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MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. ER-2008-0318

Direct Testimony

of

Kenneth Gordon

On Behalf of

Union Electric Company
d/b/a AmerenUE

April 4, 2008

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DIRECT TESTIMONY

OF

KENNETH GORDON

CASE NO. ER-2008-____

I. QUALIFICATIONS, SUMMARY AND CONCLUSIONS

A. Qualifications

Q1. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Dr. Kenneth Gordon. My business address is 200 Clarendon Street, Boston, Massachusetts 02115. My C.V. is provided as **Schedule KG-E1**.

Q2. WHAT IS YOUR CURRENT POSITION?

A. I am a Special Consultant of National Economic Research Associates, Inc. ("NERA"). Previously, I was Senior Vice President at NERA.

Q3. WILL YOU PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL QUALIFICATIONS?

A. I am an economist and former Chairman of the Maine Public Utilities Commission ("Maine Commission") and the Massachusetts Department of Public Utilities ("Mass. DPU"). I have been an economist since 1965, and I have been directly involved with developing and establishing regulatory policy at the federal and state levels since 1980, when I became an industry economist at the Federal Communications Commission ("FCC").

I received my A.B. degree from Dartmouth College in 1960. I received my M.A. degree in 1963 and my Ph.D degree in 1973, both in economics, from the University of Chicago. I have taught applied microeconomics, industrial organization, and regulation (as well as other subjects) at Georgetown University, Northwestern University, University of Massachusetts at Amherst, and Smith College.

From 1980 to 1988, I was an industry economist at the FCC's Office of Plans and Policy, where I worked on a full range of regulatory issues, including telecommunications, cable, broadcast, and intellectual property rights. At the FCC, one of the major focuses of my work was activity aimed at introducing competition into communications markets.

Prior to joining NERA in November 1995, I chaired the Maine Commission (1988 to December 1992) and the Mass. DPU (January 1993 to October 1995). During my term as Chairman of the Mass. DPU, the DPU investigated and approved a price cap incentive regulation plan for NYNEX and also undertook a proceeding to examine interconnection and other issues related to the development of competition at all levels of telecommunications, including basic local service.

While I was its Chairman, the Mass. DPU issued a series of orders aimed at the reform of electric rate regulation, including revisions to integrated resource management procedures, the introduction of incentive regulation, the treatment of acquisition premiums in mergers and acquisitions, and the design of electric industry restructuring. While in Massachusetts, I co-chaired the Governor's task force on electricity competition.

While a regulator, I was active in the National Association of Regulatory Utility Commissioners ("NARUC"), serving on its Communications and Executive Committees. In 1992, I served as President of NARUC. I was also Chairman of the BellCore Advisory Committee and the New England Governor's Conference Power Planning Committee.

B. Summary and Conclusions

Q4. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. Union Electric Company d/b/a AmerenUE ("AmerenUE") has asked me to provide testimony on the cost pressures that utilities nationwide are facing, which are leading them to file rate cases more frequently.

I discuss the cost drivers that are leading to increased numbers of utility base rate proceedings in the U.S., and provide some recent summary information on a variety of cost changes. I then describe a range of policy tools, including fuel adjustment clauses ("FACs") and related mechanisms, which can be used to reduce the frequency of rate cases, while both affording the utility a more consistent opportunity to earn its allowed returns and preserving or enhancing its incentive to seek efficiencies. I also discuss certain specific issues that are related to AmerenUE, particularly the absence of an FAC.

Q5. WHAT GENERAL CONCLUSIONS HAVE YOU DRAWN?

A. As an economist and former regulator, I conclude that:

- *The utility industry in the U.S. is facing cost pressures such that rate case filings nationwide are back to the levels found in the early 1990s.* In that era (which I remember well), rate cases were related primarily to the ending of a major generation construction cycle. Now, a new construction cycle has begun for generation, there is a need for transmission and distribution investment, and there are other investment requirements (*e.g.*, mandated environmental-related remediation and investment in environmental controls, smart meters, billing systems, etc.). On top of this, there are cost pressures related to both operating inputs (including fuel) and capital cost (infrastructure) items, with a significant factor being the energy costs built into utility capital and operating costs.

- *The resurgence of base rate cases is a national phenomenon.* The timing of rate case filings by individual utilities depend on many factors, but the ubiquitous nature of the increases in costs that U.S. utilities face is leading to widespread rate cases. Some of the cost drivers are specific to the utility industry, while others are more general in nature.

- *Cost/revenue pressures make it more difficult, even for an efficiently-operating utility, to have a realistic opportunity to earn its allowed return.* This necessitates more frequent rate cases. There is a natural tradeoff between regulatory lag and attrition. Regulatory lag gives a utility the incentive to control costs that are under a utility's control between rate cases, but cost pressures in generally unavoidable costs and costs not subject to as much control can lead to attrition—the erosion in a utility's opportunity to earn its allowed return.[1] It is thus very important to treat

[1] Attrition can be defined as "[t]he pattern of declining earnings, caused by cost of service increasing more rapidly than revenues." *See*: the chapter on attrition in Robert L. Hahne and Gregory E. Aliff, Accounting for Public Utilities (Newark, NJ: Matthew Bender, 1983), Release No. 18, November 2001, p. 8-4.

utility shareholders fairly by allowing more immediate and certain recovery of uncertain and volatile costs (such as fuel costs) that lie outside the control of utility management.

- *FACs allow management to focus on controllable costs.* Allowing the utility to recover fuel and purchased power costs—that the utility procures through market processes—through an adjustment mechanism will actually strengthen the utility's incentive intensity where management *does* have substantial control over costs. An FAC has the potential to reduce the frequency of base rate cases and can contribute to reducing the magnitude of base rate increases, while leaving the efficiency incentives provided by regulatory lag in place for costs that *are* under management's control and more easily discerned.

- *Improved ratemaking practices provide other public policy benefits.* For example, prices that more accurately reflect underlying costs can stimulate efficiency- and demand-side responses by customers. An FAC, which helps send a more timely price signal to customers by reflecting the actual cost of fuel used to generate electricity, is just such a ratemaking practice.

AmerenUE witnesses Thomas R. Voss, Richard J. Mark, and Martin J. Lyons, Jr. discuss specific issues that are relevant for AmerenUE, including the risks and challenges facing AmerenUE, AmerenUE's substantial efforts at improving its operations and reliability, and AmerenUE's request for an FAC. While I would defer to these witnesses on specific factual issues having to do with AmerenUE, I have no reason to believe that AmerenUE is filing a rate case due to reasons especially different from those faced by other U.S. utilities. Indeed, a review of their testimony indicates that AmerenUE is seeking rate relief for essentially the same reasons many other utilities must also seek more frequent rate relief in this current, rising-cost environment.

We are in a challenging era for electric utilities and their regulators, with rate cases becoming more frequent due to higher day-to-day costs and very, very large investment requirements. In this context, searching for the best balance between regulatory lag for controllable costs and more timely cost recovery for uncontrollable costs, such as fuel costs, is not only useful, but is critical to achieving good quality service at reasonable rates over the long term. This can best be done by finding and implementing ratemaking best practices.

Q6. HOW IS YOUR TESTIMONY ORGANIZED?

A. **Section II** briefly summarizes U.S. rate case trends over the last 20 years and describes the cost/revenue drivers that are leading to the upsurge of rate case proceedings in the U.S. electric utility industry.

Section III discusses regulatory lag and the tools that regulators have used to accommodate investors' expectations that utilities will have a reasonable opportunity to recover prudently incurred costs, and to balance that goal with the need to assure that rates are just and reasonable. When implemented correctly, regulatory mechanisms that balance the requirements of customers and investors, provide sound incentives, rate stability and predictability, and meet other appropriate regulatory goals.

Section IV briefly discusses issues that are specifically relevant in Missouri, such as the role of an FAC.

II. RATE CASE AND COST TRENDS

Q7. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. I first summarize the overall trends in the levels of U.S. electric utility rate cases over the past 20 years.

