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FEB 29 2008

PUBLIC SERVICE
COMMISSION

Via Hand Delivery

February 29, 2008

Beth A. O'Donnell, Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
Frankfort, Kentucky 40602

Re: Administrative Case No. 2007-00477

Dear Ms. O'Donnell:

Please find enclosed the original and twelve (12) copies of the DIRECT TESTIMONY AND EXHIBITS OF KEVIN C. HIGGINS, ON BEHALF OF THE KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC., filed in the above-referenced matter.

By copy of this letter, all parties listed on the attached Certificate of Service been served. Please place these documents of file.

Very Truly Yours,



David F. Boehm, Esq.
Michael L. Kurtz, Esq.
BOEHM, KURTZ & LOWRY

MLKkew
Attachment
cc: Certificate of Service

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing was served by mailing a true and correct copy, by regular U.S. mail (unless otherwise noted) to all parties on the 29TH day of February, 2008.

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**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

AN INVESTIGATION OF THE ENERGY AND
REGULATORY ISSUES IN SECTION 50 OF
KENTUCKY'S 2007 ENERGY ACT

)
) ADMINISTRATIVE CASE
) NO. 2007-00477

Direct Testimony of Kevin C. Higgins

on behalf of

Kentucky Industrial Utility Customers, Inc.

February 29, 2007

DIRECT TESTIMONY OF KEVIN C. HIGGINS

Introduction

Q. Please state your name and business address.

A. Kevin C. Higgins, 215 South State Street, Suite 200, Salt Lake City, Utah, 84111.

Q. By whom are you employed and in what capacity?

A. I am a Principal in the firm of Energy Strategies, LLC. Energy Strategies is a private consulting firm specializing in economic and policy analysis applicable to energy production, transportation, and consumption.

Q. On whose behalf are you testifying in this proceeding?

A. My testimony is being sponsored by Kentucky Industrial Utility Customers, Inc. (“KIUC”).¹

Q. Please describe your professional experience and qualifications.

A. My academic background is in economics, and I have completed all coursework and field examinations toward a Ph.D. in Economics at the University of Utah. In addition, I have served on the adjunct faculties of both the University of Utah and Westminster College, where I taught undergraduate and graduate

¹ KIUC is a consortium of Kentucky industrial utility consumers. Its member companies are: AGC Automotive Americas Co., Air Liquide Large Industries U.S. LP, Air Products and Chemicals, Inc., AK Steel Corporation, Alcan Primary Products Corp., Arch Chemicals, Inc., Arvin Meritor dba Carrollton Castings, Calgon Carbon Corporation, Carbide Industries LLC, Cemex, Century Aluminum, Clopay Plastics Products Co., Inc., Aleris International, Corning Incorporated, Dow Corning Corporation, Domtar Paper Co., LLC, E.I. DuPont de Nemours & Company, Ford Motor Company, Gallatin Steel, General Electric Company, Golden Foods, Kimberly-Clark Corporation, Lexmark International, Inc., Marathon Petroleum Company, LLC, MeadWestvaco, NewPage Corp., 3M (Minnesota Mining & Manufacturing), North American Stainless, Osram-Sylvania, Occidental Chemical Corporation, Rohm & Haas Kentucky, Inc., Solae (formerly Protein Technologies International), Square D Company, TI Group Automotive Systems, Toyota Motor Engineering and Manufacturing North America, Inc., and Pilkington North America.

1 courses in economics. I joined Energy Strategies in 1995, where I assist private
2 and public sector clients in the areas of energy-related economic and policy
3 analysis, including evaluation of electric and gas utility rate matters.

4 Prior to joining Energy Strategies, I held policy positions in state and local
5 government. From 1983 to 1990, I was economist, then assistant director, for the
6 Utah Energy Office, where I helped develop and implement state energy policy.
7 From 1991 to 1994, I was chief of staff to the chairman of the Salt Lake County
8 Commission, where I was responsible for development and implementation of a
9 broad spectrum of public policy at the local government level.

10 **Q. Have you testified previously before this Commission?**

11 A. Yes. I filed testimony in the Duke Energy Kentucky (Union Light, Heat
12 and Power Company) general rate case, Case No. 2006-00172, and in the East
13 Kentucky Power Cooperative general rate case, Case No. 2006-00472.

14 **Q. Have you testified previously before any state utility regulatory
15 commissions?**

16 A. Yes. I have testified in over eighty proceedings on the subjects of utility
17 rates and regulatory policy before state utility regulators in Alaska, Arizona,
18 Arkansas, Colorado, Georgia, Idaho, Illinois, Indiana, Kansas, Michigan,
19 Minnesota, Missouri, Montana, Nevada, New Mexico, New York, Ohio,
20 Oklahoma, Oregon, Pennsylvania, South Carolina, Utah, Virginia, Washington,
21 West Virginia, and Wyoming.

22 A more detailed description of my qualifications is contained in
23 Attachment A appended to this direct testimony.

1 **Overview and Conclusions**

2 **Q. What is the purpose of your testimony in this proceeding?**

3 A. I am responding on behalf of KIUC to the Commission’s invitation to
4 comment regarding the four issues identified in Section 50 of the 2007 Energy
5 Act. The Act directs the Commission to examine its existing statutes relating to
6 its authority over public utilities and to make recommendations to the Legislative
7 Research Commission regarding the four issues specified. My testimony
8 addresses these issues and offers recommendations to the Commission in support
9 of its examination.

10 **Q. What conclusions and recommendations are presented in your testimony?**

11 A. KIUC offers the following recommendations to the Commission:
12 (1) KRS 278.190 already provides a number of strong policy tools for the
13 Commission to utilize in encouraging cost-effective DSM. In light of these
14 existing policy options, a statutory change in response to Issue 1 appears
15 unnecessary.
16 (2) KIUC supports continuation of the “opt-out” provision in KRS 278.190.
17 Energy-intensive industrial customers have a strong financial interest in reducing
18 their energy expenses, and individual industrial customers are in a better position
19 to evaluate the energy savings potential from their specific industrial processes
20 than is likely from a utility-wide program. In addition, industrial customers should
21 not be asked to subsidize investments for competitors or firms in other industries.
22 (3) With respect to Issue 2, KIUC supports the encouragement of distributed
23 generation through reasonably-priced and well structured partial requirements

1 service tariffs. The Commission requires no additional statutory authority to
2 accomplish this objective.

3 (4) KIUC supports the diversification of utility energy portfolios through the use
4 of renewable generation if it is cost-effective to do so. KIUC does not support
5 arbitrary renewable energy targets that are mandated without respect to cost
6 considerations.

7 (5) With respect to Issue 3, KIUC believe that externalities such as environmental
8 impacts are best addressed in the context of national policy. For planning
9 purposes, the cost of compliance with various national environmental policy
10 scenarios can be estimated and is appropriately incorporated as an economic
11 variable in the IRP process. Such an analysis of environmental contingencies is
12 part of a prudent planning process. It should not require additional statutes for this
13 to occur.

14 (6) KIUC believes the best ways to address the objective identified in Issue 4 is to
15 send proper price signals through elimination of inter-class cost subsidies and
16 encourage rate designs that reflect time-of-use (“TOU”) energy cost differentials.

17 (7) KIUC is opposed to revenue decoupling as a means to implement the
18 objective in Issue 4. Revenue decoupling is as much a “revenue assurance”
19 mechanism as it is a “conservation enabling” mechanism. Such proposals
20 generally result in an unwarranted transfer of risk from utilities to its customers.

1 **Issue 1: Eliminating impediments to the consideration and adoption by utilities of**
2 **cost-effective demand-side management strategies for addressing future demand**
3 **prior to Commission consideration of any proposal for increasing generating**
4 **capacity**

5
6 **Q. What is your interpretation of the objective expressed in Issue 1?**

7 A. Issue 1 has two distinct components. The first component speaks to
8 eliminating impediments to adoption of cost-effective DSM to meet future
9 demand needs. The second component indicates that impediments to
10 consideration of cost-effective DSM must be eliminated prior to the Commission
11 considering any proposal for increasing generating capacity. As such, it suggests
12 an express restriction on the Commission's actions under certain circumstances.
13 Whether this component is intended to convey a restriction on the Commission, or
14 to permit a directive by the Commission to utilities under its jurisdiction is not
15 entirely clear.

