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MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. ER-2007-0002

REBUTTAL TESTIMONY

OF

PROF. JOHN W. MAYO

ON

BEHALF OF

UNION ELECTRIC COMPANY
d/b/a AmerenUE

St. Louis, Missouri
February, 2007

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REBUTTAL TESTIMONY

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JOHN W. MAYO

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I. INTRODUCTION, QUALIFICATIONS AND PURPOSE OF TESTIMONY

Q. Please state your name and business address.

A. My name is John W. Mayo. My business address is Georgetown University, McDonough School of Business, Old North Building, 37th and O Streets, N.W., Washington, D.C. 20057.

Q. What is your occupation?

A. I am Professor of Economics, Business and Public Policy at Georgetown University in the McDonough School of Business. I am also the Executive Director of the Center for Business and Public Policy in the McDonough School at Georgetown University.

Q. Would you please summarize your qualifications?

A. Yes. I hold a Ph.D. in economics from Washington University in St. Louis (1982), with a principal field of concentration in industrial organization, which includes the analysis of antitrust and regulation. I also hold both an M.A. (Washington University, 1979) and a B.A. (Hendrix College, Conway, Arkansas, 1977) in economics.

I have taught economics, business, and public policy courses at Georgetown University, Washington University, Webster University, the University of Tennessee, and at Virginia Tech (VPI). These courses include both graduate and undergraduate classes in industrial organization, regulation, and antitrust.

I also have served in senior administrative positions. Beginning in the fall of 1999 and continuing until July 2001, I served as Senior Associate Dean of the McDonough School of Business and during academic years 2002-2004, I served as Dean. Also, I have served as the Chief Economist, Democratic Staff of the U.S. Senate Small Business Committee.

I have authored a number of articles and research monographs, and have written a comprehensive text entitled Government and Business: The Economics of Antitrust and Regulation (with David L. Kaserman, The Dryden Press, 1995). I have also written a variety of specialized articles on the relationship of government and business, with particular emphasis on regulated industries including electricity and telecommunications. These articles have appeared in academic journals such as the RAND Journal of Economics, the Journal of Law and Economics, the Journal of Regulatory Economics, and the Yale Journal on Regulation.

Q. What is the purpose of your testimony?

A. As part of the present rate case, AmerenUE has asked the Commission to incorporate a fuel adjustment clause (FAC) mechanism into its rate structure. AmerenUE's proposal has subsequently been met with a variety of comments, suggested modifications, and objections by various parties to the rate case regarding the adoption of the FAC. Thus, in light of these comments, I have been asked by AmerenUE to provide an economic backdrop against which it is possible to judge the merits of these parties' comments and AmerenUE's proposed fuel adjustment clause.

Q. Can you briefly summarize your testimony?

A. Yes. Adoption of fuel adjustment clauses can be seen in the larger context of the movement in the last twenty years toward increasingly efficient economic regulation of utilities. That movement is driven by a desire to effectively regulate utilities but in a manner that

minimizes regulatory costs and which creates incentives for the firm to operate as efficiently as possible. In that context, fuel adjustment clauses promote economic efficiency by permitting retail rates to reflect underlying input market conditions that are largely exogenous (i.e., largely outside the control of utilities).

Within the context of cost-of-service regulation, the presence of large, volatile, and largely exogenous fuel costs for utilities make the adoption of FACs particularly appropriate. Specifically, FACs preserve the efficiency-enhancing properties associated with regulatory lag and, if properly designed, can encourage utilities to arduously pursue efficiency improvements in both non-fuel and fuel-related dimensions of their operations. While AmerenUE witnesses Martin J. Lyons and Shawn E. Schukar discuss the specific details of AmerenUE's proposed FAC and its off-system sales feature from a Company perspective, my broader economic assessment indicates that the proposed FAC is consistent with the general adoption of efficient regulatory design mechanisms that promote economic efficiency. Although several of the other parties' witnesses have argued for modification or rejection of AmerenUE's proposed FAC, I find little economic merit in their arguments. Consequently, I recommend that the Commission adopt the proposed FAC and off-system sales treatment proposed by AmerenUE. I also commend for the Commission's consideration AmerenUE's alternative that would involve sharing of the Company's off-system sales margins as that would permit consumers to share in incremental sales margins that AmerenUE may secure in the off-system sales market.

