

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

STB EX PARTE NO. 657

**RAIL RATE CHALLENGES UNDER THE STAND-ALONE COST
METHODOLOGY**

**WRITTEN TESTIMONY OF
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1. Qualifications

My name is Michael A. Nelson. I am an independent transportation systems analyst with over 24 years of experience advising clients on rail transportation issues. My office is in Dalton, Massachusetts.

I have directed or participated in numerous consulting assignments and research projects in the general field of transportation. My work typically involves developing and applying methodologies based on operations research, microeconomics, statistics and/or econometrics to solve specialized analytical problems.

I received my bachelor's degree from the Massachusetts Institute of Technology in 1977. In 1978, I received two master's degrees from MIT, one in Civil Engineering (Transportation Systems) and one from the Alfred P. Sloan School of Management, with concentrations in economics, operations research, transportation systems analysis and public sector management. Prior to February 1984, I was a Senior Research Associate at Charles River Associates, an economic consulting firm in Boston, Massachusetts. My qualifications and experience are described further in Exhibit A.

Over the past 20 years, I have provided testimony before this Board and its predecessor regarding numerous railroad issues. Of particular relevance to this statement, I have studied unit coal train cost and productivity issues, and have assisted coal users (individually and in groups) in the analysis of possible alternative approaches that could be utilized to create an economically viable new rail line to transport coal from the Powder River Basin (PRB) to major markets in the eastern, central and southern regions of the U.S.. To a significant extent, these analyses have addressed the same basic issues

that are faced by a hypothetical stand-alone railroad of the type developed in STB rate reasonableness assessments.

I note that, to date, I have not participated directly in any specific rail rate cases. My understanding of the Board's SAC methodology has been formed primarily on the basis of selected filings and published decisions from recent cases. As an "outsider" to the process, my comments are necessarily general, and may overlook past consideration of specific issues and options.

I also note that this statement takes no position with respect to the issue of whether or not the Board should institute a rulemaking proceeding on SAC issues. The methodological alternatives discussed herein may be considered by the Board in the context of past, present and/or future individual cases at least as readily as such alternatives could be considered in a rulemaking.

I acknowledge with thanks the support provided for this statement by Arkansas Electric Cooperative Corporation (AECC). AECC holds substantial ownership interests in three major coal-fired electric generating stations, and has a long history of providing support for initiatives to improve coal transportation options. AECC supports the identification and consideration of possible methods to improve the SAC process, as sought by the Board in its notice. The discussion of specific alternatives contained herein represents the views of the author, who solely is responsible for any errors of content or omission.

2. Methodological Issues

The specific methodological issues addressed in this statement include the following:

- "Optimal efficiency" in SARR design

- Incorporation of productivity changes in DCF analysis
- Traffic base issues
- Use of carrier-specific variable costs
- Treatment of shipper-owned equipment
- Incorporation of public pricing impacts
- "Parts test" vs. bottleneck criteria
- "Gaming" of contested rate
- Cost of capital
- "Parameterization"

Each of these is discussed below.

a. "Optimal Efficiency" in SARR Design

A transportation facility, such as a railroad, is normally designed and constructed to efficiently serve a given actual or anticipated set of demands. With the passage of time, changes in demand patterns, technology, operating practices and other factors may cause partial or total obsolescence of previous infrastructure investments. In the case of coal-hauling railroads, such factors as growing market volumes and the proliferation of heavier and longer trains may influence the optimal alignment and profile of routes. In particular, such factors tend to accentuate the need to reduce circuitry, ruling grade, rise, etc.

This is especially true in the case of the PRB, which did not originate significant volumes of coal until decades after the construction of most of the western rail network. Under such circumstances, it is reasonable to anticipate that a new purpose-built line would make considerable use of new construction – as opposed to lines of the existing carriers - to achieve "optimal efficiency".¹ The fact that the SARR's in rate cases

¹ As summarized in the Board's decision dated March 15, 2005 in Docket No. 42058, "...the SAC test...seeks to determine the least cost at which a hypothetical, optimally efficient carrier could provide service to the complaining shipper's traffic and other traffic designated by that shipper to share in the use of the hypothetical carrier's facilities and services."

generally duplicate the century-old lines of incumbent carriers can be viewed as a per se indication that they fall short of achievable efficiency levels.

The reliance on existing lines may result at least in part from the ready availability of information regarding the construction of those lines. In the context of efficient rail operations, this is analogous to looking under a streetlight for your lost car keys simply because that's where the light is. You may happen to find the keys there, but it's just as likely they'll be somewhere else.

The Board should anticipate that new construction will often be needed to create a heavy-haul SARR route that avoids circuitry and provides a profile that supports the most efficient feasible operations. In this circumstance, the Board needs to strike an appropriate balance between requirements for information sufficient to ensure that new alignment proposals are feasible vs. excessive information requirements that would unnecessarily chill consideration of the most efficient options. In general, it should be possible to use sensitivity analysis to address imprecision inherent in engineering information regarding lines that have not yet been constructed. By accepting reasonable SARR designs that incorporate new construction, the Board will help to ensure that the process embodies the "optimal efficiency" concept upon which it is premised.

b. Incorporation of Productivity Changes in DCF Analysis

The issue of how to reflect prospective future productivity improvements in the discounted cash flow (DCF) analysis for a stand-alone railroad has already been identified by the Board as requiring attention. It is certainly true that future productivity improvements for coal unit trains may differ from those applicable to other rail operations, so RCAF-A may not be directly applicable to SARR costs. However, my own

work confirms that it is also inappropriate to assume that future productivity improvements for coal unit trains will be negligible (as implicitly assumed in the use of RCAF-U).

In the context of an examination and forecast of competitive rate levels, I recently identified and analyzed 18 prospective changes in rail networks, equipment and operating practices that prospectively could improve the cost structures associated with existing PRB unit train operations. Based on this work, I would offer the following observations:

- There are many feasible actions that could produce tangible productivity improvements in unit coal train operations. For example, recent press reports have documented steps taken to advance use of one-person crews and electronically-controlled pneumatic (ECP) brakes;
- It is possible to combine information regarding the impacts of specific actions and factors affecting the likelihood of their proliferation to develop an “expected value” of anticipated productivity improvement; and,
- This “expected value” can be validated against past experience and broader forecasts.