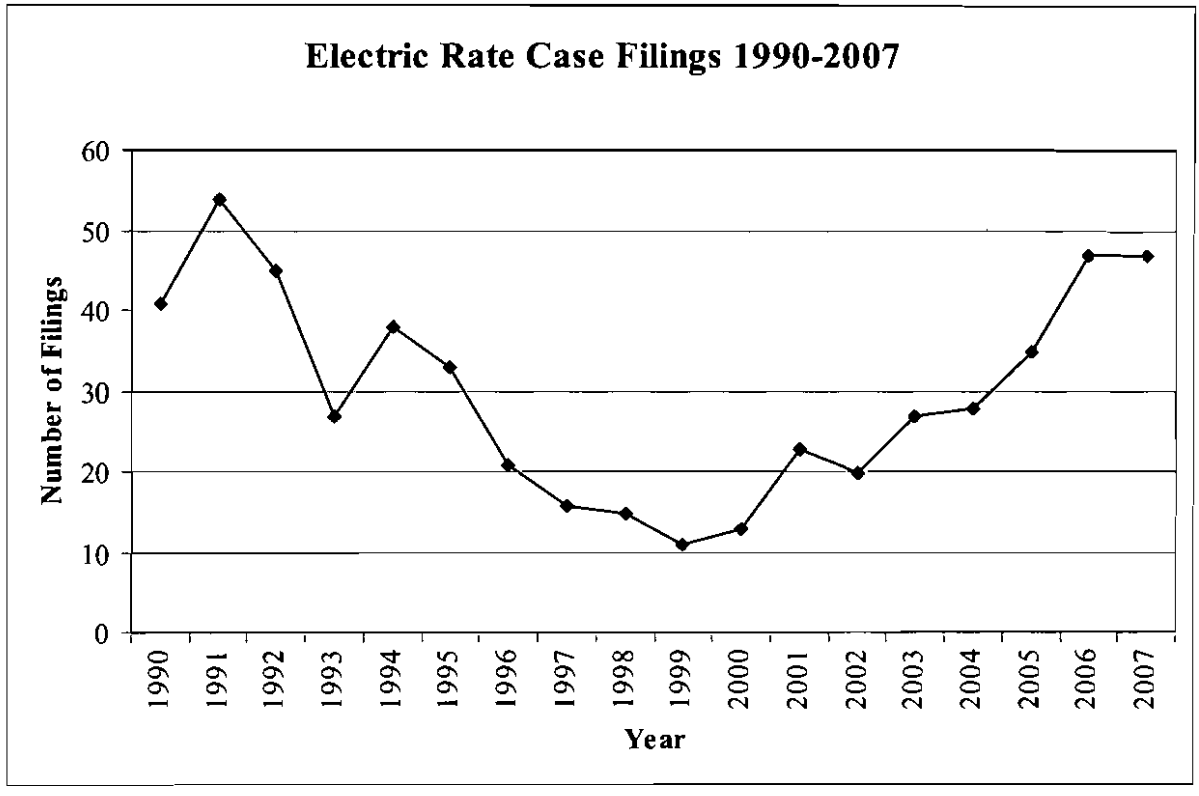
Then, I describe and examine the cost drivers that appear to be causing the current wave of utility rate cases in the U.S. I have examined the publicly-available research of other investigators on these topics. I have not attempted to examine exactly how these national trends relate to AmerenUE's electric utility operations in Missouri.

A. Rate Case Trends

Q8. HAVE YOU REVIEWED TRENDS IN THE FILING OF UTILITY RATE CASES?

A. Yes, I have. **Figure 1** contrasts the peak in rate cases that occurred in the early 1990s, with the recent up-surge in rate cases.

Figure 1: Electric Rate Case Filings per Year (1990-2007)



Source: Regulatory Research Associates

Figure 1 represents three distinct ratemaking eras:

1. *The end of the 1970s-1980s construction cycle.* By 1991, a year with over 50 electric utility rate case filings, that generation-related ratemaking cycle reached a peak. That period involved the completion of a construction cycle of large, baseload coal and nuclear units that began in the 1970s and 1980s, complicated by periods of high inflation, energy costs, and interest rates.

2. *A rate case trough during the mid-1990s to the early-2000s.* This was a period of lower inflation, low interest rates, more stable fuel commodity costs, solid economic growth, and modest baseload generation investment. The focus of generation investment was on gas-fired capacity, with lower capacity costs and shorter construction cycles. Many utilities entered into settlements and rate plans in the context of electric industry restructuring and consolidation that froze rates for a defined period.

3. *The new rate case cycle in this decade.* Many jurisdictions again face rate cases or see them looming on the "radar screen."[2] Every utility faces distinctive cost/revenue pressures, but, in recent times, the data shows that there has been a general surge in rate case filings. Relevant cost pressures include but are not limited to "deferred maintenance, network improvements, increased security costs, new environmental costs, and growing reliability issues."[3] Rising and volatile fuel costs are also a widespread problem—but, in most states, these costs are not dealt with in base rate case proceedings. As of year-end 2007, about 50 electric utility rate case proceedings were underway, which is nearly the level seen at the last peak period of rate case filings in the early 1990s.

The empirical data presented in **Figure 1** suggests strongly that we are now in a new rate case cycle. Regulators' primary regulatory "tool" for overseeing a utility is, of course, the traditional rate-of-return/cost-of-service rate case, which provides the regulator with a forum for investigating and determining the justness and reasonableness of a utility's rates. Using a "test year" revenue requirement, regulatory agencies, such as the Missouri Public Service Commission (the "Commission"), examine the reasonableness of a utility's sales growth projections, rate base, operating expenses, cost of capital, and other cost components, and then set rates that provide the utility a reasonable opportunity to recover its prudently-incurred costs. This is the core of the traditional public utility ratemaking regulatory bargain.

B. Cost Drivers in the Current Environment

Q9. PLEASE DESCRIBE, IN GENERAL TERMS, THE BASIC TYPES OF UTILITY COSTS.

A. Utilities have capital costs and operating costs. Capital costs, which are largely "fixed"[4] in nature, relate to investments in physical assets, like power plants, transmission lines, distribution plant, administrative and "back office" operations,

[2] *See*: Hethie Parmesano and Jeff D. Makholm, "The Thaw: The End of the Ice Age For American Utility Rate Cases?," *Electricity Journal*, July 2004, p. 69.

[3] *Id.*

[4] Costs that do not change with actual short-term usage of the system.

and so on. Many of these assets have very long useful lives. Through the ratemaking process, ratepayers provide utilities with the opportunity to recover a return *of* and *on* their investment; the utility recovers the test-year depreciation expense and a fair rate of return on invested capital, *i.e.*, rate base times the weighted average cost of capital ("WACC"). Between 2006 and 2030, over $400 billion of electric industry infrastructure investment in generating plants may be required.[5] Beyond the need for new generation, there will be a need for investment in transmission and distribution plant.

Operating costs, which can have "fixed" or "variable"[6] components, are the labor, fuel, tax, material, administrative, general and other costs that are necessary to operate a utility in an efficient, safe, adequate, and reliable manner.

Q10. PLEASE PROVIDE AN OVERVIEW OF THE TYPES OF CAPITAL INVESTMENTS IN UTILITY INFRASTRUCTURE THAT WILL LIKELY BE NEEDED IN COMING DECADES.

A. Capital investments will be needed in the distribution, transmission, and generation segments of the electric utility industry.

Distribution investment is needed to accommodate: (1) demand growth (*e.g.*, build-outs for new subdivisions); (2) changing demand patterns (e.g., average home sizes are increasing leading to greater demand by residential customers); (3) new initiatives (such as smart meters); and (4) reliability-related investments. In addition, storm damage has recently been a major issue for a number of utilities around the country. Given the ever-increasing applications for electricity, electric utility customers—whether small residential or large industrial and commercial—are

[5] "[T]otal of 258 gigawatts of new [generating] capacity is expected between 2006 and 2030, representing a total investment of approximately $412 billion (2005 dollars)," *Annual Energy Outlook* 2007, Energy Information Agency, DOE/EIA-0383, 2007.

[6] Costs that change with actual short-term usage of the system.

expecting more reliable service.[7] This was a sensitive issue when I was a regulator, and I have no doubt that it still is.

Transmission investment will be needed to alleviate "load pockets" and thereby avoid use of inefficient generation in congested areas, accommodate possible future carbon emission restrictions, support the development of wind energy and renewables (often located in remote areas), and improve reliability. Transmission and generation are both substitutes and complements for each other.

Generation will also be needed. Coal generation faces expensive environmental challenges.[8] Nuclear is viewed as a "key solution, but longer dated."[9] Renewables, such as wind, likely have a role to play, but their prospects are uncertain, particularly given uncertainty surrounding the tax-related subsidies.[10] Energy efficiency will have a role to play as well. This discussion of the challenges that different types of generation face does not mean that new generation will not be built, but, rather, that it will be costly.

The Edison Electric Institute ("EEI") forecasts that electric companies in the U.S. will need to spend an average of $14 billion per year on distribution investment over the next 10 years. EEI projects the total value of transmission investment over the 2007-2010 period to be $38.1 billion.[11] In addition to investments in traditionally-regulated transmission and distribution facilities, over $400 billion of infrastructure

[7] Not only are new applications for electricity continually being introduced, but utility customers are now expecting more reliable service because of the kinds of new applications that are emerging.

[8] For example, a bill was introduced in Congress to prohibit federal and state regulators to issue permits for new coal plants unless they "included controls to capture and permanently sequester CO_2 emissions." Samuel Brothwell, Darin Conti, Michael Bolte, and Jonathan Lefebvre, *Equity Research: PLUGGED IN,* Wachovia Capital Markets, March 17, 2008, pp. 1-4.

[9] *Id.*

[10] Robin Goldwyn Blumenthal, ed., "Tax Credit in Jeopardy: Green Energy Blues," *Barron's*, Jan. 21, 2008, p. 17. This article quotes a spokesman for the House Ways and Means committee, who said that it was "too early to handicap" the chances for legislation.

[11] Edison Electric Institute, http://www.eei.org/industry_issues/energy_infrastructure/distribution/index.htm and http://www.eei.org/industry_issues/energy_infrastructure/transmission/index.htm (Accessed Jan. 30, 2008).

investment in generating plant is expected for the 2006-2030 time period.[12] Investments will be needed not only to accommodate the growth in population and per-customer usage, but also to replace aging facilities, reduce emissions, and fund research and development of innovative technologies. Not surprisingly, increasing investment needs are a reality for AmerenUE as well, as discussed in Mr. Voss's direct testimony.

Q11. PLEASE DESCRIBE HOW CAPITAL INVESTMENT AND INCREASED OPERATING COSTS AFFECT A UTILITY'S COSTS.

A. Capital investment and increased operating costs put pressure on a utility's ability to maintain its current rate levels.[13] In simple terms, a utility's overall rate level is the revenue requirement divided by the units of output, such as kilowatt-hours ("kWh"). If both the revenue requirement and the units of output stay stable (or grow at exactly the same rate), then the overall rate level will remain unchanged. If that matching is not the case, then the overall rate level will need to be adjusted during the next rate case.

