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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. EO-2012-0142

DIRECT TESTIMONY

OF

RICHARD A. VOYTAS

ON

BEHALF OF

UNION ELECTRIC COMPANY
d/b/a Ameren Missouri

St. Louis, Missouri
October, 2014

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DIRECT TESTIMONY

OF

RICHARD A. VOYTAS

FILE NO. EO-2012-0142

Q. Please state your name and business address.

A. My name is Richard A. Voytas. My business address is One Ameren Plaza, 1901 Chouteau Avenue, St. Louis, Missouri 63103.

Q. By whom and in what capacity are you employed?

A. I am employed by Ameren Services Company ("Ameren Services" or "Company") as Director of Energy Efficiency/Demand Response. Ameren Services provides various technical and corporate support services for Ameren Missouri and its sister companies in a number of functions, including the area of energy efficiency and demand response.

Q. Are you the same Richard A. Voytas who filed Direct Testimony in support of Ameren Missouri's Change Request in this case?

A. Yes I am.[1]

I. Purpose and Scope of Testimony

Q. What is the purpose of your Direct Testimony?

A. I will provide evidence to prove the following to the Missouri Public Service Commission ("Commission"):

[1] This is additional direct testimony submitted in compliance with the Commission's October 8, 2014 *Order Establishing Procedural Schedule to Consider the Program Year 2013 Change Requests.* I previously submitted direct testimony in connection with the Company's filing of its Change Request. I will distinguish between this Direct Testimony and the Testimony in Support of Change Request specifically throughout this document.

1. My testimony will support the reasonableness of the Evaluation, Measurement and Verification ("EM&V") results agreed upon by the Commission Staff (“Staff”) and the Company, and supported by the Division of Energy. The Stipulation and Agreement ("*Stipulation*") that now reflects the Staff's and Ameren Missouri's changed positions represents a reasonable resolution of the change requests at issue in this case relating to the inclusion of market effects and the quantification of market efforts towards 2013 energy efficiency program load reductions actually achieved, as well as the calculation of net benefits to customers as a result of those load reductions.
2. In light of the objection described in the testimony of Office of the Public Counsel ("OPC") witness Geoff Marke in response to Ameren Missouri and Staff change requests, I will provide specific testimony concerning market effects, spillover, and free ridership that rebut Mr. Marke's support of the Staff's original change request and that also provide further support for the Company's and the Staff's changed positions as reflected in the *Stipulation*.
3. The calculation of market effects and its inclusion in the cost effectiveness of energy efficiency programs is an acknowledged industry best practice. The benefits to Ameren Missouri customers resulting from a balanced evaluation of the components of the net-to-gross ("NTG") calculation far exceed the costs. It is important to properly measure MEEIA savings, and selling short those savings could have negative long-term consequences for customers as mandates with respect to low carbon and carbon-free sources of energy loom on the horizon.

II. The Positions of Staff and Ameren Missouri Reflected in the Stipulation Represent A Reasonable Resolution of the Change Requests at Issue in this Case

Q. Provide an overview of the events that led to the Stipulation and Agreement.

A. On February 14, 2014, the draft 2013 EM&V reports were circulated to all stakeholders in accordance with the original Stipulation and Agreement approved by the Commission in 2012 to resolve the Company's initial MEEIA filing (*2012 Stipulation*). After the stakeholders had approximately one month to review the draft reports, a two day in-person meeting with stakeholders (including OPC) and the Company's EM&V evaluators, Cadmus and ADM ("EM&V Evaluators"), was held in conjunction with the quarterly stakeholder meeting called for by the *2012 Stipulation* on March 11 and 12, 2014. The EM&V Evaluators reviewed the highlights of their draft reports with the stakeholders, gave them an opportunity to express their concerns and to get their initial questions answered. Formal comments from the Company, Staff and the Commission's EM&V Auditor ("Auditor") were submitted to the EM&V Evaluators on April 15, 2014. A call was held with the stakeholders on May 6, 2014, so that the EM&V Evaluators could respond to the formal comments submitted by the Staff and the Auditor (as noted, no other stakeholder provided comments) prior to filing of the EM&V Evaluators' final report. As per the requirements of the *2012 Stipulation*, all stakeholders were provided multiple opportunities to provide the EM&V Evaluators with comments before the final EM&V reports were submitted to the Commission. No stakeholder provided any comments on the reports other than Ameren Missouri and the Staff. Next, the EM&V Evaluators provided a final report, which was filed with the Commission. Again, as per the process set forth in the *2012 Stipulation*, the Staff and the Company filed the Change Requests that initiated this docket's EM&V reports. No

other stakeholder filed change requests. The Company's and the Staff's Change Requests reflected a total of four different recommended changes to the final 2013 EM&V reports which impacted the energy savings and associated net benefits for the Ameren Missouri portfolio of energy efficiency programs that were reflected in those reports.

Q. Please describe the specific issues on which the Company, the Staff, the EM&V Evaluators, and the Auditor disagreed.

A. The 2013 EM&V reports describe the load reductions from the Ameren Missouri energy efficiency programs as determined by the Residential EM&V Evaluator, Cadmus, and the Business EM&V Evaluator, ADM. The Auditor agreed with the EM&V Evaluators' impact assessments with two exceptions, both related to the residential EM&V report. The first exception had to do with the input data used to estimate market effects for the Company's LightSavers program. The second exception had to do with the assumptions used to assign estimates of non-participant spillover to the residential energy efficiency programs. Staff agreed with the assessment of the Auditor with one exception – Staff recommended that the quantification of market effects be removed in its entirety from the calculation of net savings for the LightSavers program. The Company agreed with the assessment of the EM&V Evaluators with one exception – the Company recommended that estimates of free ridership estimated via customer self-reporting surveys be adjusted to account for documentable bias.

Q. Are the Company's and the Staff's changed positions, as reflected in the *Non-Unanimous Stipulation and Agreement Settling the Program Year 2013 Change Requests* (*Stipulation*), a "black box" settlement – a term used by OPC witness Geoff Marke in his testimony?

A. It depends upon the meaning of “black box.” If "black box" infers that the basis for the changed positions is not 100% transparent, then the positions reflected in the *Stipulation* are definitely not black box because the basis for those positions and all supporting workpapers are 100% transparent. If "black box" means that although the parties could agree on 2013 load reductions and net benefits but disagreed on certain principles on how to get there, then perhaps the phrase "black box" is partially accurate. It is true that the Company and Staff agreed on 2013 load reductions and net benefits considering a range of available data and analysis. It is also true that the Company and Staff agreed on the most significant issue – the validity of including market effects in the estimation of net savings for the LightSaver programs. The Company and Staff have also agreed to continue to work together to attempt to find common ground to the data inputs to the market effects calculation and to find common ground on how to allocate non-participant spillover to individual programs. With respect to the specific results agreed to by Staff and the Company, those results reflect the Company's and the Staff's changed positions which are supported by both the EM&V Evaluator's (Cadmus) and the Auditor's reports. These positions fall within the spectrum of results established by the data and analysis provided by those reports, as also supported by my testimony and the Staff's testimony to be filed in this docket.