16 **Q. What is your assessment of the objective expressed in Issue 1?**

17 A. A recent report prepared for the Governor's Office of Energy Policy
18 identifies a significant potential for energy savings in Kentucky.² To the extent
19 there are material impediments to the adoption of cost-effective DSM, it is
20 reasonable to explore eliminating such impediments. At the same time, KRS
21 278.190 already provides a number of strong policy tools for the Commission to

²“An Overview of Kentucky's Energy Consumption and Energy Efficiency Potential,” prepared for Governor's Office of Energy Policy, August 2007.

1 utilize in encouraging cost-effective DSM. In light of these existing policy
2 options, a statutory change in response to Issue 1 appears unnecessary.

3 **Q. Is the existing statutory and regulatory framework supportive of DSM in**
4 **Kentucky?**

5 A. Yes. As I indicated, KRS 278.285 provides the Commission a range of
6 instruments to encourage cost-effective DSM. These include: (1) allowing full
7 cost recovery of Commission-approved DSM programs; (2) allowing recovery of
8 utility lost revenues attributable to DSM; and (3) awarding incentives designed to
9 provide financial rewards to utilities for implementing cost-effective DSM
10 programs. Further, the statute also directs the Commission to consider whether a
11 utility's proposed DSM programs are consistent with its most recent long-range
12 integrated resource plan ("IRP").

13 **Q. What level of DSM activity has resulted from the existing statutory and**
14 **regulatory framework in Kentucky?**

15 A. I have reviewed the data responses in this proceeding provided by Duke
16 Energy Kentucky, East Kentucky Power Cooperative ("EKPC"), Kentucky Power
17 Company, and Kentucky Utilities / Louisville Gas & Electric ("KU/LG&E"). In
18 their responses to Data Request 4, the utilities report a wide range of DSM
19 programs, resulting in the following projected annual demand savings for 2008:

20	Duke Energy Kentucky	18 MW
21	EKPC	76 MW (winter peak)
22	Kentucky Power	6 MW (2010)
23	KU / LG&E	135 MW
24		

1 Collectively, DSM programs are allowing utilities in Kentucky to avoid
2 approximately 235 MW in generation capacity, roughly equivalent to a small
3 generating station.

4 **Q. Do you have any additional observations concerning the objectives expressed**
5 **in Issue 1?**

6 A. Yes. If the major “impediment” to DSM turns out to be a perceived
7 reluctance on the part of utilities to pursue additional cost-effective DSM without
8 extraordinary rewards, then I would caution against establishing a policy
9 objective that seeks to remove all perceived impediments without regard to
10 utility/customer equity considerations.

11 **Q. Please explain this point further.**

12 A. In my experience in various states, I am observing a recent trend in which
13 utilities assert that traditional regulation provides a disincentive for them to
14 pursue DSM, and in order to overcome this disincentive, the utilities propose
15 mechanisms that would provide very substantial rewards to themselves for
16 undertaking aggressive DSM programs. Let me frame the outside boundary of this
17 trend with an extreme example: one might make the case that the surest way to
18 eliminate all impediments to cost-effective DSM would be to allow utilities to
19 capture 100 percent of the cost-savings (minus say, \$1) through various incentive
20 mechanisms and rewards. While such an approach might fit within the scope of
21 the objective stated in Issue 1, I would not recommend it as in the public interest.
22 This suggests then, that removing impediments to DSM will require the
23 Commission’s judgment as to reasonableness.

1 **Q. Is the example you just described purely hypothetical, or is it representative**
2 **of a real phenomenon?**

3 A. The example I provided is hypothetical and is intended by design to be an
4 extreme case to illustrate a point. However, the phenomenon of utilities proposing
5 aggressive rewards for themselves to conduct DSM is real. For example, I was
6 recently a witness in a proceeding in Minnesota involving a utility that currently
7 receives DSM cost recovery and incentive payments. The utility took the position
8 that reaching more aggressive DSM targets would deprive it of the opportunity to
9 build new power plants and thereby earn a return on the associated investment.
10 Consequently, the utility proposed it be awarded earnings equivalent to what it
11 could have earned had it built a baseload power plant in lieu of performing
12 incremental DSM. The proposal amounted to a request for customers to pay a
13 return on “phantom” investment. While such proposals may “remove
14 impediments” to DSM, they also raise serious equity concerns for customers,
15 underscoring the importance of the Commission’s judgment as to reasonableness
16 in removing impediments to DSM.

17 **Q. Do you have any comments concerning the second component in Issue 1?**

18 Yes. As I indicated above, it is not clear whether this component is
19 intended to convey a restriction on the Commission, or to permit a directive by
20 the Commission to utilities under its jurisdiction. In either case, KIUC does not
21 support the formal codification of such a restriction.

22 In the former case, an interpretation that would restrict the Commission’s
23 ability to consider any proposal for increasing generating capacity until

1 impediments to DSM are removed would be an undue restriction on the
2 Commission’s discretion in acting in the public interest. Sound integrated
3 resource planning requires that a portfolio of options be considered in meeting
4 future demand, and cost-effective DSM is an essential component of such a
5 portfolio. But restricting the Commission’s ability to consider proposals for
6 increased generation until “impediments” to DSM are removed would needlessly
7 handcuff the Commission. It would also run counter to the well-established
8 practice of identifying a portfolio of resource options in developing an IRP.
9 Further, it is an invitation for parties to obstruct through lawsuit the construction
10 of potentially needed generation facilities, and may have the undesirable side
11 effect of encouraging proposals from utilities to structure DSM programs that
12 would allow them to capture an unduly large portion of the cost savings from
13 DSM (at the expense of ratepayers) through extraordinary awards and
14 incentives.

15 If, in the alternative, the restriction in the second component of Issue 1 is
16 intended to be applicable by the Commission, at its discretion, then it would not
17 have the undesirable effect of limiting the Commission’s ability to act; at the
18 same time, a Commission-adopted policy that required “elimination of
19 impediments” to DSM prior to considering construction of new generation would
20 be unduly restrictive in the consideration of resource portfolios and would suffer
21 from much the same drawbacks identified in the preceding paragraph.

22 **Q. KRS 278.285 provides that individual industrial customers with energy-**
23 **intensive processes shall be allowed to implement cost-effective energy**

1 **efficiency measures in lieu of measures approved as part of a utility’s DSM**
2 **programs and shall not be assigned the cost of utility DSM programs. Does**
3 **KIUC support the continuation of this “opt-out” provision?**

4 A. Yes. Energy-intensive industrial customers have a strong financial interest
5 in reducing their energy expenses, and individual industrial customers are in a
6 better position to evaluate the energy savings potential from their specific
7 industrial processes than is likely from a utility-wide program. Moreover,
8 industrial customers should not be asked to subsidize investments for competitors
9 or firms in other industries. For example, an industrial customer that has taken the
10 initiative to reduce its costs by implementing energy saving measures at its
11 manufacturing facilities should not have to pay for a DSM program aimed to save
12 energy and reduce costs at another, possibly competing, industrial customer’s
13 facilities that has not endeavored to act on its own.

14
15 **Issue 2: Encouraging diversification of utility energy portfolios through the use of**
16 **renewable and distributed generation**

17
18 **Q. What is your assessment of the objective expressed in Issue 2?**

19 A. KIUC supports the encouragement of distributed generation through
20 reasonably-priced and well structured partial requirements service tariffs. The
21 Commission requires no additional statutory authority to accomplish this
22 objective.

1 KIUC also supports the diversification of utility energy portfolios through
2 the use of renewable generation if it is cost-effective to do so. “Cost-effective”
3 should be determined by evaluating whether the selected resource portfolio will
4 result in the acquisition, production, and delivery of electricity at the lowest
5 reasonable cost to retail customers, taking account of long-term and short-term
6 impacts, risk, and reliability. An analysis of cost-effective renewable generation
7 should be included in utility IRPs.

