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Witness: Randy S. Gross  
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**MISSOURI PUBLIC SERVICE COMMISSION**

**REGULATORY REVIEW DIVISION**

**REBUTTAL TESTIMONY**

**OF**

**RANDY S. GROSS**

**UNION ELECTRIC COMPANY d/b/a AMEREN MISSOURI**

**FILE NO. EO-2012-0142**

*Jefferson City, Missouri  
April 2012*



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**FILE NO. EO-2012-0142**

13 Q. Please state your name and business address.

14 A. My name is Randy S. Gross, and my business address is Missouri Public  
15 Service Commission, P. O. Box 360, Jefferson City, Missouri 65102.

16 Q. What is your present position at the Missouri Public Service Commission  
(Commission)?

17 A. I am an Engineer in the Energy Unit of the Regulatory Review Division.

18 Q. Please state your educational background and experience.

19 A. These are contained in Schedule RSG-1.

20 Q. Would you please summarize the purpose of your rebuttal testimony?

21 A. I describe the Commission Staff's (Staff) review of Union Electric Company's  
22 d/b/a Ameren Missouri's (Ameren Missouri or Company) Missouri Energy Efficiency  
23 Investment Act (MEEIA) filing for demand-response (DR) programs. It proposed none. I  
24 discuss the MEEIA requirement that DR programs be evaluated, Ameren Missouri's rationale  
25 for not including DR programs, what this Commission recently said about that rationale and  
26 the importance of DR programs. I also present Staff's recommendation to the Commission  
27 concerning DR programs and Ameren Missouri's MEEIA filing.

1 I discuss the following concern regarding Ameren Missouri's exclusion of DR  
2 programs from its program plan in this MEEIA filing:<sup>1</sup>

3 The Company is deficient in its evaluation of DR programs and is  
4 inconsistent with the MEEIA statutory requirement that states: "It shall be  
5 the policy of the state to value demand-side investments equal to  
6 traditional investments in supply and delivery infrastructure ...."

7 I present Staff's following recommendation:

8 The Commission should find Ameren Missouri's MEEIA filing is inconsistent with  
9 the policy of the State of Missouri stated in MEEIA "to value demand-side investments equal  
10 to traditional investments in supply and delivery infrastructure... ." To be consistent with this  
11 state policy Ameren Missouri should use the Chapter 22 process to re-evaluate demand-  
12 response programs, then seek for the Commission to approve those that are cost effective as  
13 MEEIA programs.

14 **Ameren Missouri's MEEIA Filing Lacks Demand Response Programs**

15 Q. What DR programs are included in Ameren Missouri's MEEIA filing?

16 A. Ameren Missouri's MEEIA filing does not include a DR component.<sup>2</sup> There  
17 are no proposed DR programs or DR pilot programs in Ameren Missouri's application.

18 Q. Is this a concern and if so why?

19 A. This is a concern because Senate Bill 376, The MEEIA, requires the  
20 Commission to direct the implementation of demand-side programs "with a goal of achieving  
21 all cost effective demand-side savings."<sup>3</sup> Demand-side programs include both energy  
22 efficiency and DR programs.

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<sup>1</sup> The Commission's rules promulgated as a result of the Missouri Energy Efficiency Investment Act of 2009 (Section 393.1075, RSMo, Supp. 2011) include Rules 4 CSR 240-3.163, 4 CSR 240-3.164, 4 CSR 240-20.093 and 4 CSR 240-20.094.

<sup>2</sup> Ameren Missouri 2012 MEEIA Filing Report, line 2; page 100.

<sup>3</sup> Commission Order filed 01/06/2010, Item 2, EW-2010-0187

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1 Q. Do the MEEIA rules require the Company to include a DR component in a  
2 MEEIA filing?

3 A. No. Rules 4 CSR 240-3.163 and 4 CSR 240-3.164 contain the filing  
4 requirements for cost effective DR programs that the utility includes in its MEEIA filing. The  
5 utility may choose not to include a cost effective DR program for Commission approval or the  
6 utility screening may not identify a cost effective DR program that could be included.

