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May 1, 2006

Vernon A. Williams
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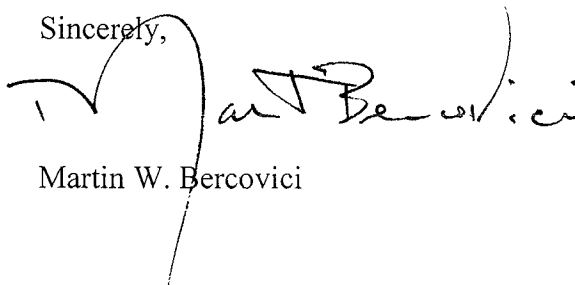
Re: Major Issues in Rail Rate Cases, Ex Parte No 657 (Sub-No. 1); Comments of
Arkansas Electric Cooperative Corporation

Dear Secretary Williams:

Submitted herewith, on behalf of Arkansas Electric Cooperative Corporation ("AECC"), please find the Written Testimony of Michael A. Nelson which constitutes the comments of AECC in this proceeding.

Your attention to the foregoing is appreciated.

Sincerely,

A handwritten signature in black ink, appearing to read "Martin W. Bercovici", with a large, stylized initial "M" and "W".

Martin W. Bercovici

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

STB EX PARTE NO. 657 (Sub-No. 1)

MAJOR ISSUES IN RAIL RATE CASES

**WRITTEN TESTIMONY OF
MICHAEL A. NELSON**

**ON BEHALF OF
ARKANSAS ELECTRIC COOPERATIVE CORPORATION**

**131 North Street
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May 1, 2006

**WRITTEN TESTIMONY OF
MICHAEL A. NELSON**

1. Qualifications

My name is Michael A. Nelson. I am an independent transportation systems analyst with over 25 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.

Over the past 22 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 cases. I also submitted written and oral testimony for the public hearing on rate case issues held by the Board in April 2005.

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.

2. Scope of Testimony

I have been asked by Arkansas Electric Cooperative Corporation (AECC) to comment on major issues regarding the proper application of the stand-alone cost (SAC) test in rail rate cases, and the proper calculation of the floor for any rail rate relief. These comments respond to the proposals presented in the Board's notice of proposed rulemaking (NPRM) in this proceeding.¹

A description of AECC and its interest in rail rate case issues is presented in Attachment 1.

3. Comments on Board Proposals

The proposals advanced by the Board address the following major rate case issues:

- the "percent reduction" method for allocating savings associated with the stand-alone railroad (SARR) in determining the maximum rate;
- allocation of revenue from "cross-over" traffic;
- methods for indexing future operating expenses to account for anticipated future productivity gains;
- movement-specific adjustments to the Board's Uniform Railroad Costing System (URCS);
- the time frame for SAC analyses and corresponding rate prescriptions; and,

¹ See Major Issues in Rail Rate Cases, STB Ex Parte No. 657 (Sub-No. 1), et al. (decision served Feb. 27, 2006).

- standards for reopening and vacating prior Board decisions (including any resulting rate prescription) based on SAC analyses.

Each of these is discussed below.

a. Maximum Rate Determination/“Percent Reduction” Method

The NPRM properly identifies and discusses the infirmities of the “percent reduction” method, and identifies two potential alternatives. The first alternative essentially places a cap on allowable revenue per ton-mile, while the second alternative encompasses a variety of possibilities based on the revenue/variable cost relationship.

All of the options identified by the Board appear to avoid the identified problems associated with the “percent reduction” method. In that sense, any of the options can be viewed as providing an improvement over the incumbent methodology. However, some of the possibilities contemplated in the NPRM appear to entail shortcomings of their own. Careful consideration of the nuances of different candidate methods is certainly warranted.

For example, the NPRM discusses issues related to the allocation of fixed costs on the basis of revenue/variable cost ratios. The NPRM properly notes some of the drawbacks of this approach, including its potential detrimental impacts on economic efficiency through distortions of decisions related to car ownership and the characteristics of cars used in the service at issue in a given case.

A further illustration of the possible deleterious effects of the revenue/variable cost ratio on economic efficiency 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

² STB Docket No. 42051.

“Allowable Gross Weight Map” shows that it can move cars at 286,000 lb. GWR from the PRB as far as Milwaukee, WI. The weight restriction apparently occurs on the short segment between Milwaukee and Sheboygan.³

In this situation, the use of a movement-specific revenue/variable cost ratio creates a perverse financial incentive for the defendant railroad regarding actions it might otherwise consider to bring a portion of its network (in this case, the segment between Milwaukee and Sheboygan) up to prevailing industry capacity standards. 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. As a result, UP may have a tangible financial incentive to leave the weight restriction in place on the given segment.

