

## MEMORANDUM

TO: Missouri Public Service Commission Official Case File  
Case No. ET-2010-0035, Tariff Tracking No. YE-2010-0052  
Union Electric Company d/b/a AmerenUE

FROM: James Watkins, Project Coordinator  
Mack McDuffey, Rate & Tariff Examiner II

/s/ Lena Mantle 8/3/09                      /s/ Sarah Kliethermes 8/3/09  
Energy Department / Date                      General Counsel's Office / Date

SUBJECT: Staff Recommendation For **Approval** Of Tariff Sheets Filed To Add “Personal Energy Manager Rebate Pilot”, an energy efficiency program

DATE: August 3, 2009

On July 23, 2009, Union Electric Company d/b/a AmerenUE (AmerenUE or Company) filed with the Commission three (3) tariff sheets with an issue date of July 23, 2009 and a proposed effective date of August 22, 2009. AmerenUE also filed Motion For Expedited Treatment (Motion) dated July 23, 2009 seeking for the tariff sheets to become effective August 6, 2009.

In this filing, Tariff Tracking No. YE-2010-0052, AmerenUE proposes to initiate Personal Energy Manager Rebate Pilot (Pilot) program to demonstrate application of a price response program for residential customers and to collect data for further evaluation and future design of such programs. This Pilot is a combined design from the Residential Demand Response – Direct Load Control program and Critical Peak Pricing w/Smart Technology, identified in the Company’s February 2008 Integrated Resource Plan (IRP) filing (4 CSR 240-22.070 Appendix B). Staff has determined that AmerenUE has met the filing requirements and recommends the Commission approve the tariff sheets, as filed on July 23, 2009, to go into effect for service on and after August 6, 2009, the requested effective date by Motion.

### **Existing Residential Energy Efficiency Portfolio Overview**

REEP along with the “Lighting and Appliance Program” were added to UE’s Promotional Practice tariff effective May 22, 2009, in Tariff Tracking No. JE-2009-0691. The REEP is found in AmerenUE’s electric Tariff Sheet Nos. 236, 237 and 238. A condensed overview of REEP is stated below:

#### **Purpose**

The purpose of the REEP is to proactively impact residential customer energy use in such a way as to reduce consumption of electric energy and/or reduce peak demand levels for residential use provided under the following Service Classifications:

- Residential Service Rate 1(M),
- Small General Service Rate 2(M),
- Large General Service Rate 3(M), or

- Small Primary Service Rate 4(M)

### **Term**

All programs in the REEP will be effective through September 30, 2011 and will terminate thereafter, unless extended.

### **Description**

REEP reductions in energy consumption and demand are to be accomplished through a variety of programs including, but not limited to:

<u>Program</u>	<u>Status</u>
• Lighting and Appliance Program	tariffed
• Multi-Family Program	tariffed
• Multi-Family Income Qualified Program	tariffed
• Central Air Conditioner Diagnostics and Tune-Up	planned
• New Central Air Conditioner Proper Installation Incentives	planned
• Home Energy Performance	planned
• Web-based Residential Energy Audits	planned
• Energy Star Homes Program	planned
• <del>Direct Load Control</del>	<del>planned</del>
• <del>Critical Peak Pricing with a Smart Thermostat</del>	<del>planned</del>
• Personal Energy Manager Rebate Pilot	proposed

### **Proposed Personal Energy Manager Rebate Pilot**

### **Purpose**

The purpose of this Pilot is to gauge the effectiveness of potential residential price response programs which provide credits to customers who, at AmerenUE's request, voluntarily reduce all or part of their electrical usage during designated periods and to test enabling technology.

### **Availability**

This Pilot program is applicable to Electric Service Classification 1(M) Residential Service Rate. All of the provisions of the Residential Service Classification and AmerenUE's General Rules and Regulations shall apply, except as modified by this Pilot program.