7 Q. Does Chapter 22 (Electric Utility Resource Planning) require the electric  
8 utilities to screen DR programs?

9 A. Yes it does. Rule 4 CSR 240-22.050(6) requires that the utility develop a set  
10 of potential DR programs, 4 CSR 240-22.050(7) requires these potential DR programs be  
11 evaluated using the total resource cost (TRC) test and 4 CSR 240-22.050(8) requires utilities  
12 to include them in the load impact estimates of demand-side resources over the planning  
13 horizon. However, it does not require DR be included in the electric utility's preferred  
14 resource plan.

15 Q. What explanation has the Company provided for not including any DR  
16 programs or DR pilot programs in this MEEIA filing?

17 A. The Company considers DR programs cost effective only in circumstances  
18 where it has identified a capacity shortfall.<sup>4&5</sup>

19 Q. Is the Company's position in compliance with the MEEIA?

20 A. No. The MEEIA statutory requirement states in part; "...it shall be the policy  
21 of the state to value demand-side investments equal to traditional investments in supply and  
22 delivery infrastructure ...."

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<sup>4</sup> Ameren Missouri 2012 MEEIA Filing Report, page 100, lines 7-9.

<sup>5</sup> Company response to Staff Data Request No. 0003

1 Q. Has the Commission commented on Ameren Missouri's approach to consider  
2 DR programs only in circumstances where it has identified a capacity shortfall?

3 A. Yes. In its March 28, 2012 *Report and Order* in Case No. EO-2011-0271  
4 regarding the Company's 2011 Chapter 22 Electric Utility Resource Planning filing, the  
5 Commission stated:

6 In its analysis, Ameren Missouri considered the use of demand-side  
7 efficiency and energy management measures only in the circumstances  
8 where it had identified a capacity shortfall. When it determined that it  
9 would need additional capacity, it treated demand-side and supply-side  
10 resources equivalently. However, Ameren Missouri did not evaluate  
11 whether existing supply-side resources could be replaced with less costly  
12 demand-side resources. In other words, demand-side resources were not  
13 allowed to compete on the basis of PVRR with existing supply-side  
14 resources.

15 That is an important distinction because Ameren Missouri is considering  
16 the possible retirement of part of its coal-fired generation fleet and is  
17 considering very expensive environmental upgrades to the portion of its  
18 fleet that is not retired. If it would be more effective to retire those plants  
19 and replace them with cheaper demand-side resources, that possibility  
20 should be considered in the planning process.

21 The Commission agrees that the rule requires that demand-side resources  
22 be allowed to compete on the basis of PVRR with existing supply-side  
23 resources as part of the IRP process. Ameren Missouri's IRP failed to  
24 undertake that comparison and, therefore, it is deficient.<sup>6</sup>

25 Q. For this MEEIA filing, did the Company screen any DR programs or DR pilot  
26 programs?

27 A. Yes. In the Company's response to Data Request No. 0003, the Company  
28 indicated that it performed a benefit/cost analysis for DR programs assuming a 3-year  
29 program life and provided the DSMore batch and aggregate tools it used to screen its "Low  
30 Risk DSM" portfolio that is included in the preferred resource plan contained in its latest

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<sup>6</sup> *In the Matter of Union Electric Company's 2011 Utility Resource Filing Pursuant to 4 CSR 240 – Chapter 22*, Case No. EO-2011-0271, March 28, 2012 *Report and Order*, pp. 11 – 12.

1 Chapter 22 Electric Utility Resource Planning filing.<sup>7</sup> These programs consisted of direct  
2 load control (DLC) DR programs for small and large commercial and industrial (C&I)  
3 customers and residential customers.

4 Q. What were the results of the benefit/cost analysis in this filing for these  
5 programs?

6 A. The Company states that none of these DR programs are cost effective (that is,  
7 TRC values much lower than 1.0) using a 3-year program life and considering the depressed  
8 market prices for capacity.<sup>8</sup>

9 Q. Are the calculated TRC values for these programs for the MEEIA filing  
10 consistent with the calculated TRC values for the same programs contained in Ameren  
11 Missouri's latest Chapter 22 Electric Utility Resource Planning compliance filing (IRP)?