Unfortunately, the impacts of such a decision are not limited to the efficiency of the portion of the given movement that occurs on the given segment. Indeed, the weight restriction limits efficiency for other traffic moving on the given segment, as well for the portions of affected movements that occur away from the given segment. For example, the weight restriction causes trains to carry substantially less than their tonnage capacity in their use of PRB loading slots, the Joint Line and UP’s trackage and other facilities between the Joint Line and Milwaukee.

In this light, application of movement-specific variable costs may contribute to the inefficient utilization of capacity throughout the rail network. To avoid such detrimental impacts on economic efficiency, the Board should give preference to dollar-based (rather than ratio-based) methods for allocating fixed costs.

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

Within the group of dollar-based methods, ton- and car-based measures have their own idiosyncrasies. For example, consider a railroad that serves two types of traffic over the same route. One traffic type normally moves in 65-car trains while the other type normally moves in 130-car trains. If a SARR is designed to handle the two types of traffic without excess capacity, the first type of traffic would consume 2/3 of the SARR's train movement capability even if the total numbers of car-miles and ton-miles for the two traffic types were the same. Similarly, one type of traffic might be able to achieve loadings of 120 net tons per car, while another (low-density) type might only achieve loadings of 30 net tons per car. Even if both types of traffic traversed the same route in equal numbers of trains of equal length, the trains moving the more dense commodity, while using only half of the available capacity, would account for 80 percent of the net ton-miles. It is important for the Board to account for the ways traffic heterogeneity may undermine the robustness of individual measures, such as tons or cars, that might be considered for use in the allocation of facility-related costs.

To address traffic heterogeneity, the Board should consider an extension of the proposals it has advanced to account for the fact that achievable throughput for any given rail line is primarily governed by train movements rather than by more specific measures of commodity volume (i.e., cars or tonnage).⁴ Moreover, because the capacity on each segment of a SARR can be designed to the needs of the specified traffic group, train-miles provide the most reasonable and direct measure of the consumption of SARR capacity by different traffic types.

⁴ The role of train movements as a primary measure of capacity and capacity usage is illustrated by the extensive use of daily train counts by UP and BNSF in their reporting on the status of the PRB throughput limitations that began in May 2005. See, for example, http://www.uprr.com/customers/energy/sprb/updates_2005.shtml.

The proposed method allocates fixed costs to different traffic types on the basis of train-miles. As a result, each train movement of a given length contributes equally to fixed cost (up to its market revenue level). An illustration of this approach is presented below. This illustration makes use of the hypothesized traffic characteristics appearing in the NPRM:

Traffic Group	Rate/ ton	Tons	Miles	Rev. (\$)	VC (\$)	# Trains	# Train- Miles	Initial Contrib.	# 4, 5	#3	SARR Contrib.	SARR Rev.	SARR \$/ton	SARR \$/T-M	SARR R/VC
Complainant	\$25	10	100	250	83	1	100	34	31	2	67	150	15.00	0.15	181
Shipper 2 (captive)	\$20	8	100	160	64	1	100	34	31	2	67	131	16.38	0.16	205
Shipper 3 (captive)	\$15	6	75	90	45	1	75	25	23	(3)	45	90	15.00	0.20	200
Shipper 4 (captive)	\$10	8	75	80	53	2	150	50	(23)		27	80	10	0.13	151
Shipper 5 (non-captive)	\$5	10	100	50	45	2	200	67	(62)		5	50	5	0.05	111
		42		630	290		625	210			210	500			187

Note: Some totals do not add due to rounding.

In this illustration, the contribution required for the SARR to break even (\$210) is first allocated on the basis of train-miles.⁵ The traffic from Shippers 4 and 5 is unable to support the full amount of the computed contribution, so the shortfall is allocated to Complainant and to Shippers 2 and 3 on the basis of their train-miles. After this allocation, the traffic from Shipper 3 is unable to support the full amount of the computed contribution, so that shortfall is allocated to Complainant and to Shipper 2.

Complainant ultimately achieves a rate reduction, but remains the largest single source of SARR revenue. While using 16 percent of the SARR's (train-mile) movement capability, Complainant's contribution covers 32 percent of the SARR's fixed costs. Complainant's contribution to fixed costs is equal to that of Shipper 2 and greater than that of each of the other shippers.

It is important to note that Complainant's contribution in this example would be obscured if measures such as \$/ton or \$/ton-mile were used. Complainant's traffic does

not rank highest on such measures only because of the comparative efficiency of its train movements. Put another way, Complainant is able to benefit somewhat (on a per ton or per ton-mile basis) by spreading the fixed costs it bears over a larger commodity volume in comparison with a shipper (like Shipper 2) that uses the same capacity to move a smaller commodity volume.