The productivity adjustment appropriate for a specific case depends upon the extent to which productivity enhancements have been incorporated in the SARR design. Using the above examples, if the SARR design incorporates one-person crews and ECP brakes, future productivity adjustments for those factors would not be needed. On the other hand, if the SARR design replicates existing operations that don’t incorporate these productivity enhancements, a greater productivity adjustment would likely be warranted.

In general, taking steps to improve service and reduce costs are critical components of financial health and long-term survival for firms operating in virtually any competitive marketplace. In the wake of the regulatory reforms provided under the Staggers Act, the rail industry has demonstrated a sustained ability to identify and implement actions to improve productivity, including actions that affect the costs of unit

coal train movements. It would therefore be reasonable and appropriate for the Board to incorporate productivity adjustments that are consistent with the SARR design in specific cases.

c. Traffic Base Issues

The possibility that a SARR would be more efficient than the defendant carrier in a rate case raises questions regarding the traffic that the SARR would be able to handle. Specific issues include the practice of using the defendant's traffic as the basis for the analysis, and also the mileage-based standard used to assess possible reroutes.

A more efficient carrier may exhibit lower costs and/or cycle times, both of which provide important competitive capabilities. A more efficient carrier may therefore be better able to attract and serve traffic in the marketplace. All else equal, SAC procedures should permit a SARR to attract traffic that the defendant would attract if the defendant were as efficient as the SARR.

For example, consider a case where Railroad A operates over a route that has higher ruling grades, higher costs and longer cycle times in comparison with the route of Railroad B, and is therefore able to attract only 1/3 of the competitive traffic (while Railroad B handles the other 2/3). If Railroad A made suitable investments, it could improve its route, and attain parity with Railroad B in the distribution of competitive traffic. If a captive shipper on Railroad A designs a feasible SARR that avoids the shortcomings of Railroad A's current route, that SARR should be evaluated on the basis of the markets it (and Railroad A) could serve, and not on the basis of Railroad A's current, limited traffic share.

Similarly, the practice of evaluating internal reroutes on the basis of mileage overlooks the potentially important role of efficiency improvements. For example, if a SARR is designed with a favorable profile in comparison with the defendant carrier's routes, it can prospectively use fewer locomotives, less fuel, less crew time, etc. to move the same tonnage. The resulting lower operating costs could make it possible for the SARR to increase contribution even on reroutes that entail a moderate increase in circuitry.

Overall, if a SARR is designed to be more efficient than the defendant railroad in a rate proceeding, the Board's procedures should enable the SARR to attract and move traffic in ways that are consistent with that efficiency. A failure to do so constrains the economic performance of the SARR, and rewards the defendant railroad for controllable inefficiencies it chooses not to address.

d. Use of Carrier-Specific Variable Costs

In cases where the SAC analysis suggests a rate below 180 percent of the defendant carrier's variable costs, the Board does not prescribe rates below that threshold. Put another way, the defendant carrier is able to retain as contribution an amount equal to 80 percent of its variable costs for the movement.

Under some circumstances, this can create financial incentives for the defendant railroad to make decisions that result in inefficiencies. An illustration of such circumstances can be seen in the WPL/Edgewater rate case.² In that case, the net lading per car was limited by a 268,000 lb. GWR restriction. UP's "Allowable Gross Weight Map" shows that it can move cars at 286,000 lb. GWR from the PRB as far as

² STB Docket No. 42051.

Milwaukee, WI. The weight restriction apparently occurs on the short segment between Milwaukee and Sheboygan.³

In this situation, UP appears to face a perverse financial incentive regarding any steps it might otherwise consider to upgrade the segment between Milwaukee and Sheboygan. Because the SARR produced a rate below the 180 percent threshold, any action by UP that would lift the weight restriction would also tend to reduce the variable costs of the movement, and potentially reduce UP's contribution therefrom. Under current SAC procedures, UP appears to have a financial incentive that tends to perpetuate inefficiency on this movement.

To avoid this type of problem, the Board should rely on variable cost information that reflects reasonably attainable efficiencies for the subject movement. This would help to ensure that perverse financial incentives associated with the 180 percent threshold are reduced or eliminated.

e. Treatment of Shipper-Owned Equipment

Under the 180 percent threshold discussed in section (d), the costs of carrier-owned railcars also contribute directly to the cost basis for the rates allowed in rate cases. While this is of concern to shippers seeking rate relief, I understand there is a long history supporting the general concept that the use of shipper-owned equipment is at the option of the railroads.

Without undermining this principle, there are recent developments in car supply that may reasonably lead the Board to reassess the status of shipper-owned equipment in at least some coal rate cases. Under public pricing, the railroads have apparently established a standard practice under which PRB shippers who are willing to make

³ See http://www.uprr.com/aboutup/maps/graphics/allow_gross_full.pdf.

volume commitments are given a unilateral option to supply their own cars.⁴ Under this standard, the railroad retains control over the movement of shipper trainsets to the extent required to maintain system fluidity.⁵

For the capacity-constrained PRB Joint Line, this standard reflects the importance of ensuring that car supply problems do not undermine efficient operations. It is a market solution to situation-specific capacity issues that has voluntarily been developed and promulgated by the serving railroads. In situations (such as the PRB) where the railroads have embraced the use of shipper-owned equipment as a standard practice that promotes efficiency, the Board should consider the propriety, under the “honest and efficient management” standard or other relevant criteria, of allowing shippers to obtain prescribed rates for movements in shipper-owned equipment.

f. Incorporation of Public Pricing Impacts

The introduction of public pricing for PRB coal movements has raised shipper concerns regarding its prospective impacts on transportation rates. In the context of stand-alone costing, these impacts are relevant to the extent that they affect the rates that will be achievable by the SARR upon the expiration of existing contracts.