Q. Describe the alternatives considered by the Company and Staff in arriving at their changed positions.

A. Multiple scenarios were considered in light of the evidence contained in the Cadmus report and the Auditor's report. The contested issues were associated with the quantification of net energy savings and the net monetary benefits associated with those net energy savings. The Company looked at the merits of the positions and agreed to accept a

number that is something less than it initially requested, but something more than was proposed by Staff. When one looks at the positions taken by Staff, the Auditor, Cadmus, and Ameren Missouri, the results are clearly within the bounds of potential results that come from combining the various approaches presented.

Q. How were the EM&V Evaluators' 2013 EM&V results in the final reports adjusted to reflect the changes agreed to in the *Stipulation* between Staff and the Company?

A. 2013 energy efficiency portfolio energy savings were reduced from approximately 390,000 MWH to 369,000 MWH, which is approximately a 5% reduction. 2013 EM&V net benefits were reduced from approximately $136 million to $130 million, approximately a 4% reduction. Although the financial performance incentive that Ameren Missouri has an opportunity to earn cannot be calculated until the end of the three-year MEEIA 1 cycle (after 2015), the positions now adopted by the Staff and the Company coupled with reasonable assumptions about the future program years' EM&V outcomes suggest that the settlement results in the financial performance incentive award being reduced by approximately $400,000 as compared to the award that would have been available had the Company's Change Request been adopted in total, and had the Staff's Change Request been rejected in total. As shown, the actual agreed-upon value is clearly not a speculative outcome and does not depart radically from likely outcomes given the positions and data available in this proceeding.

Q. Is there language in the *Stipulation* which attempts to resolve any remaining issues related to quantifying net savings for the remaining years of the MEEIA Cycle 1 implementation plan – 2014 and 2015?

A. Yes. The *Stipulation* calls for the Company and Staff to work together to resolve issues related to the mechanics of calculating free ridership, participant spillover, non-participant spillover and market effects for 2014 and 2015. Furthermore, the *Stipulation* calls for the Company and Staff to work together on longer-term solutions to the net savings issue via recommending changes to the Commission's MEEIA rules as early as July 2015. This is an important component of the agreements reached between the Company and the Staff, and the Company and the Staff intend to honor those agreements even though the *Stipulation* merely now reflects their changed positions. Given the differences with respect to EM&V experienced for the 2013 program cycle, as reflected in this proceeding, it makes sense that the parties work constructively to narrow the issues and avoid wasteful re-litigation annually of the same variety of issues associated with EM&V. Given that there are third-party evaluators and an independent auditor, it makes sense that agreement as to principles can be of utility in narrowing the potential outcomes in future years and presenting a more predictable and less litigious course. The Company recommends that its order in this case require that the parties honor these agreements.

Q. Have any MEEIA Cycle 1 interveners supported the *Stipulation*?

A. Yes. Missouri DED – Division of Energy filed with the Commission its support of the *Stipulation* as a just and reasonable resolution of the Change Requests at issue in this docket.

Q. Have any MEEIA Cycle 1 interveners opposed the *Stipulation*?

A. Yes. As noted above, OPC opposed it.

Q. On what basis?

A. OPC, in effect, adopts the Staff's original Change Request by supporting it – primarily by urging the complete elimination of the quantification of market effects from the net energy savings associated with the 2013 LightSavers programs.

III. The EM&V process, resolution of differences, and support for approval for the joint position of Staff and the Company.

Q. Please describe the organization of your arguments in support of the position agreed to by Staff and the Company with respect to the EM&V results.

A. First, I will provide a background on the EM&V process, with specific focus given toward the issue of market effects. Second, I will explain the similarities and differences between the EM&V Evaluators and the Auditor. I will also explain why Mr. Marke's observations concerning market effects are at odds with both the EM&V Evaluator (Cadmus), the Auditor, and industry best practices in EM&V. I will further explain the role of free ridership and Ameren Missouri's position concerning free ridership, and address Mr. Marke's positions with respect to the MEEIA performance incentive.

Q. Why is the background associated with market effects development in MEEIA Cycle 1 programs an important consideration with respect to the EM&V results agreed upon by Staff and the Company?

A. As noted above, the new positions of the Company and the Staff result in large part due to conferral and consideration of competing perspectives on market effects as reflected in the EM&V Evaluators' and the Auditor's reports, and other evidence I discuss herein and that I expect will be addressed by the Staff in its testimony. Additionally, the objecting party, OPC, focuses on the inclusion of market effects for the motivating factor behind its objection in this docket.

Q. Mr. Marke states on page 32, lines 3-5 of his testimony, "In his original testimony filed for the Ameren MEEIA application in 2012, Mr. Voytas focused on defining free ridership and spillover with a passing reference to market effects." Please respond to Mr. Marke's characterization and provide the chronology of information exchanges on the inclusion of market effects in the evaluation of MEEIA Cycle 1 programs.

A. Mr. Marke's testimony infers that the issue of market effects is an undefined or novel subject matter not previously discussed. Mr. Marke is mistaken if he believes that market effects were not considered when the original MEEIA Cycle 1 filing was made. Starting with the Ameren Missouri MEEIA Cycle 1 filing with the Commission on January 20, 2012, market effects were discussed on pages 56, 57 and 58 of the filing. Furthermore, Ameren Missouri attached 15 workpapers to support its NTG position in the MEEIA Cycle 1 filing. One workpaper was 100% devoted to the quantification of market effects. Substantial discussions of market effects were in 7 other workpapers that underlay its MEEIA Cycle 1 filing. All parties, including OPC, were given those workpapers.

Q. Was there an ensuing technical conference on the MEEIA filing where market effects were again discussed and emphasized?

A. Yes. On February 10, 2012, Ameren Missouri held a MEEIA technical conference with all the parties to the MEEIA Cycle 1 case (including OPC)(all of which are now stakeholders in Ameren Missouri's MEEIA efforts). Ameren Missouri presented information on market effects among other issues. Market effects and Ameren Missouri's requirement that they be quantified are discussed on slide 31 of the presentation at that meeting. A copy of the presentation is attached as Schedule RAV-1.

Q. Did you sponsor surrebuttal testimony in the MEEIA Cycle 1 proceeding that directly discussed the validity and necessity of quantifying market effects in the NTG calculation?