8 KIUC does not support arbitrary renewable energy targets that are
9 mandated without respect to cost considerations.

10

11 **Issue 3: Incorporating full-cost accounting that considers and requires comparison**
12 **of life-cycle energy, economic, public health, and environmental costs of various**
13 **strategies for meeting future energy demand**

14

15 **Q. What is your interpretation of the objective expressed in Issue 3?**

16 A. Issue 3 appears to be directed at the integrated resource planning process,
17 and appears to require the quantification of various externalities to be used along
18 with traditional economic analysis in the development of utility IRPs.

19 **Q. What is your assessment of the objective expressed in Issue 2?**

20 A. While economic theory recognizes the importance of externalities, it can
21 be very difficult to quantify them. Externalities such as environmental impacts are
22 best addressed in the context of national policy. For planning purposes, the cost of
23 compliance with various national environmental policy scenarios can be estimated

1 and is appropriately incorporated as an economic variable in the IRP process.

2 Such an analysis of environmental contingencies is part of a prudent planning
3 process. It should not require additional statutes for this to occur.

4

5 **Issue 4: Modifying rate structures and cost recovery to better align the financial**
6 **interests of the utility with the goals of achieving energy efficiency and lowest life-**
7 **cycle energy costs to all classes of ratepayers**

8

9 **Q. What is your assessment of the objective expressed in Issue 4?**

10 A. KIUC believes that this objective should be first addressed by using tools
11 that are at the Commission's disposal in a general rate proceeding: sending proper
12 price signals through elimination of inter-class cost subsidies and encouraging
13 rate designs that reflect time-of-use ("TOU") energy cost differentials.

14 **Q. How does eliminating inter-class subsidies send proper price signals?**

15 A. If a customer class is being subsidized by other classes, its rates are set
16 artificially low, which encourages wasteful consumption due to a distorted price
17 signal. Removing inter-class subsidies is a fundamental step in sending proper
18 price signals encouraging energy efficiency through proper rate design.

19 **Q. How does the adoption of well-structured TOU rates improve energy**
20 **efficiency?**

21 A. Energy costs vary across the hours of the day, with the most expensive
22 hours typically occurring from the late morning to early evening in summer, and
23 during the morning and evening in winter. Designing the energy price to end-use

1 customers to reflect these variations in energy costs sends the proper signal to
2 customers regarding the relative cost to operate the system during peak and off-
3 peak hours. Customers are then able to use this pricing information to alter their
4 discretionary patterns of usage, increasing efficiency and lowering the overall cost
5 of energy to the system.

6 TOU rates are available in each of the major retail service territories in
7 Kentucky, but participation is generally concentrated among larger customers.
8 KIUC recognizes that metering costs present a barrier to universal application of
9 TOU rates, but nevertheless believes that it would be beneficial if TOU rates were
10 more widely available.

11 **Q. Are there specific approaches to implementing the objective stated in Issue 4**
12 **that KIUC does not support?**

13 A. Yes. The objective expressed in Issue 4 may give rise to proposals in
14 support of revenue decoupling, which KIUC opposes. Revenue decoupling is a
15 rate design approach that allows a utility's revenues for fixed-cost recovery to be
16 insulated from reductions in per-customer usage. It is most commonly proposed
17 for gas utilities, but is also sometimes proposed for electric utilities. By separating
18 – or “decoupling” – revenues for fixed-cost recovery from usage per customer, a
19 utility's fixed-cost recovery can be “held harmless” from changes in customer
20 usage patterns. In the broadest application of decoupling, if per-customer usage
21 were to decline for any reason – such as customer price-responsiveness, energy
22 conservation, weather, general economic conditions, or change in customer

1 composition, to cite a few examples – the utility’s target monthly fixed-cost
2 recovery per customer would be restored via a compensating rate increase.

3 The primary rationale advanced for the adoption of a revenue decoupling
4 program is that it would remove the economic disincentive that utilities are
5 purported to have with respect to supporting energy conservation programs. This
6 disincentive is alleged to occur because traditional rate designs may not allow
7 utilities to collect all of their fixed costs when there is a decline in per-customer
8 usage, although some jurisdictions such as Kentucky permit mitigation of this
9 impact by allowing utilities to recover lost revenues from utility-sponsored DSM
10 programs. Because decoupling mechanisms would raise rates in response to per-
11 customer usage reductions, it is advanced by its proponents as having
12 conservation-enabling properties, by virtue of the removal of utility disincentives
13 to support conservation programs.

14 **Q. What is your assessment of revenue decoupling?**

15 A. I recommend against adoption of revenue decoupling mechanisms.
16 Revenue decoupling is as much a “revenue assurance” mechanism as it is a
17 “conservation enabling” mechanism. Such proposals generally result in an
18 unwarranted transfer of risk from utilities to its customers. Under traditional
19 ratemaking practice, the risk associated with declining usage per customer is
20 generally borne by the utility, although as I stated above, this risk is mitigated
21 somewhat in Kentucky by allowing utilities to recover lost revenues from utility-
22 sponsored DSM programs. Under typical decoupling proposals, this risk is fully
23 shifted to customers. For example, if customers respond to high energy prices by

1 lowering their thermostats in winter, their rates are increased to compensate the
2 utility for any resultant reduction in per-customer usage. The transfer of this risk
3 is a clear benefit to the utility.

4 It is also necessary to consider the regulatory treatment of off-system sales
5 and purchases in the context of this argument. When a utility experiences a
6 reduction in retail sales due to DSM that results in surplus generating capacity, a
7 likely outcome is an increase in off-system sales, increasing the margins earned
8 from these sales. This could result in an increase in utility profits attributable to
9 retail customer conservation, not a decrease; in other words, it could produce
10 “increased revenue” not “lost revenue”. Because profits from off-system sales are
11 generally retained by Kentucky’s electric utilities in between base rate cases, there
12 is already a built-in incentive for utilities to promote DSM. For a utility that does
13 not have surplus capacity, the likely result of DSM is a reduction in purchased
14 power. Since purchased power costs are generally recoverable in the FAC, DSM
15 in this circumstance would largely be revenue neutral to the utility.

16 Further, adoption of decoupling mechanisms typically entails a
17 fundamental and unwarranted change in ratemaking philosophy. Traditional
18 ratemaking establishes fixed base rates in a general rate proceeding and presumes
19 it is the responsibility of utility management to cope with normal business hazards
20 and the operation of economic forces. Decoupling proposals introduce a
21 fundamental change in ratemaking philosophy in which the non-fuel portion of
22 base rates becomes variable, and is adjusted on a regular basis to absolve utility

1 management of a portion of the risk associated with its normal business
2 operations. This burden is unreasonably shifted to customers.

3 For these reasons, KIUC opposes the adoption of revenue decoupling
4 mechanisms in Kentucky.

5

6 **Q. Does this conclude your direct testimony?**

7 A. Yes, it does.

**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

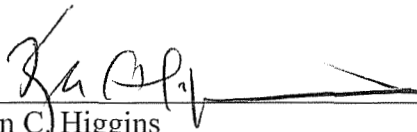
AN INVESTIGATION OF THE ENERGY AND)
 REGULATORY ISSUES IN SECTION 50 OF) ADMINISTRATIVE CASE
 KENTUCKY’S 2007 ENERGY ACT) NO. 2007-00477

AFFIDAVIT OF KEVIN C. HIGGINS

STATE OF UTAH)
)
 COUNTY OF SALT LAKE)

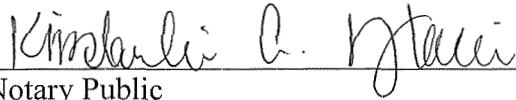
Kevin C. Higgins, being first duly sworn, deposes and states that:

1. He is a Principal with Energy Strategies, L.L.C., in Salt Lake City, Utah;
2. He is the witness who sponsors the accompanying testimony entitled “Direct Testimony of Kevin C. Higgins;”
3. Said testimony was prepared by him and under his direction and supervision;
4. If inquiries were made as to the facts and schedules in said testimony he would respond as therein set forth; and
5. The aforesaid testimony and schedules are true and correct to the best of his knowledge, information and belief.