12 A. No, they are not. The IRP calculated TRC values for the DLC DR programs  
13 for small C&I customers is 2.69, for the large C&I customers is 1.48 and for the residential  
14 customers is 2.59.<sup>9</sup> In the MEEIA filing the DR program screening calculated TRC values for  
15 small C&I DLC customers is 0.8, for large C&I customers is 0.4 and for residential DLC is  
16 0.47.<sup>10</sup>

17 Q. Why are the TRC values that were calculated to screen the programs in the  
18 MEEIA filing so different than those calculated for the IRP?

19 A. The Company explains that the significant contributing factors to this disparity  
20 centers around the 3-year program life assumed in the MEEIA calculations versus the 20-year

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<sup>7</sup> Ameren Missouri 2011 Integrated Resource Plan, page 16; Section 10 "Strategy Selection"

<sup>8</sup> Company Response to Staff Data Request-0003

<sup>9</sup> Ameren Missouri 2011 Integrated Resource Plan, Table 7.4, page 11; Section 7.

<sup>10</sup> Company response to Staff Data Request No. 0003.

1 | planning horizon used in the IRP calculations and the depressed market prices for capacity.<sup>11</sup>

2 | The large amount of program costs and low capacity prices in the 2013-2015 time frame used  
3 | in the MEEIA filing benefit/cost analysis calculations for program screening resulted in these  
4 | programs not being cost effective. In the Company's 2011 IRP filing, it states "because DSM  
5 | measures produce savings for multiple years beyond the date of their installation, cost-  
6 | effectiveness calculations require multiple years of economic forecasting."<sup>12</sup> For this reason,  
7 | the 20-year program life that was used in Ameren Missouri's IRP TRC calculations should  
8 | have been used for its MEEIA filing for consistency purpose and to provide a more realistic  
9 | assessment of the screened programs.

10 | Q. What market prices for capacity were used in the TRC calculations for the  
11 | MEEIA filing?

12 | A. The market prices for capacity used in these benefit/cost calculations are  
13 | indicated in Table 3.14 on page 74 of the MEEIA Report, and are the same as those used in  
14 | the 2012 IRP annual update.<sup>13</sup>

15 | Q. Did the Company perform any benefit/cost calculations to determine at what  
16 | market price for capacity these DR programs would be cost effective?

17 | A. No. The Company did not perform this calculation.<sup>14</sup>

18 | **DR Reliability and Economic Benefits**

19 | Q. Are there any other concerns with not having any Company DR programs?

20 | A. Yes. DR programs have been shown to enhance reliability and lower energy  
21 | costs by reducing the peak demand and shifting energy usage to off peak hours. The absence

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<sup>11</sup> Company response to Staff Data Request No. 0003.

<sup>12</sup> Ameren Missouri 2011 Integrated Resource Plan, page 26; Section 7.2.4, "Avoided Costs."

<sup>13</sup> Company Response to Staff Data Request No. 0029.

<sup>14</sup> Company Response to Staff Data Request No 0030.



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1 of any DR programs in the Company's DSM portfolio is a serious concern because these  
2 programs must be in place to quickly utilize them to mitigate unforeseen events. If they are  
3 not in place, they cannot be rapidly deployed in time to help mitigate peak loads that exceed  
4 forecasted values or unplanned outages of generation or transmission and distribution  
5 capability that may result in blackouts or brownouts. A 2006 DOE report<sup>15</sup> states, "the most  
6 important benefit of demand response is improved resource-efficiency of electricity  
7 production..." and goes on to list the following benefits:

- 8 1. Participant financial benefits through bill savings and incentive payments.
- 9 2. Market-wide financial benefits through lower wholesale market prices  
10 averting the need for more costly generations sources and also allowing  
11 Load Serving Entities to build less capacity and purchase less power.
- 12 3. Reliability benefits by lowering the likelihood and consequences of forced  
13 outages.
- 14 4. Market performance benefits by mitigating a supplier's ability to exercise  
15 market power and thus raise power prices significantly above production  
16 costs.

