

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In re: Union Electric Company's)
2011 Utility Resource Filing pursuant to) Case No. EO-2011-0271
4 CSR 240 – Chapter 22.)

AFFIDAVIT OF ROBERT FRATTO


STATE OF NORTH CAROLINA)
) SS
COUNTY OF WAKE)

Robert Fratto, of lawful age, being duly sworn on his oath, deposes and states:

1. My name is Robert Fratto. I work in the County of Wake, North Carolina, and I am employed by GDS Associates, Inc. as a Managing Director.
2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of the Missouri Department of Natural Resources' Division of Energy, consisting of thirteen pages of testimony and fourteen pages of schedules 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 to the best of my knowledge.


Robert Fratto

Subscribed and sworn to before me this 28th day of October, 2011.


Notary Public



My commission expires:

May 28, 2016

MDNR Exhibit No. 22
Date 12/15/11 Reporter JRB
File No. EO-2011-0271

Exhibit No.:	
Issues:	Demand-Side Management
Witness:	Robert Fratto
Sponsoring Party:	Missouri Department of Natural Resources – Division of Energy
Type of Exhibit:	Rebuttal Testimony
Case No.:	EO-2011-0271

**REBUTTAL TESTIMONY
OF
ROBERT FRATTO**

GDS ASSOCIATES, INC.

**On behalf of the Missouri Department of Natural Resources
Division of Energy**

OCTOBER 28, 2011

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

UNION ELECTRIC COMPANY, d/b/a AMEREN MISSOURI

**2011 UTILITY RESOURCE FILING
PURSUANT TO 4 CSR 240 – CHAPTER 22**

CASE NO. EO-2011-0271

1
2 **I. INTRODUCTION**

3 **Q. Please state your name, position and business address.**

4 A. My name is Robert Fratto. I am a Managing Director at GDS Associates, Inc. (GDS). My
5 business address is 2113 Hopeton Avenue, Raleigh North Carolina, 27614.

6 **Q. Please describe GDS Associates.**

7 A. GDS Associates Inc. is a multi-service consulting and engineering firm formed in 1986
8 that now employs a staff of over 170 in five locations across the U.S. Our consultants are
9 recognized leaders in their respective fields, dedicated to their clients and innovative in
10 their approach to meeting unique challenges. Our broad range of expertise focuses on
11 clients associated with, or affected by, electric, gas, water and wastewater utilities. The
12 services that GDS offers include:

- 13 • energy efficiency, renewable energy and demand response planning, program
14 design, implementation and evaluation;
- 15 • integrated resource planning;
- 16 • electric transmission and distribution system planning;
- 17 • wholesale and retail rate studies;
- 18 • and other planning and implementation projects for the electric and natural
19 gas industries.

20 In addition, we offer information technology, market research, and statistical services to a
21 diverse client base.

22 **Q. Can you please summarize your work experience and educational background?**

23 A. I am currently a Managing Director at GDS Associates, where I am responsible for
managing and conducting projects in the areas of energy efficiency planning,

24 implementation and evaluation. Overall, I have more than thirty years experience in the
25 energy industry that includes extensive work in the areas of energy efficiency services
26 and demand-side planning. I joined GDS in July 2004 after working as an independent
27 energy consultant and holding various management and analytical positions with
28 Progress Energy, The Cadmus Group and Commonwealth Electric Company (now
29 NSTAR).

30 My education includes a Master's Degree in Business Administration from
31 Suffolk University and a Bachelor of Science Degree in Industrial Engineering from
32 Northeastern University. I am also a Certified Energy Manager.

33 Additional detail can be found in my resume, which is provided in Schedule A to
34 this testimony.

35 **Q. On whose behalf are you testifying?**

36 A. I am testifying on behalf of the Missouri Department of Natural Resources ("MDNR"),
37 an intervenor in these proceedings.

38 **Q. What is the purpose of your rebuttal testimony?**

39 A. The purpose of my testimony is to reply to some of Ameren Missouri's responses to
40 GDS's comments regarding its 2011 Integrated Resource Plan (IRP). These responses
41 were provided by Ameren Missouri in its "Response to Comment's of the Parties"
42 (Response).¹ Specifically, my testimony addresses those deficiencies related to Ameren
43 Missouri's consideration of Demand-Side Management (DSM) in the IRP.

44 In its comments, GDS explained that Ameren Missouri did not comply with
45 Missouri's IRP rules regarding the consideration of DSM in its IRP filing because the

¹ Ameren Missouri 2011 Integrated Resource Plan, EO-2011-0271, Response to Comments of the Parties.