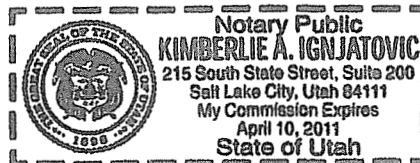
 Kevin C. Higgins

Subscribed and sworn to or affirmed before me this 27th day of February, 2008, by Kevin C. Higgins.



 Notary Public

My Commission Expires: April 10, 2011



KEVIN C. HIGGINS
Principal, Energy Strategies, L.L.C.
215 South State St., Suite 200, Salt Lake City, UT 84111

Vitae

PROFESSIONAL EXPERIENCE

Principal, Energy Strategies, L.L.C., Salt Lake City, Utah, January 2000 to present. Responsible for energy-related economic and policy analysis, regulatory intervention, and strategic negotiation on behalf of industrial, commercial, and public sector interests. Previously Senior Associate, February 1995 to December 1999.

Adjunct Instructor in Economics, Westminster College, Salt Lake City, Utah, September 1981 to May 1982; September 1987 to May 1995. Taught in the economics and M.B.A. programs. Awarded Adjunct Professor of the Year, Gore School of Business, 1990-91.

Chief of Staff to the Chairman, Salt Lake County Board of Commissioners, Salt Lake City, Utah, January 1991 to January 1995. Senior executive responsibility for all matters of county government, including formulation and execution of public policy, delivery of approximately 140 government services, budget adoption and fiscal management (over \$300 million), strategic planning, coordination with elected officials, and communication with consultants and media.

Assistant Director, Utah Energy Office, Utah Department of Natural Resources, Salt Lake City, Utah, August 1985 to January 1991. Directed the agency's resource development section, which provided energy policy analysis to the Governor, implemented state energy development policy, coordinated state energy data collection and dissemination, and managed energy technology demonstration programs. Position responsibilities included policy formulation and implementation, design and administration of energy technology demonstration programs, strategic management of the agency's interventions before the Utah Public Service Commission, budget preparation, and staff development. Supervised a staff of economists, engineers, and policy analysts, and served as lead economist on selected projects.

Utility Economist, Utah Energy Office, January 1985 to August 1985. Provided policy and economic analysis pertaining to energy conservation and resource development, with an emphasis on utility issues. Testified before the state Public Service Commission as an expert witness in cases related to the above.

Acting Assistant Director, Utah Energy Office, June 1984 to January 1985. Same responsibilities as Assistant Director identified above.

Research Economist, Utah Energy Office, October 1983 to June 1984. Provided economic analysis pertaining to renewable energy resource development and utility issues. Experience includes preparation of testimony, development of strategy, and appearance as an expert witness for the Energy Office before the Utah PSC.

Operations Research Assistant, Corporate Modeling and Operations Research Department, Utah Power and Light Company, Salt Lake City, Utah, May 1983 to September 1983. Primary area of responsibility: designing and conducting energy load forecasts.

Instructor in Economics, University of Utah, Salt Lake City, Utah, January 1982 to April 1983. Taught intermediate microeconomics, principles of macroeconomics, and economics as a social science.

Teacher, Vernon-Verona-Sherrill School District, Verona, New York, September 1976 to June 1978.

EDUCATION

Ph.D. Candidate, Economics, University of Utah (coursework and field exams completed, 1981).

Fields of Specialization: Public Finance, Urban and Regional Economics, Economic Development, International Economics, History of Economic Doctrines.

Bachelor of Science, Education, State University of New York at Plattsburgh, 1976 (cum laude).

Danish International Studies Program, University of Copenhagen, 1975.

SCHOLARSHIPS AND FELLOWSHIPS

University Research Fellow, University of Utah, Salt Lake City, Utah 1982 to 1983.

Research Fellow, Institute of Human Resources Management, University of Utah, 1980 to 1982.

Teaching Fellow, Economics Department, University of Utah, 1978 to 1980.

New York State Regents Scholar, 1972 to 1976.

EXPERT TESTIMONY

“Commonwealth Edison Company Proposed General Increase in Electric Rates,” **Illinois** Commerce Commission, Docket No. 07-0566. Direct testimony submitted February 11, 2008.

“In the Matter of the Application of Questar Gas Company to File a General Rate Case,” **Utah** Public Service Commission, Docket No. 07-057-13, Direct testimony submitted January 28, 2008 (test period). Cross examined February 8, 2008 (test period).

“In the Matter of the Application of Rocky Mountain Power for Authority to Increase its Retail Electric Utility Service Rates in Utah and for Approval of its Proposed Electric Service Schedules and Electric Service Regulations, Consisting of a General Rate Increase of Approximately \$161.2 Million Per Year, and for Approval of a New Large Load Surcharge,” **Utah** Public Service Commission, Docket No. 07-035-93. Direct testimony submitted January 25, 2008 (test period). Cross examined February 7, 2008 (test period).

“In the Matter of the Application of Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company for Authority to Increase Rates for Distribution Service, Modify Certain Accounting Practices and for Tariff Approvals,” Public Utilities Commission of **Ohio**, Case Nos. 07-551-EL-AIR, 07-552-EL-ATA, 07-553-EL-AAM, and 07-554-EL-UNC. Direct testimony submitted January 10, 2008.

“In the Matter of the Application of Rocky Mountain Power for Authority to Increase Its Retail Electric Utility Service Rates in Wyoming, Consisting of a General Rate Increase of Approximately \$36.1 Million per Year, and for Approval of a New Renewable Resource Mechanism and Marginal Cost Pricing Tariff,” **Wyoming** Public Service Commission, Docket No. 20000-277-ER-07. Direct testimony submitted January 7, 2008.

“In the Matter of the Application of Idaho Power Company for Authority to Increase Its Rates and Charges for Electric Service to Electric Customers in the State of Idaho,” **Idaho** Public Utilities Commission, Case No. IPC-E-07-8. Direct testimony submitted December 10, 2007. Cross examined January 23, 2008.

“In The Matter of the Application of Consumers Energy Company for Authority to Increase Its Rates for the Generation and Distribution Of Electricity and Other Relief,” **Michigan** Public Service Commission, Case No. U-15245. Direct testimony submitted November 6, 2007. Rebuttal testimony submitted November 20, 2007.

“In the Matter of Montana-Dakota Utilities Co., Application for Authority to Establish Increased Rates for Electric Service,” **Montana** Public Service Commission, Docket No. D2007.7.79. Direct testimony submitted October 24, 2007.

“In the Matter of the Application of Public Service Company of New Mexico for Revision of its Retail Electric Rates Pursuant to Advice Notice No. 334,” **New Mexico** Public Regulation Commission, Case No. 07-0077-UT. Direct testimony submitted October 22, 2007. Rebuttal testimony submitted November 19, 2007. Cross examined December 12, 2007.

“In The Matter of Georgia Power Company’s 2007 Rate Case,” **Georgia** Public Service Commission, Docket No. 25060-U. Direct testimony submitted October 22, 2007. Cross examined November 7, 2007.

“In the Matter of the Application of Rocky Mountain Power for an Accounting Order to Defer the Costs Related to the MidAmerican Energy Holdings Company Transaction,” **Utah** Public Service Commission, Docket No. 07-035-04; “In the Matter of the Application of Rocky Mountain Power, a Division of PacifiCorp, for a Deferred Accounting Order To Defer the Costs of Loans Made to Grid West, the Regional Transmission Organization,” Docket No. 06-035-163; “In the Matter of the Application of Rocky Mountain Power for an Accounting Order for Costs related to the Flooding of the Powerdale Hydro Facility,” Docket No. 07-035-14. Direct testimony submitted September 10, 2007. Surrebuttal testimony submitted October 22, 2007. Cross examined October 30, 2007.