A. Yes. I sponsored surrebuttal testimony on May 4, 2012, with discussion of the necessity to calculate market effects from pages 26 to 48 in the testimony. Perhaps the most compelling evidence cited in the testimony was the identification (but not quantification) of market effects found in the majority of Ameren Missouri's energy efficiency programs from the 2009-2011 cycle of energy efficiency programs. A matrix showing the identification of specific market effects is in Table 5 on page 41 of the testimony. An extract of that table follows:

Table 5: Free Ridership and Spillover Existence In Ameren Missouri Programs

Program	Net-to-Gross Ratio	Free ridership Identified	Free ridership Quantified	Spillover Identified	Spillover Quantified	Market Effects
Residential Lighting & Appliance	0.96[1]	✔	0.42*	✔	-	Appliance rebates encouraging other efficient behavior
Residential Appliance Recycling	0.64**	✔	0.36**	✔	-	Slow market transformation in first year
Residential HVAC[#]	N/A	N/A	N/A	N/A	N/A	N/A
Residential Multifamily Low Income	0.91	✔	0.09	✔	-	N/A
C&I Standard	0.90	✔	0.11	✔	0.054***	Contractors altering product mix and operations to more efficient practices[##]
C&I Custom	0.86	✔	0.14	✔	0.11***	Contractors altering product mix and operations to more efficient practices[##]
C&I Retro-Commissioning	0.83	✔	0.17	✔	0****	
C&I New Construction	0.95	✔	0.05	✔	0*****	Encouraging customers with less efficient building codes to install more efficient equipment[###]

* - Free ridership only for appliances; page 44 "Ameren Missouri Lighting and Appliance Evaluation PY 2" March 2011
** - calculated using a weighted average of freezer and refrigerator installations; Ameren Missouri Refrigerator Recycling Program Evaluation March 2011
*** - taken from page 3-8 "Evaluation of Business Energy Efficiency Program Custom and Standard Incentives" March 2011
**** - taken from page 3-7; "Evaluation of Business Energy Efficiency Program Retro-Commissioning Incentives" March 2011
***** - taken from page 3-7; "Evaluation of Business Energy Efficiency Program New Construction Incentives" March 2011
# - No impact evaluation was completed due to lack of program data
##- taken from page 5-2 "Evaluation of Business Energy Efficiency Program Custom and Standard Incentives" March 2011
- taken from page 5-1 "Evaluation of Business Energy Efficiency Program New Construction Incentives" March 2011
1 – Includes spillover

Q. Was the validity of market effects and the validity of quantifying them discussed in other witnesses' rebuttal testimonies in the original MEEIA docket?

A. Yes. As I identify below, market effects were given consideration. Natural Resources Defense Council ("NRDC") witness Phil Mosenthal filed rebuttal testimony dated April 13, 2012. Mr. Mosenthal discussed market effects and their legitimacy in the NTG calculation on pages 16-17 of his testimony. The following question and answer can be

found on lines 15-22 on page 16 and lines 1-7 on page 17 of Mr. Mosenthal's rebuttal testimony:

> **"Q. So, because NTG ratios could vary in either direction, does relying on net savings provide any benefit or risk reduction to Ameren?**
>
> A. Yes. In theory Ameren could pursue an innovative market transformation program designed explicitly to modify consumer behavior in ways that could create large spillover benefits (also term **"market effects"**). Under Ameren's approach of counting only gross savings, they would actually be hurt and under collect lost margins if this program was successful and achieved a NTG ratio above one. While this is not typical of most programs, the real concern here is twofold: 1) reliance on gross savings breaks the link between estimated net benefits (that Ameren is awarded a share of) with actual net benefits to society and with actual lost margins; and 2) it introduces perverse incentives for Ameren to avoid high NTG ratio program strategies and to drive down NTG ratios. Both of these problems are fundamentally at odds with good policy and the interests of ratepayers. The former means that any meaningful true-ups of financial flows will not happen and ratepayers will likely overpay for lost margins. The latter encourages poor DSM design and delivery practices that could enhance overall Company earnings."

Q. Was the validity of market effects and the validity of quantifying them discussed in surrebuttal testimonies to the MEEIA filing?

A. Staff witness John Rogers sponsored surrebuttal testimony on May 4, 2012. On page 3, line 13 of his testimony, Mr. Rogers states that NRDC witness Phil Mosenthal accurately describes NTG ratios in his rebuttal testimony. Mr. Rogers also states on page 6 of his testimony that another Staff witness, Michael Stahlman, addresses the importance of NTG ratios.

Q. Mr. Mosenthal's testimony on the legitimacy of market effects in the NTG ratio has already been cited; what did Staff witness Michael Stahlman state in his surrebuttal testimony?

A. Staff witness Michael Stahlman sponsored surrebuttal testimony on May 4, 2012. On page 9, beginning on line 9 of his testimony, Mr. Stahlman cites the National Action Plan for Energy Efficiency ("NAPEE")[2] Impact Evaluation guidebook stating that market transformation is a part of the NTG calculation. Market transformation and market effects are the same thing. The NAPEE Impact Evaluation Guide from 2007 has since been replaced and supplanted by the SEE Impact Guide from 2012. Extensive discussion of the need to quantify market effects in the NTG calculation is prevalent in 20-30 pages of the SEE Guide. The following excerpt is the question and answer from Michael Stalhman's surrebuttal testimony:

> **"Q. Please describe the four key components of NTG ratios as described in the 2007 NAPEE guide.**
>
> A. The 2007 NAPEE guide described the four key components as follows:
>
> - The free rider factor is similar to the free rider in NAPEE 2008, but it is divided into three groups: full, partial, and non free-rider. The partial free rider is a person who would have installed a less-efficient model without the rebate but more than baseline.
> - The spillover effects in the 2007 NAPEE guide is also more extensively defined than in the 2008 guide; it included extra actions participants take because of program participation, market transformation that occurs as a result from the program energy efficiency design changes by architects and engineers as a result of the program, and changes in energy use by non-participants that occurs as a result of the program.
> - The rebound factor is also similar to NAPEE 2008, although take-back is treated as a subset of the rebound factor.

[2] http://www.epa.gov/cleanenergy/documents/suca/evaluation_guide.pdf

- The final factor, transmission and distribution losses, attempts to correct energy savings for the differences between savings that occur at the point of use to the savings that occur at generation."

Q. What else does the 2007 NAPEE Guide referenced by Mr. Stahlman say specifically about market effects?

A. While the preceding extract from Mr. Stahlman's surrebuttal testimony clearly testifies to the legitimacy of market effects (especially in the second bulleted point in the preceding answer) Mr. Stahlman failed to provide the most poignant statement on market effects from the 2007 NAPEE guide. That statement can be found in Section 2.4, paragraph 3 as follows:

> "**Market effects evaluations** estimate a program's influence on encouraging future energy efficiency projects because of changes in the marketplace. While all categories of programs can be assessed using market effects evaluations, they are primarily associated with market transformation programs that indirectly achieve impacts and resource acquisition programs that are intended to have long-term effects on the marketplace. For example, if the goal of the evaluation is to assess cost-effectiveness for stakeholders or regulators, excluding the measurement of market effects in a resource acquisition program could result in under- or overestimating a program's overall benefits or cost-effectiveness."

