

Exhibit No.:
Issues: Energy Efficiency DSM
Programs
Witness: Hojong Kang
Sponsoring Party: MO PSC Staff
Type of Exhibit: Rebuttal Testimony
File No.: EO-2012-0009
Date Testimony Prepared: March 20, 2012

MISSOURI PUBLIC SERVICE COMMISSION

REGULATORY REVIEW DIVISION

REBUTTAL TESTIMONY

OF

HOJONG KANG

KCP&L GREATER MISSOURI OPERATIONS COMPANY

FILE NO. EO-2012-0009

*Jefferson City, Missouri
March 2012*

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

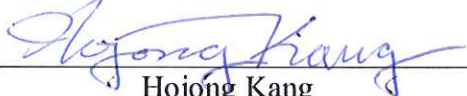
In the Matter of KCP&L Greater Missouri)
Operations Company's Notice of Intent to)
File an Application for Authority to)
Establish a Demand-Side Programs)
Investment Mechanism)

Case No. EO-2012-0009

AFFIDAVIT OF HOJONG KANG

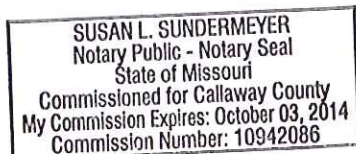
STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Hojong Kang, of lawful age, on his oath states: that he has participated in the preparation of the following Rebuttal Testimony in question and answer form, consisting of 24 pages of Rebuttal Testimony to be presented in the above case, that the answers in the following Rebuttal 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.



Hojong Kang

Subscribed and sworn to before me this 20th day of March, 2012.





Notary Public

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REBUTTAL TESTIMONY

OF

HOJONG KANG

KCP&L GREATER MISSOURI OPERATIONS COMPANY

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

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

A. I received a PhD degree in Economics from the University of Missouri, Columbia in 2005, a Master of Business Administration degree from California State University at East Bay in 1996 and a Bachelor of Science degree in Business Administration from Hong-Ik University, Korea in 1991. I have worked as a Regulatory Economist in the Resource Analysis Section of the Missouri Public Service Commission (“Commission”) since 2008 and in my employment with the Commission in 2010. In my position as a Regulatory Economist for the Commission Staff (“Staff”), I review the resource plan filings¹ and the rate increase filings² of investor-owned electric utilities and contribute to the Staff in cases regarding demand-side analysis and LED street lighting. I have contributed to

² ER-2010-0355 for Kansas City Power & Light Company (“KCPL”), ER-2010-0356 for KCP&L Greater Missouri Operations Company (“GMO”), ER-2011-0004 for Empire, and ER-2011-0028 for Ameren Missouri.

Rebuttal Testimony of
Hojong Kang

1 the Staff's direct testimony for rate design and class cost-of-service reports in the last general
2 electric rate cases of all of investor-owned electric utilities and filed surrebuttal testimony in
3 Case No. ER-2011-0028 to present and support Staff's recommendations that the electric
4 utilities initiate LED street lighting programs. Schedule HK-1 contains a list of the
5 conferences and seminars I have attended regarding LED street lighting and demand-side
6 analysis. I also attended the Commission's Missouri Energy Efficiency Investment Act of
7 2009 ("MEEIA") rulemaking workshops held in April through June, 2010.

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

9 A. I address the direct testimony of KCP&L Greater Missouri Operations
10 Company's ("GMO's" or "Company's") witness Allen D. Dennis. I provide Staff's review of
11 GMO's calculation of the Total Resource Cost test ("TRC") for all of GMO's proposed
12 demand-side management ("DSM") programs. I include Staff's review, analysis and
13 recommendations concerning GMO's proposed DSM programs³ except for the MPower and
14 the Energy Optimizer demand response programs with respect to the minimum filing
15 requirements contained in Rules 4 CSR 240-20.094(3) and 4 CSR 240-3.164(2).

16 As a result of its review, Staff finds that the energy and demand savings levels and
17 avoided cost estimates GMO has provided for its Program designs and spending levels are
18 reasonable. I present Staff's following recommendations related to GMO's proposed
19 Programs:

- 20 1. That the Commission order GMO to calculate the TRC for all of its
21 DSM programs consistent with the definition of the TRC in Rule
22 4 CSR 240-3.164(1)(X);

³ I used "Program" or "Programs" for the demand-side programs I reviewed in this testimony: nine (9) energy efficiency programs, three (3) educational programs, and one (1) affordable program for low-income residential customers.

- 1 2. The Commission approve GMO's proposed Programs with the condition that
2 GMO make a filing that meets the as yet unmet requirements of Rule
3 4 CSR 240-3.16(2)(C) for its current DSM programs that it is proposing to
4 modify in this filing;
- 5 3. The Commission find the Company's proposed annual energy and demand
6 savings levels are reasonable given the program designs and planned spending
7 levels; and
- 8 4. The Commission find that GMO has a reliable evaluation, measurement and
9 verification ("EM&V") plan.