Company: (1) failed to consider demand-side management resources (“DSM”) on an equivalent basis with supply-side alternatives, (2) Chose to ignore a critical finding of its DSM market research when it concluded that its customers are different than others in the nation with regard to their level of interest in DSM, (3) failed to document it plans for future market studies as is required by the Chapter 22 rules, (4) Conducted a comprehensive distributed generation (DG) potential study and then failed to seriously consider DG resources in the IRP and (5) used a methodology for developing avoided transmission and distribution (T&D) costs that relies too heavily on subjective, unsubstantiated “adjustment factors” and is inappropriate for assessing the value of targeted DSM, Demand Response (DR) and DG in deferring T&D investments. As a result of these deficiencies and many other identified by GDS, MDNR and other the parties in this case, Ameren Missouri’s IRP fails to satisfy the state’s IRP rules.

II. AMEREN MISSOURI HAS NOT TREATED DEMAND AND SUPPLY-SIDE OPTIONS EQUALLY IN ITS IRP

Q. Ameren Missouri claims in its Response that it evaluated demand-side resources on an equivalent basis with supply-side resources and used minimization of present value of revenue requirements (PVRR) as the primary (but not the only) selection criterion. Do you find Ameren Missouri’s statement to be supported by the facts and the argument provided in its Response?

A. I find Ameren Missouri’s argument to be unconvincing and relying solely on its opinion regarding the ability of its 2011 IRP process to meet the “letter of the law.” In its report to the Missouri Department of Natural Resources (MDNR), which was filed by MDNR on June 23, 2011 in Case No. EO-2011-027 (referenced herein as the “GDS report”), GDS concluded that Ameren Missouri failed to consider DSM resources on an equivalent

70 basis with supply-side alternatives. GDS argued that this unequal treatment was due in
71 part to the constraints that Ameren Missouri places on the amount of DSM spending.
72 Ameren Missouri has selected as its preferred demand side resource option a budget
73 constrained plan which it calls a “Low Risk” portfolio and readily admits that it would
74 increase its spending on energy efficiency if it had better cost recovery treatment. What
75 results is a less than optimal resource acquisition strategy that delays the implementation
76 of significant energy efficiency resources at the expense of Ameren Missouri’s
77 customers. Further GDS noted that in selecting candidate resource plans from the
78 alternative resource plans that were analyzed, Ameren Missouri applied a 25% weight to
79 the Present Value of Revenue Requirements (PVRR). It is questionable that this satisfies
80 the requirement that a utility use the present worth of long-run utility costs as a “primary
81 selection criteria.”

82 Ameren Missouri’s support for its conclusion that it evaluated demand-side
83 resources on an equivalent basis with supply-side resources is to state the obvious
84 regarding the mechanics of its IRP planning approach and then conclude that it represents
85 equal treatment. Specifically, Ameren Missouri notes in its Response that it evaluated
86 multiple DSM portfolios, a couple of which were considered in the final selection
87 process, and therefore concluded that “they did all that is required by the IRP rules.”²
88 Simply stating this opinion that its process meets the IRP requirements, is dismissive of
89 the legitimate concerns regarding equal treatment of demand and supply-side resources
90 raised by GDS and other parties in this case, and does not address the central concern
91 raised by GDS. That is, no matter how many DSM portfolios were considered in the

² Ameren Missouri’s Response to Comments of the Parties, p. 18.

92 IRP, Ameren Missouri's selection of a preferred plan was biased by an overriding
93 financial constraint that was applied to DSM. This constraint resulted in the exclusion of
94 anything but the very the low level of investment in DSM that is included in the preferred
95 plan. While this constraint was not applied during the screening process, and therefore
96 did not result in exclusion of the RAP and MAP plans from further consideration in the
97 IRP process, it might well have been, given the weight that it was apparently afforded in
98 selection of the final preferred plan.

99 It is clear from statements in the Ameren Missouri's 2011 IRP report, responses
100 to data requests and its Response to Comments of the Parties in this case that senior
101 management at Ameren Missouri selected the preferred plan and acquisition strategy.³
102 Yet, it appears that Ameren Missouri's senior management and those responsible for
103 preparation of the IRP did not consider the quantitative impacts that various DSM cost
104 and lost revenue recovery mechanisms might have on its selection of the preferred plan.
105 As evidenced by its reply to DNR 0155⁴, Ameren Missouri apparently has no information
106 regarding the DSM cost and lost revenue recovery mechanisms of utilities that operate in
107 many of the states with the most successful DSM programs. In that data request Ameren
108 Missouri was asked to provide any information that it has on the top twenty investor-
109 owned utilities in the US that have saved the most kWh on an annual basis with DSM
110 programs (as a percent of total annual kWh sales), and whether these investor-owned
111 utilities have any kind of recovery of lost revenues due to DSM programs or DSM
112 incentives. In response Ameren Missouri stated that it "does not have any information on
113 the top twenty investor-owned utilities in the US that have saved the most kWh on an

³ Ameren Missouri's Response to Comments of the Parties, p. 90.

⁴ The text of all data requests and their responses are provided in Schedule B.