For plants that are already covered by public prices, it is obviously possible to include such prices in SARR analyses, and I understand that the Board has already done

⁴ In UP Circular 111, General Rule Item 300 states that...“(I)n return for Shipper’s volume commitment, Railroad commits to transport Coal loaded by Shipper and moving in Shipper Owned or Leased Equipment...” An option to utilize carrier-owned equipment is explicitly conveyed to the shipper. See <http://www.uprr.com/customers/energy/attachments/circ111.pdf>. In BNSF Public Pricing Authority 90068, the “Commitment Certificate” permits the shipper to specify the equipment supplier, at least within the options published by BNSF. See [http://domino.bnsf.com/website/prices.nsf/55abb888cb03db6286256d7100515608/80ccd9c2748d39ac86256ed1004f04db/\\$FILE/BNSF%2090068%20Rev%2012%20Eff%2004%2001%2005%20coal.pdf](http://domino.bnsf.com/website/prices.nsf/55abb888cb03db6286256d7100515608/80ccd9c2748d39ac86256ed1004f04db/$FILE/BNSF%2090068%20Rev%2012%20Eff%2004%2001%2005%20coal.pdf).

⁵ In some cases, I believe railroads and shippers are entering into further agreements that permit the railroads to reassign shipper trainsets to different origin points within the PRB to support fluid and efficient use of the PRB Joint Line.

so. It is also possible to use the public prices to analyze changes from past pricing practices. To the extent that systematic changes from past pricing can be identified, it would be appropriate for the Board to consider the applicability of such systematic changes in the projection of revenues for SARR traffic not directly covered by public pricing.

g. “Parts Test” vs. Bottleneck Criteria

In STB Docket No. 42054 (the PPL/Corette rate case), the Board introduced a constraint that required the SARR to charge a rate that separately covered the costs of a high volume segment shared with other traffic and a low-volume segment that reached the plant (i.e., the “parts test”). This appears to impose on the SARR a requirement that is not imposed on the defendant railroad. Specifically, under the “bottleneck” criteria, a carrier that serves the origin and destination points of a movement generally cannot be compelled to quote a separate rate for different segments of that movement. The imposition of such a requirement on the SARR therefore appears to be inconsistent with the bottleneck criteria.

Notwithstanding this inconsistency, the avoidance of cross-subsidy is a valid regulatory objective in many contexts, and, if properly conducted, would replicate the expected conduct of an “optimally efficient” railroad. Such a railroad would seek to ensure maximum contribution from the traffic it is able to serve by applying two types of criteria to avoid cross-subsidy. First, it would ensure that the revenue from each movement is no lower than that variable cost for that movement. Second, it would ensure that the revenue from individual movements and groups of movements exceeds the incremental costs of those movements. In the context of the “parts test,” this would mean

ensuring that the gross (end-to-end) revenues from movements that make use of the low-volume segment exceed the sum of the variable costs for those movements plus avoidable fixed costs (including amortization of the segment's capital costs). If a segment failed this test, an efficient SARR would choose not to construct and operate that segment.

If a segment fails this test, however, there are additional possibilities that should be taken into account by the Board. Specifically, if the SARR is standing in the shoes of the defendant railroad, it would typically have the option to spin off the low-volume segment as a shortline. The U.S. rail network contains hundreds of examples of shortlines that sustain low-density service through low-cost operations, and receive divisions on joint movements with the "parent" railroad that do not materially exceed variable costs. The "parts test" should be implemented by the Board in a manner that is consistent with these considerations.

With or without changes in the "parts test", the Board may also wish to remedy inconsistency with the bottleneck criteria by revisiting those criteria in light of relevant industry changes that have occurred. Mergers have left the eastern and western regions of the country each served by only two major railroads. The service provided by those railroads has repeatedly been disrupted by merger integration problems, extreme weather conditions, volume growth and fluctuations, and even management misjudgments. At the same time, service-sensitive traffic such as intermodal has undergone a sustained and major growth. In light of the operational interference that often occurs between bulk and expedited traffic, and the lack of excess capacity in the network, it may be more conducive to the long-term health of the industry for the Board to permit market forces to play a greater role in allocating resources for the competitive portion of captive

movements. This would promote efficiency in the use of trunklines and an enhanced flexibility to mitigate service disruptions while still preserving a substantial ability for the destination carrier to extract rent.

h. “Gaming” of Contested Rate

Where the SARR is found to earn revenues in excess of its total costs, Board procedures currently provide for the surplus to be distributed across the SARR’s traffic (under the “percentage reduction” method). This has given rise to “gaming” under which the defendant carrier experiences an incentive to quote a high contested rate (the surplus revenue from which will be partially distributed to other traffic, thus elevating the rate prescribed for the subject movement). Shippers can also influence the outcome through the incorporation of high-rated traffic in the SARR traffic base. The process ultimately implements deviations from the demand-based differential pricing that currently moves the traffic.

The Board has already acknowledged the infirmities of this method, for which there appears to be little if any valid analytical foundation. The current process also appears onerous in comparison to the constraints faced by the defendant railroad, and is inconsistent with the pricing behavior that could be expected from an “optimally efficient” SARR. Basically, if a defendant railroad were to become revenue-adequate, I am unaware of any mechanism or precedent through which the Board would compel that railroad to lower prices on its lower-rated traffic. Indeed, an “optimally efficient” SARR would likely fire the pricing officer who left money on the table from such traffic.

The pricing behavior I would normally expect from an optimally efficient SARR would stem from the fact that a SARR is generally not designed with a great deal of

excess capacity. A railroad operating near a constraint on its ability to move tonnage has a rational incentive to seek traffic that maximizes achievable contribution per ton. (Under such a strategy, the railroad may tend to prefer longer movements over shorter movements, even when the shorter movements possess higher revenue/variable cost ratios.)

Given a SARR that is attempting to maximize contribution per ton, a straightforward way to constrain revenue for the SARR (i.e., to the break-even level) is to truncate contribution per ton at a given maximum level. Put another way, the excess revenue earned by the SARR could be used to implement a ceiling on contribution per ton that would apply to all of the SARR's traffic.