The railroads have worked diligently to increase train length and lading per car because they know it is generally a way to make the most efficient use of available train movement capacity. Board adoption of a (dollar-based) allocation methodology driven by train movements would reflect the causality of capacity-related costs, and would foster economic efficiency by providing captive shippers with a direct incentive to maximize the net lading of individual trains. Captive shippers control decisions that may materially affect net loadings, including possible investments in efficient private railcars⁶ and expanded loop track capacity.⁷ Board adoption of the proposed methodology would produce a commonality of interest between captive shippers and railroads to make the most efficient possible use of available network capacity.

For the rail industry, such economic efficiency is not just a textbook theory for improving profitability. It is well-known that the industry is facing major capacity constraints, and related capital requirements and service issues. The proposed change in the cost allocation methodology would contribute directly to a more productive use of the existing infrastructure, and thereby make it possible to achieve higher throughput and

⁵ In a SAC analysis in a rate case, train-mile data by traffic type should be readily discernible from the traffic group description and/or operational simulations.

⁶ This assumes private car use would be permitted by the Defendant carrier, at least if a dollar-based allocation methodology is used.

⁷ A car-based allocation would provide an incentive to invest in efficient railcars, but would provide no such incentive related to train lengths. A ton-based allocation would provide no incentive of either type, as

service for any given physical plant. This is appropriate – if not essential - in a capacity-constrained railroad environment.

Overall, the proposed approach would only constrain the contested rate if that rate were producing the highest contribution (per train-mile) of any traffic handled by the SARR, and would fully preserve demand-based differential pricing on lower-rated traffic. It would eliminate the ability of the defendant railroad to gain advantage by initially quoting an excessively high rate, and would ensure that the contribution from higher-rated traffic does not cross-subsidize reductions in the challenged rate. Importantly, the proposed approach would remove barriers to efficiency, and would provide tangible incentives for captive shippers to act in concert with rail industry needs regarding the efficient utilization of rail capacity.

Note Regarding Ramsey Pricing Considerations. The Board properly highlights considerations that limit the relevance of Ramsey pricing theory to the SARR cost allocation issue. In addition, it should be noted that underlying objective of Ramsey pricing is to minimize inefficiencies in resource allocations. While the current actual rates paid by the SARR's traffic result from price discrimination and presumably are efficient, there is no reason to believe that deviations from those rates need to follow any particular pattern in order to preserve efficiency. Indeed, the properties of the elasticity of demand around the current rate on individual movements would appear to undermine both the relevance and the feasibility of Ramsey pricing. If the railroad is doing its job, the current rate will reflect a reasonably tight lower bound on the rate at which the traffic would be lost to the defendant carrier. For traffic moving at a low mark-up, the next-best option

the shipper would receive the same allocation regardless of any investment it might consider to improve the efficiency of its movements.

might be, for example, direct competition from another railroad. Traffic moving at a higher mark-up may have weaker alternatives, but is similar to the lower-rated traffic in that a small increment above the current rate will still tend to lose the traffic. Conversely, at least for baseload coal plants, it is reasonable to expect a comparatively low elasticity of demand for coal transportation in the range between the current rate (regardless of mark-up) and the theoretical rate floor imposed by the variable cost of the movement. Put another way, the mark-up relationships embedded in current actual rates do not provide useful information regarding the elasticities that would apply to (downward) variations from those rates. Ramsey pricing principles therefore do not appear to support the premise that mark-up relationships embedded in current actual rates should be maintained in the distribution of the SARR's excess revenue.

b. Revenue Allocation for Cross-Over Traffic

The persistent problems associated with the treatment of revenue from cross-over traffic stem from the apparent absence of an accepted and consistent theoretical foundation. Conceptually, the various alternatives that have been used or proposed are widely divergent. The "mileage block" methodology resembles procedures that have been accepted by the Board (and its predecessor) for estimating divisions on interline movements, while alternatives such as DARA and the Board's proposal rely more directly on the concept of allocating revenues on the basis of costs. None of these methods appear to be properly rooted in the "contestability" theory that underlies the entire SAC process, and other relevant economic considerations.

Computationally, none of the methods under discussion appear to ensure that the limited SAC analysis in which they are to be applied will produce results that are

consistent with what a full SAC would show. More specifically, none of the methods limit the off-SARR allocation of revenue to the level that ensures the revenue adequacy of off-SARR segments.

As traffic levels have risen and unproductive lines have been shed, the rail industry as a whole has achieved improved financial health. All else equal, this suggests that revenue adequacy concerns associated with off-SARR lines should generally be declining. While there may be specific situations in which off-SARR revenue needs are relevant, there is no basis for systematically allowing the allocation of supracompetitive earnings to off-SARR segments.

