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BEFORE THE
SURFACE TRANSPORTATION BOARD

DOCKET NO. EP 722

RAILROAD REVENUE ADEQUACY

DOCKET NO. EP 664 (Sub-No. 2)

PETITION OF THE WESTERN COAL TRAFFIC LEAGUE TO INSTITUTE A RULEMAKING PROCEEDING TO ABOLISH THE USE OF THE MULTI-STAGE DISCOUNTED CASH FLOW MODEL IN DETERMINING THE RAILROAD INDUSTRY'S COST OF EQUITY CAPITAL

ARKANSAS ELECTRIC COOPERATIVE CORPORATION'S SUPPLEMENTAL TESTIMONY

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Dated: August 6, 2015

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In accordance with the Board's Decision served July 29, 2015, as announced by the Chairman at the Public Hearing on July 22, 2015, Arkansas Electric Cooperative Corporation (AECC) submits the attached verified statement of Michael A. Nelson as supplemental testimony to address issues raised by the Board during the Public Hearing and to respond to arguments by railroad parties at the Hearing.

Respectfully submitted,

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Dated: August 6, 2015

SUPPLEMENTAL VERIFIED STATEMENT

OF

MICHAEL A. NELSON

I. Introduction and Background.

My name is Michael A. Nelson. I am an independent transportation systems analyst with over 36 years of experience in freight rail transportation, including 31 years providing testimony before this Board and its predecessor regarding numerous aspects of railroad competition and regulation. My office is in Dalton, Massachusetts.

At the public hearing held by the Board on July 22-23, 2015 I presented oral testimony on behalf of Arkansas Electric Cooperative Corporation (AECC) in Docket Nos. EP 722 and EP 664 (Sub-No. 2). I also assisted in the preparation of AECC's written comments in those dockets, and participated extensively in prior proceedings that addressed related subject matter involving rail rate regulation, competitive access, cost-of-capital methodologies, the status of railroad competition, the study of railroad competition performed by Christensen Associates, and other topics.

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.

Pursuant to the Board's decision served July 29, 2015, I have been asked by AECC to supplement AECC's oral testimony provided at the public hearing held on July 22-23. This

Supplemental Verified Statement provides further information responsive to questions posed by the Board at the hearing, and also seeks to clarify a small number of issues discussed by different parties at the hearing that were the subject of conflicting or inaccurate testimony.

II. Summary.

The information presented in this Supplemental Verified Statement supports and is organized around the following basic findings: (a) Board policy should change and shippers are entitled to relief as a result of the attainment of railroad revenue adequacy; (b) The specific proposals advanced by AECC are sound and provide the Board with the means to satisfy the statute and the underlying theory of Constrained Market Pricing (CMP), while promoting service and efficiency—all without undermining revenue adequacy; and, (c) The railroad arguments regarding replacement costs hold no prospect of improving the Board's practices, and should not be allowed to delay the reforms that are needed.

III. Changes in Board Policy and Shipper Relief Resulting from Attainment of Revenue Adequacy.

The railroad parties urge the Board to refrain from taking any meaningful action to constrain rail earnings that accrue above the revenue adequacy level. They argue but cite no authority for the proposition that the exercise of rail market power forms an ideal from which deviations should be minimized. While the railroad parties invoke phrases and concepts that are of great significance in CMP, they do so in ways that misstate and misrepresent key elements of CMP. As a result, their wish for free rein to exercise market power in the presence of revenue adequacy is unsupported by, and is inconsistent with, the established economic principles underlying CMP.