This approach would only constrain the contested rate if that rate were producing the highest contribution per ton of any traffic handled by the SARR, and would fully preserve demand-based differential pricing on lower-rated traffic. It eliminates the ability of the defendant railroad to gain advantage by initially quoting an excessively high rate, and it ensures that the contribution from higher-rated traffic will not cross-subsidize reductions in the challenged rate.

i. Cost of Capital

In general, the cost of capital can be thought of as containing a component that reflects basic conditions in financial markets, and a "risk premium" that reflects the financial risk associated with individual firms or industries. While the Board has a formal process for measuring the rail industry's cost of capital, different railroads may have different financial risk profiles depending upon the characteristics of their traffic and other relevant factors.

SAC procedures should permit consideration of the possibility that the cost of capital for a SARR would differ from industry average. To the extent that the SARR is based on a disproportionately stable traffic base, and possesses an atypical ability to maintain financial stability in the presence of adverse developments, it may warrant a risk premium that is lower than the industry average.

j. “Parameterization”

The large analytical effort performed in a rate case by the parties and the Board is ultimately reduced to a comparatively small number of parameters that effectively determine the outcome. Moreover, as the history of such cases deepens, stand-alone railroads have been designed and variable cost determinations have been made in an increasing assortment of flows and corridors. Cross-sectional examination of results from different past cases may in some instances permit the establishment of reasonably tight ranges of potential outcomes for a new case.

This type of information could substantially narrow the scope of disputed issues in a rate case, and contribute to early settlements. Even in situations where cases do not settle, the effort required on the part of the parties and the Board to achieve resolution could be greatly reduced.

To foster greater reliance on parameterized analysis, the Board should consider modification of its fee structure to reflect the savings that are achievable when portions of the case can reasonably be resolved on the basis of prior analyses.

EXHIBIT A

QUALIFICATIONS AND EXPERIENCE

MICHAEL A. NELSON

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EDUCATION

M.S. Civil Engineering, Massachusetts Institute of Technology

M.S. Management, Alfred P. Sloan School of Management, Massachusetts Institute of Technology

B.S. Management, Massachusetts Institute of Technology

Concentrations in transportation systems, economics and operations research.

EXPERIENCE

Mr. Nelson is an independent transportation systems analyst. He provides management and economic consulting and litigation support. His work typically involves developing and applying methodologies based on operations research, microeconomics, statistics and/or econometrics to solve specialized analytical problems, as illustrated by the following examples of his experience:

A. Railroad

Mr. Nelson is the founder of the Coalition to Foster Improved Rail Economy ("CoalFIRE"). This initiative is open on a subscription basis to current and prospective Powder River Basin (PRB) coal users. It identifies and promotes awareness of specific potential group actions to improve the competitiveness of PRB rail transportation options within the current legal and regulatory framework. Over 20 specific potential group actions have been identified to date, including steps to add/restore competitors, increase the effectiveness of existing competitors, increase customer leverage and develop external pressure for reasonable competitive conduct by the current PRB rail duopoly.

For a powerplant developer, Mr. Nelson analyzed issues related to rail transportation service in the supply of coal to two potential sites for a new generation facility in Oklahoma. This work included analysis of likely rate levels in light of movement-specific competitive and operational considerations.

Mr. Nelson prepared a 10-year forecast of expected changes in rail productivity and competitive rail rate levels for the movement of coal from the PRB. This forecast has been provided on a subscription basis to interested parties, and is believed to be the only such forecast that is based on analysis of specific anticipated productivity enhancements (as opposed to extrapolation of past trends). Subscribers have used this information to analyze the merits of converting to PRB coal, to support contract negotiations and for other strategic and planning purposes.

For a powerplant developer, Mr. Nelson analyzed issues related to the anticipated reliance on competitive rail transportation service in the supply of coal to a planned new generation facility in Missouri. This work included analysis of likely rate levels in light of unique limitations faced by one of the competing rail lines.

On behalf of a group of over two dozen major electric utilities, Mr. Nelson provided strategic guidance and analytical support, and participated in negotiations with a Class I railroad regarding prospective multi-billion dollar investments by the utilities to improve their coal transportation options.

For a midwestern utility, Mr. Nelson assisted in the development of improved transportation options for a large coal-fired generating station. As part of this work, he reviewed an analysis performed by a major engineering contractor, and identified a series of cost-effective options that had been overlooked. He then provided strategic guidance and analytical support in the development process.

For a mining company, Mr. Nelson analyzed the transportation options that would be available for a prospective new facility in western Colorado. This included detailed consideration of the "new facilities" condition imposed by the Surface Transportation Board (STB) in its

approval of the merger of the Union Pacific (UP) and Southern Pacific (SP) railroads.

For Arkansas Electric Cooperative Corporation (AECC), Mr. Nelson submitted statements to the STB in Finance Docket Nos. 34177 and 34178. These statements addressed the actual and potential competitive roles of I&M Rail Link (IMRL) in domestic coal transportation, and the prospective impacts associated with control of IMRL by the Dakota, Minnesota and Eastern Railroad (DME).

On behalf of the Town of Easton (MA), representing a coalition of towns, Mr. Nelson identified and corrected a series of substantial errors and inconsistencies in the Final Environmental Impact Report for the proposal by the Massachusetts Bay Transportation Authority (MBTA) to provide new commuter rail service to New Bedford and Fall River. This extended Mr. Nelson's previous analyses, which had identified and documented a series of significant errors in the development of the MBTA's conclusions regarding the alleged infeasibility of a key alternative route. Mr. Nelson also identified and made preliminary assessments of other alignment and operational possibilities that had been inappropriately omitted from consideration.

As a subcontractor to The Brattle Group, an economic consulting firm, Mr. Nelson provided guidance to the Mexican railroad TFM regarding the identification of different types of competitive and efficiency issues raised by the proposed merger of the other two principal Mexican railroads (Ferromex and Ferrosur). The merger was denied by both the national transportation and antitrust authorities.

For the Cowboy Railroad Development Company (CRDC), a group of major electric utilities, Mr. Nelson directed the identification and evaluation of alternative routes and strategies for creating a new railroad access across Nebraska to coal mines in the PRB.

As part of the work for CRDC, Mr. Nelson analyzed the degree to which the UP/SP merger foreclosed competitive routes that could be offered by a new PRB rail carrier. The results of this analysis were submitted to the STB in Finance Docket 32760 (Sub-No.21), which provided oversight of the UP/SP merger and its impacts.