“In the Matter of General Adjustment of Electric Rates of East Kentucky Power Cooperative, Inc.,” **Kentucky** Public Service Commission, Case No. 2006-00472. Direct testimony submitted July 5, 2007.

“In the Matter of the Application of Sempra Energy Solutions for a Certificate of Convenience and Necessity for Competitive Retail Electric Service,” **Arizona** Corporation Commission, Docket No. E-03964A-06-0168. Direct testimony submitted July 3, 2007. Rebuttal testimony submitted January 17, 2008.

“Application of Public Service Company of Oklahoma for a Determination that Additional Electric Generating Capacity Will Be Used and Useful,” **Oklahoma** Corporation Commission, Cause No. PUD 200500516; “Application of Public Service Company of Oklahoma for a Determination that Additional Baseload Electric Generating Capacity Will Be Used and Useful,” Cause No. PUD 200600030; “In the Matter of the Application of Oklahoma Gas and Electric Company for an Order Granting Pre-Approval to Construct Red Rock Generating Facility and Authorizing a Recovery Rider,” Cause No. PUD200700012. Responsive testimony submitted May 21, 2007. Cross examined July 26, 2007.

“Application of Nevada Power Company for Authority to Increase Its Annual Revenue Requirement for General Rates Charged to All Classes of Electric Customers and for Relief Properly Related Thereto,” Public Utilities Commission of **Nevada**, Docket No. 06-11022. Direct testimony submitted March 14, 2007 (Phase III – revenue requirements) and March 19,

2007 (Phase IV – rate design). Cross examined April 10, 2007 (Phase III – revenue requirements) and April 16, 2007 (Phase IV – rate design).

“In the Matter of the Application of Entergy Arkansas, Inc. for Approval of Changes in Rates for Retail Electric Service,” **Arkansas** Public Service Commission, Docket No. 06-101-U. Direct testimony submitted February 5, 2007. Surrebuttal testimony submitted March 26, 2007.

“Monongahela Power Company and The Potomac Edison Company, both d/b/a Allegheny Power – Rule 42T Application to Increase Electric Rates and Charges,” Public Service Commission of **West Virginia**, Case No. 06-0960-E-42T; “Monongahela Power Company and The Potomac Edison Company, both d/b/a Allegheny Power – Information Required for Change of Depreciation Rates Pursuant to Rule 20,” Case No. 06-1426-E-D. Direct and rebuttal testimony submitted January 22, 2007.

“In the Matter of the Tariffs of Aquila, Inc., d/b/a Aquila Networks-MPS and Aquila Networks-L&P Increasing Electric Rates for the Services Provided to Customers in the Aquila Networks-MPS and Aquila Networks-L&P Missouri Service Areas,” **Missouri** Public Service Commission, Case No. ER-2007-0004. Direct testimony submitted January 18, 2007 (revenue requirements) and January 25, 2007 (revenue apportionment). Supplemental direct testimony submitted February 27, 2007.

“In the Matter of the Filing by Tucson Electric Power Company to Amend Decision No. 62103, **Arizona** Corporation Commission, Docket No. E-01933A-05-0650. Direct testimony submitted January 8, 2007. Surrebuttal testimony filed February 8, 2007. Cross examined March 8, 2007.

“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,” **Missouri** Public Service Commission, Case No. ER-2007-0002. Direct testimony submitted December 15, 2006 (revenue requirements) and December 29, 2006 (fuel adjustment clause/cost-of-service/rate design). Rebuttal testimony submitted February 5, 2007 (cost-of-service). Surrebuttal testimony submitted February 27, 2007. Cross examined March 21, 2007.

“In the Matter of Application of The Union Light, Heat and Power Company d/b/a Duke Energy Kentucky, Inc. for an Adjustment of Electric Rates,” **Kentucky** Public Service Commission, Case No. 2006-00172. Direct testimony submitted September 13, 2006.

“In the Matter of Appalachian Power Company’s Application for Increase in Electric Rates,” **Virginia** State Corporation Commission, Case No. PUE-2006-00065. Direct testimony submitted September 1, 2006. Cross examined December 7, 2006.

“In the Matter of the Application of Arizona Public Service Company for a Hearing to Determine the Fair Value of the Utility Property for Ratemaking Purposes, to Fix a Just and Reasonable

Rate of Return Thereon, To Approve Rate Schedules Designed to Develop Such Return, and to Amend Decision No. 67744, **Arizona** Corporation Commission,” Docket No. E-01345A-05-0816. Direct testimony submitted August 18, 2006 (revenue requirements) and September 1, 2006 (cost-of-service/rate design). Surrebuttal testimony submitted September 27, 2006. Cross examined November 7, 2006.

“Re: The Tariff Sheets Filed by Public Service Company of Colorado with Advice Letter No 1454 – Electric,” **Colorado** Public Utilities Commission, Docket No. 06S-234EG. Answer testimony submitted August 18, 2006.

“Portland General Electric General Rate Case Filing,” Public Utility Commission of **Oregon**, Docket No. UE-180. Direct testimony submitted August 9, 2006. Joint testimony regarding stipulation submitted August 22, 2006.

“2006 Puget Sound Energy General Rate Case,” **Washington** Utilities and Transportation Commission, Docket Nos. UE-060266 and UG-060267. Response testimony submitted July 19, 2006. Joint testimony regarding stipulation submitted August 23, 2006.

“In the Matter of PacifiCorp, dba Pacific Power & Light Company, Request for a General Rate Increase in the Company’s Oregon Annual Revenues,” Public Utility Commission of **Oregon**, Docket No. UE-179. Direct testimony submitted July 12, 2006. Joint testimony regarding stipulation submitted August 21, 2006.

“Petition of Metropolitan Edison Company for Approval of a Rate Transition Plan,” **Pennsylvania** Public Utilities Commission, Docket Nos. P-00062213 and R-00061366; “Petition of Pennsylvania Electric Company for Approval of a Rate Transition Plan,” Docket Nos. P-0062214 and R-00061367; Merger Savings Remand Proceeding, Docket Nos. A-110300F0095 and A-110400F0040. Direct testimony submitted July 10, 2006. Rebuttal testimony submitted August 8, 2006. Surrebuttal testimony submitted August 18, 2006. Cross examined August 30, 2006.

“In the Matter of the Application of PacifiCorp for approval of its Proposed Electric Rate Schedules & Electric Service Regulations,” **Utah** Public Service Commission, Docket No. 06-035-21. Direct testimony submitted June 9, 2006 (Test Period). Surrebuttal testimony submitted July 14, 2006.

“Joint Application of Questar Gas Company, the Division of Public Utilities, and Utah Clean Energy for the Approval of the Conservation Enabling Tariff Adjustment Option and Accounting Orders,” **Utah** Public Service Commission, Docket No. 05-057-T01. Direct testimony submitted May 15, 2006. Rebuttal testimony submitted August 8, 2007. Cross examined September 19, 2007.

“Central Illinois Light Company d/b/a AmerenCILCO, Central Illinois Power Company d/b/a AmerenCIPS, Illinois Power Company d/b/a AmerenIP, Proposed General Increase in Rates for Delivery Service (Tariffs Filed December 27, 2005),” **Illinois** Commerce Commission, Docket Nos. 06-0070, 06-0071, 06-0072. Direct testimony submitted March 26, 2006. Rebuttal testimony submitted June 27, 2006.

“In the Matter of Appalachian Power Company and Wheeling Power Company, both dba American Electric Power,” Public Service Commission of **West Virginia**, Case No. 05-1278-E-PC-PW-42T. Direct and rebuttal testimony submitted March 8, 2006.

“In the Matter of Northern States Power Company d/b/a Xcel Energy for Authority to Increase Rates for Electric Service in Minnesota,” **Minnesota** Public Utilities Commission, Docket No. G-002/GR-05-1428. Direct testimony submitted March 2, 2006. Rebuttal testimony submitted March 30, 2006. Cross examined April 25, 2006.