10 **Calculation of the Total Resource Cost Test**

11 **Q. Did GMO properly calculate the TRCs for each of the programs?**

12 A. No, GMO improperly calculated the TRC for the Appliance Turn-in and
13 MPower programs that have the negative participant cost with an incentive.

14 **Q. What is improper about how GMO calculated the TRCs?**

15 A. In Rule 4 CSR 240-3.164(1)(X), TRC is defined as:

16 (X) Total resource cost test, or TRC, means the test of the cost-effectiveness of
17 demand-side programs that compares the avoided utility costs to the sum of all
18 incremental costs of end-use measures that are implemented due to the
19 program (including both utility and participant contributions), plus utility costs
20 to administer, deliver, and evaluate each demand-side program.

21 Total costs in the TRC calculation can be expressed as⁴:

22 Total Costs (***TC***) = All Utility Costs (***UC***) + Participant Contributions (***PC***)

23 *where:*

⁴ The California Standard Practice Manual (2002). In this manual, the formula is expressed with the net present values.

UC: The *Sum* of Administration Costs, Implementation Costs,
Utility Incentive Payments, and Other Costs including EM&V.

PC: Gross Expense *minus* Utility Incentive Payments.

This can be rewritten as:

$$\begin{aligned} \text{Total Costs (TC)} = & [\text{Administration Costs} + \text{Implementation Costs} + \text{Utility} \\ & \text{Incentive Payments} + \text{Other Costs including EM\&V}] + \\ & [\text{Gross Expense} - \text{Utility Incentive Payments}] \end{aligned}$$

In this formula, the utility incentive payments are canceled out, because utility incentive payments are a positive cost to the utility and a negative cost to the participant. It signifies no change in total resources in the service territory because the incentive dollars paid by the utility remain within the service area and are considered an economic transfer payment from the utility to the DSM program participants. Therefore, the payment of an incentive in a demand-side program does not affect the total resources in the service territory or the TRC calculation.

However, the Company included the incentive payments as an implementation or participant cost when it evaluated its Appliance Turn-In and MPower programs using the DSMoreTM⁵ computer software. The Company explained its TRC calculation in its response to Staff's Data Request No. 0007⁶ as follows: "KCP&L interprets 'all Incremental costs' in Rule 4 CSR 240-3.164(1)(X) to mean all utility costs including any incentive payments made by the utility to a participant of a program plus participant contributions." This is inconsistent

⁵ Demand Side Management Option Risk Evaluator (DSMoreTM) is a financial analysis tool designed to evaluate the costs, benefits, and risks of DSM programs and services. DSMoreTM provides cost effectiveness test results, including UCT, Total Resource Cost Test, Ratepayer Impact Measure Test, and Societal Test. Currently, Ameren Missouri, KCPL and GMO are using this program to evaluate DSM programs.

⁶ In this data request response, GMO refers to itself as KCP&L.

1 with the definition in Rule 4 CSR 240-3.164(1)(X) and the generally accepted method for
2 calculating the TRC. Instead, it is consistent with calculating the utility cost test (“UCT”).

3 **Q. What is the difference between the UCT and the TRC?**

4 A. The UCT, also called the Program Administrator Cost Test (“PACT”),
5 measures the net costs of a program as a resource option based on the costs the program
6 administrator incurs, *including incentive costs*, and excluding any net costs the program
7 participants incur. The UCT benefits are similar to the TRC benefits.⁷ The TRC includes the
8 net participant cost, but the UCT does not.

9 **Q. Did Staff calculate the TRC for the Appliance Turn-in and MPower**
10 **programs?**

11 A. Yes, Staff re-ran the DSMore analysis conducted by GMO to determine the
12 TRCs of these two programs.

13 **Q. Did the Company re-calculate the TRC for the Appliance Turn-in and**
14 **MPower programs?**

15 A. Yes, in response to Staff Data Request No. 0008, GMO re-calculated the TRC
16 for the Appliance Turn-In program. The TRC of this program changed to 3.65 from 2.30,
17 which is consistent with Staff’s result. Staff also re-calculated the TRC for the MPower
18 program with the same methods it used for recalculating the TRC for the Appliance Turn-In
19 program and got 5.21 instead of the 0.21 GMO originally calculated and reported. To
20 confirm Staff’s TRC calculation for the MPower program, in Staff Data Request No. 0008.1
21 Staff has requested GMO to re-calculate the TRC for the MPower program. Staff does not yet
22 have GMO’s response to that data request.

⁷ The California Standard Practice Manual (2002), p.23.

