

Exhibit No.:  
Issues: Benefit Cost Tests  
Witness: David C. Roos  
Sponsoring Party: MO PSC Staff  
Type of Exhibit: Surrebuttal Testimony  
File No.: EO-2012-0009  
Date Testimony Prepared: May 10, 2012

**MISSOURI PUBLIC SERVICE COMMISSION**

**REGULATORY REVIEW DIVISION**

**SURREBUTTAL TESTIMONY**

**OF**

**DAVID C. ROOS**

**KCP&L GREATER MISSOURI OPERATIONS COMPANY**

**FILE NO. EO-2012-0009**

*Jefferson City, Missouri  
May 2012*

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

In the Matter of KCP&L Greater Missouri )  
Operations Company's Notice of Intent to )  
File an Application for Authority to )  
Establish a Demand-Side Programs )  
Investment Mechanism )

Case No. EO-2012-0009

**AFFIDAVIT OF DAVID C. ROOS**

STATE OF MISSOURI     )  
                                      ) ss  
COUNTY OF COLE     )

David C. Roos, of lawful age, on his oath states: that he has participated in the preparation of the following Surrebuttal Testimony in question and answer form, consisting of 9 pages of Surrebuttal Testimony to be presented in the above case, that the answers in the following Surrebuttal Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true to the best of his knowledge and belief.

  
\_\_\_\_\_  
David C. Roos

Subscribed and sworn to before me this 10<sup>th</sup> day of May, 2012.



  
\_\_\_\_\_  
Notary Public

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**SURREBUTTAL TESTIMONY**

**OF**

**DAVID C. ROOS**

**KCP&L GREATER MISSOURI OPERATIONS COMPANY**

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Q. Please state your name and business address.

A. My name is David C. Roos, and my business address is Missouri Public Service Commission, P. O. Box 360, Jefferson City, Missouri 65102.

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

A. I am a Regulatory Economist in the Resource Analysis Section of the Energy Unit in the Regulatory Review Division.

Q. Please state your educational background and experience.

A. In May 1983, I graduated from the University of Notre Dame, Notre Dame, Indiana, with a Bachelor of Science Degree in Chemical Engineering. I also graduated from the University of Missouri in December 2005, with a Master of Arts in Economics. I have been employed at the Missouri Public Service Commission as a Regulatory Economist III since March 2006. I began my employment with the Commission in the Economics Analysis section where my responsibilities included class cost-of-service and rate design. In 2008, I moved to the Energy Resource Analysis section where I am responsible for Staff’s review of electric utility load analysis and load forecasting, energy efficiency programs, and resource acquisition strategy selection related to Chapter 22 Electric Utility Resource Planning; and fuel adjustment clause filings and prudence reviews. Prior to joining the Public Service

Surrebuttal Testimony of  
David C. Roos

1 Commission, I taught introductory economics and conducted research as a graduate teaching  
2 assistant and graduate research assistant at the University of Missouri. Prior to the University  
3 of Missouri, I was employed by several private firms where I provided consulting, design, and  
4 construction oversight of environmental projects for private and public sector clients.

5 Q. Would you please summarize the purpose of your surrebuttal testimony?

6 A. I address two conclusions concerning the short-run and long-run cost-  
7 effectiveness of demand-side management (“DSM”) programs as discussed in the rebuttal  
8 testimony of Missouri Industrial Energy Consumers’ witness Maurice Brubaker.

9 1. The Commission Staff (“Staff”) agrees with Mr. Brubaker’s conclusion  
10 that in the short-run, customers that participate in the DSM programs will have  
11 the opportunity to be better off, while those customers who do not participate  
12 in the DSM programs will be worse off.

13 2. While Staff agrees with Mr. Brubaker’s conclusion that in the long-run,  
14 the DSM programs will cause customers’ rates to be higher than they would be  
15 without the DSM programs, on average, customer bills will be lower.