For a major electric utility, Mr. Nelson performed a detailed analysis of rail transportation options for PRB coal movements to the Sunflower Electric generating station at Holcomb, KS. The results of this analysis were used by the utility in assessing the merits of investing in a planned expansion of that facility.

For an assortment of major electric utilities and power producers, Mr. Nelson has performed detailed analyses of rail transportation options, including build-outs, for a total of over 30 large coal-fired generating stations. The results of these analyses have served as the basis for management decisions that are projected to save many millions of dollars in fuel costs.

On behalf of AECC, Mr. Nelson submitted a statement to the STB in Finance Docket 32760 (Sub-No.21). This statement addressed competitive issues resulting from the UP/SP railroad merger, with a particular focus on the effect of trackage rights compensation levels.

On behalf of the Committee to Improve American Coal Transportation (IMPACT), Mr. Nelson submitted a statement to the STB in Ex Parte 582 (Sub-No. 1). This statement addressed a wide range of issues related to rail merger policy.

For a major Class 1 railroad, Mr. Nelson assisted senior management staff in the design and evaluation of a potential construction project.

For the Mid-States Coalition for Progress (a group of landowners), Mr. Nelson analyzed the proposal by DME to construct an extension of its line into the PRB. Mr. Nelson developed estimates of DME's volumes and unit revenue levels on the basis of a plant-by-plant analysis, taking into account likely future market conditions and the competitive capabilities of the UP and Burlington Northern Santa Fe (BNSF). Mr. Nelson's analysis was filed at the STB (Finance Docket No. 33407).

For the National Railroad Passenger Corporation (AMTRAK), Mr. Nelson investigated issues related to the definition of "express" traffic that AMTRAK is permitted to carry (STB Finance Docket No. 33469). Mr. Nelson analyzed relevant data from the STB Rail Waybill Sample and the Census of Transportation, and investigated the factors affecting use

of Amtrak by the U.S. Postal Service. The definition of "express" eventually adopted by the STB was consistent with Mr. Nelson's findings.

For the Moffat Tunnel Commission (Colorado), Mr. Nelson analyzed the factors affecting future railroad use of that tunnel, which traverses the Continental Divide and serves the principal Colorado coal fields on the UP line that formerly was the Denver and Rio Grande Western Railroad (DRGW) main line west of Denver. The tunnel had historically been owned by the Commission (and leased to the railroad), but under sunset legislation was being offered for public sale. Mr. Nelson's analysis included study of the utilization of Colorado/Utah vs. PRB coals in the context of the central corridor conditions imposed by the STB in the UP/SP merger.

For Canadian Pacific Railway (CP), Mr. Nelson performed detailed studies of competitive and traffic issues associated with the acquisition and break-up of Conrail by Norfolk Southern and CSX (Finance Docket No. 33388). These studies included analyses of competitive issues in the area served by the former Delaware and Hudson (a CP subsidiary) and in the midwest, competitive issues involving coal traffic throughout the Conrail service area, and traffic impacts associated with potential remedial conditions. CP relied upon the results of Mr. Nelson's studies in reaching its settlements with Applicants in that case.

For SP, Mr. Nelson provided expert testimony before the Interstate Commerce Commission (ICC) in Finance Docket No. 32133 (the proposed control of C&NW by UP). This testimony was based primarily on Mr. Nelson's analyses of data from the Rail Waybill Sample, which identified substantial numbers of specific flows for which the proposed transaction created different types of potential competitive problems (including losses of point-to-point competition, source competition, competition in grain originations, and shipper leverage). In addition, Mr. Nelson's testimony utilized Rail Waybill Sample data to demonstrate the occurrence of merger-related foreclosure from previous UP acquisitions, and provided statistical support for SP's traffic study. Mr. Nelson also conducted a detailed investigation of the impact of the merger on source competition for western coal.

For Rio Grande Industries (RGI), Mr. Nelson provided expert testimony before the ICC in Finance Docket No.'s 31505 (the proposed acquisition by RGI of Soo's Kansas City - Chicago line) and 31522 (the proposed acquisition by RGI of the Chicago, Missouri and Western line between St. Louis and Chicago) based on his analysis of Rail Waybill Sample data. This testimony involved analysis of potential cumulative anti-competitive effects from the proposed transactions, development of time-series estimates of rail traffic volumes and carrier shares in different flows, and assessment of the statistical reliability of the portions of the testimony of other RGI witnesses that were based on Rail Waybill Sample data.

Also for RGI, Mr. Nelson provided expert testimony before the ICC in Finance Docket No. 32000, the consolidation of SP and DRGW. This testimony involved analysis of Rail Waybill Sample data to determine rail traffic volumes in different flows, the statistical reliability of studies conducted by other RGI witnesses, and potential competitive problem flows associated with a consolidation of SP and KCS.

For DRGW, Mr. Nelson provided expert testimony before the ICC in Finance Docket No. 30800 (the acquisition of MKT by UP) based on his analysis of Rail Waybill Sample data. This testimony involved examination of intramodal competition in the central corridor, development of traffic flow databases utilized by other witnesses, assessment of the statistical reliability of other witnesses' studies, and analysis of issues related to use of market share data from waybill samples to evaluate the competitive impact of the proposed merger.

Also for DRGW, Mr. Nelson provided extensive expert testimony before the ICC regarding a number of issues raised by the proposed merger of SP with ATSF (Finance Docket No. 30400):

* Mr. Nelson provided a detailed comparison of the economic and operating characteristics of the intercity trucking and railroad industries, with a particular focus on long-haul markets. Mr. Nelson's analysis of the trucking industry utilized the National Motor Transport Data Base (NMTDB). For this study, Mr. Nelson developed and implemented analytical techniques that compensate for the non-random sampling procedures employed in the gathering of

the NMTDB, making it possible to use this source to reliably conduct studies at the industry and corridor level. The Commission adopted the results of Mr. Nelson's study verbatim in its analysis of the anti-competitive consequences of the proposed merger.