17 The Federal Energy Regulatory Commission (FERC) has recognized the value of DR  
18 programs and has promoted the use of DR programs in the wholesale power market. John  
19 Norris, a FERC Commissioner, testified, "Effective demand response can help reduce electric  
20 price volatility, mitigate market power, and enhance reliability.... I believe that the best  
21 energy outlook will include an efficient mix of both demand-side resources and supply-side  
22 resources."<sup>16</sup>

23 Q. Are there instances where DR was successfully deployed to mitigate the  
24 impact of unforeseen events that could have resulted undesirable consequences?

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<sup>15</sup> 2006 DOE report; Benefits of Demand Response in Electricity Markets, page vi.

<sup>16</sup> Testimony of Commissioner John Norris before the Subcommittee on Energy and the Environment, March 23, 2010. <https://www.ferc.gov/EventCalendar/Files/20100323141646-Norris-3-23-10.pdf>

1           A.     Yes, there are several.   Following are two examples of such instances  
2 involving Curtailment Services Providers (CSP) who participated in this Commission’s DR  
3 workshops.

4           1.     “On February 26, 2008 (the same day that Florida suffered a blackout), a  
5 significant amount of wind and conventionally generated electricity was  
6 expected to be on-line in ERCOT but was unavailable. At the same time, the  
7 demand for electricity was significantly higher than forecasted. As a result,  
8 ERCOT dispatched its rapid-response demand response resources (called  
9 "Load acting as a Resource" or LaaR). CPower provided more than 100% of  
10 its obligation for that hour within 10 minutes, as did many other providers. A  
11 total of 1,200 megawatts of load participating in the program was able to drop  
12 off the grid within 12 minutes, thereby preventing ERCOT from having to  
13 create rolling blackouts for non-participating clients by involuntary load  
14 shedding.”<sup>17</sup>

15          2.     “...on July 22, 2011 as a severe heat wave swept North America. High  
16 temperatures and increased electricity usage across the continent led to record  
17 peaks in demand for electricity and unusually high energy prices. EnerNOC's  
18 network responded to a series of dispatches from grid operators including the  
19 mid-Atlantic's PJM Interconnection, New York Independent System Operator,  
20 the Ontario Power Authority, and ISO-New England. EnerNOC was also  
21 dispatched by utility partners from across the United States, ultimately  
22 providing approximately 1,230 megawatts (MW) of demand response  
23 resources in all. These demand response dispatches helped mitigate the risk of

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<sup>17</sup> <http://cpowered.com/utilities-reserves-regulation.php>

1                   blackouts and brownouts and reduce the cost of energy for all electricity users  
2                   in the affected regions... In ISO-New England, real-time pricing in some areas  
3                   eclipsed \$560 per megawatt-hour, approximately ten times the average 2011  
4                   hourly real-time price.”<sup>18</sup>

5           Q.     Are there Ameren Missouri customers who have expressed an interest in  
6 participating in demand response programs, but who are not?

7           A.     Yes, there are. On March 19, 2010, the Commission received a letter from the  
8 Midwest Independent Transmission System Operator, Inc. (MISO) stating that Cpower had  
9 registered with MISO to aggregate specific customers’ DR in Ameren Missouri’s service  
10 territory.<sup>19</sup>

11          Q.     Are there any others?

12          A.     Walmart has actively attended and participated in the Commission’s DR  
13 workshops and indicated it would like to participate in acceptable DR programs. Ms. Angie  
14 Beehler of Walmart stated in the Commission’s October 4, 2011, workshop, “as consumers,  
15 we would prefer choice of different options in Missouri. The choice of participating with the  
16 MISO, an aggregator or the utility in ancillary or demand response programs should be  
17 available to all consumers to encourage all efficiencies possible within the MISO to deliver  
18 additional dollars to Missouri ratepayers.”<sup>20</sup>

19          Q.     Do you know why Walmart is not currently participating in Ameren Missouri  
20 DR programs?

21          A.     Walmart indicated at the time of the workshops that it considered the Ameren  
22 Missouri Rider L Peak Power Rebate program (electric usage reduction requirements of a

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<sup>18</sup> <http://finance.yahoo.com/news/EnerNOC-DemandSMART-TM-Demand-iw-840612978.html>

<sup>19</sup> File No. EW-2010-0187, item 19, 03/21/2010, page 3.