The revenue requirement can go up when new plant is built (or inexpensive plant is retired), when operating costs go up, and/or when the required "fair rate of return"[14] or cost of capital goes up. Further, a decrease in the units of output could result in a need to increase the utility's overall rate level. A "status quo" utility, with a generation, transmission, and distribution system that is sufficient to meet demand, would not normally need to file a rate case unless it faced: (1) the need to replace existing (perhaps fully depreciated) plant with new more-costly plant; (2) operating cost increases (perhaps for such items as bad debt expense, post-retirement labor

[12] "[T]otal of 258 gigawatts of new [generating] capacity is expected between 2006 and 2030, representing a total investment of approximately $412 billion (2005 dollars)," *Annual Energy Outlook* 2007 at 41, Energy Information Administration, DOE/EIA-0383 (Feb. 2007).

[13] Credit Suisse points out that "regulated utility earnings should generally be assumed to suffer during inflationary environments since the rates charged to customers are not changing as quickly/equally as are cost movements." Dan Eggars, Samantha Dennison, Justin Speer, and Kevin Cole, *Cost Inflation: The Silent Killer?*, Credit Suisse, March 31, 2008, p. 21.

[14] This is also known as the "opportunity cost of capital."

costs, or property taxes, and, of course, fuel); or (3) declining-use-per-customer trends that reduced the units of output sold. These are the basic reasons why a status quo utility's overall rate level can increase.

Things, however, get much more complicated when demand growth, increased service standards, or the need to replace aging infrastructure leads to the need for substantial new investment. Much of the pressure for increased rate levels results from the need to make investments in utility plant. Increased utility plant may increase operating costs as well.

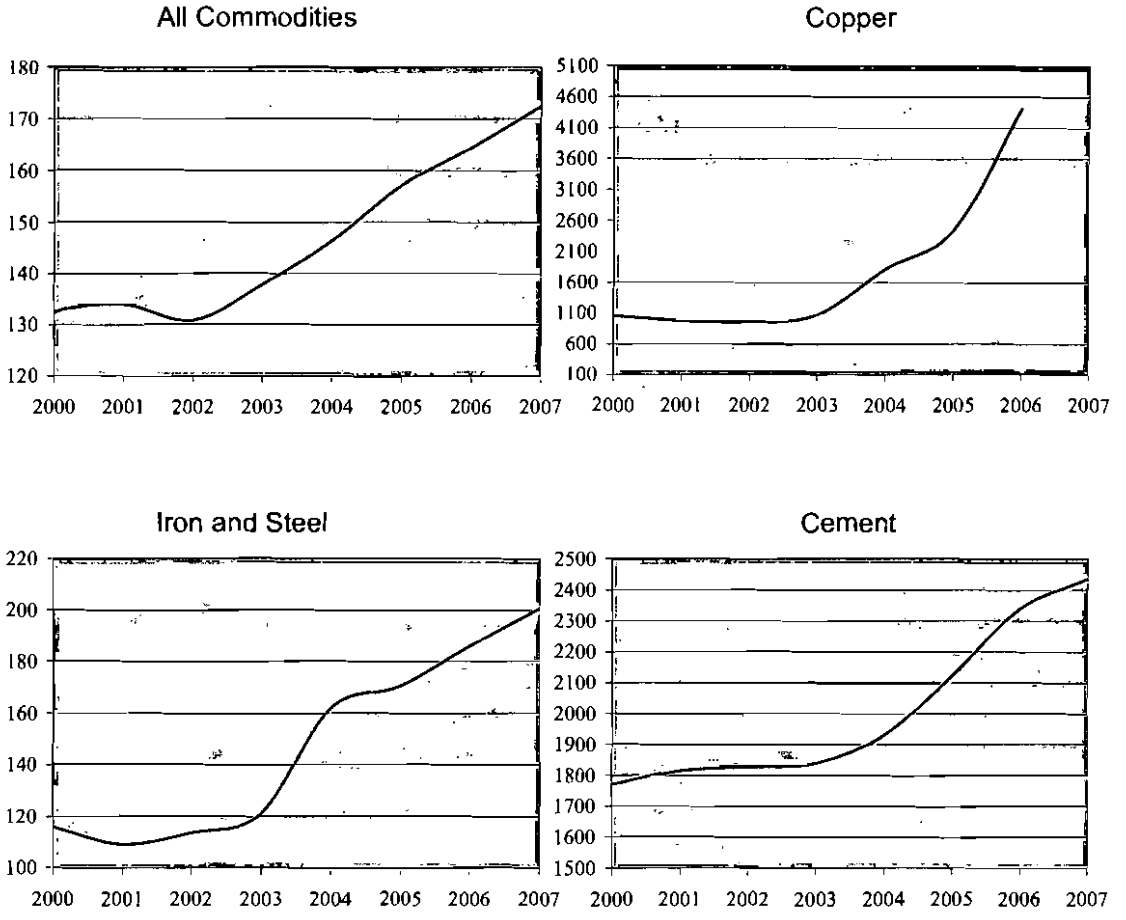
Things get even more complicated when operating costs are increasing. Operating cost increases (*e.g.*, fuel, taxes, labor, administrative, general, and other) can justify rate increases, with energy costs being one of the major contributors in the current environment.

Q12. HOW DO INCREASES IN ENERGY COSTS AFFECT UTILITIES?

A. To a utility, just like other businesses, the cost of energy extends beyond fuel purchases and purchased power, as energy costs are embedded in the material inputs used by a utility, *e.g.*, the energy costs embedded in the price of steel.[15] This is one of the reasons we are seeing drastic run-ups in the cost of not just steel, but copper, aluminum, and various kinds of equipment used by utilities. **Figure 2** presents graphs of price trends for a wide basket of commodities, and several that are important in utility construction.

[15] A Congressional Report Service ("CRS") study for the U.S. Congress noted, for example, that "[n]atural gas is widely used in the steel industry" and that "[a]mong all steelmaking inputs, perhaps none has risen higher in price [in] recent years than gas." *See:* Stephen Cooney, *Steel: Price and Policy Issues*, Congressional Report Service, updated August 31, 2006, p. 20. Available at http://www.fas.org/sgp/crs/misc/RL32333.pdf (Accessed on March 21, 2008).

Figure 2. Commodities Price Indices 2000 – 2007



Source: Bureau of Labor Statistics. 2007 data for the copper price index were not available.

The escalation of commodities prices works its way into utility costs in numerous ways. For example, energy costs affect the cost of rail transportation, the price of steel, and the price of concrete. Even if commodity prices decline in the future, the benefits of those declines would "take time to flow through given the longer lead times for equipment, need to first use higher cost inventories, and transition of utility capex programs to current costs."[16] Moreover, given regulatory lag, it will take time

[16] Credit Suisse notes that "[w]ith major raw material inputs up considerably, we would look for these costs to continue to roll through utility financial statements over the next several years through higher O&M expense (consumables are more expensive as inventories are consumed) and higher capex as most (continued...)

for higher commodity prices to work their way through the ratemaking process to the point that utility rates reflect the utility's higher operating costs and the capital costs for new generation, transmission, and distribution plant.

Q13. PLEASE DESCRIBE, IN GENERAL TERMS, THE ECONOMIC FORCES THAT INCREASE PRICE LEVELS, AND HOW THOSE ECONOMIC DRIVERS APPLY TO THE ELECTRIC UTILITY INDUSTRY.

A. We are all familiar with inflation—the general rise of prices over time—as measured by the gross domestic product ("GDP") deflator and/or the consumer price index ("CPI"). Determinants of the rate of increase in prices include cost-push pressures resulting from supply shocks for resources and demand pressures resulting from population and/or economic growth. Each of these concepts is applicable to the electric utility industry.

Rising input costs include the cost of the capital, labor, and other inputs used by utilities in order to provide service to customers. These can be measured via the producer price index ("PPI") or specialized indices focused on the electric utility industry (*e.g.*, the Handy-Whitman indices).

Q14. HOW DO ECONOMIC FORCES AFFECT UTILITY COSTS? PLEASE PROVIDE SOME EXAMPLES.

A. Today, regulated utilities face sharply rising capital and operating expenses. There are three basic ways in which economic forces affect utility costs, and thereby lead to greater numbers of utility rate cases in the U.S. First, there is the need for capital expenditures in utility infrastructure, the cost of which is affected by inflation. Second, there are increases in non-fuel operating costs. Third, there are increasing energy costs, such as fuel and purchased power.