1 **Q. Did GMO use the correct method to calculate the TRC for its other**
2 **demand-side programs?**

3 A. Yes.

4 **Q. Does Staff have a recommendation for the Commission regarding the**
5 **calculation of the TRCs for GMO's demand-side programs?**

6 A. Yes. Staff recommends that the Commission order GMO to calculate the TRC
7 for its demand-side programs in future filings consistent with the definition in Rule
8 4 CSR 240-3.164(1)(X) for all of its demand-side programs.

9 **Additional Variance**

10 **Q. Has Staff identified any variances GMO should have requested for its**
11 **demand-side programs that it has not already identified in pleadings filed in this case?**

12 A. Yes. Based on Staff's review, not all of the DSM programs GMO proposes
13 here are part of GMO's preferred plan filed at the Commission. GMO has not requested any
14 variances from Rule 4 CSR 240-20.094(3)(A)(3). That rule requires that all of the DSM
15 programs GMO proposes either (1) be included in GMO's preferred plan or (2) have been
16 analyzed through the integration process required by Rule 4 CRS 240-22.060 to determine the
17 impact of the demand-side programs and program plans on the net present value of revenue
18 requirements of the Company.

19 **Q. If GMO were now to request a variance from Rule**
20 **4 CRS 240-20.094(3)(A)(3) to address this deficiency would Staff support them?**

21 A. GMO is scheduled to make a compliance filing pursuant to Chapter 22 on
22 April 1, 2012 ("2012 Filing"). Only on the condition that GMO includes all proposed DSM

1 programs as a part of GMO's preferred plan in its 2012 Filing would Staff support the
2 Commission granting this variance.

3 **Review of Demand-Side Programs**

4 **Q. Has Staff identified any differences between GMO's current DSM**
5 **programs and the DSM programs GMO is proposing the Commission approve under**
6 **the MEEIA here?**

7 A. Yes, GMO has modified four (4) existing programs for purposes of their being
8 approved under the MEEIA in this case: Energy Star® New Homes program, MPower
9 program, Energy Optimizer program, and Energy Audit and Energy Saving Measures Rebate
10 program.

11 **Q. What specific modifications to these programs has GMO made?**

12 A. The following summary provides the proposed modifications to Energy Star®
13 New Home program and Energy Audit and Energy Saving Measures Rebate programs. Staff
14 witness Randy S. Gross discusses GMO's modifications to its MPower and Energy Optimizer
15 programs in his testimony.

16 **1. ENERGY STAR® New Homes**

17 a. Consistent with ENERGY STAR® guidelines for multi-family units, GMO
18 proposes to change the program to include multi-family units greater than three stories
19 if:

- 20 i. the structure is permitted as residential by local building code; and
21 ii. each individual residential unit has its own heating, cooling, and hot
22 water systems, separate from the other units.

1 b. The annual maximum rebate cap per builder per development is \$150,000 to
2 prevent exhaustion of the program budget due to large multi-family projects.

3 **2. Energy Audit and Energy Saving Measures Rebate Program**

4 GMO proposes to:

5 a. Rename tariff to C&I Rebate program.

6 b. Expand the Prescriptive Energy Efficiency Measures Rebate component.

7 c. Eliminate the rebate for a completed audit. This portion of the current
8 program has not been successful and has not had any participants.

9 d. Increase annual customer maximum rebate levels such that the maximum is
10 limited up to \$150,000 per site per program year and up to \$250,000 per
11 customer per program year. This change is expected to encourage larger
12 energy efficiency projects, and will allow each customer to submit more
13 applications for multiple sites up to these maximums.

14 **Q. How do these modifications affect these programs?**

15 A. These program modifications may increase the number of participants in these
16 programs.

17 **Q. Would you describe the programs you reviewed for this case?**

18 A. I reviewed nine (9) energy efficiency (“EE”) programs, three (3) educational
19 programs, and one (1) affordable program for low-income residential customers. A brief
20 description of each follows.
21

1 **1. Energy Efficiency Programs**

2 In this category, GMO is requesting approval for four (4) of its existing
3 programs with some modifications, and for five (5) newly developed
4 programs.

5 **Existing Programs**

6 **a. Energy Star® New Homes**

7 The Energy Star® New Homes program is designed to improve the
8 energy efficiency of homes built in the residential construction market
9 by applying efficient construction techniques and high-performance
10 products (windows, doors, appliances, lighting, and heating and cooling
11 systems) in accordance with guidelines set by the Energy Star®
12 program. Homes built under the Energy Star® guidelines are typically
13 20–30% more energy efficient than standard homes.

14 This program is offered in accordance with the training, rating and
15 incentive elements of the program available to builders constructing
16 new homes within the Company’s service territory area.