114 annual basis with DSM programs.” Moreover, in its reply to DNR 0154, Ameren
115 Missouri states that “Ameren Missouri has not conducted any analyses, reports, or studies
116 of DSM cost recovery, lost revenues recovery, and DSM incentive mechanisms in other
117 states.” Ameren Missouri’s responses to these data requests speak to the apparent lack of
118 comprehensiveness of its analysis of potential cost recovery, lost revenue recovery, and
119 DSM incentive mechanisms and its commitment to finding a DSM financial treatment
120 that will support an aggressive portfolio of DSM programs.

121 GDS realizes that the IRP rules do not require consideration of DSM cost
122 recovery mechanisms and that Ameren Missouri believes that the best forum for
123 addressing DSM cost recovery is through a MEEIA filing. However, as Ameren
124 Missouri acknowledges in DNR 0090, it would, “increase its spending on energy
125 efficiency from the low risk scenario if it had better cost recovery treatment. The exact
126 spending level would need to be determined based upon the cost recovery plan that was
127 approved.” So, in essence, Ameren Missouri is asking the Commission to approve a
128 preferred IRP plan that does not represent the lowest PVRR until such time that it can
129 decide if it will propose a DSM cost recovery mechanism in a MEEIA filing, and then
130 determine after that process is completed and a cost recovery mechanism is possibly
131 approved, how that will impact the preferred resource plan. Given these uncertainties
132 regarding the preferred plan and the many other deficiencies identified by the parties in
133 this proceeding, GDS sees no reason for the Commission to approve the preferred plan at
134 this time.

135 **II. AMEREN MISSOURI’S ASSUMED DSM PROGRAM PARTICIPATION**
136 **RATES ARE LIKELY UNDERSTATED.**

137 Q. Did GDS suggest in Deficiency 9 of the GDS Report⁵, as claimed by Ameren
138 Missouri that the Company should “divert effort and budget toward increasing
139 customer satisfaction because it will raise energy efficiency participation levels?”⁶

140 A. No, that is not what GDS recommended. Ameren Missouri has either misunderstood the
141 argument that GDS was making or restated the argument to support its conclusion that
142 DNR is somehow suggesting that Ameren Missouri should redefine its customer
143 satisfaction strategy to focus primarily on increasing energy efficiency participation and
144 that this does not make business sense.

145 Q. Can you please restate Deficiency 9 of the GDS Reports and explain the point that
146 GDS was trying to make with regard to the relationship between DSM program
147 take rates assumed by Ameren Missouri in its potential study and the market
148 research that was conducted by Global Energy Partners on behalf of Ameren
149 Missouri?

150 A. Deficiency 9 states that Ameren Missouri’s conclusions regarding its customer’s interest
151 in DSM ignore a critical market research finding regarding the potential connection
152 between low customer satisfaction and DSM program participation.

153 In its IRP, Ameren Missouri concluded that its customers are “different than others in
154 the nation. They typically express less interest in DSM investments at this time.”⁷ This
155 presumed lower level of interest impacts DSM program take rates that are assumed in the
156 DSM potential study that is the basis for the Realistic Achievable Potential (“RAP”) and
157 MAP portfolios. This can easily leave one with the impression that DSM programs are
158 likely to be less successful in Ameren Missouri’s service territory than they are in other

⁵ GDS Report, p. 37.

⁶ Ameren Missouri’s Response to Comments of the Parties, p. 34.

⁷ Ameren Missouri’s 2011 Integrated Resource Plan, Chapter 7, p. 17.

159 states. The point that GDS was trying to make in its discussion supporting this deficiency
160 is that Ameren Missouri's conclusion regarding its customers' interest in DSM fails to
161 mention a key factor impacting the level of interest its customers express in DSM. For
162 both the residential and C&I sectors, the study concluded that:

163 *"How customers think about AmerenUE (Ameren Missouri) may explain why the*
164 *overall realistic take rates for Ameren UE's (Ameren Missouri's) programs are*
165 *lower than they are for those observed at many other U.S. utilities"*⁸

166 These are the exact words of Ameren Missouri's market research consultant, Global
167 Energy Partners, not an opinion expressed by GDS. Instead of acknowledging that low
168 satisfaction with Ameren Missouri as an energy provider may explain why take rates for
169 its DSM programs are lower than those of many other utilities, Ameren Missouri states
170 that DNR is advising that it divert effort and budget toward increasing customer
171 satisfaction because it will raise energy efficiency participation and claims that this would
172 be a classic case of the "tail wagging the dog."⁹ Further, the Company states that it is
173 "patently obvious" that Ameren Missouri already has a strategy in place to monitor and
174 improve customer satisfaction, and has been doing so since long before energy efficiency
175 programs were enacted.¹⁰ What also is obvious, based on the aforementioned research
176 finding, is that this strategy may not be working for some customer groups and that it
177 may be impacting both actual and assumed DSM take rates. Ameren Missouri chooses
178 not only to ignore this likely linkage, but instead cling to the supposition that its

⁸ AmerenUE Demand Side Management (DSM) Market Potential Study Volume 2: Report Number 1287-2, prepared by Global Energy Partners, LLC, January 2010, Chapter 4, page 22 (page 67 of 185 in the overall Volume) and Chapter 7, page 26 (page 143 of 185 in the overall Volume).