An illustration of this can be seen in the example provided in the NPRM. In that example, the off-SARR portion of the hypothesized cross-over movement would receive revenue of \$7.14/ton (i.e., 71.4 percent of \$10.00 per ton). This is 42.8 percent higher than the average total cost of \$5.00/ton incurred for the off-SARR portion of the movement. Put another way, the proposal presented in the NPRM would permit the residual defendant to earn supra-competitive revenues of \$2.14/ton. This is flatly inconsistent with contestability theory, which would cap revenue at the level needed to provide a market rate of return on the required capital. Furthermore, it would be achieved at the expense of the traffic moved only by the SARR (which would face higher differential pricing in order to cover the SARR's costs).

Under some circumstances, the methodology proposed in the NPRM could also produce incentives for economically inefficient conduct by the SARR and/or by the residual incumbent to "capture" contribution from cross-over traffic. This is particularly true when the volume and contribution of cross-over traffic are substantial.

For example, assume that cross-over traffic accounts for 90 of 100 tons handled by the SARR described in the NPRM, and that revenue per ton for cross-over traffic is \$15 (rather than \$10) per ton. Under these circumstances, the methodology proposed in the NPRM would provide the SARR with gross revenue of \$386 from the cross-over traffic, and net revenue of \$211 above its total cost. However, if the same SARR increased its costs by expending \$50 (an average of \$0.50/ton) on a frivolous item, it would receive revenue of \$450 from the cross-over traffic, and would earn net revenue of \$225 above its total cost:

		SARR	OFF-SARR	Total
Tons		100	90	
ATC		2	5	
% Revenue		28.6	71.4	
Rev/ton.		2.5	15	
Cross-Over Revenue		386	964	1350
SARR-Only Revenue		25		
SARR Net		211		

"Inefficient SARR"				
ATC		2.5	5	
% Revenue		33.3	66.7	
Cross-Over revenue		450	900	1350
SARR Net		225		

In this example, the SARR can increase its net income – and thereby create a tighter cap on the contested rate - simply by reducing its efficiency under the proposed methodology. Presumably, analogous incentives would exist for the residual incumbent. This is not a desirable property.

To be consistent with the theory upon which the stand-alone cost analysis is based, the treatment of revenue on cross-over traffic should emulate the view of a hypothetical new entrant standing in the shoes of the defendant carrier and considering

the defendant carrier's investment in the facilities used to handle the subject traffic. As discussed in detail in a recent submission to the Board by UP, the value to an owning railroad of the traffic that moves over a any given segment in its network is determined by the full contribution from that traffic, and not from any artificial allocations thereof.⁸ This is a straightforward application of incremental (as opposed to marginal) economic analysis, and reflects the fact that absent the subject segment, the entirety of the contribution would be lost.

For a railroad, a given segment will only be established (or preserved) if the contribution from the traffic using that segment is sufficiently high. To give the SARR the same view as the incumbent carrier, the SARR must be permitted to count the full amount of the contribution from cross-over traffic that results from the investment in the subject facilities.

In most instances, this will correspond to the full amount of the contribution from that traffic (i.e., gross revenue less total variable costs). While this may initially sound unduly favorable to shippers, there are at least four ways in which this methodological framework would limit the contribution attainable from specific movements:

- If the incumbent has an alternative route that could be used to move cross-over traffic and earn a positive contribution at the current rate without making use of the subject facility, the contribution attributable to such cross-over traffic would generally be limited to the variable cost savings associated with the use of the subject facility;

⁸ See STB Ex Parte No. 575 (Review of Rail Access and Competition Issues – Renewed Petition of the Western Coal Traffic League), Reply Comments of Union Pacific Railroad Company (March 28, 2006), Reply Statement of Warren C. Wilson, Senior Director – Rail Line Planning, footnote 1 at 3.

- Similarly, the contribution from any “internal reroute” traffic would generally be limited to the variable cost savings that could be demonstrated. Normally, such traffic would only produce a positive contribution in cases where the SARR is measurably more efficient than the defendant railroad’s existing operations;
- The methodology supports rigorous cross-subsidy testing for individual segments within a SARR as well as for the SARR as a whole. For example, assume the non-issue traffic moving on any segment of the SARR yields a contribution that is insufficient to cover that segment’s amortized capital and other fixed costs. In this situation, the methodology would establish a lower bound on the contribution required from the issue traffic, even if the SARR as a whole has positive net revenue.
- If a defendant carrier can demonstrate that an off-SARR segment used to move cross-over traffic requires a specified contribution from such traffic in order to cover its amortized capital and other fixed costs, the methodology would support imposition on the SARR of the need to pay any such shortfall or reduce cross-over revenues accordingly. This would preserve the right of the shipper to specify the design of the SARR, but would also protect the defendant carrier against cross-subsidies from off-SARR segments. Importantly, it would produce a result equivalent to that of an expanded SARR analysis.