17 **b. Cool Homes**

18 The Cool Homes program is designed to encourage residential
19 customers to have their working, central cooling systems evaluated and,
20 if feasible, brought back to factory specifications (re-commissioned), or
21 to replace less efficient, working central cooling systems with high
22 efficiency central cooling systems.

1 This program is available to any current customer with a working,
2 central home cooling system receiving service under any generally
3 available residential rate schedule. Customer participation is limited to
4 fund availability.

5 **c. Home Performance with Energy Star[®]**

6 The Home Performance with Energy Star[®] (“HPwES”) program is
7 intended to encourage residential customers to identify deficiencies and
8 implement measures in energy efficiency in their homes. This is
9 achieved by conducting a comprehensive home audit and implementing
10 at least one of the recommended improvements.

11 This program is available to any customer receiving service under
12 any generally available residential rate schedule offered by the
13 Company. All audits must be requested by the owner of the home,
14 multiplex, or apartment. A tenant agreement is required for rental
15 residences. Program rebates are limited to one rebate per audit.
16 Customer participation is limited to fund availability.

17 **d. Commercial and Industrial (“C&I”) Rebate**

18 The Company’s C&I Rebate program is designed to encourage
19 more effective utilization of electric energy through energy efficiency
20 improvements in the building shell, installation of efficient electrical
21 equipment in new construction, or the replacement of inefficient
22 electrical equipment with efficient electrical equipment. The program

1 provides rebates for an energy audit and subsequent improvements in
2 the energy efficiency of the building space and/or equipment.

3 Customer applications are evaluated and the rebates will be
4 distributed on a first-come basis according to the date of the customer's
5 application. Customer participation is limited to fund availability.

6 **New Programs**

7 **e. Residential Lighting and Appliance**

8 The Residential Lighting and Appliance ("L&A") program
9 promotes ENERGY STAR® appliances, lighting, and home electronics.
10 The program uses a two-pronged approach: 1) increasing the supply of
11 qualifying products through partnerships with retailers, manufacturers
12 and distributors, and 2) creating demand through consumer awareness
13 and understanding of the ENERGY STAR® label and the benefits of
14 energy efficiency.

15 Residential customers may participate in this program by
16 purchasing any of the ENERGY STAR® qualified products listed in
17 this tariff from participating program partners. Eligible measures
18 installed and paid incentives under this program are not eligible for an
19 incentive through any of the Company's other demand-side
20 management programs. Customer participation is limited to fund
21 availability.
22

f. Residential Energy Report

This program is a pilot program that provides residential customers with an energy report that shows a comparison of the customer's household energy usage information with similar type customers or neighbors. The intention of the energy report is to provide information that will influence customers' behaviors in such a way that they reduce their energy usage. This is a behavioral modification program.

The Company will conduct a three-year pilot of the program, selecting 50,000 customers per year for participation. The program will operate as an opt-out only program, meaning the Company will select customers for participation in the program and will allow customers to opt-out if desired. Residential energy reports will be automatically delivered to each target customer five or six times per year.

g. Multi-Family Rebate

The Multi-Family Rebate program advances comprehensive energy efficiency measures, including: whole house solutions, plug load efficiency, visual monitoring and displays, performance standards, local government opportunities and DSM integration in qualified multi-family residences.

The Multi-Family Rebate program offers prescribed rebates for energy efficient products to motivate multi-family property owners/managers to install energy efficient products in both common

1 and dwelling areas of multi-family complexes and common areas of
2 mobile home parks and condominiums.

3 **h. C&I Prescriptive Rebate**

4 The program is designed to 1) provide incentives to facility owners
5 and operators for the installation of high efficiency equipment and
6 controls; and 2) provide incentives to facility owners and operators for
7 the installation of high efficiency equipment and controls; and 3)
8 provide a marketing mechanism for electrical contractors, mechanical
9 contractors, and their distributors to promote energy efficient
10 equipment to end users.

11 Customer applications will be evaluated and the rebates will be
12 distributed on a first-come basis according to the date of the customer's
13 application.

14 **i. Appliance Turn-In**

15 The Appliance Turn-In program is designed to incent residential
16 customers to remove operating, inefficient, secondary appliances (old
17 room air conditioners, refrigerators, freezers, and dehumidifiers) by
18 taking the appliances out of the home and recycling them in an
19 environmentally safe manner at no cost to the participating customer.
20 Refrigerators or freezers must be clean, empty, defrosted, and at least
21 10 cubic feet and no more than 32 cubic feet in size.