The inconsistency of the railroads' position with CMP is readily visible in documentation associated with the ICC's original implementation of CMP. Specifically, the consensus verified statement submitted in June 1983 in Coal Rate Guidelines by a group of 16 eminent economists[1] stated the following considerations, which collectively void the position now being taken by the railroad parties:

- The "ideal" economic standard underlying CMP is the normal competitive market result wherein competition causes price to be approximately equal to marginal cost;[2]

- Due to the "natural monopoly" characteristics of railroads (i.e., marginal costs lower than average total costs), pricing at the marginal cost level would not enable recovery of total costs unless outside subsidies were provided.[3] Absent such subsidies, CMP permits a limited amount of differential pricing by railroads, but only up to the point where they would have "the opportunity to earn a rate of return on their investment equal to the current cost of capital"[4] (i.e., revenue adequacy). ***Earnings above the revenue adequacy level are thereby identified as a "competitive abuse"***;[5]

- The limited amount of differential pricing that is permitted is supposed to be implemented in a way that is consistent with the principles of so-called "Ramsey pricing". Under Ramsey pricing, distortions from the pattern of economic activity that hypothetically would result from marginal cost pricing are minimized by ensuring that the largest deviations from marginal cost pricing occur on the traffic movements that are least sensitive to changes in price;[6]

- With railroads, consistency with Ramsey pricing principles is assumed to result from the ability of the railroads to price-discriminate (i.e., price individual movements up to the maximum at which the traffic still moves).[7]

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[1] See ICC Ex Parte No. 347 (Sub-No. 1), Coal Rate Guidelines – Nationwide, "Verified Statement of Economists Supporting the Principles of Constrained Market Pricing" (June 1983) (hereafter, "VS Economists"). A copy of this document is accessible in Docket No. EP 657 (Sub-No. 1), Major Issues in Rail Rate Cases, "Comments of BNSF Railway Company" (May 1, 2006), VS Willig, Exhibit RDW-2. Page number references to this document are based on the pagination of the document (at the bottom of each page), and not the numbering appended to the upper right corner of each page in the copy appearing in Exhibit RDW-2.
[2] VS Economists at page 4.
[3] VS Economists at page 4.
[4] VS Economists at page 3.
[5] VS Economists at page 3. This substantiates the explicit finding in Coal Rate Guidelines referenced by the Board, AECC and others in this proceeding that carriers are not entitled to earnings above the revenue adequacy level.
[6] VS Economists at page 4. This is commonly referred to as "inverse elasticity pricing".
[7] VS Economists at pages 4-5.

Collectively, these considerations establish that railroad pricing freedoms and permissible levels of differential pricing and earnings are tightly circumscribed by revenue adequacy considerations. Indeed, the economists specifically described how Ramsey pricing differs from the type of unrestricted exercise of market power that the railroads now seek, because Ramsey pricing enables the regulator to implement appropriate limits on overall earnings.[8] The railroad argument that the Board should not concern itself with differential pricing and earnings levels after the achievement of revenue adequacy is self-serving, enjoys no support in CMP, and is specifically refuted by CMP.

AECC articulated accurately the standard the Board should apply to differential pricing and excess earnings beyond the achievement of revenue adequacy. The standard AECC described is the same as the one the ICC concluded was correct 30 years ago. Contrary to the railroads' assertions, those 30 years have not changed the fact that the exercise of rail market power still causes deviations from the ideal established by competitive market standards, and that the objective of minimizing those deviations requires that differential pricing and excess earnings be curbed effectively when revenue adequacy has been achieved.

AECC highlighted for the Board the extensive evidence already in the Board's possession that demonstrates the time for significant changes in the Board's regulatory practices stemming from the achievement of revenue adequacy is here, if not long overdue. Such evidence includes:

> (a) The finding by the Board's consultant, Christensen Associates, that all of the large railroads have been able to employ efficient amounts of capital since at least 1995;[9]

[8] VS Economists at pages 4-5.

[9] See Christensen Associates, An Update to the Study of Competition in the U.S. Freight Railroad Industry (January 2010) Table 3-13 on p. 3-18, as discussed in Docket No. EP 705, Competition in the Railroad Industry, "Initial Comments of Arkansas Electric Cooperative Corporation" (April 12, 2011) VS Nelson at page 8.