“In the Matter of the Application of Arizona Public Service Company for an Emergency Interim Rate Increase and for an Interim Amendment to Decision No. 67744,” **Arizona** Corporation Commission, Docket No. E-01345A-06-0009. Direct testimony submitted February 28, 2006. Cross examined March 23, 2006.

“In the Matter of the Applications of Westar Energy, Inc. and Kansas Gas and Electric Company for Approval to Make Certain Changes in Their Charges for Electric Service,” State Corporation Commission of **Kansas**, Case No. 05-WSEE-981-RTS. Direct testimony submitted September 9, 2005. Cross examined October 28, 2005.

“In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company for Authority to Recover Costs Associated with the Construction and Ultimate Operation of an Integrated Combined Cycle Electric Generating Facility,” Public Utilities Commission of **Ohio**,” Case No. 05-376-EL-UNC. Direct testimony submitted July 15, 2005. Cross examined August 12, 2005.

“In the Matter of the Filing of General Rate Case Information by Tucson Electric Power Company Pursuant to Decision No. 62103,” **Arizona** Corporation Commission, Docket No. E-01933A-04-0408. Direct testimony submitted June 24, 2005.

“In the Matter of Application of The Detroit Edison Company to Unbundle and Realign Its Rate Schedules for Jurisdictional Retail Sales of Electricity,” **Michigan** Public Service Commission, Case No. U-14399. Direct testimony submitted June 9, 2005. Rebuttal testimony submitted July 1, 2005.

“In the Matter of the Application of Consumers Energy Company for Authority to Increase Its Rates for the Generation and Distribution of Electricity and Other Relief,” **Michigan** Public Service Commission, Case No. U-14347. Direct testimony submitted June 3, 2005. Rebuttal testimony submitted June 17, 2005.

“In the Matter of Pacific Power & Light, Request for a General Rate Increase in the Company’s Oregon Annual Revenues,” Public Utility Commission of **Oregon**, Docket No. UE 170. Direct testimony submitted May 9, 2005. Surrebuttal testimony submitted June 27, 2005. Joint testimony regarding partial stipulations submitted June 2005, July 2005, and August 2005.

“In the Matter of the Application of Trico Electric Cooperative, Inc. for a Rate Increase,” **Arizona** Corporation Commission, Docket No. E-01461A-04-0607. Direct testimony submitted April 13, 2005. Surrebuttal testimony submitted May 16, 2005. Cross examined May 26, 2005.

“In the Matter of the Application of PacifiCorp for Approval of its Proposed Electric Service Schedules and Electric Service Regulations,” **Utah** Public Service Commission, Docket No. 04-035-42. Direct testimony submitted January 7, 2005.

“In the Matter of the Application by Golden Valley Electric Association, Inc., for Authority to Implement Simplified Rate Filing Procedures and Adjust Rates,” Regulatory Commission of **Alaska**, Docket No. U-4-33. Direct testimony submitted November 5, 2004. Cross examined February 8, 2005.

“Advice Letter No. 1411 - Public Service Company of Colorado Electric Phase II General Rate Case,” **Colorado** Public Utilities Commission, Docket No. 04S-164E. Direct testimony submitted October 12, 2004. Cross-answer testimony submitted December 13, 2004. Testimony withdrawn January 18, 2005, following Applicant’s withdrawal of testimony pertaining to TOU rates.

“In the Matter of Georgia Power Company’s 2004 Rate Case,” **Georgia** Public Service Commission, Docket No. 18300-U. Direct testimony submitted October 8, 2004. Cross examined October 27, 2004.

“2004 Puget Sound Energy General Rate Case,” **Washington** Utilities and Transportation Commission, Docket Nos. UE-040641 and UG-040640. Response testimony submitted September 23, 2004. Cross-answer testimony submitted November 3, 2004. Joint testimony regarding stipulation submitted December 6, 2004.

“In the Matter of the Application of PacifiCorp for an Investigation of Interjurisdictional Issues,” **Utah** Public Service Commission, Docket No. 02-035-04. Direct testimony submitted July 15, 2004. Cross examined July 19, 2004.

“In the Matter of an Adjustment of the Gas and Electric Rates, Terms and Conditions of Kentucky Utilities Company,” **Kentucky** Public Service Commission, Case No. 2003-00434. Direct testimony submitted March 23, 2004. Testimony withdrawn pursuant to stipulation entered May 2004.

“In the Matter of an Adjustment of the Gas and Electric Rates, Terms and Conditions of Louisville Gas and Electric Company,” **Kentucky** Public Service Commission, Case No. 2003-00433. Direct testimony submitted March 23, 2004. Testimony withdrawn pursuant to stipulation entered May 2004.

“In the Matter of the Application of Idaho Power Company for Authority to Increase Its Interim and Base Rates and Charges for Electric Service,” **Idaho** Public Utilities Commission, Case No. IPC-E-03-13. Direct testimony submitted February 20, 2004. Rebuttal testimony submitted March 19, 2004. Cross examined April 1, 2004.

“In the Matter of the Applications of the Ohio Edison Company, the Cleveland Electric Illuminating Company and the Toledo Edison Company for Authority to Continue and Modify Certain Regulatory Accounting Practices and Procedures, for Tariff Approvals and to Establish Rates and Other Charges, Including Regulatory Transition Charges Following the Market Development Period,” Public Utilities Commission of **Ohio**, Case No. 03-2144-EL-ATA. Direct testimony submitted February 6, 2004. Cross examined February 18, 2004.

“In the Matter of the Application of Arizona Public Service Company for a Hearing to Determine the Fair Value of the Utility Property of the Company for Ratemaking Purposes, To Fix a Just and Reasonable Rate of Return Thereon, To Approve Rate Schedules Designed to Develop Such Return, and For Approval of Purchased Power Contract,” **Arizona** Corporation Commission, Docket No. E-01345A-03-0437. Direct testimony submitted February 3, 2004. Rebuttal testimony submitted March 30, 2004. Direct testimony regarding stipulation submitted September 27, 2004. Responsive / Clarifying testimony regarding stipulation submitted October 25, 2004. Cross examined November 8-10, 2004 and November 29-December 3, 2004.

“In the Matter of Application of the Detroit Edison Company to Increase Rates, Amend Its Rate Schedules Governing the Distribution and Supply of Electric Energy, etc.,” **Michigan** Public Service Commission, Case No. U-13808. Direct testimony submitted December 12, 2003 (interim request) and March 5, 2004 (general rate case).

“In the Matter of PacifiCorp’s Filing of Revised Tariff Schedules,” Public Utility Commission of **Oregon**, Docket No. UE-147. Joint testimony regarding stipulation submitted August 21, 2003.

“Petition of PSI Energy, Inc. for Authority to Increase Its Rates and Charges for Electric Service, etc.,” **Indiana** Utility Regulatory Commission, Cause No. 42359. Direct testimony submitted August 19, 2003. Cross examined November 5, 2003.

“In the Matter of the Application of Consumers Energy Company for a Financing Order Approving the Securitization of Certain of its Qualified Cost,” **Michigan** Public Service Commission, Case No. U-13715. Direct testimony submitted April 8, 2003. Cross examined April 23, 2003.

“In the Matter of the Application of Arizona Public Service Company for Approval of Adjustment Mechanisms,” **Arizona** Corporation Commission, Docket No. E-01345A-02-0403. Direct testimony submitted February 13, 2003. Surrebuttal testimony submitted March 20, 2003. Cross examined April 8, 2003.

“Re: The Investigation and Suspension of Tariff Sheets Filed by Public Service Company of Colorado, Advice Letter No. 1373 – Electric, Advice Letter No. 593 – Gas, Advice Letter No. 80 – Steam,” **Colorado** Public Utilities Commission, Docket No. 02S-315 EG. Direct testimony submitted November 22, 2002. Cross-answer testimony submitted January 24, 2003.

“In the Matter of the Application of The Detroit Edison Company to Implement the Commission’s Stranded Cost Recovery Procedure and for Approval of Net Stranded Cost Recovery Charges,” **Michigan** Public Service Commission, Case No. U-13350. Direct testimony submitted November 12, 2002.