The proposed methodology is illustrated in the following example, which is based on the example presented in the NPRM. Assume that:

- all traffic originates from point “A” and travels over a 75-mile segment to point “B” (“A-B”);
- Shippers 3 and 4 are served from point “B”;
- traffic for Shippers 2 and 5 moves beyond point “B” on a 25-mile segment to point “C” (“B-C”);
- Complainant’s traffic moves beyond point “B” on a separate 25-mile segment to Point “D” (“B-D”) on which no other traffic moves; and,
- amortization of capital costs and other fixed operating costs = \$1.40/mi. for segments A-B and B-C, and \$2.80/mi. for segment B-D.

Traffic Group	Rate per ton	Tons	Miles	Revenue	VC	Contribution
Complainant	\$25	10	100	\$250	\$83	\$167
Shipper 2 (captive)	\$20	8	100	\$160	\$64	\$96
Shipper 3 (captive)	\$15	6	75	\$90	\$45	\$45
Shipper 4 (captive)	\$10	8	75	\$80	\$53	\$27
Shipper 5 (non-captive)	\$5	10	100	\$50	\$45	\$5
		42		\$630	\$290	\$340

Under these circumstances, the proposed methodology would work as follows:

- a total contribution of \$210 ($= (1.40 \times 100) + (2.80 \times 25)$) is needed to enable the SARR to break even. Actual contribution is \$340, and net revenue is \$130, so in the aggregate the SARR is viable;
- a total contribution of \$105 ($= 1.40 \times 75$) is needed to ensure the viability of segment A-B. This is dwarfed by the total contribution of the traffic that traverses segment A-B (\$340), so segment A-B is viable;
- a total contribution of \$70 ($= 2.80 \times 25$) is needed to ensure the viability of segment B-D. Complainant’s traffic is the only traffic that uses this segment, so it must make a contribution of no less than \$80 (equivalent to a rate of \$16.30/ton and an R/VC ratio of 1.96);

- a total contribution of \$35 ($= 1.40 \times 25$) is needed to ensure the viability of segment B-C. The traffic of Shippers 2 and 5 must make a combined contribution of at least this amount.

Under the assumed conditions, the Board might conclude that segment B-C is not used by Complainant's traffic, that the SARR should be viewed as comprising segments A-B and B-D (only), and that the traffic of Shippers 2 and 5 should be viewed as cross-over traffic. Under these circumstances, a total contribution of \$175 ($= (1.40 \times 75) + (2.80 \times 25)$) is needed to ensure the viability of the "A-B-D" SARR. As long as the contribution from the "cross-over" traffic of Shippers 2 and 5 is reduced by the \$35 needed to ensure the viability of segment B-C, the contribution available to the "A-B-D" SARR would be \$305 ($= 340 - 35$), and net income of \$130 ($= 305 - 175$) would be same as if segment B-C were included in the SARR.

Overall, the Board should adopt the alternative methodology presented herein because it relies on a sound analytical framework, is computationally straightforward, is consistent with industry practices, and provides a foundation for consistent treatment of ancillary issues. It allows the SARR to view the economics of cross-over traffic in a light no less favorable than the actual economics of the incumbent, and is consistent with a hypothesized new entrant considering the provision of the facilities used by the contested movement. At the same time, it would ensure that the SARR doesn't benefit from cross-subsidy, while avoiding the excessive off-SARR revenue levels and incentives for inefficiency that may result from application of the methodology presented in the NPRM.

As a practical matter, the Board should not be alarmed if the proper treatment of cross-over revenues is supportive of SARR viability. In the particular case of PRB

movements, private markets have funded the creation and expansion of the Joint Line, as well as substantial facility enhancements away from the Joint Line. Given the PRB volumes that move in major corridors and the progress of the railroads towards overall revenue adequacy, the Board should probably be most concerned by any finding that a proper SARR could not afford to handle a contested movement at a reasonably low rate. In the era of improved carrier financial health, the fact that little supra-competitive pricing is needed to justify a SARR should not be viewed as a surprise. It is the 180 percent R/VC threshold, and not the economic performance of the SARR, that is likely to govern the level of prescribed rates, at least in major corridors.

c. Indexing Operating Expenses to Reflect Productivity Improvements

The proposal described in the NPRM for incorporating productivity improvements in the estimates of future operating costs represents a significant advancement over the incumbent methodology in the recognition it provides of the importance (for both the SARR and the defendant railroad) of future efficiency improvements. Since the passage of the Staggers Act more than 25 years ago, much of the improvement in the financial health of the industry – as well as the declines observed in real (and sometimes nominal) competitive rates – has been driven by productivity improvements. For the SAC process to have validity as a tool for balancing carrier revenue needs against deviations from competitive price levels, it is essential that it reflect realistically the effects over time of productivity improvements.