The applicability of this Pilot program is limited to the first 300 Ameren Corporation employees who are customers receiving service under the Residential Service Classification who voluntarily agree and have the capability to reduce electrical usage during Price Response Events specified by the Company. An additional control group of 60 Company employees, based upon the same criteria above will be selected based upon the same demographics of the original group of 300. Additionally, total enrollment of all customers under this Pilot program shall not exceed 360 customers.

Applicants for this Pilot program must provide AmerenUE a registration form that is acceptable to AmerenUE. Program and registration information can be obtained from AmerenUE by calling 314-206-0648.

This Pilot program shall expire on October 31, 2009.

### **Program Details**

The Personal Energy Manager Rebate Pilot will leverage the Company's Peak Power Rebate Rider L load reduction provisions and the Company's current testing of Tendril's in-home displays and web portal to demonstrate the implementation of a price response program for residential customers. Real time usage information will be provided from existing Company's smart meters to customers via an in-home display and web portal. This is new technology developed in the spring of 2009. The web portal will also be utilized as a demand response tool by the Company to control a customer's central air-conditioners through a smart thermostat. The customer will also have the ability to adjust the settings on the thermostat via the web portal.

Past Pilot residential demand response programs such as TOU and CPP have penalized the customer through very high rates during load reduction events. This Pilot, in contrast will provide load reduction rebates to participants and measure their response to signals to decrease their load. A customer's daily savings will be provided via the internet. In order to measure the response impact from various levels of information, segmented participants will use various types of tools, including in-home display and web portal, with and without controls. The customer can over ride controls via the web portal.

The following table summarizes the segments of the Pilot participants and how they will participate in the Pilot:

Groups	Number of Customers	Proposed configuration (Tendril Devices)	Purpose
Control	60	Post Card Company Bill - No Tendril Devices	Baseline Measurement with
Web and On-Site Information	120	In-Home Display + Web Portal	Measures consumer response to information & rebate
Web Information	60	Web Portal only	
Web Information w/ Smart Thermostat	60	Web Portal + Remote Thermostat Control	Measures consumer response to information, rebate & with equipment
Web and On-Site Information W/ Smart Thermostat	60	In-Home Display + Web Portal + Remote Thermostat Control	

The in-home display and web portal will provide participants with 5 minute real time energy usage information. The control group will only have their standard Company post card bill to show energy usage. The Pilot will help determine the appropriate tools to allow the customer to reduce their energy usage to meet long term capacity needs of the Company. The Pilot will also show the interaction with the usage data by the participant and measure customer satisfaction. Additionally, to better educate participants about ways to be more energy efficient, a 13-page booklet, "Smart Energy Made Easy" was shipped with the in-home display kits. Routine energy efficiency messages will also be sent to the in-home display and web portal. The Pilot is

designed to be flexible to test customer's responses to varying event periods and different rebate amounts.

### **Notification**

Price Response Events shall be a minimum of four (4) hours in duration and may be called a maximum of sixty (60) hours. Standard notification of the declaration of a Price Response Event shall be by a method specified by the Company, which may include but not be limited to In-Home Display or E-mail.

Notification of a Price Response Event will be sent to customers by 8:30 A.M. on the last business day prior to the day of the Price Response Event (day-ahead) and/or by 8:30 A.M. on the day of the Price Response Event (same-day) as the situation warrants. This may result in multiple Rebate offers for the same or different Price Response Events on a single day.

The Company will endeavor to provide customers as much advance notice as possible with regard to said notifications. The notification shall include the specified hours of the Price Response Event and the corresponding hourly prices.

### **Credits**

Hourly Credit = [Hourly Reduction kWh] X [Hourly Price quoted by Company]

The monthly credit calculated for electric service at a premise will be subject to the following conditions:

1. Price Response Event credit will be the sum of the individual Hourly Credits per the above formula.
2. In cases where the Price Response Event credit is calculated to be negative, the credit will be netted with the other Price Response Event credits in that month.
3. The monthly credit will be the sum of the credits for each Price Response Event, both positive and negative, occurring during that month, provided that no monthly credit shall be less than \$0.