“Application of South Carolina Electric & Gas Company: Adjustments in the Company’s Electric Rate Schedules and Tariffs,” Public Service Commission of **South Carolina**, Docket No. 2002-223-E. Direct testimony submitted November 8, 2002. Surrebuttal testimony submitted November 18, 2002. Cross examined November 21, 2002.

“In the Matter of the Application of Questar Gas Company for a General Increase in Rates and Charges,” **Utah** Public Service Commission, Docket No. 02-057-02. Direct testimony submitted August 30, 2002. Rebuttal testimony submitted October 4, 2002.

“The Kroger Co. v. Dynegy Power Marketing, Inc.,” **Federal Energy Regulatory Commission**, EL02-119-000. Confidential affidavit filed August 13, 2002.

“In the matter of the application of Consumers Energy Company for determination of net stranded costs and for approval of net stranded cost recovery charges,” **Michigan** Public Service Commission, Case No. U-13380. Direct testimony submitted August 9, 2002. Rebuttal testimony submitted August 30, 2002. Cross examined September 10, 2002.

“In the Matter of the Application of Public Service Company of Colorado for an Order to Revise Its Incentive Cost Adjustment,” **Colorado** Public Utilities Commission, Docket 02A-158E. Direct testimony submitted April 18, 2002.

“In the Matter of the Generic Proceedings Concerning Electric Restructuring Issues,” **Arizona** Corporation Commission, Docket No. E-00000A-02-0051, “In the Matter of Arizona Public Service Company’s Request for Variance of Certain Requirements of A.A.C. R14-2-1606,” Docket No. E-01345A-01-0822, “In the Matter of the Generic Proceeding Concerning the Arizona Independent Scheduling Administrator,” Docket No. E-00000A-01-0630, “In the Matter of Tucson Electric Power Company’s Application for a Variance of Certain Electric Competition Rules Compliance Dates,” Docket No. E-01933A-02-0069, “In the Matter of the Application of Tucson Electric Power Company for Approval of its Stranded Cost Recovery,” Docket No. E-01933A-98-0471. Direct testimony submitted March 29, 2002 (APS variance request); May 29, 2002 (APS Track A proceeding/market power issues); and July 28, 2003 (Arizona ISA). Rebuttal testimony submitted August 29, 2003 (Arizona ISA). Cross examined June 21, 2002 (APS Track A proceeding/market power issues) and September 12, 2003 (Arizona ISA).

“In the Matter of Savannah Electric & Power Company’s 2001 Rate Case,” **Georgia** Public Service Commission, Docket No. 14618-U. Direct testimony submitted March 15, 2002. Cross examined March 28, 2002.

“Nevada Power Company’s 2001 Deferred Energy Case,” Public Utilities Commission of **Nevada**, PUCN 01-11029. Direct testimony submitted February 7, 2002. Cross examined February 21, 2002.

“2001 Puget Sound Energy Interim Rate Case,” **Washington** Utilities and Transportation Commission, Docket Nos. UE-011570 and UE-011571. Direct testimony submitted January 30, 2002. Cross examined February 20, 2002.

“In the Matter of Georgia Power Company’s 2001 Rate Case,” **Georgia** Public Service Commission, Docket No. 14000-U. Direct testimony submitted October 12, 2001. Cross examined October 24, 2001.

“In the Matter of the Application of PacifiCorp for Approval of Its Proposed Electric Rate Schedules and Electric Service Regulations,” **Utah** Public Service Commission, Docket No. 01-35-01. Direct testimony submitted June 15, 2001. Rebuttal testimony submitted August 31, 2001.

“In the Matter of Portland General Electric Company’s Proposal to Restructure and Reprice Its Services in Accordance with the Provisions of SB 1149,” Public Utility Commission of **Oregon**, Docket No. UE-115. Direct testimony submitted February 20, 2001. Rebuttal testimony submitted May 4, 2001. Joint testimony regarding stipulation submitted July 27, 2001.

“In the Matter of the Application of APS Energy Services, Inc. for Declaratory Order or Waiver of the Electric Competition Rules,” **Arizona** Corporation Commission, Docket No.E-01933A-00-0486. Direct testimony submitted July 24, 2000.

“In the Matter of the Application of Questar Gas Company for an Increase in Rates and Charges,” **Utah** Public Service Commission, Docket No. 99-057-20. Direct testimony submitted April 19, 2000. Rebuttal testimony submitted May 24, 2000. Surrebuttal testimony submitted May 31, 2000. Cross examined June 6 & 8, 2000.

“In the Matter of the Application of Columbus Southern Power Company for Approval of Electric Transition Plan and Application for Receipt of Transition Revenues,” Public Utility Commission of **Ohio**, Case No. 99-1729-EL-ETP; “In the Matter of the Application of Ohio Power Company for Approval of Electric Transition Plan and Application for Receipt of Transition Revenues,” Public Utility Commission of **Ohio**, Case No. 99-1730-EL-ETP. Direct testimony prepared, but not submitted pursuant to settlement agreement effected May 2, 2000.

“In the Matter of the Application of FirstEnergy Corp. on Behalf of Ohio Edison Company, The Cleveland Electric Illuminating Company, and the Toledo Edison Company for Approval of Their Transition Plans and for Authorization to Collect Transition Revenues,” Public Utility Commission of **Ohio**, Case No. 99-1212-EL-ETP. Direct testimony prepared, but not submitted pursuant to settlement agreement effected April 11, 2000.

“2000 Pricing Process,” **Salt River Project** Board of Directors, oral comments provided March 6, 2000 and April 10, 2000.

“Tucson Electric Power Company vs. Cyprus Sierrita Corporation,” **Arizona** Corporation Commission, Docket No. E-000001-99-0243. Direct testimony submitted October 25, 1999. Cross examined November 4, 1999.

“Application of Hildale City and Intermountain Municipal Gas Association for an Order Granting Access for Transportation of Interstate Natural Gas over the Pipelines of Questar Gas Company for Hildale, Utah,” **Utah** Public Service Commission, Docket No. 98-057-01. Rebuttal testimony submitted August 30, 1999.

“In the Matter of the Application by Arizona Electric Power Cooperative, Inc. for Approval of Its Filing as to Regulatory Assets and Transition Revenues,” **Arizona** Corporation Commission, Docket No. E-01773A-98-0470. Direct testimony submitted July 30, 1999. Cross examined February 28, 2000.

“In the Matter of the Application of Tucson Electric Power Company for Approval of its Plan for Stranded Cost Recovery,” **Arizona** Corporation Commission, Docket No. E-01933A-98-

0471; “In the Matter of the Filing of Tucson Electric Power Company of Unbundled Tariffs Pursuant to A.A.C. R14-2-1601 et seq.,” Docket No. E-01933A-97-0772; “In the Matter of the Competition in the Provision of Electric Service Throughout the State of Arizona,” Docket No. RE-00000C-94-0165. Direct testimony submitted June 30, 1999. Rebuttal testimony submitted August 6, 1999. Cross examined August 11-13, 1999.

“In the Matter of the Application of Arizona Public Service Company for Approval of its Plan for Stranded Cost Recovery,” **Arizona** Corporation Commission, Docket No. E-01345A-98-0473; “In the Matter of the Filing of Arizona Public Service Company of Unbundled Tariffs Pursuant to A.A.C. R14-2-1601 et seq.,” Docket No. E-01345A-97-0773; “In the Matter of the Competition in the Provision of Electric Service Throughout the State of Arizona,” Docket No. RE-00000C-94-0165. Direct testimony submitted June 4, 1999. Rebuttal testimony submitted July 12, 1999. Cross examined July 14, 1999.