(b) Christensen's finding that the rail industry has achieved earnings more than sufficient to attract needed capital under the CAPM standard since 2001;[10]

(c) Data presented in the Christensen study that reveal harms to railroad costs and productivity trends stemming from the combination of the "duopoly" mergers in the east and west, and the Bottleneck Rule;[11]

(d) Despite evidence of revenue adequacy, the large railroads have provided inadequate service over protracted periods on multiple occasions; and,

(e) As demonstrated in AECC's presentation at the public hearing, the Board's revenue adequacy assessments show that Class I industry earnings above the revenue adequacy level have been large and increasing rapidly since 2011.

Based on the foregoing, the Board should now accept the need for substantial changes in its past practices, and take definitive steps to implement reforms that are appropriate and effective in the revenue-adequate environment.

IV. AECC's Specific Proposals are Sound, Beneficial and Would Preserve Revenue Adequacy

The Board possesses the information it needs to tailor reforms to the degree of excess market power being exercised by the rail industry at any given point in time. Specifically, the Board's revenue adequacy determination provides a direct measurement showing the magnitude of the excess market power being exercised by the industry as a whole, and its distribution among regions and carriers. This enables the Board to undertake reforms reasonably matched to market conditions, and to amend or supplement those reforms as their actual effects are observed

[10] See Christensen Associates, A Study of Competition in the U.S. Freight Railroad Industry and Analysis of Proposals that Might Enhance Competition (November 2009) Figure 8-23 on page 8-32, as discussed in Docket No. EP 680, Study of Competition in the Freight Railroad Industry, "Comments of Arkansas Electric Cooperative Corporation Regarding Study of Competition in the U.S. Freight Railroad Industry Conducted by Christensen Associates" (December 22, 2008) Statement of Michael A. Nelson Regarding Christensen Study of Competition in the Freight Railroad Industry at page 7.

[11] See Christensen Associates, An Update to the Study of Competition in the U.S. Freight Railroad Industry (January 2010), Figures 3-2 through 3-5 on pages 3-21 and 3-22, as discussed in Docket No. EP 705, Competition in the Railroad Industry, AECC Initial Comments, VS Nelson at pages 13-14.

in subsequent revenue adequacy measurements.[12] Put another way, the Board has assurance and a specific, fail-safe mechanism for ensuring that the reforms advanced by AECC and other shipper parties will not push rail earnings below the level needed for railroads to attract and retain needed capital, or to possess the financial means needed to provide adequate service.

AECC presented a comprehensive menu of options from which the Board may select to curb the exercise of market power by the rail industry above the level needed to sustain revenue adequacy. These options include rate case reforms, removal of past restrictions on competitive access, a revenue adequacy constraint, and revisions in the methods used by the Board to determine the rail industry cost of capital.

(a) Rate Case Reforms. The number of large rate cases is small, as are the aggregate amounts at issue, relative to current and recent levels of excess rail earnings. Far from posing a threat to adequate revenues, rate case reforms of the types AECC proposed could help the rail industry avoid or forestall future traffic losses. For many coal shippers, superimposition of growing environmental costs and uncertainties for coal-fired plants on top of past shipper experiences with rail differential pricing practices have contributed to plant retirements. Meaningful rate case reforms would change rate expectations for captive coal shippers in a way that would minimize unnecessary or premature retirements and traffic losses.

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[12] The ongoing ability of the Board to tailor remedial measures to conditions that evolve underscores the absurdity of the railroad proposal to extend the period of revenue adequacy evaluation to correspond to the lifespan of capital assets. When a home buyer applies for a mortgage, a financial institution assesses the buyer's ongoing ability to generate income and pay the bills. The same way a home buyer doesn't have to actually make 30 years of payments before qualifying for financing, railroads do not need to generate decades of adequate earnings before they can reasonably and properly be found able to attract and retain needed capital. The ongoing ability of the Board to tailor remedial measures to rail industry conditions adds an assurance of future performance not present in the homeowner analogy, and further voids any conceivable rationale for the greatly extended evaluation period advocated by rail parties.