⁹ Ameren Missouri's Response to Comments of the Parties, p. 34.

¹⁰ Ibid

customers are just different with regard to interest in DSM programs. Even if Ameren Missouri chooses to ignore the identified linkage between customer satisfaction and DSM program participation, it should not simply dismiss the fact that the Global Energy Partner's research has uncovered issues with how certain customer groups think about Ameren Missouri that should concern both Ameren Missouri and the Public Service Commission.

III. AMEREN MISSOURI FAILED TO CONSIDER SIGNIFICANT COMBINED HEAT AND POWER (CHP) AND DISTRIBUTED GENERATION (DG) POTENTIAL IN ITS PREFERRED RESOURCE PLAN.

Q. Did Ameren Missouri adequately consider CHP and DG in its IRP analysis?

A. In its Response, Ameren Missouri claims that it adequately considered CHP and DG in its IRP and identifies a few technologies (CHP-Recip, Residential and Commercial Solar photovoltaics and small wind) as cost-effective, according to the TRC tests, in the 20 year planning horizon, none before 2020.¹¹ However in its reply to DNR 0186, Ameren Missouri stated that "its focus is on emerging DG technologies and the associated capital and operating costs and that it has "not made a determination on the cost effectiveness model(s) that will be used to evaluate the full range of benefits and costs associated with DG technologies." Potential additional benefits that were not considered by Ameren Missouri include:

1. Reduced transmission and distribution line losses
2. Enhanced reliability
3. Improved stability and power quality
4. Provision of Ancillary Services/VAR support

¹¹ Ameren Missouri's Response to Comments of the Parties, p. 23.

5. Environmental benefits compared to central station facilities,
6. Thermal load provided in CHP applications
7. Increased responsiveness to load growth resulting from DG's modularity and scale
8. Lower market prices for power
9. Increased employment and tax revenue in Missouri
10. National security benefits associated with reduced security risk to grid
11. Net Metering benefits
12. Market transformation impacts (such as greater acceptance and increased demand for DG facilities and reduced system costs, both material and installation)

According to Ameren Missouri¹², none of the above potential benefits, with the exception of avoided T&D costs were considered in cost-effectiveness analysis of DG technologies that was conducted for Ameren Missouri by Navigant Consulting.

Ameren Missouri also stated in its IRP¹³ that it is using the results of the above referenced potential study to evaluate various DG options and developing strategies to connect with customers. To do this Ameren Missouri has dedicated a core group of specialists throughout the corporation to focus on multiple aspects of a distributed generation strategy including identifying communication strategies, and determining necessary incentive dollars to move the market. Given the ongoing nature of the evaluation of DG options by Ameren Missouri and the acknowledged lack of consideration of many potential DG benefits in its cost-effectiveness analysis, GDS

¹² DNR 0186

¹³ Ameren Missouri's 2011 Integrated Resource Plan, Chapter 7, p. 64.

concludes that the current IRP did not adequately consider the significant potential that is represented by DG technologies, including CHP.

IV. CRITICAL ADJUSTMENT FACTORS USED BY AMEREN MISSOURI IN ITS CALCULATION OF T&D AVOIDED ARE SUBJECTIVE AND LACK SUFFICIENT SUPPORTING DOCUMENTATION

Q. In its Response, Ameren Missouri dismisses claims that its avoided cost methodology relies on unsubstantiated “adjustment factors” citing the fact the DNR has not proposed an alternative approach or taken issue with the reasonableness of the numbers. Can you please explain the basis for your concern and respond to the points that Ameren Missouri makes to defend its position that its T&D avoided cost methodology is reasonable and does not violate IRP rules?

A. Ameren Missouri’s Response regarding this issue ignores the critical point made by GDS in support its conclusion regarding Ameren Missouri’s T&D avoided costs. That is that Ameren Missouri has not provided sufficient documentation to support the adjustment factors that were applied in its calculation of avoided T&D costs. Analysis or recommendation of alternative avoided transmission and distribution cost estimation methodologies was not necessary to conclude that the adjustment factors used by Ameren Missouri in its methodology have a significant impact on the avoided cost calculation. As discussed and documented on p. 47 of the GDS Report, the application of multiple judgmental adjustment factors reduces transmission avoided cost values by 72%. While GDS understands that these adjustment factors are intended to reflect the fact that some T&D projects cannot be deferred with DSM, it reiterates its concern that the adjustment factors that have such a large impact on the T&D avoided costs should be well documented. Instead Ameren Missouri concedes that these adjustments factors are based

248 purely on subjective engineering judgment. When asked in DNR 0098 to provide all
249 source data, assumptions and worksheets to support a 70% Condition/Reliability
250 Replacement Factor that is used in the T&D avoided cost calculation, Ameren Missouri
251 replied that it was determined subjectively and therefore has no associated workpapers.
252 Without any documentation to support the use of subjective adjustment factors that have
253 such a significant impact on T&D avoided cost values, it is difficult for the any of the
254 parties or the Commission to assess the reasonableness of the T&D values that were used.
255 What can be concluded is that the large reduction in avoided T&D costs that results from
256 application of multiple subjective factors will negatively impact the cost-effectiveness of
257 DSM measures.