“In the Matter of the Application of Tucson Electric Power Company for Approval of its Plan for Stranded Cost Recovery,” **Arizona** Corporation Commission, Docket No. E-01933A-98-0471; “In the Matter of the Filing of Tucson Electric Power Company of Unbundled Tariffs Pursuant to A.A.C. R14-2-1601 et seq.,” Docket No. E-01933A-97-0772; “In the Matter of the Application of Arizona Public Service Company for Approval of its Plan for Stranded Cost Recovery,” Docket No. E-01345A-98-0473; “In the Matter of the Filing of Arizona Public Service Company of Unbundled Tariffs Pursuant to A.A.C. R14-2-1601 et seq.,” Docket No. E-01345A-97-0773; “In the Matter of the Competition in the Provision of Electric Service Throughout the State of Arizona,” Docket No. RE-00000C-94-0165. Direct testimony submitted November 30, 1998.

“Hearings on Pricing,” **Salt River Project** Board of Directors, written and oral comments provided November 9, 1998.

“Hearings on Customer Choice,” **Salt River Project** Board of Directors, written and oral comments provided June 22, 1998; June 29, 1998; July 9, 1998; August 7, 1998; and August 14, 1998.

“In the Matter of the Competition in the Provision of Electric Service Throughout the State of Arizona,” **Arizona** Corporation Commission, Docket No. U-0000-94-165. Direct and rebuttal testimony filed January 21, 1998. Second rebuttal testimony filed February 4, 1998. Cross examined February 25, 1998.

“In the Matter of Consolidated Edison Company of New York, Inc.’s Plans for (1) Electric Rate/Restructuring Pursuant to Opinion No. 96-12; and (2) the Formation of a Holding Company Pursuant to PSL, Sections 70, 108, and 110, and Certain Related Transactions,” **New York** Public Service Commission, Case 96-E-0897. Direct testimony filed April 9, 1997. Cross examined May 5, 1997.

“In the Matter of the Petition of Sunnyside Cogeneration Associates for Enforcement of Contract Provisions,” **Utah** Public Service Commission, Docket No. 96-2018-01. Direct testimony submitted July 8, 1996.

“In the Matter of the Application of PacifiCorp, dba Pacific Power & Light Company, for Approval of Revised Tariff Schedules and an Alternative Form of Regulation Plan,” **Wyoming** Public Service Commission, Docket No. 2000-ER-95-99. Direct testimony submitted April 8, 1996.

“In the Matter of the Application of Mountain Fuel Supply Company for an Increase in Rates and Charges,” **Utah** Public Service Commission, Case No. 95-057-02. Direct testimony submitted June 19, 1995. Rebuttal testimony submitted July 25, 1995. Surrebuttal testimony submitted August 7, 1995.

“In the Matter of the Investigation of the Reasonableness of the Rates and Tariffs of Mountain Fuel Supply Company,” **Utah** Public Service Commission, Case No. 89-057-15. Direct testimony submitted July 1990. Surrebuttal testimony submitted August 1990.

“In the Matter of the Review of the Rates of Utah Power and Light Company pursuant to The Order in Case No. 87-035-27,” **Utah** Public Service Commission, Case No. 89-035-10. Rebuttal testimony submitted November 15, 1989. Cross examined December 1, 1989 (rate schedule changes for state facilities).

“In the Matter of the Application of Utah Power & Light Company and PC/UP&L Merging Corp. (to be renamed PacifiCorp) for an Order Authorizing the Merger of Utah Power & Light Company and PacifiCorp into PC/UP&L Merging Corp. and Authorizing the Issuance of Securities, Adoption of Tariffs, and Transfer of Certificates of Public Convenience and Necessity and Authorities in Connection Therewith,” **Utah** Public Service Commission, Case No. 87-035-27; Direct testimony submitted April 11, 1988. Cross examined May 12, 1988 (economic impact of UP&L merger with PacifiCorp).

“In the Matter of the Application of Mountain Fuel Supply Company for Approval of Interruptible Industrial Transportation Rates,” **Utah** Public Service Commission, Case No. 86-057-07. Direct testimony submitted January 15, 1988. Cross examined March 30, 1988.

“In the Matter of the Application of Utah Power and Light Company for an Order Approving a Power Purchase Agreement,” **Utah** Public Service Commission, Case No. 87-035-18. Oral testimony delivered July 8, 1987.

“Cogeneration: Small Power Production,” **Federal Energy Regulatory Commission**, Docket No. RM87-12-000. Statement on behalf of State of Utah delivered March 27, 1987, in San Francisco.

“In the Matter of the Investigation of Rates for Backup, Maintenance, Supplementary, and Standby Power for Utah Power and Light Company,” **Utah** Public Service Commission, Case No. 86-035-13. Direct testimony submitted January 5, 1987. Case settled by stipulation approved August 1987.

“In the Matter of the Application of Sunnyside Cogeneration Associates for Approval of the Cogeneration Power Purchase Agreement,” **Utah** Public Service Commission, Case No. 86-2018-01. Rebuttal testimony submitted July 16, 1986. Cross examined July 17, 1986.

“In the Matter of the Investigation of Demand-Side Alternatives to Capacity Expansion for Electric Utilities,” **Utah** Public Service Commission, Case No. 84-999-20. Direct testimony submitted June 17, 1985. Rebuttal testimony submitted July 29, 1985. Cross examined August 19, 1985.

“In the Matter of the Implementation of Rules Governing Cogeneration and Small Power Production in Utah,” **Utah** Public Service Commission, Case No. 80-999-06, pp. 1293-1318. Direct testimony submitted January 13, 1984 (avoided costs), May 9, 1986 (security for levelized contracts) and November 17, 1986 (avoided costs). Cross-examined February 29, 1984 (avoided costs), April 11, 1985 (standard form contracts), May 22-23, 1986 (security for levelized contracts) and December 16-17, 1986 (avoided costs).

OTHER RELATED ACTIVITY

Participant, Oregon Direct Access Task Force (UM 1081), May 2003 to November 2003.

Participant, Michigan Stranded Cost Collaborative, March 2003 to March 2004.

Member, Arizona Electric Competition Advisory Group, December 2002 to present.

Board of Directors, ex-officio, Desert STAR RTO, September 1999 to February 2002.

Member, Advisory Committee, Desert STAR RTO, September 1999 to February 2002. Acting Chairman, October 2000 to February 2002.

Board of Directors, Arizona Independent Scheduling Administrator Association, October 1998 to present.

Acting Chairman, Operating Committee, Arizona Independent Scheduling Administrator Association, October 1998 to June 1999.

Member, Desert Star ISO Investigation Working Groups: Operations, Pricing, and Governance, April 1997 to December 1999. Legal & Negotiating Committee, April 1999 to December 1999.

Participant, Independent System Operator and Spot Market Working Group, Arizona Corporation Commission, April 1997 to September 1997.

Participant, Unbundled Services and Standard Offer Working Group, Arizona Corporation Commission, April 1997 to October 1997.

Participant, Customer Selection Working Group, Arizona Corporation Commission, March 1997 to September 1997.

Member, Stranded Cost Working Group, Arizona Corporation Commission, March 1997 to September 1997.

Member, Electric System Reliability & Safety Working Group, Arizona Corporation Commission, November 1996 to September 1998.

Chairman, Salt Palace Renovation and Expansion Committee, Salt Lake County/State of Utah/Salt Lake City, multi-government entity responsible for implementation of planning, design, finance, and construction of an \$85 million renovation of the Salt Palace Convention Center, Salt Lake City, Utah, May 1991 to December 1994.

State of Utah Representative, Committee on Regional Electric Power Cooperation, a joint effort of the Western Interstate Energy Board and the Western Conference of Public Service Commissioners, January 1987 to December 1990.

Member, Utah Governor's Economic Coordinating Committee, January 1987 to December 1990.

Chairman, Standard Contract Task Force, established by Utah Public Service Commission to address contractual problems relating to qualifying facility sales under PURPA, March 1986 to December 1990.

Chairman, Load Management and Energy Conservation Task Force, Utah Public Service Commission, August 1985 to December 1990.

Alternate Delegate for Utah, Western Interstate Energy Board, Denver, Colorado, August 1985 to December 1990.

Articles Editor, Economic Forum, September 1980 to August 1981.