirely new rail-to-rail competition, as well as enhancing the ability of the merged carriers to compete against other railroads, trucks, and water carriers. For example, Union Pacific's merger with Southern Pacific created new rail-to-rail competition in the Seattle-Los Angeles "I-5" corridor as part of an agreement with BNSF. *See Union Pacific/Southern Pacific Merger*, 1 S.T.B. at 564-65.

The Board or the Interstate Commerce Commission carefully reviewed each merger proposal. Where necessary, conditions were imposed to ensure that no shipper would lose the benefits of competition. *See Central Power & Light Co. v. S. Pac. Transp. Co.*, 1 S.T.B. 1059, 1071 n.18 (1996). Throughout the entire period of rail industry consolidation, and for years afterwards, rail rates declined. *See* STB, *Study of Rail Rates: 1985-2007* (Jan. 16, 2009).

Each of Union Pacific's mergers was subject to the same type of careful agency review and competition-preserving conditions as other rail industry mergers.[4] And, they all produced a similar reduction in rates. Our rates fell in real dollar terms and nominal terms for two decades, from the *UP/MP/WP* merger in 1983 through 2003. Even now, three decades later, our real rates remain below 1983 levels, and our nominal rates remain below the levels our customers would be paying if rates had merely tracked inflation, as shown below in Figure 1.

[4] *See, e.g., Union Pacific/Southern Pacific Merger*, FD 32760 (Sub-No. 21), Decision No. 21, slip op. at 3-4 (STB served Dec. 20, 2001) ("the merger has resulted in strengthened competition for 2-to-1 shippers, 3-to-2 shippers, shippers of key commodities affected by the merger, and shippers in every rail corridor and region affected by the merger" (footnotes omitted)).

Figure 1: Rates Since 1983 (in dollars) (Butler VS, ELB-5)



2. We have made massive capital investments.

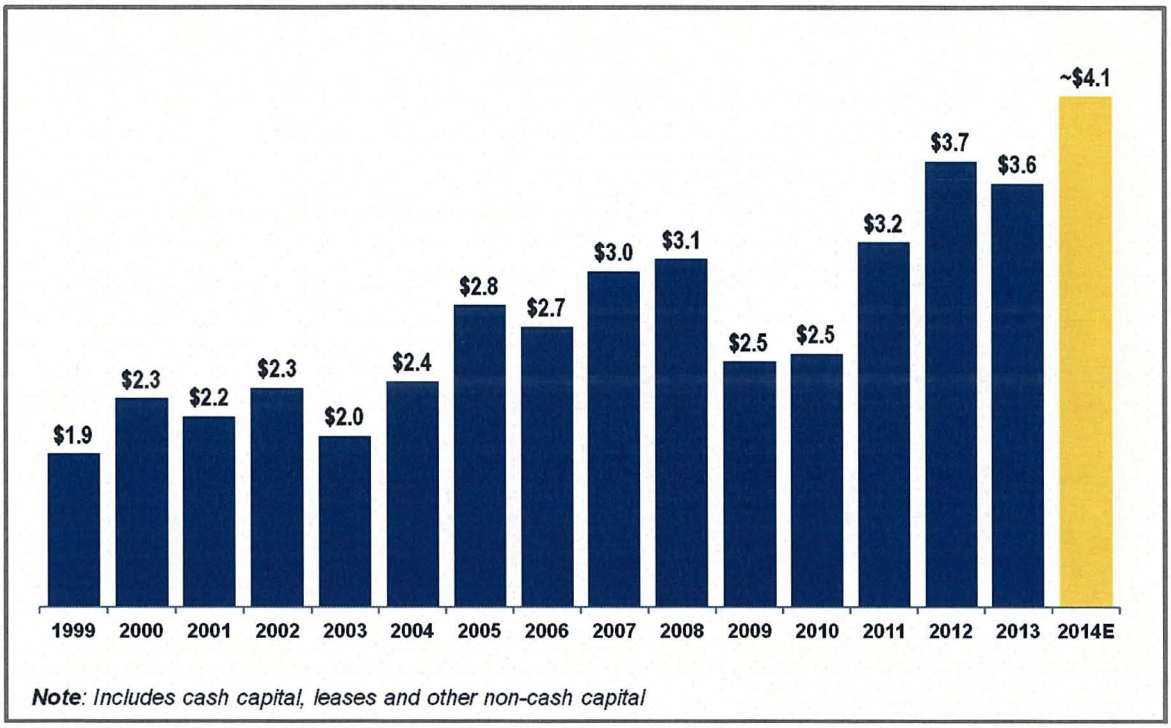
As Union Pacific implemented our consolidations and service improved, we attracted more business. As we have previously shown,[5] by 2003, the rail industry, and Union Pacific in particular, had left behind the era of surplus capacity that characterized much of the nation's rail network in the latter part of the 20th century. Rail traffic was booming. In late 2003, with higher volumes consuming available capacity, we significantly expanded capital spending to improve our service and accommodate the rapidly growing demand. We acquired more than 1,500 new locomotives and dramatically increased our investment in track and terminal capacity expansion. We were able to fund these investments because we set rates based on marketplace demand. Our

[5] *See* Reply Comments of Union Pacific Railroad Company, Reply Verified Statement of John J. Koraleski ("Koraleski EP 705 Reply VS") at 9-11, *Competition in the Railroad Industry*, EP 705 (May 27, 2011).

investments propelled record levels of performance in providing high-quality, reliable service that delivered value to customers.

As business increased, we invested even more in our network. This investment was possible because our management and shareholders believed we would have the opportunity to earn market-based returns. We have continued to ramp up investment in recent years. Between 1999 and 2013, we devoted more than $40 billion to capital expenditures, as shown below in Figure 2. The $40 billion includes more than $13.3 billion in capital to support network expansion.

Figure 2: Capital Investment (billions) (Butler VS, ELB-8)



From 1999 to 2008, our capital expenditures grew by 63 percent, reaching a high of $3.1 billion in 2008. When the recession decreased carloadings and railroad earnings fell, we pulled back on capacity investment both as a prudent move to preserve liquidity and because we had significant excess capacity due to the dramatic decrease in carloads. However, our capital

spending remained robust, exceeding levels in any year before 2005. In fact, we used the opportunity to reduce aggressively the miles of slow orders on our lines, so that the railroad could provide stronger service as traffic returned.[6]

As the economy began to recover, we increased capital spending, even as carloadings recovered more slowly (in large part due to market and regulatory changes that reduced our coal loadings). From 2011 through 2013, we invested at levels above the record-setting, pre-recession levels, even though our carloadings remained well below their pre-recession levels. We plan to invest a record $4.1 billion in 2014.

Union Pacific has used this high level of capital spending to expand service offerings, enhance productivity, and provide quality service to our customers. The result has been more traffic and stronger financial performance. As discussed below and in Mr. Butler's statement, we continue to identify new capital projects that will expand and improve service for customers. Whether we can make those investments will depend on whether we continue to have the opportunity to earn market-based returns.

3. We have grown business.

Union Pacific's improved financial condition owes much to our sustained efforts to attract and retain business. As our service improved and more shippers began taking advantage of the improved routings and new single-line service that our mergers made possible, our traffic grew. In 1983, the railroads that make up the present-day Union Pacific originated 3.77 million carloads. By 1990, originations had increased to 4.55 million carloads. By 1995, the year before the Union Pacific/Southern Pacific merger, originations had increased to 5.59 million carloads.

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[6] *See* Comments of Union Pacific Railroad Company, Verified Statement of Lance M. Fritz at 11-12, *Competition in the Railroad Industry*, EP 705 (Apr. 12, 2011).

By 2000, originations jumped to 7.38 million carloads. In 2005, originations were 7.87 million carloads, and in 2006, our originations hit their all-time peak of 8.13 million carloads.[7]

Until recently, originations have been below peak levels, in substantial part because of the recession and the reduced demand for coal. However, business has come roaring back. Our network is again straining to meet demand. Our 7-day carloadings averaged 190,755 in July. This is close to our record annual average of 191,968, which was set during the economic boom in 2006. Our current carloadings are even more impressive given the reduction in coal demand.

Union Pacific is facing growing demands on our network not only because overall traffic levels are once again approaching record levels, but also because of the nature of the demand, as Mr. Butler explains. For example, a significant portion of the increased demand involves frac sand, which is used to support drilling activity for energy products, and plastics and industrial chemicals, which are expected to be produced in increasing quantities as companies expand to take advantage of lower natural gas prices in the U.S. We cannot simply use track capacity made available by lower coal volumes to handle this traffic, because much of the new demand is concentrated in the eastern third of our network. Moreover, many of these products require handling in yards or terminals that are increasingly capacity constrained.

The demands on our network are also continuing to grow because of our success in converting traffic from truck-to-rail as a result of our long-term investments in improving service. Despite the recession, our domestic intermodal traffic increased by 27 percent from 2004 through 2013. Our vigorous and successful pursuit of this highly-competitive business shows that we have improved our financial condition by competing effectively, not by exercising market power.

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[7] *See* AAR Analysis of Class I Railroads (1980-2012).

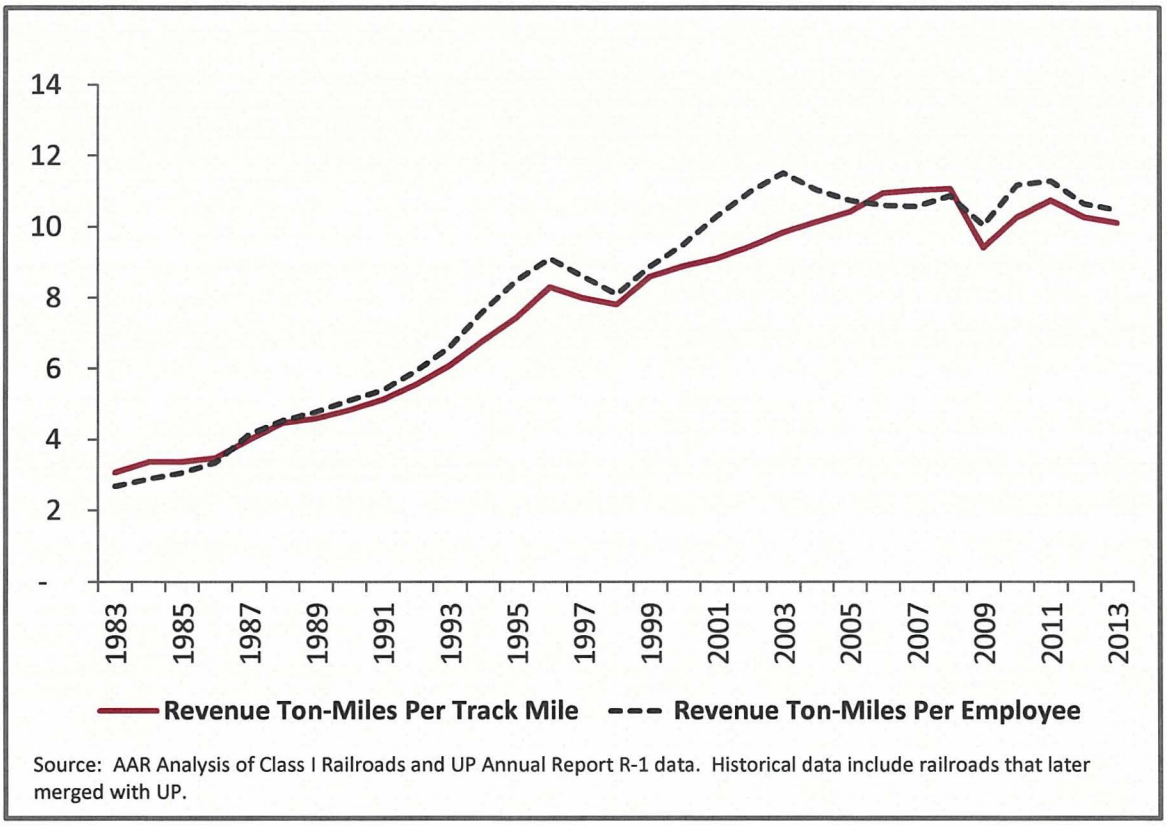
4. We have increased productivity.

Union Pacific's improved financial condition also owes much to our investments in increasing the productivity of our operations. As discussed above, we have invested billions of dollars to increase productivity by restructuring our rail network. Through consolidations and the expansion of single-line service, we eliminated costly interchanges. We developed operating plans that allowed us to concentrate traffic on high-capacity, higher-density corridors and move cars from origin to destination as efficiently as possible. And we improved the productivity of our yards and terminal facilities. This allowed us to redeploy under-used lines and terminal facilities. This also reduced cycle times, which improved locomotive and freight car utilization.

Union Pacific also made massive investments in productivity unrelated to consolidations. We invested in computer systems that allowed us to reduce clerical staff. We invested in improved track materials and track maintenance technologies that extended the lives of track assets. We invested in new dispatching technologies, including new signaling systems. We invested in more reliable, more fuel efficient locomotives. We invested in distributed power, which allows us to reduce crew expense, enhance capacity, and reduce fuel consumption. We also continued to refine our operating plans and processes. And, we substantially improved productivity by negotiating labor contracts that allowed us to reduce crew sizes.

Professor Murphy discusses our history of productivity growth and shows how productivity increased using several measures. Two of those measures – revenue-ton miles of freight per track and revenue ton-miles of freight per employee – are shown below in Figure 3.

Figure 3: Productivity Growth (Murphy VS, KMM-4 and KMM-6)



Our productivity gains not only benefited Union Pacific, they also provided tremendous benefits to our customers. They allowed us to become a stronger competitor for traffic, while real rate levels fell. Congress anticipated that the Staggers Act would allow railroads to improve their financial condition by increasing their rates.[8] Congress believed the benefits of a stronger rail network for shippers would outweigh the rate increases. In fact, shippers benefited much more than was anticipated. As shown above in Figure 1, we made such dramatic productivity gains that real rates fell for more than 20 years, and they remain below the levels that existed three decades ago.

[8] *See, e.g.*, S. Rep. No. 96-470, at 7 (1979) ("The Committee believes that it is important to assist the carriers in achieving adequate rate levels. Noncompensatory rates must be eliminated. Rates that are marginally profitable should be increased whenever possible, where such increases will not result in diversion of traffic.").

As Mr. Butler explains, our customers today benefit from our past investments in productivity whenever they use our service. They are enjoying the fruits of our consolidations and restructuring efforts, as well as our decades of investment in improving operating processes, equipment, and technology. Their traffic moves over shorter routes. It requires less handling. It moves in faster, more efficient, and more reliable trains. For example, customers shipping traffic between Los Angeles and Dallas, and Los Angeles and Memphis, and along many other routes continue to benefit from the shorter routes made possible by our merger with Southern Pacific, which reduce transit times and improve utilization of their cars. Customers shipping traffic in the corridor from Texas to Southern Illinois continue to benefit from the directional running we instituted by combining our mainline tracks with Southern Pacific's, thereby increasing network capacity, decreasing transit time, and improving reliability. Coal and grain customers today ship their traffic in longer, more efficient, and more reliable trains, thanks to our past investments in longer sidings and distributed power.

Union Pacific continues to invest and innovate to improve productivity. As Figure 3 shows, our rate of productivity growth has slowed with the completion of major restructuring activities, and that has important consequences with regard to our need for greater investment to expand capacity in the future, as Professor Murphy explains, and as we discuss in Part III. But our pursuit of cost savings still plays an important role in improving our financial returns. By continuing to refine transportation plans and target investment to eliminate network bottlenecks, we continue to produce savings of crew and equipment costs. We are reducing fuel consumption rates by investing in new, fuel efficient locomotives and improving our training and operating practices. We are continuing to invest in detector technology and to refine our maintenance practices to reduce costly service failures.

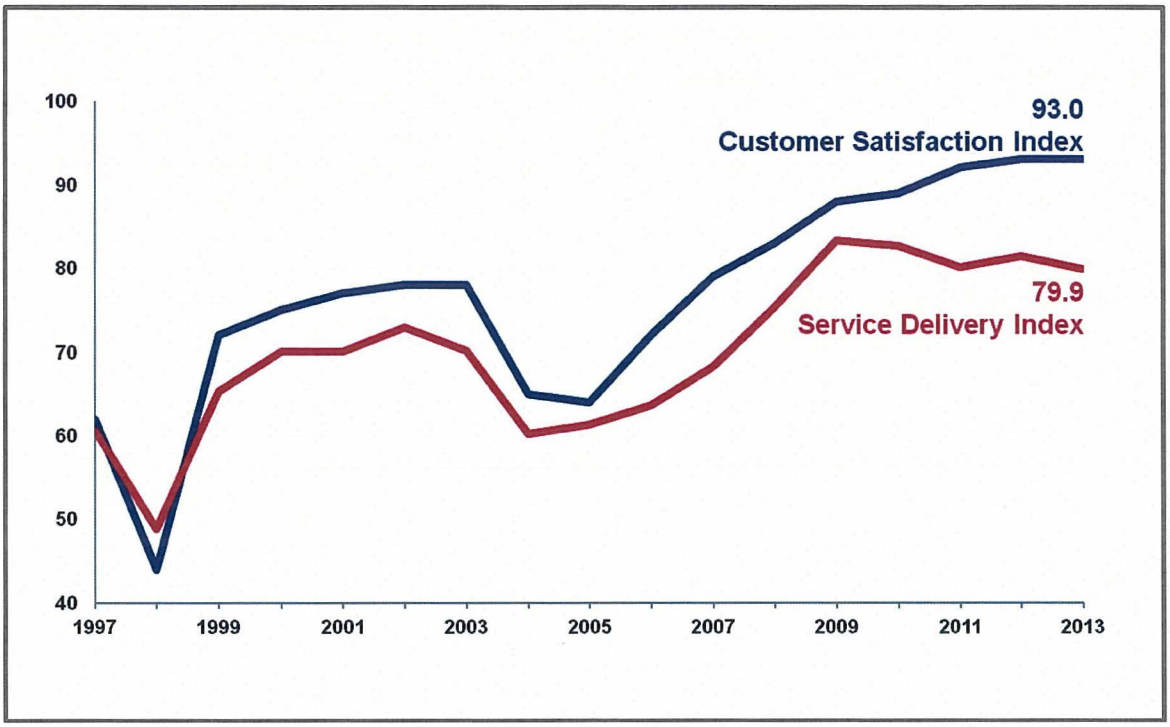
These productivity enhancements continue to benefit our customers. They reduce cost pressures on rates, even though they are no longer massive enough to offset increasing operating costs, as they were during the first two decades after the passage of the Staggers Act. And they enhance our ability to provide the reliable, high-value service our customers are demanding.

5. We have increased the value of our service.

Union Pacific's improved financial condition is also due in large part to improvements in service that have increased the value we provide to our customers. As Mr. Butler explains, our customers are willing to pay more for service that provides more value for their businesses, and we have worked hard to improve the value of using our rail service. Our service improvements provide the capacity, speed, and reliability that allow our customers to be stronger competitors for their customers' business and reduce their supply chain costs.

As Mr. Butler describes, one of the best indicators of how our customers view our service and its value to them is our Customer Satisfaction Index ("CSI"). As shown below in Figure 4, after a disappointing performance in 2004-05, when we lacked sufficient employees to meet customer needs when traffic surged, our CSI began a steady climb. By 2007, our CSI had returned to previous levels, but it did not stop rising. We began setting customer satisfaction records and continued setting them.

Figure 4: Customer Satisfaction and Service Delivery Indices (Butler VS, ELB-4)



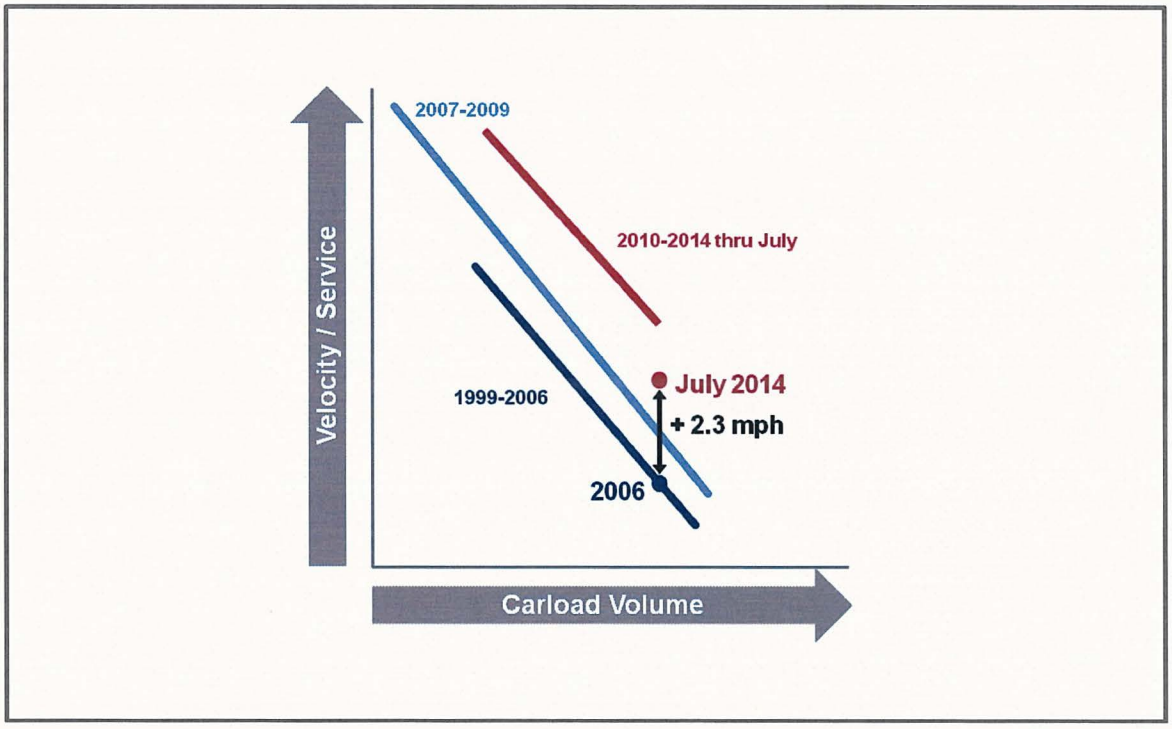
The foundation for achieving these levels of customer satisfaction is rigorous planning and heavy investment that allows us to move more freight faster than before. As part of this planning and investment, we provided for "surge" resources, such as extra locomotives, that could quickly be placed into service to help us respond to unexpected challenges, including spikes in demand and service interruptions.

Union Pacific recognizes that certain of our service metrics have declined in 2014 as the result of an unusually harsh winter, spring flooding, and unexpectedly strong growth in demand, especially over the eastern third of our network. But our performance is actually quite impressive when placed in perspective. As noted above, our 7-day carloadings averaged 190,755 this past July. Compared with the last time we were moving a similar volume over a sustained period, our average train speed is 2.3 miles per hour faster. As Mr. Butler explains, just a one mile per hour

increase in velocity makes available the resources equivalent to about 200 locomotives and the work of more than 250 train-crew employees.

As Mr. Butler also explains, there will always be a trade-off between the volume of traffic a railroad handles and the speed at which traffic moves: all other things being equal, adding more traffic will reduce average velocity. But we have made significant investments in improving our network and designing our operating plans to improve that trade-off – that is, to move any given volume of traffic at higher velocities. Our success in achieving that objective is shown below in Figure 5.

Figure 5: Service-Volume Equation (Butler VS, ELB-1)



This figure shows that Union Pacific has improved the velocity/volume trade-off over the years. It shows that we have been raising our service to new levels. This is one important way that we are providing better value to our customers, while generating greater returns for our investors.

6. We have increased contribution from across our traffic base, especially from traffic exempted from regulation.

Union Pacific's traffic data confirm that our improved financial condition is attributable to successfully operating in a competitive environment. Shippers have claimed that our pricing behavior changed in 2004-05.[9] We agree that our rates began to rise more rapidly in that period. The disagreement is about why. Mr. Butler explains that our rate increases reflect market-based changes in an era of increasing demand, loss of surplus capacity, rising costs, and declining productivity gains.[10] These factors would be expected to lead to higher prices in a competitive marketplace. Yet, shippers have claimed that Union Pacific and other railroads have been increasingly exploiting shippers with fewer competitive alternatives.

Professor Murphy evaluates shipper claims by examining changes in two metrics between 2004 and 2012: contribution margin and R/VC ratio. Contribution is the difference between revenues and variable costs; it is the portion of our revenue available to cover our fixed and common costs, including the costs of providing a return on investment. Contribution margin is the ratio of contribution to revenue. R/VC ratios are a measure that is familiar to the Board as the ratio of revenue to variable cost.

Professor Murphy explains that if shippers were correct that rate increases since 2004 reflect the exercise of market power, one would expect to see the contribution margin for traffic with fewer competitive options increasing faster than the margin for traffic with more options. However, his analysis shows the opposite: our contribution margin from traffic types that have

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[9] *See, e.g.*, Comments of Western Coal Traffic League at 20, *Competition in the Railroad Industry*, EP 705 (Apr. 12, 2011); Escalation Consultants, Inc., *Analysis of Freight Rail Rates for U.S. Shippers* at 2-6 (Mar. 2014).

[10] *See also* Koraleski EP 705 Reply VS at 8-11.

been exempted from regulation – that is, plainly competitive traffic – increased at a faster pace than our contribution margin from traffic types that are potentially subject to regulation.

Professor Murphy's analysis shows that our contribution margin on both exempt and non-exempt traffic increased between 2004 and 2012, but the margin on exempt traffic increased at a faster pace. The contribution margin on exempt traffic increased by 12 percentage points, while the margin on non-exempt traffic increased by only 8 percentage points. His results are shown in below in Figure 6.[11]

Figure 6: Changes in Contribution Margins (Murphy VS, KMM-18)

	2004	2012	Percentage Point Difference
Non-exempt	{ }	{ }	8%
Exempt	{ }	{ }	12%

Professor Murphy examines changes in R/VC ratios for much the same reason he examines changes in contribution margin: if shippers were correct that rate increases since 2004 reflect an abuse of market power, one would expect R/VC ratios for non-exempt traffic to increase at a faster pace than R/VC ratios for exempt traffic. However, Professor Murphy's analysis shows that our R/VC ratios for exempt traffic increased at a faster pace than R/VC's for non-exempt traffic, as shown below in Figure 7.

Figure 7: Changes in R/VC Ratios (Murphy VS, KMM-18)

	2004	2012	Percent Change
Non-exempt	{ }	{ }	14%
Exempt	{ }	{ }	17%

In sum, our data show that our improved financial condition reflects broad-based growth in contribution from all traffic, not the exercise of market power.

[11] Material within brackets has been redacted from the public version of these Comments.

B. Competition for all types of business has remained strong as Union Pacific's financial condition improved.

That Union Pacific's improved financial condition is attributable to successfully operating in a competitive environment is additionally confirmed by evidence of the competition we face every day in seeking every type of business. As Mr. Butler explains, we face continuous and pervasive competition from other railroads and other modes of transportation, including trucks, barges, water carriers, and pipelines. Competition not only continues to protect customers from abuse of market power, but also spurs us to make substantial investments in improving our facilities, processes, and services to capture and retain business. In our experience, our customers want low rates, but they also want more. They want reliability, service offerings that allow them to enter new markets, and safe and secure transportation for their products and raw materials, all of which affect their total logistics costs and their ability to compete in today's global economy. They also want to know that we are continuing to invest in both infrastructure and productivity to meet their future needs.

We compete for business across all these dimensions because customers weigh the value of the service we provide against the price we offer in deciding whether to ship with us or someone else. When we invest in improving service, customers are willing to pay more for the higher level of service. Unless the Board considers the full value proposition we offer, it would blind itself to the full breadth of competition.

The sections below summarize Mr. Butler's more detailed discussion of the competitive nature of the marketplaces in which each of our business groups operates.

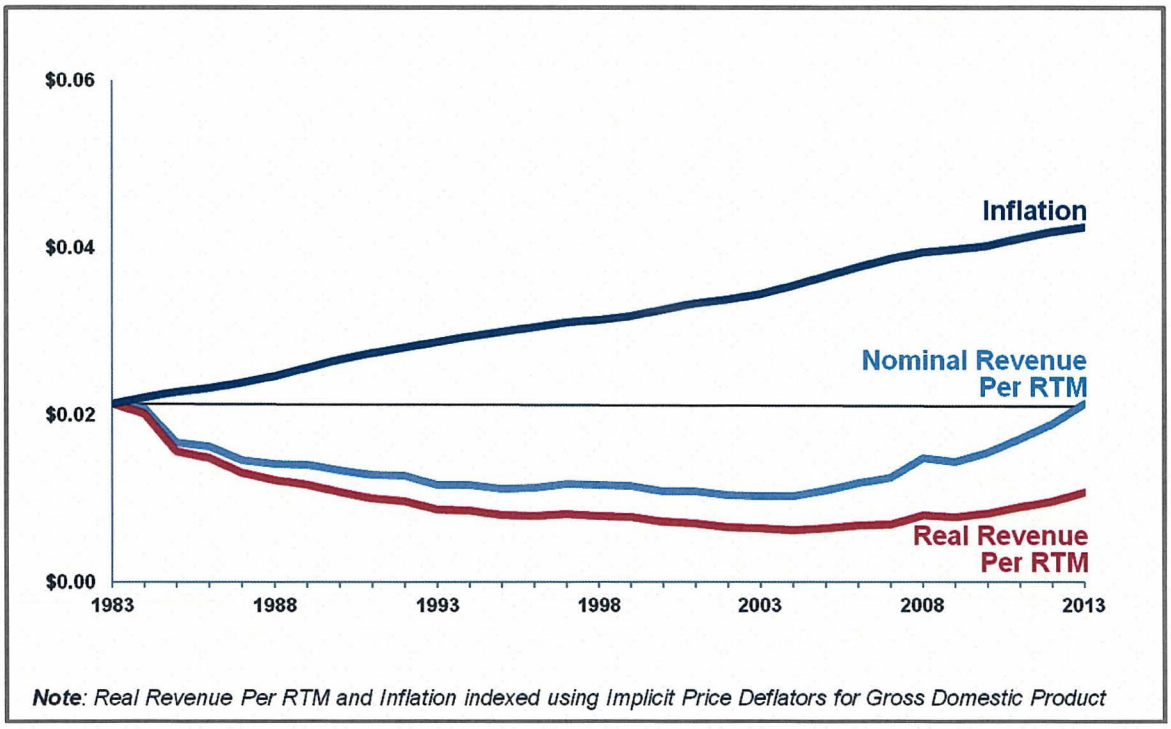
1. Competition for coal traffic remains strong.

Union Pacific faces intense direct and indirect competition for coal. We continue to compete head-to-head with BNSF for most of our coal business, just as we have since we entered

the Southern Powder River Basin ("SPRB") in 1984. Our coal business also faces significant competitive pressures from low-priced natural gas and renewable sources of energy, such as solar and wind power.

Union Pacific's coal customers have benefited greatly from our vigorous competition with BNSF. The last 30 years have seen dramatically declining rates and increasing investment. Our rates have increased in recent years as we renegotiated long-term contracts that contained unsustainably low rates, but our coal customers are still getting an excellent deal. As shown below in Figure 8, our revenue per revenue-ton mile for this business remains below 1983 levels in real terms, and current nominal rates are 50 percent lower than if they had tracked inflation.

Figure 8: Coal Rates Since 1983 (Butler VS, ELB-12)



***Note**: Real Revenue Per RTM and Inflation indexed using Implicit Price Deflators for Gross Domestic Product*

Union Pacific's customers continue to benefit from our competition with BNSF. Recent contract negotiations provide examples of situations in which traffic shifted from us to BNSF, situations in which we wrested business from BNSF, and situations in which we retained

business { }. Mr. Butler also describes one situation in which Union Pacific recently lost business that we had held for years { }. These are just the latest battles in a fierce competition for business that has continued unabated for three decades.

Union Pacific's coal business has also had to respond to significant product competition, especially from natural gas. New horizontal extraction techniques have revolutionized production of natural gas, greatly expanding the domestic supply and reducing its cost. As a result, electricity from natural-gas fired plants is displacing electricity from coal-fired generation. In addition, the government's environmental and tax policies are favoring renewable sources of energy and imposing significant costs on coal-fired generation, further reducing consumption of coal.

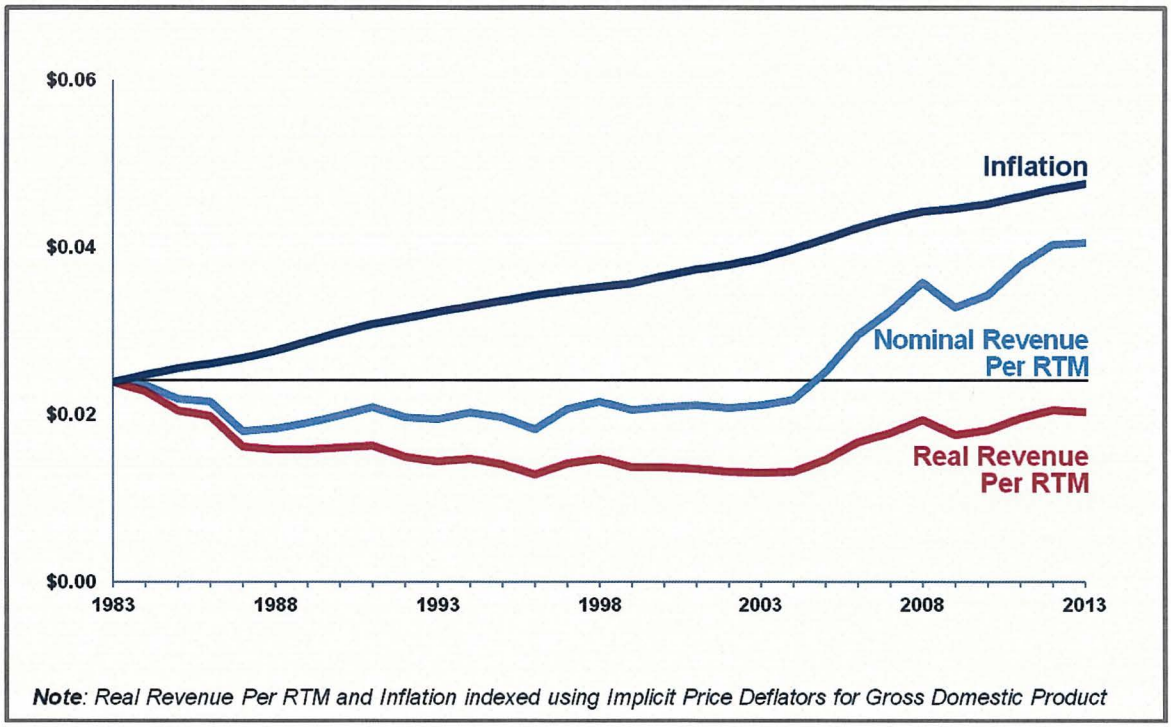
Union Pacific's record of investment also reflects the highly competitive nature of the coal business. Since entering into the SPRB, we have invested in more expensive locomotives and constructed longer sidings. We also incentivized our customers to use higher-capacity aluminum cars. All of this allows us to deliver more coal with each train, thus keeping down costs and rates. Between 2004 and 2010, to ensure we would have sufficient capacity to meet our customers' long-term service needs, we invested nearly $600 million in new coal capacity, including $470 million in our SPRB coal corridors. These investments were made when SPRB volumes were expected to exceed 400 million tons in 2008 and keep growing. However, the marketplace changed, and the forecasted volumes have not materialized. In this environment, we have every incentive to continue setting our coal rates at competitive levels to retain and attract business.

2. Competition for agricultural products traffic remains strong.

Union Pacific faces intense competition for agricultural products business, which consists of transportation of whole grains, grain products (including ethanol), feed commodities, and other food and refrigerated products. We battle for business with other railroads, trucks, and barges for movements of agricultural products. In fact, agricultural products move primarily by truck or barge, not rail. We also face significant source competition. Many shippers are served by other railroads, and we have a strong interest in working with our customers to allow them to remain competitive in their markets, so they can expand the business they give to us.

Union Pacific's rates for agricultural products traffic continue to provide outstanding value for our customers. When the market environment for our transportation began to change, our rates for grain, which were mostly in tariffs, and for food products, which were exempt, were adjusted more rapidly than business with long-term contracts. Yet the rate levels are still low. As shown below in Figure 9, our revenue per revenue-ton mile for this business remains below 1983 levels in real terms, and current nominal rates are 15 percent lower than if they had tracked inflation.

Figure 9: Agricultural Products Rates Since 1983 (Butler VS, ELB-15)



Union Pacific's efforts to compete for agricultural products traffic are reflected not only in our low, market-based rates, but also in our work to improve our service and to develop new services to attract and retain business. Shuttle trains are the most popular and successful recent innovation in grain transportation. They allow us to move more grain traffic with any given level of equipment, and we offer incentives to customers for loading and unloading shuttle trains in a timely manner. We have developed truck-competitive premium services for shipments of refrigerated products. We have also developed an innovative, intermodal "plant-to-port" service that involves transloading grain to marine containers for export. In addition, our agricultural customers are the primary beneficiaries of a web-based monitoring tool we recently developed to track shipments in boxcars, refrigerated boxcars, and food-grade covered hoppers.

Union Pacific has also made substantial capital investments to improve our competitive posture. We have the largest refrigerated boxcar fleet in the railroad industry. We have also been

acquiring thousands of new covered hoppers to carry agricultural products, including more than 880 cars that we recently added to our fleet in response to strong demand in grain markets in late 2013, and we intend to add at least 700 additional covered hoppers to our fleet in 2014.

These investments involve significant risk. Our grain business can vary significantly depending on the size of the harvest and demand conditions in national and global markets. Rail cars will be in high demand in one year, and then sit idle in others. As Mr. Butler describes, in 2008, we picked up our car acquisition programs, only to see thousands of covered hoppers sit idle until recent record harvests. Nonetheless, so long as we can charge rates that give us an opportunity to earn market-based returns, we can respond to market signals for additional investment and provide the highly competitive services our customers desire.

3. Competition for chemicals traffic remains strong.

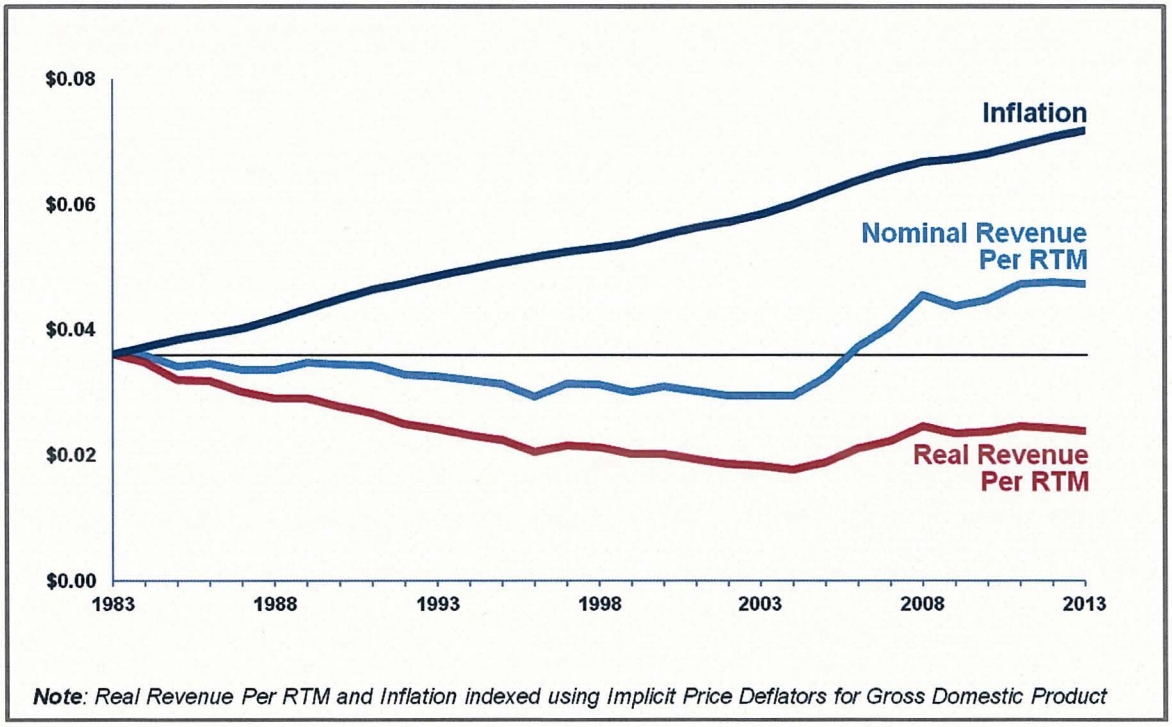
We continue to face strong competition for chemicals business. A large part of Union Pacific's chemicals business involves transportation of petrochemicals to and from the Gulf Coast region. Petrochemicals include industrial chemicals, plastics, petroleum products, and liquid petroleum gases. We also transport fertilizer, soda ash, and a variety of other chemical products.

Many Union Pacific-served chemical facilities have rail access to BNSF and Kansas City Southern Railway ("KCS") directly or via short lines or terminal railroads, and many have the additional option of moving traffic by water, pipeline, or truck. Our customers with facilities served solely by Union Pacific often have plants at other locations, so they can divert production to facilities served by other railroads if they are dissatisfied with our rates or service terms. In fact, customers sometimes expand production at locations only we serve, even when they could choose a location served by multiple railroads, because they have many options for obtaining

competitive rates and service terms for production at the location we serve. Our customers do not hesitate to remind us about their many competitive options.

Union Pacific competes for chemicals business by providing competitive rates and high-quality service to create value for our customers. Competition has kept our rates down. As shown below in Figure 10, our revenue per revenue-ton mile for this business remains below 1983 levels in real terms, and current nominal rates are 34 percent lower than if they had tracked inflation.

Figure 10: Chemicals Rates Since 1983 (Butler VS, ELB-18)



Union Pacific's experience is that service plays a critical role when our chemical customers choose among their transportation options. We have therefore devoted considerable effort to improving service and thus the value we provide to our customers. Most of our chemical customers own or lease the cars they use, so when we reduce cycle times, we allow them to maintain smaller fleets, which saves them money. Our reliable service also provides significant

value to our customers whose production processes require a constant flow of material to avert costly shut-downs. We have had success in using our strong service to convert business from truck to rail.

As Mr. Butler explains, Union Pacific is also investing heavily to attract and retain chemicals business. In 2012 and 2013, we invested $425 million to expand capacity in our Southern Region, which includes the Gulf Coast. We have been upgrading lines, improving and expanding terminals and yards, installing and extending sidings, and upgrading signal systems to improve throughput. In the same period, we also invested more than $1 billion to maintain, replace, and improve the integrity of our network infrastructure in the Southern Region, which is critical for providing safe, reliable transportation of chemical products.

The investments we are making in our chemicals business involve significant risks. The production of petrochemicals in the U.S. is expected to grow because of the availability of low-cost, domestic natural gas, which is a critical feedstock in the production process. Whether our investments in capacity generate economic returns ultimately depends on our ability to compete successfully for additional traffic, as well as events beyond our control, including developments in global energy markets and the demand for our customers' products. But it is the prospect of earning market-based returns that spurs us to respond with increased investment to chemicals markets that are signaling a desire for additional capacity.