* Using the NMTDB and the Rail Waybill Sample, Mr. Nelson analyzed the extent to which rail pricing and services on selected traffic are determined by competing intercity trucking alternatives available to shippers. This analysis was conducted at a highly detailed level, and included explicit accounting for the handling characteristics of each rail commodity and the operating economics of the corresponding truck equipment needed.

* Mr. Nelson analyzed the tests applied by various economists in the proceedings, including those of the U.S. Departments of Justice and Transportation, to identify rail traffic that would most likely be subject to anti-competitive effects in the wake of the proposed merger. Mr. Nelson identified circumstances under which these tests systematically yield invalid results, and provided guidelines for their proper application.

* Mr. Nelson identified improvements needed in the merger applicants' initial methodology for estimating the rail traffic diversions that likely would result from the proposed merger.

* In addition to this expert testimony, Mr. Nelson served as principal investigator for several studies underlying testimony offered by other witnesses, addressing issues related to intramodal (rail) competition, product and source competition, shipper benefits and leverage and trackage rights compensation. Mr. Nelson also conducted a number of special studies on request for other witnesses and counsel.

For a private client, Mr. Nelson participated in a study of the purchase and utilization of jumbo covered hopper cars by shippers and railroads. This study involved extensive analysis of the Rail Waybill Sample and other data sources, and included a detailed examination of historical car shortages in light of economic and traffic conditions, and other related factors. The results of Mr. Nelson's work were incorporated in testimony before the ICC.

As a subcontractor to consulting firms, Mr. Nelson has participated in a number of other rail-related studies. These include (1) analysis of Rail Waybill Sample data to address issues stemming from traffic protective conditions at the Jacksonville (FL) gateway between FEC and CSX, and (2) analysis of CN's Port Huron-Sarnia tunnel project and the alternative of a tunnel at Detroit-Windsor.

B. Postal Service

For Magazine Publishers of America (MPA) acting on behalf of a coalition of periodicals mailers, Mr. Nelson analyzed several issues related to the purchased transportation costs incurred by the Postal Service. This included identification of feasible cost reductions and efficiency improvements, as well as development of needed refinements in the methods used by the Postal Service to analyze transportation costs. The results of this analysis were presented to the Postal Rate Commission (PRC) in the R2000-1 omnibus rate case. A portion of the identified costing refinements has been adopted by the Postal Service.

Mr. Nelson identified and developed opportunities for a major publisher to create more efficient and desirable price/service options by avoiding selected costs in its mailings of periodicals. This work included consideration of transportation, delivery and unfunded retirement liability costs.

For Foster Associates (under contract to the Postal Service), Mr. Nelson worked in the following areas:

* Delivery costing - Mr. Nelson developed a series of refinements in delivery cost analysis procedures. These refinements included analysis of driving time on motorized letter routes, collection costing and extensive revision of costing for special purpose routes and special delivery messengers. In support of the new methodologies, Mr. Nelson developed data collection plans and assisted in the development of survey instruments and innovative procedures to gather new field data from carrier and messenger operations. He conducted extensive analysis of the new data, including development of data cleaning and weighting procedures, analysis program logic, and specifications for new econometric models. He also identified an overlap in costing systems that produced a "double-count" of delivery activity performed by personnel other than special delivery

messengers but charged to LDC 24 (Cost Segment 9). He developed spreadsheet modifications needed to incorporate the costing refinements and new data, and eliminate the "double-count" problem. The results of Mr. Nelson's delivery costing work were presented before the PRC in the R97-1 omnibus rate case. The PRC adopted 9 out of 10 of Mr. Nelson's recommended methodological changes, 2 with commendations.

* New products - Mr. Nelson identified the cost basis for a number of potential new product offerings involving Express Mail and Priority Mail, and developed the analytical framework and information needed to support their implementation. This included design and analysis of a new field study of relevant Express Mail piece characteristics, which was also presented by Mr. Nelson in the R97-1 rate case.

* Litigation support - In Docket No. R94-1, Mr. Nelson reviewed intervenor testimony regarding city delivery carrier and transportation issues, and developed discovery and cross-examination topics for Postal Service counsel.

* IOCS - Mr. Nelson developed refinements in IOCS data gathering procedures to improve the validity and precision of available information regarding Express Mail activities. Mr. Nelson then interpreted the initial results from the new data and provided suggestions for improvements in Express Mail costing procedures.

* Postal AMR - Mr. Nelson developed a plan for analyzing the street time costs associated with a proposal to have postal vehicles perform automated meter reading for utility companies.

* Eagle Network - Mr. Nelson developed a potential methodology for attributing the costs of dedicated air transportation services procured by the Postal Service.

For United Parcel Service (UPS), Mr. Nelson provided extensive expert testimony before the PRC in Docket No. R90-1. This testimony presented Mr. Nelson's studies of cost causality and/or elasticity within the city delivery carrier, special delivery messenger, vehicle service driver, purchased highway transportation and expedited air network operations of the Postal Service. These studies, which involved application of operations research

techniques and development of econometric models and other statistical analyses based on postal data, were referenced and relied upon extensively by the PRC in its Opinion and Recommended Decision. To a considerable degree, these studies represented extensions and refinements of Mr. Nelson's previous studies, which were presented before the PRC in Mr. Nelson's testimony in Docket No. R87-1, and in Docket No. RM86-2B, a rulemaking proceeding established in part to explore issues raised in testimony before the PRC in Docket No. R84-1 for which Mr. Nelson served as principal investigator.

C. Other

Mr. Nelson participated in an airport master planning study for Sydney, Australia. For this study, he developed a comprehensive set of site selection criteria and evaluation measures.

Until February 1984, Mr. Nelson was a Senior Research Associate at Charles River Associates (CRA), an economic research and consulting firm, where his work experience included the following:

Freight Transportation

Mr. Nelson served as Manager of Consulting Services for the National Motor Transport Data Base (described above), which at the time was sponsored by CRA. In this position, he was responsible for handling client requests for information from the database, including problem definition, sampling issues, conduct of analyses and reporting of results. He conducted specific analyses for a number of public and private clients.