In assessing the need for implementation of meaningful rate case reforms, it is important for the Board to recall the authoritative evidence that shows the effectiveness of market forces has been dwindling in recent years. The Christensen study found evidence of tangible harms stemming from 3-2 reductions in the number of serving carriers,[13]and even in this docket UP has elected not to dispute AECC's written and oral comments citing productivity data tabulated by UP as demonstrating the reduced effectiveness of market forces in the aftermath of the 3-2 mergers and the Bottleneck Rule.[14] The dwindling effectiveness of market forces leaves the Board as the only body that can perform the actions needed to effectively control rates, and it should do so proactively.

(b) Competitive Access. The market forces unleashed by expanded use of competitive access would offer many potential benefits, including tangible improvements in rail efficiency and service quality, above and beyond any downward pressure on rates they may introduce. Improving the service expectations of captive coal shippers and reducing the substantial costs imposed by inventory needs and/or potential burn restrictions would reduce premature plant retirements and traffic losses. Likewise, improvements in efficiency will produce benefits for both shippers and carriers, and mitigate impacts on carrier earnings that may result from downward pressure on rates.

Regarding the potential for increased availability of competitive access, it is important that the Board take steps to ensure that such competitive access produces a tangible competitive

[13] See Christensen Associates, A Study of Competition in the U.S. Freight Railroad Industry and Analysis of Proposals that Might Enhance Competition (November 2009) at page 6-10 and Table 6-3 at page 6-11. Using coal shipments as an example, the strong response of RPTM to the presence of railroad competition in the destination county (coefficient on RRCOMP_TER) and the lesser impact of the DLM_TER variable indicates that the determining factor is the number of carriers, not whether or not a monopoly is present.
[14] See AECC Reply Comments (EP 722) at page 23, footnote 33.

influence before a shipper is deprived of rate case protections via the market dominance criteria. As indicated by Vice Chairman Begeman, "either you have competition or you don't"; to lose rate case protections that competition must be "effective".

(c) Revenue Adequacy Constraint. AECC's proposed refund-based revenue adequacy constraint is self-limiting in that it mathematically cannot reduce rail earnings below the revenue adequacy level. It does nothing more than implement the principle articulated by the economists and reflected in Coal Rate Guidelines that excess earnings represent an abuse of market power that should not be retained by the industry.[15] Whether or not this option is viewed as having a significant impact is purely a function of the magnitude of the excess earnings the industry is now generating.

(d) Cost of Capital Methodology. AECC's recommendations regarding needed changes in the Board's cost of capital methodology have been thoroughly explained and documented and therefore will not be repeated here. However, two opposing arguments promulgated by AAR, regarding the relationship between CAPM beta and rail market power and the significance of the omission of BNSF from the Board's cost of capital analysis - are so blatantly false and misleading that they are discussed further below to ensure they are afforded no weight by the Board. Also, further information is provided in response to a question posed by Chairman Elliott at the hearing.

- CAPM Beta and Rail Market Power. AAR witness Villadsen offered the Board a series of literature citations purporting to respond to AECC's evidence regarding the effects of industry

[15] In doing so, AECC's proposal addresses railroad statements of concern regarding the adverse effects of such limits on carrier incentives for productivity improvement, etc. AECC's proposal contemplates reliance on industry- and/or regional-level data in revenue adequacy determinations as needed to preserve the ability of a firm to profit from performance better than that of its peers, as occurs in competitive markets.