4. Competition for industrial products traffic remains strong.

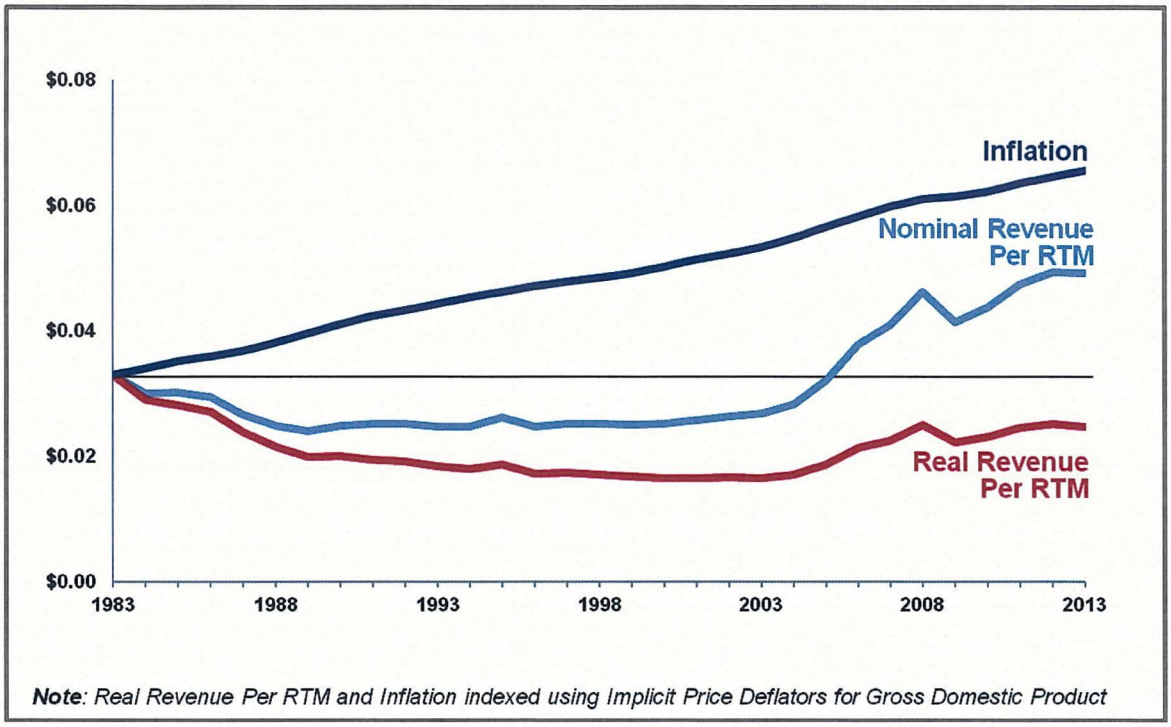
Union Pacific's industrial products business faces pervasive competition from other railroads, trucks, and other modes, as well as product and geographic competition. Our industrial products business includes shipments of hundreds of commodities between thousands of origins and destinations. The traffic includes lumber, other construction materials, metals and minerals, paper and consumer goods, frac sand, and countless other products.

Union Pacific faces intense competition from trucks for almost all of these products. Trucks typically offer shippers advantages in terms of cycle time and speed that railroads cannot match. In addition, these products often move in relatively smaller quantities to a variety of destinations, which can make trucks more economical than rail. And, many of these products move to or from locations that are not directly served by rail, so they must be loaded onto trucks for at least some portion of the move. All this means we must provide high-quality service and rates that represent good value to capture the business.

Where Union Pacific has advantages over trucks, we face competition from other railroads – primarily BNSF. Those shippers that are directly served exclusively by Union Pacific or BNSF often transload their products to the other railroad. Where transloading is not feasible, our rates are still constrained by product and geographic competition: the products our customers ship can often be sourced from other locations served by other carriers, so we are competing against those other carriers when we establish rates for our customers.

Because Union Pacific's industrial products traffic comprises a large variety of products and the mix of traffic changes over time, it is difficult to compare rates across different periods. Since most of this traffic is exempt and even the non-exempt traffic is often for short-duration moves, there are relatively few long-term contracts. Thus, rates could adjust to recover increased costs more quickly. However, our rates reflect the highly competitive nature of the marketplaces for transportation of these many products. As shown below in Figure 11, our revenue per revenue-ton mile for our industrial products business remains below 1983 levels in real terms, and current nominal rates are 25 percent lower than if they had tracked inflation.

Figure 11: Industrial Products Rates Since 1983 (Butler VS, ELB-21)



Union Pacific's effort to compete for industrial products business is also reflected in our record of investment and innovation to attract and retain industrial products traffic. For example, since 2004, we have rebuilt the entire Southern Pacific line from Portland, Oregon, to Northern California, a route that is heavily used for lumber transportation, and we have expanded capacity in yards across our network to handle growth in manifest traffic, including shipments of frac sand and steel pipe.

Union Pacific's industrial products traffic is highly variable, which creates substantial challenges when making investment decisions. In 2005, in the midst of a booming construction market, we spent millions of dollars to lease centerbeam cars, which are used to move lumber, only to have hundreds of those cars sit idle during the recession. More recently, we have been investing heavily to support growth in demand for frac sand. These investments also involve significant risks, as the anticipated returns depend on assumptions about future volume of natural

gas and petroleum production and the rates we will be able to charge. So far, however, we are responding to market signals for investment under the assumption we will be able to charge market-based rates.

5. Competition for automotive traffic remains strong.

Union Pacific faces intense competition for automotive business, which consists of transportation of finished vehicles and automotive parts. This traffic is subject to pervasive rail, truck, and water competition. We compete for business not only by offering competitive rates, but also by investing and innovating to provide the premium services that automotive shippers demand. Competition is intense, as automakers can and will switch their finished vehicles business back and forth from one alternative to the other.

Union Pacific and BNSF compete head-to-head in bidding for almost every major movement of finished vehicles in the western United States. Both railroads have comparable access to production plants in North America, and to West Coast ports, where vehicles arrive from overseas. Both railroads can then move those vehicles to destinations throughout the West, using their network of distribution centers, or to connections with eastern railroads. KCS is also a strong competitor for movements of finished vehicles from production plants in Mexico.

Union Pacific also competes with trucks for movements of finished vehicles, which requires us to provide advantages that overcome the additional time, costs, and risk of damage involved in unloading vehicles from trains and loading them onto trucks for final delivery. This competition can be seen not only in rates, but also in our investments in distribution facilities, improving service reliability, and implementing processes that minimize the risk of damage to vehicles during transportation.

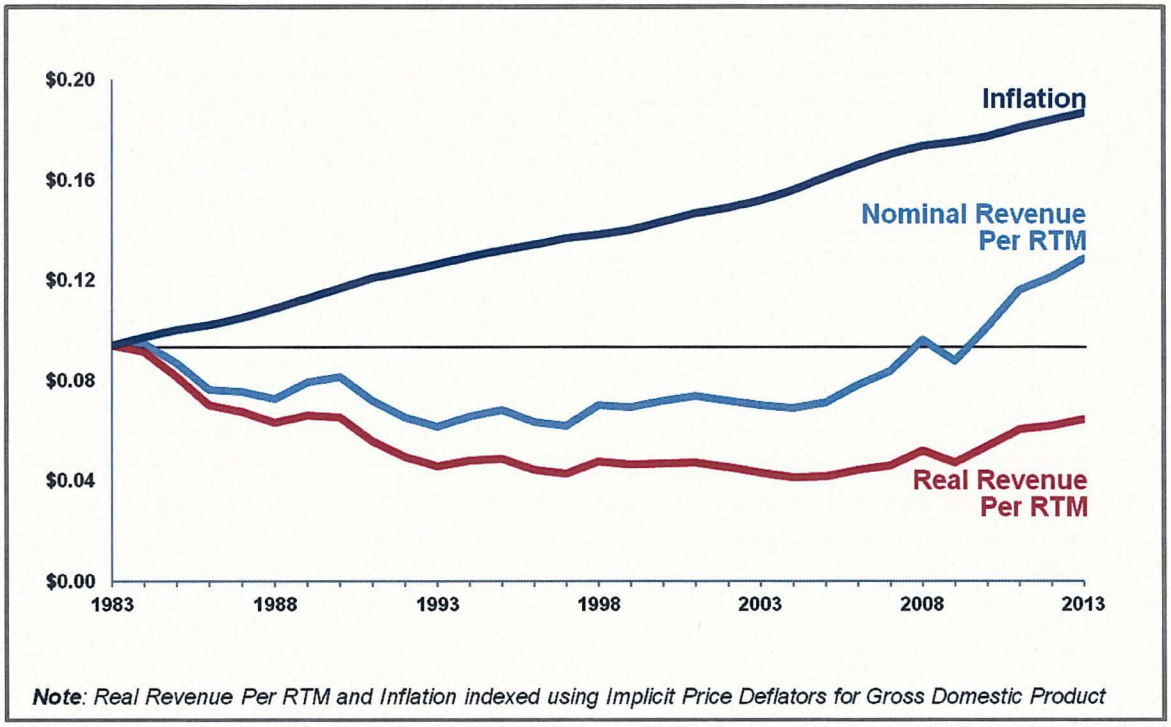
Union Pacific also must compete against ocean carriers, which provide yet another alternative to rail for the transportation of finished vehicles from Mexico to either U.S. coast. We

have seen tens of thousands of vehicles destined from Mexico to domestic markets that previously moved on Union Pacific diverted to ocean carriers in recent years. We also have seen the vehicle traffic for new Mexican plants awarded to ocean carriers.

Union Pacific also faces pervasive competition for automotive parts movements. We compete vigorously with BNSF, and we also face strong competition from KCS, particularly from the Upper Midwest to Mexico, which is one of the most significant lanes for parts traffic. However, trucks dominate the parts business. The parts business is highly service sensitive: if parts are not delivered consistently, production grinds to a halt, and trucks are generally perceived as having speed and reliability advantages over rail.

Union Pacific's rates for automotive traffic reflect the highly competitive nature of the marketplace. Essentially all of the traffic is exempt from regulation. As shown below in Figure 12, our revenue per revenue-ton mile for this business remains below 1983 levels in real terms, and current nominal rates are 31 percent lower than if they had tracked inflation.

Figure 12: Automotive Rates Since 1983 (Butler VS, ELB-24)



Union Pacific's effort to compete for movements of finished vehicles and automotive parts is also reflected in our record of investment and innovation. We invested more than $530 million over the past 10 years in network facilities and new rail cars for automotive business. This year, we plan to invest { } in facilities specifically serving the automotive business, which includes multi-million-dollar expansions of our Kirby and Mesquite, Texas, distribution facilities, and approximately { } in new rail cars for shipments of finished vehicles. In addition, in the past two years, we have opened new intermodal lanes to provide better parts service to and from Mexican gateways. We have also invested in technology that provides value to our customers, including our VINFormation tracking system and LogicNet routing software. We are also actively seeking to expand rail competition to new markets. For example, we were the first railroad to fight with trucks for a share of the used car market with our ShipCarsNow program.

The investments we make to expand our automotive business involve significant risks. The automotive industry is highly cyclical. When sales and shipments plummet, as they did in the last recession, we are challenged to earn an economic return on our investments. We can also lose large volumes of traffic when automakers re-bid their transportation contracts or change their production patterns. However, as long as we continue to have the opportunity to earn market-based returns, our incentives to continue investing in this business to improve our competitive posture will remain strong, and our customers will benefit.

6. Competition for intermodal traffic remains strong.

Intermodal traffic is the most competitive category of traffic that moves by rail. To attract and retain this business, we must not only offer competitive rates, but also invest in our network to provide fast, reliable service and expand our service offerings.

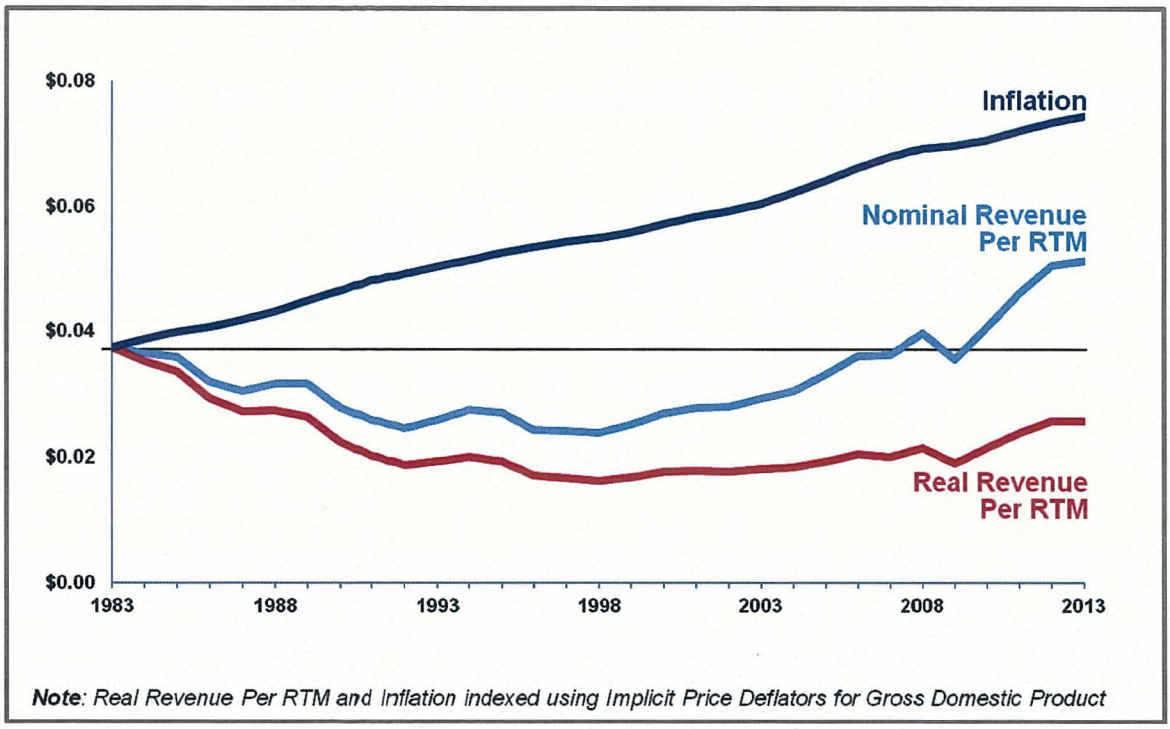
Union Pacific competes both head-to-head and indirectly with other railroads for international intermodal traffic. Ocean carriers can choose among competing railroads at U.S. ports, and they can expand their competitive options even further by choosing among the various ports on the west and east coasts, including ports in Canada and Mexico.

Union Pacific also competes vigorously for domestic intermodal business, both with other railroads and with trucks. Virtually all domestic intermodal traffic that moves by rail is subject to rail competition because railroads do not need to serve a particular shipper facility, or even have rail facilities in the same city, to compete for this business. However, in almost every situation, our most significant competitor is not another railroad – it is a truck. We are making meaningful progress in attracting business to rail, but trucks still dominate the domestic cargo business.

Union Pacific's rates reflect the highly competitive nature of the intermodal business. As shown below in Figure 13, our revenue per revenue-ton mile for our intermodal business remains

below 1983 levels in real terms, and current nominal rates are 31 percent lower than if they had tracked inflation.

Figure 13: Intermodal Rates Since 1983 (Butler VS, ELB-27)



Union Pacific's effort to compete for intermodal business is also reflected in our record of investment and innovation. For example, since 2000, we have invested more than $1.4 billion in intermodal terminal capacity, including building new ramps in Dallas, San Antonio, Chicago, and Santa Teresa, New Mexico. We have purchased more than 23,000 containers since 2008. We also spent $1.1 billion to increase capacity on our Sunset Route from El Paso to Los Angeles, which is a critical route for intermodal traffic. We have also developed dozens of new intermodal service offerings over the last 10 years in response to market demand, including new routes and improved schedules for existing routes. We are in the process of purchasing technologically advanced gate systems for our terminals to improve fluidity. We also created a subsidiary,

Streamline, to provide all-inclusive "door-to-door" service in an effort to attract smaller customers that are less familiar with traditional intermodal service.

The investments we make to expand our intermodal business involve significant risks. We are subject to intense competition for all of our intermodal business. When we build new facilities, there is no guarantee that traffic will materialize at the volumes we anticipated. We have substantial sunk investments in terminals that are not producing the results we expected. However, we believe that the intermodal business, especially domestic intermodal, provides important opportunities for growth. As long as we have the opportunity to earn market-based returns, our incentive to continue investing in this business will remain strong.

III. Union Pacific's Financial Condition Must Continue To Improve For The Railroad To Continue Making The Types Of Investments In Capacity That Our Customers Are Demanding.

Union Pacific must continue to have the opportunity to earn market-based returns if we are to continue investing and innovating to meet the long-term needs of our customers. Our financial condition has improved, but we are far from earning returns that, when properly measured against the current cost of our assets, are equal to, much less exceed, our cost of capital. Moreover, our ability to earn market-based returns is growing more important as investments are focusing more on increasing capacity, and those investments are themselves becoming increasingly expensive.

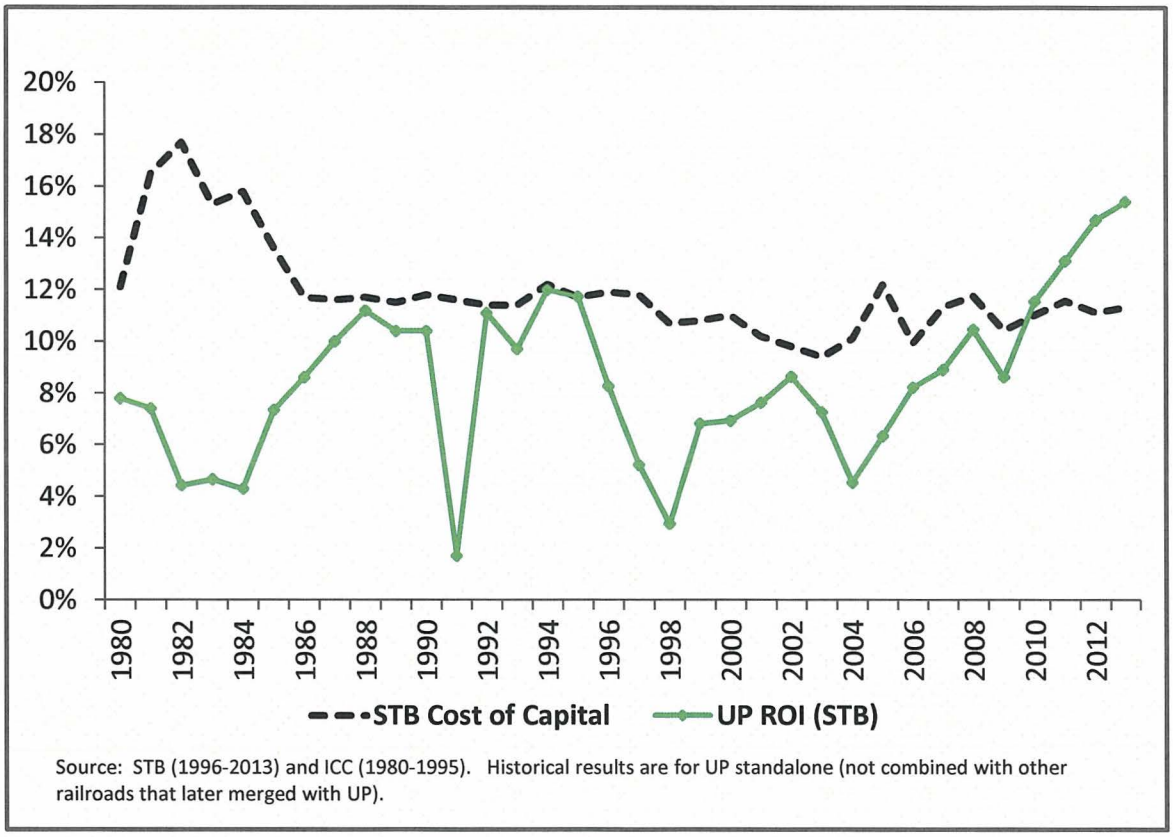
A. Union Pacific's financial performance lags behind the performance of other companies operating in competitive environments.

Union Pacific is encouraged by our progress towards improving our financial condition. At the same time, our improvement must be viewed in perspective: for a very long period, our returns were exceedingly poor, our return on investment is still below our cost of capital, and our

returns continue to trail those of other successful companies operating in competitive markets. Suggestions that we are earning exceptionally large returns are mistaken.

One reason we appear to have made so much progress is that we had a lot of catching up to do. As Professor Murphy shows, even using the Board's methodology (which is flawed for reasons we discuss in the section below), our return on investment equaled the railroad industry's cost of capital just once in the 29-year period from 1981 through 2009, as shown below in Figure 14.

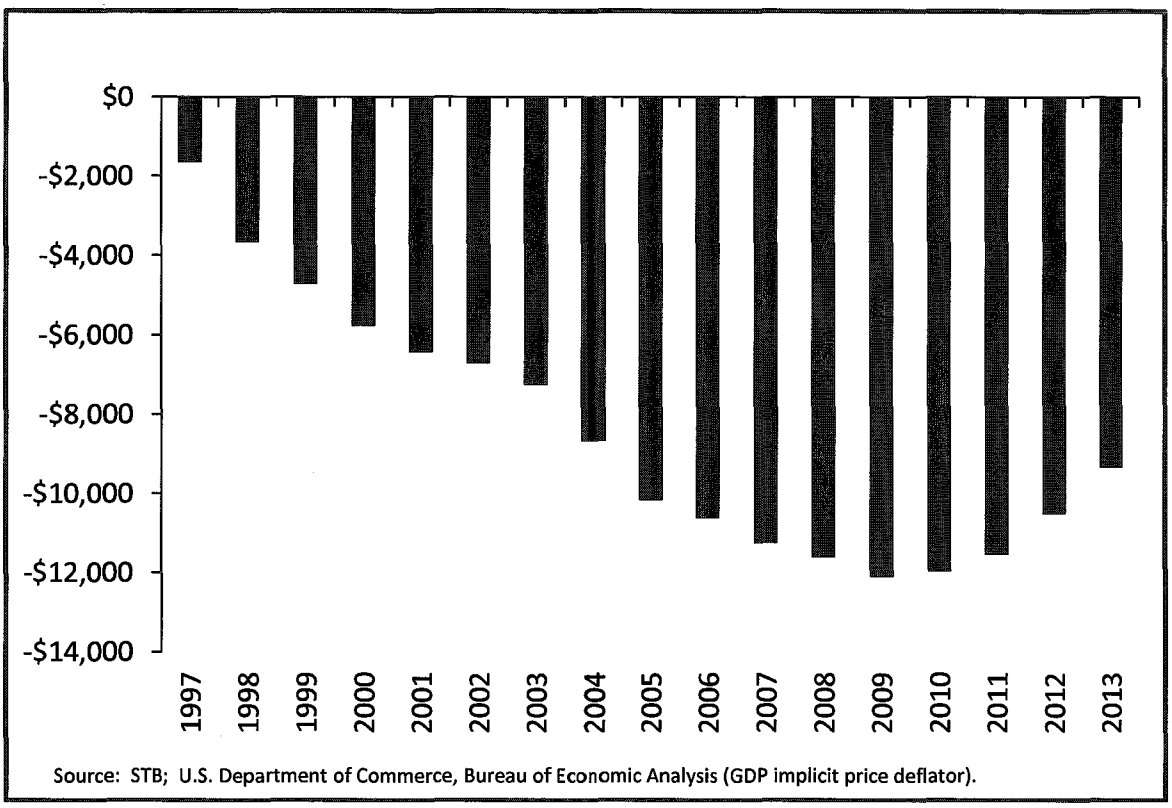
Figure 14: STB Revenue Adequacy Results (Murphy VS, KMM-1)



Source: STB (1996-2013) and ICC (1980-1995). Historical results are for UP standalone (not combined with other railroads that later merged with UP).

Although the Board found Union Pacific to be revenue adequate in 2010 through 2013, our cumulative revenue adequacy shortfall just since merging with Southern Pacific far exceeds the amount by which we have exceeded revenue adequacy (as measured by the Board), as shown below in Figure 15.

Figure 15: Cumulative Revenue Adequacy Results (2013 constant dollars in millions) (Murphy VS, KMM-2)



Dr. Willner provides another method of placing Union Pacific's financial results into perspective. He compares Union Pacific's performance to the performance of other companies over the period from 2004 to 2013. His analysis shows that Union Pacific's results generally lag behind the results of other companies operating in competitive environments.

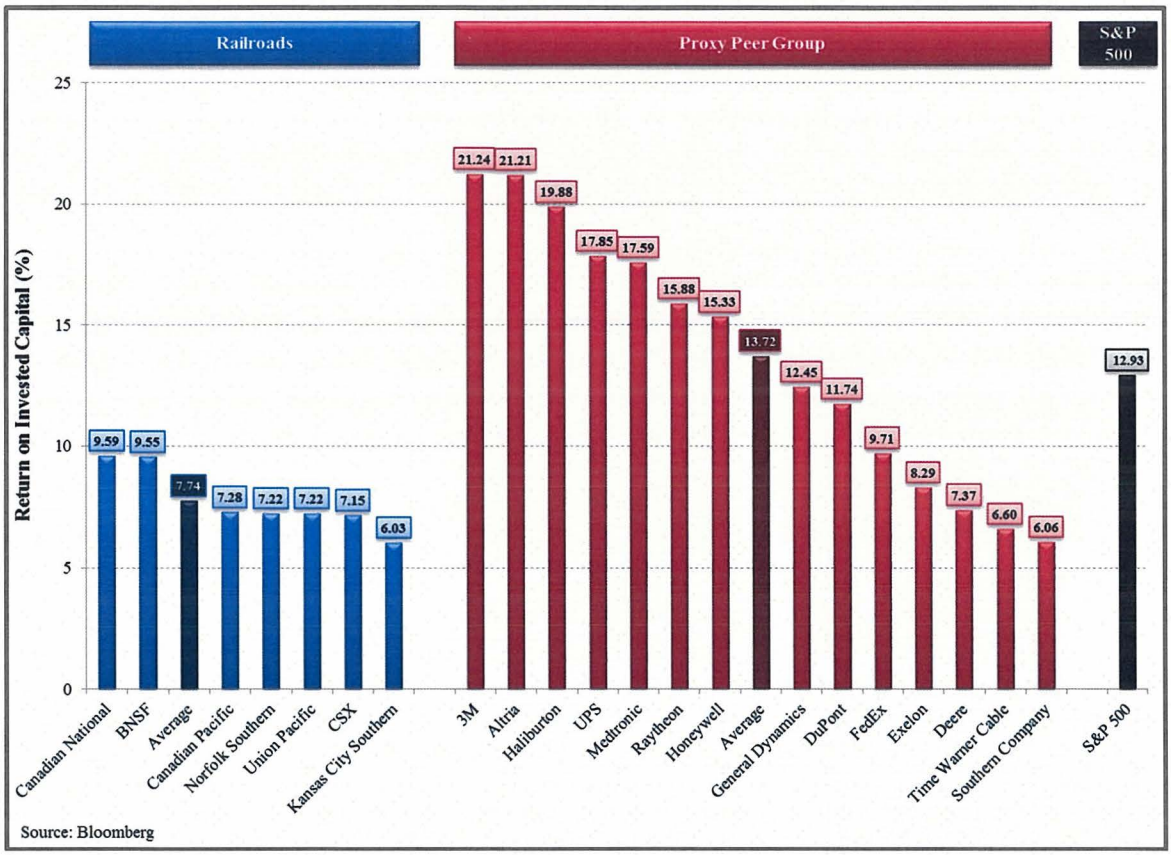
Specifically, Dr. Willner uses data from Bloomberg to compare Union Pacific's return on invested capital ("ROIC") to returns of fourteen "peer group" companies our board of directors has selected to evaluate the performance of our management and companies in the S&P 500.

Dr. Willner's analysis shows that Union Pacific's ROIC, which is similar to the Board's measure of return on investment,[12] is *below* the average ROIC for companies in our peer group

[12] Bloomberg and the Board both calculate this measure of return using historical rather than current data on asset costs. Given the long-lived nature of railroad assets, this likely has the (continued...)

and in the S&P 500. *See* Willner VS at 5-6. In fact, our ROIC is below the ROIC of all but two of the companies in our peer group, as shown below in Figure 16.

Figure 16: Average Return on Invested Capital (Willner VS, RW-1)



Dr. Willner also uses Bloomberg data to analyze Union Pacific's use of cash for capital expenditure, dividends, and stock buybacks in comparison with the use of cash by our peer group companies and companies in the S&P 500. His analysis shows that Union Pacific has allocated a larger portion of cash to capital expenditures than the average for our peer group and companies

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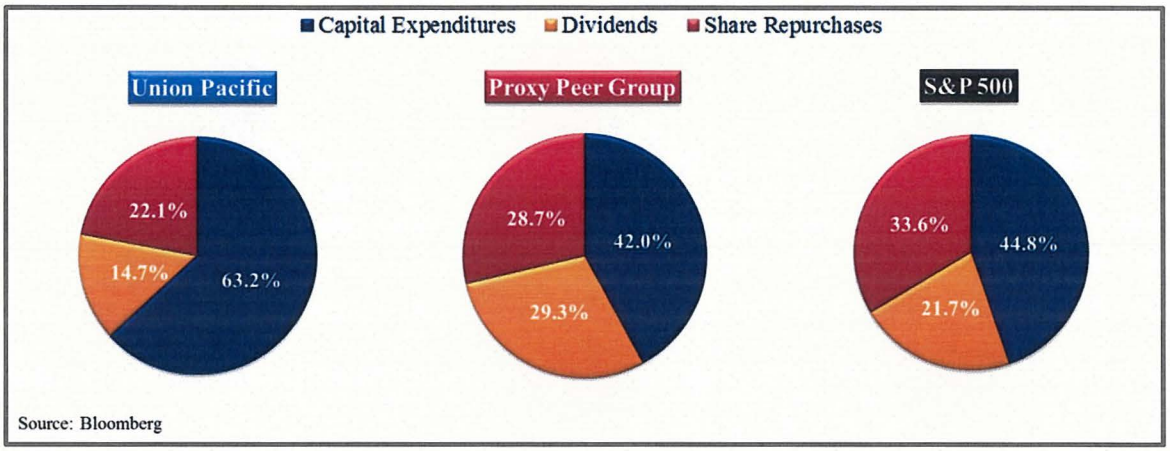
impact of making railroad returns appear higher in relation to returns of other companies than they actually are. *See* Willner VS at 5 n.6. Bloomberg's calculations are different from the Board's in that Bloomberg does not remove the impact of deferred income taxes from its measure of income and the net capital stock. *See id.* at 5. Using Bloomberg data allows for an apples-to-apples comparison and is in any event more appropriate, since, as discussed in more detail below, ordinary investors expect deferred tax reserves to be included in the investment base. *See id.*

in the S&P 500, as shown below in Figure 17. And while some have cited railroad buybacks of stock to argue that railroads are earning too much revenue,[13] Dr. Willner's analysis shows that we lag peer firms and the S&P 500 in this regard. *See id.* at 8.

Figure 17: Average Cash Allocation (Willner VS, RW-3)



Dr. Willner's analyses confirm that Union Pacific's financial performance is not outside the norm. In fact, in terms of ROIC we continue to lag behind our peer group and the S&P 500. We are encouraged by our progress, but we are not yet where we need to be, if we are to continue devoting increasing amounts of capital to expanding our capacity.

B. Union Pacific's earnings are not sufficient today to attract the capital necessary to assure we will be able to meet shippers' needs.

Union Pacific has not consistently earned returns exceeding our cost of capital, as those measures are calculated by the Board. As discussed above, Union Pacific has been found to be revenue adequate under the Board's methodology just five times in the past thirty-three years. Even by the Board's measure, we are still working off a substantial shortfall. *See* p. 41, *supra*.

[13] *See, e.g.*, Office of Oversight and Investigations Majority Staff, Committee on Commerce, Science and Transportation, United States Senate, *Update on the Financial State of the Class I Freight Rail Industry* at 19-20 (Nov. 21, 2013).

In addition, even if one could infer a possible need for more protection of shippers who may lack effective competition when a railroad's returns consistently exceed the cost of capital, such an inference would be especially inappropriate here because of how the Board calculates railroad returns. Specifically, the Board's revenue adequacy measure substantially overstates railroad returns for two reasons, one involving the use of historical assets costs to value the railroad investment base, the other involving the treatment of deferred taxes.

As Professor Murphy explains, the Board's calculation of returns using railroads' net historical asset costs is inconsistent with a revenue adequacy standard designed to represent "'a reasonable level of profitability for a healthy carrier'" and "'assure[] shippers that the carrier will be able to meet their service needs for the long term.'" Murphy VS at 7 (quoting the Board's Notice). He observes that, "[a]s a matter of economics, the proper way to measure whether a carrier is earning a return on investment sufficient to allow it to invest and meet demands for service in the long term must use forward-looking investment costs." *Id.* This is because "[i]nvestors will be willing to lend to a company if the expected future returns on investment in that company will be as high as the investor can receive (after accounting for risk) from alternative investment opportunities." *Id.* at 8-9. Dr. Willner concurs from an investor's perspective: "[a] prospective investor is purchasing with current dollars," so to be able to evaluate an investment in a particular company against other opportunities, the investor "will be concerned with economic returns calculated based on the current value of a company's asset base." Willner VS at 4-5.

Professor Murphy observes that the Board recognizes this point in its stand-alone cost test, which correctly embodies the critical concept that a railroad's earnings must be sufficient to cover the current costs of the assets necessary to provide the same set of services that the railroad

provides. *See* Murphy VS at 23-24. But the Board's measure of revenue adequacy "provides no information about a railroad's ability to attract the capital it needs to maintain and grow its network and operations, which is the relevant economic criterion for determining whether the carrier will be financially healthy and be able to serve its customers in the future." *Id.* at 7.

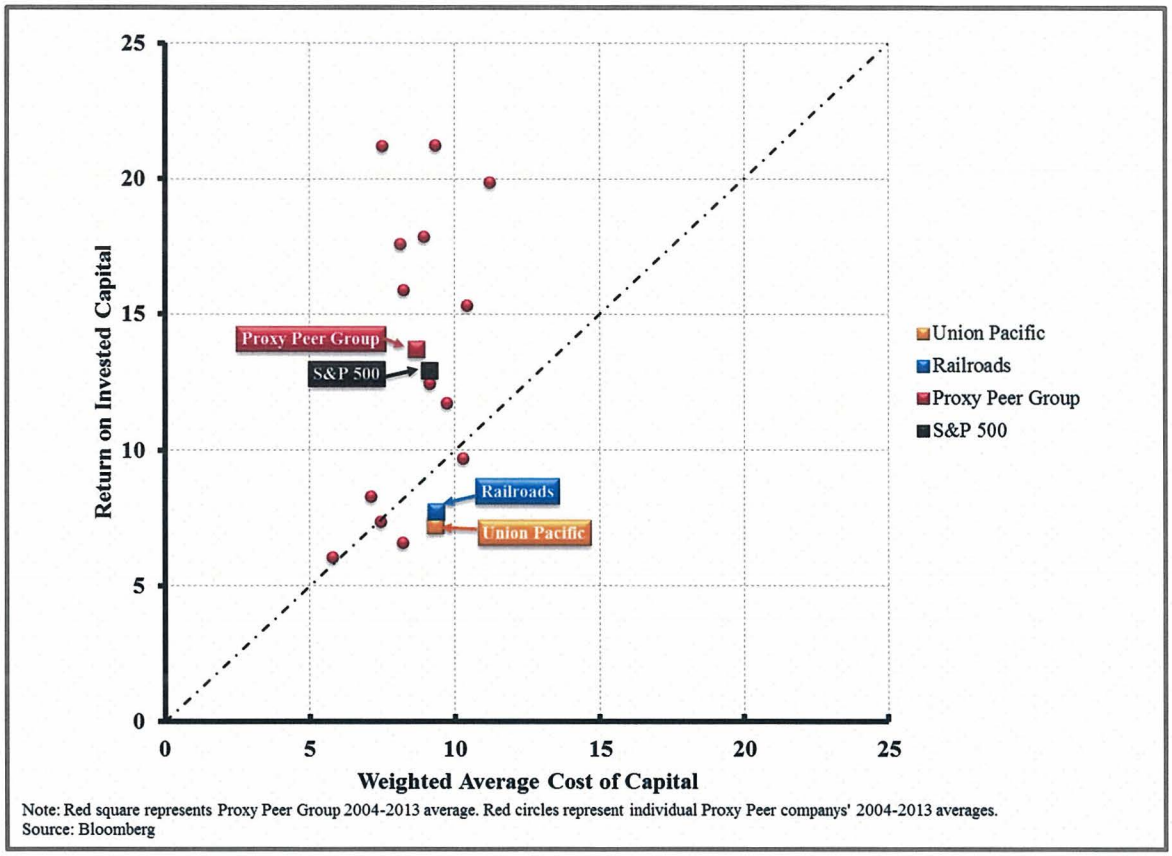
After reviewing Union Pacific's estimates of current asset costs, Professor Murphy concludes that Union Pacific's "current earnings are not sufficient today to attract the capital necessary to replace its assets." *Id.* at 8. Rather, Union Pacific's economic returns are substantially below the returns calculated by the Board, and substantially below the railroad cost of capital calculated by the Board. *See id.* at 20-22. Professor Murphy's conclusion is consistent with statements Union Pacific has made to investors. *See id.* at 21 n.24 (citing statements in quarterly earnings calls).

Dr. Willner, an expert on financial valuation of companies, discusses the second reason why the Board's revenue adequacy calculation substantially overstates railroad returns; namely, the Board's calculation excludes deferred taxes from the net investment base. That is, the Board's calculation excludes funds that the railroads continue to hold, and on which investors expect a return. As Dr. Willner explains, the exclusion of deferred taxes inflates the Board's return calculation by creating the misimpression that a railroad's earnings are generated from a smaller investment base. *See* Willner VS at 5. He notes that the Board's approach is problematic from an investor's perspective because "[w]hat matters to investors . . . is the actual capital base invested," and "[i]nvestors expect the same return on deferred tax reserves as on other capital because deferred tax reserves are a portion of the company's capital base." *Id.*

Dr. Willner also shows that Union Pacific is much further away from consistently earning returns above our cost of capital than our peer group companies and companies in the S&P 500,

when returns are calculated in a manner similar to the Board's calculation – that is, based on historical asset costs. *See id.* at 7. Specifically, from 2004 through 2013, companies in our peer group and the S&P 500 have on average earned more than the cost of capital, while we have not, as shown below in Figure 18.

Figure 18: Average ROIC and Average Cost of Capital (Willner VS, RW-2)



Note: Red square represents Proxy Peer Group 2004-2013 average. Red circles represent individual Proxy Peer companys' 2004-2013 averages.
Source: Bloomberg

Dr. Willner's analysis of these data illustrates an additional point that we discuss in Part IV: there is nothing troubling about a pattern of returns exceeding the cost of capital, especially when those returns are measured based on historical asset costs. Dr. Willner suggests that rather than worry that railroads are earning outsized returns, the Board "should actually be more concerned that the returns on investment earned by UP and other railroads are low when compared to returns earned by comparable companies." Willner VS at 2. He explains that

"[t]hese low returns impact the railroads' ability to attract capital from the capital markets, thus potentially limiting their ability to continue investing in innovation and growth." *Id.*

C. Union Pacific must make increasingly risky and costly investments to support expanding traffic.

Union Pacific must continue to invest to compete for business and to provide the amount and quality of service our customers are demanding. And, as shown above, we *are* investing in our network at record levels. But the nature of our investments has changed over time in ways that make it even more important for us to have the opportunity to earn more than an amount of revenues deemed to be "adequate." Specifically, we are investing more heavily in projects where the expected return that drives our investment decision depends on traffic and revenue growth, rather than productivity and costs savings, and the amount we must invest to generate a given level of benefit is increasing. We must have the opportunity to earn higher returns to justify undertaking these more risky, more costly investments.

Mr. Butler describes how our capital investments are focused more than ever before on supporting new business growth. As discussed above, we are investing to expand capacity in our Southern Region to support the growth of chemicals business. We are expanding yards all across our network to handle growing volumes of industrial products business, such as frac sand. We have been building new terminal facilities to increase our capacity to handle intermodal and automotive business. We have invested in thousands of new covered hoppers that allowed us to move the 2013 record harvest.

Professor Murphy describes how the nature of our investment has changed over time. He shows that the amount we have invested annually per track mile has increased substantially since 2004. For every mile of track that we operate, we invested 69 percent more in real terms in 2013 than in 2004. *See* Murphy VS at 17. He explains that after largely exhausting many of the lower-

capital methods of increasing throughput, we now need to make higher-cost investments in new facilities to attract additional business and retain existing customers. *See id.* at 18.

Our capital investments to support new business growth are risky. As Professor Murphy explains from an economic perspective, the risk arises from the combination of several factors. Railroad investments are expensive, and even if successful, they may not generate net positive returns for many years. *See id.* at 29-30. In the years it takes to obtain a positive payoff, markets can change in ways that reduce the investment's returns. This is because railroad service is a derived demand that is affected by, among other things, general economic trends, changes in demand for specific commodities, and the economics of alternative transportation modes and other railroads. *See id.* at 30. And, in many cases, "railroad assets are sunk" and effectively dedicated to serve certain commodities or specific locations, and "[o]nce those investments are made, a railroad cannot redeploy those assets and recoup its investments if the expected demand does not materialize." *Id.*

Mr. Butler confirms that Professor Murphy's economic analysis is consistent with real world concerns when we invest to expand traffic for any of our businesses. As discussed above, our coal business is highly sensitive to changes in the national economy, natural gas prices, and government regulation. Our chemicals business is sensitive to changes in the national economy and prices for natural gas. Our agricultural business depends on harvest size and conditions in global markets. Our industrial products, automotive, and intermodal businesses all depend on conditions in the national and global economy. And, the vast majority of all of our traffic is subject to some combination of rail, intermodal, product, and geographic competition, adding to the risk we face in making investments.

Mr. Butler gives examples that demonstrate the very real nature of the risks associated with investing to support growth. He notes the example of our massive investment in the SPRB, where a recession, low natural gas prices, and environmental regulation have combined to keep demand well below the projected levels that had justified the investment. *See* Butler VS at 21, 26-27; *see also* Murphy VS at 30-32. Mr. Butler describes our investment in an intermodal terminal outside Chicago where traffic volumes, and thus returns, fell below our projections. *See* Butler VS at 57; *see also* Murphy VS at 32.

Mr. Butler describes another important characteristic of the investments we are making today: the rising costs of adding capacity. As Mr. Butler explains, one reason the cost of adding capacity is rising is that we have already done so much investing: we have added sidings, cross-overs, and connections where they would have the biggest impact per dollar on throughput. In the future, we will have to spend more capital to make an equivalent impact on capacity.