Mr. Nelson served as principal investigator for a study of motor carrier safety and traffic characteristics. This study involved extensive analysis of a number of databases, including the FHWA "Loadometer" Study, the 1977 Census of Transportation, the ICC "Empty/Loaded" Survey, and the NMTDB. The results of his work were incorporated in testimony before the U.S. District Court on behalf of a private client engaged in litigation with a state over the use of twin trailers.

Mr. Nelson participated in several other projects providing support for motor carriers involved in litigation cases.

For these clients he performed detailed financial analyses of motor carrier operations and traffic in different settings, and assisted in the preparation of testimony and briefs. Mr. Nelson also served as an internal consultant on a number of CRA's other motor carrier, railroad, and freight transportation studies.

For the U.S. Department of Transportation (DOT), Mr. Nelson was principal investigator of a study to develop a conceptual framework and data collection strategy for analyzing the impacts of the motor carrier regulatory reforms implemented under the Motor Carrier Act of 1980. For this project, Mr. Nelson was responsible for identifying and selecting specific research issues, data requirements, data sources and analytical techniques.

In a study for the Office of the Secretary of Transportation, Mr. Nelson made extensive use of probabilistic modeling techniques to develop quantitative estimates of potential fuel conservation resulting from selected aspects of proposed motor carrier regulatory reforms.

For DOT, Mr. Nelson was principal investigator for a study of the merits of alternative approaches that could be utilized by the ICC to implement the inflation-based index for allowable rate adjustments by railroads mandated by the by the Staggers Rail Act of 1980. For this study he analyzed the ICC's proposed approach and developed specific conclusions and recommendation in a number of issue areas, including selection of the basic index, productivity adjustments, treatment of profit and non-recurring expenses, frequency of index adjustment, rate averaging, regional differences, collective ratemaking and fuel surcharges. The results of this study were used by DOT in formulating its response to the ICC's proposed approach.

For a private client, Mr. Nelson analyzed the logistical considerations involved in siting a plant to process imported high-value mineral ores. This study, which was part of a larger study to assess the overall economic feasibility of plant construction and operation, involved comparisons of costs and other attributes of a variety of modes and modal combinations, including rail, inland waterway, motor carrier and TOFC.

In a study of urban freight consolidation alternatives conducted for the U.S. Department of Energy (DOE), Mr. Nelson utilized principles of network analysis, simulation and queuing theory to evaluate and critique the merits of previous studies, and recommend research approaches for analysis of route and terminal consolidation strategies.

Also for DOE, Mr. Nelson was a major contributor to a study of potential fuel-use changes that could occur in response to dramatic fuel price increases. Mr. Nelson's work focused on the freight and intercity passenger transportation sectors and included analyses of opportunities for improvements in fuel efficiency by each mode under different fuel price increase scenarios, as well as modal shifts and net traffic reductions caused by resulting cost (and rate) increases.

Passenger Transportation

Mr. Nelson served as principal investigator for a series of Service and Management Demonstration Evaluations conducted for DOT. For three parallel assessments of the feasibility of user-side subsidies, and one demonstration of taxicab regulatory reforms and paratransit service innovations, he developed instruments for and implemented several surveys, conducted data analysis and prepared Final Evaluation Reports. For an assessment of alternative transit transfer policies, he developed research issues and data requirements, selected and supervised interviews of over 40 transit properties, and wrote or was responsible for all major deliverables. He assisted DOT in the development of research issues to be addressed in demonstrations of innovative checkpoint paratransit services and in the review of a proposed paratransit policy.

Also for DOT, Mr. Nelson was principal investigator of a study of methods to improve transit productivity and cost-effectiveness. This study involved the identification and documentation of 146 distinct productivity-enhancement measures that have been implemented at U.S. transit properties, assessment of the transferability of each measure to different settings, and development of impact magnitude estimates. Prior to this project, Mr. Nelson developed over two dozen ideas for possible innovations to improve transit productivity and cost effectiveness.

Mr. Nelson participated in a financing study of the New York Metropolitan Transportation Authority's proposed multi-billion dollar capital improvement program. Mr. Nelson's responsibilities in this project involved econometric analysis of operating costs, with a particular emphasis on identifying the variability of different cost components with alternative future levels of rapid rail, bus, and commuter rail activity. The results of his work were incorporated in the MTA's Official Statement for the successful initial offering of \$250 million in transit revenue bonds.

For DOT, Mr. Nelson participated in a study to develop technical guidelines for use by local planners to satisfy alternatives analysis requirements. For this study he developed a matrix-based method for determining data requirements in different scenarios, and played a major role in the development of a method for generating locally responsive alternatives to high-capital transit investments using multicriteria decision techniques.

For the Massachusetts Port Authority, Mr. Nelson participated in a study to forecast future levels of passenger and air cargo activity at Logan International Airport. For this study, Mr. Nelson supervised data collection efforts, developed methods for synthesizing data from diverse sources (FAA, CAB, Port Authority records, etc.) to yield relevant market segment size estimates, and analyzed seasonality and short-term peaking phenomena.

Mr. Nelson also participated in a quantitative assessment of the market penetration potential and associated impacts of electric vehicles for the Electric Power Research Institute (EPRI).

Thesis

In his graduate thesis at M.I.T., which fulfilled the thesis requirements for two Master's degrees, Mr. Nelson developed a comprehensive review of the theoretical and practical shortcomings encountered in the use of linear programming in a real time multiple vehicle routing and scheduling system (dial-a-ride). Based on network analysis techniques, he then developed a set of heuristic algorithms that avoided the shortcomings inherent in the linear programming (LP) approach. The performance of these algorithms was simulated by computer and found to meet or

exceed the LP's performance in a variety of scenarios drawn from actual operating data.