Where customer participates in both day ahead and same day voluntary reductions, customer's Hourly Credits will be priced as described herein, based upon the higher of the quoted day ahead or same day hourly prices. Hourly prices quoted for both day-ahead and same day reductions will be determined by the Company based on a representative MISO day-ahead or same day risk adjusted market energy price per kWh plus a risk adjusted capacity price of \$0.20 per kWh. Such Credits will be paid to customers by credit applied to the next applicable bill or at the Company's option, by check.

The energy and capacity payments to customers shall be separately accumulated in the appropriate Regulatory Asset Account(s), as authorized by the Missouri Public Service Commission (MPSC) in Case No. ER-2007-0002. The expenses will be reviewed for prudence and considered for recovery in future rate cases.

### **Program Metric**

A detailed calculation of the Pilot's Total Resource Cost test (TRC) will be performed once data has been collected from the results of the Pilot. Based on the information from this Pilot and

future confirmed cost, a TRC will be calculated and presented with supporting spreadsheet documentation for any potential future program. TRC work papers have not been developed and are not included for this Pilot.

The Pilot operation and incentive costs were modeled from the Company's Peak Power Rebate Rider L tariff (60 hours of operation with customer capacity @ \$0.20/kW/hour and energy @ \$0.10kWh). As assumed for Rider L, the avoided kW costs are assumed to be a capacity equivalent CTG of 77% of \$80/kW-year and an assumed 10 year life on the equipment. The TRC for this Pilot would be expected to be low. The assumptions are too large to complete a detailed TRC calculation for the Pilot.

### **Budget**

<b>Personal Energy Manager Pilot</b>	<b>PY1</b>
Prime Contractor Admin/Hardware	\$300,000
Marketing	\$0
Incentives	\$5,000
Total	\$305,000

Since this is a Pilot, the overall costs are high on a per customer basis, when compared to a production program. This is due to higher hardware costs, small number of participants, manual data processing and working through issues associated with new technology and software. The Pilot costs also do not include internal IT support, administration, and EM&V costs. The incentives are estimated at a maximum level and are high. They are based upon every customer reducing their load 750W (estimated) every hour of each event. Therefore, the costs of this Pilot are not representative of a production program. They are only a high level estimate for the basis to determine the maximum budget allocation. Results of this Pilot will clarify these costs. Future program costs will be determined from actual implementation contractor proposals.

### **Marketing**

No external marketing or advertising will be required during this Pilot to solicit additional participants. Only having Company employees involved in the Pilot provides flexibility to correct issues and receive continuous feedback without sacrificing customer satisfaction. The group of participants is not intended to represent the entire population of the Company's customers. It is anticipated that a future program such as the pilot will target niche groups of customers who want to invest time into understanding their usage patterns and make changes to their lifestyles in order to reduce their energy consumption. Demographics of the participants will be collected prior to the launch of this Pilot. This information, along with future focus group results, will help determine the marketing approach of future similar programs.

### **Evaluation**

The evaluation, measurement and verification of the Pilot will be performed by the evaluation contractor for the Company's Residential Demand Side Management Portfolio, The Cadmus Group and their subcontractor, PA Consulting (the "Evaluator"). The overall evaluation objectives will focus on delivering an impact evaluation including determining energy and peak demand savings attributable to the Pilot and calculation of net-to-gross ratios. The Evaluator will

also provide a process evaluation that includes measuring participant satisfaction with the Pilot, and will provide suggestions for improving the design and implementation of future programs.