Another factor driving up the cost of new capacity is that much of the current expansion in demand is occurring in congested areas, where acquiring land is expensive and construction is difficult. As Mr. Butler explains, this is particularly true in our Southern Region, which includes locations such as Houston, Texas, and Lake Charles, Louisiana. In those areas, it is difficult and costly to acquire property needed to construct rail facilities. And, once we acquire the property, construction can be costly and suffer delay because of environmental and permitting challenges, and the large number of pipelines in the region that may require relocation before construction can begin.

We want to be able to invest to expand our network and improve service to meet customer demand and compete for new business. Successfully competing for new business is important to our continuing effort to improve our financial condition. But we will not be able to

make these investments unless we have the opportunity to provide our shareholders returns on those investments that are high enough to offset the risk and costs.

IV. Sound Public Policy Requires That Railroads Have The Incentive And Opportunity To Earn Returns In Excess Of Their Cost Of Capital In Order To Promote Optimal Investment In Innovation And Growth.

Sound public policy requires that railroads have the incentive and opportunity to earn returns in excess of their cost of capital. As Professor Murphy explains, the prospect of earning returns in excess of their cost of capital is what drives companies to innovate and pursue opportunities to grow. This is especially true for companies like railroads that operate in competitive environments where new investment carries a high degree of risk. Companies for whom returns are not guaranteed need the opportunity to earn returns exceeding their cost of capital on the investments they make to provide the prospect of earning returns at least equal to their cost of capital over the long run. Without that opportunity, they will inevitably invest less. Thus, a constraint on our revenues would not only be contrary to our interests, it would also be contrary to the interests of our customers and others who are calling for increased investment in the rail network.

A. The existence of railroad returns exceeding the cost of capital would not indicate a need for increased regulation of railroad rates, and there is no evidence justifying greater regulation.

A rate constraint designed to limit overall railroad revenues would not advance public policy. The Board's governing statute sets forth a clear policy "to allow, to the maximum extent possible, competition and the demand for services to establish reasonable rates for transportation by rail," 49 U.S.C. § 10101(1), and authorizes the agency to regulate rates only where a shipper lacks "effective competition," *id.*, § 10707(a). But as Professor Murphy explains, "there is no economic reason why a finding that a railroad is earning a rate of return at or above its cost of capital should lead the Board to take action to force rate reductions." Murphy VS at 25.

"[F]inding that a railroad as a whole is more than revenue adequate reveals nothing about whether any rates, and if so, which rates, exceed the competitive level due to a lack of effective competition." *Id.* at 26.

In fact, as Professor Murphy observes, whether railroads achieve revenue adequacy will depend more on traffic that is presumptively competitive than on traffic that potentially lacks effective competition. Approximately 80 percent of Union Pacific's traffic is either exempt from regulation or moves under rates that produce an R/VC ratio below 180 percent – so rates on this traffic "will dominate aggregate measurements of UP's revenue, costs and profitability." *Id.* at 26. Thus, "it is not possible to determine whether rates are above the competitive level on the remaining 20 percent of UP's traffic – the portion potentially subject to rate regulation – using a broad-based measure of performance such as revenue adequacy." *Id.* at 26-27.

Moreover, Professor Murphy's shows that Union Pacific improved its financial condition using the same strategies that other firms operating in competitive markets use to improve their profitability – through pro-competitive efforts to increase efficiency and provide more and higher-value service to their customers. Professor Murphy reviews our post-Staggers Act history of consolidations, productivity growth, investment, service improvement, and pricing, *see id.* at 35-41, and he concludes that the trends "are consistent with what [he] would expect to observe in a competitive industry," *id.* at 45. He cautions that "[r]egulatory interference in UP's incentives to anticipate ways to improve service and invest to do so will harm competition and shippers." *Id.* at 46.

Professor Murphy also examines empirically whether Union Pacific's improved financial condition is attributable to excessive pricing on traffic that lacks effective competition. As discussed above, *see* pp. 22-23, *supra*, his analysis shows that we have achieved larger gains in

contribution margin from traffic that is exempt from rate regulation than from traffic that is subject to rate regulation. He explains that the results are not what one would expect if Union Pacific had been raising rates by exercising market power against shippers without effective competition. *See* Murphy VS at 43-44. Rather, they support his conclusion that Union Pacific's improved financial condition in recent years "reflects increased, not reduced, competition and benefits for shippers." *Id.* at 7.

B. Companies in competitive environments must have the opportunity to earn returns in excess of their cost of capital in order to invest to expand capacity.

A rate constraint designed to limit overall railroad returns to the cost of capital is not only unnecessary, it would be extremely harmful to railroads, our customers, and the public interest. Professor Murphy explains that "[e]conomic efficiency depends on encouraging railroads to strive to earn more than their cost of capital." *Id.* at 6. We must have the opportunity to earn returns in excess of our cost of capital if we are going to invest in expanding capacity, which involves significant risks. Without the prospect of earning higher returns on the projects that succeed, we will have little choice but to return more cash to shareholders for them to invest in other activities that provide a better opportunity to earn a high return.

As Professor Murphy explains, the prospect of earning high returns is what drives companies to invest in expanding output and increasing efficiency. *See* Murphy VS at 27-28. This also benefits shippers: "Improvements in rail service offered by UP and other railroads represent a win-win situation for railroads and their customers – higher profits for railroads in exchange for better service for shippers." *Id.* at 6-7. But if our returns were capped at a predetermined level, our incentives to innovate and grow would be reduced: there would be no point in investing if we must surrender the fruits of our efforts when we succeed but suffer the loss when we fail. And even more important, as discussed in more detail below, our shareholders

will not allow us to risk the company's money if even successful projects would have limited payoffs.

Limiting railroad returns to the cost of capital would also be harmful because railroads must have the opportunity to earn returns that exceed their cost of capital, or they will never earn their cost of capital over the long-run. As Professor Murphy observes, unlike a traditional public utility that can obtain a rate increase from its regulator if it fails to reach a targeted rate of return, "UP is not guaranteed a competitive rate of return on average; market conditions and changes in demand and supply can cause it to earn below a competitive rate of return for extended periods of time." *Id.* at 28. Thus, Union Pacific "will not earn a competitive rate of return on average if it is forced to endure periods where its rate of return falls below the competitive level without the prospect of earning a return above its cost of capital at other times." *Id.* at 28-29. In other words, limiting our earnings to the cost of capital would actually condemn us to perpetually falling short of actual revenue adequacy.

In addition, the prospect of earning high returns has become even more important in the current environment because, as discussed above, our investments are now focused more on increasing capacity than reducing costs. As Professor Murphy observes: "Through mergers and rationalization of assets, railroads largely have eliminated the excess capacity and inefficient operations with which they were afflicted when they were first deregulated. Going forward, railroads must attract capital to replace their network and provide additional capacity where there is demand from shippers." *Id.* at 6. Investing to reduce costs is less risky, because we usually benefit even if traffic or rate levels fall. But investments to accommodate growth are inherently risky, and they must offer the prospect of a substantial upside to offset the potential downside if expected traffic or rate levels fail to materialize. *See id.* at 29-32. And the potential downside is

not just a theoretical concern, as shown by our experience with very substantial investments that had limited success. We have made sizeable investments, including investments in expanding capacity to transport SPRB coal and investments in new and expanded intermodal terminals that have generated lower-than-expected returns when economic and regulatory conditions changed or we did not attract the business we expected to attract. *See id.* at 30-32; Butler VS at 26, 57.[14]

Professor Murphy explains that limiting returns to the cost of capital would lead railroads to make inefficient investment decisions that would harm both railroads and their customers. He observes that "[i]n unregulated competitive markets, investment decisions are motivated by the expected risk-adjusted return on investment opportunities and the firm's goal of achieving the highest level of profitability from its investment decisions." Murphy VS at 33. However, "[i]f the railroad's return on investment is burdened by an additional constraint – that successful investments would affect the Board's calculation of revenue adequacy and result in the Board constraining the railroad's future revenues – then the railroad will make inefficient investment decisions and fewer projects will go forward." *Id.* Indeed, the effects of regulation could reduce investments for traffic that is not otherwise subject to regulation. "A railroad with an investment opportunity to serve exempt or other presumptively competitive traffic that would be highly profitable on its own [could] be discouraged from pursuing that investment by the need to discount the anticipated return to take into account how success would affect other rates through

[14] Professor Murphy also explains that the need for greater investment also makes the Board's current measure of revenue adequacy even more problematic. In the past, when we had more room to improve productivity, investors could expect returns from both cash flow generated directly from investments made with their capital and improved operational efficiencies. *See id.* at 18-20. With the second source of potential returns diminishing, investors are necessarily more focused on generating returns on current investments, which makes it "more critical than in the past that revenue adequacy be judged by what matters to investors, which is the return on assets based on their current cost, and not on a backward-looking accounting measure of profitability." *Id.* at 20.

broad-based regulation based on the carrier's overall profitability." *Id.* Professor Murphy also points out that the effects of such regulation would likely cause the greatest harm to shippers who stood to gain the most from investments: "The greater the anticipated return on a particular investment, the greater the likely benefit for shippers. Yet, the greater the expected profitability of an investment, the greater likelihood that it will result in rate regulation . . . ." *Id.*

Dr. Willner approaches these issues from a different perspective, but he reaches the same conclusions as Professor Murphy. He explains that "[i]nvestors demand that companies only spend capital on an investment if the expected return of the investment is at or above the company's cost of capital." Willner VS at 9. Thus, "purely [as] a matter of arithmetic," if a company is projecting returns accurately, one "would expect to see the company's realized returns above its cost of capital – even in fiercely competitive industries." *Id.* at 9.

Dr. Willner also describes how limiting returns to the cost of capital would reduce the number of projects in which railroads would invest, leading to less investment than would exist in a competitive environment. As he explains, company managers decide whether to invest in a particular project by comparing the project's expected returns with the company's cost of capital. In general, if the expected returns exceed the cost of capital, the project merits funding. *See id.* at 9. But, "if regulation limits the potential gains from successful investments – for example, if a railroad is required to surrender a portion of the gains of the investment in the form of rate relief – then that will alter the calculation of expected returns." *Id.* at 9-10. Specifically, there will be fewer investments with expected returns above the cost of capital, and thus fewer investments will be made than would be made in a competitive environment. *See id.* at 10-11.

Dr. Willner also explains that this reduction in investment will occur regardless of whether a company has enough cash on hand to fund investment. If a company's investment

opportunities do not have expected returns that equal or exceed the company's cost of capital, then the company's management will not spend cash on those opportunities. *See id.* at 11. In fact, constraining returns to the cost of capital would *increase* the cash a company uses for purposes other than investment, and in particular, the amount of cash a company would return to its shareholders through dividend payments and share repurchases. As Dr. Willner explains, if a company does not have options for investing cash in projects that will generate returns above the company's cost of capital, investors would expect management to return the investible funds to their true owner – the shareholders. *See id.*

Professor Murphy also emphasizes that earnings are not locked within a company to be used only for reinvestment: "the return on reinvesting in the railroad's assets must be compared to the return on alternative investments," and "[t]hat is true whether such investments would be financed out of retained earnings or financed by attracting new capital." Murphy VS at 9. As he explains, railroads "do not need a guarantee that they can earn more than a normal rate of return, but they do need the opportunity to do so." *Id.* at 32. Moreover, "[i]f, contrary to sound economic policy, the Board uses a finding of revenue adequacy or another profitability measure as a reason to lower rates, it would induce inefficient investment decisions and harm railroads and shippers." *Id.* at 25. Thus, imposing limits on rail rates because a railroad has succeeded in improving revenues to an "adequate" level would be contrary to sound public policy.

V. The Board Should Affirm That Railroads Will Have The Opportunity To Earn Market-Based Returns On Investments In Their Networks And That Competitive Market Principles Will Govern Rail Rate Regulation.

Union Pacific's financial condition has improved in recent years as a result of decades of pro-competitive investments and innovations that have benefited our customers and advanced the public's interest in the development of a sound rail transportation system. Yet, we are still a long way from earning returns that could properly be described as adequate, much less excessive. In

the meantime, we are being called upon to increase investment, and we see investment opportunities that could be beneficial to us, our customers, and the nation's economy. But those investments will be expensive, and they carry risk that some will not be successful. Our ability to make the investments, and thus deliver those benefits, depends on our having the opportunity to earn market-based returns. That opportunity would be threatened by rate regulation that disregards sound economics and competitive market principles. We therefore urge the Board continue to allow competitive market forces to drive railroad investment and innovation. We also urge the Board to use this proceeding to affirm that railroads must have the opportunity to earn market-based returns and that, in the rare instances where competition does not effectively constrain rates, it will continue to rely on competitive market principles to regulate rates.

Respectfully submitted,

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September 5, 2014

BUTLER

REDACTED – TO BE PLACED ON PUBLIC FILE

BEFORE THE
SURFACE TRANSPORTATION BOARD

Ex Parte No. 722
RAILROAD REVENUE ADEQUACY

VERIFIED STATEMENT
OF
ERIC L. BUTLER

September 5, 2014

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VERIFIED STATEMENT OF ERIC L. BUTLER

My name is Eric L. Butler. I am Executive Vice President – Marketing and Sales for Union Pacific Railroad Company. I joined Union Pacific in 1986 and have held my current position since 2012. Since joining the railroad, I have served in other positions including Vice President and General Manager – Industrial Products, Vice President – Automotive, Vice President – Supply, and Vice President – Planning and Analysis. I hold a bachelor's degree in mechanical engineering and a master's degree in industrial administration from Carnegie Mellon University.

I. Introduction

In my current job, I am responsible for Union Pacific's six major business groups: agricultural products, automotive, chemicals, coal, industrial products, and intermodal. My job is to ensure that Union Pacific delivers strong value to our customers in the highly competitive transportation services market. Rates are only part of the value equation. Shippers demand speed, reliability and capacity so that they can compete for their own customers' business. To deliver strong value, we must provide quality service. If we don't have service—if we don't add value for our customers—we have nothing to sell.

Earlier in my career, as Vice President – Planning and Analysis, I was responsible for Union Pacific's capital budgeting process. In my experience, there is a powerful connection between the investments we make and the value we are able to deliver for our customers. Union Pacific must invest huge amounts of private capital every year just to maintain our system. But that isn't enough. To

increase system velocity, to improve shipment reliability, and now—more importantly than ever—to grow our capacity, we must invest more. To remain competitive, we must have the financial capability to respond to market changes and the resiliency to keep going when things get tough.

Our experience in 2014 is a great example. As the Board knows, railroad traffic has surged this year to levels not seen since the booming pre-recession economy of 2006. Our 7-day carloadings averaged 190,755 in July, close to our record 191,968 7-day annual average in 2006. Demand has been well above what we—and I believe what most others—expected. Union Pacific also has been challenged in other ways that no one could have predicted. Only 25 of the first 200 days this year passed without a major service interruption somewhere on our system, as we dealt with the "Polar Vortex," extensive spring flooding and other setbacks.

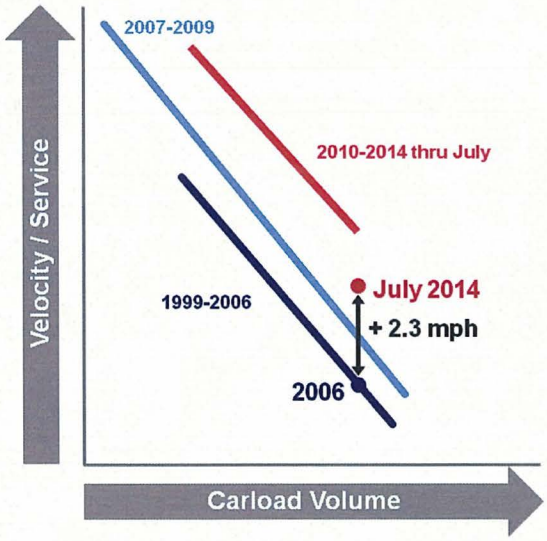
Unquestionably, we have been challenged in 2014 to respond under circumstances that in prior years might have ground our system to a halt. We have responded, however. I know from experience that we could not have met these challenges as effectively without the huge investment in our railroad—in our people, in growth capacity, in system improvements, in equipment (including "surge" locomotives to handle spikes in demand), and in new technology—that we have put in place over the past decade.

The chart below, **ELB-1**, illustrates this point. It tracks Union Pacific's velocity against carloadings since 1999. The two measures are inversely related: In general, the more volume Union Pacific takes onto our system, the more

difficult velocity is to achieve. Velocity drives service and value. It is the key measure of our efficiency and closely tied to customer satisfaction.

As the Board can see, we have improved service compared to volume steadily over the 1999–2006, 2007–2009 and 2010–2014 time periods. The lines on the chart move up and to the right. That is, we have been able to move more freight at higher velocities on our railroad over time. Critically, despite our recent challenges, we are moving traffic more than two miles per hour *faster* in 2014 than at approximately the same peak volume levels in 2006. To put that in context: A one mile per hour increase in velocity is worth about 200 locomotives and the work of more than 250 train crew employees.

ELB-1. Service-Volume Equation



I understand the Board is requesting comments in this proceeding on the methodology for its annual railroad revenue adequacy determination. I understand the Board also is seeking comments on the possible use of the

concept of revenue adequacy in setting or adjusting regulated railroad rates. This statement focuses on two points:

First, Union Pacific agrees with the Board that the structure of the railroad industry and the industry's role in supporting growth in the nation's economy have changed under the competitive market framework established by the Staggers Act. The story of how Union Pacific and other railroads evolved from lumbering, financially at-risk, service- and price-regulated enterprises to more nimble market competitors is familiar. I have watched those changes unfold, I believe for the better, over the course of my railroad career.

Second, Union Pacific agrees that the questions presented in this proceeding raise a range of important policy issues. In particular, Union Pacific believes the Board should take this opportunity to affirm that railroads must have appropriate economic incentives, including the ability to earn market-based returns, to make the huge investments required to effectively compete for business. In our view, the Board also should view with great caution any proposals to use the concept of revenue adequacy to impose a "top down" regulatory cap on railroad revenues, because it will reduce the investment needed to meet customer demand for rail service. We believe sound economics and good public policy fully support these conclusions.

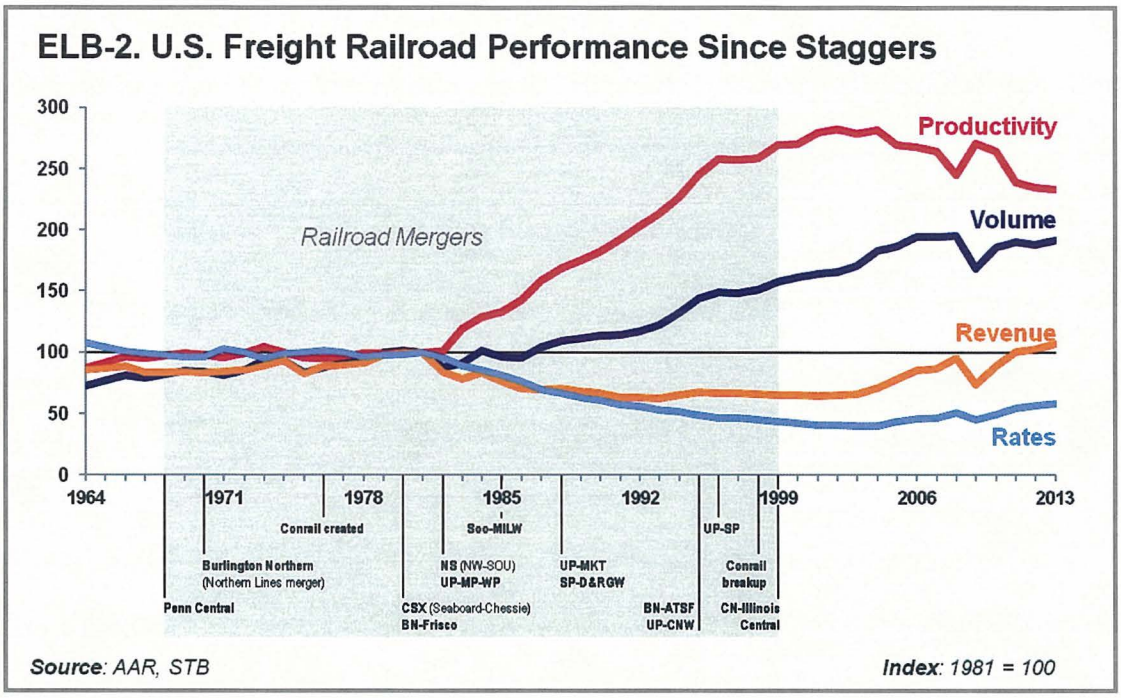
Below, I will describe some of the ways that Union Pacific's post-Staggers Act consolidations and network improvements enabled us to provide better customer service while increasing competition. I will discuss how Union Pacific has improved our financial condition by competing for business and why rates

have increased since 2004—although not for the reasons, and not by as much, as some shippers would like the Board to believe. I will explain how we have been able to improve service and meet increasing and ever-changing market demand with the support of huge capital investments, and why the cost of further improvements to our network is rising. Finally, I will provide examples of how each of our business groups competes and invests to grow business.

II. The Competitive Transformation Of The Railroad Industry Improved Service And Increased Competition

The Staggers Act freed railroads to compete on price and service. Railroad mergers and the rationalization of rail networks under the Staggers Act improved productivity and reduced rates, with shippers as primary beneficiaries of those gains. The mergers also *enhanced* rather than *decreased* competition. Union Pacific's increased revenues and improved financial condition today reflect better service, more efficient operations, and enhanced competitiveness made possible by deregulation.

Some shippers claim that post-Staggers Act railroad mergers reduced competition. These shippers misread history and ignore the factors that actually caused rate levels to increase over the past 10 years. As shown in **ELB-2** below, railroad rates fell for more than two decades after the Staggers Act as the industry consolidated—including *after* the last of the Class I mergers in the late 1990s. Railroad rates did not begin to increase until 2004. Even now, real railroad rates, including Union Pacific's, remain below their pre-Staggers Act levels.



While the connection some shippers seek to draw between railroad mergers and rate increases is a false trail, the link between railroad consolidation, Staggers Act reforms and the revival of the railroad industry is real. As shown by the timeline above, railroad productivity gains, volume growth, and rate reductions did *not* occur before the competitive opportunities presented by regulatory reform—despite merger activity in the 1960s and 1970s. On the contrary, U.S. railroads were teetering on the brink of financial collapse by the time Congress passed the Staggers Act.

Pre-Staggers Act, despite some mergers, the U.S. rail system continued to consist of smaller railroads that scattered traffic over a wide variety of inefficient routes. The railroads were burdened with operating branch lines that trucks had stripped of almost all traffic. Most railroads lacked the volume to be efficient. To make matters worse, then-existing regulation prevented price

competition. Railroads were unable to earn enough to reinvest to handle existing traffic, much less to compete with trucks.

After the Staggers Act, it was a different story. The Staggers Act, and subsequent mergers, did more than combine railroads. They restructured the industry entirely. Inefficient routes with multiple interchanges and routine delays disappeared. Uneconomic lines disappeared or went to short-line railroads. Since the Staggers Act, Union Pacific and other carriers were able to abandon or discontinue service over thousands of miles and to lease (or sell) low-density lines to short lines that could operate them more efficiently.

Deregulation also allowed railroads to finally realize the cost savings, increased productivity, and service improvements that mergers promised. Regulatory impediments to increased productivity were reduced or removed. Collective rate-making and general rate increase proceedings eventually disappeared as railroads and customers negotiated contract rates. And railroads finally began attracting investment capital to rebuild the U.S. rail network and to go after freight moving on trucks and barges. This combination of industry consolidation and regulatory reform has been by all accounts a resounding policy success.

Union Pacific's consolidations provided us with critical opportunities to leverage regulatory reforms to become a more effective competitor. Beginning with our Missouri Pacific and Western Pacific railroad transactions in 1982 and through our last merger with the Southern Pacific railroad in 1996, we were

able to increase productivity and reduce costs while improving our service and growing traffic. Our experience is that delivering greater value to our customers also is the best way to grow earnings—a true win-win situation for Union Pacific's customers and investors.

Moreover, mergers demonstrably increased rather than reduced competition for shipments that move on our lines. Competition was enhanced by having two strong competitors in the Western United States—Union Pacific and BNSF. At the time of our merger, the Southern Pacific was by any measure a weak competitor and in poor financial condition.

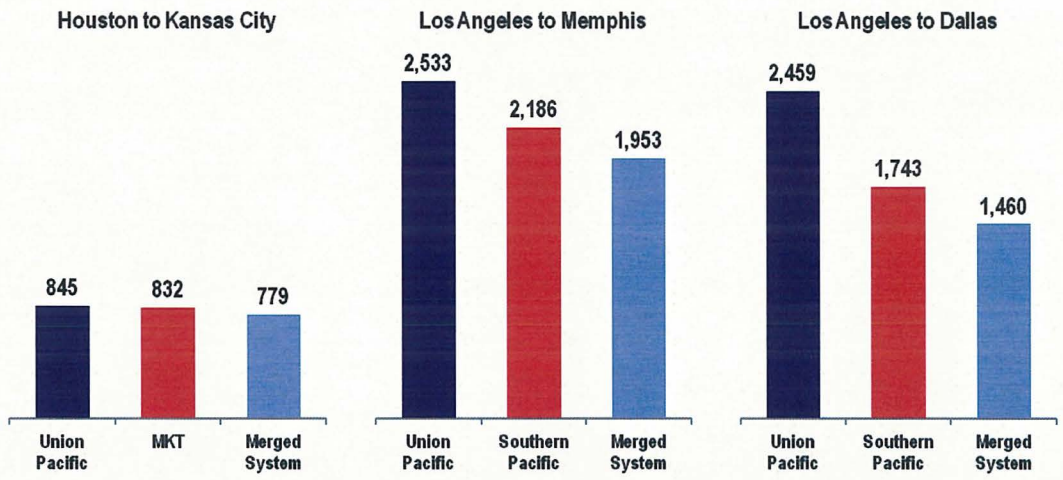
In a notable example, the Southern Pacific merger gave birth to two single-line north-south routes in the West Coast I-5 corridor. Besides creating competing Union Pacific and BNSF routes for shippers, both railroads gained improved capabilities to compete with trucks in the I-5 corridor. At the end of the Southern Pacific merger oversight in 2001, the Board found that "the merger has resulted in strengthened competition for 2-to-1 shippers, 3-to-2 shippers, shippers of key commodities affected by the merger, and shippers in every rail corridor and region affected by the merger."

The various mergers and acquisitions that created today's Union Pacific improved customer service in many ways including ones that went beyond increased competition. Here are a few examples:

Shorter, Faster Routes. The Union Pacific and Southern Pacific systems complemented each other especially well, creating numerous opportunities for shorter routes. Other mergers also let us shorten routes. These shorter routes

reduced transit time for customer shipments, improved rail car utilization for private and railroad-supplied cars, and saved fuel. Some examples are shown in **ELB-3** below:

ELB-3. Shorter Route Miles From UP Mergers



***Source**: Merger Filings*

Directional Running. After the Southern Pacific merger, we implemented north-south directional running using existing mainline track between Southern Illinois and Texas. Before, both railroads faced constraints in this corridor. The change also allowed us to make better use of classification yards at North Little Rock and Pine Bluff, Arkansas. The Union Pacific yard at North Little Rock now builds northbound trains destined for the Upper Midwest and for interchange to Eastern carriers; the former Southern Pacific yard at Pine Bluff builds southbound trains and takes blocks of cars built by Norfolk Southern and CSX for our destinations. Directional running increased network capacity at a fraction of what it would have cost to double track those lines and

expand those yards.

Single-line Service. Shipper support for single-line service resulting from railroad mergers was overwhelming. Single-line service typically includes more direct routes and less switching, which means faster transit times and increased reliability. In addition, single-line service can improve shipper access to destination markets. For example, Iowa, Minnesota and Wisconsin farmers and elevators previously served by the CNW railroad gained improved access through Union Pacific to customers in Arkansas, Arizona, California and export markets in Mexico. As a result of our Missouri Pacific and Western Pacific consolidations, Union Pacific intermodal and bulk customers gained greater access to West Coast ports and direct access to ports on the Gulf of Mexico.

Equipment Availability. Shippers also gained greater access to specialized equipment. Union Pacific had a larger fleet of specialized cars than the Missouri Pacific, CNW or Southern Pacific. CNW grain shippers, for example, benefitted from Union Pacific's larger covered hopper fleet. Southern Pacific metals shippers benefitted from access to Union Pacific gondola cars. In addition, the merged Union Pacific-Southern Pacific created more opportunities for triangulation and backhauls of locomotives, further improving equipment availability.

All these benefits continue to this day.

III. Union Pacific Has Increased Revenues And Improved Our Financial Condition By Competing For Business

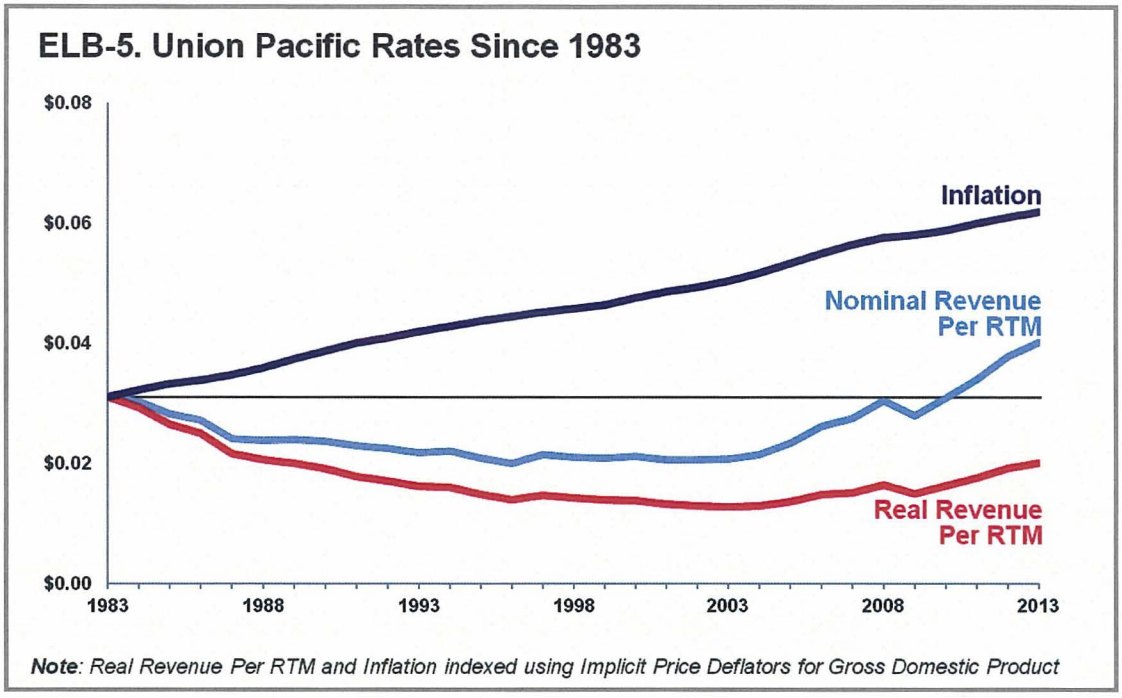
The ability to compete on service and price—with other railroads and modes of transportation—is the foundation of Union Pacific's improved financial

condition. Union Pacific has been able to win customer business, increase contribution, reinvest to grow our business, and deliver better returns to investors all as a result of our ability to provide a quality competitive service option in the transportation market.

In our experience, shippers are willing to pay more for a higher value transportation services product in the competitive market. Shippers demand speed, reliability and capacity so that they can compete for their own customers' business. Speed minimizes inventory carrying costs and improves equipment utilization. Reliability means consistent transit times from day-to-day, week-to-week and during different seasons. Reliability reduces customer supply chain costs. Shippers often tell us that service reliability is their most important measure for transportation. Shippers also want to know that we are reinvesting in our network to meet their current and future transportation needs.

The data show that service delivery and customer satisfaction are closely related. Our Service Delivery Index measures key service quality indicators for the railroad as a whole and for each of our six business groups. Our Customer Satisfaction Index measures customers' overall satisfaction with our performance. As shown in **ELB-4** below, customer satisfaction has closely tracked service improvements over the past decade at the same time railroad rates were increasing.

The fact that rates have increased is not in and of itself "bad" as some shippers seem to argue. Our rate increases reflect the operation of market forces. Rates also have not increased as quickly as some shippers would have the Board believe. While it is true that Union Pacific's rates began to increase in 2004 after falling for two decades after the Staggers Act, our rates in real dollars remain below their level in 1983, the year after our Missouri Pacific and Western Pacific transactions. If our rates merely had tracked inflation over the same period, they would be much higher than the rates shippers pay today, as shown in **ELB-5** below.

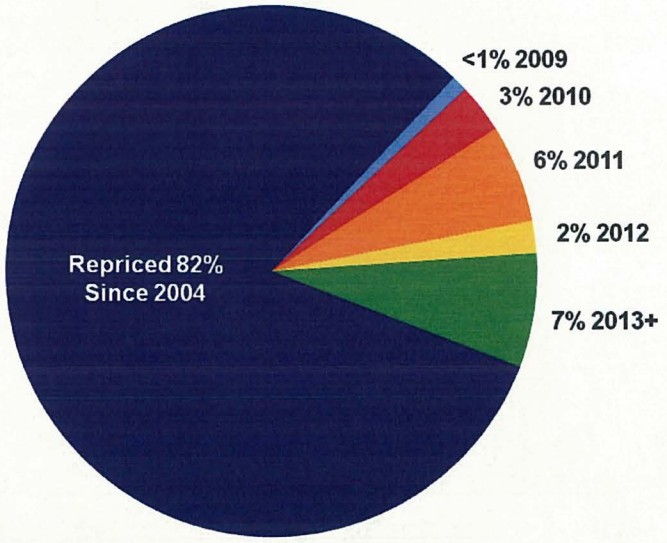


Increases in railroad rates since 2004 reflect the work of economic forces beyond Union Pacific's and our customers' control. Demand for rail transportation increased widely and persistently for several years as surplus capacity was consumed by customer demand. Our spending for line capacity, locomotives and recruiting and training thousands of new employees also increased significantly. For example, the cost of a commonly used locomotive model increased by 35% to almost $2.5 million from 2004–2013. At the same time, rising operating costs, especially fuel costs, began to put upward pressure on rates just as productivity gains slowed.

The expiration of long-term "legacy" contracts with rates below or only slightly above the variable cost of handling the business, and the renewal of these contracts at current market-levels also increased rates for some customers. Most of these re-pricing opportunities were presented from 2004–2008, as shown in

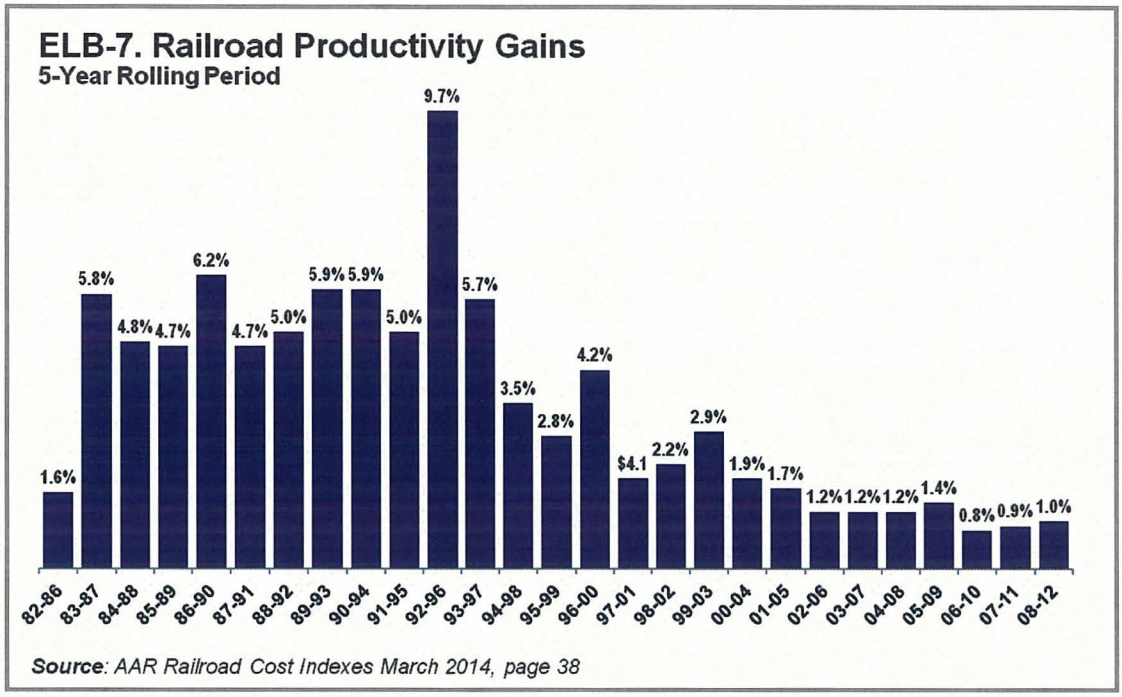
ELB-6 below. New negotiated agreements did not reflect the exercise of market power. On the contrary, as these contracts came up for renewal, we simply renegotiated them to reflect market-based prices that would allow us to adequately reinvest in the assets required to perform the service.

ELB-6. Re-Pricing Opportunities
Percentage Of Revenue As Of January 1, 2009



***Source**: Investor Fact Book 2008*

In addition, the "easy" productivity gains railroads were able to achieve and pass along to shippers in the form of lower rates in the first decades after the Staggers Act now are more difficult to come by and are not enough to offset our increasing costs. As shown in **ELB-7** below, railroad productivity gains peaked in the 1990s. At Union Pacific, we achieved most of our merger cost savings in the years immediately after the Southern Pacific acquisition. However, the biggest opportunities to reduce the costs to operate trains, to install computer systems (and replace armies of clerks), and to shed thousands of miles of track came around only once.



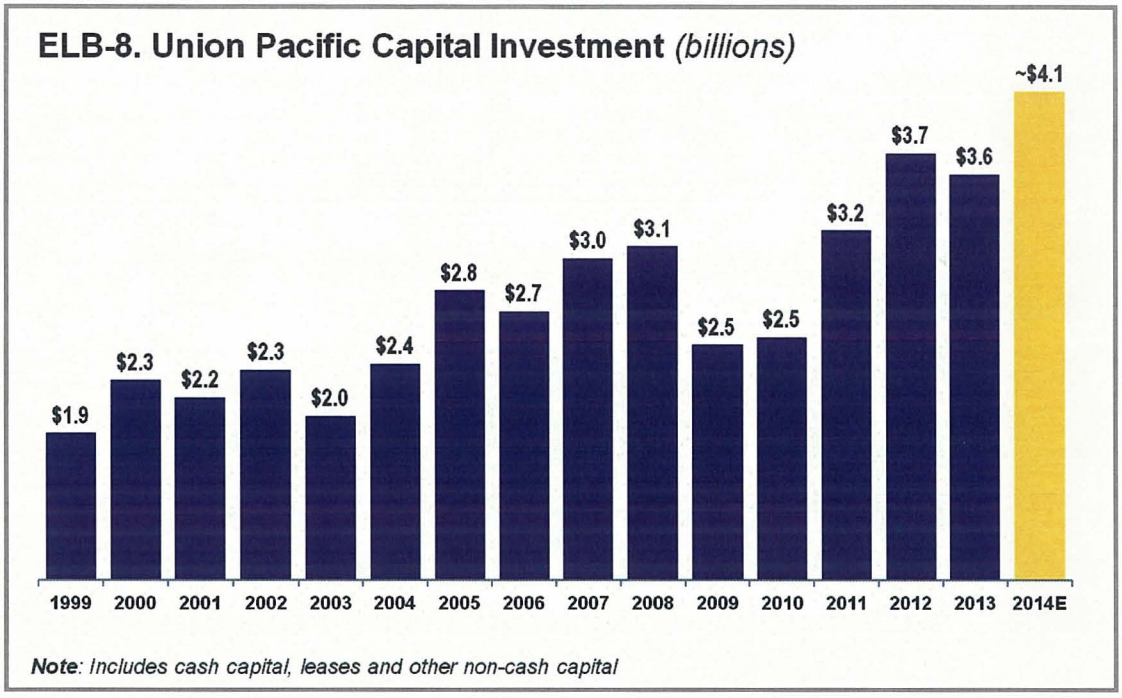
Source: *AAR Railroad Cost Indexes March 2014, page 38*

Now, the low-hanging fruit has been picked. Our success in shedding the excess overhead imposed by earlier regulation, negotiating more efficient agreements with our labor unions and achieving merger-related improvements during the first two-decades after Staggers still benefits our customers and our investors, but we cannot repeat such gains. Productivity gains today are not only more incremental, they cost more to achieve. We still strive for greater efficiency and continually look for process improvements to wring out all we can from our infrastructure. However, as discussed in the section below, we often must invest much more now to produce the same kind of service improvements and capacity gains (*e.g.*, increasing the number of trains per day that can run over a line) that we were readily able to achieve in the past. Because of this, it is more critical than ever to earn returns sufficient to enable that investment.

IV. Union Pacific Must Continue To Invest In Capacity To Meet Market Demand And The Cost Of Capacity Is Rising

In our experience, whether rail capacity will be enough to meet their future needs is a concern for many shippers. We work closely with our customers to determine where and when to make capacity investments. Many shippers want and need the railroads to invest to expand capacity—as the Board heard repeatedly in its hearing in *United States Rail Service Issues*, Ex Parte No. 724, earlier this year. We believe most shippers also recognize that the U.S. rail network does not have the excess capacity that it did in the 1980s and 1990s and that new investments are needed to meet increasing and changing service demands.

As our revenues have grown, Union Pacific has been and is making huge capital investments to support new business growth, especially in the categories of new line and terminal expansion. For example, from 1995–2010, we invested approximately $1 billion to increase capacity on our "Red X" mainlines across the Upper Midwest and Great Plains. From 2003–2012, we invested more than $1.1 billion to increase capacity on our Sunset Route from El Paso to Los Angeles. As shown in **ELB-8** below, we expect to invest record amounts of capital projects in 2014, including for growth.



We believe a historic opportunity exists to grow capacity, improve service and take more truck traffic off the nation's highways and onto rail. To meet increasing and ever-changing market demand, we need the financial capability to continue investing in coming years. We do not yet earn the kinds of returns necessary to support the investments needed, but the opportunity to grow and to serve the nation's transportation needs is there.

Our greatest opportunities now are on the eastern third of our network—with a focus on our Southern Region, which includes Texas and Louisiana. A resurgence in U.S. oil and natural gas production has sharply boosted demand for transporting "frac" sand and other materials used in drilling operations. To serve this market, we have had to shift resources and redirect investments because the predominant traffic flow over our system historically has been east-west, while the frac sand traffic mostly moves north-south.