16 In this testimony I discuss: 1) why the ratepayer impact measure test (“RIM” or “non-  
17 participant test”)<sup>1</sup> is not an appropriate long-run cost-effectiveness test for DSM programs; 2)  
18 why the appropriate analyses of the KCP&L Greater Missouri Operations (“GMO” or  
19 “Company”) DSM portfolio should be focused on lowering customers’ average bills in the  
20 long run; 3) how Rule 4 CSR 240-22.060 Integrated Resource Plan and Risk Analysis and the

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<sup>1</sup> 4 CSR 240-3.164(1)(P): Non-participant test (sometimes referred to as the ratepayer impact measure test or RIM test) is a measure of the difference between the change in total revenues paid to a utility and the change in total cost incurred by the utility as a result of the implementation of demand-side programs. The benefits are the avoided cost as a result of implementation. The costs consist of incentives paid to participants, other costs incurred by the utility, and the loss in revenue as a result of diminished consumption. Utility costs include the costs to administer, deliver, and evaluate each demand-side program.

1 results of the utility cost test (“UCT”)<sup>2</sup> are the correct analyses to use to evaluate the long-run  
2 impact on customers; and 4) how the rate impact of GMO’s DSM programs as measured  
3 through the RIM test should be a secondary consideration.

4 **DSM Cost-Effectiveness Tests in Missouri**

5 Q. Is the RIM test a preferred cost-effectiveness test for DSM programs in  
6 Missouri?

7 A. No. Section 393.1075.4, RSMo, states: “The commission shall consider the  
8 total resource cost [TRC] test a preferred cost-effectiveness test.”

9 Q. Does the Missouri Energy Efficiency Investment Act (“MEEIA”) or the  
10 MEEIA rules<sup>3</sup> identify any preferred cost-effectiveness test other than the TRC?

11 A. No; however, in addition to the TRC test, Rule 4 CSR 240-3.164(2)(B)2.  
12 requires the electric utility to provide calculations for the following set of secondary cost tests  
13 when filing for approval of DSM programs: the utility cost test (“UCT”), the participant test  
14 (“PCT”), the non-participant test (also referred to as the “ratepayer impact measure test” or  
15 “RIM”), and the societal cost test (“SCT”).

16 Q. What cost-effectiveness tests are required by the Commission’s Chapter 22  
17 Electric Utility Resource Planning rules?

18 A. Rule 4 CSR 240-22.050(5)(B) requires the electric utility to calculate the TRC  
19 to evaluate potential DSM programs and rates. Rule 4 CSR 240-22.050(5)(C) requires the  
20 calculation of the UCT for comparison purposes.

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<sup>2</sup> Rule 4 CSR 240-3.164(1)(Y): Utility cost test means the test that compares the avoided utility cost to the sum of all utility incentive payments, plus utility costs to administer, deliver, and evaluate each demand-side program to quantify the net savings obtained by substituting the demand-side program for supply-side resources.

<sup>3</sup> The Commission’s rules promulgated as a result of the Missouri Energy Efficiency Investment Act of 2009 (“MEEIA”) (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.

1 Q. Other than Rule 4 CSR 240-3.164(2)(B)2., are you aware of any guidance on  
2 when to use preferred or primary cost-effectiveness tests versus secondary cost-effectiveness  
3 tests?

4 A. Yes. The National Action Plan for Energy Efficiency (2007), *Guide to*  
5 *Resource Planning with Energy Efficiency*, offers the following guidance:

6 PRIMARY COST TESTS<sup>4</sup>

7 Total Resource Cost (TRC) Test

8 The TRC test measures the net direct economic impact to the utility services  
9 territory (5-2). It is the primary cost test for regulators because programs that  
10 pass the TRC will reduce the total cost of energy in a region (5-3).

11 Societal Cost Test (SCT) Test

12 The SCT test is the same measurement as the TRC with external benefits  
13 included, and some tax credits excluded (5-3).

14 SECONDARY COST TESTS

15 Participant Test (PCT)

16 The PCT test measures the economic impact to the participating customer of  
17 adopting an energy efficiency measure (5-1).