While the proposal presented in the NPRM represents a commendable step in this direction, there are additional considerations that the Board may wish to take into account before institutionalizing any new procedure. These include the following:

- The proposal advanced in the NPRM relies on a weighted average of two indices (RCAF-U; RCAF-A), neither of which is designed to directly address the issue at hand. The RCAF indices reflect cost and productivity changes for many rail activities unrelated to unit coal train operations. While their use offers benefits of administrative simplicity and at least indirect incorporation of productivity improvements, this should be tempered with recognition of their possible inaccuracies.
- The concentrations of tonnage and cost associated with unit coal train movements create strong financial incentives for carriers to ensure their efficiency. For example, the NPRM discusses the possibility that the SARR would use the most efficient available locomotives, while the incumbent deploys a mix of newer and older locomotives. While such a situation might well exist, the incumbent typically serves a broad spectrum of markets, and has a strong incentive to deploy power in a manner that best matches the differing needs of those markets. In general, it would not be surprising for the defendant carrier's actual unit train operations to resemble closely a SARR in terms of both the current use of efficient technology and opportunities for longer-term productivity enhancements.
- The likely closeness of the correspondence between the technologies of the SARR and the defendant carrier is further reinforced by interoperability requirements associated with cross-over traffic. For example, even if a SARR might ideally wish to utilize 315,000 lb. GWR cars, it would not be able to

benefit from use of such cars on cross-over traffic until such time as the residual defendant carrier also operated under that standard.

- Of course, there may be instances where a SARR is able to incorporate productivity improvements that the defendant carrier has not yet adopted. In such instances, the SARR would begin with a productivity advantage over the defendant railroad, but likely would not achieve comparable productivity growth in the near term.

Ultimately, the degree to which the productivity improvements available to the SARR will differ from those available to the incumbent is largely an empirical issue that stems from the design of a particular SARR. In circumstances where the SARR design largely mimics the plant, equipment and operations of the defendant carrier, the Board's methodology should not unduly restrict the SARR in realizing future cost reductions comparable to those that could reasonably be projected for the defendant. Any deviations from this standard should be based on the degree to which the SARR incorporates productivity improvements in comparison with defendant's operations.

To achieve this result, the Board should permit the parties to submit limited evidence regarding (a) the magnitude of productivity improvements that can reasonably be anticipated during the forecast period for the types of heavy haul operations at issue, and (b) the degree to which the SARR already incorporates such improvements. This information could then be used to derive a "case-specific" productivity adjustment that follows the general concept advanced in the NPRM, but avoids that proposal's risks of inaccuracy.

For example, assume that available evidence indicates that heavy haul operations comparable to the movements at issue are likely to achieve average productivity growth of 2.0 percent per year during the next 20 years. Assume further that in one rate case, the proposed SARR has a 10 percent productivity advantage over the incumbent because it has incorporated productivity improvements not reflected in the defendant carrier's operations. In such a case, the permissible productivity adjustment for the SARR could be determined through the type of gradual approach presented in the NPRM. Specifically, since the 10 percent advantage reflects the equivalent of 5 years' worth of productivity improvements,⁹ permitted productivity adjustments could be phased in over a (5x2=) 10-year period during which the allowed productivity adjustment would gradually escalate from 0 to the full 2.0 percent. At the end of the 10-year period, the SARR would be no more efficient than the defendant carrier, and would thereafter be able to utilize the full 2.0 percent per year figure.

In a different case, the SARR might have no technological advantage over the defendant. In such a case, it would be allowed the same 2.0 percent that is understood to be applicable to the defendant. In either event, the allowed productivity adjustment would be appropriate for the situation in the case, and would be straightforward to develop.

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

⁹ For simplicity, this presentation omits discussion of compounding effects over multiple years.

incorporate productivity adjustments that are consistent with the SARR design in specific cases.

d. Movement-Specific Adjustments to URCS

The proposal presented in the NPRM to eliminate movement-specific adjustments to URCS represents a bold step to streamline and simplify the rate case process. The primary issue is whether this would produce an unacceptable loss of accuracy for specific movements.