Meanwhile, the inexpensive feedstock produced by the oil and gas boom and the expectation of low-cost and abundant domestic natural gas supply is spurring a revitalization of U.S. chemical production. Again, our Southern Region is a great example. A large number of new plants are being announced and new pipelines are being built there to transport gas, oil and downstream chemical products. Union Pacific is working with our chemicals customers to add more line and terminal capacity in Texas and Louisiana, as the increase in production increases demand for rail service.

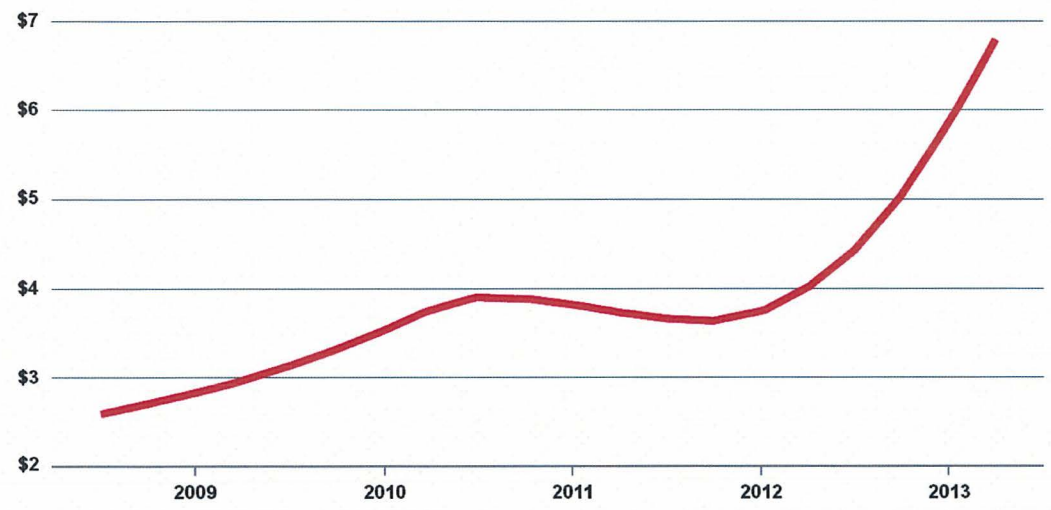
With these opportunities, however, come challenges. The cost of adding new capacity on our system is rising due to several factors. First, new sidings, crossovers, connections and improved signal systems already have been constructed in places where they had the biggest impact to throughput. Future investments also will increase network capacity, but to a lesser extent than in the past. To make an equivalent impact, more miles of track will have to be added at a greater total cost. The cost of track materials, signaling systems, and technology, including Positive Train Control, all represent elements of inflation that increase the cost of adding new capacity.

Another cause of rising costs is the challenge of adding new track in congested areas. For example, since 2009, we have invested more than {

} Between 2009 and 2013, the average sale

price of urban land in the largest cities in these states more than doubled, as shown in **ELB-9**. Other factors also can make expanding capacity difficult in such areas, including the large number of pipelines and environmental and permitting challenges.

ELB-9. Texas And Louisiana Urban Land Values
Average Sale Price Per Square Foot



***Source**: CoStar Realty Information, Inc.*

V. Examples From Union Pacific's Business Groups Show How Competition And Investment Drive Performance

The vast majority of the traffic that moves on our railroad is competitive, and each of our six business groups competes for our customers' business. As discussed below, we innovate and invest in our network to meet our customers' increasing or changing rail transportation needs.

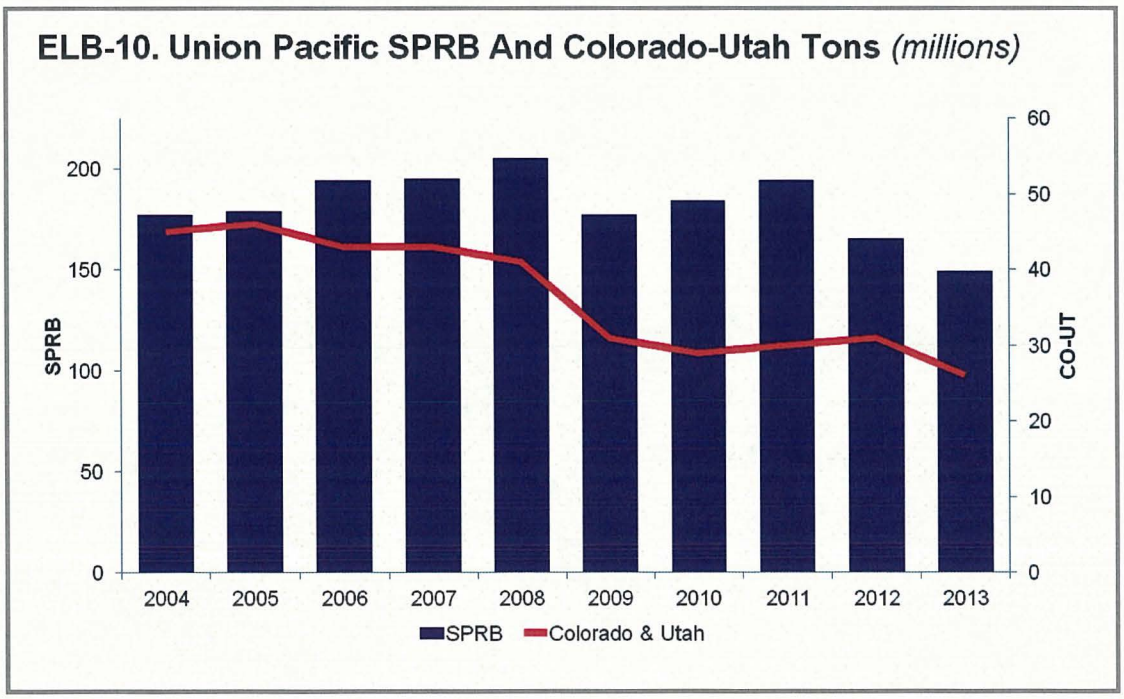
A. Coal

Union Pacific transports coal and coke to utilities and industrial facilities throughout the U.S. and for export. Coal originating in the Southern Powder

River Basin ("SPRB") of Wyoming is the largest segment of our coal business, comprising 73% of carloads in 2013. Coal produced in the Uinta Basin region of Colorado and Utah is the second largest segment, accounting for 14% of carloads in 2013. The remaining traffic consists of coal forwarded to Union Pacific from other carriers (such as Central Appalachian coal), coal originating in Southern Wyoming's Hanna Basin, the Illinois Basin, or New Mexico, and coke moving from refineries throughout the country.

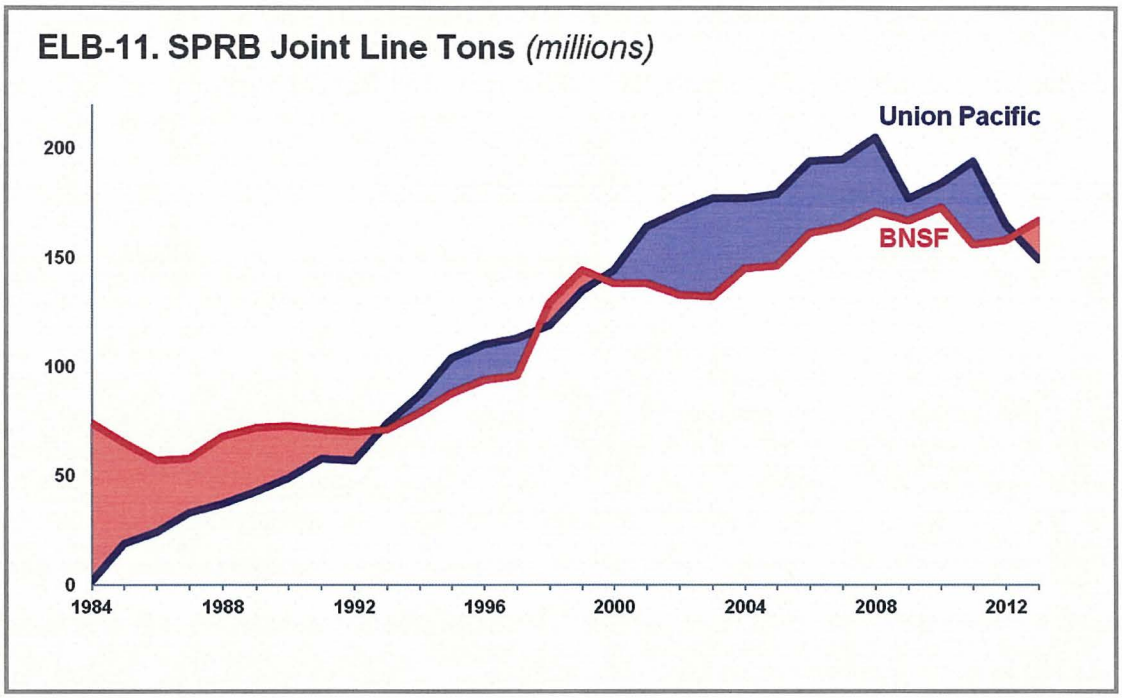
1. Competition For Coal Business

Union Pacific faces profound direct and indirect competition for our coal business. From 2004–2008, Union Pacific faced growing demand for coal from the SPRB, Colorado and Utah due to the surging economy and rising natural gas prices. At our peak, we moved 205 million tons out of the SPRB in 2008, and 46 million tons out of Colorado and Utah in 2005.



To meet that strong demand and the anticipation of further growth, we invested heavily in capacity for our coal network during the middle of the last decade. Market forces, however, changed direction on us. Overall coal demand—and demand for coal transportation—dropped during the recession and in response to changing environmental regulation and tax policy that favored renewable and other non-coal sources of energy. Then, just after our coal volumes began to recover from the recession, natural gas prices hit record lows and we also lost business to our chief competitor, drastically reducing coal demand and Union Pacific's coal volumes. As shown in **ELB-10** above, Union Pacific's SPRB coal volumes have decreased by 23% since 2011 and 27% since the peak in 2008. Similarly, our Colorado and Utah coal volumes have decreased by 11% since 2011 and 43% since the peak in 2005, approximately six fewer trains per day.

Direct Competition. As joint owners of the rail line serving the SPRB mines ("Joint Line"), Union Pacific and BNSF compete head-to-head for SPRB coal. The rail carrier who moves more SPRB tons fluctuates over time as one gains and the other loses market share, as shown in **ELB-11** below. As the second entrant into the SPRB, Union Pacific succeeded in growing our market share from 23% in 1985 (our first full year serving the SPRB) to over 50% in less than a decade. BNSF briefly took back the lead for a few years in the late 1990s before Union Pacific won the majority of SPRB market share beginning in 2000. More recently, we lost market share in the SPRB, due largely to customers shifting from Union Pacific to BNSF.

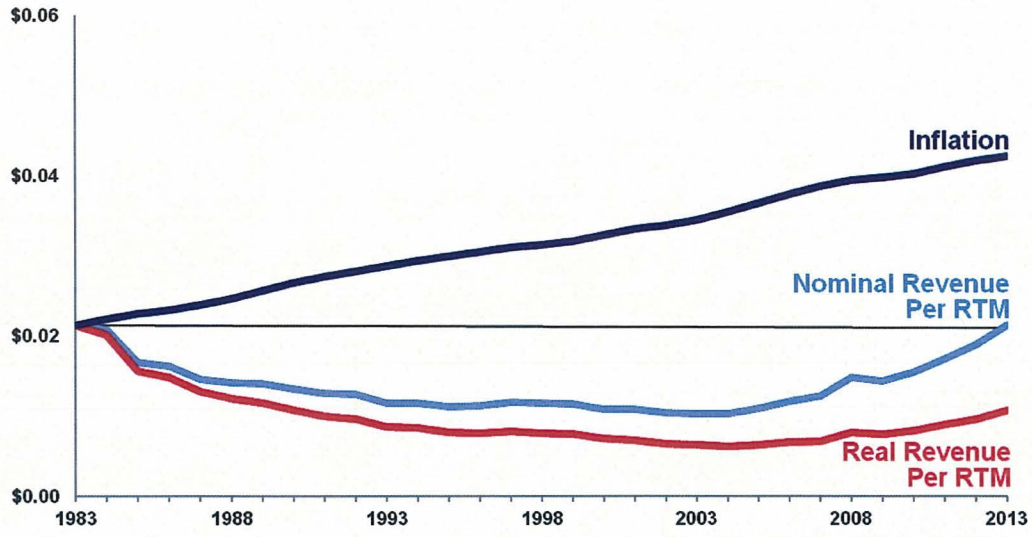


From the time Union Pacific entered the SPRB in 1984 through 2003, Union Pacific's rates for coal fell significantly as Union Pacific made substantial productivity gains and passed those savings on to our customers. For example, Union Pacific invested in more expensive locomotives equipped with AC traction and distributed power, and we invested in longer sidings. These investments—along with incentivizing customers to use higher-capacity aluminum cars—allowed Union Pacific to run longer trains and deliver more coal with each train. This reduced our costs, and at the same time improved reliability and reduced unloading costs for our customers.

When the economy surged in late 2003, we faced significant challenges in our coal network. We had limited capacity to accommodate higher demand for coal in Colorado and we were attempting to determine how much more capacity we would need for anticipated growth in SPRB volumes. Our costs (especially fuel

costs) were increasing and productivity gains were harder to realize. In addition, much of our coal traffic moving under legacy contracts was barely covering (and in some cases not covering) our variable costs for moving the coal. These rate levels were simply not sustainable—besides being below market. Beginning in 2004, coal rates began to increase to reflect the higher costs and the rising demand to invest in new capacity to support that traffic.

ELB-12. Union Pacific Coal Rates Since 1983



***Note**: Real Revenue Per RTM and Inflation indexed using Implicit Price Deflators for Gross Domestic Product*

Our strategy to price at reinvestable levels as legacy contracts came up for bid has yielded an increase in nominal rates, but higher costs have consumed much of that increase as illustrated in **ELB-12**. For example, we recently renegotiated a legacy contract {

}

In addition to having opportunities to improve margins on competitive business, Union Pacific has won business by offering a more competitive pricing and service product. For example: We won one Midwestern utility's business the last time it came up for bid by developing a superior route {

} Consequently, Union Pacific was able to offer competitive rates {

}

Union Pacific also has retained competitive business {

}

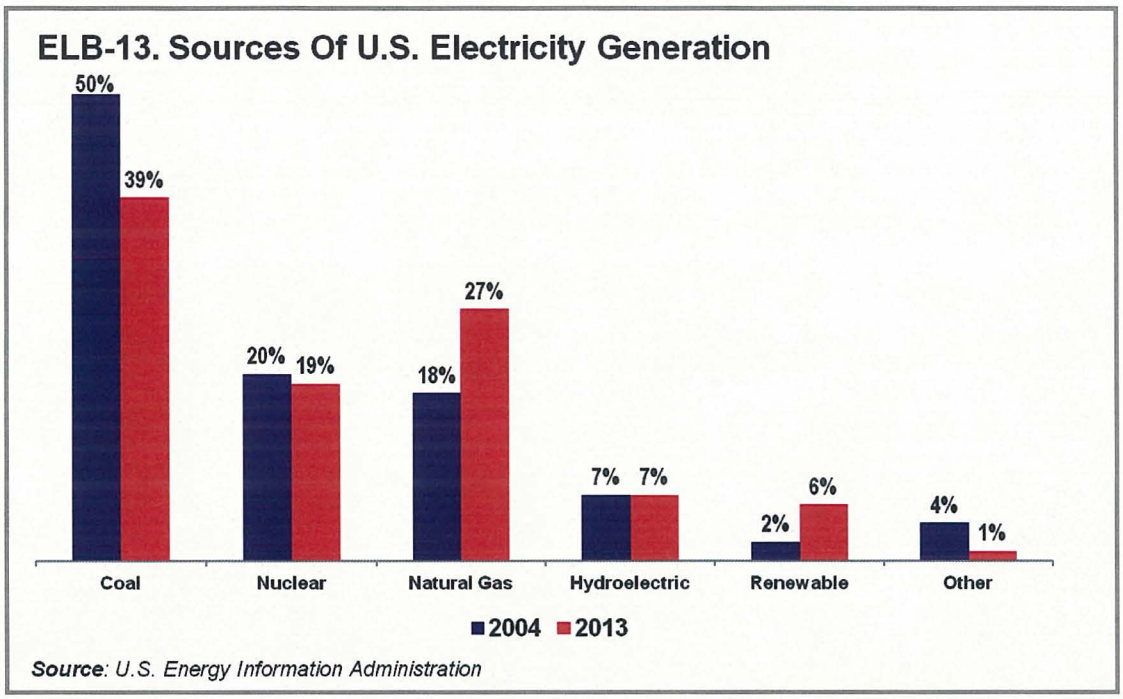
On the other hand, Union Pacific has lost business that we held for years, despite offering competitive rates. {

}

Indirect Competition. Union Pacific's coal business also faces competitive pressures from low natural gas prices as well as renewable sources of energy, such as solar and wind power. Over the past couple of years, new horizontal extraction techniques revolutionized the production of natural gas, greatly increasing domestic supply and significantly decreasing the cost. As a result, natural gas-fired power plants were able to produce electricity for less than it costs to run many coal-fired units, displacing electricity supplied by coal-fired generation. Moreover, government policy (both environmental and tax) favoring renewable sources of energy and imposing significant costs on coal-fired generation has displaced coal further.

In 2004, coal accounted for 50% of the electricity consumed in the U.S., while natural gas-fired generation accounted for 18% and renewable sources accounted for 2%, as shown in **ELB-13** below. Nearly a decade later, natural gas-fired generation and renewable sources combined for 33% of U.S. electricity

in 2013 and displaced a portion of coal-fired generation, which fell to 39%.

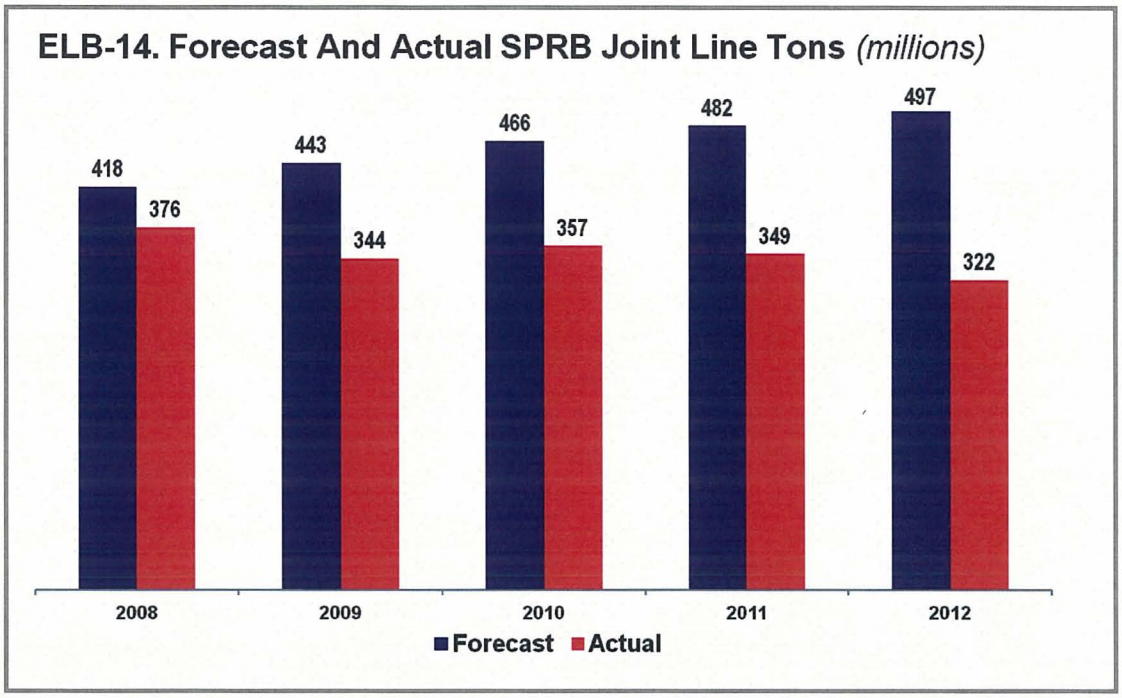


The increased competition between natural gas-fired and coal-fired generation and government policy discouraging coal-fired generation decreased coal shipments on Union Pacific by 14% from 2011–2012 alone.

2. Investments In Our Coal Network

Union Pacific has devoted significant resources to support and expand our coal network. From 2004–2010, we invested nearly $600 million in coal capacity alone, including $470 million in capacity in our SPRB coal corridors, $55 million in our Colorado and Utah coal corridors, and over $60 million in railcars. When we made the SPRB investments, total SPRB coal volumes from the Joint Line were expected to exceed 400 million tons in 2008 and keep growing. Unfortunately, those forecasted volumes did not materialize. Actual SPRB tonnage on the Joint Line peaked in 2008 at 376 million tons and has not

rebounded since.



As for Colorado and Utah coal volumes, repeated production problems such as those caused by longwall failures, fires, flooding and mine collapses (as well as reduced demand for coal due to lower natural gas prices and environmental pressures) have prevented average loadings from rebounding to peak levels. Several Utah mines have even closed since our peak in 2005, further reducing coal volumes.

B. Agricultural Products

Our agricultural products business consists of transportation of grain, grain products and food and refrigerated products for domestic use and export.

- Grain includes whole grains such as corn and wheat, soy beans and other specialty grains. Grain accounts for 39% of carloads for our agricultural products business. The majority of the grain we move originates in the Midwest and moves to domestic processing and feed markets in the Midwest, South and West and for export to Mexico and export terminals in

the Pacific Northwest and the Gulf Coast.

- Grain products, such as ethanol, dried distiller grains (known as "DDGs") and soybean oil, make up 35% of our agricultural products carloads. We move grain products from processing facilities in the Midwest to destinations in the West and South for further processing for consumption or, in the case of ethanol to destinations, including in the Northeast via connections, for use as a fuel additive.

- Food and refrigerated products make up the remaining 26% of the agricultural products carloads. This segment consists of a wide variety of products such as beer, food ingredients, fresh and frozen products that move from the production areas primarily on the West Coast and in Mexico to consumption markets in the Midwest and, via connections with other railroads, the Eastern United States. This segment consists of exempt traffic.

1. Competition for Agricultural Products Business

Agricultural shippers enjoy robust competition. Union Pacific competes directly for agricultural traffic against other railroads, trucks and barges and indirectly against producing regions not served by Union Pacific. We offer these customers competitive rates and innovative products while investing in rail infrastructure to support the growth of domestic and export traffic.

Grain. Shippers of grain in particular have readily available transportation alternatives to Union Pacific, and receivers have readily available supply options. Agricultural processors, such as grain and oilseed milling facilities, often are located near agricultural producers. Nearly all grain producers and elevators have a wide range of competitive options for moving grain to both nearby and distant destinations. The few producers that may be beyond trucking distance to any destination except a Union Pacific served elevator also benefit from extensive geographic competition for grain.

Trucks pose a potent competitive challenge because *all* grain that is shipped *starts* its journey to market in a truck. Direct trucking from field to market or barge terminals is common in Union Pacific's service territory. Grain that is not trucked directly to a terminal or processor will likely be trucked to an elevator and stored until sold to an exporter, a processor or a feeder. In our service area, producers are generally located within trucking distance of multiple elevators located on different railroads. There is extensive trucking of grain from elevator to market in our service territory, meaning that even if grain arrives at an elevator served by Union Pacific it may never be transported by Union Pacific.

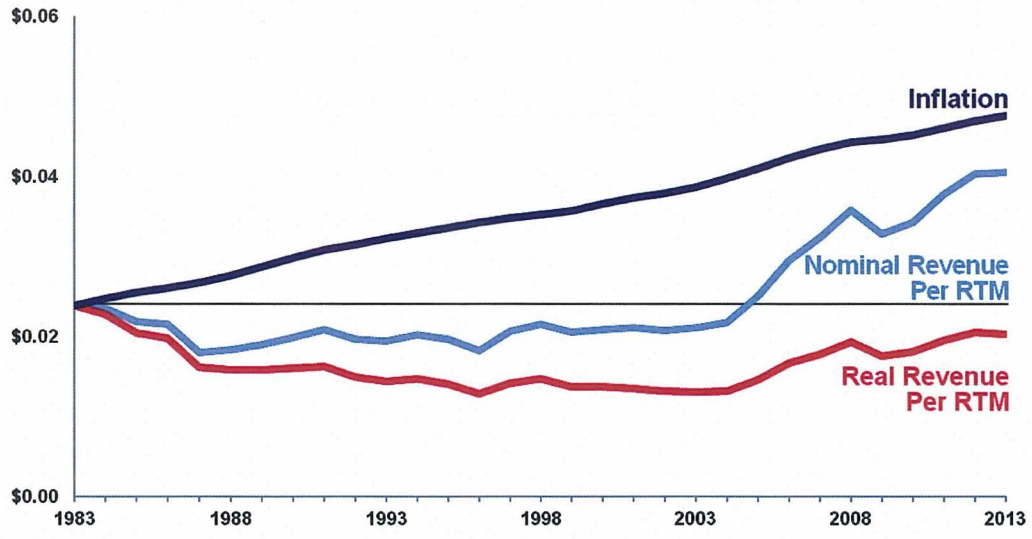
Grain Products. We compete for new grain products business by working with customers to increase shipping capacity by expanding customer facilities located on Union Pacific. There is an initiative underway to work with grain processors to expand rail capacity on Union Pacific. This gives originating shippers more access to Union Pacific and non-Union Pacific destinations. We would prefer to keep the expanded business on Union Pacific so we are also working with existing customers to expand their capacity to receive grain products, while trying to find new destinations to deliver grain products.

Food and Refrigerated Products. Union Pacific faces strong competition from trucks for the transportation of food and food products as well. While trucks handle the "first mile" of virtually every shipment similar to grain, food products are typically processed at plants near the fields. Rail movements start at the plants and end up at distribution centers or re-seller locations. Trucks

will then handle the "last mile" for the vast majority of food/food products shipments that are sold in grocery stores or consumed in restaurants. Trucks carry more than 70% of agricultural and food products, and more than 80% of communities in the United States—where the food is consumed—are served exclusively by truck. Shipment of perishables in particular is a highly truck-competitive market, as customers require fast, reliable transit times that railroads historically were unable to provide. Union Pacific continues to compete for—and win—this business with new service offerings.

In developing rates and service terms, Union Pacific takes into account the many alternatives shippers and receivers enjoy and seeks to be competitive with other modes. For example, our grain rates apply from defined geographic groups. All locations within a group normally take the same rates to any given destination, and groups generally are created without taking into account whether locations are served only by Union Pacific or have access to multiple railroads. Because most grain and much of the grain products traffic move under common carrier rates instead of contracts, we were able to respond to the changing marketplace and increasing costs more quickly than we were with customers with long-term contracts.

ELB-15. Union Pacific Agricultural Products Rates Since 1983



***Note**: Real Revenue Per RTM and Inflation indexed using Implicit Price Deflators for Gross Domestic Product*

We also innovate to serve this business. Shuttle trains are the most popular and successful recent innovation in grain transportation. Shuttle trains are dedicated trains where the cars and locomotive power stay together from trip to trip—that is, they are not broken up once they are unloaded, but are moved intact back to an origin for another load. Union Pacific allocates shuttle train capacity through an auction system, where supply and demand sets the price for our commitment to continuously cycle the train for a period of time. This commitment is valuable, especially when demand for grain transportation is high and equipment supply is low.

Shuttle train customers are not locked into any one origin-destination pair. Rather, the customer can choose to move the train between any Union Pacific shuttle origin and destination or sell its shuttle train capacity to other customers, providing the customer more flexibility while using equipment more

efficiently. This efficiency and flexibility of shuttle trains allows 45% of Union Pacific's grain car fleet to move 72% of Union Pacific's total grain. This high utilization rate allows us to move more grain more efficiently for our customers.

After years of development and investment, we recently opened a first-of-its-kind, intermodal "plant-to-port" service for grain. The new service involves transportation of covered hopper unit trains from the Midwest to a new facility in Yermo, California. There the grain is transloaded to marine containers, and then moved in double-stack intermodal train service to the ports of Los Angeles and Long Beach for export.

We have been able to compete for refrigerated shipments because we offer two premium services for refrigerated products. In one, we move fresh produce in unit train service from the West Coast to New York in as few as five days. In another, we move dairy products, canned goods, wine, frozen foods and some fresh produce from the West Coast to destinations in the East and Southeast. These services create opportunities for Union Pacific to capture market share from trucks in this service-sensitive sector.

Agricultural products customers also can take advantage of ShipmentVision Lite, a web-based monitoring tool to trace rail shipments moving in Union Pacific boxcars, refrigerated boxcars and food-grade covered hoppers. ShipmentVision Lite allows customers to track a shipment's entire transit route over all rail carriers. Through our subsidiary UPDS, we monitor shipments and ensure shipments are handled in an expedited manner, as part of Union

Pacific's door-to-door value. This value-added service product has improved car cycle time by 2.5 days, creating more equipment capacity for customers while allowing Union Pacific to generate more revenue per car.

Union Pacific is actively testing and marketing new services to food customers in Mexico. {

} In August of 2014, Union Pacific, in cooperation with CSX, completed our first test load of watermelons from Mexico to Maryland. If future tests prove successful, we will be able to compete with trucks for produce moving from Mexico into the United States.

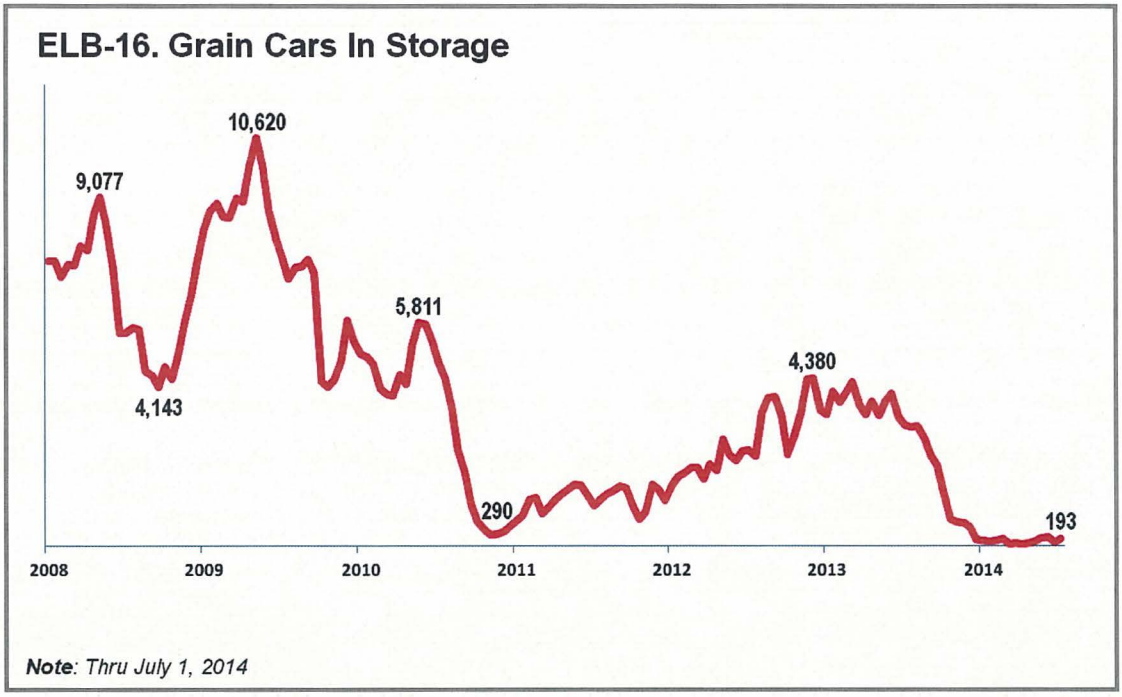
2. Investments In Our Agricultural Products Network

Since 2008, Union Pacific has acquired approximately 1,985 covered hoppers through purchase or lease. This includes more than 880 covered hoppers that Union Pacific recently added to our fleet in response to strong demand in the grain market in late 2013.

Union Pacific plans to add at least 1,500 additional covered hoppers to our fleet in 2014 bringing the total to 16,600 hoppers. Our new covered hoppers are capable of carrying more than 5,000 cubic feet of product, compared to older hoppers that could carry about 4,750 cubic feet of product.

While car acquisition benefits customers, it also exposes Union Pacific to the risk of equipment underutilization. As shown in **ELB-16** below, grain cars in

storage spiked when market demand fell during the recession. More than 50% of our grain car fleet was in storage in 2010.



Union Pacific's agricultural products investments go beyond covered hoppers. Our premium refrigerated services would not be possible without our fleet of nearly 5,000 refrigerated box cars, currently the largest refrigerated boxcar fleet in the industry. One refrigerated rail car provides the loading capacity of up to four truckloads. The fleet helps create a competitive advantage for customers shipping perishables on Union Pacific.

C. Chemicals

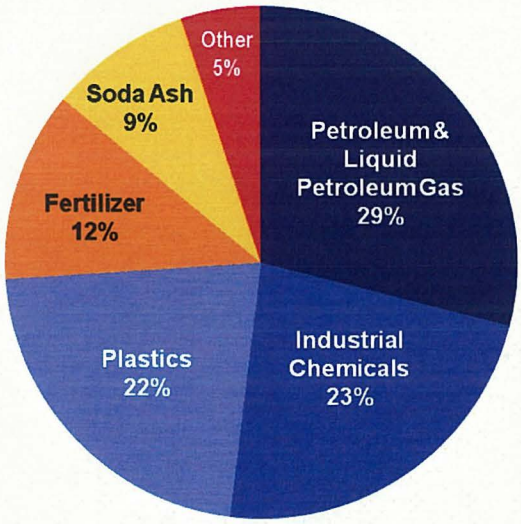
Union Pacific's chemicals business consists of four broad segments: petrochemicals, fertilizer, soda ash and other.

- Petrochemicals includes industrial chemicals, plastics, petroleum products (such as crude oil) and liquid petroleum gases and accounts for 74% of our chemicals volume. These products move primarily to and from

the Gulf Coast region, where significant chemical production is located and expanding.

- Fertilizer shipments represent 12% of our chemicals business and include nitrogen, phosphates and potash. These shipments move from the Gulf Coast region, the Western United States, and Canada to major agricultural users in the Midwest, the Western United States, and abroad.
- Soda ash originates in southwestern Wyoming and California and moves to chemical and glass-producing markets in North America and abroad. It accounts for 9% of our chemicals business.
- The remaining 5% consists of sodium products, phosphorus rock and sulfur.

ELB-17. Chemicals Carloads *(2013)*



***Source**: Investor Fact Book 2013*

1. Competition for Chemicals Business

Union Pacific's chemicals business is subject to competition from other railroads as well as other transportation modes. Many of the chemical facilities that we serve are accessed by another railroad directly or through short lines or terminal railroads. In particular, Union Pacific, BNSF and KCS directly serve many of the same chemical facilities in the Gulf Coast region where much of

the domestic chemical production is concentrated. All three Class I carriers access chemical customers in the Houston area through the Port Terminal Railroad Association ("PTRA").

Even chemicals customers who are served by a single railroad have transportation options, and they leverage those options to negotiate competitive transportation rates. Many chemicals customers have multiple plants throughout the U.S., and customers can shift production from a plant served only by Union Pacific to a plant we do not serve if they are not satisfied with our rates or service. Moreover, much of our chemicals business can move by other modes of transportation. Fertilizers move by truck, barge or vessel, and some fertilizers even move by pipeline (such as anhydrous ammonia). Plastics and soda ash move by truck or utilize transload operations to combine multiple modes of transportation. Other petrochemicals move predominately by pipeline (such as propylene, ethane, butane, natural gasoline and propane), but can also move by truck, barge, or vessel.

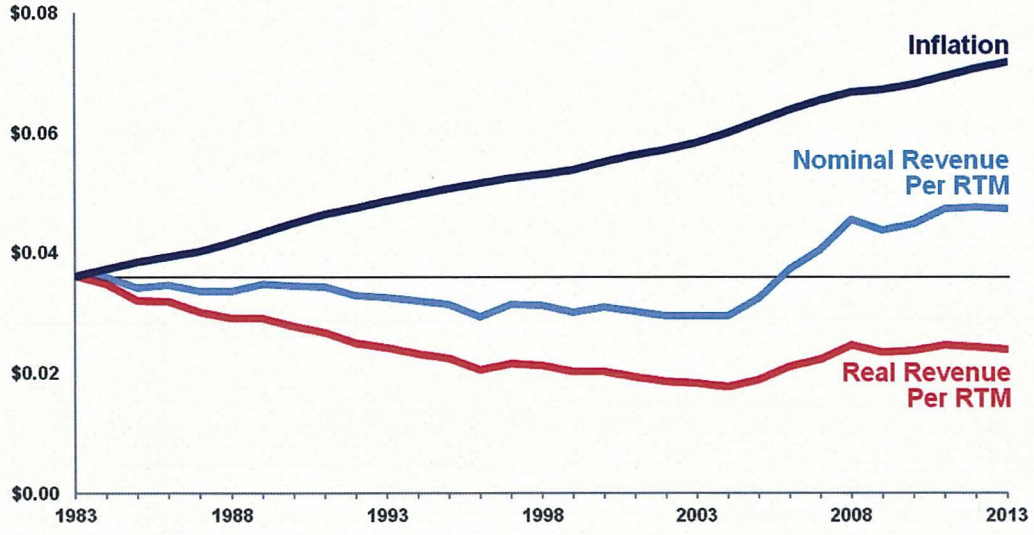
Chemical customers utilize multiple product sources and can change suppliers in order to negotiate competitive transportation rates. Union Pacific recently lost business when the receiver decided to source from a location with multiple transportation options. {

}

Our chemicals customers share common expectations. *First*, they expect Union Pacific to provide safe, timely and reliable service, which makes them more competitive in their own respective markets. *Second*, our chemicals customers expect us to handle their growing business. These expectations require that we price our services at market levels to generate the returns required to reinvest in our network.

Starting in 2004, Union Pacific's chemicals rates began to rise as demand increased and fuel costs and other costs also increased, as shown in **ELB-18** below. But they have remained relatively flat since then. Real rates remain below their levels in 1983.

ELB-18. Union Pacific Chemicals Rates Since 1983



***Note**: Real Revenue Per RTM and Inflation indexed using Implicit Price Deflators for Gross Domestic Product*

Union Pacific's service performance is a key competitive advantage for retaining existing chemical business and winning new business. We believe it is one factor in our customers' decisions on where to locate production. Several of our chemicals customers are in the process of expanding production at locations served only by Union Pacific, even though they could have chosen other possible locations served by multiple railroads.

We also have converted business from other transportation modes. In one case, we converted a customer's short haul business to rail that had been moving by truck for about two years. In another case, our chemicals and intermodal teams worked together to convert specialty movements of plastics from truck to rail using intermodal containers.

Some of our customers' production processes require a consistent flow of raw materials, and if the raw materials are not delivered on time, production stalls or shuts down completely, which can be very costly to reverse. Occidental Chemical Corporation ("Oxy") recently testified that reduced production rates caused by transportation delay on another carrier resulted in $7 million of additional costs. With Union Pacific's help, Oxy avoided additional costs from service interruptions. Union Pacific worked tirelessly with Oxy to keep the plant running by "reworking plans, expediting movements, putting together special trains, creating extra switches, and building unit trains." *U.S. Rail Service Issues*, Ex Parte No. 724, Hearing Tr. at 439-40 (April 10, 2014) (testimony of Robin A. Burns, Occidental Chemical Corporation).

Union Pacific also uses our facilities to create value for our chemicals customers. For example, Union Pacific has the largest and most strategically positioned storage-in-transit ("SIT") facilities in the U.S. SIT yards allow our plastics customers to store their products in their railcars at our facilities prior to final delivery, which is especially important for those customers who do not have capacity inside their plants to store their product until it is sold to end-users. Union Pacific currently has six SIT yards strategically located near plastics production in Texas and Louisiana.

2. Investments In Our Chemicals Network

Union Pacific has devoted substantial resources to attract and retain chemicals business through strategic investments in our network. Our investment strategy in the eastern third of our network and throughout our Southern Region is particularly attractive to our chemicals customers because of the large amount of chemicals flowing to and from the Gulf Coast.

Union Pacific invested more for capacity in our Southern Region in 2012 and 2013 than we had in the previous five years combined: more than $425 million. Additionally, for the same two years, Union Pacific invested more than $1 billion to maintain, replace or improve the integrity of our Southern Region's infrastructure, which is critical for providing safe, reliable transportation. Since we are required by federal law to move chemicals traffic—much of which is hazardous—between origins and destinations designated by our customers, investing in infrastructure improves safety for our employees, customers and communities.

The following are examples of capacity investments that benefit (or will soon benefit) our chemicals customers:

- ***Baytown Subdivision.*** In order to support heavier cars, we are upgrading the lines on our Baytown Subdivision near Houston from an allowable gross weight per car of 268,000 pounds to 286,000 pounds. This enables our customers to ship more freight in their cars, increasing their fleet's capacity.

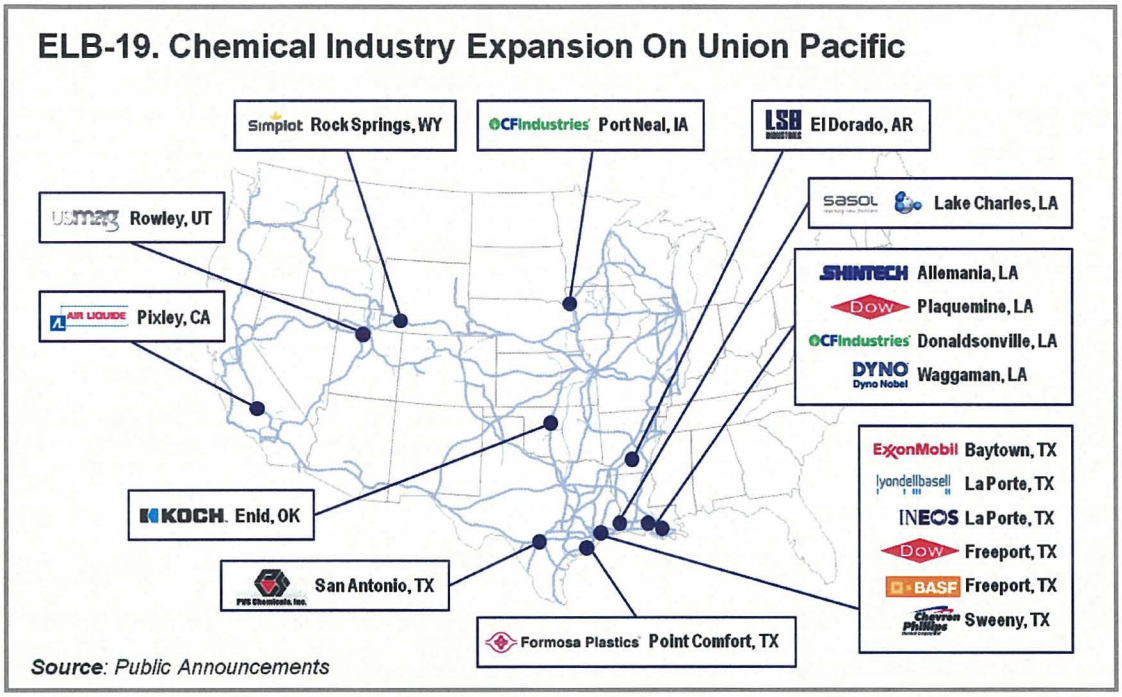
- ***PTRA.*** We made a series of capacity investments in the PTRA, such as double tracking and additional sidings. These investments have improved the interchange capability between PTRA and its Class I members and has improved local service to industries (including many chemical plants) in the Houston area.