"concentration" on the beta values estimated by CAPM. This is highly misleading because AECC has never made, attempted to make, or assumed any specific relationship between concentration and beta values. In this proceeding, AECC documented that a run-up in the exercise of rail market power over the past several years has occurred and has had the anticipated effect of artificially increasing measured beta values. AECC's evidence followed the guidance to rely on empirical analysis to determine the relationship between market power and beta in any given industry, which was ***provided in the literature reference that AAR previously used in an attempt to confuse this Board on this issue.***[16] In other words, AAR is criticizing AECC for doing what its own literature reference said should be done to analyze the actual impact of market power on measured beta in this industry. AAR may wish that it could distance itself from the original finding of its own expert, Stewart Myers, that the rail industry is characterized by low risk, and AECC's plain evidence that the run-up of measured rail beta values has only occurred subsequent to that finding when a corresponding run-up in the exercise of rail market power has also occurred. But that does not change the fact that those are primary sources of reliable evidence available to the Board on this topic, or the false and misleading nature of AAR's pattern of attempts to avoid this reality.

- <u>Sample Size Issues</u>. AAR and witness Villadsen also offer incorrect claims in an attempt to justify the exclusion of BNSF from the Board's cost-of-capital determination. Although the Board's practice of omitting data for railroads owned by conglomerates and foreign multinationals from its analysis may achieve a form of "purity", AECC provided evidence that it does so by introducing potential inaccuracies and bias in the parameter estimate it produces. Witness Villadsen specifically made a claim in her remarks at the hearing that insurance is a

[16] See AECC Opening Comments (EP 722), Appendix A at page 6, footnote 5.

different industry from railroads so the two are unrelated in cost-of-capital determinations. Even if it is assumed that Dr. Villadsen had no specific awareness of the extent to which the capital needs of BNSF are funded via investment of the "float" of GEICO insurance premiums held by their shared corporate parent Berkshire Hathaway, it is not a mystery that conglomerates exist largely or entirely to create and take advantage of opportunities for precisely this type of symbiosis. At a minimum, Dr. Villadsen should have exercised caution regarding the possibility that BNSF's ownership by Berkshire Hathaway did, in fact, affect the availability of and terms under which it could access needed investment capital. Given AECC's demonstration that BNSF's ready access to investment capital has caused it to account for nearly half of all rail investment activity since the time of its acquisition by Berkshire Hathaway, Dr. Villadsen's persistence in attempting to defend the omission of BNSF from the Board's analysis lacks credibility. In the real world, conglomerates (and multinationals) may enjoy advantages over "freestanding" firms in securing access to investment capital.

- Response to Chairman Elliott's Question. At the hearing, Chairman Elliott posed a question to shipper representatives regarding positions taken by shippers on cost-of-capital measurement in other forums, and possible inconsistencies with positions taken by the same shippers before the Board. I indicated that AECC had relied on the MSDCF methodology in an analysis filed at FERC. I further indicated that this did not constitute an inconsistency with AECC's position on MSDCF before the Board, since the deep concerns AECC has expressed to the Board regarding MSDCF stem from application problems that have arisen in the rail context, and not any issues pertaining to the legitimacy of the method per se. The Board should find no inconsistency in this situation.

V. Consideration of Replacement Costs Should Not Delay or Distract the Board from Needed Reforms

The discussions of replacement costs at the hearing revealed major differences among the railroad parties regarding the definition of the term that was being assumed. Some railroad witnesses indicated that a switch to replacement costs would have major ramifications for the revenue adequacy determination. However, another described a scenario where replacement costs would be computed by applying inflation to the original purchase price, but then depreciation would be removed and a gain recorded for the calculated increase in the value of the asset, creating a net impact that would not necessarily be significant. Despite the supposed agreement among rail parties that replacement costs should be used, there was not, in fact, any agreement on what that would entail.

This section addresses a limited set of specific issues pertaining to the potential rationale for and implementation of replacement cost analysis.

(a) Basis for Use of New Assets in SAC

As discussed at the hearing in response to a question posed by Vice Chairman Begeman, the rationale for using new assets in SAC analyses stemmed from the general status and condition of rail industry assets at the time the SAC test was developed, and not from any philosophical or theoretical preference for replacement cost analysis. In the aftermath of a lengthy period during which the industry as a whole experienced substantial difficulty in attracting and retaining needed capital, and also regulatory difficulty in ridding itself of unproductive assets, it was not reasonable to assume that the assets operated by the defendant railroad were optimal or even reasonably efficient for moving prevailing traffic. At the time, so-called "impaired" assets (i.e., assets that would not be economical to replace) were commonplace.