II. BACKGROUND

Q. What is a fuel adjustment clause and what role has it historically played in the electric utility industry?

A. The Federal Power Act (Title 16 U.S.C. §824d(f)(4) of the U.S. Code) describes an automatic adjustment clause as "a rate schedule which provides for increases or decreases (or both), without prior hearing, in rates reflecting increases or decreases (or both) in costs incurred by an electric utility." In practice, automatic adjustment clauses have most frequently been applied in the electric utility industry to cover fuel costs, which are often large, volatile, and largely outside of the utility's control. While fuel adjustment clauses arose as a consequence of rising fuel prices in World War I, they became prominent in the 1970s as a result of that decade's significant oil price shocks. Today, the vast majority of non-restructured states (Missouri being one of the rare exceptions) have implemented fuel adjustment clauses as part of their regulatory design.[1]

Q. Has Missouri taken steps toward the adoption of a fuel adjustment clause?

A. Yes. In 2005, the Missouri legislature passed and Governor Blunt signed Senate Bill 179, which enables the Missouri Public Service Commission to implement fuel adjustment clauses and similar regulatory mechanisms. In the wake of this enabling legislation, the Commission created rules under which AmerenUE has proposed that a fuel adjustment clause be implemented as part of the present rate case.

III. ECONOMIC CONSIDERATION OF FUEL ADJUSTMENT CLAUSES

Q. Aside from the legislation designed to enable FACs, are there economic policy guideposts that the Commission might draw upon as it considers adoption of an FAC for AmerenUE?

A. Yes. As described by Professor Alfred Kahn, "the single most widely accepted rule for the governance of regulated industries is to regulate them in such a way as to produce the

[1] As noted by Mr. Lyons, 27 of 29 non-restructured states (other than Missouri) and most utilities within these states currently use such adjustment clauses. (See Schedules MJL-3 and MJL-4).

same results as would be produced by effective competition, if it were feasible."[2] In the case at hand, this guiding principle indicates that swings in the costs of the fuel used to produce electricity should be reflected in the prices that consumers face just as they would in competitive markets. Attempts to deaden that volatility through the regulatory process simply mask the true underlying market conditions and are ultimately detrimental to the pursuit of economic efficiency.[3] That is, the economic role of prices is to send signals to consumers regarding the costs that their consumption imposes on society. When prices appropriately reflect changes in the cost of providing service, consumers receive the correct market signals. Price reductions (which reflect the relative abundance of low cost inputs) encourage consumption, while higher prices (which reflect scarcity and higher cost inputs) discourage consumption. While consumers will always prefer lower than higher prices, regulatory mechanisms that mask the beneficial cost-signaling nature of prices simply distort economic consumption and production decisions and harm economic efficiency. Conversely, by incorporating an FAC into the prices charged for power, the Commission can be confident that it is promoting economic efficiency by more accurately permitting prices to reflect changes in the underlying economic cost of providing that power.

Q. You mentioned that FACS have historically been adopted when fuel costs are volatile, large, and largely outside of utility control. Is that consistent with sound economic policy?

[2] Alfred E. Kahn The Economics of Regulation: Principles and Institutions, Vol. 1, MIT Press, Cambridge, Massachusetts, 1988, p. 17.

[3] The fact that market efficiency dictates that prices adjust to reflect the underlying cost of providing service does not mean that every consumer should bear the full cost of providing power. Targeted programs to assist financially constrained families can and routinely are fashioned. Thus, adoption of a policy of having prices generally reflect changing economic conditions in input markets does not sacrifice the ability to design programs that ease the financial burden borne by the least well off members of society.