(...continued)

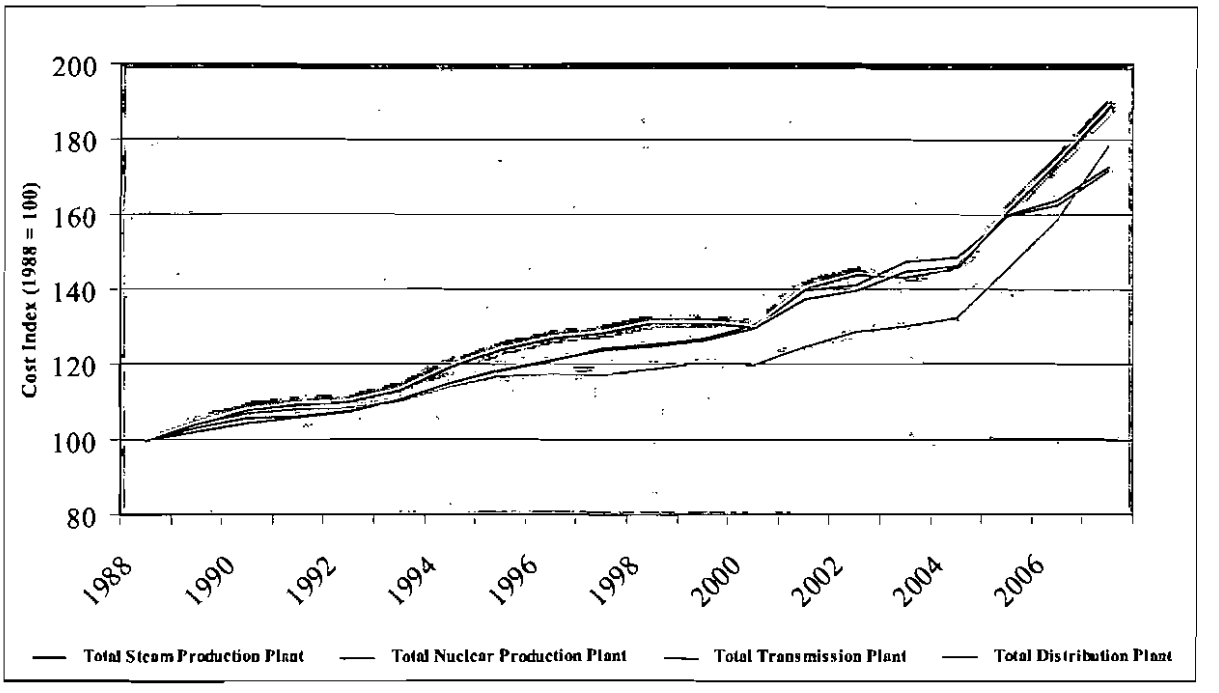
everything costs more to build/replace today than it did over the past several years." Credit Suisse, *supra* note 13, p. 3.

Q15. PLEASE DISCUSS THE TRENDS IN THE COSTS OF NEW INVESTMENT IN UTILITY INFRASTRUCTURE.

A. Costs are capitalized if they: 1) create an asset that will provide lasting services; 2) extend the lifetime of existing assets; or 3) modify an asset to produce a new stream of services. The need for capital expenditures is driven by the requirement for utilities to meet their obligation to serve, which requires construction of new assets and replacement of old assets. Customer and regulatory commission expectations relating to service are also increasing because of the even more central role electricity now plays in everyone's life, and due to increasing demand. Most households have one or more computers, charge cell phones and music players, and operate other digital devices where even momentary power interruptions can result in much greater disruption and inconvenience than in the past.

It is clear from the indexed plant costs trends shown in **Figure 3** that there has been a substantial increase in utility plant cost since 2004. Distribution plant, transmission plant, and generation plant, have gone up by ~~35~~ 34.6 percent, 29.43 percent, and ~~24~~ 15.16 percent since 2004, respectively.

Figure 3: Indexed Plant Cost Figures for Electric Utilities



Source: Handy-Whitman Cost Index for Electric Utilities

The *rate* of increase has gone up in the 2004-2007 period, compared to the 1988-2003 period as shown in **Table 1** below:

Table 1. Rate of Increase in the Cost of Generation, Transmission and Distribution Plant

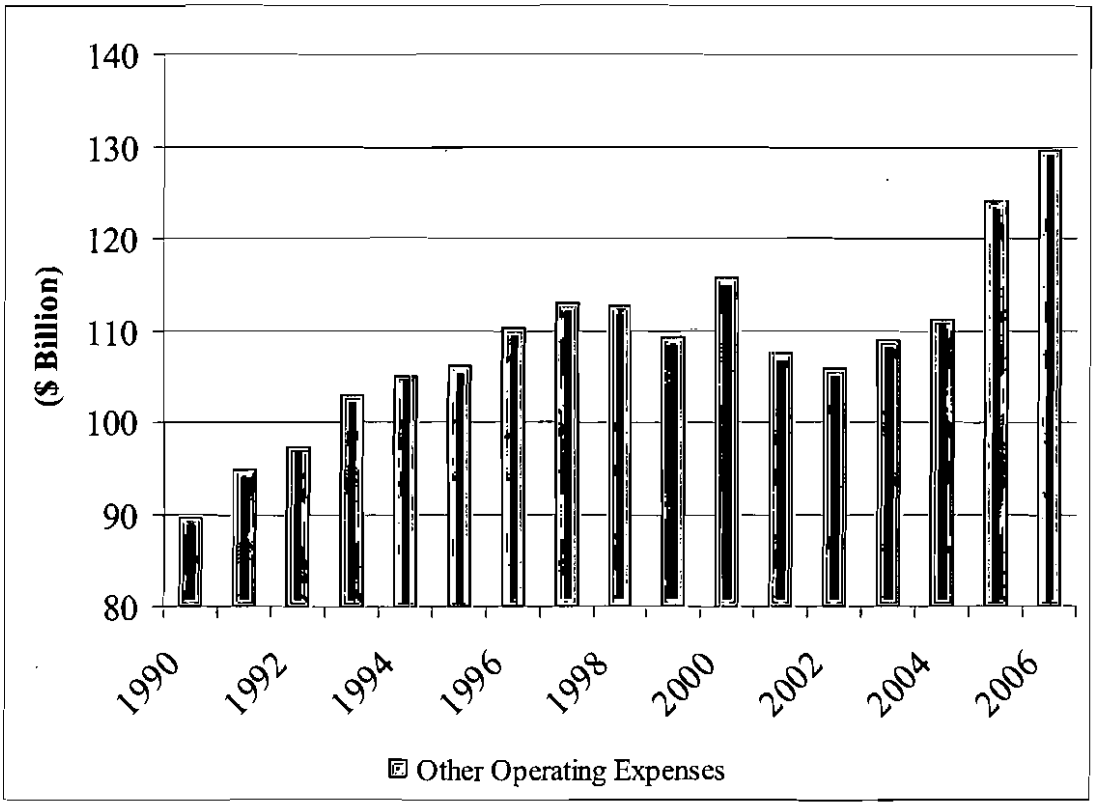
	2000-2003	2004-2007
Generation	1[illegible]%	~~24.34%~~ 66%
Transmission	10.23%	~~42.71%~~ 29.43%
Distribuition	8.22%	34.63%

Source: Handy-Whitman Cost Index for Electric Utilities

Q16. PLEASE DISCUSS THE COST TRENDS IN NON-FUEL OPERATING EXPENSES.

A. Operating expenses are trending upward as well. Operating expenses are sensitive to economy-wide price pressures. **Figure** 4 shows the trend in electric utility operating expenses, other than fuel and purchased power, from 1990 to 2006.

Figure 4: Operating Expenses (Less Fuel and Purchased Power) for U.S. Investor Owned Utilities, 1990-2006 [17]



Source: U.S. Energy Information Administration

Operating expenses are again trending upward as well. Non-fuel operating and maintenance ("O&M") has increased by about 22.4 percent between 2002 and 2006.[18]

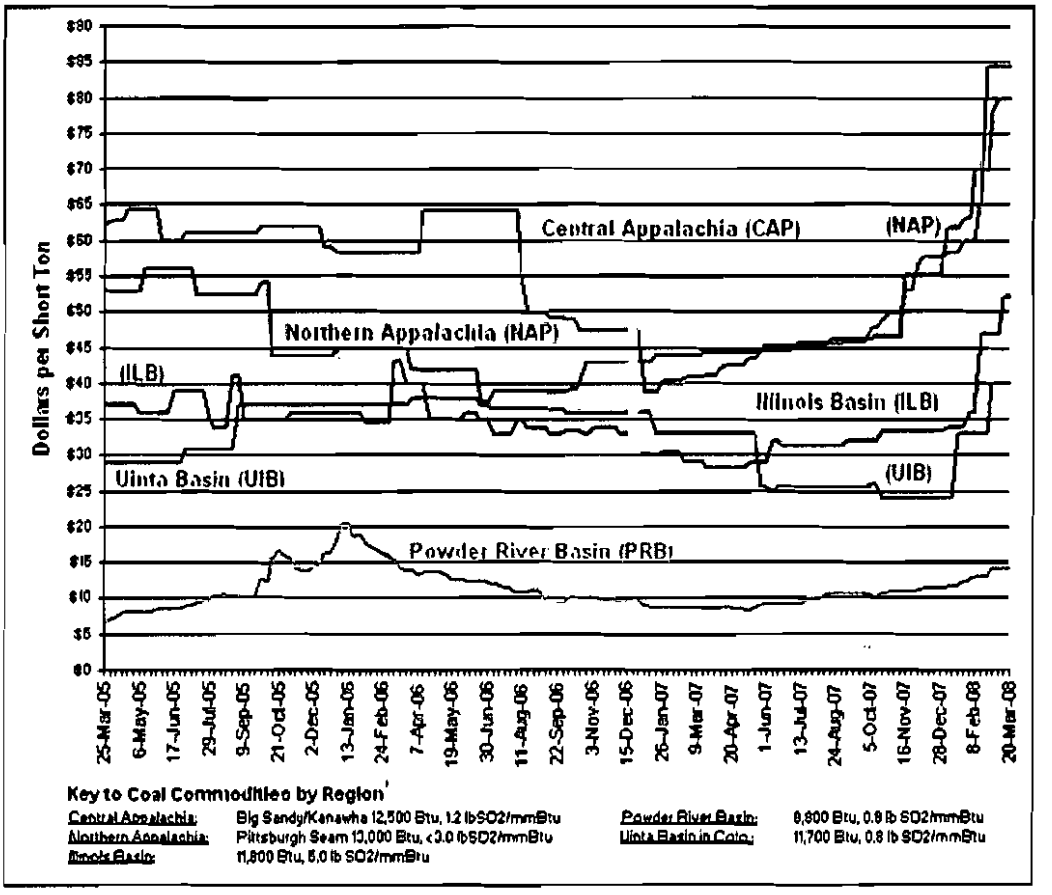
Q17. PLEASE DISCUSS THE OVERALL TRENDS IN COAL COSTS FOR U.S. UTILITIES.