TESTIMONY

Surface Transportation Board, Finance Docket No. 34178

- Verified Statement, 11-14-02

Surface Transportation Board, Finance Docket No. 34177

- Verified Statement, 7-18-02

Surface Transportation Board, Finance Docket No. 32760
(Sub-No. 21)

- Verified Statement, 8-17-01

Surface Transportation Board, Finance Docket No. 32760
(Sub-No. 21)

- Verified Statement, 8-18-00

Postal Rate Commission, Docket No. R2000-1

- Direct Testimony, MPA-T-3, 5-22-00

Surface Transportation Board, Ex Parte 582 (Sub-No. 1)

- Statement, 5-16-00

Surface Transportation Board, Finance Docket No. 33407

- Verified Statement, 8-31-98

- Supplemental Verified Statement, 10-28-98

Surface Transportation Board, Finance Docket No. 33469

- Verified Statement, 11-10-97

- Reply Verified Statement, 11-25-97

Postal Rate Commission, Docket No. R97-1

- Direct Testimony, USPS-T-19, 7-10-97

Interstate Commerce Commission, Finance Docket No. 32133

- Verified Statement, SP-20 (Volume 2), 11-29-93
- Rebuttal Verified Statement, SP-41 (Volume 2), 7-28-94

Postal Rate Commission, Docket No. R90-1

- Direct Testimony, UPS-T-1, 7-16-90
- Rebuttal Testimony, UPS-RT-1, 10-1-90

Interstate Commerce Commission, Finance Docket No. 31505

- Verified Statement, RGI-14/SOO-14 (Volume 2), 9-15-89
- Rebuttal Verified Statement, RGI-55/SOO-55, 2-15-90

Interstate Commerce Commission, Finance Docket No. 31522

- Verified Statement, RGI-7/CMW-7 (Volume 2), 8-25-89

Interstate Commerce Commission, Finance Docket No. 32000

- Verified Statement, RGII-10, 2-22-88
- Verified Opposition and Rebuttal Statement, RGII-59, 6-1-88

Postal Rate Commission, Docket No. R87-1

- Direct Testimony Concerning Special Delivery Messenger and City Delivery Carrier Street Time Costs, UPS-T-1, 9-14-87
- Rebuttal Testimony, UPS-RT-5, 11-23-87
- Statement Regarding SDWAFS Analyses, 12-1-87

Interstate Commerce Commission, Finance Docket No. 30800

- Verified Statement, DRGW-13, 4-7-87
- Verified Statement, DRGW-24, 7-13-87

Postal Rate Commission, Docket No. RM86-2B

- Direct Testimony Concerning City Delivery Carrier Street Time Costs, UPS-T-1, 12-1-86

Interstate Commerce Commission, Finance Docket No. 30400

- Verified Opposition Statement, DRGW-20, 11-21-84

- Verified Opposition Statement, DRGW-23, 12-10-84 (with Paul H. Banner)

- Verified Rebuttal Statement, DRGW-33, 5-29-85

SELECTED PUBLICATIONS

Reports Prepared for Charles River Associates

User-Side Subsidy Demonstration Project: Lawrence, Massachusetts. Final Evaluation Report. Prepared for U.S. Department of Transportation. October, 1983.

Analysis of Labor Conditions and Union Status in the Intercity Trucking Industry. Final Report. Prepared for U.S. Department of Transportation. August, 1983.

Actions Being Taken by Transit Operators to Improve Performance. Final Report. Prepared for U.S. Department of Transportation. April, 1983.

User-Side Subsidy Demonstration Project: Montgomery, Alabama. Final Evaluation Report. Prepared for U.S. Department of Transportation. December, 1982.

Plan for Monitoring the Impacts of Regulatory Reforms Implemented Under the Motor Carrier Act of 1980. Final Report. Prepared for U.S. Department of Transportation. October, 1982.

New York City Transit Authority Revenue Feasibility Study: Economic Analyses and Projections. Final Report. Prepared for Metropolitan Transportation Authority, New York, NY. In part. October, 1982.

Taxi Regulatory Revisions in Dade County, Florida. Data Collection Plan. Prepared for U.S. Department of Transportation. April, 1981.

Analysis of Rail Cost-Plus Pricing Systems. Prepared for U.S. Department of Transportation. March, 1981.

Net Demand for Oil Imports: Preliminary Estimates of Short-Run Price Elasticities. Prepared for the U.S. Department of Energy. In part. December, 1980.

User-Side Subsidy Demonstration Project: Kinston, North Carolina. Final Evaluation Report. Prepared for U.S. Department of Transportation. October, 1980. Executive Summary reprinted in Taxicab Management November/December, 1981.

Potential Fuel Conservation from Regulatory Reform of the Trucking Industry. Prepared for Office of the Secretary of Transportation. July, 1980.

Operator Guidelines for Transfer Policy Design. Prepared for U.S. Department of Transportation. June, 1980.

State of the Art of Current Practices for Transit Transfers. Prepared for U.S. Department of Transportation. June, 1980.

"Generation of Transportation Alternatives." Technical Monograph prepared for U.S. Department of Transportation. January, 1979.

"Definition of Transportation Alternatives." Technical Monograph prepared for U.S. Department of Transportation. November, 1978.

Preliminary Analysis of Alternative Proposals to Encourage Efficient Service Concepts in Urban Freight Movement. Prepared for U.S. Department of Energy. In part. October, 1978.

Other Publications

Nelson, Michael and Daniel Brand. 1982. "Methods for Identifying Transportation Alternatives." Transportation Research Record 867.

Nelson, Michael, Daniel Brand and Michael Mandel. 1982. "State of the Art Current Bus Transfer Practices." Transportation Research Record 854.

Nelson, Michael and Jane Piro. March, 1982. "Implementation and Impacts of the Kinston, North Carolina User-Side Subsidy Demonstration Project." Specialized Transportation Planning and Practice.

Nelson, Michael and Paul H. Banner. 1981. "Analysis of Alternative Railroad Cost Recovery Procedures." Proceedings - Twenty-Second Annual Meeting of the Transportation Research Forum.

Nelson, Michael, Daniel Brand and Michael Mandel. 1981. "Use and Consequences of Timed Transfers on U.S. Transit Properties." Transportation Research Record 798.

Mellman, Robert, Michael Nelson and Jane Piro. 1980. "Forecasts of Passenger and Air Cargo Activity at Logan International Airport." Transportation Research Record 768.

Nelson, Michael. 1978. "Evaluation of Potential Replacements for Failing Conventional Transit Services." M.S. Thesis, Massachusetts Institute of Technology, Department of Civil Engineering and Alfred P. Sloan School of Management.