18 Ratepayer Impact Measure (RIM) Test

19 The RIM test measures the impact on utility operating margin and whether  
20 rates would have to increase to maintain the current levels of margin if a  
21 customer installed energy efficient measures (5-2).

22 Utility Cost Test (UCT)

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<sup>4</sup> The following page references at the end of each sentence refer to The National Action Plan for Energy Efficiency (2007), *Guide to Resource Planning with Energy Efficiency*. Prepared by Snuller Price et.al., Energy and Environmental Economics, Inc. <[www.epa.gov/eeactionplan](http://www.epa.gov/eeactionplan)>

1           The UCT measures the change in the amount the utility must collect from the  
2           customer every year to meet revenue requirement (5-2). The UCT is the  
3           appropriate cost test from a resource planning perspective aimed at minimizing  
4           a utility's lifecycle revenue requirement (5-3).

5           Q.     What are some of the characteristics of the RIM test?

6           A.     The National Action Plan for Energy Efficiency (2008), *Understanding Cost*  
7           *Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and*  
8           *Emerging Issues for Policy-Makers*<sup>5</sup> states:

9                     A RIM test result of less than 1 implies rates would need to increase for the  
10                    utility to achieve the same level of earnings in the short term (6-4).

11                   The RIM is the most restrictive of the five cost-effectiveness tests (6-5).

12                   Most jurisdictions do not choose the RIM test as a primary test; many use it as  
13                   a secondary consideration, if at all (6-5).

14           **Short-Run Effects of DSM Programs on Retail Rates**

15           Q.     Does Staff agree with Mr. Brubaker's short-run assessment that "customers  
16           who do not participate will see higher rates"<sup>6</sup>?

17           A.     Yes. In the short-run, there are both direct and indirect benefits, and direct and  
18           indirect costs from the DSM Programs. Customers who participate in DSM programs are  
19           normally better off as a result of their direct participation in the programs. This situation is  
20           reflective of a PCT score greater than 1. The PCT score for GMO's residential customer

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<sup>5</sup> The following page references at the end of each sentence refer to National Action Plan for Energy Efficiency (2008), *Understanding Cost Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*. Energy and Environmental Economics, Inc. and Regulatory Assistance Project. <[www.epa.gov/eeactionplan](http://www.epa.gov/eeactionplan)>

<sup>6</sup> Rebuttal testimony of Maurice Brubaker, p.2, l. 18.



1 portfolio is 3.41 and the PCT score for GMO's Commercial and Industrial customer portfolio  
2 is 2.41.

3 Direct benefits for a customer participating in a DSM program include rebates or  
4 incentive payments received for participating in the program as well as lower energy usage  
5 and/or demand and, thus, lower monthly bills. The direct costs for a customer participating in  
6 a DSM program are out-of-pocket costs for the measures purchased through the DSM  
7 program. An indirect benefit for all retail customers (those who participate in DSM programs  
8 and those who do not) would be GMO's decreased reliance on spot market energy purchases  
9 and perhaps an increase in off-system sales revenue due to a drop in retail kWh sales equal to  
10 energy kWh savings from DSM programs. Decreased reliance on spot market energy  
11 purchases and more off-system sales would favorably impact all retail customers through  
12 GMO's current fuel adjustment clause ("FAC")<sup>7</sup>.

13 Even so, in the short-run, indirect benefits are not expected to be greater than the  
14 demand-side programs investment mechanism ("DSIM")<sup>8</sup> charge on customers' bills.<sup>9</sup> Thus,  
15 customers who do not participate directly in DSM programs can expect to have higher bills in  
16 the short-run because rates will increase due to the cost of the electric utility's DSM programs  
17 more than they will decrease due to the decreased reliance on spot market energy and  
18 increased off-system sales.

19 **Long-Run Effects of DSM Programs on Retail Rates**

20 Q. Is the RIM test appropriate for evaluating long-run effects of DSM programs?

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<sup>7</sup> GMO's P.S.C. MO. No. 1, Sheet Numbers 124 through 127.5.