Evaluation of the demand reduction impacts of the Pilot will be based on a comparison of each customer's load during the peak load reduction periods (Price Response Event) against the customer's baseline peak demand (Hourly Equivalent Period) to determine each participant's Hourly Load Reduction for each event. Data for this analysis will be gathered through existing smart meters providing interval data. The analysis will evaluate impact results from the four segmented groups of 300 participants which have Tendril equipment installed in their homes; it will also examine results obtained from a control group of 60 participants without the Tendril system installed. See the chart included above for segmentation groups. The Evaluator will assist the Company in selecting the control group to minimize the possibility that any differences in impact results between the two groups are due to differences in the two samples.

The Evaluator will also conduct primary research with Pilot participants. For analysis purposes, participants will be segmented based on the level of their change in demand/consumption and whether or not they have the Tendril device. Among the survey objectives are assessments of:

- Motivations for participation
- Overall experience with the device
- Effectiveness of the communication regarding price response events
- Actions taken to respond to price response events
- Customer perception of the costs of participation relative to the value of the incentive

The Evaluator understands that the Pilot participants are Company employees, and analysis of survey responses will explore the variable of potential biases. However, the Evaluator still expects the surveys will provide valuable feedback to inform program expansion.

The Evaluator will work with the Company to ensure a clear understanding of the mechanics of the Pilot's operation. With that understanding, coupled with findings from the impact analysis and participant research, the Evaluator will identify any areas where improvements can be made to optimize operations and achieve maximum load reductions.

An evaluation of this program will be performed within three (3) months of the expiration of this Pilot. Process and impact evaluations along with TRC analysis and technology assessments will be included in the evaluation. Results of the evaluation will be provided to MPSC staff and OPC and used in future integrated resource plans.

### **Staff Recommendation**

To comply with Commission Rule 4 CSR 240-3.150(3), Filing Requirements for Electric Utility Promotional Practices, the Company is required to provide the following:

- Description of Advertising or Publicity – This provision has been documented in the filing.
- Cost effectiveness of demand side resources – AmerenUE has stated that a detailed calculation of the Pilot's Total Resource Cost test (TRC) will be performed once data has

been collected from the results of the Pilot  
The Staff believes that making the tariff sheets effective on less than thirty (30) days' basis will enhance the possibility of obtaining additional information during the remaining summer season for the Pilot Program.

The Commission's Energy Department Staff (Staff) has reviewed the filed tariff sheets and is of the opinion that the Pilot Program should be offered as soon as possible for the remaining summer possible peaking events. Staff therefore recommends that the Commission **approve** the following proposed tariff sheets, as filed on July 23, 2009, to become effective on August 6, 2009 as requested in AmerenUE's Motion, with less than 30 day's notice for good cause shown pursuant to Section 393.140(11) RSMo 2000.

Union Electric Company, MO.P.S.C. Schedule NO. 5

4<sup>th</sup> Revised Sheet No. 192 Cancelling 3<sup>rd</sup> Revised Sheet No. 192

5<sup>th</sup> Revised Sheet No. 193 Cancelling 4<sup>th</sup> Revised Sheet No. 193

Original Sheet No. 193.1

The Staff has verified that AmerenUE has filed its 2008 annual report and is not delinquent on any assessment. Staff is not aware of any other matter before the Commission that affects or is affected by this filing.

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

In the Matter of Union Electric Company     )  
d/b/a AmerenUE's Tariff Establishing the     )  
Personal Energy Manager Rebate Pilot        )

Case No. ET-2010-0035  
Tariff No. YE-2010-0052

AFFIDAVIT OF WILLIAM L. McDUFFEY

STATE OF MISSOURI                     )  
  ) ss  
COUNTY OF COLE                     )

William L. McDUFFEY, of lawful age, on oath states: that he has participated in the preparation of the foregoing Staff Recommendations; that he has knowledge of the matters set forth in such recommendation; and that such matters are true to the best of his knowledge and belief.



Subscribed and sworn to before me this 3<sup>rd</sup> day of August, 2009.



Notary Public

CARLA K. SCHNIEDERS Notary Public - Notary Seal State of Missouri Commissioned for Cole County My Commission Expires: August 25, 2012 Commission Number: 08533187
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