22 The secondary purpose is to raise awareness of the energy benefits
23 of Energy Star® appliances.

1 **2. Educational Programs**

2 All of the educational programs are existing programs.

3 **a. Building Operator Certification**

4 This voluntary program is designed to establish and encourage
5 Building Operator Certification through the Northwest Energy
6 Efficiency Council's Building Operator Certification Level 1 and Level
7 2 curriculums. This effort will include certification update and refresh
8 as appropriate. In support of partnerships with the Missouri
9 Department of Natural Resources Energy Center (MDNR) and the
10 Midwest Energy Efficiency Alliance (MEEA), the Company will:

- 11 1) Reimburse the annual cost to license the Level 1 and Level 2
12 curriculums for the Company's Missouri service territory, and
13 2) Reimburse portions of the tuition costs for Building Operators
14 associated with properties in the Company's service area who
15 successfully complete or refresh the certifications.

16 **b. Home Energy Analyzer**

17 This program allows all residential customers with access to the
18 Internet to retrieve their billing information, make comparisons of
19 electric usage on a monthly or yearly basis, analyze electric usage on an
20 enduse basis, and research energy savings by end use through a
21 searchable resource center. Customers can also compare their bills to
22 analyze changes from one month to another. Residential customers can

also compare their home to a similar home in terms of average energy usage using the Energy Guide label concept.

c. Business Energy Analyzer

This program is similar to the Home Energy Analyzer program. It is available to any non-residential and non-lighting customers.

3. Affordable Program – Low-Income Weatherization

This voluntary program is intended to assist low-income residential customers in reducing their energy usage by weatherizing the homes of qualified customers.

Q. Would you summarize types and amount of reimbursements allowed for each Program?

A. In the proposed tariff sheet, Sheet No. R-68.1, filed in this case, GMO summarizes the types and amount of reimbursements allowed. I have also attached this proposed tariff sheet as the Schedule HK-2.

Evaluation, Measurement, and Verification Reports

Q. Did the Company provide evaluation, measurement, and verification (“EM&V”) reports for the programs contained in its MEEIA filing?

A. The Company provided EM&V reports for the following six (6) existing programs: Energy Star New Homes, Cool Homes, HPwES, C&I Rebate, Building Operator Certification, and Low-Income Weatherization in Allen Dennis’ Schedules ADD-4, ADD-5, ADD-6, ADD-9, ADD-10, and ADD-7, respectively. The Company also filed the EM&V reports for the Energy Optimizer and MPower demand response programs in Schedules ADD-

1 3 and ADD-8 to the direct testimony of GMO witness Allen Dennis, respectively. Staff
2 witness Randy S. Gross discusses these programs in his rebuttal testimony.

3 The Company did not file an EM&V report for two existing programs, Home Energy
4 Analyzer and Business Energy Analyzer, because it is difficult to measure the amount of the
5 energy savings from these programs.

6 GMO did not file EM&V reports for the new programs because programs should
7 operate for at least two years before a meaningful evaluation can be conducted.

8 **Q. Does Staff have a position regarding the EM&V reports GMO included in**
9 **its MEEIA filing?**

10 A. Yes. Staff reviewed the EM& V reports developed by the Opinion Dynamics
11 Corporation. Staff notes that Opinion Dynamics Corporation has demonstrated experience
12 and expertise in this area as indicated by its energy client list, case studies and list of
13 publications on its website.⁸ Staff finds that the EM&V reports meet the rule requirements for
14 EM&V reporting, requirements such as the independence of a third party evaluator to assure
15 the integrity of an EM&V report. Staff also concludes that the EM&V results indicate that
16 these programs are a cost-effective means of achieving energy saving goals in Missouri.

17 **Q. In his direct testimony, at page 29, GMO witness Allen Dennis states that**
18 **there will be a true-up mechanism for annual energy and demand-side savings that will**
19 **only account for differences in projected verse actual participants and measures. Does**
20 **Staff view this to be sufficient?**

21 A, No. Staff witness Mark L Oligschlaeger recommends the Commission allow
22 the Company to book a regulatory asset equal to GMO's proposed shared benefits incentive
23 component, subject to true-up based on actual shared benefits determined through an EM&V

⁸ <http://www.opiniondynamics.com/>

1 process. However, Staff is in agreement with Mr. Dennis concerning the use of participants
2 and measures for the true-up of programs' costs for GMO's cost recovery component of a
3 DSIM.

4 **Minimum Filing Requirements of Rule 4 CSR 240-3.164(2)(C)**

5 **Q. Did the Company provide the minimum filing requirements of Rule 4**
6 **CSR 240-3.164(2)(C) for each of its proposed programs?**

7 A. No. The Company provided in its application all of the minimum filing
8 requirements of Rule 4 CSR 240-3.164(2)(C) for its proposed new programs, but not for its
9 existing programs that it includes as programs for the Commission to approve under the
10 MEEIA. Staff requested information in Staff's Data Request Nos. 0006 and 0006.1 to obtain
11 all of the minimum filing requirements in Rule 4 CSR 240-3.164(2)(C) for GMO's existing
12 programs which it includes in this case as proposed demand-side programs for the
13 Commission to approve under the MEEIA. The Company response to Data Request No.
14 0006.1 states:

15 Schedule TMR-4 attached to the testimony of Tim Rush in Case
16 No. EO-2012-0008 was considered the support detail for GMO
17 as well. Schedule TMR-4 consists of the Applications,
18 Recommendations and Orders associated with the KCP&L
19 portfolio of the requested DSM programs and is attached.