- ***Tower 55.*** Union Pacific, BNSF and government entities recently completed upgrading the Tower 55 intersection in Fort Worth, Texas—one of the nation's busiest and most congested rail intersections—this September. The improvements will increase fluidity for traffic moving through the area and provide additional capacity for future growth.

- ***Terminal and Yard Improvements.*** We made a series of investments to improve throughput in Livonia, Louisiana, Pine Bluff, Arkansas, and Houston. For example, we built three train-staging tracks outside of Livonia to reduce congestion inside the terminal and on our main lines. We increased the yard capacity in Pine Bluff, which is a key terminal for southbound traffic. {

  }

As I describe elsewhere, Union Pacific has made significant investments in the Upper Midwest and in Texas to support the growth in frac sand and drilling materials. Our chemicals customers also benefit from investments that increase production of low-cost natural gas. Now that drilling innovations have tapped huge deposits of gas in U.S. shale formations, the chemicals industry has access to an abundant supply of natural gas—a crucial feedstock—at low cost, causing many chemicals customers to build and expand production in the U.S.

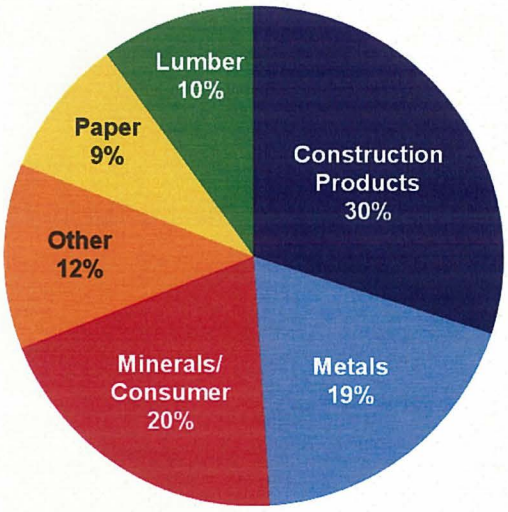


As shown in **ELB-19** above, many of these plant expansions are located in Texas and Louisiana, and the investments we are making will allow Union Pacific to improve service and more effectively compete for this new traffic when production comes online. As production comes online though, Union Pacific will be expected to move higher volumes of outbound product, increasing demand to add even more terminal and line capacity in our Southern Region.

D. Industrial Products

Our industrial products group transports hundreds of commodities between thousands of origins and destinations. We move construction products, metals and minerals, paper and consumer goods (including furniture and appliances), lumber, frac sand and countless other miscellaneous products. We have customers with long experience shipping by rail and many others who are new to rail transportation.

ELB-20. Industrial Products Carloads *(2013)*



***Source**: Investor Fact Book 2013*

1. Competition For Industrial Products Business

I described the highly competitive marketplace for industrial products traffic in *Review of Commodity, Boxcar and TOFC/COFC Exemptions*, Ex Parte No. 704. My testimony gave an overview of the largest segments of our industrial products business and detailed the intense competition Union Pacific faces from railroads and other modes of transportation, especially trucks. I also explained how product and geographic competition constrains the rates that Union Pacific charges.

The competition is just as intense today. Rail-to-rail competition remains fierce. Shippers located on Union Pacific or BNSF routinely transload their products to the other railroad. Now as then, trucks dominate some industrial products markets, such as lumber and wood products, in which they are competitive with rail even over long distances.

This competition drives Union Pacific to continuously improve service and bring new customers on the railroad. Industrial products must replace between 10% and 20% of its business *every year* just to stay even. This "churn" is due to the completion of construction projects, market changes, geographic source competition, and competition from other railroads and motor carriers. This churn also presents challenges for investment planning and pricing decisions and requires flexibility in how we manage our business.

For example, we are successfully responding to rapidly increasing demand arising from "fracing" for oil and gas production. We work with sand producers, industry suppliers and exploration and production companies. We face competition at the origin and destination. Inbound railcars are transloaded and the sand is trucked to drilling sites, which means that either barges or any railroad in the vicinity can win the business. This industry is generating enormous demand for sand, drilling-related minerals, steel, pipe products and stone.

Union Pacific succeeds in competing for this business by striving to be first to market with the ability to deliver the freight and by responding with innovative service products and logistics support for the complex and ever-changing needs of these customers. Price, equipment, service and ease of doing business all are important factors for winning and bringing on new business.

For example, to serve the frac sand market, we have implemented new train service for sand traveling from Minnesota and Wisconsin to Texas that reduces transit times compared to our standard carload service.

Similarly, Union Pacific, in conjunction with UPDS, was the first railroad to offer door-to-distribution center services for wind turbines and related components. We were able to attract this business by developing specialized equipment and providing concierge service, including arranging for off-loading at the distribution center. Today, Union Pacific has over 40 wind-distribution centers in North America.

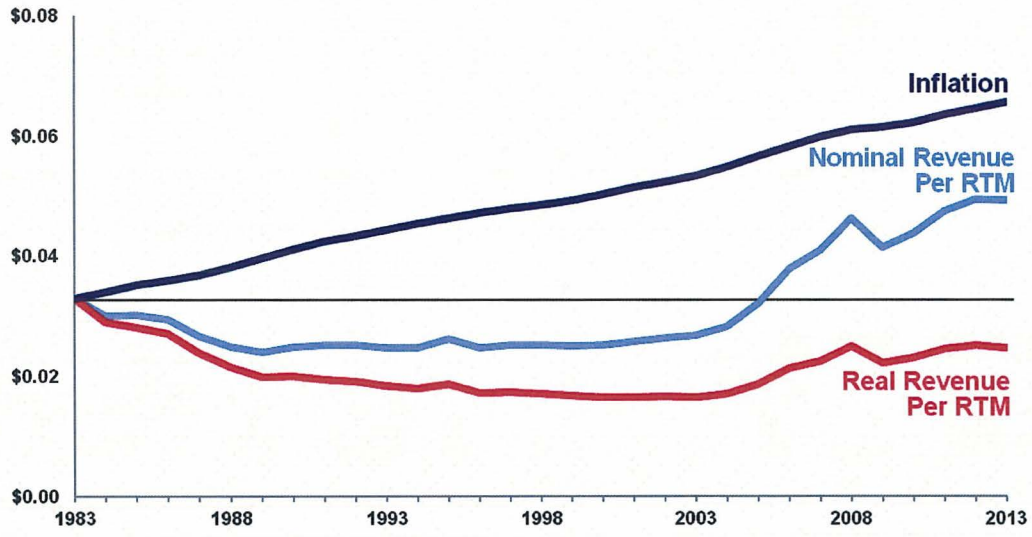
Union Pacific continues to focus on developing our own transloading operations, including specialized commodity handling capabilities in many areas of our network—for example, in Arizona (steel), Louisiana (rubber tires), Oregon (wallboard) and Washington (lumber). We also work with third-party transload operations across the country. These service capabilities have allowed us to convert business from both truck and BNSF.

During the last decade, our industrial products business has been able to grow revenues by focusing on improving our mix of traffic, investing to expand capacity and delivering customer value. The majority of industrial products traffic is exempt. Many of our industrial products customers compete in fast-paced and dynamic markets, like the frac sand business, and, therefore, are looking for relatively short-term moves. In these markets, we are constantly responding to requests for new rates and short-term rates are expiring.

When the rail market began to change a decade ago, industrial products had the ability to adjust our rates due to rising costs and new market prices. Legacy contracts have been rare with these customers. At the same time, if we price above market, these customers can use another carrier or mode of

transportation. As shown in **ELB-21** below, even though our nominal rates have increased since 2004, our real rates show only modest improvement despite the significant investment and risks we face with this business portfolio.

ELB-21. Union Pacific Industrial Products Rates Since 1983



Note: Real Revenue Per RTM and Inflation indexed using Implicit Price Deflators for Gross Domestic Product

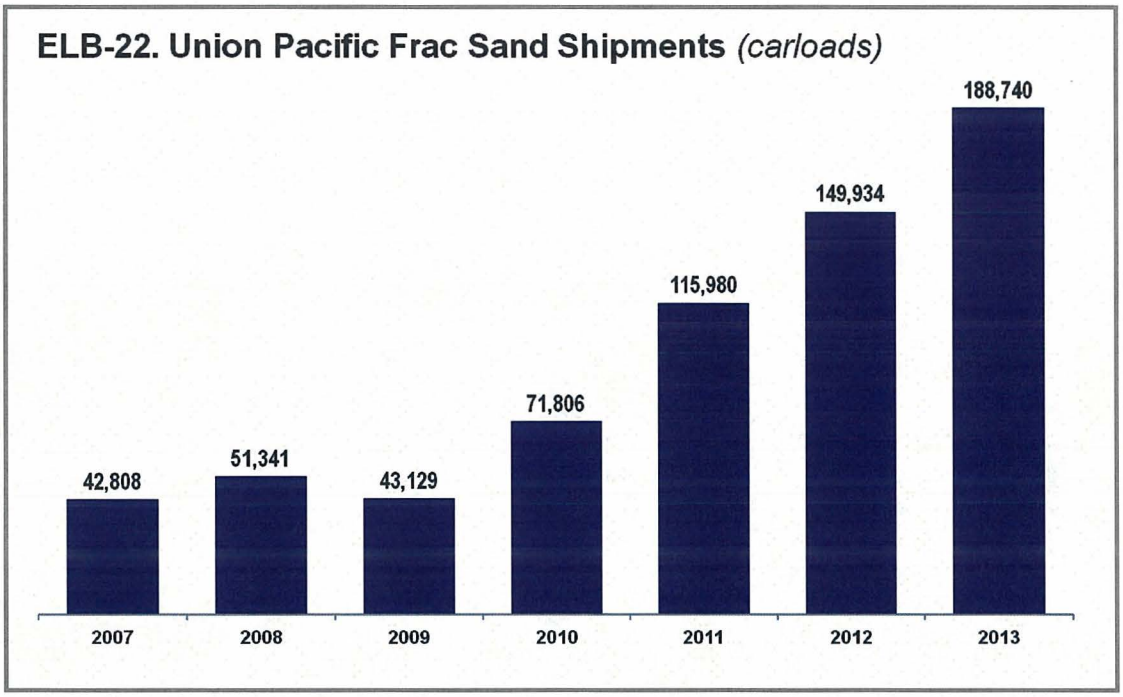
2. Investments In Our Industrial Products Network

The growth in the fracing market, a resurgence in commercial and residential construction and general economic growth all are driving our decisions to invest in the assets needed to meet the current and future demands of our industrial products customers.

For example, since 2004, Union Pacific has rebuilt much of the former Southern Pacific rail route from Portland, Oregon to Northern California, which is heavily utilized by the lumber and construction industries. We spend tens of millions of dollars annually to increase the number of sidings and install new

terminals to support the flow of traffic from the Pacific Northwest to Midwestern, Eastern and Southern destinations.

The fracing industry presents a remarkable opportunity. As shown in **ELB-22** below, our sand shipments have increased from fewer than 50,000 carloads to almost 200,000 in just a few years. As shale-related production of crude oil and natural gas continues to increase, this traffic is projected to grow more.



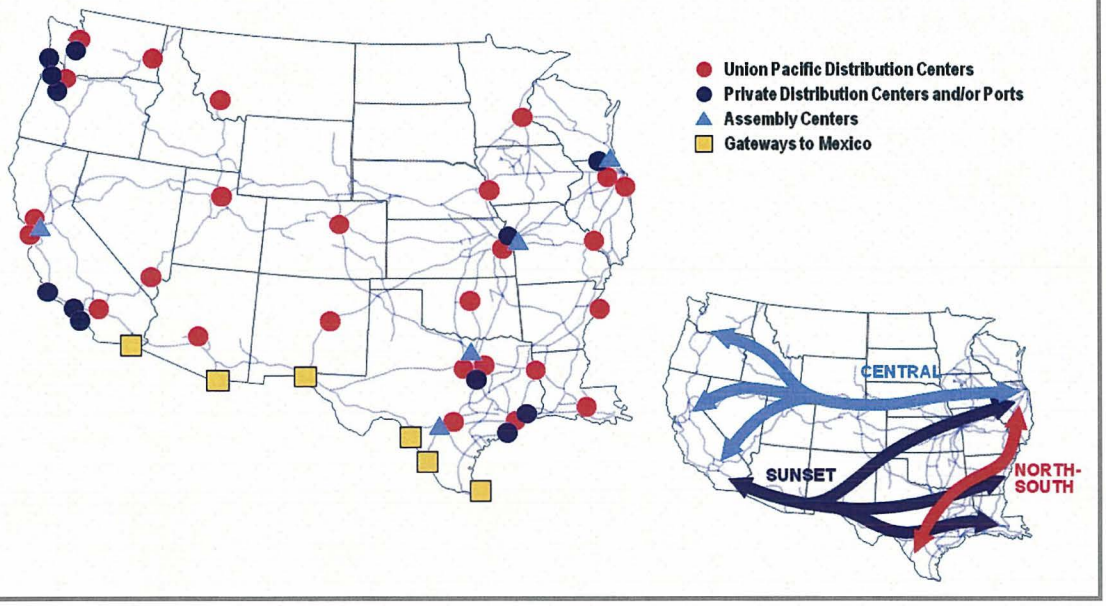
However, frac sand generally originates in Minnesota and Wisconsin and is needed in large amounts in Oklahoma and Texas. Investment is needed in our network to accommodate this new business. We have invested $14 million in nine capital projects on our Twin Cities Service Unit from 2011–2013 to build capacity and relieve capacity constraints. We have identified more than a dozen additional capital projects in the area for 2014–2015.

Investments do not always generate the returns expected. Take for instance, Union Pacific's investment in railcars. We supply a significant portion of the equipment utilized by industrial products customers. In the mid-2000s, Union Pacific invested in hundreds of centerbeam cars, primarily used to move lumber. Those cars later sat in storage as a result of the precipitous drop in the housing market that accompanied the Great Recession.

E. Automotive

Union Pacific operates a dedicated premium transportation network for the automotive industry. We serve five U.S. vehicle production plants directly. We access more than 40 vehicle distribution centers across the Western United States. We connect with major West Coast ports and the Port of Houston for import and export traffic. Union Pacific also provides expedited transportation of automotive parts for vehicle production plants in the United States, Mexico, and Canada.

ELB-23. Union Pacific Automotive Network



1. Competition For Automotive Business

Competition defines the automotive transportation market. Shippers can choose from truck, rail and ocean vessels to move automotive parts to assembly plants and finished vehicles to market, as described below:

- ***Rail Competition.*** Union Pacific and BNSF compete head-to-head for every major movement of finished vehicles in the Western United States. Both railroads have comparable access to automotive production plants in the eastern United States, Upper Midwest, Canada and Mexico either directly, through interline movements or by truck-to-rail connections. Both railroads have access to vehicle distribution centers in major metropolitan areas across the West. Both railroads have comparable access to ports on the West Coast and the Port of Houston. KCS is a strong competitor for finished vehicles traffic from in Mexico. Union Pacific also competes with BNSF and KCS for automotive parts traffic.

- ***Truck Competition.*** Trucks provide a fast, flexible alternative to railroads in both the finished vehicles and automotive parts markets. Trucks can take finished vehicles directly from a port or a plant to dealerships. Transportation of finished vehicles by rail requires loading and unloading at a rail facility and delivery by truck to the dealership, which adds time and cost. Consequently, truck movements can be competitive with rail even over some longer hauls. Truck is the dominant mode of transportation for automotive parts. At all levels of the supply chain, automotive parts must be delivered quickly to hold down inventory costs, and they must be delivered consistently or production will grind to a halt. Trucks are perceived as having both speed and reliability advantages for many moves.

- ***Ocean Vessels Competition.*** Ocean vessels carry finished vehicles from Mexico to either coast for distribution by truck or rail, providing shippers yet another transportation option. Union Pacific has seen tens of thousands of vehicles destined from Mexico to domestic markets that previously moved by rail diverted to ocean carriers in recent years. We also have seen vehicle traffic for new Mexican plants awarded to ocean carriers.

In our experience, automotive shippers are sophisticated buyers, who are fully aware of their many competitive options and will pit railroads against each other and other transportation modes to get the best possible deal. Union Pacific competes for this business by delivering the premium transportation services

automotive shippers demand.

For example, Union Pacific has been a leader in designing new equipment to serve the automotive market, including introducing the AutoFlex autorack in 2012. (An "autorack" is a specialized rail car used to transport finished vehicles.) The AutoFlex autorack can be converted between a bi-level and a tri-level configuration depending on the size of the vehicles being transported. This innovation has provided Union Pacific additional flexibility to meet the marketplace's ever changing needs.

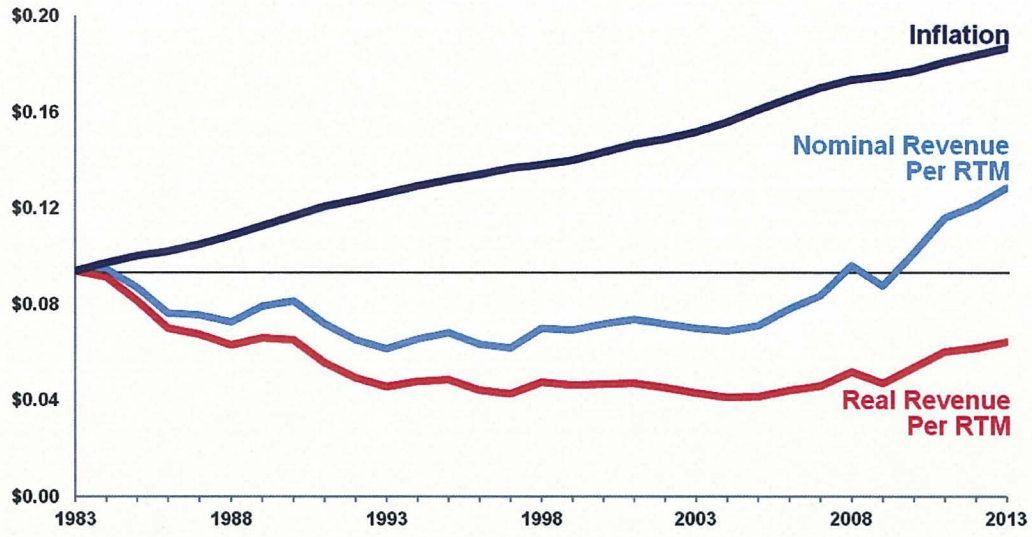
ShipCarsNow is another example of value-added service. Union Pacific launched this subsidiary in 2006 to offer transportation services to the used car market. Railroads previously had participated very little in this market because used cars generally are shipped in small volumes thought to be more suitable to trucks than trains. We designed software that allows customers to arrange their moves online. Since 2009, customers have been able to move their used cars in any volume, including a single vehicle, through the ShipCarsNow website.

Over the past two years, we have opened new intermodal lanes to provide better automotive parts service from our Mexican gateways to and from Chicago, the Ohio Valley and the Southeast.

Our automotive rates reflect the value of the premium transportation service we deliver. However, they also reflect the highly competitive nature of the market, in which essentially all the traffic is exempt. As with the coal business, the replacement of long-term legacy contracts has allowed our automotive contracts to move toward more reinvestable rates. As show in **ELB-24** below,

when the market changed during the last decade and our costs increased, automotive rates also began to increase so that we could justify making the investments necessary to handle this traffic.

ELB-24. Union Pacific Automotive Rates Since 1983



Note: Real Revenue Per RTM and Inflation indexed using Implicit Price Deflators for Gross Domestic Product

2. Investment In Our Automotive Network

Union Pacific responds to competition in the automotive transportation market by innovating and investing to secure and retain business. Our automotive customers also face competition in their markets and require fast transit times, consistent performance to schedule and a high standard of care for their products.

The investments Union Pacific has made in our automotive network have enabled us to reduce average transit times for finished vehicles. Union Pacific has reduced average transit times for finished vehicles from 5.1 days to 4.7 days from 2005–2013 (the earliest date for comparable figures), resulting in millions

of dollars in savings for our customers. We also have improved on-time delivery performance, and we are providing 99.7 percent damage-free delivery to the automotive industry.

We have invested to develop new technology products that provide value to our customers, including our VINformation system and LogicNet software.

- ***VINFormation.*** The VINFormation tracking system helps automobile manufacturers track and locate individual vehicles traveling by train. This proprietary software, developed by Union Pacific, associates each Vehicle Identification Number with the railcar in which the specified vehicle is traveling. Customers can use the system to map, query, locate, and track all of their vehicles quickly and easily.

- ***LogicNet.*** Union Pacific purchased LogicNet software to provide automotive customers with more information about transportation options. Union Pacific uses the LogicNet software to highlight all of a customer's destinations overlaid with our transportation network. LogicNet helps customers save money by making their transportation route more efficient.

In total, we have invested approximately $532 million from 2004–2013 in network facilities and rail cars specifically for our automotive business. This figure does not include specific additional investments in intermodal facilities and rail equipment used to transport automotive parts.

Union Pacific this year expects to invest { } in facilities specifically serving the automotive business. Most of these dollars will go toward capacity improvements in growth markets, including multi-million-dollar expansions of our Kirby and Mesquite, Texas, automotive distribution facilities. Each of these investments carries risk.

Union Pacific also is investing in our fleet of autoracks. This year alone, Union Pacific expects to make { } in additional equipment investments for finished vehicles shipments. Over the past 10 years,

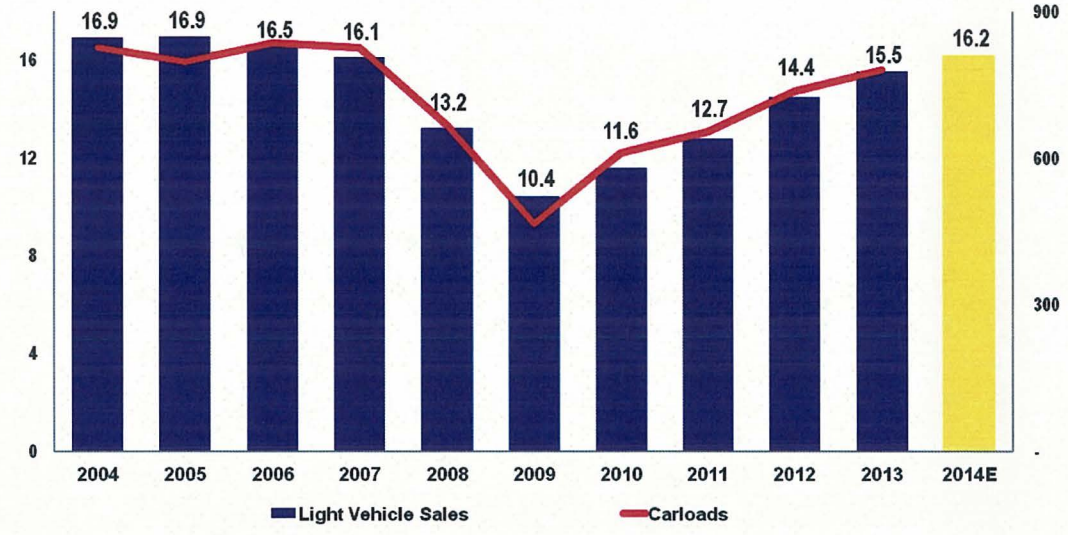
we have made an average annual investment of approximately $32 million to improve and expand our fleet. Union Pacific also is the largest contributor to the national multi-level fleet pool used to transport finished vehicles by rail.

The value of these investments to automakers was apparent this last summer. Union Pacific was able to run extra trains, provide alternative origins for loading, and share Union Pacific's equipment investment in the national multi-level pool with other railroads during the summer lull in industry production to assist automakers to drive down high inventories of unshipped vehicles that had accumulated during the harsh 2013-2014 winter and get them to dealerships.

The returns on the investments that Union Pacific has made and continues to make in our automotive business are the foundation for the premium service product we deliver. These returns are not guaranteed, however. The traffic "mix" may change from larger to smaller vehicles—and back again—requiring Union Pacific to adjust to meet market needs. We may win or lose large volumes of traffic when automakers re-bid their transportation requirements. Near-sourcing of automotive parts production is another risk, because it reduces the need for transportation.

When sales and shipments plummet, as they did during the last recession (as shown in **ELB-25** below), Union Pacific is challenged to earn an economic return on our investments.

ELB-25. U.S. Light Vehicle Sales vs. Union Pacific Auto Carloads

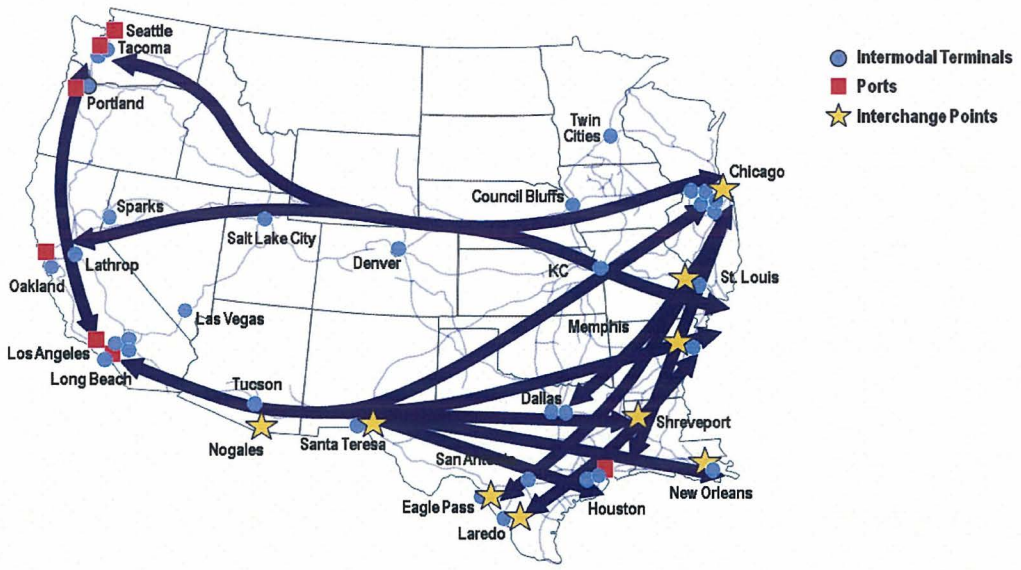


***Source**: IHS Global Insight July 2014*

F. Intermodal

Union Pacific operates an extensive network in the highly competitive, service-sensitive intermodal transportation market. We compete with trucks, ocean carriers, and other railroads for intermodal business. We provide intermodal rail service at 33 terminals in the Western United States. We invest in intermodal equipment and system routes to build our service product.

ELB-26. Union Pacific Intermodal Network



Intermodal intermediary companies package intermodal equipment and rail, truck and water transportation options to form a "door-to-door" service product. Intermodal traffic involves multiple modes of transportation, and a movement may extend far beyond our rail network. We provide service in both the international and domestic markets. International moves involve an ocean carrier. Domestic moves do not move over water, but may extend into Canada or Mexico.

1. Competition for Intermodal Business

Shippers have many competitive options in the intermodal transportation market. Intermodal traffic is 100% exempt. International shippers select service providers among various ocean carriers, ports, motor carriers and railroads. For example, an international intermodal customer moving a container from Asia to Chicago through a port on the West Coast has 13 different port/rail

options, including rail offerings from Union Pacific, BNSF, CN, and CP. If the same customer moving a container from Asia to Chicago is willing to ship to either the West Coast or the East Coast (through the Panama Canal or Suez Canal) before moving it to Chicago by rail, the customer has 28 port /rail options (13 options on the West Coast and 15 options on the East Coast).

Domestic intermodal customers also have a large number of competitive options. Customers can select among numerous motor carriers and railroads. Approximately 90% of domestic cargo moves by truck. Large trucking companies such as J.B. Hunt, Schneider and Swift compete directly with Union Pacific for intermodal traffic. In addition, BNSF serves nearly all metropolitan areas served by Union Pacific and other railroads, such as KCS, compete with Union Pacific on specific routes.

Union Pacific has improved our overall financial performance by competing more effectively for intermodal business. Our intermodal volume increased by 6% from 2004–2013. Our domestic intermodal volume, which competes head-to-head with trucks, increased by 27% over the same time period. In the last two years alone, Union Pacific has converted an estimated 70,000 intermodal loads from truck-to-rail.

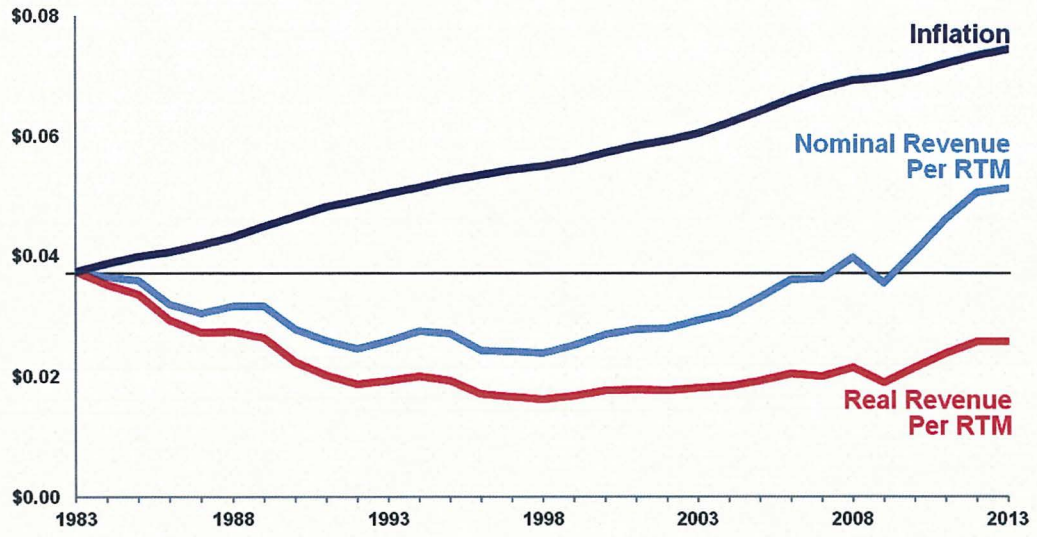
To compete in this market, we have innovated, including developing new service products. For example:

- We have developed 46 new intermodal service offerings over the last 10 years. New service offerings include both new routes and improved schedules for existing routes. Over the past year, Union Pacific developed a new service product between Northern California and Chicago that decreased scheduled transit time by 18.7 hours.

- We created our Streamline subsidiary in 2007 to provide a simplified rail service option for intermodal customers. Union Pacific traditionally only had provided terminal-to-terminal service for non-auto parts intermodal shipments. Streamline offers an all-inclusive "door-to-door" service as a wholesale product so that smaller customers that are less familiar with traditional intermodal service have a rail option. {
}

Our service delivery and innovations have allowed us to win business at rates that reflect the value we deliver, as show in **ELB-27** below.

ELB-27. Union Pacific Intermodal Rates Since 1983



Note: Real Revenue Per RTM and Inflation indexed using Implicit Price Deflators for Gross Domestic Product

2. Investment In Our Intermodal Network

To compete effectively for intermodal customers, Union Pacific must invest in our network. We have invested significant capital on intermodal terminals, equipment and routes to build our current intermodal network. We also have learned from experience that investment returns in the highly competitive intermodal business are not guaranteed.

For example:

- We invested approximately $1.4 billion for intermodal terminals since 2000, including building five new ramps in Dallas, San Antonio, Chicago (two), and Santa Teresa, New Mexico.
- Union Pacific purchased 23,400 intermodal containers since 2008, including 15,700 since 2010 as part of the UMAX container program that we created with CSX to offer customers an additional equipment option. Union Pacific owns 37,000 chassis that customers utilize to move containers between intermodal ramps and off-ramp locations.
- Intermodal customers also benefit when Union Pacific invests capital dollars in network routes over which intermodal freight travels like, for example, our investment to double-track a major portion of the Sunset Route.

While many of these investments have produced positive returns, others have not. Case in point: In the early 2000s, Union Pacific invested $165 million to build our Global 3 intermodal terminal in Rochelle, Illinois to capture projected intermodal growth in the Chicago area with a specific focus on international intermodal customers. Union Pacific selected Rochelle because it predicted industrial expansion west of Chicago and believed that the affordable land costs and favorable public reception would allow Union Pacific to compete more effectively.

As it turned out, industrial expansion moved south of Chicago and customers reacted negatively to the additional trucking costs needed to travel to Global 3. Annual actual volumes fell far below annual projected volumes. They were lower in 2013 than 2007, when Union Pacific evaluated the investment. { } The evaluation was done before the financial crisis of 2008–2009, when Union Pacific's international intermodal volume dropped by almost a third.

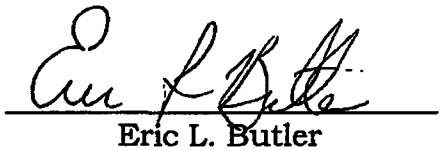
VI. Conclusion

Union Pacific appreciates the opportunity to the address the Board on the important policy issues presented in this proceeding. The Staggers Act gave railroads the opportunity to compete. We work every day to deliver value to our customers in the competitive transportation services market. Our improved financial performance is the best evidence that we are competing and that the competitive market framework established by railroad deregulation works. Competitive service also means the capability to grow to meet demand and to respond quickly and effectively to market changes. That capability requires investment. It requires that our rates generate sufficient revenues to reinvest in our business and provide market-based returns to our investors. The concept of a revenue adequacy constraint is at odds with these objectives. Absent the financial capability to compete, our customers will receive less service, not more, and Union Pacific will move backward, not forward.

VERIFICATION

I, Eric L. Butler, declare under penalty of perjury that the foregoing is true and correct. Further, I certify that I am qualified and authorized to file this Verified Statement.

Executed on September 5, 2014.



Eric L. Butler

MURPHY

REDACTED – TO BE PLACED ON PUBLIC FILE

BEFORE THE
SURFACE TRANSPORTATION BOARD

RAILROAD REVENUE ADEQUACY

Docket No. EP 722

VERIFIED STATEMENT OF

PROFESSOR KEVIN M. MURPHY

SEPTEMBER 5, 2014

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I. INTRODUCTION

My name is Kevin M. Murphy. I am the George J. Stigler Distinguished Service Professor of Economics in the Booth School of Business and the Department of Economics at The University of Chicago, where I have taught since 1983.

I earned a doctorate degree in economics from The University of Chicago in 1986. I received my bachelor's degree, also in economics, from the University of California, Los Angeles, in 1981.

At The University of Chicago, I teach economics in both the Booth School of Business and the Department of Economics and I am co-Chair of the Becker Friedman Institute for Research in Economics. I teach graduate level courses in microeconomics, price theory, empirical labor economics, and sports analytics. In these courses, I cover a wide range of topics, including the incentives that motivate firms and individuals, the operation of markets, the determinants of market prices, and the impacts of regulation and the legal system. Most of my teaching focuses on two things: how to use the tools of economics to understand the behavior of individuals, firms and markets; and how to apply economic analysis to data. My focus in both research and teaching has been on integrating economic principles and empirical analysis.

I have authored or co-authored more than 65 articles in a variety of areas in economics. Those articles have been published in leading scholarly and professional journals, including the *American Economic Review*, the *Journal of Law and Economics*, and the *Journal of Political Economy*.

I am a Fellow of the Econometric Society and a member of the American Academy of Arts and Sciences. In 1997, I was awarded the John Bates Clark Medal, which the American Economic Association awarded once every two years to an outstanding American economist under the age of forty.[1] In 2005, I was named a MacArthur Fellow, an award that provides a five-year fellowship to individuals who show exceptional merit and promise for continued and enhanced creative work. Also in 2005, I was elected a Fellow of the Society of Labor Economists.

In addition to my positions at The University of Chicago, I am also a Senior Consultant to Charles River Associates ("CRA"), a consulting firm that specializes in the application of economics

[1] The John Bates Clark Medal was awarded biennially until 2009, but it now is awarded annually. *See* http://www.aeaweb.org/honors_awards/clark_medal.php (accessed December 19, 2012).

to law and regulatory matters. I have consulted on a variety of antitrust, intellectual property, fraud, and other matters involving economic and legal issues, such as damages, class certification, mergers, labor practices, joint ventures, and allegations of anticompetitive exclusionary access, tying, price fixing, and price discrimination.

I have submitted testimony in Federal Court, the U.S. Senate, and to state regulatory bodies, and I have submitted expert reports in numerous cases. I have testified on behalf of the U.S. Federal Trade Commission, and I have consulted for the U.S. Department of Justice.

My opinions are based on the information available to me as of the date of this report. My work is on-going, and I will continue to collect data and other information relevant to the issues and opinions that I discuss in this report. In particular, I will review and, if requested to do so, respond to comments submitted in this proceeding by other parties.

I have been asked by Union Pacific Railroad Company ("UP") to apply economic analysis to evaluate what role, if any, the concept of "revenue adequacy" should play in oversight and regulation of rail freight rates by the Surface Transportation Board ("Board"). Since 1981, the Board or its predecessor agency, the Interstate Commerce Commission ("ICC"), has issued an annual determination whether rail carriers are "revenue adequate" by comparing each rail carrier's annual return on the depreciated book value of its assets[2] (net of "deferred taxes") with the rail industry's average cost of capital.[3] Congress mandated an annual evaluation of whether railroads are earning adequate revenues when it substantially deregulated the railroad industry in order to "promote a safe and efficient rail transportation system by allowing rail carriers to earn adequate revenues."[4]

The Board has requested comments on its methodology for determining railroad revenue adequacy and on potential application of a measure of revenue adequacy in evaluating whether rail freight rates are reasonable. As explained by the Board: "In the last several years, questions have

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[2] The Board uses historical cost minus accumulated depreciation (net of deferred taxes) as its measure of a railroad's assets for purposes of calculating revenue adequacy. For ease of exposition, in the rest of my report, I refer to the historical cost minus accumulated depreciation as "book value."

[3] *See* STB Decision EP 679, *Association of American Railroads – Petition Regarding Methodology for Determining Railroads Revenue Adequacy*, decided October 23, 2008, pp. 1-2 ("For a railroad, ROI has traditionally been calculated by dividing net income from railroad operations by the depreciated original cost, or book value, of the railroad's assets. This is done by dividing net railway operating income (an after-tax, before-interest figure) by an investment base that consists of the firm's net investment in railroad property, plus working capital, less accumulated deferred income tax credits.").

[4] Staggers Rail Act of 1980, Pub. L. No. 96-448, § 3, 94 Stat. 1897, section 3(a).

been raised regarding the agency's methodology for determining revenue adequacy and whether it appropriately measures the financial condition of the railroad industry. These questions cover a range of issues, such as the viability of the Board's current methodology and possible alternative methodologies, what it means to be revenue adequate and how such a finding should impact the railroads, and how to apply the revenue adequacy constraint in regulating rates, among many others."[5]

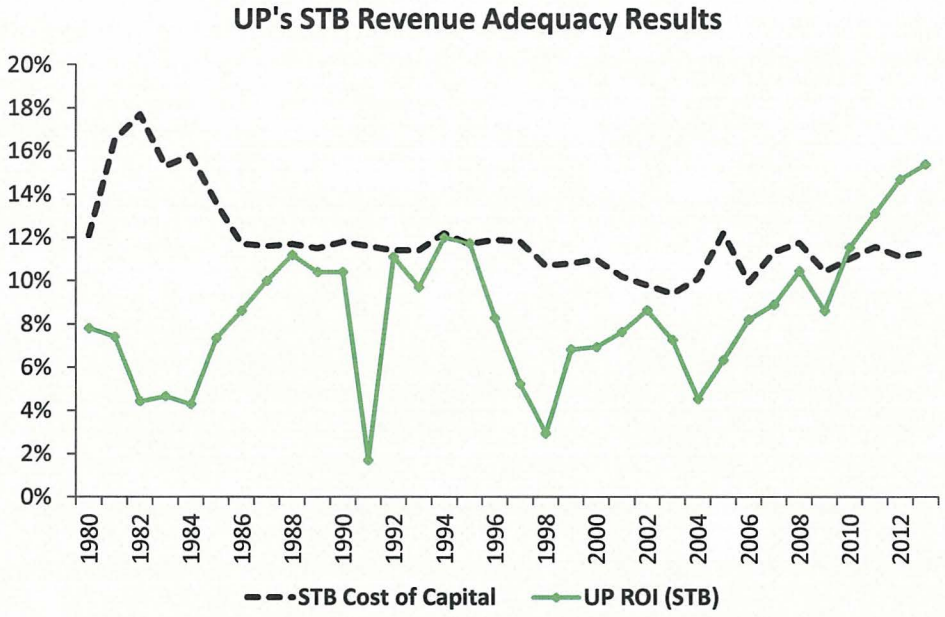
Using its current methodology, the Board has found that some Class I railroads have been "revenue adequate" in certain recent years.[6] This recent "revenue adequacy" follows an extended period of time after passage of the Staggers Rail Act ("Staggers Act") when, even using the Board's methodology (which, as I explain below, results in an estimated return on investment that greatly exceeds the relevant economic rate of return), the industry's return on investment was below, and often far below, its cost of capital, and railroads typically were not found to be "revenue adequate." As shown in Figure KMM-1, for most of the post-Staggers period, UP was far from revenue adequacy. The Board found that UP was "revenue adequate" from 2010-2013. (The only other year since 1980 in which UP was found to be revenue adequate was 1995.) Although the Board has found UP to be revenue adequate in the last few years, Figure KMM-2 shows that the cumulative amount by which the current UP system – that is, the system as configured after UP's 1996 merger with the Southern Pacific Transportation Company ("SP") – was revenue inadequate far exceeds the amount by which it has exceeded revenue adequacy between 2010 and 2013.[7]

[5] STB Decision EP 722, *Railroad Revenue Adequacy*, decided April 1, 2014, p. 4.

[6] In addition to UP, which was found to be revenue adequate in 2010-2013, BNSF Railway ("BNSF") and Norfolk Southern Railway ("NS") have been found to be revenue adequate in 2011-2013. *See* STB Decision EP 552, *Railroad Revenue Adequacy – 2010 Determination*, decided December 31, 2013; *Railroad Revenue Adequacy – 2011 Determination*, decided December 31, 2013; *Railroad Revenue Adequacy – 2012 Determination*, decided December 31, 2013; and *Railroad Revenue Adequacy – 2013 Determination*, decided September 2, 2014.