Q. What other pertinent information on market effects does Mr. Stahlman provide in his surrebuttal testimony?

A. Beginning on page 9, line 28, Mr. Stalhman states "Staff's view is that a knowledgeable third party EM&V contractor can best decide what components to examine in calculating a NTG ratio for a particular energy efficiency program."

Q. Were meetings specific to the topic of market effects held after the MEEIA Cycle 1 filing was approved?

A. Yes. On March 18 and 19, 2013, Ameren Missouri hosted meetings with all DSM stakeholders to discuss draft EM&V workplans for each program in the MEEIA Cycle 1 portfolio. Cadmus led the discussion on the need to identify market effects in the NTG calculation. A copy of the presentation wherein Cadmus presented a slide with the quantification of the potential upper limits of market effects is on slide 31 of the presentation included as Schedule RAV-1.

Q. Did Cadmus discuss and get input from the Auditor prior to finalizing the workplan?

A. Yes, on several occasions. Cadmus discussed the EM&V workplan with the Auditor during the evaluation planning process. This process started in February 2013 with the final plans were completed in June 2013. As mentioned previously, a meeting was held with all stakeholders on March 18, 2013 to discuss these plans. Cadmus also sent their draft calculations to the Auditor in mid-January of 2014, prior to submitting the draft 2013 report. Cadmus reviewed the Auditor's comments to the draft report, sent updated calculations and met with the Auditor directly via telephone for further discussions on May 2, 2014, then presented and discussed the Cadmus' response to these comments during an Ameren Missouri DSM stakeholder webinar held on May 6, 2014, just prior to finalizing the 2013 EM&V impact report.

Q. What were the Auditor's comments on the Cadmus approach during the discussions that were held through May 6?

A. The comments are listed in Exhibit A, which is a copy of the PowerPoint® Presentation Cadmus used at the stakeholder webinar. During that webinar, Cadmus summarized and responded to the Auditor's written comments on the draft report.

Q. When did the Commission approve the 2012 Stipulation (the Ameren Missouri MEEIA Cycle 1 Stipulation)? Did the 2012 *Stipulation* address the components of the NTG calculation?

A. The 2012 *Stipulation* was approved by the Commission on August 1, 2012. There is no explicit discussion of the components of NTG in the 2012 *Stipulation*.

Q. Is it clear which components of the components of NTG were to be evaluated under the 2012 *Stipulation*?

A. Yes. In the Ameren Missouri MEEIA Cycle 1 filing, Ameren Missouri recommended that the EM&V budget be set not to exceed 3% of total program costs. However, ensuing negotiations that led to the terms of the 2012 *Stipulation* increased the EM&V budget to 5% ~ a 66% increase in the EM&V budget. A significant component of that sizable budget increase was to allocate additional EM&V resources to take a robust, balanced approach to measure all components of NTG. EM&V resources had not been allocated to estimating all forms of spillover and market effects in prior Ameren Missouri DSM three-year implementation plans.

Q. Is there compelling evidence from Staff witness John Rogers in his surrebuttal testimony in the MEEIA Cycle 1 docket that Staff recommended a 5% EM&V budget to "accurately" determine NTG ratios?

A. Yes. Mr. Rogers' surrebuttal testimony from that case is replete with the reasons he has for recommending what he refers to as "full EM&V" at 5% of total program cost level. The majority of the surrebuttal testimony addresses the need for full EM&V on the estimation of the NTG ratio. Pages 6, 7 and 8 of Mr. Rogers' surrebuttal testimony are

mostly allocated to the importance of doing full EM&V on NTG for each program in the Ameren Missouri MEEIA Cycle 1 programs.

Q. Does Mr. Marke ever acknowledge the expertise of the EM&V Evaluator or the Auditor?

A. He does. When it comes to the estimation of free ridership, the application of which lowers energy savings attributable to Ameren Missouri programs, Mr. Marke's testimony reflects a view that shows he recognizes that Cadmus is an expert. On page 13, lines 5-7, Mr. Marke states "As the Company is well aware and has acknowledged in the testimony of Mr. Voytas, the evaluators are recognized industry leaders and fully aware of the threat of self-reporting bias inherent in self-reporting surveys and have taken steps to mitigate this problem." Yet, when it comes to the estimation of market effects, which increase energy savings attributable to Ameren Missouri's program, Mr. Marke cites his opinions and presents a series of disjointed but unrelated facts as purported evidence as if it proves that he has more knowledge than either Cadmus or the Auditor in estimating market effects.

Q. What did the Commission's independent EM&V Auditor say about market effects?

A. The Auditor's report states: **"**While the EM&V Auditor agrees with the evaluator that the market effects are likely non-zero, the EM&V Auditor does not agree that the PY2013 effects are as large as reported in the evaluation." It is a fact that the Auditor agreed 100% with the *methodology* Cadmus used to quantify market effects. However, the EM&V Auditor disagreed with the input data and assumptions to be used to assess market effects.

Q. Is the inclusion of market effects an appropriate application of industry best practices?

A: Yes, it is. Rather than inflating energy and demand savings and associated financial performance awards, the inclusion of market effects actually enables Ameren Missouri to more accurately compute the energy and demand savings attributable to its LightSavers program. Market effects assess longer-term changes in the structure or functioning of a market, or changes in the behavior of market participants, resulting from energy efficiency programs. The U.S. Department of Energy's forthcoming Phase II Uniform Methods Protocol ("UMP"), developed to provide industry best practices guidance, states that positive market effects are an industry-accepted factor and should be addressed when estimating full net program savings.

In addition, the State and Local Energy Efficiency ("SEE")[3] Action Network published its *Energy Efficiency Program Impact Evaluation Guide* in December 2012 to provide guidance and discussion of, "…the issues that determine the most appropriate evaluation objectives and best practices approaches for different efficiency portfolios." In this document, SEE Action states, "If the evaluation's goal is to assess cost-effectiveness for stakeholders or regulators, excluding the measurement of market effects could result in underestimating (or possibly overestimating) a program's overall benefits or cost-effectiveness." In the same document, SEE Action later states, "Market effects are sometimes called the ultimate test of a program's success, answering the question: 'Will energy efficiency (best) practices continue in the marketplace, even after the current program ends?'"