[17] Energy Information Agency. *Electric Power Annual, Vol. II.* Contacted EIA and compiled from hardcopies of past editions of the Electric Power Annual report tables titled "Revenue and Expense Statistics for Selected Investor-Owned Electric Utilities": Table 8.1 (1992-2003), Table 11 (1990-1994), Table 34 (1986-1990).

[18] Credit Suisse estimates that non-fuel O&M has been increasing at about a four percent annual rate during the 2002-2006 period and that fuel has gone up by about seven percent annually during that same period. Credit Suisse, *supra* note 13.

A. **Figure 5** shows cost trends for the spot price of coal. While increases in the levels and volatility in the price of natural gas have been more visible, the price of coal has also risen. Coal contracts may affect the timing of increases in the price of coal for AmerenUE. Although the cost of Powder River Basin coal is low relative to other supply areas, prices were more volatile during 2005 and 2006 and the price has increased substantially over the past year.

Figure 5: Average Weekly Coal Commodity Spot Prices



Source: U.S. Energy Information Administration

Note that an increase in the price of Powder River Basin coal from $10 to $15 per MMBtu is a 50 percent increase. While it can be instructive to look at the spot price of coal, the *delivered* price may be more relevant. It is my understanding that coal transport costs are a large proportion of the delivered price of Powder River Basin

coal, have risen markedly in recent years, and add significant volatility to the overall coal price.

It is my understanding that these industry-wide trends are being seen at AmerenUE, as discussed in the direct testimony of AmerenUE witness Robert K. Neff, who addressed these same kinds of increases in the delivered price of coal experienced by AmerenUE in recent years, and that will be experienced in the coming years.

III. REGULATORY MECHANISMS THAT BALANCE REGULATORY LAG AND MORE TIMELY RECOVERY OF UNCONTROLLABLE COSTS

A. Regulatory Mechanisms

Q18. WHAT DO YOU SEE AS THE THRESHOLD ISSUE FOR UTILITY RATEMAKING IN THE CURRENT ENVIRONMENT?

A. A reasonable balance must be struck between regulatory lag and timely recovery of largely uncontrollable costs. If that balance is not struck properly, utilities, who are facing rapidly rising costs in many areas and huge investment needs, will find themselves in a weakened financial condition at precisely the time they need financial strength to access large sums of needed capital at a reasonable cost. A number of regulatory mechanisms can be used—in conjunction with traditional utility ratemaking—to balance these considerations.

Q19. PLEASE DESCRIBE SOME OF THESE MECHANISMS.

A. These mechanisms include:

- *Forward-looking test year/Updates and True-ups to Historic Test Years.* Adjustments to a historic test year can be made in order to prevent or at least minimize a situation where a utility would be unable to have an opportunity to earn its allowed return because stale accounting data were used to set rates.

- *Fuel Adjustment Clause.* Adjustment mechanisms are commonly used for costs such as fuel and purchased power, which constitute a large portion of a utility's costs; can be volatile and unpredictable; and, critically, are, to a considerable degree, beyond the control of the utility.

- *Trackers for Designated Categories of Costs.* Trackers can be used for designated operating expenses, such as bad debts expense, pension/OPEB costs, and property taxes. I understand that AmerenUE has such a tracker for pension/OPEB costs.

- *Price-cap regulation.* Many of the price-cap rate plans that have been proposed and/or adopted can be regarded as formalized, time certain, institutionalized regulatory lag. Thus, a utility might agree to a rate plan that would raise rates based on a "GDP-PI minus X +/- Z" approach, with rate increases based on the rate of inflation minus a productivity offset (X-factor) and plus or minus any exogenous costs (Z-factor) that are beyond the utility's control. Simpler rate "stay-out" approaches have also been used.

- *Rate phase-in plans for major capital investments.* Many utilities that are embarking on major construction projects are working with their regulators to find appropriate rate mechanisms. Some states are pursuing policies aimed at providing incentives to build new generation. A number of traditionally regulated states have recently passed laws providing for prior review of plant and the inclusion of construction work in progress ("CWIP") in rate base.

While I will not discuss these mechanisms in detail, all of these mechanisms are and have been in use in various jurisdictions around the country.

B. Potential Benefits

Q20. PLEASE EXPLAIN HOW THESE REGULATORY MECHANISMS COULD BENEFIT CUSTOMERS.

A. The public utility industry is capital-intensive. Utilities must continually invest in the long-lived assets that are necessary to provide delivery services to customers. In order to provide efficient, safe, adequate, and reliable service to their customers, utilities must have ready access to capital markets to maintain and upgrade capital facilities. Investor-owners of public utilities must submit to the requirements of capital markets to raise money to provide utility services. In other words, investor-owned utilities can only *attract* capital at a reasonable cost by showing that investors' capital will be repaid at a reasonable rate of return through a transparent system of regulated prices and timely cost recovery that in fact allows utilities a fair opportunity to earn their allowed return. In turn, long-term capital costs are

minimized and thus rates are kept lower, while the quality of utility service is maintained or improved.

Q21. PLEASE EXPLAIN WHY FAILING TO MAINTAIN A PROPER BALANCE BETWEEN THE EFFICIENCY INCENTIVES PROVIDED BY REGULATORY LAG AND FAIR AND TIMELY COST RECOVERY IS A MAJOR PROBLEM.

A. If regulatory lag is so severe that a utility is deprived of a reasonable opportunity to earn its allowed return, the financial strength of the utility would be undermined, the utility would require more frequent rate cases and, ultimately, the utility's costs would be higher. Those higher costs would eventually be passed through to utility customers.

Utility ratemaking should not prevent a utility from earning an adequate return on its investment in serving the public. Absent imprudence, a utility should not face a persistent inability to recoup its costs of providing utility service. Put more positively, it should be given a reasonable opportunity to realize an adequate rate of return and thereby be assured of access to the capital market on reasonable terms.

Q22. PLEASE EXPLAIN THE ROLE OF "REGULATORY LAG" IN TRADITIONAL RATE REGULATION.

A. It is well known by students and practitioners of public utility regulation that there is an important positive aspect to traditional regulation from an efficiency/incentive perspective—in the United States, it is usually termed "regulatory lag." Simply put, during the time between rate cases, managements have an incentive to cut costs, seek new efficiencies, and avoid wasteful or unnecessary expenses. The longer they anticipate that period will be, the stronger the incentive. The reason is simple: until the next rate case is decided they get to keep any additional profits generated. Under such a structure, indeed even under less formal variants, there is a presumption that expenditures that management makes are a necessary part of running the company efficiently and effectively.

Q23. WHAT HARM TO CUSTOMERS COULD RESULT IF A UTILITY FACED A PERSISTENT LACK OF OPPORTUNITY TO RECOVER ITS PRUDENTLY-INCURRED COSTS?

A. Much of the harm to customers that could result from a utility's persistent inability to recover the real costs of providing utility service (*i.e.*, attrition) stems from the incentives (and outright constraints) that the utility would face. Utilities *must* have incentives that lead them to maximize customer benefits—so that customers receive efficient, safe, adequate, and reliable service both now and in the future. A persistent inability to recover any of the real costs of providing utility service, while perhaps yielding (unsustainable) lower rates in the short term, could result in underinvestment and/or excessive cost cutting by the utility, which would have short- and long-run implications for the rates paid by consumers, the quality, adequacy, and reliability of service, incentives and/or ability to invest in essential infrastructure, and the efficiency of resource allocation. It also creates an overall deterioration in the utility's financial health, which makes the utility more risky and, consequently, makes it harder for the utility to attract necessary capital and makes the capital it can attract more expensive.

Q24. WHAT HARMS TO ECONOMIC EFFICIENCY COULD OCCUR IF A UTILITY FACES A SYSTEMIC INABILITY TO RECOVER ITS PRUDENTLY-INCURRED COSTS IN RATES?

A. As an economist, I am concerned about the harm to efficiency that could occur. There are several types of efficiency and I consider each of them in turn.

Allocative efficiency refers to the prices that customers face. Allocatively efficient utility rates would give customers the economically correct price signals to use electricity or gas or not, depending on the customer's choice. Failure to allow appropriate costs to be included in the utility revenue requirement distorts this efficiency, since customers are receiving an inappropriate price signal. If rising fuel, material, and equipment costs, coupled with the costs associated with large capital investments necessary to improve the system or comply with governmental

mandates are occurring, then customer rates need to signal to customers that there are higher costs associated with their consumption. Otherwise, energy efficiency initiatives don't work properly, demand continues to grow at higher rates (requiring yet more investment), and in the long run, costs and rates end up being higher than they should have been.

Productive (or technical) efficiency refers to the incentives that the utility faces as it decides how to provide its services. The utility should have the incentives to operate in an efficient manner, while also continuing to provide safe, adequate, and reliable service. With appropriate incentives, few if any costs should be borne by investors because the utility will be focused on fulfilling its obligations to its customers.