In coal unit train operations, substantial variations in cost may occur as a result of factors that are not currently reflected and may never be able to be reflected by URCS. Topography, in particular, is an extremely important consideration that illustrates some of the problems that would be associated with exclusive reliance on URCS.¹⁰ Consider, for example, a fully loaded PRB coal train made up of 120 cars and powered by three 4400 HP locomotives. Such a train would have a total gross weight of well over 17,000 tons. On level terrain, under favorable conditions, such a train might be able to achieve a speed of slightly over 50 mph at full throttle. On a sustained downgrade of approximately 0.25 percent, the same train would be able to maintain a speed on the order of 50 mph while coasting (i.e., with little fuel use and no locomotive effort). However, to climb a sustained grade of 0.25% the train would only be able to achieve about 30 mph, even at full throttle. In the limit, the train could likely climb a 1.0 percent grade, but would only be able to achieve 10-11 mph in doing so. Put another way, in comparison with a downgrade of a given length, an ascent of the same length may account for as much as 5

¹⁰ Numerous other factors may also affect operating costs in a manner that would be difficult or impossible to capture through URCS, ranging from curvature and track materials to weather conditions and even prevailing winds on specific line segments. The discussion in the text focuses on topography as a primary example of this more general issue.

times as many T&E crew and locomotive hours, and dramatically higher fuel use and locomotive (and potentially track) wear. Given that gross (and net) ton-miles for the two segments would be equal, the prospects of such cost variations being captured by URCS appear slim. Use of URCS therefore entails a risk that cost differences between routes with different profiles may not be assessed with accuracy.

At the same time, the proposal presented in the NPRM would materially streamline the SAC process. Given the burdens that the complexity of the current process imposes on both shippers and carriers, such simplification is a legitimate goal of SAC process reform.

Fortunately, there appears to be a way to preserve most or all of the benefits of the NPRM proposal while providing a measure of protection for shippers or carriers who would be disadvantaged by the potential inaccuracies of unadjusted URCS in specific situations. Specifically, consideration should be given to the possible use of information drawn from SARR operating simulations to verify or refute the accuracy of the aggregate results of the URCS analysis. Such simulations provide information regarding important cost parameters, including locomotive and crew hours, fuel use, etc., that are developed based on the route profile and other factors unique to the subject movement. If a party is able to (a) demonstrate an inconsistency between the simulations and URCS results, and (b) provide a credible linkage between the observed inconsistency and the limitations of URCS in the context of the subject movement, the Board could consider the propriety of imposing appropriate adjustments on the aggregate URCS results.

This type of validation would help to ensure the accuracy of the result without materially eroding the benefits of the proposal presented in the NPRM. It would make

efficient use of movement-specific information normally generated within a case, and would not require litigants (whose interests generally relate to at most a small number of specific movements) to bear the burden of repairing URCS in situations where URCS results are demonstrably inaccurate. Given that the entire rate prescription in any given case may be governed by the measurement of variable cost, and that URCS may never be able to accurately reflect some cost factors, it is essential that any elimination of movement-specific URCS adjustments be accompanied by suitable fail-safe procedures.

e. Stand Alone Cost Analysis Period

The NPRM advances a proposal to limit the term of the DCF analysis to 10 years in place of the 20-year period that has historically been used, and cites five different supporting reasons. Comments on each of these reasons are provided below:

1. Dynamic marketplace – Changes in the marketplace certainly may affect out-year conditions in the manner discussed in the NPRM. However, the Board is already addressing methods for recognizing the effects of changed circumstances within its review of the criteria associated with reopening an existing rate prescription (see below). If the process for reopening an existing prescription is sound, and includes ways to address changed circumstances, it would appear unnecessary to truncate the DCF analysis based on the possibility that change circumstances will occur.
2. Taxes and Business Cycle – The NPRM may be correct that a 20-year analysis period is unnecessary to capture tax and business cycle issues. However, a focus on tax and business cycle issues overlooks the fact that in the markets at issue in most coal rate cases, the relevant volumes are

characterized primarily by secular growth rather than cyclical fluctuation. For example, the most recent DOE/EIA forecast of total U.S. coal production shows an overall average growth rate of 0.9% per year for the period 2006-2016 followed by 2.0% per year for 2016-2026. For the fast-growing Wyoming portion of the Powder River Basin, projected out-year growth is even more significant (1.0 percent per year for 2006-2016, followed by 2.7 percent per year for 2016-2026). While there may be uncertainty regarding the exact values, the overall pattern is one of robust growth in coal volumes in which most of the growth over the next 20 years occurs in years 11-20 rather than in years 1-10. Under these circumstances, truncating the analysis period at 10 years would appear to undermine the ability of the SARR to match the Defendant's current ability to rely on long term growth expectations to support capital investment.

3. Reduced Expense and Complexity – All else equal, a shorter analysis period would be more convenient in this respect, if it did not unduly undermine accuracy.
4. Industry Trend Toward Shorter Contracts – The NPRM correctly observes that the duration of contracts has generally shortened since the time of the Staggers Act. However, it overlooks the crucial role that long-term contracts can play in supporting capital investments. Indeed, the Board can reasonably infer that long-term contracts in place in the early 1980's (as referenced in the NPRM) were supportive of the development of competitive rail service for coal moving from the Powder River Basin. While carriers using existing

facilities may make greater use of shorter contracts, a carrier considering investment in new facilities (like a SARR “investing” in the facilities used to serve the traffic at issue in a rate case) may derive significant benefits from longer-term contracts.