20 **Q. Does the Company's response fulfill the minimum filing requirements of**
21 **Rule 4 CSR 240-3.164(2)(C) for GMO's proposed DSM programs?**

22 A. No, Schedule TMR-4 of the Kansas City Power & Light's ("KCPL") filing in
23 File No. EO-2012-0008 consists of all of the following for *KCPL's current* demand-side
24 programs: tariff sheets, supporting information, any recommendations of Staff and other
25 parties, and Commission orders. Schedule TMR-4 does not satisfy the minimum filing

1 requirements of Rule 4 CSR 240-3.164(2)(C) for GMO's proposed DSM programs, because it
2 contains information for *KCPL's current* DSM programs and not *GMO's proposed* DSM
3 programs. For example, GMO does not provide the information for the proposed evaluation
4 schedule and budget information with regarding to Rule 4 CSR 240-3.164(2)(C)(13) and (14),
5 respectively.

6 **Q. Has not KCPL withdrawn its application that created Case No. EO-2012-**
7 **0008?**

8 A. Yes.

9 **Q. What is Staff's position regarding the minimum filing requirements of**
10 **Rule 4 CSR 240-3.164(2)(C) and GMO's MEEIA filing?**

11 A. Even though GMO did not fulfill the minimum filing requirements of the rule,
12 Staff finds that the Company's proposed programs would be beneficial to GMO's customers.
13 Therefore, Staff recommends that the Commission order GMO to bring its filing into
14 compliance with Rule 4 CSR 240-3.16(2)(C) as a condition of approving GMO's DSM
15 programs.

16 **Proposed Annual Energy and Demand Savings Levels**

17 **Q. How much energy savings does the Company expect to achieve from the**
18 **proposed programs?**

19 A. Staff witness John A. Rogers summarizes the amount of savings from each
20 program in his Schedule JAR-3.

21 **Q. How are GMO's proposed annual energy and demand savings levels for**
22 **its DSM programs calculated?**

1 A. First, GMO evaluates each DSM program with the DSMore™ software based
2 on the inputs from the results of EM&V reports for the existing programs and based on
3 EM&V studies performed for other utilities and inputs from its contractors for the newly
4 proposed DSM programs. Based on the cost-effectiveness test outputs from the DSMore™
5 model for all proposed DSM programs, GMO chose the DSM programs for this MEEIA
6 filing. However, the Company does not use the annual energy and demand savings outputs
7 from the DSMore™ model analysis for its DSM programs as its demand-side program plan's
8 annual energy and demand savings levels and budgets.

9 GMO calculated its proposed DSM programs' annual energy savings levels by scaling
10 the actual energy savings of its 2010 DSM programs and using the result for the existing
11 programs it is proposing to continue (with modifications), and by adding energy savings for
12 the new programs to equate to 0.5% of GMO's forecasted energy sales (kWh) per year.
13 GMO's annual demand savings levels for its DSM programs are based on maintaining the
14 same general relationship between annual energy savings and annual demand savings for the
15 2010 DSM programs and "scaling up" to levels of annual energy and demand savings for its
16 proposed DSM programs. Annual demand savings for the new DSM programs are based on
17 contractor estimates. The Company calls this approach '*the top-down methodology*,' which
18 also uses an assumed 15-year life for all DSM programs' measures, except for the MPower
19 and Residential Reports program.

20 **Q. Does Staff have any concerns with this "top-down" methodology?**

21 A. When compared to DSMore™ model evaluation results for the same DSM
22 programs, GMO's *top-down methodology* results are inconsistent. For instance, the ratio of
23 annual energy saving (kWh) to annual demand saving (kW) is different using the *top-down*

1 methodology from the same ratio which is available from the DSMore™ model. The ratio of
2 the Home Performance with Energy Star is 2,153 from the DSMore™ model and 4,380 from
3 the *top-down methodology*. It is Staff's understanding that GMO estimates annual demand
4 savings (kW) for the top-down methodology based on the method motioned above, not based
5 on a historical demand savings as used in the DSMore™ model.

6 Also, the proposed savings of each program's levels can be overestimated or
7 underestimated relative to the estimated savings from the DSMore™ model. For the
8 evaluation of the proposed programs using the DSMore™ model, each measure for each
9 program has a defined measure life. However, GMO assumed 15 years for a measure life for
10 each program without giving a good explanation. Using a different measure life will cause a
11 different savings level - both with the *top-down methodology* and with the program evaluation
12 with the DSMore™.