Investment incentives are the dynamic aspect of productive efficiency. The utility must have the incentive to invest efficiently in infrastructure. An inability to recover its costs could distort the utility's investment incentives as well.

In each of these types of efficiency, incentives will be better when rates to customers reflect the utility's true cost of providing service at the time the service is being provided.

IV. FAC MECHANISMS IN MISSOURI

Q25. DOES AMERENUE HAVE AN FAC?

A. No, it does not.

Q26. DO FACS HAVE A ROLE TO PLAY IN UTILITY RATEMAKING?

A. Yes. An FAC is a commonly-used way to strike a reasonable balance between regulatory lag and timely recovery of uncontrollable costs, such as fuel and purchased power. One of the reasons that FACs are almost universally used is that they are a practical means to deal with the problems caused by attrition.

Having an FAC can send better price signals to consumers, reduce the need to file more frequent rate cases on account of fuel cost changes, and help maintain the financial health of the utility—which can also be a benefit to customers.

FAC mechanisms help utilities maintain a reasonable opportunity to recover their legitimate costs of generating, transmitting, distributing and procuring electricity on behalf of customers. Some of the reasons for using an FAC to limit attrition can include:

1) The purchased item is largely outside the control of the buying utility. Most commonly this is fuel, as the name suggests.

2) The item is a significant or large component of the utility's total operating costs.

3) The costs of that item can be volatile and/or unpredictable, or simply rising rapidly.[19]

It is my understanding that nearly all traditionally-regulated states use FACs as part of their ratemaking process. The widespread use of FACs documented in Mr. Lyons's testimony is consistent with my understanding.

Q27. WOULD AN FAC ELIMINATE COMMISSION OVERSIGHT OVER FUEL AND PURCHASED POWER COSTS?

A. Absolutely not. The utility, of course, has an obligation to *procure* its fuel and purchased power in a prudent manner. The National Regulatory Research Institute ("NRRI") notes that a utility is not "excused from hard-nosed, tough bargaining" and goes on to explain that "state public utility commissions often hold utilities to a standard of care of a prudent business man in negotiating fuel contracts before allowing the cost to flow through a fuel adjustment or purchased gas adjustment clause."[20] Regulatory oversight of the prudence of a utility's management of its power procurement activities can be accomplished while allowing for timely rate changes that reflect fuel and wholesale power market prices accurately.

[19] Robert Burns, Mark Eifert and Peter Nagler. "Current PGA and FAC Practices: Implications for Ratemaking in Competitive Markets," *National Regulatory Research Institute*, November 1991, p. 9. [Hereinafter referred to as the "NRRI Report"]

[20] NRRI Report, *supra* note 19, p. 4.

Q28. WHY IS IT IMPORTANT THAT COSTS RECOVERED IN AN FAC BE OUTSIDE THE CONTROL OF THE UTILITY?

A. Because if that is the case, recovering costs in an FAC does not harm the utility's efficiency incentives. If certain costs (called "exogenous costs")[21] are not within the control of the utility, the pursuit of economic efficiency calls for no penalty or gain to be borne by the utility as a result of changing market prices.

Exogenous cost changes represent any change in the cost of the firm—up or down—that is beyond the control of the firm. In a competitive industry, if these costs were required to provide a service, input cost changes would alter the long run marginal and average cost curves of the industry and would directly affect the market price prevailing in the industry.

Because exogenous costs are not under the control of the firm, passing such cost changes through to customers automatically cannot affect the incentive of the firm to behave efficiently. The pass through of exogenous costs permits the regulated firm's prices to reflect market conditions (for the prices of its inputs), in similar fashion to the way that input cost changes affect prices in unregulated, competitive markets, while providing a market price signal to customers.

Q29. WHY IS IT IMPORTANT THAT COSTS RECOVERED IN AN FAC BE LARGE AND/OR VOLATILE AND UNCERTAIN?

A. Because an FAC is an exception to the use of base rate case proceedings to set utility rates, there needs to be a reason to allow recovery of fuel and purchased power costs in a different manner. Here, the reasons are simple: having an FAC sends better price signals to consumers, stems earnings erosion, helps maintain the financial health of the utility, and reduces the need to file more frequent rate cases on account of fuel cost changes.

[21] We define the cost of fuel to be exogenous because a utility's purchasing power cannot affect the price of these commodities arrived at in the world market. That being said, utilities *can* ensure that they purchase these commodities in an informed and prudent manner, and these procurement decisions can have an effect on the ultimate price paid for fuel.

It is clear that fuel and purchased power costs are a large part of any electric utility's operating costs. From a broad standpoint, two facts are notable. First, nearly all public utilities commissions operating in traditionally-regulated states have found that an FAC is justified. Second, volatile is a relative term—are the costs volatile or uncertain enough to justify an FAC? My basic point is that if an FAC could make rate cases less frequent, and the preservation of a reasonable opportunity to realize the allowed rate of return more likely, then an FAC could be beneficial. It is as simple as that.

Q30. PLEASE ELABORATE ON THE UNCONTROLLABLE NATURE OF FUEL COSTS.

A. Fuel costs are a function of national and increasingly international markets for coal, natural gas and nuclear fuel. FAC mechanisms give utilities a reasonable opportunity to recover their legitimate costs of procuring fuel and electricity on behalf of customers. Utilities procure fuel and purchased power from markets and normally have no ability to control the prices set in those markets—they are "price takers."[22] I agree with AmerenUE witnesses Messrs. Neff, Glaeser, and Irwin about the uncontrollable nature of these commodities for a price taker such as AmerenUE.

The Colorado Public Utilities Commission explained their long-standing use of FAC mechanisms by stating that they established their FAC in order to:

> [P]ermit rapid recovery of increased costs over which the utility has no control. The Commission recognized that, in the circumstances which existed at the time, unless increased fuel costs were passed through to customers expeditiously, the utility would undergo a serious erosion of earnings. We observed that this erosion of

[22] A price taker is "sufficiently insignificant in relation to the size of the market in which it operates, such that its activities can bring no influence to bear on the prevailing market price." *The MIT Dictionary of Modern Economics*, Fourth Edition. MIT Press. p. 343.

earnings would, in turn, jeopardize the utility's ability to provide service.[23]

Moreover, the utility typically has a limited ability, if any, to control its customers' demand.[24] It must procure the fuel and purchased power that is needed to meet customer demand as part of its obligation to serve.

Q31. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

[23] Before the Public Utilities Commission of the State of Colorado, "In the Investigation of Electric Cost Adjustment Clauses For Regulated Electric Utilities," Docket No. 93I-702E, Decision No. C95-248, February 6, 1995.

[24] A utility may have direct or indirect means to *influence* customers' demand, e.g., load control devices on water heaters or interruptible rates for industrial customers, but this falls far short of being able to control customers' demand.

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-2008-____

AFFIDAVIT OF KENNETH GORDON

STATE OF MAINE)
) ss
COUNTY OF CUMBERLAND)

Kenneth Gordon, being first duly sworn on his oath, states:

1. My name is Kenneth Gordon. I work in Windham, Maine, and I am a Special Consultant with National Economic Research Associates, Inc.

2. **Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Union Electric Company d/b/a AmerenUE consisting of 26 pages, Attachment A, and Schedule KG-E1, all of which have 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.

Kenneth Gordon

Subscribed and sworn to before me this 2 day of Apr. 2008.

Notary Public

My commission expires:

ELLEN L. BRINK
NOTARY PUBLIC
COMMISSION EXPIRES DEC. 21, 200

EXECUTIVE SUMMARY

Dr. Kenneth Gordon

Special Consultant – National Economic Research Associates, Inc. (NERA)

* * * * * * * * * *

I am an economist and former Chairman of the Maine Public Utilities Commission and Massachusetts Department of Public Utilities. My testimony provides a discussion of the cost drivers that are leading to increased numbers of utility base rate proceedings in the U.S., with an emphasis on policy tools, including fuel adjustment clauses ("FACs") and related mechanisms, which can be used to reduce the frequency between rate cases, while both affording the utility a more consistent opportunity to earn its allowed returns and preserving or enhancing its incentive to seek efficiencies.

The utility industry in the U.S. is facing cost pressures such that rate case filings nationwide are back to the levels found in the early 1990s. In recent times, a new construction cycle has begun for generation, there is a need for transmission and distribution investment, and there are other investment requirements, such as investment in environmental controls. The widespread need for investment, coupled with an historically unprecedented rise in cost pressures related to both operating inputs (including fuel) and capital cost (infrastructure) items, makes it critical to ensure utility shareholders a reasonable return on investment.

Cost/revenue pressures make it more difficult, even for an efficiently-operating utility, to have a realistic opportunity to earn its allowed return. This necessitates more frequent rate cases. Regulatory lag gives a utility the incentive to control costs that are under a utility's control between rate cases, but pressures from generally unavoidable costs can lead to attrition—the erosion in a utility's opportunity to earn its allowed return.

It is thus very important to treat utility shareholders fairly by allowing more immediate and certain recovery of hard to predict and/or volatile costs (such as fuel costs) that lie outside the control of utility management. Fuel cost riders, such as fuel adjustment clause mechanisms, are a means to alleviate attrition and the pressure

imposed by frequent rate case filings, while protecting the financial stability of the utility. Fuel adjustment clauses are used almost universally to regulate vertically integrated electric utilities throughout the country in non-restructured jurisdictions.