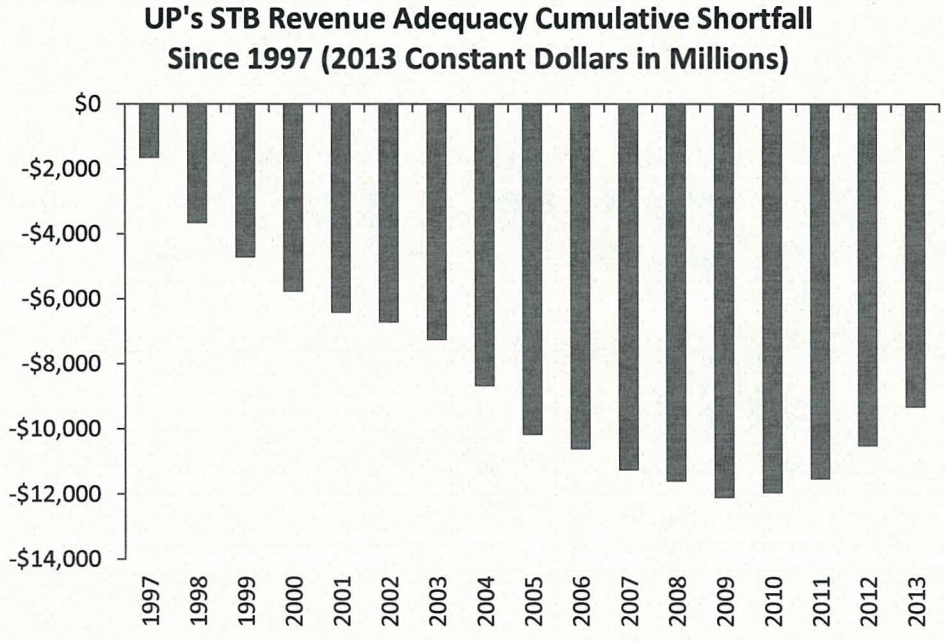
[7] UP's cumulative shortfall between 1997 and 2013 is $9.3 billion (in 2013 dollars).

Figure KMM-1



Source: STB (1996-2013) and ICC (1980-1995). Historical results are for UP standalone (not combined with other railroads that later merged with UP).

Figure KMM-2



Source: STB; U.S. Department of Commerce, Bureau of Economic Analysis (GDP implicit price deflator).

In preparing my Statement, I have been informed by a number of prior Board decisions, statements submitted by economists in prior Board proceedings, a variety of data and documents on the railroad industry, data and information received from UP, and academic literature on the railroad industry. My analysis also relies on generally accepted economic principles of incentives and economic efficiency. Based on my analysis, I have reached the following core opinions, which I explain in detail in this statement:

- A measure of "revenue adequacy" can serve two distinct functions, only one of which is consistent with sound economics. One role is informational – to help monitor a railroad's (and the railroad industry's) progress towards meeting Congress's objective of fostering financially sound railroads that can attract the capital needed to allow them to continue to invest and compete to serve customers (a test that railroads failed before deregulation and that motivated deregulation, at least in part).[8] A second possible role is prescriptive – that the Board should be required to take some action, such as change the processes and standards by which it now regulates freight rates, if railroads attain or exceed "revenue adequacy." This second application appears to be what some shippers propose – that the Board should take into account a finding that a railroad is "revenue adequate" as part of its evaluation of shippers' claims that their rates are unreasonable. I explain why the informational use of a measure of revenue adequacy could be useful, while such a prescriptive use is likely to be harmful to the industry's performance and to the shippers that UP serves.
- While UP's profitability has increased in recent years, UP is not yet "revenue adequate" in an economically meaningful way. The goal of deregulation was to allow railroads to operate (without financial support from the government) as private firms responsible for purchasing, operating and maintaining the enormously expensive infrastructure and equipment they require. In doing so, railroads compete for capital with the vast number of other private firms, not just in the United States but worldwide. The relevant measure of return on investment for potential investors is not the return on the book value of a railroad's assets, which is what the Board uses in calculating its revenue adequacy measure, but the expected return on the capital that the railroad will invest in the future. Capital assets acquired in the future – both those for replacement of existing economically obsolete assets and those to support increased demand and expected future growth and improvement in the railroad's services – must be purchased at the market prices prevailing when those assets are acquired. The relevant economic return for purposes of evaluating UP's financial condition in the long run is thus much more closely linked to the return on the replacement or current cost of the firm's existing assets than it is to the book value of those assets. Where, as in the railroad industry, the gap between book and replacement value is large, return on book value will be uninformative about whether the firm can attract capital and be financially healthy. Regulation based on return on

[8] *See* Railroad Transportation Policy Act of 1979, Report of the Senate Committee on Commerce, Science, and Transportation on S. 1946 to Reform the Economic Regulation of Railroads and for Other Purposes, December 7, 1979, pp. 3, 34-38.

book value of assets will endanger the railroad's financial health and the value provided to its customers.

- It is more important today than it might have been in the past that railroads are able to earn a competitive rate of return on their assets. Through mergers and rationalization of assets, railroads largely have eliminated the excess capacity and inefficient operations with which they were afflicted when they were first deregulated.[9] Going forward, railroads must attract capital to replace their networks and provide additional capacity where there is demand from shippers, which makes the return on replacement value of the railroad's assets a more critical barometer than it might have been in the past.
- Broad-based regulation of railroad rates, which some shippers might claim is required by recent Board findings of revenue adequacy, would harm competition and shippers. It would bring into play the classic problems of rate of return regulation and endanger the industry's ability to achieve the goal of deregulation, namely to allow forces of competition to motivate and constrain railroads' performance and thereby achieve a "safe, adequate, economical, efficient, and financial stable rail transportation system."[10] Economic efficiency depends on encouraging railroads to strive to earn more than their cost of capital without concern that the Board will force them to lower rates to give the resulting benefits to shippers or that the Board will otherwise further limit the railroads' flexibility to set rates to meet market conditions. Operational and investment decisions – lowering operating costs, investing in high-return projects, developing new services valued by shippers, changing management – can increase a railroad's profits and allow it to earn a rate of return that exceeds its cost of capital for periods of time, an outcome that benefits its customers and should be encouraged by the Board.
- UP has become more profitable in recent years in part because of its increased efficiency and the willingness of its customers to pay more for higher quality service. Like all private sector firms, it is the prospect of increased profits that motivates UP and other railroads to increase their efficiency, develop opportunities to win new customers, and anticipate the needs of their existing customers. Improvements in rail

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[9] *See* Verified Statement of Eric Butler ("Butler Statement") for description of UP's rationalization. *See also* STB Decision EP 646, *Simplified Standards*, decided September 4, 2007, p. 14 ("Railroads no longer are burdened by substantial excess capacity; rather, the rail industry now faces the opposite situation. Rail capacity is strained, demand for transportation is forecast to increase, and railroads must make capital investments to meet that demand."). Agricultural shippers recently called on railroads to increase their investment (*see* Public Hearing on United States Rail Service Issues, EP 724 (April 10, 2014), *e.g.*, "We feel that there needs to be a lot more reinvestment into the rail system than what is being planned at this point" (representative of the South Dakota Farmers Union, p. 369:20-22)).

[10] Staggers Rail Act of 1980. This point was made long ago by two economists at Princeton University: Professors William Baumol and Robert Willig (*see* Baumol, William J., and Robert D. Willig, "Verified Statement," EP 347, Coal Rate Guidelines - Nationwide, May 11, 1981). They explained in their Verified Statement in support of the ICC's proposal to adopt Ramsey pricing and the stand-alone cost standard in regulating rail rates that "Ramsey pricing and stand-alone costs [are] sufficient pricing restraints," noting that "it is neither necessary nor desirable to adopt any [] additional pricing constraints. The entire purpose of the Staggers Act and the movement toward (partial) deregulation of rail transportation can be frustrated by adoption of such unnecessary restraints" (pp. 77-78). They concluded further that "those same pricing principles continue to apply with equal validity under adequacy of revenues...the regime of financial solvency will therefore require no modification" in the ICC's pricing principles (p. 85).

service offered by UP and other railroads represent a win-win situation for railroads and their customers – higher profits for the railroads in exchange for better service for shippers. UP's increased profitability in recent years, measured either under the Board's formula or in UP's own financial reporting, reflects increased, not reduced, competition and benefits for shippers, contrary to what some shippers may contend.

I explain the basis for these opinions in the rest of my Statement.

II. THE BOARD'S CALCULATION OF REVENUE ADEQUACY IS NOT AN ECONOMICALLY MEANINGFUL MEASURE OF UP'S ABILITY TO MEET ITS LONG-TERM INVESTMENT REQUIREMENTS

In its request for comments, the Board cited the ICC's statement that the "revenue adequacy standard *represents a reasonable level of profitability for a healthy carrier*. It fairly rewards the rail company's investors and *assures shippers that the carrier will be able to meet their service needs for the long term... Carriers do not need greater revenues than this standard permits*, and we believe that, in a regulated setting they are not entitled to any higher revenues."[11] However, as historically implemented by the Board, the calculated measure of revenue adequacy does not "represent[] a reasonable level of profitability for a healthy carrier" nor "assure shippers that the carrier will be able to meet their service needs for the long term." As calculated by the Board, the "net investment base" used to measure railroad return on investment ("ROI") as part of the Board's revenue adequacy determination is a measure of the value of past investments (reduced for deferred taxes), and it provides no information about a railroad's ability to attract the capital it needs to maintain and grow its network and operations, which is the relevant economic criterion for determining whether the carrier will be financially healthy and be able to serve its customers in the future. Railroads *require* a greater return on their future investments than suggested by the Board's revenue adequacy calculation in order to maintain the level of service they provide today and expand to serve new demands as they arise.

As a matter of economics, the proper way to measure whether a carrier is earning a return on investment sufficient to allow it to invest and meet demands for service in the long term must use forward-looking investment costs. The same is true for operating costs – one would not conclude based on wage rates in a labor union contract expiring today that the firm could operate profitably in the future if current market conditions forced the firm to pay wages three times as high going forward. Return on the historical net investment base used in the Board's calculation of revenue

[11] STB Decision EP 722, *Railroad Revenue Adequacy*, decided April 1, 2014, p. 3.

adequacy is not informative about whether the railroads will be healthy in the long run – whether they will be able to attract the capital necessary for replacement of their assets as they become economically obsolete or depreciate or the railroads need to invest in order to serve new demands for their services.

Measured properly, UP's current earnings are not sufficient today to attract the capital necessary to replace its assets, despite the Board's finding that UP is revenue adequate. This is because the value of the necessary capital is not the net investment amount used by the Board in its revenue adequacy calculation, but rather the amount that it would take to replace those assets and construct an efficient railroad – which is much closer to the replacement cost of those assets.

The remainder of this section of my report is organized as follows. I first explain the difference between accounting returns (such as those on which the Board bases its calculation of revenue adequacy) and economic returns (which are the relevant measure by which a firm and its investors evaluate potential investment opportunities and the firm's financial health). Second, I explain why it is more important than ever that UP and other railroads are able to seek and earn a return on investment at or above the cost of capital, now that railroads have rationalized their operations and eliminated excess and inefficient capacity. Third, I show that UP is not close to earning an economic return on investment equal to its cost of capital today. Finally, I explain that the Board recognizes the proper economic measure of asset values when it conducts stand-alone cost ("SAC") evaluations in connection with shipper rate complaints, and should apply the same economic principles when evaluating whether a railroad is revenue adequate.

A. Economic Returns, Not Accounting Returns, Provide the Appropriate Signals to Investors

Accounting measures of profitability often are uninformative about a firm's economic profits and its ability to attract capital. Accounting measures are backward looking – they are based on historical purchase prices and depreciation of the assets that a firm owns. In contrast, economic profitability is a forward-looking measure of a company's ability to cover future operating expenses, assure repayment of its debt, and attract and retain the capital needed to replace its assets. Economic profitability is calculated as the rate at which expected *future* cash flows from making an investment today must be discounted to equal the initial investment.[12] Investors will be willing to lend to a

[12] *See* J. Berk and P. De Marzo, *Corporate Finance,* 2007 ("Berk and DeMarzo"), pp. 156-158.

company if the expected future returns on investment in that company will be as high as the investor can receive (after accounting for risk) from alternative investment opportunities. As explained in a popular corporate finance textbook,

> The company's book rate of return may not be a good measure of profitability. It is also an *average* across all of the firm's activities. The average profitability of past investments is not usually the right hurdle for new investments.[13]

The economic rationale for evaluating whether a railroad is revenue adequate is to determine whether it can raise the funds necessary for financial health and growth in the long term. In order for a railroad to be financially healthy in the long term, it must be able to raise funds in competition with other potential investment opportunities available to investors. That is true whether such investments would be financed out of retained earnings or financed by attracting new capital. In both cases, the return on reinvesting in the railroad's assets must be compared with the return on alternative investments.

The ROI calculated by the Board provides little, if any, information about whether railroads will be able to attract investors in the future. The Board's measure of ROI is an accounting measure in which capital is measured as the book value of the firm's past investments. Some of these assets may be fully depreciated and so contribute nothing to the investment base, even though those assets generate revenue and the railroad will have to finance their replacement once they are economically obsolete.

To understand the importance of the distinction between a measured return on the book value of past investments and the necessary return on future investment, assume that a railroad has an asset that has a useful life of 30 years but that is depreciated (according to accounting rules) over 20 years. Assume that, in the final 10 years of the asset's life, it is as productive as it was in the first 20 years, but that it becomes useless and must be replaced after the thirtieth year. The ROI in the last ten years will be infinite – the asset is generating a positive return but has been fully depreciated under accounting rules. Yet, the asset's true economic return is much lower, which is what a potential acquirer of the asset or a firm considering replicating that asset would want to evaluate. Penalizing the railroad by forcing it to lower rates when its calculated ROI is "high" would prevent it from

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[13] F. Allen, S. C. Myers and R. A. Brealey, *Principles of Corporate Finance* 8th ed. (2006), p. 89.

obtaining the necessary cash flow to attract investors for future replacement of assets when they become obsolete.

Economic return – the expected future return from providing capital – is what guides a firm's investors. In the example above, an investor will provide funds for the railroad to purchase an asset with a 30-year economic life if it expects that the asset has value (earns a return – either through revenues earned by the original owner or by being sold to another owner) throughout that economic life, including the last 10 years of use. Firms looking to maximize shareholder value will follow these same rules and will retain earnings for purposes of financing investment only when the return on such investments exceeds the opportunity cost of those funds. In deciding whether to replace or upgrade track, for example, UP does not ask whether its return on the book value of that track exceeds its cost of capital; rather, it considers whether it can earn at least its cost of capital on the investment required to replace that track. The principle of evaluating investments based on the cost to purchase the assets and the future return over their life applies to all investments that UP makes.[14]

This forward-looking evaluation of investment decisions is reflected in the Authority for Expenditure ("AFE") that must be approved by management before UP undertakes capital spending. For example, a recent AFE for Phase 1 of Twin Cities Capacity Investments to "support incremental growth primarily in the frac sand and crude oil markets" {

} Project approval depended on the amount of capital to be spent and the cash flow that the investment will generate, not historical costs.

B. Replacement Cost, Rather than Book Value, Has Become a More Critical Measure of Assets for Evaluating Railroad's Revenue Adequacy

Railroads took advantage of the opportunity and incentive provided by the Staggers Act to reduce their costs and improve service, and to gain additional traffic volume as a result. By the mid-

[14] In considering the timing of replacing assets, a component of the return may be the savings that will be realized from no longer having to maintain the asset that is replaced and reductions in operating expenses from reducing slow orders.

2000s, they had largely exhausted the ability to gain volume by reducing costs and improving operations. Future volume gains will come from expanding and upgrading plant and equipment. Investors will be willing to provide capital only if they expect an economic return that is competitive with other investment opportunities. Under these conditions and for such investments, the return on the replacement cost of the railroad's assets provides a reasonable proxy for the firm's ability to attract and retain the required capital. As I now explain, this means that, compared with the first decades after passage of the Staggers Act, railroads will have to invest at higher levels to keep growing and they must be assured that they can attract capital in order to be willing to make risky and sunk investments. Using historical cost measures of asset values to evaluate UP's revenue adequacy has become an increasingly misleading indication of UP's ability to maintain financial health in the long run, and to make the investments that result in high-quality service for shippers. Future investments will replace and expand UP's network, and the ability to attract needed capital will not be reflected in revenue adequacy measures based on the book value of existing assets

1. The Extraordinary Gains in Productivity Achieved by UP and Other Railroads Have Slowed Since 2004

UP and other railroads have taken advantage of the operational flexibility provided by the Staggers Act to enhance productivity by eliminating inefficient operations, unnecessary assets and unproductive manpower through mergers and improved operations. Opportunities to rationalize operations largely have been exhausted and improvements in productivity have slowed as limits in feasible traffic density largely have been achieved. Future increases in capacity and growth will require substantial investments in laying new track, improving terminals and acquiring more efficient locomotives to permit greater density and longer trains. These investments are expensive, and will be made only if the railroads and their investors anticipate that the return will at least repay the cost of the invested capital.

Figure KMM-3 summarizes improvements in railroads' productivity. The figure shows five-year rolling averages of the change in railroads' productivity (which underlie the Board's Productivity Adjustment Factor-5 ("PAF-5")[15]), starting with the average change for 1982-1986.

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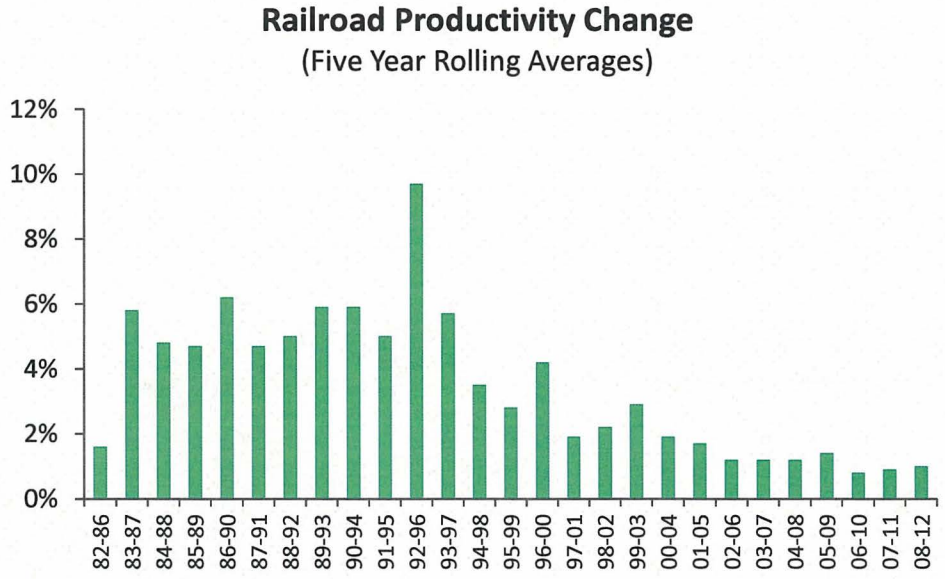
[15] As explained in Laurits R. Christensen Associates, Inc., *An Update to the Study of Competition in the U.S. Freight Railroad Industry, Final Report,* January 2010, "[t]he output measure used in the PAF is based on a revenue-weighted index of railroad ton-miles, distinguished by shipment weight, length of haul, car type, and service type. Distinguishing ton-miles by these different shipment characteristics means that the more expensive types of shipments are given more

After many years of high productivity gains, growth slowed at the end of the 1990s and has averaged less than two percent annually since 2003. Thus, railroads no longer are able to make large gains in volume simply by reducing costs.

Figure KMM-3



Source: *AAR Railroad Cost Indexes*, March 2014, p. 38.

UP's productivity improvements show the same pattern. Figure KMM-4 shows that UP's productivity per employee increased substantially after passage of the Staggers Act, before leveling off around 2004. UP also improved productivity by eliminating duplicative and unproductive physical assets. As shown in Figure KMM-5, the total number of miles of track UP operated declined fairly steadily from 1983 until 2007, but has remained essentially constant since then.[16]

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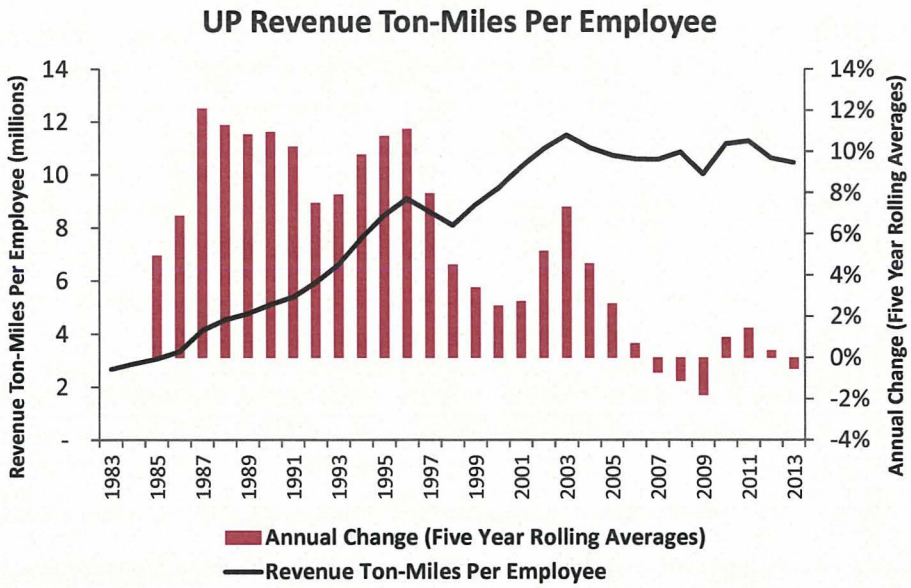
weight in the index than the cheaper types of shipments. The input measure used to compute the PAF is constant dollar operating expenses." (pp. 2-6, 7).

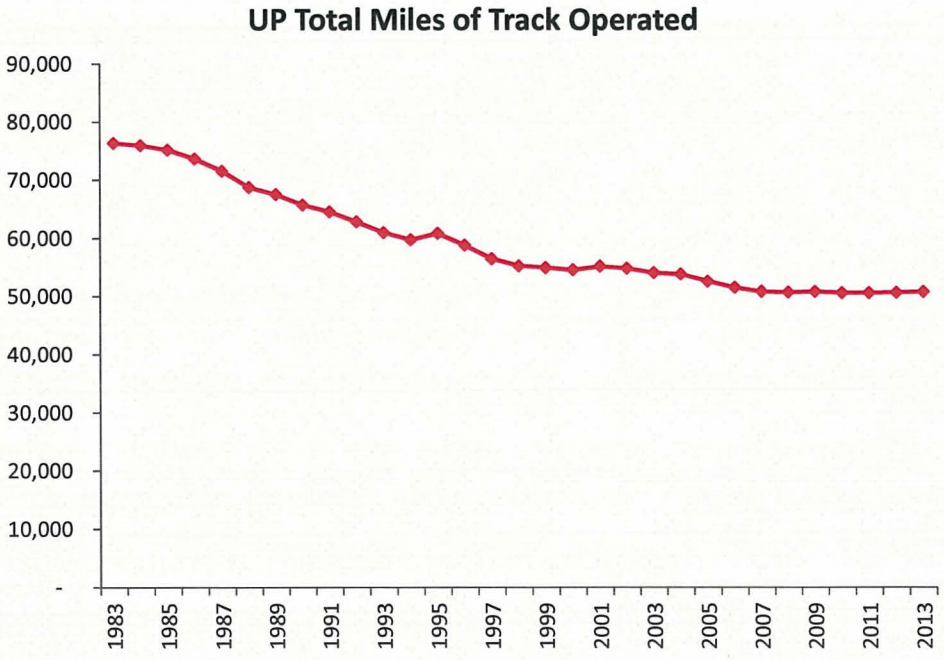
[16] UP has been making selective investment in expanding track to increase the efficiency of its network – adding double and triple tracks. *See* 2007 UP Investor Fact Book, pp. 20, 24.

Figure KMM-4



Source: AAR Analysis of Class I Railroads and UP Annual Report R-1 data. Historical data include railroads that later merged with UP. For rolling average annual changes, years shown are the last year in each five-year period.

Figure KMM-5

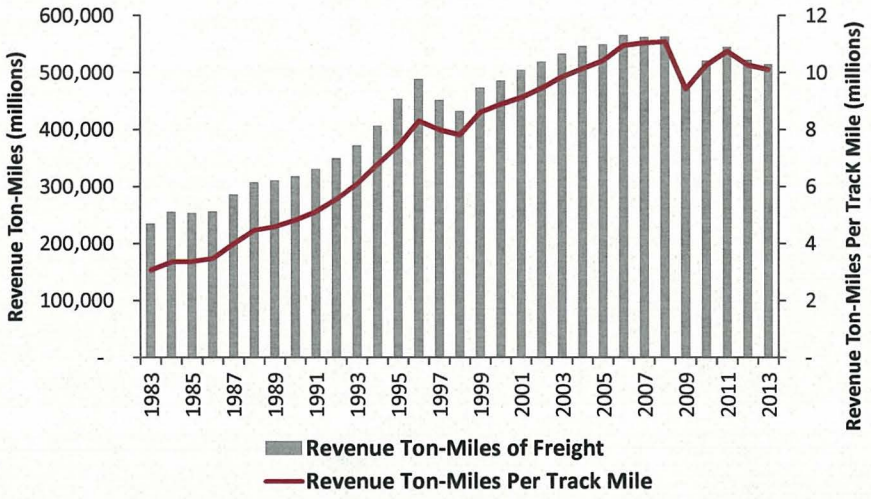


Source: AAR Analysis of Class I Railroads and UP Annual Report R-1 data. Historical data include railroads that later merged with UP.

By reducing miles of track and increasing operational efficiency, traffic density increased and each mile of UP's track became more productive. Figure KMM-6 shows that UP was able to handle more revenue ton-miles using fewer miles of track. The average annual increase in traffic density was 7.7 percent between 1983 and 1996 and 2.5 percent between 1997 and 2008. With the recession in 2009, UP's total ton-miles and traffic density declined and have not yet returned to the pre-recession level.

Figure KMM-6

UP Revenue Ton-Miles and Revenue Ton-Miles Per Track Mile Operated



Source: AAR Analysis of Class I Railroads and UP Annual Report R-1 data. Historical data include railroads that later merged with UP.

Thus, UP achieved dramatic improvements in productivity through operational changes and reductions in excess assets (track miles). Because of the long-lived nature of railroad assets and the long history of regulation, it took UP and other railroads many years to fully achieve the rationalizations and improvements that allowed them to serve their customers more efficiently.

2. Because Productivity Increases Have Slowed, UP Now Must Invest More Capital Relative to Its Existing Assets

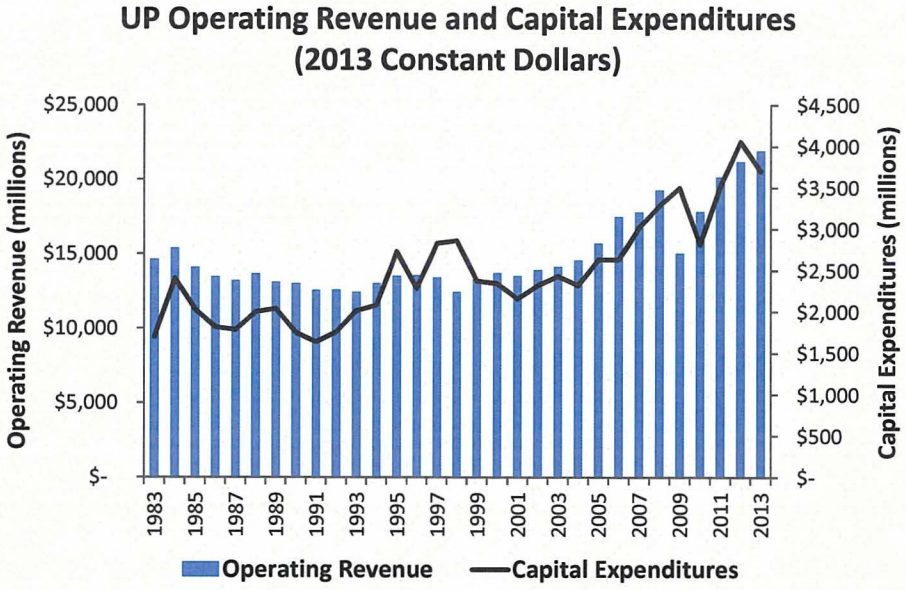
Eliminating excess capacity (assets and labor), which is what UP was doing between 1980 and 2003, can require a lower level of investment than expanding and replacing capacity once capacity has been sized to serve current demand efficiently, as UP has been doing since 2004. After exhausting less capital intensive ways of increasing throughput and approaching the limits of

economies of density given today's technology, UP now faces the need to re-invest in existing capacity to serve existing business and invest in new facilities to attract additional business and to retain its existing customers.[17] As UP competes to serve new shippers and to keep its existing customers, it will have to invest at a substantially higher level in a broad range of assets in order to continue to improve and expand its service, because the benefits from the productivity growth generated by network rationalization largely have been exhausted. Investment returns based on historical asset values are a highly misleading measure of the necessary return to justify investments in expansion.

UP and other Class I railroads have used a high percentage of their revenue for capital investments since passage of the Staggers Act. Figures KMM-7 and KMM-8, below, compare the total annual capital expenditures by UP and all the Class I railroads combined since 1983 with their total operating revenue. The figures show that operating revenue in real terms generally declined throughout the 1980s and 1990s, reflecting the substantial decline in railroad rates over that period. However, capital expenditures did not decline, and indeed increased in many years during this period. As shown in Figure KMM-9, the result was that, throughout the 1980s and 1990s, capital expenditures generally were increasing as a share of UP's and other Class I railroads operating revenue. UP has invested an average of about 16-17 percent of its revenue for many years, with Class I railroads as a group averaging about the same.

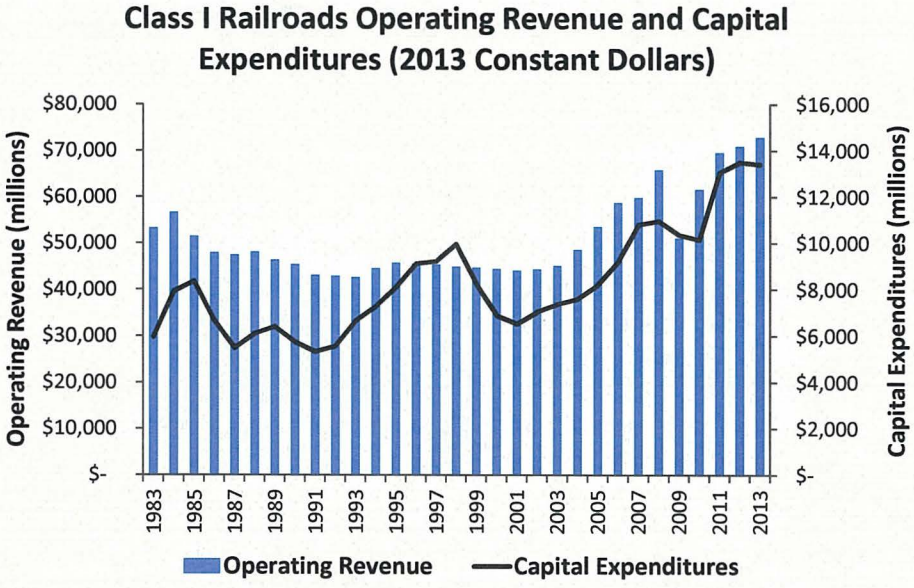
[17] With increased traffic density and movement of more freight over existing track, ties and rail must be replaced more frequently.

Figure KMM-7



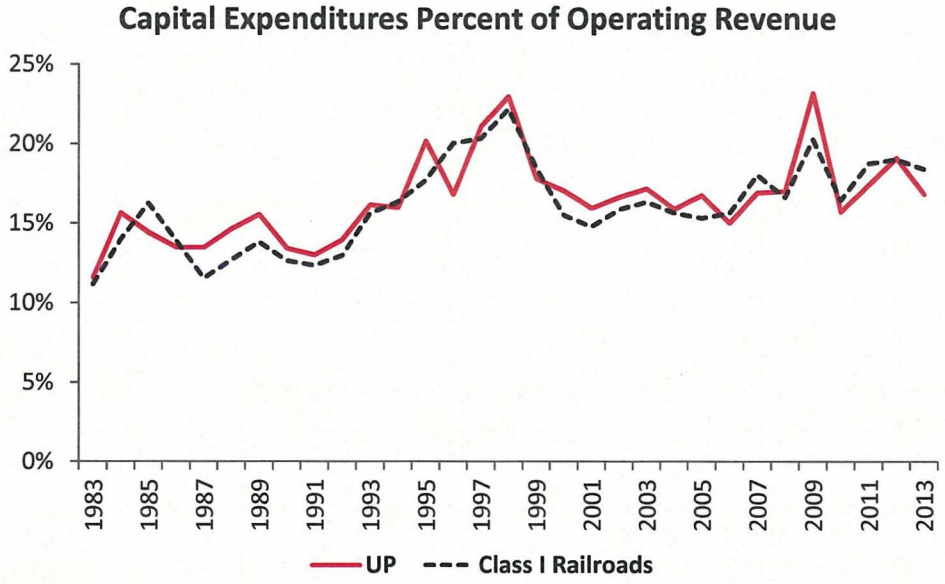
Source: AAR Analysis of Class I Railroads and UP Annual Report R-1 data; U.S. Department of Commerce, Bureau of Economic Analysis (GDP implicit price deflator). Historical data include railroads that later merged with UP.

Figure KMM-8



Source: AAR Analysis of Class I Railroads and Class I Railroad Annual Report R-1 data; U.S. Department of Commerce, Bureau of Economic Analysis (GDP implicit price deflator).

Figure KMM-9



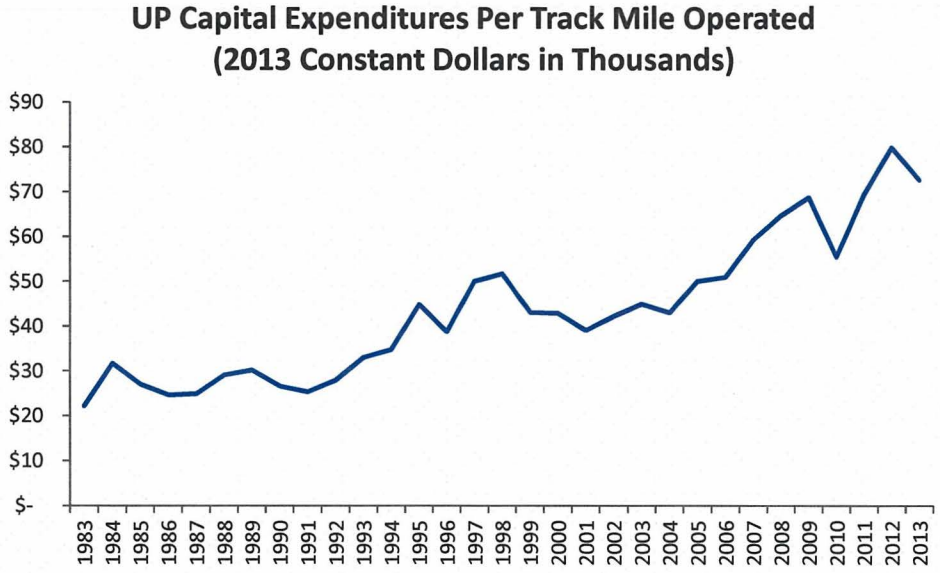
Source: AAR Analysis of Class I Railroads and Class I Railroad Annual Report R-1 data. Historical data include railroads that later merged with UP.

While the percentage of operating revenue that railroads invest has been high and consistent for a long period of time, the nature of railroad investment has changed. Since 2003, investments have focused less on making existing legacy assets more efficient and more on adding track and terminals to expand capacity.

This development can be seen in Figure KMM-10. In recent years, UP has increased investment in track and terminal expansion – such as by constructing a second main track on the Sunset Route – in order to increase capacity, because its ability to increase traffic simply by becoming more efficient with existing assets has declined. As a consequence, UP's investment (in 2013 dollars) per existing track mile has increased substantially since 2004. For every mile of track that UP operates, it invested 45 percent more in 2013 than it did in 1997 measured in real terms (99 percent more in nominal terms) and 69 percent more than in 2004 (102 percent in nominal terms). For the period 1983-2003, UP invested an average of $35,000 per track mile (in 2013 dollars); over the next ten years from 2004-2013, it invested an average of $61,000 per track mile (in 2013 dollars). In other words, the amount of investment required to support the assets that UP relies upon (or which miles of track is a component) has increased, and UP increasingly will have to raise and commit

greater amounts of capital for investments that are sunk and risky, rather than taking its existing facilities and making them more productive.

Figure KMM-10



Source: AAR Analysis of Class I Railroads and UP Annual Report R-1 data; U.S. Department of Commerce, Bureau of Economic Analysis (GDP implicit price deflator). Historical data include railroads that later merged with UP.

The need for UP to invest relatively more to support its operations and asset base today (more investment per track mile, for example) than in the past is a consequence of the tremendous improvements that it and other railroads made after regulation, opportunities that largely were exhausted by the early 2000s. This has two important implications for this proceeding. The first is that, compared with the past, UP will incur greater investment costs per unit of existing assets, which means that it will need to continue to invest at a high level to support and expand its business. The second is that using historical cost measures of asset values in a calculation of revenue adequacy, as the Board does, increasingly fails to properly measure whether UP is revenue adequate from the perspective of investors and its long-run financial health, and thus whether UP will have the resources to provide shippers with the high quality service that they require. Future investment spending will be used to replace and expand UP's network, and the capital expenditures necessary will be unrelated to the book value of existing assets.

A stylized example helps illustrates why the evolution of the railroad industry has increased the importance of evaluating revenue adequacy based on a forward-looking measure of asset costs,

not book value. Assume that there are two periods. In the first period, Year 1, the railroad was only marginally profitable as a result of operating inefficiencies and duplicative inefficient asset levels inherited from the past. In the second period, Year 2, the railroad had achieved efficient scale and operations to handle its traffic and was now more profitable. If the railroad did not grow in the future, its need for capital would be limited to the replacement cost of the assets generating its steady-state level of income.

Between Year 1 and Year 2, the railroad eliminated unnecessary assets that were on its books, and was able to generate the same amount of revenue and greater profits with fewer total assets. In essence, the railroad was able to provide its investors with an attractive return in part through improving operations to create greater cash flow from fewer assets. Investors could expect returns from two sources: (a) the cash flow generated directly from investments made with the investor's capital (e.g., projects to lay additional track to serve new intermodal customers, to expand to serve coal shippers in the Southern Powder River Basin ("SPRB"), to update terminals to accommodate increased manifest traffic, etc.), and (b) the improved operational efficiencies that the railroad achieved by eliminating assets (and associated maintenance and replacement), improving scheduling so there were fewer traffic delays, etc.

Trends in UP's and other railroad's operations since the beginning of the 2000s show that the second source of return for investors has significantly declined. This is not because the railroads have become less efficient or no longer seek opportunities to increase their efficiency, but rather because the legacy of inherited capital and operational inefficiencies largely have been eliminated by mergers, strategic investments and improved operations in response to the market incentives created by deregulation.[18] Given the long-lived nature of railroad assets and the overlapping, inefficiently-sized networks with which railroads were saddled because regulation had prevented them from abandoning unprofitable operations, there were many opportunities for railroads to improve their operations without investing large amounts of capital (e.g., reducing 5-man crews) or by using less capital to deliver significant productivity improvement (e.g., implementing technology to reduce clerks).[19] Those opportunities now largely are exhausted, so in the future railroads will be investing to replace their current assets as they wear out and to increase capacity. Now that railroads have

[18] *See* Butler Statement, Section II.

[19] Butler Statement, p. 14. *See also* Carl D. Martland, "Productivity Improvements in the U.S. Rail Freight Industry 1980-2010," 51(3) Journal of the Transportation Research Forum 83 (Fall 2012), pp. 94-100.

eliminated excess capacity and need to maintain and replace their assets and add additional capacity in order to serve shippers' growing demands, it is more critical than in the past that revenue adequacy be judged by what matters to investors, which is the return on assets based on their current cost, and not on a backward-looking accounting measure of profitability.

C. The Board's Measure of UP's Return on Investment is Far Higher than the Economically Meaningful Measure of that Return

The Board has declined to calculate revenue adequacy using the replacement or current cost of railroad assets at least in part because the replacement cost value of a railroad's assets is not readily available from data that railroads currently report, unlike the measure of net investment base that the Board uses in determining revenue adequacy.[20] In the past, there was little risk of potentially harmful regulation from ignoring the difference between historical and future-looking asset measures because, even using historical measures, railroads generally did not approach revenue adequacy. Thus, the risk that shippers would demand and the Board would impose additional rate regulation based on a finding of revenue adequacy was low. However, this proceeding, recent Board regulatory decisions,[21] and shipper complaints show that this is no longer true. Today, the Board could endanger the railroads' long-run health and the quality of service that shippers receive if it wrongly concludes that the railroads are "revenue adequate" and it imposes rate reductions as a consequence.

Figure KMM-11 below compares UP's net investment base (used by the Board in calculating UP's ROI for evaluating revenue adequacy) with UP's estimate of the current cost of its assets (excluding the cost of land).[22] In 2010, which is the first year (other than 1995) in which the Board found UP revenue adequate, the Board based its revenue adequacy calculation on a net investment

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[20] STB Decision EP 679, *Association of American Railroads – Petition Regarding Methodology for Determining Railroads Revenue Adequacy*, decided October 23, 2008, p. 2 ("The idea of using a replacement cost methodology in the revenue adequacy determination has been addressed several times by our predecessor agency, the Interstate Commerce Commission (ICC). As the ICC observed in the early 1980s, in theory 'replacement cost valuation can be preferable to original cost valuation,' because 'regular and continuing calculation of depreciation charges and inflation adjustments under the replacement cost method may better reflect the true economic costs associated with an investment. Further, the replacement cost method is preferable because it comes closer to the competitive result.' Standards for Railroad Revenue Adequacy, 364 I.C.C. 803, 841 (1981). But shifting to a replacement-cost approach has proved impractical. The major obstacle has been estimating the current value of individual investments, because this valuation cannot be based on actual transactions.").

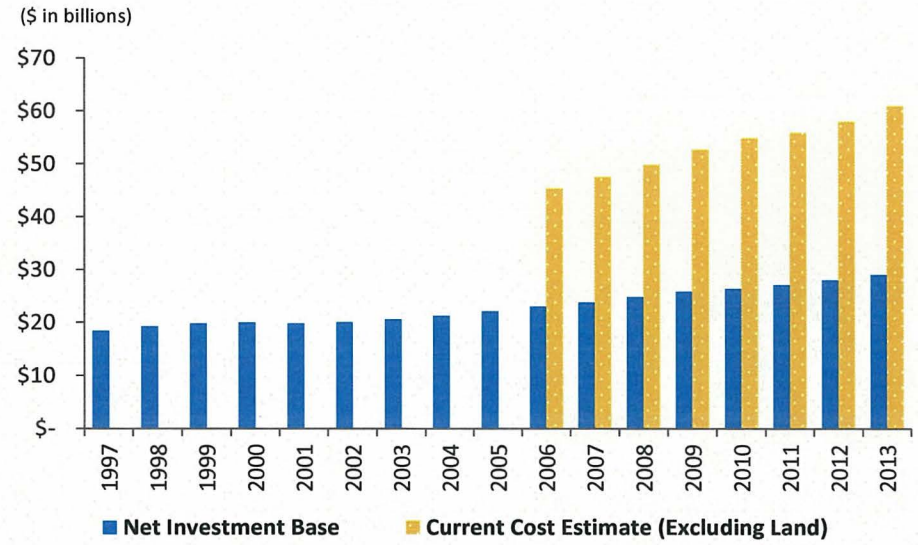
[21] *See* STB Decision NOR 42123, *M&G Polymers USA, LLC v. CSX Transportation, Inc.*, decided December 7, 2012; STB Decision NOR 42121 *Total Petrochemicals & Refining USA, Inc. v. CSX Transportation, Inc.*, decided August 16, 2013.