A. Yes. Volatility, and the unpredictability that springs from that volatility, make the process of predicting price and cost changes notoriously inexact. The consequence is that even the best-intentioned regulators are constrained in their ability to efficiently establish retail rates that accurately reflect the future realized costs for fuel. If fuel costs were a very small component of the overall costs of providing power the fact that there is volatility in their prices would be of little consequence. In the case of providing electricity, however, fuel costs are not only volatile but are also quite a large component of total costs.[4] Thus, in the absence of an FAC, volatile fuel prices are likely to prove significantly disruptive to the firm's financial performance, raising concerns from the financial community that have essentially nothing to do with the management of the company.[5] Finally, to the extent that fuel prices are established in large national or international markets, these prices are exogenous to the firm. That is, these costs are largely outside the control of the firm. As a consequence, a regulatory design mechanism that permits and, indeed, provides incentives for managers to more squarely focus their attention on more controllable (or endogenous) costs and managerial issues within the firm is consistent with sound economic policy.

Q. Is the adoption of an FAC consistent with the broader movement to design more economically efficient regulatory mechanisms for public utilities?

A. Yes. Over the past twenty years, economic studies have increasingly revealed that traditional cost-of-service regulation provides limited incentives for regulated firms to

[4] See Mr. Neff's direct and rebuttal testimonies for a discussion of the magnitude and volatility of these costs.
[5] See Mr. Lyons' rebuttal testimony as well as Fitch Ratings, "U.S Electric Utilities: Credit Implications of Commodity Cost," February 13, 2006; and Standard & Poor's, "Fuel And Purchased Power Cost Recovery In The Wake Of Volatile Gas And Power Markets--U.S. Electric Utilities To Watch," March 22, 2006.

behave efficiently.[6] Indeed, because the nominally ideal implementation of traditional cost-of-service regulation would continuously align prices and costs, any efficiency incentives for firms operating under such a system enter only indirectly through an "imperfection" of cost-of-service regulation, namely regulatory lag. Specifically, because prices are fixed in a rate case and remain in place until the conclusion of the next rate case, a firm may, in the interim, engage in cost cutting and efficiency measures and retain the resulting profits until the next rate case. Thus, it is only because of this regulatory lag that efficiency incentives are created. In a world of significant fuel price increases, however, traditional cost-of service regulation may drive firms to press more frequently for rate increase cases that would re-align their prices and costs. Similarly, if input prices are declining rapidly, various consumers are likely to press for more frequent rate reduction cases. The result of more frequent rate cases, however, is that the primary driver of efficiency within cost-of-service regulation, namely regulatory lag, is attenuated.

The adoption of an FAC, however, can re-introduce the efficiency consequences of regulatory lag. Specifically, because fuel cost changes, which are largely uncontrollable, are passed into rates on an automatic basis that reflects actual changes in the realized cost of fuel, the need for a full-blown rate hearing is reduced.[7] This improves economic efficiency in several ways. First, by attenuating the need for frequent rate cases, the potential for regulatory-lag

[6] For a review of the growing emphasis on regulatory mechanisms that seek to incorporate incentives for economic efficiency from within firms rather than via regulatory fiat, see, e.g., Mark Armstrong and David E.M. Sappington "Recent Developments in the Theory of Regulation," Handbook of Industrial Organization, M. Armstrong and R. Porter, Eds., Amsterdam: Elsevier, forthcoming.

[7] That is not to say that all fuel costs are automatically passed through into retail rates. Indeed, as required under the Missouri FAC rules, fuel costs are reviewed closely on an annual basis and only costs that are ultimately found to be prudent are reflected in retail rates.

induced efficiencies are created.[8] Second, because rate cases themselves are quite expensive, regulatory costs are reduced. Third, FACs promote the economic goal of better aligning prices and costs. That is, because consumer prices more accurately reflect the cost of providing service, economic efficiency is enhanced. And finally, the creation of an FAC has the potential effect of allowing, or even encouraging, the managers of the utility to focus their managerial efforts on controllable, endogenous non-fuel-related costs. Thus, while regulatory oversight and audits may act, imperfectly, to ensure acceptably efficient behavior, economists have increasingly identified the potential for superior performance to arise from the adoption of regulatory mechanisms such as FACs that provide economic incentives for superior firm performance.