Utilities and regulators throughout the country face challenges due to higher day-to-day operating costs and very large investment requirements. In this context, searching for the best balance between regulatory lag for controllable costs and more timely cost recovery for uncontrollable costs, such as fuel costs, is not only useful, but is critical to achieving good quality service at reasonable rates over the long term. This can best be done by finding and implementing ratemaking best practices, including the use of fuel adjustment clauses where appropriate.

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Dr. Kenneth Gordon, as of April 2001, is a Special Consultant with National Economic Research Associates, Inc. specializing in utility regulation and related issues. Prior to that date, Dr. Gordon was a Senior Vice President with National Economic Research Associates. He was Chairman of the Massachusetts Department of Public Utilities from January 1993 to October of 1995. He came to the Massachusetts Commission from the Maine Public Utilities Commission, where he held the office of Chairman from 1988 through the end of 1992. Prior to that, he was an Industry Economist at the Federal Communications Commission's Office of Plans and Policies. Prior to that, he taught at several colleges since 1965, the most recent position having been at Smith College.

Dr. Gordon was an active member of the National Association of Regulatory Utility Commissioners (NARUC) and served as president of that organization in 1992. He was also a member of the Executive Committee, and the Committee on Communications of NARUC. He has served as Chairman of the New England Conference of Public Utilities Commissioners Telecommunications Committee, and is a former Chairman of the Power Planning Committee of the New England Governors' Conference. He currently also serves on several boards and committees. Dr. Gordon has authored a number of publications and lectures widely on topics related to utility regulation.

Dr. Gordon is a graduate of Dartmouth College and holds a doctorate in economics from the University of Chicago.

EDUCATION

University of Chicago	Ph.D	1973
University of Chicago	M.A.	1963
Dartmouth College	A.B.	1960

EMPLOYMENT

April 2001 -	**National Economic Research Associates, Inc.,** Cambridge, MA Special Consultant
August 1996 – March 2001	**National Economic Research Associates, Inc.,** Cambridge, MA Senior Vice President
November 1995 – July 1996	**National Economic Research Associates, Inc.,** Washington, D.C. Senior Vice President
October 1995	**Consulting Economist**
January 1993 - October 1995	**Massachusetts Department of Public Utilities** Chairman
October 1988- December 1992	**Maine Public Utilities Commission** Chairman
1980 - 1988	**Federal Communications Commission, Office of Plans and Policy** Industry Economist
1965 - 1980	**University and College Teaching** (most recently at Smith College)
1963 - 1964	**University of Chicago** Research Associate

CURRENT APPOINTMENTS AND MEMBERSHIPS

Telecommunications Policy Research Conference
Chair, 1995-1996
Board Member, 1994

Energy Modeling Forum (EMF 15, A Competitive Electricity Industry),
Stanford University
Member

American Economic Association

Transportation and Public Utilities Group, AEA

PAST APPOINTMENTS AND MEMBERSHIPS

National Association of Regulatory Utility Commissioners
Communications Committee, 1990 - 1995
Executive Committee, 1991-1995
President, 1992

New England Conference of Public Utility Commissioners
Power Planning Committee
Chairman

Governor's Electric Utility Market Reform Task Force
Co-Chairman

Boston University Telecommunications Forum
Advisor

Center for Public Resources, Legal Program to Develop Alternatives to Litigation
Chairman, Utilities Committee

Office of Technology Assessment, Advisory Panel on International Telecommunications Networks

Bellcore Advisory Committee,
Member and Chairman, 1993 to 1996.

ACTIVITIES

Participant in numerous regional and state committees, organizations, and task forces.

Participant in various NARUC/DOE conferences on gas and electricity issues.

Frequent speaker on electric, telephone and environmental issues nationally.

TESTIMONIES

Before the Illinois Commerce Commission, Testimony on behalf of Nicor Gas Company. Docket No. 04-0779. November 1, 2004. Subject: Ratemaking policy.

Rebuttal testimony before the Arizona Corporation Commission on behalf of Arizona Public Service Company on appropriate regulatory policy following a reversal in policy direction by the regulator. March 30, 2004.

Prefiled Rebuttal testimony before the Public Utilities Commission of Nevada, Sierra Pacific Power Company's 2003 General Rate Case regarding proper regulatory treatment of merger savings and costs. March 29, 2004.

Before the Nevada Public Utilities Commission on behalf of Nevada Power Company, rebuttal testimony on appropriate regulation policy for the recovery of merger-related costs. February 5, 2004.

Before the Connecticut Department of Public Utility Control, on behalf of Southern Connecticut Gas Company, direct testimony on the role of exogenous cost recovery in a comprehensive incentive rate plan, Docket No. 03-11-20. December 9, 2003.

Before the Florida Public Service Commission on behalf of Verizon Florida Inc., Bell South Telecom, and Sprint-Florida, Docket No. 030867-TL, 030868-TL, 030869-TL and 030961-TI, rebuttal testimony on rate rebalancing. November 19, 2003.

Before the Nevada Public Service Commission on behalf of Nevada Power Company, testimony regarding appropriate rate making policy for the recovery of merger-related costs. October 1, 2003.

Before the Florida Public Service Commission on behalf of Verizon Florida Inc., Bell South Telecom, and Sprint-Florida, Docket No. 030868-TL,. direct testimony on rate rebalancing. August 27, 2003.

Before the Arizona Corporation Commission, on behalf of Arizona Public Service Company, Docket Nos. 99-09-03PH02, 99-04-18 PH03, 01-04-04), direct testimony on the proper regulatory policy framework and the importance of credible regulatory commitments. June 27, 2003.

Before the New York State Public Service Commission, on behalf of Rochester Gas & Electric Company, direct testimony regarding the determination of merger-enabled savings. May 16, 2003.

Before the Connecticut Department of Public Utility Control, on behalf of Connecticut Natural Gas Corporation and the Southern Connecticut Gas Company, Docket Nos. 99-09-03PH02, 99-04-18PH03 and 01-04-04, direct testimony regarding the determination of merger-enabled gas cost savings. April 28, 2003. Refiled on June 10, 2003.

Before the New York State Public Service Commission, Case No. 02-G-1553, letter to CFO on the problems and challenges associated with implementing incentive regulation. Letter was included as Exh. ___ (JSF-1) to testimony of Joan S. Freilich. November 27, 2002.

Before the Iowa Utilities Board, on behalf of Iowa Telecommunications Services, Inc., rebuttal testimony regarding economic support of the company's rate adjustment proposal. August 6, 2002.

Before the Public Utilities Commission of Ohio, on behalf of the Cincinnati Gas & Electric (Company), Case No. 00-813-EL-EDI and 01-2053-EL-ATA, direct testimony on the imposition of a moratorium on minimum stay requirements with respect to switching between default (POLR) service and competitive service. Filed June 4, 2002.

Before the Iowa Utilities Board, on behalf of Iowa Telecommunications Services, Inc., direct testimony regarding economic support of the company's rate adjustment proposal. May 24, 2002.

Before the Florida legislature, on behalf of Bell South (Florida), oral testimony on rate rebalancing issues in telecommunications. Presented on January 30, 2002.

Before the Public Utilities Subcommittee of the Maryland House Environmental Matters Committee, on behalf of Southern Maryland Electric Cooperative and Choptank Electric Cooperative, testimony on affiliate issues relating to cooperatives' participation in non-core markets. Filed January 22, 2002.

Before the Indiana Utilities Regulatory Commission on behalf of Citizens Gas & Coke Utility and Indiana Gas Co., Inc., Case Nos. 37394GC50S1 and 37399GC50S1. Affidavit on why the use of RFP bids as a transfer price is appropriate. Filed December 10, 2001.

Before the Alberta Energy & Utilities Board, on behalf of EPCOR Transmission Inc., rebuttal testimony addressing code of conduct issues. November 2, 2001.

Before the Illinois Commerce Commission on behalf of Commonwealth Edison Company, Docket No. 01-0423, surrebuttal testimony on designing delivery service tariffs in a way that support economic efficiency. October 24, 2001.

Before the Illinois Commerce Commission on behalf of Commonwealth Edison Company, Docket No. 01-0423, rebuttal testimony on designing delivery services in a way that supports economic efficiency. September 18, 2001.

Before the New Jersey Board of Public Utilities on behalf of Verizon New Jersey, additional rebuttal testimony on structural separation and code of conduct issues, Docket No. TO01020095. Panel testimony co-sponsored by C. Lincoln Hoewing. August 17, 2001.

Before the Alberta Energy & Utilities Board, on behalf of Atco Group of Companies, Affiliate Proceeding Before the Alberta Energy and Utilities Board, Testimony of Rebuttal Evidence, submitted August 3, 2001

Before the Massachusetts Department of Telecommunications and Energy, on behalf of Berkshire Gas Company, direct testimony on benefits of incentive ratemaking and policy rational supporting company's plan. July 17, 2001.

Before the New Jersey Board of Public Utilities on behalf of Verizon New Jersey, Surrebuttal Testimony on structural separation and code of conduct issues (Docket No. TO01020095). Filed June 15, 2001 (panel testimony co-sponsored by C. Lincoln Hoewing).

Rebuttal Testimony on behalf of Qwest Corporation, Application of Authority to provide in-region interLATA service (Docket No. INU-00-2). Filed May 23, 2001.

Before the State of New York State Public Service Commission on behalf of Verizon New York (Case No. 00-C-1945): Initial panel testimony on the New York State competitive marketplace. May 15, 2001 (co-sponsored with William E. Taylor).