[3] https://www4.eere.energy.gov/seeaction/publication/energy-efficiency-program-impact-evaluation-guide

The SEE guide discussed above on page 5-1 provides the description of net savings as full net savings equal total gross savings, minus free riders, plus participant and non-participant spillover, plus market effects that are not already captured by spillover. Excluding market effects, or any of these factors, from net savings calculations yields incomplete net savings values.

Q. Is the SEE Impact guide considered a source that describes national best EM&V practices?

A. Yes. The State and Local Energy Efficiency Action Network ("SEE Action") is a state and local-led effort facilitated by the U.S. Department of Energy and the U.S. Environmental Protection Agency to take energy efficiency to scale. Composed of more than 200 leaders from state and local governments, associations, businesses, non-government organizations, and their partners, SEE Action is working toward a goal of achieving all cost-effective energy efficiency by 2020. SEE Action offers information resources and technical assistance to the following state and local decision makers on successful approaches to energy efficiency policies and programs.

- **State and local utility regulators** who can promote energy efficiency to ensure reliable, affordable energy for ratepayers;
- **State and local policymakers** including governors, legislators, mayors and county officials, who can implement effective energy efficiency policies and programs for their communities;
- **State energy and air officials** who can develop and implement cost-effective energy efficiency programs to realize energy, cost, and emissions savings; and

- **Partners and implementers** including utilities and other energy efficiency program administrators, financial institutions, energy services companies, industrial facility and commercial building owners, and many others.

SEE Action's leadership is composed of an Executive Group and eight policy and program working group co-chairs who work toward achieving our nation's efficiency potential.

Based on the preceding description of the vision, mission and governance of SEE, SEE attempts to bring national best practices to light with the goal of achieving all cost effective energy efficiency. SEE understands and describes with astute clarity in their Evaluation Guide why the quantification of market effects is a key component, hence a national best practice, required to achieve all cost effective energy efficiency.

Q. Mr. Marke states on Page 9, Line 1 of his testimony that the inclusion of non-participant spillover and market effects in the computation of the NTG ratio is a Cadmus equation and not the basic NTG equation. Is there any truth to Mr. Marke's statement?

A. No, there is not. Cadmus has not invented or re-created any new definition of NTG. The SEE Action Network has a compendium of best practices and SEE defines NTG exactly as Cadmus does for Cadmus' 2013 EM&V work.

Q. Are market effects a newly introduced concept, or has the industry been assessing market effects for a long time?

A. Evaluating market effects is not new, and in fact, while market effects have been around for many years, the inclusion of market effects has become even more common in the past few years in energy efficiency program evaluations in jurisdictions throughout the

United States. Many regulators, utility staff, and evaluators now recognize that energy efficiency program market interventions often have effects that last after the intervention has been withdrawn, reduced, or changed. As noted, the energy efficiency industry has recognized the importance of assessing market effects for many years. For example, market effects were addressed in the *California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals*[4], which was published in April 2006 and prepared by a panel of industry experts including Nobel Prize winner Ed Vine. The California protocols state that market effects evaluation should be conducted when, "…such an evaluation would provide valuable information for directing program improvements and/or **for better assessing the complete impacts from the portfolio of programs**." [Emphasis added].

Q. Since market effects are an industry-accepted component of net savings calculations for energy efficiency programs, are there associated industry-accepted practices for assessing market effects?

A. Yes, SEE Action's 2012 impact evaluation guide provides six approaches for assessing market effects: shipment and sales data, surveys of customer purchases, surveys of supply-side actors, customer-reported free ridership and spillover, cross-sectional methods, and expert judging. The forthcoming Phase II UMP suggests most of these approaches as well: the UMP states that analysis of market sales data, structured expert judgment, survey-based approach in conjunction with structured expert judgment, and historical tracing are approaches that may be employed to assess market effects.

[4] https://www.energycodes.gov/sites/default/files/documents/bpCaliforniaEnergyEfficiencyEvaluationProtocols.pdf

Q. In which other jurisdictions[5] have market effects been included in energy efficiency program evaluations?

A. Market effects have been included in evaluations of energy efficiency programs in many jurisdictions. Recently, in the *Evaluation Framework for Pennsylvania Act 129 Phase II Energy Efficiency and Conservation Programs*, the Pennsylvania Public Utility Commission directs the seven Pennsylvania electric distribution companies to conduct NTG, econometric, or market share and market effects research to, "1) monitor the effects the program is having on the market, 2) gain a more complete understanding of the attribution of savings, and 3) identify with specific program measures no longer need ratepayer support."

In addition, Energy Trust of Oregon uses market effects estimates, along with impact evaluations and process evaluations, in its utility resource planning. In its 2013 evaluation of the Focus on Energy Residential Lighting and Appliance Program, Cadmus quantified cumulative market effects energy and demand savings for the 2008 to 2013 time period. Earlier Focus on Energy evaluations also considered market effects. For example, the 2009 evaluation of the Focus on Energy programs included market effects in its expanded cost-effectiveness test.

Further, in a 2013 literature review of effective market transformation practices, NMR Group Inc. ("NMR") states that Northwest Energy Efficiency Alliance ("NEEA") claims savings from net market effects of its initiatives. The NMR report also states that program administrators in Massachusetts (Berkshire Gas, Columbia Gas, National Grid, New England Gas, NSTAR/Western Massachusetts Electric, and Cape Light Compact) and New

[5] The forgoing referenced jurisdictional materials are on file with the author and contained in workpapers. Please see links in footnotes to materials referenced or quoted readily available by internet.

York (New York Research and Development Authority, or "NYSERDA"), claim savings from market effects to the extent they are embedded in NTG ratios.

Q. Please continue to list some of the EM&V industry thought leaders on market effects and their ensuing recommendations or plans that show that the quantification of market effects is a best practice.

A. The list includes:

1. The State Energy Efficiency Action Network ("SEE")
2. The National Action Plan For Energy Efficiency ("NAPEE")
3. States with well-defined EM&V protocols, such as California
4. Lawrence Berkley National Laboratory ("LBNL")
5. National Organizations with a focus on energy efficiency such as the National Home Performance Council ("NHPC")
6. Northeast Energy Efficiency Partnerships ("NEEP")
7. California Institute For Energy and The Environment ("CIEE")
8. Massachusetts' "MassSave" implementation and evaluation plans since Massachusetts earned the highest ranking in the latest ACEEE state energy efficiency scorecards
9. States, such as Arizona, with aggressive energy efficiency portfolio standard ("EEPS") mandates

Q. Is there a convergence to a central theme on the validity and necessity of estimating market effects as part of a balanced approach to estimating NTG for energy efficiency programs from the EM&V thought leaders listed above?