Q. So far you have spoken about a broader movement of utility regulation to incorporate incentives into regulatory design. But won't the inclusion of an FAC reduce the incentives for cost minimization because fuel costs are just "passed through"?

A. No. The pass through of fuel costs into rates is more automatic than traditional regulation and thereby theoretically reduces incentives for the firm to minimize fuel-related costs. It is important to remember, however, that the target of an FAC is *exogenous* expenses, which by definition are uncontrollable. In this regard, a recent review article on incentive-based regulation noted that "there is little to be gained by holding a regulated firm responsible for unanticipated costs that are beyond its control."[9] Thus while there is a theoretical, but, as it turns out, inert attenuation of the firm's cost reduction incentives brought about by the introduction of an FAC, several characteristics of an FAC actively promote the firm's efficiency incentives.

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[8] Other parties (e.g., Mr. Brosch, p 7, lines 3-4; Mr. Binz, p. 1, line 14-15 (in their December 29, 2006 testimonies)) acknowledge the efficiency enhancing aspects created by regulatory lag. Mr. Brosch, however, argues that once an FAC is in place it has the effect of "eliminating regulatory lag" (p. 10). But because fuel costs are such a significant portion of the total costs of producing power, the absence of an FAC in the presence of volatile fuel costs is likely to lead to *more* frequent rate cases, reducing regulatory lag and its consequent efficiencies.

[9] See David Sappington, Johannes Pfeifenberger, Philip Hanser and Gregory Basheda "The State of Performance-Based Regulation in the U.S. Electric Utility Industry," The Electricity Journal, October 2001, pp. 71-79.

Specifically, as I mentioned, in an era of changing or volatile fuel expenses, an FAC promotes efficiencies by lengthening the time between regulatory rate cases, by allowing a less disruptive financial environment for the firm, and by acting to focus managerial attention on controllable costs. I should also note that the adoption of FACs are typically accompanied by a set of specific regulations that include detailed annual reviews, general prudence standards, and other regulatory rules unrelated to the FAC itself.[10]

Q. While the FAC is largely targeted to fuel prices which are exogenous, are there not dimensions of fuel cost that are controllable by the firm?

A. Yes. Fuel costs, while largely being dependent on the price of fuel, are also in part driven by the efficiency and availability of the utility's power plants. These latter factors are not entirely exogenous, but in fact are partly under the control of utility management.

Q. In light of this, are there any additional ways to design an FAC to promote the incentives of the company to improve its efficiency?

A. Yes. In the case at hand, the volatility of wholesale energy markets may allow AmerenUE, with its mix of generation assets, to sell power that is not needed to serve its native load in an off-system sales market. These sales inure to the benefit of AmerenUE customers as they are considered in rates as an offset to AmerenUE's revenue requirement.[11]

Like the case of fuel expenses, sales in the off-system sales market are difficult to accurately determine before the fact because of the volatility of prices in wholesale markets, unpredictability of load, the coincidence of native demand and demand in off-system wholesale markets, and so on. Unlike fuel prices that are largely beyond the control of the firm, however, the ability to alter sales opportunities in the off-system sales market (e.g., through increased plant

[10] My understanding is that these safeguards are an integral part of the Missouri FAC regulations.
[11] See the discussion in the direct testimony of Mr. Baxter, pp. 30-33.

availability) has the potential to be endogenous; that is, more controllable by the firm. That is, with an appropriate treatment of off-system sales in combination with an FAC, incentives regarding sales in the off-system sales market may be created with considerable economic benefits for both the firm and consumers.