258 Regarding the need for greater rigor in Ameren Missouri's methodology for
259 calculating avoided T&D costs, Ameren Missouri states in its response that the GDS
260 report takes issue with the methodology without offering any suggestion as to what that
261 might entail. This point was clarified by GDS in its reply to Ameren-DNR-001WRD. In
262 that reply, GDS states it was referring to the inability of this approach to appropriately
263 assess the value of targeted DSM (including distributed generation and demand
264 response). This fact is acknowledged by Ameren Missouri in its reply to DNR 0097, in
265 which Ameren Missouri states that its DSM planners are "working with Ameren Missouri
266 distribution system planners in the review and analysis of new tools, such as the
267 DataRaker software, that can interface with the Transformer Load Management system to
268 identify specific areas where targeted DSM opportunities might exist."¹⁴ Ameren
269 Missouri should be required to provide a detailed scope of work and schedule for its

¹⁴ See the response to DNR 0097, Page B-3.

270 development of new tools that can interface with the Transformer Load Management
271 system to identify targeted DSM opportunities with the goal of incorporating new
272 planning tools into its next IRP filing.

273 **Q. Does this complete your rebuttal testimony?**

274 A. Yes, it does.

EDUCATION:

Executive Management Development Program, Northeastern University, 1986
Masters of Business Administration, Suffolk University, 1979
BS Industrial Engineering, Northeastern University, 1973

SUMMARY:

Mr. Fratto is a Managing Director with GDS Associates, an energy and engineering consulting firm. His thirty plus years of experience in the energy industry includes extensive work in the area of energy efficiency planning, including managing and conducting several energy efficiency potential studies. Mr. Fratto has also designed implemented and evaluated energy efficiency program for various utilities and energy efficiency organizations. Bob joined GDS in July 2004 after working as an independent energy consultant and holding various management positions with Progress Energy and Commonwealth Electric Company (now NSTAR). He is currently based in Raleigh, NC where he is providing energy efficiency consulting services to the Missouri Department of Natural Resources, the Maryland Energy Administration, Oglethorpe Power Corporation and the Efficiency Maine Trust.

Mr. Fratto has also provided energy efficiency consulting services to various other clients including the Maryland Department of Housing & Community Development, Central Maine Power Company, U.S. Environmental Protection Agency, Bonneville Power Administration, GasNetworks, KeySpan Energy (now National Grid), Vermont Department of Public Service, New Hampshire Public Utilities Commission, Connecticut Energy Advisory Board, South Mississippi Electric Power Association and Springfield Massachusetts Housing Authority. At Commonwealth Electric Company, Mr. Fratto held various management positions including, Manager Market Planning & Research, Manager Demand Program Administration and Manager Load Forecasting. At Progress Energy Mr. Fratto directed DSM planning activities and designed and delivered various energy efficiency services.

Mr. Fratto earned his Master's Degree in Business Administration from Suffolk University and has a Bachelor of Science Degree in Industrial Engineering from Northeastern University. Mr. Fratto is also a Certified Energy Manager.

EXPERIENCE and ACCOMPLISHMENTS:

GDS Associates, Inc. – Marietta, GA

Managing Director – 5/03 to Present

Manage energy efficiency projects and provide energy efficiency consulting services, including market research and analysis, program design and implementation, and program evaluation to GDS clients. Current and past projects include:

- Assisting the Missouri Department of Natural Resources with review of utility Integrated Resource Plans, including DSM programs.