In the absence of revenue adequacy, SAC was intended to function as a safeguard against cross-subsidy, limiting differential pricing to the level needed to sustain the assets actually needed to move the traffic efficiently. The assumption that the stand-alone railroad would need to buy new equipment accompanied the protection to the shipper that was afforded by the opportunity to design an optimally efficient SARR, and avoid the higher level of differential pricing that conceivably would be needed to sustain the incumbent carrier's actual operations. While the ICC relied in part on a rationale that current costs should be used to correspond to the implicit assumption in SAC that hypothetical new entry would be taking place by a separate competitor, the fact that this had no basis in any systematic preference for replacement cost analysis is demonstrated by the fact that the widespread use of replacement costs was ruled out by the ICC (and at least 2 other agencies) at approximately the same time use of such costs was adopted in SAC.

As discussed at the hearing and in AECC's filings, AECC's proposed rate case reforms implement simplifying changes in costing methods that are appropriate in a revenue adequate environment. Basically, in a revenue adequate environment, it becomes appropriate to assume that the combination of new and depreciated used assets and equipment operated by the defendant railroad in fact constitutes an efficient physical plant. In this new environment, it is possible to greatly simplify rate case procedures.

(b) Department of Commerce Replacement Costs

Based on the question posed by Chairman Elliott regarding the method employed by the Department of Commerce to estimate its version of replacement costs, I was asked by AECC to make an initial assessment of that method. From information provided on the Department of Commerce website, I understand that method was initially developed nearly 40 years ago, and was intended to improve the reliability of comparisons across industries of measures the Department generates that reflect the consumption of capital by a given industry in a given year. Although I have not yet been able to perform a full replication of the Department's computations, my initial assessment is that this method has no way to avoid the problems that have plagued other replacement cost analyses when their use has been considered in the type of application contemplated by the Board.

In particular, the task of estimating current year capital consumption does not raise the inflation double-count issue, because it does not intrinsically require determination or application of an allowed rate of return. When used in a rate-of-return type of analysis, any write-up of existing assets to reflect the actual effects of inflation must be accompanied by an adjustment in the required rate of return to remove the investor's expectation of inflation (which is no longer relevant to the investment decision if the investor is to be compensated through a write-up reflecting actual inflation).[17] Separating the investor's expectation of inflation from the "real" required rate of return has been found repeatedly to provide a formidable analytical challenge, as the Board concluded when it rejected further consideration of replacement costs in EP 679.

Furthermore, implementation of virtually any method of writing up assets requires numerous assumptions that can affect the outcome. Should an older asset be written up if its function could be performed more cost-effectively by a new asset? Should asset specifications be changed if the traffic forecasts upon which they were originally premised were wrong? Should

[17] On this basis I conclude preliminarily that UP witness Murphy was, at best, misleading when he asserted at the hearing the supposed legitimacy of using replacement costs estimated by the Department of Commerce method without removing inflation from the cost of capital estimate. The Department's use may not require such an estimate, but that does not imply that the Board's use for its different purpose would not.

an asset be included at all if it is not used or useful? These and many other questions must be answered for a replacement cost analysis to be performed.

In the end, replacement cost analysis appears to entail more complexities and assumptions, and less purity and clarity, than its railroad advocates have claimed. Based on a preliminary investigation, I have not discerned any way in which the Department of Commerce method would have any advantage over other replacement cost methods on these criteria if an attempt were made to use it in the Board's application. The Board therefore should not assume or conclude that the Department of Commerce method offers any reasonable prospect of remedying the many problems with replacement cost analysis that have precluded its use to date.

VERIFICATION

I, Michael A. Nelson, declare under penalty of perjury that the foregoing is true and correct. Further, I certify that I am qualified and authorized to file this verified statement.

Michael A. Nelson

Executed on August 4, 2015