A. Yes. The SEE and NAPEE Impact Evaluation Guides are very similar with the difference being the SEE Guide provided additional information to support key points – especially around market effects as discussed previously in this testimony. The bottom line, however, in both documents in regards to market effects, is expressed in this excerpt from both documents:

> "Market effects evaluations estimate a program's influence on encouraging future energy efficiency projects because of changes in the marketplace. While all categories of programs can be assessed using market effects evaluations, they are primarily associated with market transformation programs that indirectly achieve impacts and resource acquisition programs that are intended to have long-term effects on the marketplace. **For example, if the goal of the evaluation is to assess cost-effectiveness for stakeholders or regulators, excluding the measurement of market effects in a resource acquisition program could result in under- or overestimating a program's overall benefits or cost-effectiveness." [Emphasis added].**

Q. What do the California EM&V protocols say about the validity and necessity of estimating market effects as part of a balanced approach to estimating NTG for energy efficiency programs?

A. The California protocol is clear that market effects are real and can be quantified (estimated) and the protocol is designed to guide evaluations conducted to document the various market changes that affect the way energy is used within a market and estimate the energy and demand savings associated with those changes that are induced by sets of program or portfolio interventions in a market.

Q. What does the Lawrence Berkley National Laboratory ("LBNL") say about the validity and necessity of estimating market effects as part of a balanced approach to estimating NTG for energy efficiency programs?

A. In 2010, LBNL published a paper titled "The Review of Evaluation, Measurement and Verification Approaches Used to Estimate the Load Impacts and Effectiveness of Energy Efficiency Programs."[6] The paper paints a vivid picture of the

[6] http://emp.lbl.gov/sites/all/files/lbnl-3277e.pdf

significant number of states that, as of 2010, measured market effects. Key points from the paper about market effects are:

- "About two-thirds of respondents indicated that most or all energy efficiency programs evaluations in their jurisdictions include consideration of free-ridership. About 60% of state respondents reported that spillover/market effects caused by efficiency programs are analyzed."
- **"Measurement methods used to estimate net savings** – EM&V methods are well documented and relatively standardized for determining gross (direct) energy savings for energy efficiency programs or projects. In contrast, there is much less agreement on the value and methods that should be used to estimate net savings. Key areas where differences exist on issues relating to net savings include: (1) how, if at all, to address program attribution; (2) how to define and set standards for rigor and accuracy for net savings given different policy objectives, and (3) how to assess broader "net" market effects of energy efficiency programs on future spillover savings in the market and the demand for energy services."
- "About 80% of the state-level respondents rated the importance of different types of evaluation studies at present and in the future (see Figure 2). Benefit cost analyses are separated out from the impact evaluation category since they are sometimes considered separately. In aggregate, respondents rated impact studies and benefit cost analysis as more important than process evaluation and market effects studies. In terms of projecting into the future, respondents perceive that the relative importance of process and benefit-cost studies is likely to decrease

while market effects/market transformation studies are likely to become more important in the future." [Emphasis Added].

- See Table 10 from the LBNL paper on the states where market effects are included in estimates of net savings from energy efficiency programs:

Table 10. Market influences and program effects included in estimates of net savings from energy efficiency programs

State	Free-ridership	Spillover/ Market Effects	Leakage to Other States?
CA	Yes	Yes in few cases	Yes, but just for selected programs
CT	Yes	Yes in some cases	NA
FL	Yes	Yes	No
IA	No	No	NA
ID[25]	No	No	No
IL	Yes	Yes	NA
MA	Yes	Yes	No
ME	Yes	No	No
MN	Yes	No	No
NEEA	No	No	No
NY	Yes	Yes	No
OR	Yes	Yes	No
PA	No	NA	No
TX	No	No	No
WI	Yes	Yes in few cases	No
Total Yes	***10***	***8***	***1***

Q. What does the National Home Performance Council ("NHPC") say about the validity and necessity of estimating market effects as part of a balanced approach to estimating NTG for energy efficiency programs?

A. NHPC states the definition of a market transformation program as inclusive of market effects. NHPC also replicates the preceding table in the LBNL paper:

Table 4.2. Market Influences and Program Effects Included in Estimates of Net Savings

State	Free-ridership	Spillover/ Market Effects
CA	Yes	Yes in few cases
CT	Yes	Yes in some cases
FL	Yes	Yes
IA	No	No
ID	No	No
IL	Yes	Yes
MA	Yes	Yes
ME	Yes	No
MN	Yes	No
NEEA	No	No
NY	Yes	Yes
OR	Yes	Yes
PA	No	NA
TX	No	No
WI	Yes	Yes in few cases
Total Yes	10	8

Source: NMR 2010, Table 2-2.

Q. What does the Northeast Energy Efficiency Partnerships ("NEEP") say about the validity and necessity of estimating market effects as part of a balanced approach to estimating NTG for energy efficiency programs?

A. In a "Net Savings Scoping Paper" prepared for NEEP by the NMR Group, Inc. and Research Into Action, Inc. in November 2013, the importance, validity and necessity to calculate market effects is expressed in the following excerpt from the paper:

> "**Net Savings Approaches Do Not Meet Current Policy Needs.** Commentators offered two explanations for why they did not believe that approaches to net savings meet current policy needs. The first explanation rested on skepticism regarding the quality of existing methods and, therefore, the results. Approaches to net savings could meet current policy needs, many of these individuals argued, if they could more accurately estimate free ridership and spillover, as well as cumulative effects and market effects. The second explanation was that net savings is too narrow a focus and fails to recognize the broader context in which current programs (and future ones too) operate. These people argued that programs should be

> evaluated in terms of how well they engage the customer and should involve measures like extent of behavioral change and market transformation that could be thought of as a very broad and inclusive definition of spillover. It is important to note that this group thought that the current policy focus on net savings—more specifically free ridership—impairs planning and innovation that will allow programs to meet evolving policy needs."

Q. What does the California Institute For Energy and the Environment ("CIEE") say about the validity and necessity of estimating market effects as part of a balanced approach to estimating NTG for energy efficiency programs?

A. CIEE sponsored a paper written in March 2009 titled "Market Effects and Market Transformation: Their Role In Energy Efficiency Program Design and Evaluation." In the recommendations section of the paper, CIEE addresses the importance and validity of quantifying market effects matter-of-factly as:

"Recommendation #1: Include spillover and other benefits of demonstrated market effects among achieved savings and net benefits counted for the Performance Earnings Basis."

Another pertinent excerpt is:

"If program sponsors are to be encouraged to expend program resources on efforts that are likely to generate market effects, then the performance of those measures should be assessed and their success compensated."

Q. What does the Massachusetts "MassSave" implementation plan say about the validity and necessity of estimating market effects as part of a balanced approach to estimating NTG for energy efficiency programs?