<sup>8</sup> Rule 4 CSR 240-20.093(1)(M): Demand-side programs investment mechanism, or DSIM, means a mechanism approved by the commission in a utility's filing for demand-side programs approval to encourage investments in demand-side programs.

<sup>9</sup> Rule 4 CSR 240-20.093(1)(O): DSIM rate means the charge on customers' bills for the portion of the DSIM revenue requirement assigned by the commission to a rate class.

1           A.     No. The RIM test evaluates the change in rates needed for the utility to  
2 achieve the same level of earnings in the short run.<sup>10</sup>

3           Q.     Is there a cost-effectiveness test appropriate for measuring the long-run effects  
4 of DSM?

5           A.     Yes. The UCT is the appropriate cost-effectiveness test for the long run,  
6 because it views DSM programs from a resource planning perspective aimed at minimizing a  
7 utility's revenue requirement.<sup>11</sup> Under the UCT, a ratio greater than 1.0 indicates that the  
8 long run revenue requirement is less than if the utility had pursued supply-side resources. A  
9 UCT score greater than 1.0 also shows that customer average bills will eventually go down, if  
10 DSM programs are implemented.<sup>12</sup>

11          Q.     Would you please summarize the RIM and UCT ratios for GMO's DSM  
12 portfolio?

13          A.     The UCT ratio is 3.22 and the RIM ratio is 0.95 for GMO's residential  
14 customer portfolio. The UCT ratio is 3.99 and the RIM ratio is 1.09 for GMO's Commercial  
15 and Industrial customer portfolio. The UCT ratio is 3.45 and the RIM ratio is 1.00 for GMO's  
16 total DSM portfolio. These ratios show that if these DSM programs are implemented GMO's  
17 rates may be higher, but the average customer's bill will be lower than they would be without  
18 the DSM programs.

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<sup>10</sup> National Action Plan for Energy Efficiency (2008), *Understanding Cost Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*. Energy and Environmental Economics, Inc. and Regulatory Assistance Project. <[www.epa.gov/eeactionplan](http://www.epa.gov/eeactionplan)> (P. 6-4)

<sup>11</sup> The National Action Plan for Energy Efficiency (2007), *Guide to Resource Planning with Energy Efficiency*. Prepared by Snuller Price et.al., Energy and Environmental Economics, Inc. [www.epa.gov/eeactionplan](http://www.epa.gov/eeactionplan) (P. 5-2),(P. 5-3)

<sup>12</sup> National Action Plan for Energy Efficiency (2008), *Understanding Cost Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*. Energy and Environmental Economics, Inc. and Regulatory Assistance Project. [www.epa.gov/eeactionplan](http://www.epa.gov/eeactionplan) (P. 6-3)

**Long-Run Effects of DSM Programs on Customers' Average Bills**

Q. Do Commission rules require electric utilities to evaluate DSM programs over the long-run?

A. Yes. The Commission's Chapter 22 Electric Utility Resource Planning rules and its MEEIA rules both require electric utilities to evaluate DSM programs over the long-run.

Q. Would you summarize the requirements of these rules with respect to evaluation of long-run DSM program options?

A. One of the policy objectives of Chapter 22 Electric Utility Resource Planning is to analyze demand-side resources and supply-side resources on an equivalent basis. This evaluation is part of a larger process designed to minimize present worth of the utility's long-run utility cost expressed as the present value revenue requirement ("PVRR"). With regard to DSM programs, Rule 4 CSR 240-22.050 Demand Side-Resource Analysis specifies the principles by which potential DSM program options are developed and analyzed for cost-effectiveness. The goal of DSM program analysis is to achieve all cost-effective demand-side savings.<sup>13</sup> DSM program options are then evaluated through the requirements of Rule 4 CSR 240-22.060 Integrated Resource Plan and Risk Analysis with the purpose of designing alternative resource plans to meet the primary planning objective of minimizing PVRR. Rule 4 CSR 240-22.070 Resource Acquisition Strategy Selection, requires the utility to select a preferred resource plan from the candidate resource plans, using minimization of PVRR as the primary selection criterion. An implementation plan is developed and adopted as part of the resource acquisition strategy.