[22] UP estimates that the value of its land is{ }.

base for UP of $26.4 billion.[23] However, UP estimates that the current value of its invested capital (excluding land) in 2012 was $58 billion – or more than twice as much.[24] Figure KMM-12 calculates the difference between the rates of return achieved by UP using each of these revenue bases and UP's cost of capital. As Figure KMM-12 shows, while this difference turns positive over the last three years using the backward-looking net investment base measure, it remains substantially negative using the economically more relevant replacement cost measure. Thus, from an economic perspective, UP was not close to being revenue adequate. In 2012, the ROI (based on UP's estimate of the current cost of its assets excluding land) was only 6.1 percent.[25]

Figure KMM-11

UP's Net Investment Base and Current Cost Estimate



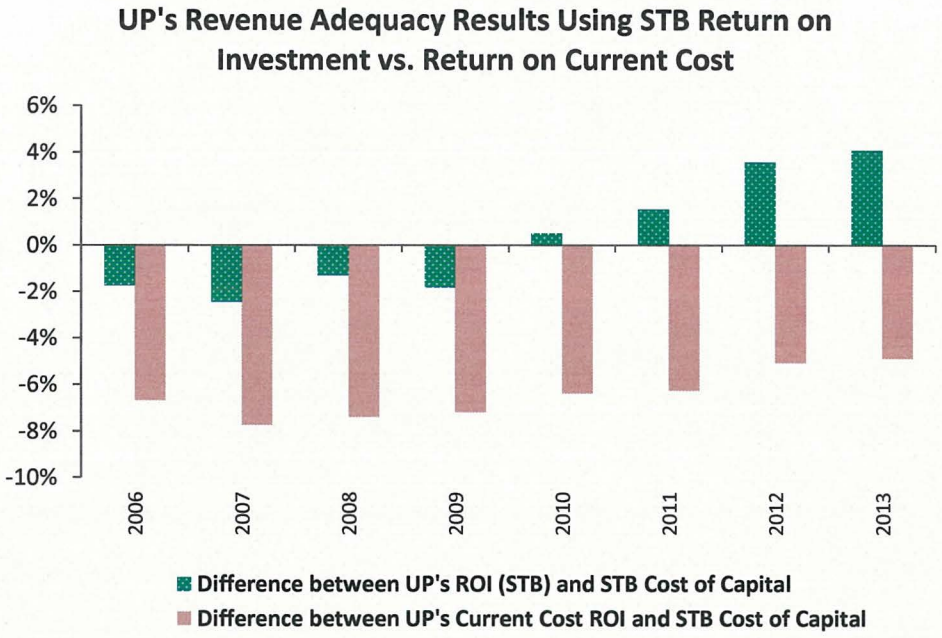
Source: UP.

[23] The Board subtracts deferred taxes from the asset base when calculating revenue adequacy. *See* STB Decision EP 646, *Simplified Standards*, decided September 4, 2007, p. 50.

[24] In 2010 and 2013 Earnings Calls, UP executive indicated that the ROIC based on replacement cost would be about half the value that UP reports in its financial statements. *See, e.g.*, UP Q4 2010 Earnings Call (James Young response that, if ROI is 10.5 percent, it would be cut in half if calculated on a replacement cost basis); UP Q4 2012 Earnings Call (Robert Knight response that, even though UP is generating 14 percent return on capital (as reported), on replacement cost it is "7-ish"); Q2 2013 Earnings Call (Robert Knight: "if you look at our calculation of our returns on a replacement basis, our returns are around call it 7%ish"); Q4 2013 Earnings Call (on replacement basis return is about half the reported 14.7 percent).

[25] In previous opinions, the Board has indicated that it would have to use a real cost of capital to evaluate revenue adequacy if it used the return on the replacement cost of a railroad's assets. There is not a single way to measure the real cost of capital. However, for purposes of demonstrating that UP is not revenue adequate today, it is unnecessary to use a real cost of capital because with current inflation rates any measure of the real cost of capital will still far exceed UP's return on investment based on current costs.

Figure KMM-12



Source: STB (cost of capital and UP ROI) and UP (estimated current cost ROI).

The Board has been concerned in the past that it was impractical to measure a railroad's replacement costs accurately. It elected to continue to measure revenue adequacy using railroads' historical costs, even while acknowledging that this may not properly reflect the return on investment necessary to attract capital.[26] As long as railroads were far from revenue adequate under the Board's methodology, the difference between the Board's methodology and the economically appropriate measure had no practical implication, except to provide a misleading impression that the railroads were closer to achieve a return on investment sufficient to attract the necessary capital for long-term financial solvency.

Today, however, there is potentially great danger from continuing to ignore the misleading nature of the Board's measure of the adequacy of UP's rate of return. There is a large gap between the economically appropriate and inappropriate measures of UP's return on investment. It would

[26] *See* STB EP 679, *Association of American Railroads – Petition Regarding Methodology for Determining Railroads Revenue Adequacy*, decided October 23, 2008, p. 2 (citing the ICC Standards for Railroad Revenue Adequacy: "As the ICC observed in the early 1980s, in theory 'replacement cost valuation can be preferable to original cost valuation,' because "'regular and continuing calculation of depreciation charges and inflation adjustments under the replacement cost method may better reflect the true economic costs associated with an investment'").

reduce investment incentives tremendously if the Board were deterred from taking into account the need for a railroad to earn a competitive (economic) investment return because it was concerned about challenges in measuring the current value of UP's and other railroads' assets precisely.

The essential message of the figures and discussion above is that the proper economic measure of the railroads' ROI has not yet begun to approximate the industry's cost of capital today. This implies that here has been no "threshold" event to warrant consideration of imposing additional regulatory restriction on railroads' rates. Critically, this conclusion does not require the Board to obtain an accurate and transparent measure of the railroads' current value of invested capital even if it decides that there is a regulatory purpose for measuring revenue adequacy.[27] No economic significance can be attached to an inappropriate measure of return crossing above the cost of capital when it is certain that the true economic return is far below the cost of capital, even if we cannot say precisely how far below.

D. The Board Should Evaluate Railroads' Revenue Adequacy Using the Same Economic Principles that It Applies in Performing a Stand-Alone Cost Evaluation of Shippers' Rate Complaints

The concept of evaluating the long-run financial health of railroad assets based on the cost to replace the assets that it is efficient to replace is embodied in the stand-alone cost ("SAC") methodology that the Board uses to evaluate shippers' rate complaints.[28] For the same reason that the current value of a railroad's assets is used to determine whether the hypothetical stand-alone railroad would earn enough to cover its cost of capital and earn a competitive return, the current value of the railroad's assets and the investments necessary to replace and expand those assets should factor into the Board's determination of whether the railroad as a whole can attract capital need to assure its long-run financial health.

Let me explain in more detail why the Board's SAC methodology is relevant here. A shipper that files a grievance challenging a carrier's rate must support its complaint with an analysis of the

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[27] Shippers may claim that the increase in UP's share price since 2004 is evidence that UP must be revenue adequate and must be exploiting market power and charging unreasonable prices. However, UP's share price historically was depressed so the increase since 2004 is not surprising given that its market capitalization was far below the current value of its assets.

[28] In addition to the full SAC test, two other procedures (the Simplified-SAC method and the Three-Benchmark method) are available when the full SAC analysis may be too costly. According to the Board, "[t]he Full-SAC test has been the most heavily utilized method for challenging the reasonableness of rail rates." (STB Decision EP 715, *Rate Regulation Reforms*, decided July 25, 2012, p. 15.)

costs to construct a hypothetical efficient new entrant railroad that serves a selected set of shippers, and must demonstrate that the rate charged by the incumbent exceeds this stand-alone cost (and has a revenue to variable cost ("RVC") ratio above 180).[29] In other words, the shipper must demonstrate that, in a competitive market, the hypothetical entrant would find it attractive to enter and supply the services at issue at the prices resulting from the SAC model. In its SAC calculations, the shipper cannot use the book value of the incumbent's assets or the nominal cost of those assets when the incumbent originally purchased them. To win a rate challenge, the shipper must demonstrate that the hypothetical new entrant would find it profitable to incur the necessary costs of entry, including acquiring necessary assets, at the current time (which is when the shipper is challenging the railroad's rate),[30] just as the incumbent had to incur those costs when it entered.

A similar analysis is appropriate for evaluating whether a railroad is earning revenues adequate to attract capital needed to assure its long-run health, which is in essence a question about the stand-alone cost for the railroad as a whole (i.e., what it would cost to reconstruct the entire railroad and to do so efficiently). This effectively measures what it would cost to operate the railroad in the long term. The necessary assets would be those that the new entrant would choose to purchase. If the incumbent owned track, cars or locomotives that an efficient new entrant would not choose to replicate, then those would not be counted in the investment cost for entry, just as they would not be replaced by the incumbent once they became obsolete.

If the Board asked what revenue a hypothetical entrant would need to earn in order to cover the stand-alone costs, including the cost of capital, necessary to provide the same set of services that UP as a whole provides, it would find that the required revenues vastly exceed those that UP currently receives (see Figure KMM-11). UP's current earnings are not sufficient to attract the capital necessary to replace the assets that create value and support its operations, even though, according to the Board's calculation, UP is revenue adequate. This is because the value of the necessary capital is not the net investment amount used by the Board in its revenue adequacy

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[29] "At the heart of our rate rules lies the stand-alone cost (SAC) test. Under this test, also referred to as the Full-SAC test, the rate at issue cannot be higher than the rate a hypothetical efficient railroad would need to charge to serve the complaining shipper while fully covering all of its costs, including a reasonable return on investment" (STB Decision EP 715, *Rate Regulation Reforms*, decided July 25, 2012, p. 2).

[30] *See, e.g.*, STB Decision NOR 42125, *E.I. DuPont DeNemours and Company v Norfolk Southern Railway Company*, decided March 21, 2014, p. 48 ("[i]n SAC cases, [Road Property Investment ("RPI")] costs are developed by replacement costs, and not the cost the incumbent railroad paid for the line when it was acquired." RPI is "the investment that would be required to build the [stand-alone railroad's] physical facilities" (p. 47)).

calculation, but rather the amount that it would take to replace those assets today and to construct an efficient railroad – which is much closer to the replacement value of those assets. Now that UP has shed the excess assets that it had in the past, its current assets should be a reasonable proxy for the asset base that would be needed by an entrant that was going to duplicate in an efficient way the total operations provided by UP today and in the future (i.e., that would be part of the stand-alone costs under the SAC methodology).

III. REGULATING RAILROAD RATES BASED ON "REVENUE ADEQUACY" OR ANY OTHER MEASURE OF OVERALL PROFITABILITY WILL DISTORT INVESTMENT DECISIONS AND HARM SHIPPERS AND CONSUMERS

A properly calculated measure of economic return on investment could provide information about whether the railroads are earning a rate of return sufficient to achieve long-run financial solvency. However, there is no economic reason why a finding that a railroad is earning a rate of return at or above its cost of capital should lead the Board to take action to force rate reductions. Finding that a railroad has achieved or is exceeding such a rate of return provides no information about whether particular rail transportation rates are above or below a reasonable level given supply and demand conditions for a particular shipper and shipments (and the fact that a railroad must charge rates above variable cost to some shippers in order to be healthy in the long run). If, contrary to sound economic policy, the Board uses a finding of revenue adequacy or another profitability measure as a reason to lower rates, it would induce inefficient investment decisions and harm railroads and shippers.

A. The Board Should Monitor Revenue Adequacy Only to Understand Whether Railroads Are Financially Healthy, and Not to Adjust Rates if Railroads Are at or Above Measured Revenue Adequacy

Achieving true revenue adequacy is critical for the railroads to survive as private firms in the long run. Congress understood that railroads could not continue to serve shippers in the long term if they did not earn a return on investment sufficient to cover their cost of capital. The ICC and the Board acknowledged that replacement cost was more appropriate than historical costs for determining a railroad's return on investment, but it relied on book value because it was easier to measure. Questions about calculating an economically appropriate measure of revenue adequacy and consideration of how long a railroad had to realize an ROI equal to or above its cost of capital did not have to be addressed when the railroads were drowning. The goal was to have them survive, not to set parameters for the role of regulation if they not only survived, but prospered. When railroads

were far from becoming revenue adequate (by any measure), there would have been little benefit for an agency to undertake an in-depth evaluation of how to measure and to apply revenue adequacy in an economically meaningful way, and whether to require additional regulatory review and possible restrictions on a railroad that was more than revenue adequate.

Some rates charged by railroads today may exceed the level that is justified by the standards that the Board uses to evaluate shipper complaints.[31] However, finding that a railroad as a whole is more than revenue adequate reveals nothing about whether any rates, and if so which rates, exceed the competitive level due to a lack of effective competition, even if the determination of revenue adequacy were forward looking (based on current or replacement cost). Establishing that a railroad is revenue adequate adds nothing to the Board's ability to evaluate individual complaints by shippers claiming that their rates are too high.

Today, railroads are much healthier financially than they were in 1980. Deregulation is succeeding. As Congress intended, the market has been allowed to work, with potential regulatory oversight of rates only where a shipper can demonstrate that the railroad faces no effective competition. Only about 20 percent of UP's traffic (measured as a share of total 2012 carloads) is potentially subject to rate regulation today – the rest is either exempt (because the Board has found that railroads face effective competition for those shipments) or the markup over the Board's measure of variable cost on that traffic is less than 80 percent (and thus presumed to be competitive).[32] Even if rates on *some* portion of the remaining 20 percent of UP's traffic that is potentially subject to rate regulation were unreasonable and would be found to be excessive based on a SAC analysis, the Board receives no guidance in identifying any "unreasonable" rates from finding that UP is revenue adequate. Rates on the 80 percent of traffic that is exempt or has an RVC ratio less than 180 (and thus is presumptively competitive) will dominate aggregate measurements of UP's revenue, costs and profitability.[33] With the network's joint and common costs recovered largely from traffic that is either exempt or presumptively competitive, it is not possible to determine whether rates are above

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[31] Since 2004, the Board has determined that rates were unreasonable in seven proceedings and reasonable in seven proceedings; all other rail rate cases were settled or withdrawn (*see* http://www.stb.dot.gov/stb/industry/Rate_Cases.htm).

[32] This 80 percent is the share of UP's traffic that was either an exempt commodity, moving in exempt equipment or with an RVC ratio below 180 percent.

[33] Any non-exempt traffic with an RVC ratio of 180 or above that is moving under a contract between UP and the shipper also is not subject to a rate challenge – the Board lacks jurisdiction over contract traffic (*see* 49 USC § 10709).

the competitive level on the remaining 20 percent of UP's traffic – the portion potentially subject to rate regulation – using a broad-based measure of performance such as revenue adequacy.

There are many reasons unrelated to improved margins on traffic potentially subject to rate regulation why UP's revenue adequacy metric could increase (move upward toward or higher above the industry cost of capital). These include increasing the amount of exempt traffic with higher margins that it handles, increasing rates on exempt shippers in conjunction with providing additional value to shippers, reducing the cost of serving other traffic, or otherwise earning a greater return on and providing greater value to shippers for which the railroad is not "market dominant." Even on traffic for which UP is "market dominant," margins could increase if UP provides additional value to shippers through better services or reduces its costs – reasons unrelated to noncompetitive pricing. In particular, finding more efficient ways to move a customer's traffic will increase the RVC ratio and earnings (by reducing cost) while simultaneously improving service quality, even if there is no change in rate.[34] Rates of return and thus revenue adequacy will reflect UP's skills, decision making and ingenuity, just as they do for other firms operating in competitive markets. Changes in UP's overall rate of return provide little or no economic basis for the Board to conclude that there is a lack of competition or for a complaining shipper to petition successfully for reduced rates on (potentially market dominant) coal, chemical or grain shipments if it would not be able to successfully challenge its rate when UP's overall ROI was lower. The harm created from broad-based regulation that interferes with the railroad traffic for which the market is setting competitive rates likely will outweigh any benefit to shippers of the remaining traffic potentially subject to regulation if their rates are "unreasonable."[35]

Competitive firms strive to earn returns above their cost of capital – to profit from their investment decisions by creating above average value for shareholders. Fluctuations in demand and changes in costs can cause ROI to fluctuate over time. For example, rapidly increasing fuel costs in

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[34] An example of a cost-saving innovation that improved service for shippers is UP's development of a way to change out defective wheels on coal cars at North Platte in less than 10 minutes without having to switch the cars out of the trains, a procedure that had taken hours and taken cars out of service for days. This allowed longer trains, reduced switching delays and provided customers with better equipment utilization. *See* Statement of Jack Koraleski, Executive Vice President of Marketing and Sales, Union Pacific Railroad Company, in EP 672, July 5, 2007, p. 4. *See* also "Big Push at Bailey Yard: How Union Pacific is Dropping Dwell Times," Railway Age, February 2007, p. 20 ("In-train wheelset changeouts on westbound coal empties are handled . . . by the Green Team, which is capable of replacing a bad wheelset in 15 to 20 minutes without uncoupling cars of disconnecting air brake hoses" using "a compact little three-wheeled forklift obtained in Ireland and appropriately nicknamed the 'Green Machine'").

[35] I discuss the harmful impact of such regulation in Section III.C.2, below.

the early to mid-2000s caused a reduction in UP's earnings because some of its contracts did not allow those costs to be passed through to shippers. It has taken UP many years to negotiate new contracts that allow UP to recover future cost increases as they occur and that reflect current market prices. Firms try to innovate in ways that give them advantages over competitors, resulting (at least temporarily) in above average rates of return. One cannot conclude from a short-term change in a firm's return on assets that a firm has permanently reached a new equilibrium and its return will perpetually exceed or lag that of the market as a whole. Depriving railroads of the opportunity to benefit from procompetitive efforts to improve service and innovate will result, over the long term, in poorer performance by railroads and a reduced level of service for shippers.

The concept of revenue adequacy for a rail system is untethered from the underlying competitive conditions of individual shipments, and so does not advance the policy of permitting supply and demand to determine rates to the extent possible. A regulatory regime where railroads are regulated differently depending on whether or not they are found to be revenue adequate would penalize efficient, profitable railroads and favor less efficient railroads.

B. Revenue Adequacy Is Not an Economically Justified Basis to Regulate Rates Outside of Traditional Rate-of-Return Regulation, Because It Interferes with the Desired Role of Competition in Rate-Setting

Under traditional public utility regulation, regulators set rates to guarantee a given (sufficient) rate of return if the utility operates efficiently. When a utility is a natural monopoly (or otherwise has market power over most or all of its customers), regulators can increase rates when the utility fails to make the targeted rate of return, and then reduce rates in subsequent periods to allow the utility to be "revenue adequate" on average, and no more. However, UP is not guaranteed a competitive rate of return on average; market conditions and changes in demand and supply can cause it to earn below a competitive rate of return for extended periods of time, with no ability to guarantee that it can raise rates on other shipments or at other times. Competition, not regulation, determines whether a railroad can recoup prior losses.[36] Indeed, shippers' and the Board's current focus on railroads' recent increase in profitability ignores both the unpredictability of the return on investment that a competitive firm will receive and the long period during which the railroads were far from achieving revenue adequacy (no matter how calculated). A railroad will not earn a competitive rate of return on

[36] As shown in Figure KMM-2, between 1997 and 2013, UP's cumulative net revenue *shortfall* (based on the Board's methodology) was $9.3 billion (in 2013 dollars).

average if it is forced to endure periods where its rate of return falls below the competitive level without the prospect of earning a return above its cost of capital at other times.

C. Broad-Based Rate Regulation in Response to a Finding of Revenue Adequacy Will Reduce Incentives for Investment and Harm Shippers and Consumers

Shippers may ask the Board to require railroads that achieve revenue adequacy to reduce rates on traffic that would have been found competitive under a SAC test (in effect, to force a railroad to transfer earnings from shareholders to shippers even when those shippers' rates would be found to be competitive under the SAC test). Such regulatory intervention is inconsistent with Congress's intent that, where they are constrained by effective competition, railroads should be able to set the terms of service – rates, conditions, service offerings – without regulatory interference.

In the railroad industry, as in many competitive industries, "competition" does not lead to pricing at marginal (or variable) cost. Rather, railroads must be able to set rates above variable costs in order to cover joint and common costs and operate without government subsidies. Any regulation that forces railroads to reduce both "reasonable" rates (those that would be found competitive under the SAC test) and rates that would fail the SAC test interferes with railroads' ability to raise revenue to cover fixed and common costs in the least distortionary manner and to choose investments that earn the highest possible rate of return. Railroads are not guaranteed a competitive rate of return, or even a positive return, on any investments, nor are they guaranteed a competitive rate of return overall in any period or even over an extended period of time (as shown above in Figure KMM-2). Because many railroad investments are sunk and risky and will turn out to be unprofitable, railroads must have the opportunity to earn higher than normal returns for some periods of time in order for investors to expect a competitive return on average. Investors will find it attractive to invest in railroads only if railroads can balance their periods of below-market returns with periods of above-average returns, and not if there is a cap on the upside but none on the downside.

1. The Sunk and Uncertain Nature of Railroad Investments Makes a Cap on Allowed Return at or Near a Normal Rate of Return Counterproductive and Harmful

A cap on the allowed rate of return is especially harmful in industries where investments are sunk and long-lived, and investment returns are uncertain. Major railroad investments take a long time to plan and implement. Shippers depend on railroads' proactive planning and risk taking in committing large amounts of capital to projects that may not pay back for many years, if ever.

Railroad service is a derived demand affected by general economic trends (periods of overall economic growth and recession), demand for specific commodities (e.g., the demand for rail-delivered coal which became less competitive with pipeline-delivered natural gas), the economics of alternative transportation modes (truck vs. rail), and changes in competition from and success of railroad competitors. Even with the most careful planning and execution, some investments will not be profitable and can drag down the railroad's return on investment for extended periods of time.

Many railroad assets are sunk and effectively dedicated to serving shippers in specific locations. Once those investments are made, a railroad cannot redeploy those assets and recoup its investment if the expected demand does not materialize. Track, which can cost several million dollars per mile, is such an investment.[37] Yet, once track is laid, it may serve only a subset of shippers and its utilization will depend on whether forecasted demand by those shippers is achieved. While investments in locomotives and railcars are not "sunk" in the same way, because they can be moved around and even sold to other railroads, cyclical declines that affect all railroads can substantially reduce the value of rolling stock.

An example of the risks associated with this type of sunk investment is UP's expansion of capacity in the Southern Powder River Basin ("SPRB") to serve demand of coal shippers between 2003 and 2008. In May 2005, coal dust combined with an unusually wet spring caused extensive track damage and slow orders, significantly reducing the railroads' capacity to serve the SPRB.[38] UP (and BNSF, the other Class I railroad serving the PRB) responded to track work delays and the anticipated need for additional capacity to serve projected demand growth by adding 79 miles of triple and quadruple track at a cost of $303 million.[39] This proactive investment was lauded: one report on "Coal bottleneck on the railroads" in Wyoming quotes comments from a financial analyst that "'[w]e are encouraged by how the railroads have performed and behaved' [in response to the

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[37] For example, the total cost of 79 miles of main track construction (triple and quadruple tracks) for the UP-BNSF Joint Line between 2003 and August 2014 was $303 million, or $3.84 million per mile (*See* STB Tour of the Powder River Basin, August 5-6, 2014, p. 30). A 2007 report prepared for the Association of American Railroads estimated that, in 2007 dollars, the average unit construction cost per mile of track ranged from $700,000 to $4.4 million (*see National Rail Freight Infrastructure Capacity and Investment Study*, prepared for Association of American Railroads by Cambridge Systematics, Inc., September 2007, Table 7.2).

[38] *See* Verified Statement of David Connell, STB Finance Docket No. 35305, p. 7. *See also* UP 2005 Annual Report, p. 18.

[39] *See* STB Tour of the Powder River Basin, August 5-6, 2014. UP also constructed additional line and terminal capacity on its coal corridor in Wyoming, Nebraska and Kansas (*see* Reply Verified Statement of Jack Koraleski, STB EP 705 (filed May 27, 2011), p. 23).

increased demand for rail service]. Any new track is expensive and must last decades, he said, so railroads need to plan carefully for future demand. 'If coal demand falls in an economic slowdown,' he said, 'the railroads do not want to be left holding the bag.'"[40]

Indeed, to some extent, the railroads were left "holding the bag" because of the recession that began late in 2008 and the decline in natural gas prices that caused utilities to switch from coal to natural gas and substantially reduce purchases SPRB coal. Reduced demand for SPRB coal resulted in underutilization of track installed by UP and BNSF on the Joint Line used to serve those shippers. UP's investment in the Joint Line was sunk – it had no value in serving corn shippers in the Midwest or auto companies in Detroit.[41] While coal demand may increase in the future and SPRB assets may become fully utilized, UP's recovery of the cost of those investments will, at a minimum, be deferred long past the date it expected to recoup its sunk investment.[42]

The impact of the unanticipated changes in demand for SPRB coal was documented in {

[40] http://www.boston.com/business/globe/articles/2006/08/28/coal_bottleneck_on_the_railroads/ (quoting John Caldwell, chief investment strategist at McDonald Financial Group, which holds Peabody stock and has owned Union Pacific shares).

[41] According to UP, some of the capacity installed on UP's coal corridor is shared with other types of traffic.

[42] As Christensen explained in its comparison of the economics of various network industries, "The railroad industry is also similar to the telecommunications industry in the way that infrastructure improvements are privately financed. . . This privately financed infrastructure for the telecom and railroad industries is a distinct difference from the publicly financed highway infrastructure used by the trucking industry. The private financing of the infrastructure requires the railroads to finance lumpy and uncertain costs that become sunk costs once they are made" (*see* Laurits R. Christensen Associates, Inc., *Description of the U.S. Freight Railroad Industry*, Revised Final Report, Volume 1 (November 2009), pp. 3-15).

}.

A similar sunk investment is described in {

}[43]

A third example of the riskiness of UP's investments in sunk assets is its {

}[44]

These examples show why UP must be able to realize returns above its cost-of-capital when its investments succeed. A railroad can earn a "normal" rate of return only if it is allowed to earn an "above normal" rate of return for extended periods in order to compensate for losses it incurs over extended periods when its investments are unprofitable because of changes affecting particular shippers and parts of the network, or economic downturns that affect the entire railroad. Figures KMM-1 and KMM-2, above, showed that this is not simply a theoretical possibility – UP's revenue inadequacy, even based on book value, was both large and persistent over an extended period of time. Railroads in a competitive market do not need a guarantee that they can earn more than a normal rate of return, but they do need the opportunity to do so and thereby make up in part for losses on sunk,

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[43] {

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[44] Butler Statement, p. 58.

underutilized and inefficient assets. Investors care about expected returns; they expect periods, indeed long periods, of below normal returns, so they require the prospect of earning above-normal returns in other periods.

2. Price Regulation to Achieve a Rate of Return Target Will Distort Investment Incentives and Harm Shippers

Price regulation to achieve a targeted overall rate of return on a railroad's investment, rather than limit rates on traffic that is not subject to effective competition and is priced above the rate justified under the SAC test, will create incentives for railroads to forgo some investments with a high rate of return and make other investments with lower rates of return. In unregulated competitive markets, investment decisions are motived by the expected risk-adjusted return on investment opportunities and the firm's goal of achieving the highest level of profitability from its investment decisions. This leads to investments that expand output and increase efficiency. If the railroad's return on investment is burdened by an additional constraint – that successful investments would affect the Board's calculation of revenue adequacy and result in the Board constraining the railroad's future revenues – then the railroad will make inefficient investment decisions and fewer projects will go forward.

Railroads serve a variety of different types of shippers and most traffic is exempt and/or has an RVC ratio of less than 180 (and is presumed by the Board to be competitive). Investments in serving such traffic, such as intermodal traffic, are efficient if they will earn a rate of return that exceeds the railroad's hurdle rate. A railroad with an investment opportunity to serve exempt or other presumptively competitive traffic that would be highly profitable on its own should not be discouraged from pursuing that investment by the need to discount the anticipated return to take into account how success would affect other rates through broad-based regulation based on the carrier's overall profitability. The greater the anticipated return on a particular investment, the greater the likely benefit for shippers. Yet, the greater the expected profitability of an investment, the greater the likelihood that it will result in rate regulation based on a comparison of the railroad's ROI with the industry cost of capital.

For example, consider UP's investment in double tracking the Sunset Corridor. This costly investment was of immense benefit to a large portion of UP's traffic, much of it exempt. By making this investment, UP became more competitive serving a variety of traffic, and economics informs us that competition would allow UP to increase rates to reflect the improved service quality (higher

velocity, fewer delays) that shippers received.[45] The return on this investment was expected to be high – it would be realized over a large volume of UP's traffic, and the increased velocity and reduced delays would have greater value to shippers (reducing their costs). If this investment would trigger a regulatory rate reduction because of its impact on UP's revenue adequacy, the consequence could be that this very profitable investment would be discouraged.

Another example of an investment that had a high rate of return because it provided cost-saving benefits and improved productivity for both shippers subject to and those not subject to rate regulation was UP's construction of approximately five miles of a third mainline track and signal and other infrastructure in North Platte, Nebraska in order to {

}[46] The benefits of this investment were widespread and were realized by both shippers that are and are not subject to rate regulation. Again, if this investment caused the Board to reduce UP's rates because the investment's success improved revenue adequacy, it would discourage UP from making the investment.

Thus, broad-based regulation that reduces UP's incentives to invest will cause broad harm to shippers – those that are not subject to rate regulation as well as those that are and that might (wrongly) expect to benefit from such regulation.

IV. UP'S IMPROVED FINANCIAL HEALTH IS NOT AN ECONOMIC JUSTIFICATION FOR AN INCREASED ROLE FOR RATE REGULATION

The fundamental goal in deregulating the railroads was to provide them with incentives and flexibility to undertake the necessary investments and operational changes to become profitable and

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[45] In 2014, due to weather and other factors, UP and other railroads experienced difficulty maintaining the high levels of service that they achieved in 2013 (*See* Butler Statement, p. 2). The difficulties that the railroads experienced demonstrates how problems in one part of the network can have broad impacts throughout the network, and thus how all shippers could be harmed if a revenue adequacy constraint caused railroads to forgo investments that otherwise could be profitable.

[46] { }

competitive to the benefit of shippers and consumers.[47] Railroads were in extreme financial difficulty for many years. Congress was concerned about their survival as private firms and did not want taxpayers to have to support the railroads if their financial performance did not improve.[48] The railroads' increased profitability is evidence that deregulation has allowed the railroads to become more financially healthy by improving their service and increasing and diversifying the traffic they carry. Railroads' incentives to undertake operational and capital investments to improve service, and the incentive for investors to provide railroads with capital to invest, is the prospect of increasing their profits.

UP's history and performance demonstrate that UP is realizing the goals of the Staggers Act and its customers are benefitting as a result. This success provides no basis for the Board to now consider reregulating rates through additional constraints (beyond the protections available to shippers through procedures for appealing rates on particular shipments based on the principles reflected in the SAC test). UP's improved financial health does not mean that UP is exercising market power or engaging in anticompetitive conduct.[49]

A. UP's Operating and Investment Strategy Since the Staggers Act Has Been Procompetitive

On its website, UP explains that the Staggers Rail Act:

> revolutionized the business of railroads. Signed into law by President Carter, the act phased out industrywide rate-making and encouraged railroads to compete with each other as well as

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[47] The move to deregulate the railroads began with the 1976 Railroad Revitalization and Regulatory Reform Act ("4R Act"), which provided for reduced federal oversight of the railroads. Deregulation was furthered by the 1980 Staggers Rail Act, which gave railroads flexibility to set rates and discontinue unprofitable service.

[48] In contrast to the privately financed freight railroads, Congress passed the Rail Passenger Service Act of 1970, establishing the National Railroad Passenger Corporation to "take over the intercity passenger rail service that had been operated by private railroads. Amtrak began service on May 1, 1971 serving 43 states with a total of 21 routes" (*see* http://history.amtrak.com/amtraks-history/1970s). This federally supported rail service recently requested $1.62 billion in federal grants for its 2015 fiscal year (*see* http://www.amtrak.com/ccurl/412/537/Amtrak-FY2015-Federal-Budget-Request-ATK-14-028,0.pdf). Freight railroads outside North America also are generally government owned or subsidized.

[49] The classic article explaining the distinction between accounting and economic profits, and why accounting rates of return provide no information about whether profits are above the competitive level, is Franklin M. Fisher and John J. McGowan, "On the Misuse of Accounting Rates of Return to Infer Monopoly Profits," 73(1) The American Economic Review 82 (1983) ("it is the economic rate of return that is equalized within an industry in long-run industry competitive equilibrium and (after adjustment for risk) equalized everywhere in a competitive economy in long-run equilibrium. It is an economic rate of return (after risk adjustment) above the cost of capital that promotes expansion under competition and is produced by output restriction under monopoly. Thus, the economic rate of return is the only correct measure of the profit rate for purposes of economic analysis. Accounting rates of return are useful only insofar as they yield information as to economic rates of return" (footnotes omitted), p. 1).

> other modes. Railroads also were given more freedom to abandon unprofitable lines, set their own prices and tailor services that would meet specific shipper needs. They received broad authority to use contracts with shippers. For perhaps the first time since the early 1900s, *railroads were able to behave like other businesses*.[50]

Like other businesses, the railroads after passage of the Staggers Act were motivated in their investments and operating decisions to maximize profits.[51]

As explained above, in the two decades following passage of the Staggers Act, UP's investments focused largely on eliminating excess capacity, improving operating performance and reducing operating costs on inefficient operations. Each year from 1997 through 2004, UP invested about $2 billion. Through the 1990s, investments were split fairly evenly between those for growth and those for maintenance.[52]

Between 1982 and 1996, UP made five major acquisitions: the Missouri Pacific ("MP") and Western Pacific ("WP") railroads in 1982, the Missouri-Kansas-Texas Railroad ("MKT") in 1988, the Chicago and North Western Railway ("CNW") in 1995, and SP in 1996. Other railroads also made acquisitions during this period, and the resulting consolidation advanced rationalization of the industry and led to higher productivity, reduced costs and lower rates. The last major railroad acquisition occurred in 1999, with CN acquiring Illinois Central. As reflected in its high level of capital spending, UP has continued to invest to improve operations and expand its ability to serve a variety of shippers during this post-consolidation period, including attracting new business from existing customers and from other modes of transportation.[53]

As the Staggers Act foreshadowed, by abandoning and redeploying unprofitable lines and improving operations, railroads achieved rapid and large gains in productivity. UP's performance improved on a variety of metrics. According to performance data provided by UP, its average AAR train speed was 21 miles per hour in 1998, which increased thereafter to a peak of 27.3 miles per hour in 2009 (which coincided with a drop in volume because of the recession), after which it has been fairly constant (while carloads have almost returned to pre-recession levels). UP's freight car terminal dwell time, a measure of freight car idleness, peaked in 1998 and then generally declined,

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[50] http://up150.com/timeline/staggers-rail-act (visited 7/31/14) (emphasis added).

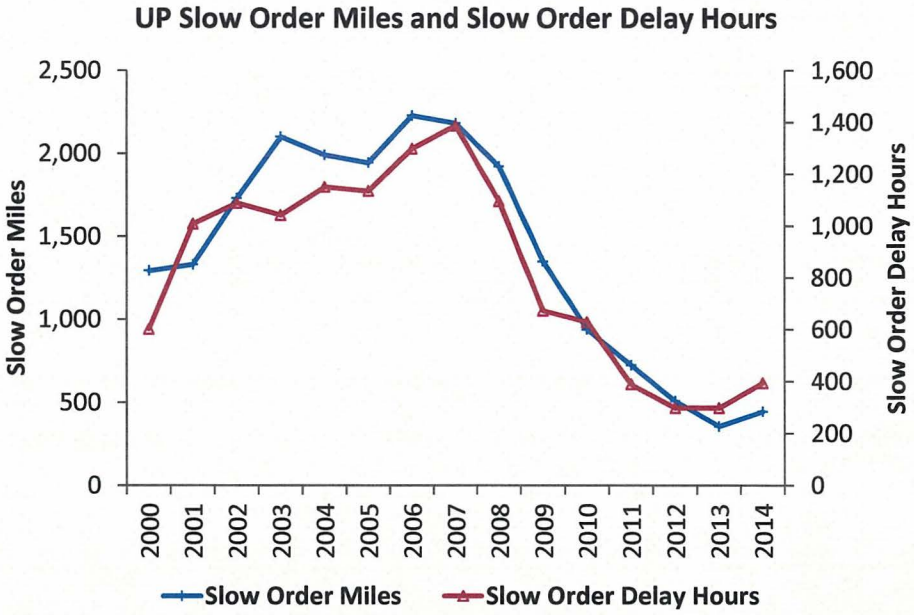
[51] *See, e.g.,* D. W. Carlton and J. M. Perloff, *Modern Industrial Organization* (3rd. ed., 2000), p. 58 ("[t]he objective of any firm, including a competitive firm, is to maximize its profits (or, equivalently, minimize its losses)").

[52] { }

[53] In his Verified Statement, Mr. Butler describes UP's investments and the business that it gained as a consequence.

also reaching its lowest value in 2009. UP's slow order miles declined, as have its slow order delay hours (see Figure KMM-13).

Figure KMM-13

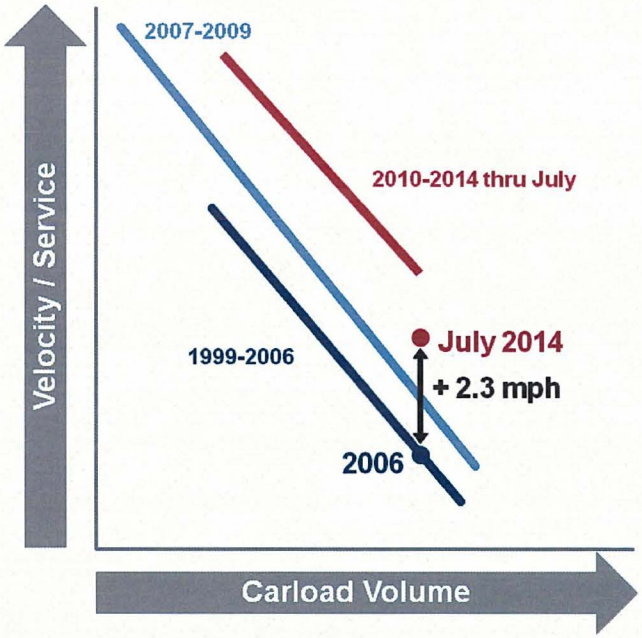


Source: UP.

Figure KMM-14 summarizes the improvement in UP's performance and the service delivered to shippers since 1999. All else equal, there is a tradeoff at any given time between the volume of cars that a railroad can handle and the speed with which it can deliver those cars. Based on its network configuration and the efficiency of its operations, adding more cars to the network slows down average velocity. UP's goal is to improve this tradeoff – investing in its network and increasing its operational efficiency so that, for any given load on the network, it can achieve higher average velocity. Figure KMM-14 shows that it has been successful in doing so, with substantial improvement achieved over the 2010-2014 period.

Figure KMM-14

UP Velocity vs. Carload Volume



Source: Butler Statement, ELB-1.

The improved service provided by UP has resulted in increased customer satisfaction. For decades, UP has tracked both a Service Delivery Index ("SDI"), a measure of the quality of service it delivers,[54] and a Customer Satisfaction Survey Index ("CSI"), a measure of customer satisfaction with UP service.[55] The acquisition of SP in 1996 and subsequent integration of the two railroads' operations resulted in substantial service problems for UP for several years. Service quality then

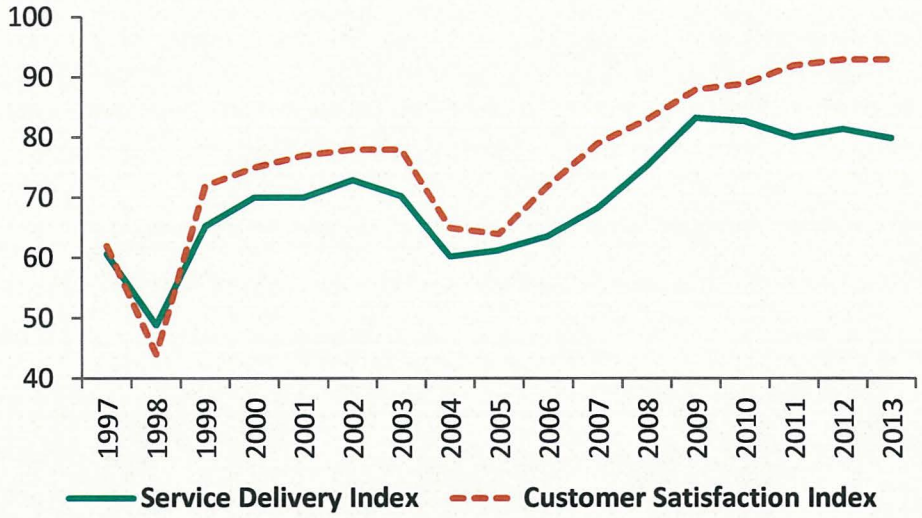
[54] The SDI is a summary measure of performance calculated individually by commodity, with different metrics applied to evaluate how well service was delivered ("Depending on the commodity, the SDI measures how closely a car followed its scheduled trip plan or how well a train performed against contractual obligations or agreed-upon transit times." (http://www.up.com/investors/factbooks/factbook99/uprrhigh99.pdf)).

[55] In measuring customer satisfaction, respondents are asked their opinions on UP's national customer service center, equipment, transportation service, marketing and sales, freight loss and damage, freight and extra service billing, and overall. Ninety percent of the revenue base is surveyed during the year, and there is a 70 percent response rate. The survey is conducted monthly by e-mail. *See* UP internal presentation "Customer Satisfaction Measurement at Union Pacific Railroad."

improved, as reported by shippers. As shown in Figure KMM-15, both the SDI and CSI increased between 2004 and 2009, reaching high and sustained levels.[56]

Figure KMM-15

UP Service Delivery Index and Customer Satisfaction Index



Source: UP.