5. Future Capacity – The staging of capacity improvements over time is a challenge faced by any railroad in an environment of traffic growth, and the Board is undoubtedly correct that SARR’s built to distant out-year requirements impose unnecessary costs on current customers. However, the NPRM proposal would have the effect of ignoring the out-year volume growth as well as the capital staging issues that it creates. The Complainant in a rate case has every incentive to ensure that the SARR is based on an expansion path that is appropriate for its traffic base. The failure of past SARR’s to develop an efficient expansion path should not preclude future Complainants from doing so.

Overall, the proposed truncation of the DCF analysis might simplify the process somewhat, but it likely would impede the ability of the SARR to benefit from out-year volume growth. To the extent that this would undermine the financial position of the SARR relative to that of the defendant carrier, it should not be implemented.

f. Uniform Standard for Reopening

In imposing new requirements that must be met by shippers who wish to reopen a case, the Board should adopt a heightened sensitivity to the likelihood that the inevitable changes over time in market conditions (as referenced repeatedly in the NPRM) will, at times, require changes in past decisions. While administrative repose is an important

practical consideration, it should not undermine or materially limit the Board's willingness or ability to address changes or to rectify problems associated with past decisions.

ATTACHMENT 1

Description and Statement of Interest

Arkansas Electric Cooperative Corporation (AECC) is a membership-based generation and transmission cooperative providing electric generation and transmission services for the 17 rural electric distribution cooperatives in Arkansas. Those cooperatives, in turn, serve approximately 440,000 customers located in each of the seventy-five counties in Arkansas.

AECC holds a diverse portfolio of generation assets comprising over 2400 MW (powered by coal, natural gas, fuel oil and hydro) to generate electricity for its members. Coal fuels the majority of AECC's generation. The Arkansas coal-fired generation facilities in which AECC holds an ownership interest (jointly with others) include the White Bluff plant at Redfield, the Independence plant at Newark, and the Flint Creek plant at Gentry. These plants normally utilize in excess of fourteen million tons of Powder River Basin ("PRB") coal annually.¹¹ AECC's share of this PRB coal is approximately 5,000,000 tons per year.

AECC has participated in several efforts to improve price/service options for coal transportation. It has sponsored the submission of filings in several proceedings to provide information and to assist the Board within the discretion it holds on rail matters.

Of particular relevance to this proceeding, two of the three coal-fired generation facilities in which AECC holds ownership interests are currently captive to a single rail carrier for delivery. The high resulting transportation rates have caused delivered fuel costs for such plants to be high in comparison with other PRB users in the region. AECC

therefore has a direct interest in rate case procedures, and in the proposed refinements presented in the NPRM.

¹¹ On three occasions during the past 12 years rail service problems have interfered materially with PRB coal deliveries, resulting in burn restrictions that have reduced volumes and imposed significant costs on plant owners and their customers.

EXHIBIT A

QUALIFICATIONS AND EXPERIENCE

MICHAEL A. NELSON

131 North Street
Dalton, MA 01226

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:

I. Railroad

For Arkansas Electric Cooperative Corporation (AECC), Mr. Nelson analyzed issues related to rail transportation service in the supply of coal to two potential sites for a new electric generation facility in Arkansas. This work included analysis of likely rate levels in light of movement- and site-specific competitive and operational considerations.

On behalf of a group of coal users, including Ameren, Dominion and AECC, Mr. Nelson submitted a verified statement to the Surface Transportation Board (STB) in Finance Docket No. 34421. This testimony addressed technical, operational and public interest considerations associated with a proposal to permit the construction of a

competing rail line within the unused portion of an existing rail carrier's right-of-way.

Mr. Nelson has developed information to assist coal users in responding to the coal supply problems created by the May 2005 derailments and subsequent rail throughput constraints on the Powder River Basin (PRB) Joint Line. He has identified potential actions by coal users to improve PRB coal throughput, transportation issues for substitute coals and fuels, and steps to facilitate rail cooperation.

In response to a public request by the STB for suggested improvements in the "stand alone" cost methodology (SAC) used to assess the reasonableness of contested rail rates, Mr. Nelson provided written and oral testimony in STB Ex Parte No. 657. This testimony identified potential methodological refinements in 10 specific areas, and was cited by Commissioner Mulvey for its high responsiveness to the Board's request.

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 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- and site-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 STB in its approval of the merger of the Union Pacific (UP) and Southern Pacific (SP) railroads.

For 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.

II. 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.

III. 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. 34421

- Verified Statement, 9-29-05

Surface Transportation Board, Ex Parte No. 657

- Written Testimony, 4-20-05
- Oral Testimony, 4-26-05

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

- 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.