A. The MassSave 2013-2015 implementation plan clearly states how market effects are to be included in the cost effectiveness of energy efficiency programs as follows:

> "3. Net Benefits and Cost-Effectiveness
>
> The Program Administrators have projected the expected benefits and costs associated with this statewide Plan consistent with the requirements of D.P.U. 08-50-A, in which the Department reaffirmed that "the Total Resource Cost test is the appropriate test for evaluation of the cost-effectiveness of ratepayer-funded energy efficiency programs." D.P.U. 08-50-A at 14. To conduct the TRC test, Program Administrators routinely update their benefit/cost screening models to reflect new assumptions relating to program costs and benefits, the discount rate, the general rate of inflation, and avoided costs. In general, the benefit categories in the TRC test include the value of energy savings, gas and electric system benefits, and other measurable benefits (for example, participant resource benefits, participant non-resource benefits and benefits due to measurable market effects)."
>
> "6. Evaluation Budgets
>
> By agreement with the Council's Consultants, the Program Administrators will allocate four percent of total program budgets for evaluation and market research in each year of the three-year plan. The evaluation and market research budget was based on several factors, including historical evaluation costs and an expected higher cost of evaluation activities for codes and standards initiatives **and the quantification of market effects." [Emphasis Added].**

Q. Why should it be meaningful to the Commission to understand the Massachusetts perspective on quantifying market effects in the NTG calculation?

A. ACEEE ranks Massachusetts as the #1 state for implementing energy efficiency. For its 2013-2015 implementation plan, Massachusetts plans on achieving annual electric load reductions of 2.5% with a three-year budget of $1.5 billion. To attempt to reach this level of energy efficiency performance leadership, it is imperative that Massachusetts recognize and reward performance related to market effects. Although annual load reduction targets are lower and annual budgets are significantly lower, achieving performance leadership in Missouri will also require a balanced approach to estimate NTG for energy efficiency programs.

Q. What does Arizona say about the validity and necessity of estimating market effects as part of a balanced approach to estimating NTG for energy efficiency programs?

A. Arizona is a state with an energy efficiency portfolio mandate to achieve a 22% reduction in electric load by 2020. To get there, Arizona will need to achieve annual load reductions of 2.5% from 2016 through 2020. Market effects are to be analyzed in the program net benefits as per the following excerpt from Arizona energy efficiency rules:

> **"R14-2-2412. Cost-effectiveness**
> **E.** Market transformation programs shall be analyzed for cost-effectiveness by measuring market effects compared to program costs."

Q. Please summarize the voluminous evidence presented proving that the quantification of market effects for energy efficiency programs is an industry EM&V best practice.

A. There should be no question that the quantification is an EM&V best practice. The fact that the quantification of market effects may be difficult or resource intensive has no bearing on whether or not it is a best practice. A fair, impartial and balanced analysis of all the components of the NTG calculation requires the necessary rigor to analyze free ridership, spillover and market effects. CIEE succinctly summarized the best practice nature of quantifying market effects when they said "If program sponsors are to be encouraged to expend program resources on efforts that are likely to generate market effects, then the performance of those measures should be assessed and their success compensated."

IV. OPC's Opinions On Market Effect For The 2013 Ameren Missouri Residential LightSavers Programs

Q. Given that Mr. Marke has cited and adopted Staff's Change Request, please explain further why such a position is unsupportable in this case.

A. Staff's original Change Request Overview in paragraph 6 stated that "Cadmus has wrongly included market effects in its determination of net to gross ("NTG") ratios used to calculate the 2013 incremental annual energy and demand savings and net benefits of Ameren Missouri's LightSavers program." However, the inclusion of market effects is recognized in the industry as outlined in detail above. The Auditor agrees that market effects exist. Moreover, Staff has now changed its position and supports the inclusion of market effects in this case and has agreed to discuss further the proper inclusion of market effects in future EM&V proceedings. Accordingly, the Staff and the Company have now advanced a joint position that reflects an industry best practice. Since Mr. Marke has adopted Staff's original Change Request, Mr. Marke disregards the expertise of Cadmus, a knowledgeable third party EM&V contractor, at least as far as the determination of market effects is considered, and the Auditor. Among professionals with expertise in the EM&V field, few are more knowledgeable on market effects than Cadmus' Dr. Sami Khawaja, who holds a doctorate degree in Economics and Systems Science; who has been conducting demand side management ("DSM") program impact and process evaluations since 1983; who is the author of the *Electric Power Research Institute Impact Evaluation Guide*, co-author of the *International Performance, Measurement, and Verification Protocols*, co-author of the *Environmental Protection Agency National Action Plan for Energy Efficiency Impact Evaluation Guide*, and author of over 30 papers on evaluation issues. Further, Mr. Marke also refutes the market effects work of the Commission's EM&V Auditor, Ms. Katherine

Johnson. While both experts may differ from their peers (and each other) on matters related to the proper measurement of EM&V, both recognize the underlying validity of market effects. From his testimony we can recognize that Mr. Marke challenges the industry and its experts on fundamental means by which we address and quantification of the components of NTG or EM&V calculation. Inasmuch as Mr. Marke's testimony represents a departure from accepted practice and a challenge to principles of general acceptance in the field, his testimony should be rejected.

Q. Does Mr. Marke's testimony have any support within the academic or professional industry with respect to the quantification of all components of NTG?

A. No, Mr. Marke's arguments and rationale to exclude market effects are not supported by any recognized authority of which I am aware. Mr. Marke's opinions with respect to the subject do not square with what is accepted in the industry, nor do his opinions adequately address the important points in the EM&V reports, as I discuss more thoroughly below.

Q. What is Mr. Marke's opinion on the validity of market effects?

A. Mr. Marke expressed multiple opinions. His opinions include:

- Page 10, Lines 16-19: "My testimony will provide evidence that the market effects Ameren Missouri and Cadmus are claiming are really a result of creative and aggressive evaluations and more accurately attributable to outside forces (federal legislation) and separate actors (naturally occurring market forces)."

- Page 30, Lines 18-20: "Ameren Missouri's standard for assessing the presence of market effects is simply not meaningful; it offers no way to draw distinctions. Under this standard, if you have a program then there are market effects."

- Page 35, Lines 24-26*:* "Any actions taken that resulted from energy efficiency efforts in preceding years represent sunk costs and are not incremental to the current program being

evaluated. Because of these parameters, market effects qualify as double counting of spillover in this evaluation, and thus, overstating the actual energy savings obtained."

- Page 36, Lines 3-5: "**Q. Have any other states recognized the use of market effects, nonparticipant spillover and participant spillover simultaneously in their determination of the net-to-gross ratio?** A. Not to my knowledge, and not under similar regulatory and incentive structures as Missouri."

- Page 44: "Market effects represent creative and aggressive reporting that overstate the benefits received by customers directly attributable to program costs."

- Page 45, Line 17: "There are no accepted best practices for the quantification of market effects."