- Providing business program implementation services to the Maine Public Utilities Commission and the Efficiency Maine Trust.
- Leading an analysis of commercial sector electric and gas energy efficiency potential for the Michigan Department of Technology Management & Budget.
- Leading an analysis of natural gas energy efficiency potential in the commercial sector for the Maryland Energy Administration.
- Reviewed energy efficiency program plans submitted by the Connecticut electric utilities and provided analysis and recommendations to the Connecticut Energy Advisory Board regarding alternative financing mechanisms and program design features that can reduce program costs.
- Managed an energy efficiency and demand response potential study for transmission need areas in Central Maine Power Company's service territory.
- Conducted an analysis of commercial sector energy efficiency potential for South Mississippi Electric Power Association.
- Reviewed a proposed Energy Efficiency Utility Order of Appointment for The Vermont Department of Public Service and provided findings and recommendations regarding the length of the appointment and compensation mechanism.
- Conducted a natural gas energy efficiency potential study for GasNetworks, a collaborative of local natural gas companies serving customers throughout New England.
- Developed commercial energy efficiency measure characteristics and baseline data in support of an all fuels energy efficiency potential study conducted for the New Hampshire Public Utilities Commission.
- Managed a process evaluation of Bonneville Power Administration's Non-Wires Solution Initiative.
- Assisted a Public Housing Authority with preparation of a performance contracting RFP and selection of an Energy Services Company.
- Conducted primary marketing research to identify customer preferences for various energy efficiency incentives.
- Prepared a research report on the use of energy efficient electrical equipment in the small business market.
- Managed a study of the lighting, HVAC and motor equipment supplier market in the State of Maine.

Progress Energy – Raleigh, NC

Senior Fundamental Market Analyst – 4/01 to 2/03

Conducted market analysis in support of wholesale power business development. This included identification of market opportunities and trends, competitor tracking, and customer targeting.

- Managed the design and implementation of a market intelligence and deal tracking information system.
- Developed a customer-targeting tool that allows business development managers to identify

and rank potential customers

- Improved business planning through implementation of better data mining tools and use of market segmentation analysis.

Regulatory Project Analyst – 8/99 to 4/01

Managed regulatory compliance activities, tracked and analyzed industry marketplace changes and recommended positioning strategies for operating companies.

- Prepared project plans and monitored progress for a company wide effort to secure government approvals of a major merger.
- Created position proposals on important industry deregulation issues.
- Developed a strategic plan for the company's renewable energy activities.

The Cadmus Group, Durham, NC

Account Manager/Consultant – 12/98 to 6/99

Assisted local governments and educational institutions with planning and implementing energy efficiency projects in conjunction with the EPA's Energy Star Buildings and Green Lights Partnerships.

Carolina Power & Light Company, Raleigh, NC

Product Developer/Manager – 4/96 to 12/98

Developed and screened new product ideas, conducted market and financial analysis, prepared business plans and identified partnering strategies. Marketed, delivered and had P&L responsibility for products and services.

Demand Planning Director – 8/93 to 4/96

Directed demand-side planning activities, including assessment of market potential, analysis of program costs/benefits and preparation of demand reduction forecasts.

Commonwealth Electric Company, Wareham, MA

Senior Project Engineer – 6/92 to 4/93

Provided project management support for the engineering and planning departments.

Manager Program Administration – 6/91 to 6/92

Administered the delivery of energy efficiency services, including lighting, HVAC and building shell programs to both consumer and business markets.

Manager Market Planning & Research – 6/80 to 6/91

Managed a group that developed marketing plans for demand-side management programs, prepared demand forecasts, and provided regulatory support.

Senior Resource Planner – 8/74 to 6/80

Developed plans for power purchases and plant additions to meet customer demand.

PROFESSIONAL MEMBERSHIP:

Association of Energy Engineers

Association of Energy Services Professionals

ADDITIONAL TRAINING & CERTIFICATIONS:

- Certified Energy Manager
- Certified Demand-Side Management Professional
- Building Operator Certification
- Compressed Air Challenge – “Fundamentals of Compressed Air Systems”
- Ballast Technology
- Energy Options, Futures and Derivatives
- Utility Demand-Side Management
- Cost-of-Service & Retail Rate Design
- Marginal Cost in Electric Utility Ratemaking
- Fundamentals of Load Research
- Load Forecasting and Econometrics
- Project Management
- Public Speaking & Presentation Skills
- Supervisory Skills
- Professional Selling Skills

TESTIMONY:

Have provided expert witness testimony in various cases on DSM planning and implementation issues before the following state commissions:

- Maryland Public Service Commission
- Maine Public Utilities Commission
- Vermont Public Service Board
- Massachusetts Department of Public Utilities

Recent testimony includes:

- Before the Maryland Public Service Commission, EmPOWER Maryland 2012-2014 Energy Efficiency, Conservation, and Demand Response Programs, Cost Effectiveness of DHCD's Weatherization Assistance Program, October 13, 2011.
- Maine Public Utilities Commission, Docket No. 2008-255, Petition for Finding of Public Convenience and Necessity for the Maine Power Reliability Program Consisting of the Construction of Approximately 350 Miles of 34.5 kV and 115 kV Transmission Lines (MPRP), February 4, 2010. (Testimony on Potential for Targeted DSM and Demand Response Potential).
- Vermont Public Service Board, Docket No. 7466, Investigation into Petition filed by Vermont Department of Public Service re: Energy Efficiency Utility Structure, On behalf of the Vermont Department of Public Service, June 26, 2009.