Q. Has AmerenUe included such an incentive mechanism in the consideration of its off-system sales?

A. Yes. My understanding is that AmerenUE has identified a proposed level of off-system sales margins of $183 million. In this instance, the firm would be singularly responsible for the consequences of off-system sales margins that deviate from this target. For sales margins that are realized below $183 million, AmerenUE would incur losses until the next rate case, while sales margins above $183 million are kept by the firm. This creates quite a "high powered" incentive for the firm to make sales in the off-system sales arena which, as Mr. Lyons explains, also directly benefits consumers because higher plant performance and availability also serves to lower fuel costs. Yet this traditional regulatory treatment fails to share directly with AmerenUE's consumers the sales margins of its incremental or decremental off-system sales opportunities. In light of this, AmerenUE has identified an alternative incentive mechanism that would provide for a broad range of off-system sales in which consumers and the firm would both be beneficiaries of the profits the firm is able to make in the off-system sales market. This sharing mechanism is described in detail in the direct testimony of Mr. Schukar, who also addresses sharing issues in his January 31 and February 5, 2007 rebuttal testimonies.

From an economic perspective, AmerenUE's proposed off-system sales treatment (both its proposed traditional treatment and its alternative sharing mechanism) is attractive because it adds an incentive component to the FAC and does so in an arena, off-system sales,

where incentives are especially likely to matter. Specifically, the ability to make sales in the off-system sales market will be significantly influenced by the ability (or lack thereof) of the utility to manage its plants' availability and efficiency. Thus, by creating a financial incentive for the firm to increase its off-system sales, the Commission will provide a strong incentive for the firm to become increasingly efficient in this arena. The consequences of this efficiency will, under either AmerenUE's proposed traditional or alternative off-system sharing plan, benefit AmerenUE's consumers.

Q. But if consumers can benefit from higher off-system sales margins, why not, as suggested by Mr. Brosch (p. 33, line 8-14), simply keep track of these margins and directly flow them through to consumers?

A. The short answer is that adoption of such a proposal would effectively eliminate the firm's incentives for system improvements that could result in enhanced off-system sales. That is, if off-system sales margins were passed through in their entirety, any economic incentive for the firm to enhance its plants' availability and efficiency would be eliminated. Consequently, the beneficial effects of this incentive-based mechanism would be lost.

IV. CONCLUSION

Q. Having considered the economic merits of FACS and the objections to its adoption in Missouri, what is your recommendation?

A. Within the context of the larger movement of economic regulation to increasingly create incentives for firms to promote and generate enhanced efficiencies of their operations, I recommend that the Commission adopt the AmerenUE proposed FAC and off-system sales treatment. As noted in Mr. Lyons' rebuttal testimony, FACs have become the mainstream regulatory treatment of fuel costs. The proposed FAC, in combination with the off-system sales

1 treatment proposed in this case, will improve economic efficiency by: (1) having prices more
2 accurately reflect costs; (2) preserving regulatory lag-induced incentives to promote economic
3 efficiency; (3) reducing regulatory costs associated with more frequent rate cases; and (4)
4 incorporating incentives for improved plant availability and efficiencies. While I appreciate the
5 concerns of the opponents to the FAC proposal, I find little economic merit to their anxieties
6 regarding the adoption of AmerenUE's proposed FAC.

7 **Q. Does this conclude your testimony?**

8 A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric Company d/b/a AmerenUE for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in the Company's Missouri Service Area.	)))))	Case No. ER-2007-0002

AFFIDAVIT OF JOHN W. MAYO

WASHINGTON)
) **ss**
DISTRICT OF COLUMBIA)

John W. Mayo, being first duly sworn on his oath, states:

1. My name is John W. Mayo. My business address is Georgetown University, McDonough School of Business, Old North Building, 37th and O Streets, N.W., Washington, D.C. 20057.

2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of Union Electric Company d/b/a AmerenUE consisting of 12 pages, which has been prepared in written form for introduction into evidence in the above-referenced docket.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct.

John W. Mayo

Subscribed and sworn to before me this 28th day of February, 2007.

Notary Public

My commission expires:

DAVID ROMAN
NOTARY PUBLIC DISTRICT OF COLUMBIA
My Commission Expires November 14, 2011