<sup>20</sup> File No. EW-2010-0187, item 109, 10/26/2011, page 9.

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1 minimum of 200 and maximum of 10,000 kW at a single premise) and that Walmart did not  
2 find this program acceptable for it to participate in.

3 Q. Does Ameren Missouri currently have the Rider L Peak Power Rebate  
4 program?

5 A. No, it does not. The Rider L Peak Power Rebate program expired at the end of  
6 2011. The Company has told Staff it has no plans to re-establish this program in 2012 or 2013  
7 and has indicated it would take several months to re-establish this program.<sup>21</sup>

8 Q. Concerning the Rider L Peak Power Rebate program, how often was it utilized  
9 the two years before it expired at the end of 2011?

10 A. No Rider L Peak Power Rebate Program events were called by the Company in  
11 2011 or 2010, nor did the Company purchase energy to meet peak demand requirements  
12 during this time.<sup>22</sup>

13 Q. Does the Company currently have any DR programs and if so, how many  
14 customers are enrolled in these programs?

15 A. The Company has an Option Based Curtailment Rider M tariff filed in 2006  
16 (minimum of 1,000 kW curtailment of electric use) and currently there are no customers  
17 enrolled in this program.<sup>23</sup>

18 Q. Is staff concerned that Ameren Missouri does not have any customers enrolled  
19 in any DR programs?

20 A. Yes. These programs take time to establish. For example the Company has  
21 indicated re-establishing a Rider L type DR program would take several months.<sup>24</sup> In addition,

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<sup>21</sup> Company response to Staff Data Request No. 0027

<sup>22</sup> Company response to Staff Data Request No. 0028.

<sup>23</sup> Company response to Staff Data Request No. 0032.

<sup>24</sup> Company response to Staff Data Request No. 0027.

1 should the Commission end the temporarily prohibition allowing the operation of Aggregators  
2 of Retail Customers (ARC) in Missouri, customers who in the past have desired to sign up  
3 with an ARC to provide DR will most likely do so and will therefore be unavailable to  
4 provide DR resources to the Company.

5 Q. Is there any another option that is available to Walmart that will allow it to  
6 participate in an Ameren Missouri DR program?

7 A. None that allows Walmart to participate through a Company program or  
8 directly through an ARC. The Commission issued an order an Order on March 31, 2010,  
9 temporarily prohibiting the operation of ARCs in Missouri.<sup>25</sup>

10 Q. Could Walmart could participate in an Ameren Missouri DR program through  
11 an ARC or CSP working under a contractual relationship with the Company.

12 A. Yes, this is an option.

13 Q. Has the Company explored this option with any ARCs or CSPs?

14 A. Not that the Staff is aware of. Based on its response to a Staff data request, the  
15 Company has not initiated or responded to any requests to participate in any recent  
16 discussions with any ARCs or CSPs to provide DR services.<sup>26</sup>

17 Q. Has the Company expressed an opinion on pursuing this alternative?

18 A. In a General Response to Staff's request for comment, the Company stated:  
19 "One approach that Ameren Missouri feels would be productive would be for the utilities and  
20 the ARC's to engage in discussion about possible alternative programs."<sup>27</sup>

21 Q. Have any customers in Missouri participated in DR programs with an ARC,  
22 CSP or contractor working through an Investor Owned Utility (IOU)?

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<sup>25</sup> File No. EW-2010-0187, item 19, 03/31/2010.

<sup>26</sup> Company response to Staff Data Request No. 0031.

<sup>27</sup> File No. EW-2010-0187, item 84, 05/02/2011.

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1           A.     Yes. Kansas City Power & Light Company (KCPL) and KCP&L Greater  
2 Missouri Operations Company (GMO) both have a DR program, “MPower,” that is executed  
3 by Energy Curtailment Specialists (ECS) and a small commercial and residential programs,  
4 “Energy Optimizer” executed by Honeywell, Inc.

5           Q.     Are these programs successful?

6           A.     Yes. The evaluation, measurement and verification (EM&V) reports that were  
7 prepared for both programs indicate they are cost effective and have high levels of customer  
8 satisfaction.