A recent study by Eakin and Schoech concluded that the pass-through rate (into lower shipper rates) for the Class I railroads' productivity gains between 1980 through 2004 exceeds one, with customers receiving 127 percent of the productivity gains between 1996 and 2004.[57] A study by Carl D. Martland reached a similar conclusion that the "great majority of the productivity benefits went to rail customers."[58]

UP's increased profitability after 2004 resulted from both increases in prices and productivity gains that helped hold down costs. Eakin and Schoech concluded that, beginning in about 2004 and

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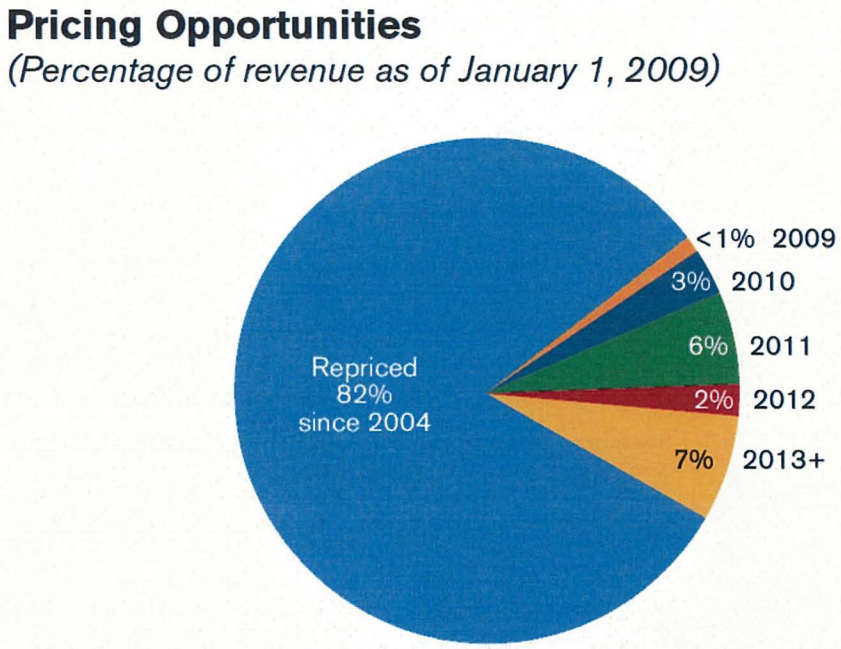
[56] These indices declined slightly in 2014. During 2014, UP's performance was affected by weather and other factors. *See* UP Q2 2014 Earnings Release Slides, July 24, 2014, pp. 14-15.

[57] B. Kelly Eakin and P. E. Schoech, "The Distribution of the Post-Staggers Act Railroad Productivity Gains," Working Paper (2010) ("Eakin and Schoech), p. 15.

[58] Carl D. Martland, "Productivity Improvements in the U.S. Rail Freight Industry 1980-2010," 51(3) Journal of the Transportation Research Forum 83 (Fall 2012), p. 101.

continuing through 2008 (the end of the period analyzed), the railroads stopped passing productivity improvements through to consumers by reducing prices.[59] In part, this reflected the expiration of some long-term "legacy" contracts with pricing and service commitments negotiated under different market conditions. As these contracts expired, and as UP negotiated new contracts, UP entered into arrangements with pricing and other terms that recognized the impact of volatile fuel and other costs, the increased demand for rail transportation and elimination of excess capacity, and that better reflected the value to shippers of the railroads' improved service quality (see Figure KMM-16).[60]

Figure KMM-16



Source: 2008 UP Investor Fact Book.

Figure KMM-17 shows that UP's operating ratio (the ratio of operating expense to operating revenue) has declined substantially since 2004. Reducing its operating ratio has been one of UP's primary goals, highlighted in its financial reports and discussions with analysts. This ratio can decline through increases in revenue or reductions in expenses, and UP has been successful in

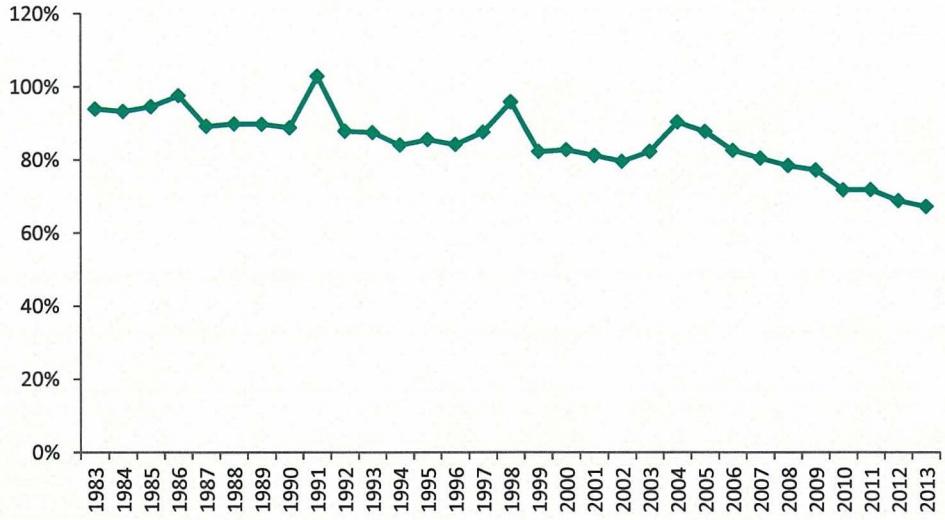
[59] Eakin and Schoech Table 5.

[60] Reply Verified Statement of John J. Koraleski, STB EP 705 (filed May 27, 2011) ("Koraleski Reply EP 705"), pp. 20-21, 27. *See also* Butler Statement, pp. 23, 24, 31 and 51.

achieving both since its merger with SP, albeit with different degrees of success at different times. UP's improved financial performance accompanied and reflects the improved and more reliable service it has delivered.

Figure KMM-17

UP Operating Ratio



Source: AAR Analysis of Class I Railroads and UP Annual Report R-1 data. Historical data include railroads that later merged with UP.

B. Changes in UP's Markups Over Variable Costs for Exempt and Non-Exempt Traffic Do Not Indicate Increased Market Power

The Board's inquiry into how to calculate and apply revenue adequacy appears to be motivated by complaints from shippers who claim that they lack effective competition for their traffic and have been subject to noncompetitive pricing and rate increases reflecting railroads' market power.[61] However, a comparison of trends in pricing of exempt and non-exempt traffic does not support claims that shippers that potentially lack effective competition for their traffic (i.e., shippers of non-exempt traffic) have experienced disproportionate increases in markups for that traffic.

In order to successfully challenge a rate subject to rate regulation, shippers must demonstrate that specific challenged rates are "unreasonable." The first step in doing so is to show that the

[61] *See* STB EP 705 "Joint Comments", dated April 12, 2011; STB EP 712 "Comments of the National Industrial Transportation League," dated January 10, 2012.

railroad "has market dominance over the transportation at issue"[62] because there is no "effective competition from other rail carriers or modes of transportation for the transportation to which a rate applies."[63] This is a threshold requirement – if the railroad is not "market dominant," then the shipper cannot challenge the level of rates. Demonstrating "market dominance" requires evidence that the challenged rate is 180 percent or more of the measured variable costs of providing the service[64] and, if it is, that there is no *feasible* inter- or intramodal competition that provides an "effective form of competition" for the shippers' business.[65]

The Board has found that railroads face "effective competition" for most traffic. This traffic is "exempt" from regulation because the Board has found that there is a sufficiently competitive market for the transportation involved – through competition from other railroads, other transportation modes, and/or because the traffic is subject to product or geographic competition – that regulatory rate protections are not needed.[66] In 2012, about 55 percent of UP's traffic was exempt.[67] This traffic includes intermodal shipments (an increasing part of UP's business), traffic moving in boxcars, a variety of agricultural products (meat, poultry, fish, sugar beets, and dairy products),[68] lumber, and certain types of paper.[69] The remainder of UP's traffic is non-exempt – that is, it is potentially subject to rate regulation. Even within this non-exempt category, rates would not be subject to challenge if they produce an RVC ratio of less than 180 percent or if the traffic is moving under contract, and a portion of the remaining traffic likely would be found to have competitive alternatives if a shipper filed a rate challenge.

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[62] STB Decision NOR 42121, *Total Petrochemicals & Refining USA, Inc. v. CSX Transportation, Inc.*, decided August 16, 2013, digest.

[63] 49 U.S.C. § 10707 (a).

[64] 49 U.S.C. § 10707(d)(1)(A).

[65] *Rail Relief Processes for Shippers*, Chapter 11 (http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5084095), p. 356.

[66] *See* ICC Decision Ex Parte No. 346 (Sub-No. 8), Exemption from Regulation – Boxcar Traffic, 367 I.C.C. 425, 433-40 (1983), and ICC Decision Ex Parte No. 346 (Sub-No. 5), Rail Exemption Authority – Lumber or Wood Products, 7 I.C.C.2d 673, 676-78 (1991).

[67] Calculation based on the 2012 Waybill Sample as a share of total carloads.

[68] *Rail Relief Processes for Shippers*, Chapter 11 (http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5084095), p. 355.

[69] 49 C.F.R. Parts 1039, 1090.

If complaining shippers are correct that railroads have obtained and increased their market power, and that this explains rate increases during the 2000s and the improved revenue adequacy, then I would expect that alleged exercise of market power to exhibit itself in a greater increase in the markup that UP obtains above variable costs for non-exempt (and potentially subject to rate regulation) traffic than for exempt (and presumptively competitive) traffic. All else equal, the amount by which a firm can set price above variable (or marginal) costs is related to its market power, so if UP's market power has increased then I would expect to find exercise of increased market power reflected in relatively greater increases in markups over variable costs for traffic where UP may not have effective competition (non-exempt) than where it does (exempt). However, this is not the case.

In Figure KMM-18, I compare two measures of UP's markup over variable cost for exempt and non-exempt traffic in 2004 and 2012 – the contribution margin percentage, or the ratio of the difference between revenue and variable cost to revenue; and the RVC ratio that the Board relies on as a threshold consideration before evaluating whether a rate on non-exempt shipments is potentially unreasonable. The contribution margin percentage on exempt traffic increased by 12 percentage points, compared with eight percentage points on non-exempt traffic, while the RVC ratio on exempt traffic increased by 17 percent, which is more than the 14 percent increase for non-exempt traffic. In other words, there is no evidence that rates on non-exempt traffic have increased disproportionately relative to cost changes, as might be expected if UP was exercising market power against shippers without effective competition; the changes were greater on UP's exempt than on its non-exempt traffic.{

}

A more formal analysis of changes in revenues relative to costs through 2008 for different types of shipments is provided in a recent study by John Bitzan and Theodore Keeler, two economists who have studied the railroad industry for many years.[70] The authors examine long-term pricing trends by commodity since passage of the Staggers Act, noting that "U.S. shipper groups have called for increased regulation of U.S. railroads, citing increased rates and profits, and monopoly pricing to 'captive shippers.'"[71] Their study takes into account differences in marginal costs for the different "commodity categories" (some exempt and others not), and examines cost and pricing trends from 1986-2008. The authors' basic methodology is to (1) estimate a cost function from which they simulate "stand-alone cost" for each commodity under the assumption that the railroad carries only that commodity; (2) calculate a weighted average (across the Class I railroads) of revenue per car-mile for each commodity; and (3) calculate the ratio of average revenue to average stand-alone cost for each commodity and year.

[70] John D. Bitzan and Theodore E. Keeler, "The evolution of U.S. rail freight pricing in the post-deregulation era: revenues versus marginal costs for five commodity types," 41 Transportation 305 (2014) ("Bitzan and Keeler").

[71] Bitzan and Keeler, p. 305.

The authors find that "real marginal costs of handling all commodities have decreased substantially since 1986,"[72] while "changes in revenues per car-mile have varied widely among commodities." They find that, "between 1986 and 2008, revenues per car-mile decreased for coal, chemicals, and food products, while they increased for intermodal, farm products, pulp/paper products, and lumber products."[73] They conclude that "[c]ommodities with the biggest price increases included lumber products and intermodal (TOFC) shipments," and that "the products with the largest increases in revenues and in revenue/mc ratios are products that are thought to be truck competitive – intermodal shipments, lumber products shipments, and pulp/paper products shipments."[74]

Thus, comparisons of rate trends relative to costs for exempt and non-exempt traffic do not suggest that the railroad industry's improved profitability has resulted from noncompetitive pricing to shippers that are potentially subject to rate regulation.

V. CONCLUSION: COST, PRODUCTIVITY AND PRICING TRENDS ARE CONSISTENT WITH A WELL-PERFORMING INDUSTRY, WHICH WILL BE THREATENED IF REVENUE ADEQUACY BECOMES A BASIS FOR RATE REGULATION

Outcomes since passage of the Staggers Act are consistent with what I would expect to observe in a competitive industry that had been structured and operated inefficiently under regulation that prevented market forces from operating. When the railroads were first freed from most regulation in 1980, many were inefficiently sized and configured. This structure was especially problematic in a network industry such as this, where freight can travel large distances and interchange between railroads requires coordination of two (or more) firms' operations. The initial competitive response was for railroads to abandon unprofitable operations (that had been sustained under regulation) and to integrate many inefficiently sized independent railroads, thereby creating strong regional competitors operating more efficiently configured networks. The process was not always smooth, but the result, as described above, was improved operations on the railroad side (e.g., higher velocity, fewer work events, lower costs, and greater productivity) and better service on the

[72] Bitzan and Keeler, p. 315.

[73] Bitzan and Keeler, p. 315.

[74] Bitzan and Keeler, p. 319.

customer side (e.g., faster cycle time, more reliable service, improved car utilization, and single-line service to more markets).[75]

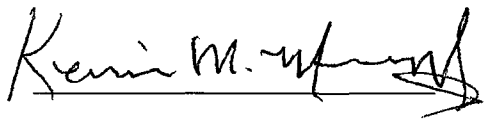
Ambition for higher rates and greater profits is what I expect to see in competitive markets free from regulatory restrictions on firms' ability to benefit from their investments and innovation. This procompetitive conduct would be threatened if the Board decided to use UP's success against it by using its finding of revenue adequacy to interfere with competitive outcomes by restricting UP's flexibility in negotiating with its shippers over rates, terms and service quality. Regulatory interference in UP's incentives to anticipate ways to improve service and invest to do so will harm competition and shippers.

[75] *See* Butler Statement, which discusses these improvements in detail.

VERIFICATION

I, Kevin M. Murphy, declare under penalty of perjury that the foregoing is true and correct. Further, I certify that I am qualified and authorized to file this Verified Statement.

Executed on September 5, 2014.



Kevin M. Murphy

WILLNER

BEFORE THE
SURFACE TRANSPORTATION BOARD

Ex Parte No. 722

RAILROAD REVENUE ADEQUACY

VERIFIED STATEMENT

OF

DR. RAM WILLNER

SEPTEMBER 5, 2014

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I. INTRODUCTION

My name is Ram Willner and I am a Director with Berkeley Research Group, LLC ("BRG") in Los Angeles, California. I have extensive experience in asset management, securities, financial valuation, and general financial consulting, with particular emphasis on quantitative analysis, including risk management. My investment industry experience includes the management of global fixed income portfolios for Analytic Investors, LLC, and Global Fixed Income Partners, LLC, a hedge fund, where my oversight included both quantitative and qualitative review of global bonds, credit bonds, international fixed income, equity, equity derivatives, and mortgage security purchases.

Prior to that, I headed Bank of America Capital Management's International fixed-income department, where I was responsible for the management of nearly $1 billion in global sovereign and credit bonds. I also worked for Morgan Stanley Investment Management in London as a portfolio manager, and for PIMCO as a senior member of both the international fixed income and analytic teams.

Prior to practicing in the field, I served as a professor at the Tuck School of Business at Dartmouth College and the Stern School at New York University. I also served as a visiting professor at the University of California at Irvine and have lectured at the University of Southern California and University of California, Los Angeles.

I earned a Ph.D. (DBA) in business administration (finance/quantitative methods) from Harvard University, an MBA from Carnegie Mellon University, and a bachelor's degree in mathematics from Brandeis University. I have published in such journals as the *Journal of Fixed Income* and the *Journal of Portfolio Management*, and I have lectured in many venues. My curriculum vitae is attached as Appendix A.

II. OVERVIEW

I have been asked by Union Pacific Railroad Company ("UP") to address two issues: (a) the financial performance of UP and other Class I railroads compared to the performance of other similar companies, and (b) the likely impact on railroads' investment decisions if rates were regulated in a manner designed to constrain realized returns to no more than the railroad industry's cost of capital.

With regard to the first issue, I understand claims have been made that railroads are earning outsized returns. I have determined that those claims are inaccurate. Based on my analysis, the Surface Transportation Board (the "Board" or "STB") should actually be more concerned that the returns on investment earned by UP and other railroads are low when compared to returns earned by comparable companies. These low returns impact the railroads' ability to attract capital from the capital markets, thus potentially limiting their ability to continue investing in innovation and growth. I also compared UP's allocation of cash between capital expenditures and payments to shareholders to those of other publicly traded firms, and I found no evidence in the data that UP is earning outsized returns.

With regard to the second issue, my perspective is that of an investor. Accordingly, I am focused on the elements of revenue generation that would most influence an investor's decision of whether to provide either debt or equity capital to railroads. Those elements generally include current financial performance (within a pattern of historical performance), future performance and risk. I understand from the Board's Notice instituting this proceeding that the Board is considering regulation that would limit a railroad's realized returns to no more than the industry's cost of capital.[1] The Board quotes an earlier decision stating that the agency's

[1] STB Notice, Docket No. EP 722, Railroad Revenue Adequacy, April 2, 2014 at 3.

"revenue adequacy" standard, which determines on an annual basis whether a railroad's accounting returns are equal to the rail industry's cost of capital, "represents a reasonable level of profitability for a healthy carrier" that "assures shippers that the carrier will be able to meet their service needs for the long term," and thus "[c]arriers do not need greater revenues than this standard permits." Based on my knowledge and experience, limiting railroad returns to the industry's cost of capital will decrease the level of railroad investment because investors will demand that UP and other railroads forgo investment opportunities that UP and other railroads would have pursued under the current regulatory structure and instead return a greater percentage of their cash to investors through increased dividends or share repurchases.

I elaborate on these points in the sections below.

III. UP AND OTHER RAILROADS HAVE NOT BEEN EARNING OUTSIZED RETURNS AND UP SPENDS RELATIVELY MORE CASH ON CAPITAL EXPENDITURES THAN COMPARABLE COMPANIES

I compared: (i) the accounting returns of UP and other railroads with the returns of similar companies, and (ii) UP's cash allocation with the cash allocation of similar companies. My conclusions are as follows.

A. THE ACCOUNTING RETURNS OF UP AND OTHER RAILROADS ON AVERAGE LAG BEHIND THE ACCOUNTING RETURNS OF COMPARABLE COMPANIES

To analyze whether UP and other railroads have been earning outsized profits, I used a metric that is familiar to investors – Bloomberg's calculation of return on invested capital ("ROIC") – to compare the accounting returns generated by UP and other railroads with the accounting returns generated by UP's peer companies and the broader S&P 500.

To examine the returns of other railroads, I used Bloomberg's "B1 North America Class 1 Rail Freight Transportation Competitive Peers."[2] To examine the returns of UP's peer companies in other industries, I used: (i) the companies selected as peers by the Union Pacific Corporation Board of Directors for the purpose of evaluating the performance of UP executives (the "Proxy Peer Group"),[3] and (ii) the S&P 500.[4] The companies selected for my comparisons all have data available from 2004-2013. This period includes years when UP was deemed revenue adequate by the Board and years when UP was not deemed revenue adequate by the Board. Given the volatility of the U.S. economy, I consider a 10-year period the minimum period necessary to compare the accounting returns of various companies.

I used Bloomberg's ROIC calculation because it is similar to the Board's calculation of railroads' return on investment for the annual revenue adequacy determinations. Bloomberg calculates ROIC by dividing Net Operating Profit After Tax ("NOPAT") by Average Invested Capital.[5] However, I must note one important weakness in both Bloomberg's and the Board's return calculations: both are accounting measures – that is, they use historic cost data to determine a company's investment base. A prospective investor is purchasing with current dollars, and thus will be concerned with economic returns calculated based on the current value

[2] Bloomberg identifies this peer group with the following companies: Burlington Northern Santa Fe, Canadian National, Canadian Pacific, CSX, Kansas City Southern, Norfolk Southern and UP.
[3] The Proxy Peer Group consists of four railroad and 14 non-railroad publicly traded firms with comparable revenues, operating income, total assets, market capitalization and number of employees. The non-railroad companies are: 3M, Altria Group, Deere, DuPont, FedEx, Exelon, General Dynamics, Halliburton, Honeywell, Medtronic, Raytheon, Time Warner Cable, Southern Company and UPS. 2013 Union Pacific Corporation Proxy Statement at 41-42. In my analysis, I excluded the four railroads that UP includes in its Proxy Peer Group because they were already included in Bloomberg's railroad group.
[4] S&P 500 averages were calculated with companies listed in the S&P 500 as of December 31 of each corresponding year. Bloomberg data for S&P 500 companies are as of August 29, 2014. Analysis may be subject to change as revised data is made available by Bloomberg.
[5] Bloomberg data for Railroads and Proxy Peer Group companies are as of August 18, 2014. Analysis may be subject to change as revised data is made available by Bloomberg.

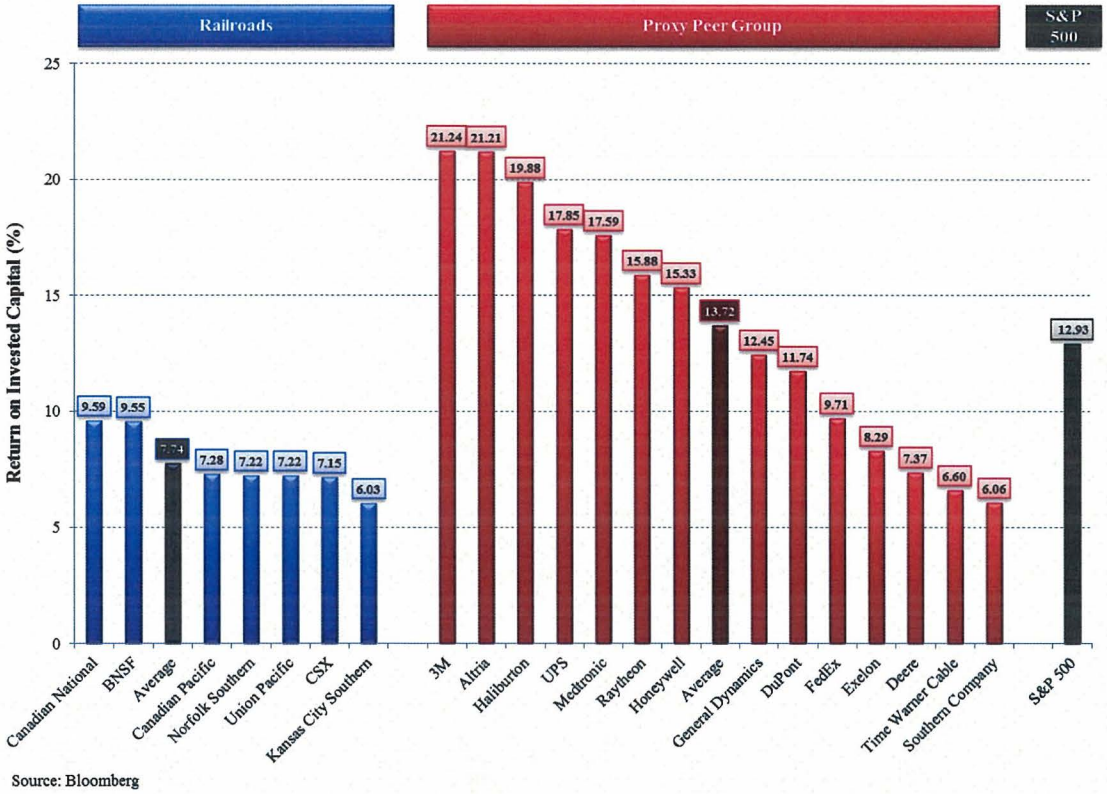
of a company's asset base. Nevertheless, utilizing Bloomberg's ROIC data allows me to compare companies across industries.[6]

I also note one significant difference between Bloomberg's and the Board's return calculations: Bloomberg's calculation deducts actual income taxes from returns, but it does not make an adjustment for deferred taxes. By contrast, the Board deducts actual and deferred income taxes from its measure of income, and it deducts the accumulated value of deferred income taxes from the net capital stock. The Board's adjustment for deferred income taxes reduces the net capital stock much more (proportionately) than it reduces income, and thus, the Board's calculations produce a higher apparent return. As a result, the Board's return calculations consistently exceed the Bloomberg ROIC. What matters to investors, however, is the actual capital base invested – that is, Bloomberg's measure. Investors expect the same return on deferred tax reserves as on other capital because deferred tax reserves are a portion of the company's capital base. Thus, using the Bloomberg data not only allows a comparison across industries, but it presents the deferred taxes in a manner in which they would be viewed by investors.

The data in the figure below (Figure RW-1: 2004-2013 Average Return on Invested Capital) show that, over the last decade, railroads as a group, and UP specifically, underperformed the Proxy Peer Group and S&P 500. In particular, the railroad average ROIC during 2004-2013 was 7.74%, and UP's ROIC was 7.22%, compared to 13.72% and 12.93% for the Proxy Peer Group and the S&P 500, respectively.

[6] Because Bloomberg data rely on an accounting measure, knowledgeable investors are sensitive to industry characteristics when using these data. For example, in industries with long-lived assets, like railroads, it is important to recognize that use of historic cost data may significantly overstate relative ROIC. Accordingly, if a railroad has an accounting-based ROIC that is similar to that of a company with shorter-lived assets, the actual economics returns on the railroad company's investment are probably lower.

Figure RW-1: 2004-2013 Average Return on Invested Capital



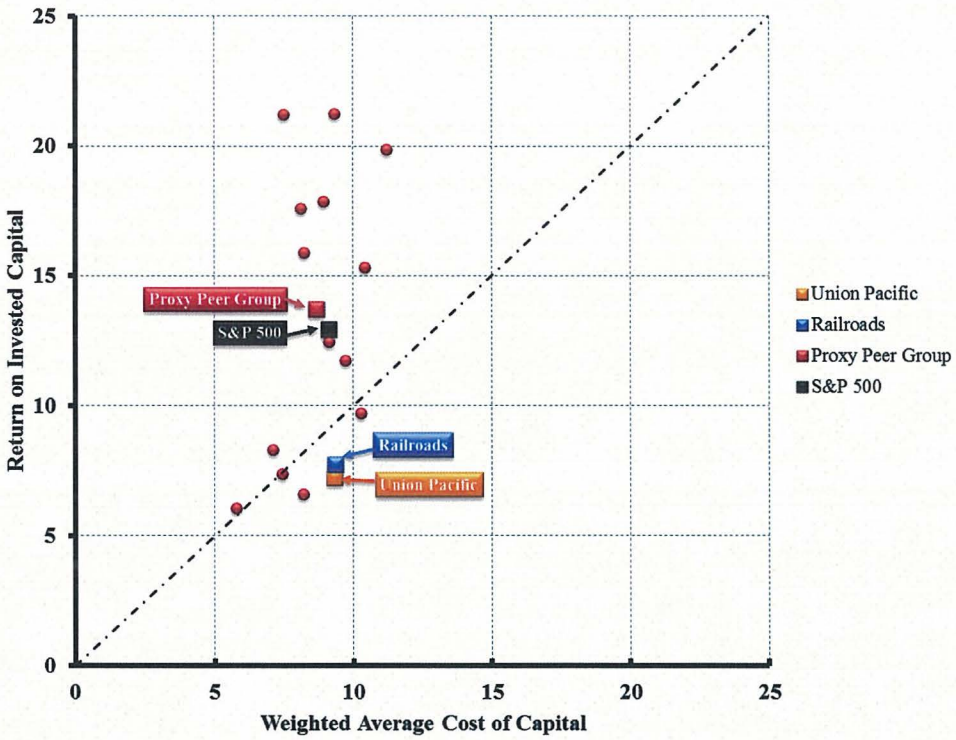
Source: Bloomberg

To put railroad returns in further perspective, I analyzed the relationship between Bloomberg's ROIC calculations and Bloomberg's calculations of Weighted Average Costs of Capital ("WACC").[7] Conceptually, the cost of capital is defined as the opportunity cost of all capital invested in an enterprise – it is the return the investor forgoes by undertaking one particular investment. As such, it is the minimum return that investors expect to earn when they invest in a company, or else they would be better off investing their money in a different investment with an equivalent risk profile. (In fact, investors expect the companies in which they invest to strive to earn more than their cost of capital, as I discuss below.)

[7] Bloomberg's WACC calculation is different from the Board's cost-of-capital estimate for the railraod industry. I used Bloomberg's WACC calculation simply because it permits a consistent cost-of-capital and rate of return comparison across industries.

The following figure (Figure RW-2: 2004-2013 Average ROIC and Average WACC) shows that the average ROICs of UP and railroads as a group were below their average WACCs during the past decade. In contrast, almost every company in the Proxy Peer Group had an average ROIC that exceeded its average WACC, and the average ROIC of the S&P 500 was significantly higher than the average WACC of the S&P 500

Figure RW-2: 2004-2013 Average ROIC and Average WACC



Note: Red square represents Proxy Peer Group 2004-2013 average. Red circles represent individual Proxy Peer companys' 2004-2013 averages.
Source: Bloomberg

B. UP DEVOTES MORE OF ITS CASH TO CAPITAL EXPENDITURES THAN COMPARABLE COMPANIES

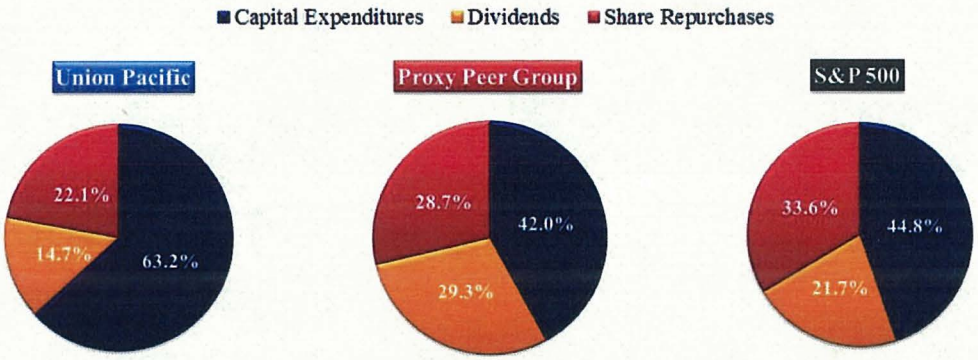
In response to suggestions that the amount of cash railroads spend on dividends and share repurchases reflects outsized profits,[8] I compared UP's allocation of cash to capital spending,

[8] I disagree with the premise that dividends and share repurchases reflect outsized profits. The different uses of cash indicate nothing of the sort. As I explain in the next section, a company allocates its capital based on expected return and correctly returns the remaining capital to its shareholders. Management is charged with allocating company capital to generate the highest return for its shareholders.

dividends, and share repurchases to the allocations of the Proxy Peer Group and companies in the S&P 500.

I find that there is nothing outsized or unusual about UP's dividends and share repurchases in relation to capital investment. The data in the figure below (Figure RW-3: 2004-2013 Average Cash Allocation) shows that relative to the Proxy Peer Group and companies in the S&P 500, UP uses a larger proportion of cash for capital investment. In particular, UP allocated 63% of its cash for capital investment during 2004-2013, whereas the Proxy Peer Group and the S&P 500 utilized approximately 42% and 45% of their cash for capital investment, respectively.

Figure RW-3: 2004-2013 Average Cash Allocation



Source: Bloomberg

IV. INVESTORS WOULD REQUIRE THAT RAILROADS REDUCE THEIR CURRENT LEVELS OF INVESTMENT IF THE BOARD ADOPTS REGULATION THAT WOULD LIMIT A RAILROAD'S REALIZED RETURNS TO NO MORE THAN THE INDUSTRY'S COST OF CAPITAL

In establishing a regulatory framework for the railroad industry, Congress wisely recognized that railroads must obtain their capital from competitive capital markets in order to make the investments necessary to serve their customers and the broader public interest. This recognition is embodied in the Interstate Commerce Act, which directs the Board to assist

railroads in attaining revenue levels sufficient to, among other things, "attract and retain capital in amounts adequate to provide a sound transportation system in the United States."[9]

Railroads operate in a capital-intensive industry. UP, for example, spent $3.6 billion on cash and non-cash capital in 2013, $3.7 billion in 2012, and $3.2 billion in 2011.[10] Despite the capital intensive nature of the industry, investors evaluate the capital expenditures of railroads the same as the capital expenditures of other companies. Investors demand that companies only spend capital on an investment if the expected return of the investment is at or above the company's cost of capital. If the expected return of an investment is below the company's cost of capital, investors will demand that the company return the company's cash to the investors in the form of dividends or share repurchases rather than spending it on the investment.

The result is that companies invest only in projects that have expected returns at or above the cost of capital. Moreover, if the company is projecting returns accurately and only investing in those projects with expected returns above the cost of capital, we would expect to see the company's realized returns above its cost of capital – even in fiercely competitive industries. This is purely a matter of arithmetic – if a company selects only those opportunities at or above its cost of capital, the resulting average expected value will be above the cost of capital.

As stated above, my understanding is that the Board is considering regulation that would limit a railroad's realized returns to no more than the industry's cost of capital. Based on established investing principles, I can tell you that such regulation would reduce the amount of investment by the railroads below the level that would exist in a competitive environment. The primary reason, among many, is that a limit on realized returns would decrease the expected return of each investment contemplated by the railroads. That is, if regulation limits the potential

[9] 49 U.S.C. § 10704(a)(2).
[10] Union Pacific Corporation, 2013 Investor Fact Book.

gains from successful investments – for example, if a railroad is required to surrender a portion of the gains of the investment in the form of rate relief – then that will alter the calculation of expected returns. As a result, projects that previously had expected returns above the cost of capital would have expected returns below the cost of capital. Investors would consequently demand that railroads forgo these investments and instead return the cash to investors in the form of dividends or share repurchases.

I have included Figure RW-4 below to help illustrate this point. The figure is a graphical depiction of a company's investment analysis. The "investment line" runs from point A to point Q. The investment line represents potential projects of the company. The investment line is downward sloping because as a company increases its number of projects, the expected value of each project decreases. The dashed line represents the company's cost of capital. Because investors demand that companies only invest in projects that have an expected return at or above the cost of capital, this company would invest in Q^C projects in a competitive environment.

Figure RW-4: Investment Analysis

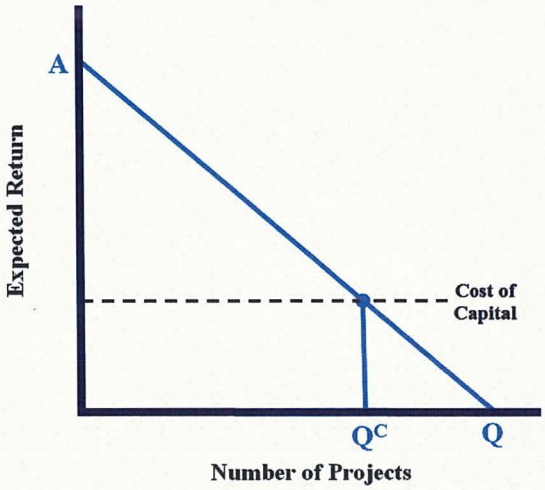
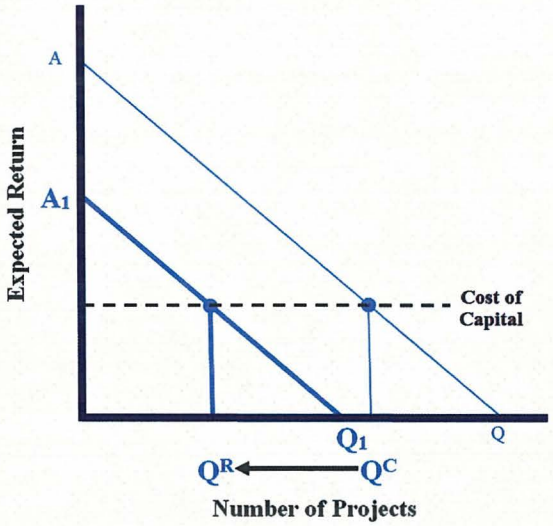


Figure RW-5 illustrates the effect of regulation that would limit realized returns. The prospect of limiting realized returns from successful investments would decrease the expected

return of each investment opportunity. The effect is depicted on the graph by the investment line shifting down to A^1-Q^1. The company now invests at Q^R, the point at which the expected return of the last project equals the cost of capital. As you can see, the company would fund fewer investment projects because investment projects that previously generated expected returns above the cost of capital would now generate expected returns below the original cost of capital – the amount of the decrease is represented by Q^C minus Q^R.

Figure RW-5: Investment Analysis With New Regulation



Notably, the decrease in investment has nothing to do with whether or not the company generates high enough returns to fund the additional investments.[11] It solely is a function of the fact that investments that previously had an expected return above the cost of capital, will have an expected return below the cost of capital. If the company depicted in this chart invested at the competitive level despite new regulatory limits on realized returns (i.e., at level Q^C), investors would rebel – they would demand that the company reduce its investments to Q^R and return any additional cash to the investors through higher dividends or stock repurchases.

[11] If necessary, the firm could even raise external capital to fund such projects.

V. CONCLUSION

From my perspective as an investor, I have formed two conclusions in my analysis: (1) the financial performance of UP and other railroads does not reflect excessive returns; indeed, UP and other railroads have underperformed when compared to other peer groups; and (2) constraining the railroad's realized revenues to the cost of capital will decrease railroad investment.

VERIFICATION

I, Ram Willner, declare under penalty of perjury that the foregoing is true and correct. Further, I certify that I am qualified and authorized to file this Verified Statement.

Executed on September 5, 2014.

Dr. Ram Willner

APPENDIX A

BERKELEY RESEARCH GROUP

CURRICULUM VITAE

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EDUCATION

Ph.D. (DBA, Finance Quantitative Methods)	Harvard University, 1986
MBA (MS, Industrial Administration)	Carnegie-Mellon University, 1982
B.A. (Mathematics)	Brandeis University, 1979

PRESENT EMPLOYMENT

Berkeley Research Group, LLC, Director
Independent Consultant, Ram Willner Ph.D., Investment, Finance & Quantitative Services
Assignments: Portfolio Manager and Head Of Fixed Income Strategies, Analytic Investors, LLC
Special Projects Manager, Research Affiliates, Inc.
Clinical (Medical) Mathematics Consultant, CNSResponse, Inc.

PREVIOUS POSITIONS

CIO and Managing Partner, Global Fixed Income Partners, 2004–2007
Portfolio Manager and Managing Director, Bank of America Capital Management, 2000–2003
Portfolio Manager and Principal, Morgan Stanley Asset Management (London), 1999–2000
Senior Investment Team Member and Risk Manager, Global Fixed Income, PIMCO, 1994–1998
VP Analyst, Sanford Bernstein (now AllianceBernstein), 1993–1994
VP Citibank, NA, 1992–1993

PROFESSORIAL APPOINTMENTS

University of California, Irvine, Paul Merage School of Business, 1994–2004
New York University, Stern School of Business, 1991
Dartmouth College, Amos Tuck School of Business, 1987–1990
Seminars at University of Southern California and University of California, Los Angeles

APPENDIX A

BERKELEY RESEARCH GROUP

PROFESSIONAL AWARDS, RECOGNITION, AND PRIZES

2000	1996 Journal Fixed Income Paper recognized as one of 10 best of the 1990s
2003	Recognized as leading practitioner Risk Management Monogram
2011	FDIC-qualified as "investment expert"

PROFESSIONAL AFFILIATIONS

Series 3, Series 65, IMRO/FSA (UK)

PUBLICATIONS: ARTICLES AND WORKING PAPERS

(1) "Risk Rating Migration and the Valuation of Floating Rate Debt," Ginzburg, Alex, Kevin J. Maloney, and Ram Willner. Working paper, Citibank, Dartmouth College, Sanford C. Bernstein & Co., November 1993.

(2) "Valuing Start-Up Venture Growth Options," in Trigeorgis, Lenos, ed., Real Options in Capital Investment Models, Strategies and Applications, Preager, 1995.

(3) "Convexity: Sightings, Measurement and Applications," Journal of Financial Planners, 1995.

(4) "A New Tool for Portfolio Managers: Level, Slope & Curvature Durations," Journal of Fixed Income, June 1996. Presented by the Journal of Fixed Income as one of their 10 best articles of the decade.

(5) "Measuring the Duration of an Internationally Diversified Bond Portfolio" (co-authored with Lee Thomas), Journal of Portfolio Management, fall 1997.

(6) "Changing Currency Risks," AIMR Conference Proceedings, Managing Currency Risk (November 1997): 6–13.

(7) "Improved Measurement of Duration Contributions of Foreign Bonds in Domestic Portfolios," in Frank J. Fabozzi, ed., Perspectives on International Fixed Income Investing. New Hope, PA: Frank J. Fabozzi Associates, 1998.

(8) TIRO, Target Information Ratio Optimization—A portfolio optimized robust achievement of Sharpe/Information: Ratio minimum targets tradeoff with performance. Working paper, 2006.

(9) "Hey! We Are in A Bond Market Bubble," Research Affiliates, 2011. Working paper.

APPENDIX A

BERKELEY RESEARCH GROUP

Expert Experience

Concluded BRG Assignments

(1) Advisor to testifying expert on asset-backed commercial paper mismanagement allegation case. (2012)

(2) Testifying expert, including expert report preparation, in case involving alleged theft of financial-analytical intellectual property. (2012)

(3) Testifying expert on case regarding Mortgage Backed Securities and potential misrepresentation of underlying collateral quality. (2012)

(4) Deposition and testifying expert on case regarding bankruptcy and damages valuation for Underwritten CDS. (2012)

(5) Deposition and testifying expert on case regarding hedging with complex financial derivatives instruments Involved in CLO warehousing and SPV structuring. (2013)

(6) Testifying expert on case Action Rate Securities and proper invest management. (2013)

(7) Consulting expert on case regarding appropriate FX settlement rates. (2013)

(8) Consulting expert on case regarding valuation applying 'real options' methodology. (2013)

Current BRG Engagements as Testifying Expert (including expert report preparation)

(9) Testifying Expert in criminal case involving securities fraud (2013/2014)

(10) Testifying expert on case regarding bank in receivership and fiduciary failure due to risky CDO investments. (2013/2014)

(11) Damages testifying expert regarding inappropriate investment recommendations (2014)

(12) Rebuttal expert regarding investment standards for commercial paper (2014)

Expert Testimony Case History

Highland Capital v. Bank of Nova Scotia, U.S. Dist. Ct., Dallas County, Texas, Case Nos. 650097/2009, 650752/2010 and 652646/2011. Deposition on behalf of plaintiff in 2013.

UBS v. Highland Capital Management, Supreme Court of the State of New York, Docket No. DC-11-07438. Deposition on behalf of defendant in 2013.