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<sup>13</sup> The purpose statement of Rule 4 CSR 240-22.050 is: "This rule specifies the principles by which potential demand-side resource options shall be developed and analyzed for cost effectiveness with the goal of achieving all cost-effective demand-side savings."

1           The MEEIA states that it is the policy of the state to value demand-side investments  
2 equal to supply-side investments and that a goal is to achieve all cost effective demand-side  
3 savings.<sup>14</sup> Rule 4 CSR 240-20.094 Demand Side Programs sets forth the requirements,  
4 procedures for filing, and processing applications for approval of electric utility DSM  
5 programs. Rule 4 CSR 240-20.094(3)(A)3. requires the utility's DSM programs and program  
6 plan be included in the electric utility's preferred resource plan or have been analyzed through  
7 the integration process required by Rule 4 CSR 240-22.060 to determine the impact of the  
8 DSM programs and program plan on the present value of revenue requirements of the electric  
9 utility.

10           Q.     Is PVRR analogous to the long-run impact on customers' average bills?

11           A.     Yes. Lower long-run utility costs equates to lower PVRR which equates to  
12 lower customers' average bills in the long-run.

13           Q.     Does this conclude your testimony?

14           A.     Yes.

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<sup>14</sup> Section 393.1075.3. & 4. RSMo Supp. 2011.

David C. Roos

**Present Position:**

I am a Regulatory Economist III in the Energy Resource Analysis Section, Energy Unit, Regulatory Review Division of the Missouri Public Service Commission.

**Educational Background and Work Experience:**

In May 1983, I graduated from the University of Notre Dame, Notre Dame, Indiana, with a Bachelor of Science Degree in Chemical Engineering. I also graduated from the University of Missouri in December 2005, with a Master of Arts in Economics. I have been employed at the Missouri Public Service Commission as a Regulatory Economist III since March 2006. I began my employment with the Commission in the Economics Analysis section where my responsibilities included class cost-of-service and rate design. In 2008, I moved to the Energy Resource Analysis section where I am responsible for Staff's review of electric utility load analysis and load forecasting, energy efficiency programs, and resource acquisition strategy selection related to Chapter 22 Electric Utility Resource Planning; and fuel adjustment clause filings and prudence reviews. Prior to joining the Public Service Commission, I taught introductory economics and conducted research as a graduate teaching assistant and graduate research assistant at the University of Missouri. Prior to the University of Missouri, I was employed by several private firms where I provided consulting, design, and construction oversight of environmental projects for private and public sector clients.

## Previous Cases

<u>Company</u>	<u>Case No.</u>
Empire District Electric Company	ER-2006-0315
AmerenUE	ER-2007-0002
Aquila Inc.	ER-2007-0004
Kansas City Power and Light	ER-2007-0291
AmerenUE	EO-2007-0409
Empire District Electric Company	ER-2008-0093
Kansas City Power and Light	ER-2008-0034
Greater Missouri Operations	HR-2008-0340
Greater Missouri Operations	ER-2009-0091
Greater Missouri Operations	EO-2009-0115
Greater Missouri Operations	EE-2009-0237
Greater Missouri Operations	EO-2009-0431
Empire District Electric Company	ER-2010-0105
Greater Missouri Operations	EO-2010-0002
AmerenUE	ER-2010-0036
AmerenUE	ER-2010-0044
Empire District Electric Company	EO-2010-0084
Empire District Electric Company	ER-2010-0105
AmerenUE	ER-2010-0165
Greater Missouri Operations	EO-2010-0167
AmerenUE	EO-2010-0255
Greater Missouri Operations (Aquila)	EO-2008-0216
Ameren Missouri	ER-2011-0028
Empire District Electric Company	EO-2011-0066
Empire District Electric Company	EO-2011-0285
Ameren Missouri	EO-2012-0074
Empire District Electric Company	EO-2012-0294
Ameren Missouri	EO-2012-0142