13 Another concern is GMO's estimate of the program cost of each DSM program.
14 GMO estimated the program cost based on the historic average total program cost per kWh
15 savings for the first year of each program during the 2008 to 2010 time period. GMO also
16 assumes that the program cost will increase 2.5% yearly. These estimated program costs
17 under GMO's assumptions are different than the estimated program costs used in the
18 DSMore™ model. Additionally, GMO's estimated program costs are not separated into the
19 different components of program costs, such as incentive payments or administration costs, as
20 they are in the DSMore™ model. Program costs may be overestimated or underestimated if
21 the Company spent more or less during the first program year, a year which is usually a
22 period of transition and uncertain program performance. As programs are implemented, the

1 programs' administrator(s) "climb the learning curve," and the Company's customers become
2 familiar with the availability of the programs.

3 Because of these differences in methodologies, the estimated cost-effectiveness test
4 results for each proposed program will be different from those results from the DSMore™
5 model even though GMO used the same average annual avoided energy cost per kWh and the
6 same average annual avoided capacity cost per kW obtained from the DSMore™ model. This
7 means that if GMO achieved the same values for the program benefit, but at a different value
8 for the program cost, the result would be different cost-effectiveness test results for the
9 outcome.

10 **Q. What Net-To-Gross ratio does GMO intend to use for its impact**
11 **evaluation?**

12 A. Mr. Dennis in his testimony, p.26, states that:

13 GMO's goal of impact evaluation is to calculate gross program
14 energy and demand savings. Gross program impacts are the
15 estimated site level demand and energy savings caused by the
16 measures installed through the program and do not account for
17 factors such as free ridership, which may influence attribution of
18 savings to the program.

19 GMO uses the DSMore model for its impact evaluation. The DSMore™ model
20 includes both net and gross ratios. It is not clear in GMO's filing whether the Company is
21 proposing to only measure and verify gross savings through the EM&V process. If the
22 Company plans to only measure and verify gross savings, rather than also attempting to
23 quantify net savings, the estimated savings levels calculated as part of the impact evaluation
24 will not evaluate the effects of free-riders and spillover.

25 **Q. What is Staff's recommendation regarding GMO's proposed annual**
26 **energy and demand savings levels?**

A. The Commission find the Company's proposed annual energy and demand savings levels reasonable given the programs' designs and planned spending levels.

Programs' Estimated Cost-Effectiveness Tests

Q. Would you summarize the estimated cost-effectiveness test results for each proposed program?

A. Yes. Table 1 summarizes the results of each cost-effectiveness test for GMO's proposed Programs, except the Home Energy Analyzer and Business Energy Analyzer, which are education programs for which the benefits are very difficult to quantify. The Company did not calculate an aggregate TRC for all of GMO's proposed programs.

**<Table 1>
Cost-Effectiveness Test Summary**

Programs	TRC	UCT	RIM⁹
Energy Star® New Homes	1.32	1.52	0.70
Cool Homes	1.58	2.91	1.19
HPwES	0.58	1.48	0.72
C&I Rebate	1.05	4.52	0.92
Residential L&A	1.76	2.80	0.95
Residential Energy Report	0.86	0.86	0.41
Multi-Family Rebate	2.88	5.08	0.86
C&I Prescriptive Rebate	2.78	3.13	1.02
Appliance Turn-In	3.65	2.30	0.71
Building Operator Certification	2.15	2.35	0.95
Low-Income Weatherization	0.20	0.20	0.15

Q. Would you summarize benefits and costs GMO reports for each cost-effectiveness test for each program?

A. Table 2 summarizes the components in each cost-effectiveness test.

⁹ RIM stands for a Ratepayer Impact Measure test.

<Table 2>
Summary of Benefits & Costs Included in Each Cost-Effectiveness Test¹⁰

Component	TRC	UCT	RIM
Energy- & capacity-related avoided costs	Benefit	Benefit	Benefit
Additional resource savings	Benefit		
Non-monetized benefits			
Incremental equipment & installation costs	Cost		
Program overhead costs	Cost	Cost	Cost
Incentive payment		Cost	Cost
Bill savings			Cost

Q. Do you recommend the Commission approve GMO's proposed programs?

A. Yes, conditionally. Staff recommends that the Commission issue an order that approves the proposed Programs conditioned upon GMO meeting the requirements of Rule 4 CSR 240-3.16(2)(C). As Table 1 illustrates, most of the programs have a total resource cost (TRC) test ratio greater than one (1.0). A TRC greater than one means that the program is cost-effective. The proposed Residential Energy Report has a TRC less than one (1.0), but it is a new pilot program limited to 50,000 participants. The Low-Income Weatherization program has a TRC lower than one (1.0), but this program helps low-income customers reduce their energy usage and energy bills, and low-income programs are not required to have a TRC greater than 1.0. The Home Performance with Energy Star program is an existing program that is a part of a national program created through the U.S. Environmental Protection Agency (EPA) and strives to provide homeowners with consumer education, value and a whole-house approach. It also encourages the development of a skilled and available contractor/provider infrastructure that has an economic self-interest in providing and

¹⁰ 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>

Rebuttal Testimony of
Hojong Kang

1 promoting comprehensive, building science-based, retrofit services. Staff recommends an
2 approval of these Programs because it has many benefits that cannot be measured monetarily.