9  
10          Q.     What recommendation is Staff making concerning DR programs in this case?

11          A.     The Commission should find Ameren Missouri’s MEEIA filing is inconsistent  
12 with the policy of the State of Missouri stated in MEEIA “to value demand-side investments  
13 equal to traditional investments in supply and delivery infrastructure... .” To be consistent  
14 with this state policy Ameren Missouri should use the Chapter 22 process to re-evaluate  
15 demand-response programs, then seek for the Commission to approve those that are cost  
16 effective as MEEIA programs.

17          Q.     Does this complete your rebuttal testimony?

18          A.     Yes.

## **Randy S. Gross**

### **Educational Background and Work Experience**

I have Master and Bachelor of Science degrees in Electrical Engineering from the University of Missouri at Columbia. I am an active licensed Professional Engineer in the states of Kansas and Missouri with inactive licenses in Arizona and Illinois. I have co-authored nine technical papers in the areas of process instrumentation and controls, power plant performance monitoring and information technology. My work experience spans more than 39 years in electrical and instrumentation and control detailed design, information technology, training, software verification and validation, telecommunication, project management and controls, construction management, contract administration, plant start-up, project oversight, plant operating procedures, design basis reconstitution, equipment technical specifications and procurement, nuclear plant and site, detailed design engineering, plant modifications and engineering procedures. From 1972-1997, I was employed by Black & Veatch with responsibilities in electrical, instrumentation and control engineering and project management. From 1997-2001, I was employed by the Foxboro Company (Invensys) as a Principal Account Manager for Distributed Control Systems (DCS) that included hardware, software and instrumentation. From 2001-2002, I provided consulting services for the Argosy Console company in the areas of process engineering and re-engineering, supply chain management, Quality Assurance, Six Sigma and Safety program implementations.

From 2002-2005, I provided contract engineering services to AmerenUE at the Callaway Nuclear Station in the areas of Software Verification and Validation, INPO accredited training, Project Management, Cost and Schedule controls, Digital Control System procedures

**Schedule RSG-1-1**

and Plant Operation procedures. In 2005, I provided contract detailed instrumentation and control engineering services for the Process Division of Burns & McDonnell Engineering for the Conoco Phillips refinery in Amarillo, TX. In 2006, I was employed by CIBER as a Senior Strategist with responsibilities in Project Oversight for large software development projects and Continuity of Operations Plans. From 2007-2009, I provided staff augmentation contract engineering services for the Wolf Creek Nuclear Operating Company (WCNOC) at their Wolf Creek Nuclear Power Station as a Senior Design Professional Engineer for major design projects, emergent engineering issues and plant refueling outage engineering. In 2009, I was employed with Black & Veatch as the Nuclear Division Business Line Manager with responsibilities for business development, outside sale and marketing. I have been employed by the Missouri Public Service Commission since February 2010 as a staff Engineer to provide technical expertise in the areas of smart grid deployment and implementation, transmission, distribution, demand response, renewable/alternative energy sources, plug in hybrid and electric vehicles and coal carbon capture and sequestration. I attended the Commission's Missouri Energy Efficiency Investment Act of 2009 ("MEEIA") rulemaking workshops held in April through June, 2010 and participate in workshops addressing issues, impacts, deployment and implementation for demand response aggregation and smart grid issues. I am currently serving on the Organization of MISO States Demand Response and Technology independent working group, the NARUC staff Subcommittee on Clean Coal and Carbon Sequestration, and have worked with EISPC on various transmission line planning tasks.

**Schedule RSG-1-2**



Other cases I have been assigned to or participated are as follows:

<b>Date Filed</b>	<b>Case Number</b>	<b>Company Name</b>
11/10/2010	ER-2010-0355	Kansas City Power & Light Company
11/17/2010	ER-2010-0356	Kansas City Power & Light Company Greater Missouri Operations Company
05/10/2011	ER-2011-0028	Ameren Missouri
01/06/2012	EO-2011-0271	Ameren Missouri
03/20/2012	EO-2012-0009	Kansas City Power & Light Company Greater Missouri Operations Company