Schedule B

DATA RESPONSES CITED:

- DNR 0090
- DNR 0097
- DNR 0098
- DNR 0154
- DNR 0155
- Ameren-DNR-001-WRD

**Ameren Missouri
Response to DNR Data Request
MPSC Case No. EO-2011-0271
Union Electric Company d/b/a Ameren Missouri's 2011 Utility Resource Filing pursuant to 4
CSR 240 - Chapter 22**

Data Request No.: DNR 0090 – Adam Bickford

On page 2 of Chapter 7, Ameren Missouri states that the Low Risk Portfolio “reduces Cycle 1 levels of program spending and savings to a level commensurate with the Company’s growing concerns with the current DSM regulatory framework, especially lost revenues.”

- a. What is Ameren Missouri doing to address these concerns? b. How would addressing these concerns impact the DSM portfolio that the company has included in its preferred plan?

RESPONSE

Prepared By: Dan Laurent

Title: Manager Energy Efficiency & Demand Response

Date: April 21, 2011

- a.) Ameren Missouri is working with stakeholders in the current electric rate case to obtain better financial treatment for DSM efforts. Ameren Missouri is also investigating other options such as a DSIM filing through the MEEIA rules or additional legislation, but has not made a decision on which options to pursue at this time.
- b.) Ameren Missouri would increase its spending on energy efficiency from the low risk scenario if it had better cost recovery treatment. The exact spending level would need to be determined based upon the cost recovery plan that was approved.

Schedule B

Ameren Missouri

Response to DNR Data Request

MPSC Case No. EO-2011-0271

Union Electric Company d/b/a Ameren Missouri's 2011 Utility Resource Filing pursuant to 4
CSR 240 - Chapter 22

Data Request No.: DNR 0097 – Adam Bickford

On page 29 of Chapter 7 in the discussion of the Location-specific Factor/Deferrable Factor, Ameren states that: "Since DSM programs are not being designed to avoid or offset specific transmission projects, there is no certainty as to which projects will actually be deferred."

- a. Please explain why DSM programs are not being designed to avoid or offset specific transmission projects? b. Has Ameren reviewed geographically targeted DSM programs designed to avoid or offset transmission investments that have been studied or implemented in other states such as Vermont? If so, please describe the extent of this review including specific targeted DSM studies or programs that have been reviewed.

RESPONSE

Prepared By: Dave Costenaro

Title: Sr. Planning Consultant-DSM

Date: April 22, 2011

- a) The integrated resource planning exercise is a high-level analysis that deals with DSM program concepts at a system-wide scale. It typically does not get as granular as geographically targeting DSM programs. However, DSM planners are working with Ameren Missouri distribution system planners in the review and analysis of new tools, such as the DataRaker software, that can interface with the Transformer Load Management system to identify specific areas where targeted DSM opportunities might exist.
- b) No.

Ameren Missouri

Response to DNR Data Request

MPSC Case No. EO-2011-0271

**Union Electric Company d/b/a Ameren Missouri's 2011 Utility Resource Filing pursuant to 4
CSR 240 - Chapter 22**

Data Request No.: DNR 0098 – Adam Bickford

With respect to the 70% Condition/Reliability Replacement Factor that is cited in the example on p. 29 of Chapter 7: a. Is the 70% Condition/Reliability Replacement Factor that is cited in the example the factor that was used in the development of avoided transmission cost?
b. Please provide all source data, assumptions and worksheets that were used to derive the Condition/Reliability Replacement Factor that was used in the IRP.

RESPONSE

Prepared By: Bill Davis

Title: Sr. Load Research Specialist

Date: 4/21/2011

- a) Yes, the 70% factor was used in the development of avoided transmission costs.
- b) The Condition/Reliability Replacement Factor was determined subjectively and therefore has no associated workpapers.

Ameren Missouri

Response to DNR Data Request

MPSC Case No. EO-2011-0271

Union Electric Company d/b/a Ameren Missouri's 2011 Utility Resource Filing pursuant to 4

CSR 240 - Chapter 22

Data Request No.: DNR 0154 – Adam Bickford

Please provide any analyses, reports, or studies that Ameren-Missouri has conducted of DSM cost recovery, lost revenues recovery, and DSM incentive mechanisms in other states.

RESPONSE

Prepared By: Bill Davis

Title: Sr. Load Research Specialist

Date: 4/25/2011

Ameren Missouri has not conducted any analyses, reports, or studies of DSM cost recovery, lost revenues recovery, and DSM incentive mechanisms in other states.

Ameren Missouri

Response to DNR Data Request

MPSC Case No. EO-2011-0271

Union Electric Company d/b/a Ameren Missouri's 2011 Utility Resource Filing pursuant to 4

CSR 240 - Chapter 22

Data Request No.: DNR 0155 – Adam Bickford

Please provide any information that Ameren Missouri has on the top twenty investor-owned utilities in the US that have saved the most kWh on an annual basis with DSM programs (as a percent of total annual kWh sales), and provide whether these investor-owned utilities have any kind of recovery of lost revenues due to DSM programs or DSM incentives.