3 **Q. Does that conclude your rebuttal testimony?**

4 **A.** Yes, it does.

LIST OF THE CONFERENCES AND WORKSHOPS

BY HOJONG KANG

- June 14 – 15, 2010 ***In-Depth Introduction to Electricity Markets***, presented by Electric Utility Consultants, Inc.
- July 8 – 9, 2010 ***Forecasting for Regulators***, presented by Institute of Public Utilities Regulatory Research and Education, Michigan State University
- July 15 – 16, 2010 ***Energy Efficiency for the Mass-Market***, presented by Electric Utility Consultants, Inc.
- Sept. 23 – 24, 2010 ***Innovative Regulatory Approaches to Accommodate Renewable Energy, Demand-Side Resources and Energy Efficiency Programs***, presented by Center for Public Utilities at the New Mexico State University and National Association of Regulatory Utility Commissioners.
- Sept. 27 – 29, 2010 ***2010 IES Street and Area Lighting Conference***, presented by Illuminating Engineering Society.
- Sept. 30, 2010 ***Southwest Region Workshop***, presented by Municipal Solid-State Street Lighting Consortium sponsored by the U.S. Department of Energy
- Jan. 12 – 14, 2011 ***Midwest Energy Solutions: Seizing the Momentum***, presented by Midwest Energy Efficiency Alliance
- July 19, 2011 ***Energize Missouri Industry Energy Efficiency Forum***, presented by Missouri Department of Natural Resources
- Sept. 19 – 21, 2011 ***2011 IES Street and Area Lighting Conference***, presented by Illuminating Engineering Society.
- Sept. 25 – 26, 2011 ***2011 National Conference on Energy Efficiency as a Resource***, presented by American Council for an Energy-Efficient Economy (ACEEE).
- Jan. 11, 2012 ***The Size of the Prize: Midwest Industrial Energy Efficiency Summit***, presented by Midwestern Governors Association, World Resources Institute, Midwest Energy Efficiency Alliance, and Great Plains Institute.
- Jan. 11 – 13, 2012 ***2012 Midwest Energy Solutions Conference***, presented by Midwest Energy Efficiency Alliance.

Series of Workshops for the Missouri Energy Efficiency Investment Act

- Apr. 14, 2010
- May 17 – 18, 2010
- Jun. 11, 2010
- Jun. 29, 2010

STATE OF MISSOURI, PUBLIC SERVICE COMMISSION

P.S.C. MO. No. 1
 Canceling P.S.C. MO. No. 1

Original Sheet No. R-68.1
 Revised Sheet No.

KCP&L Greater Missouri Operations Company
KANSAS CITY, MO 64105

For Territory Served as L&P and MPS

RULES AND REGULATIONS
ELECTRIC

13.1 SUMMARY OF TYPES AND AMOUNT OF REIMBURSEMENTS ALLOWED

Energy Efficiency Program and Reimbursement

<u>Section</u>	<u>Program</u>	<u>Type</u>	<u>Amount</u>	<u>Limits</u>	<u>Effective</u>
9.20(D)5	Energy Star® New Homes	HERS Inspection	Up to \$750	per new home	10/15/11
9.20(D)6	Energy Star® New Homes	Energy Star® Requirement	Up to \$800	per new home	10/15/11
9.20(D)	Energy Star® New Homes: Annual Maximum per builder or per development is \$500,000 effective 8/20/10. After the Company reviews projects paid during the first six months of a Program year, the Company may approve application for additional rebates if Program funds are available.				
9.21(D)	Bldg Operator Certification	Tuition	\$575	per level	10/15/11
10.06(D)11	Home Performance With Energy Star®	Residential Audit and Prescriptive Measures	Up to \$600	per home	10/15/11
10.07(C)1	Commercial Energy Audit and Energy Savings Measures	<25,000 Sq Ft ≥25,000 Sq Ft	Up to \$300 Up to \$500	50% of audit 50% of audit	10/15/11
10.07(D)	Commercial Energy Audit and Energy Savings Measures	All Classes New and Retrofit	Up to \$150,000 Up to \$250,000	per facility per program year per customer per program year	10/15/11