Before the Commonwealth of Kentucky Public Service Commission on behalf of E.ON AG, Powergen plc, LG&E Energy Corp., Louisville Gas and Electric Company and Kentucky Utilities Company, (Case No. 2001-104). Direct testimony on the benefits to consumer's resulting from the acquisition of Powergen by E.ON AG. May 14, 2001.

Before the New York State Public Service Commission on behalf of New York State and Gas Corporation, Affidavit on the proper treatment of proprietary competitive information by regulators. Affidavit filed April 23, 2001.

Before the Virgin Islands Public Services Commission, Government of the Virgin Island of the United States (PSC Docket No. 526) on behalf of Innovative Telephone, Rebuttal testimony regarding rural exemption, request for interconnection for Innovative Telephone. Filed April 10, 2001.

Before the State of New York Public Service Commission on behalf of Energy East Corporation, RGS Energy Group, Inc., New York State Electric & Gas Corporation, Rochester Gas and Electric Corporation, and Eagle Merger Corp. Affidavit filed March 23, 2001.

Before the Indiana Utility Regulatory Commission on behalf of PSI Energy, Inc. (IURC Docket No. 41445-S1): Rebuttal testimony on the continued use of a purchased power tracker. Filed February 8, 2001.

Before the Pennsylvania Public Utility Commission on behalf of Verizon PA: Rebuttal testimony on why the structural separation model used in electricity does not apply to telecommunications. October 30, 2000.

Before the State of New York Public Service Commission on behalf of New York State Electric & Gas Corporation (Case 96-E-0891): Rebuttal testimony on market power analyses used in setting the backout credit. October 30, 2000. (Cosponsored with David Kathan.)

Before the Connecticut Department of Public Utility Control, on behalf of Connecticut Natural Gas Corporation (Docket No. 99-09-03, Phase II): Rebuttal testimony on role of incentive ratemaking. October 11, 2000.

Before the New York Public Utilities Commission on behalf of New York State Electric & Gas Corporation (Case 96-E-0891): Direct testimony on whether the backout credit set in a stipulation continues to be proper. October 4, 2000. (Cosponsored with David Kathan.)

Before the Virginia State Corporation Commission on behalf of Appalachian Power d/b/a/ American Electric Power Company (Docket Case No. PUA980020): Direct testimony regarding use of "asymmetric" transfer price rules. Filed September 20, 2000.

Before the Alberta Energy and Utilities Board, on behalf of ATCO Gas, ATCO Pipelines, and ATCO Electric: Direct testimony addressing affiliate issues. August 31, 2000.

Before the Iowa Utilities Board on behalf of Qwest Corporation (Docket No. INV-00-3): Direct testimony on deregulation of local directory assistance services. August 11, 2000.

Before the Connecticut Department of Public Utility Control on behalf of the Southern Connecticut Gas Company (Docket No. 99-04-18, Phase III): Late-filed Exhibit No. 159 (direct testimony) on the proper design of an incentive ratemaking plan. August 11, 2000.

Before the Connecticut Department of Public Utility Control on behalf of Connecticut Natural Gas Corporation (Docket No. 99-09-03 Phase II): Prefiled supplemental testimony addressing incentive rate-making issues. Filed August 11, 2000.

Before the Maine Public Utilities Commission on behalf of Central Maine Power Company. Surrebuttal testimony regarding the proper role of incentive ratemaking. August 10, 2000.

Before the Pennsylvania Public Utility Commission on behalf of Bell Atlantic PA (now Verizon PA): Direct testimony on the costs and problems with structural separation in telecommunications. June 26, 2000.

Before the Maine Public Utilities Commission on behalf of Central Maine Power Company (Docket No. 99-666): Rebuttal testimony on incentive rate-making issues. Filed June 22, 2000.

Before the Connecticut Department of Public Utility Control, The Southern Connecticut Gas Company Bench Request/Late file Exhibit (direct testimony) on proper implementation of incentive ratemaking. May 24, 2000.

Before the Public Utilities Commission of Ohio, on behalf of the Cincinnati Gas & Electric Company (Case No. 99-1658-EL-ETP): Supplemental testimony addressing shopping incentive and market power issues. Filed May 1, 2000.

Before the New York Public Service Commission on behalf of New York State Electric & Gas Corporation (NYSEG). Affidavit on the proper calculation of the billing credit customers would receive that switch. Filed April 20, 2000.

Before the Public Utilities Commission of Ohio, on behalf of the Cincinnati Gas & Electric Company: Direct testimony addressing shopping incentive and market power issues. Filed December 28, 1999.

Before the Federal Communications Commission, on behalf of Virgin Islands Telephone: Comments addressing Federal universal service support in the U.S. Virgin Islands. Filed December 19, 1999.

Before the Connecticut Department of Public Utility Control, on behalf of Connecticut Natural Gas Corp.: Direct testimony on performance based ratemaking. Filed November 8, 1999.

Before the Public Service Commission of Maryland, on behalf of Baltimore Gas and Electric Co., etc.: Reply testimony on "code of conduct" issues. Filed October 26, 1999.

Before the Illinois Commerce Commission, on behalf of Illinois Power Company: Rebuttal testimony addressing the pricing of metering and billing services. Filed October 21, 1999.

Before the Maine Public Utility Commission, on behalf of CMP Group, Inc.: Rebuttal testimony on issues related to acquisition of CMP by Energy East. Filed October 13, 1999.

Before the Illinois Commerce Commission, on behalf of Illinois Power Company: Direct testimony addressing the proper pricing of metering and billing services. Filed October 8, 1999.

Before the Public Service Commission of Maryland, on behalf of Baltimore Gas and Electric Co., etc.: Direct testimony on "code of conduct" issues. Filed October 1, 1999.

Before the Maine Public Utilities Commission, on behalf of Central Maine Power Co.: Direct testimony addressing the proposed alternative ratemaking plan. Filed September 30, 1999.

Before the Michigan Public Service Commission, on behalf of Ameritech Michigan: Direct testimony regarding economic consequences resulting from full avoided cost discount as applied to resale of existing contracts. Filed September 27, 1999.

Before the Public Service Commission of West Virginia, on behalf of Allegheny Power and American Electric Power: Rebuttal testimony on "code of conduct" issues. Filed July 14, 1999.

Before the Maine Public Utilities Commission, on behalf of Central Maine Power Co.: Direct testimony on the acquisition of CMP by Energy East. Filed July 1, 1999.

Before the Public Service Commission of West Virginia, on behalf of Allegheny Power and American Electric Power: Direct testimony on "code of conduct" issues. Filed June 14, 1999.

Before the Illinois Commerce Commission, on behalf of Commonwealth Edison: Rebuttal testimony addressing the design of delivery services tariffs. Filed May 10, 1999.

Before the Subcommittee on Energy and Power, on behalf of National Economic Research Associates: Statement addressing electric restructuring market power issues. Filed May 6, 1999.

Before the New Jersey Public Utilities Board, on behalf of the Edison Electric Institute: Direct testimony on the PUC's draft affiliate relations standards. Filed May 3, 1999.

Before the US District Court, Western District of Pennsylvania, on behalf of Allegheny Energy, Inc.: Expert report on regulatory issues regarding the recovery of stranded costs, filed May 1989

Expert report, on behalf of ICG/Teleport addressing the way in which Denver's ordinance allocates costs among users of public rights-of-way. Filed April 21, 1999.

Before the Ohio Senate Ways and Means Committee, on behalf of the Ohio Electric Utility Institute: Direct testimony regarding restructuring of Ohio electricity industry. Filed April 20, 1999.

Before the Federal Energy Regulatory Commission, on behalf of the Central Vermont Public Service Corporation: Rebuttal testimony regarding CVPSC's reasonable expectation to serve its Connecticut Valley affiliate. Filed April 8, 1999.

Before the Joint Committee on Utilities and Energy, on behalf of the Central Maine Power Company: Direct testimony on rate design for recovery of stranded costs. Filed March 23, 1999.

Before the Illinois Commerce Commission, on behalf of the Commonwealth Edison Company: Direct testimony on Commonwealth Edison's delivery service tariffs. Filed March 1, 1999.

Before the Indiana Utility Regulatory Commission, on behalf of Ameritech Indiana: Direct testimony on interconnection issues between RBOC and independent LECs. Filed February 19, 1999.

Before the Indiana Utility Regulatory Commission, on behalf of Ameritech Indiana: Direct testimony on competitive flexibility and alternative rate plan issues. Filed January 29, 1999.

Before the Rhode Island Public Utilities Commission, on behalf of Bell Atlantic-Rhode Island: Rebuttal testimony regarding economic consequences of granting a request by CTC to assume BA-RI retail contract without customer penalty or termination charges. Filed December 4, 1998.

Before the Michigan Public Service Commission, on behalf of Ameritech Michigan: Surrebuttal testimony regarding interconnection agreement. Filed November 9, 1998.

Before the Michigan Public Service Commission, on behalf of Ameritech Michigan: Direct testimony regarding interconnection dispute with a CLEC. Filed October 20, 1998.

Before the Wisconsin Public Service Commission, on behalf of the Edison Electric Industry: Surrebuttal testimony on utility diversification issues. Filed October 16, 1998.

Before the Wisconsin Public Service Commission, on behalf of The Edison Electric Institute: Supplemental direct testimony addressing DSM issues and electric restructuring. Filed October 13, 1998.

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INCIDENTAL TEACHING AND LECTURING

University and College
Yale School of Management and Organization
Harvard Law School, Telecommunications Seminar
Suffolk University Law School
University of Maine
Boston University

Other
Edison Electric Institute
(Electricity Consumers Resource Council)

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