RESPONSE

Prepared By: Bill Davis

Title: Sr. Load Research Specialist

Date: 4/21/2011

Ameren Missouri does not have any information on the top twenty investor-owned utilities in the US that have saved the most kWh on an annual basis with DSM programs.

Ameren Missouri

Response to MDNR Data Request

MPSC Case No. EO-2011-0271

**Union Electric Company d/b/a Ameren Missouri's 2011 Utility Resource Filing pursuant to 4
CSR 240 - Chapter 22**

Data Request No.: DNR 0186– Sarah Mangelsdorf

On p. 24 of their Response to Comments of the Parties, Ameren Missouri states that it has evaluated distributed generation technologies including CHP and has therefore complied with the requirements of the rule. They refer to the consultants conclusion that only CHP-Recip, Solar photovoltaics (Residential and Commercial), and small wind became cost effective in the 20 year planning horizon and no technologies became cost effective before 2020. However in its IRP (Chapter 7, p. 64) Ameren Missouri stated that it is using the results of the potential study to evaluate various DG options and developing strategies to connect with customers. Moreover, they have dedicated a core group of specialists throughout the corporation to focus on multiple aspects of a distributed generation strategy. Analyzing the various technologies, identifying communication strategies, and determining necessary incentive dollars to move the market. a. Please provide a status report on this effort and identify the DG technologies are being analyzed. b. Will Ameren Missouri use the TRC test to determine the cost-effectiveness of the DG technologies that it is analyzing? c. Is Ameren Missouri looking at any of the following other potential benefits of DG in their analysis? i. Reduced transmission and distribution line losses; ii. Enhanced reliability; iii. Improved stability and power quality; iv. Provision of Ancillary Services/VAR support; v. Environmental benefits compared to central station facilities, including reduced air and water pollutants, promotion of environmental equity compared to large central station power plants; vi. Thermal load provided in CHP applications; vii. Increased responsiveness to load growth resulting from DG's modularity and scale; viii. Lower market prices for power; ix. Increased employment and tax revenue in Missouri; x. National security benefits associated with reduced security risk to grid; xi. Net Metering

Schedule B

benefits xii. Market transformation impacts (such as greater acceptance and increased demand for DG facilities and reduced system costs, both material and installation). d. Were any of the above potential benefits considered by NCI in their analysis of the cost-effectiveness of DG technologies?

RESPONSE

Prepared By: Richard A. Voytas

Title: Manager, Energy Efficiency and Demand Response

Date: October 14, 2011

- A. Please see the attached power point presentation for a status report.
- B. Ameren's focus is on emerging DG technologies and the associated capital and operating costs. Consequently, Ameren has not made a determination on the cost effectiveness model(s) that will be used to evaluate the full range of benefits and costs associated with DG technologies.
- C. Other Considerations: See response to (B). Ameren is not at the stage where any of the potential benefit identified in (C) i-xii have been addressed.
- D. The NCI analysis considered avoided T&D benefits in its analysis.

No. Ameren-DNR-001WRD

Data Information Request
From Union Electric Company d/b/a Ameren Missouri
MPSC Case No. EO-2011-0271

Requested From: Missouri Department of Natural Resources
Requested By: Wendy Tatro
Date of Request: June 29, 2011

Information Requested:

Please provide all documentation and analysis for all alternative avoided transmission and distribution cost estimation methodologies considered to be "more rigorous and well documented" compared the methodology used in Ameren Missouri's 2011 IRP. Also, please explain in detail how each alternative methodology is considered to be "more rigorous and well documented". Each alternative methodology should include sample calculations in spreadsheet form with formulas intact.

Response:

The "more rigorous and well documented" approach referred to in the GDS Review of Ameren Missouri's 2011 Utility Resource Filing was not based on a comparison of Ameren Missouri's methodology to alternative methodologies.

Regarding the need for better documentation, it is the opinion of GDS that Ameren Missouri has not provided sufficient documentation to support the adjustment factors that were applied in its calculation of avoided T&D costs. Analysis of alternative avoided transmission and distribution cost estimation methodologies was not necessary to conclude that the adjustment factors used by Ameren Missouri in their methodology have a significant impact on the avoided cost calculation (as discussed on p. 47 of the GDS Report). GDS finds that the documentation to support these key factors was not sufficient to determine if the appropriate values were used.

Regarding the need for greater rigor in Ameren Missouri's methodology for calculating avoided T&D costs, GDS was referring to the inability of this approach to appropriately assess the value of targeted DSM (including distributed generation and demand response). This fact is acknowledged by Ameren Missouri in their response to DNR Data Request 0097, in which Ameren Missouri states that its DSM planners are "working with Ameren Missouri distribution system planners in the review and analysis of new tools, such as the DataRaker software, that can interface with the Transformer Load Management system to identify specific areas where targeted DSM opportunities might exist."