- Page 46: Lines 1-5: "To be sure, market effects can happen. They just did not happen here in one year nor can they be reasonably attributed to Ameren Missouri's actions independent of the factors explained in this testimony. The quantification of market effects is contextually sensitive and requires a collective effort in design, coordination and execution from stakeholders prior to implementation."

In summary, Mr. Marke has covered the gamut of opinions on market effects acknowledging that they can happen, but curiously he then claims they can't happen in Ameren Missouri energy efficiency programs and especially not in 2013. Mr. Marke opines (without support) that the quantification of market effects is not an EM&V best practice. Mr. Marke does not let Cadmus or the Commission EM&V Auditor off the hook either. He minces no words when he opines that both double counted 2013 Ameren Missouri LightSavers energy savings when quantifying market effects. In effect, Mr. Marke challenges the evaluators, the Auditor, and three other parties and stakeholders concerning the inclusion of market effects in the calculation. Mr. Marke disregards established methodologies, and in support thereof, cites tangential material and excerpts from largely irrelevant sources to support his theories.

Q. Discuss Mr. Marke's purported evidence that Walmart is responsible for CFL market effects rather than Ameren Missouri.

A. As a threshold point, Mr. Marke's argument presents an existential challenge to energy efficiency efforts brought about by state law and advanced by State Commissions, including this Commission through MEEIA programs implemented in Missouri. If a Walmart press release can foretell massive energy savings across the region, then there is little need for a utility energy efficiency residential lighting program, and Ameren Missouri, as well as scores of other utilities across the country, could have simply referred their customers to Walmart. Specifically, Mr. Marke's theory is that in 2006, Walmart embarked to move 100 million CFLs, thereby transforming the market. In Mr. Marke's words "This pledge literally changed the lighting market." (Page 48, line 4).

The fact is that this nationwide one-time, one-year pledge, made in 2006, had no impact on the lighting market. Walmart has 4049 U.S stores. The sale of 100 million CFLs in 2006 by Walmart stores is equivalent to each store selling on average approximately 25,000 CFLs in 2006. It is also a fact that utility lighting incentives were utilized by Walmart to achieve their 2006 CFL sales goals. As a reference point, the Company's market transformation LightSavers program sold over 4 million bulbs in 2013.

Q. What are the facts regarding Walmart's sales philosophy on all lighting products?

A. Walmart is a trade ally and retail partner in the 2013 Ameren Missouri LightSavers program. In July 2014, General Electric ("GE") made a presentation to Ameren Missouri to discuss the status of the Ameren Missouri/Walmart/GE partnership in providing

efficient lighting products to Ameren Missouri customers via the Walmart stores. A copy of the presentation is attached as Schedule RAV-2.

Walmart takes a balanced approach in offering customers a choice on incandescent, efficient halogen, CFL, and LED lighting products. Walmart, in fact, considers themselves in 2014 the "king" of the sales of incandescent 4-pack light bulbs – even though these incandescent light bulbs are no longer being manufactured. This is a far different picture, based on Ameren Missouri specific Walmart stores primary inventory data, than what Mr. Marke states based on his cursory search of Walmart nationwide CFL activity.

Another fact is that the Walmart sales of CFLs are declining year after year in the Ameren Missouri service territory. Conversely, the Walmart sale of energy efficient halogen light bulbs is increasing at an increasing pace year after year. These two facts from Ameren Missouri service territory Walmart stores conclusively should show that the Ameren Missouri service territory for CFLs is not transformed. To the contrary, without intervention, energy efficiency lighting choices for residential customers would trend toward regression, at least as far as Walmart is concerned.

Q. What evidence of CFL market effects in Walmart stores is as a direct result of a partnership with Ameren Missouri does GE cite?

A. The fact that Walmart would not allow the Ameren Missouri signage, off shelf merchandising in other store areas, or in-store demonstrations in the past contributed to lower sales in CFLs. In other words, without our programming, Walmart would be a major driver of standard and halogen bulb residential lighting, neither of which are considered energy efficient. Walmart itself acknowledges that Ameren Missouri lighting incentives are key to

Walmart meeting their lighting sales goals. Walmart also acknowledges that Ameren Missouri incentives are key to Walmart restoring its lighting sales margins.

The following slides in the July 2014 GE presentation offer solid evidence of the significant market effects at Walmart as a direct result of the Ameren Missouri LightSavers program:

- Slides 7,8,10 – Value of Ameren Missouri – 3x Utility growth, comparing non-utility to utility program stores, benefit of Associate education and engagement due to Utility Programs;
- Slide 12-Walmart is increasing in store utility signage and demos due to the value in increased sales;
- Slide 13-Walmart is increasing special locations for bulb displays with utility rebates due to higher sales opportunity;
- Slide 18 – Walmart weekly sales of Ameren Missouri 10 packs vs all 10 packs, due to the additional point of sale (POS) signage; and
- Slide 27 – Speaks to implementing Ameren Missouri's lighting implementation contractor, Applied Proactive Technology (APT), inspired protocol changes in all Walmart stores as a result of the gains seen in Ameren Missouri stores.

Q. What is Mr. Marke's next theory regarding why the market for CFLs is already transformed without any Ameren Missouri intervention?

A. Mr. Marke's second theory is that Home Depot transformed the CFL market. His sole piece of evidence is a Home Depot press release showing a satellite "heat map" of the intensity of CFL sales in the top 50 U.S. Home Depot markets. Both Kansas City and St. Louis receive the same color of light on the heat map. According to Mr. Marke, since Kansas City does not have a robust utility-sponsored CFL program and St. Louis does, Mr. Marke surmises that the Ameren Missouri CFL program has no impact on the sale of CFLs.

Q. Please analyze Mr. Marke's Home Depot theory.

A. It is important to understand what a heat map represents. The Home Depot press release cited by Mr. Marke took sales data for 2013 and overlaid census data and created a heat map-style data visualization showing the top 10 and top 50 cities that bought energy-efficient light bulbs on a per capita basis. This is not the "truest" way to look at this because it is so heavily weighted on how many stores may be in an area (Kansas City for example) and the population base. The Kansas City area may be heavily saturated with a large number of Home Depot locations that are also high volume. Combine that with a population base that is not as dense and it would tend to have a significantly higher per capita rating. The inclusion of Kansas City on this heat map is most likely due to the high volume store concentration and the population base of using Kansas City only, instead of the Kansas City metro area, which has 2.34M people in it. Kansas City would have dropped out of the Top 50 if the metro area had been used.

Fayetteville, Arkansas and Miami, Florida are examples of cities that made the top 50 only because of this factor as well. Miami is heavily concentrated with an ultra-high volume of Home Depot locations. There are no utility programs in that market at all. But more surprising is what cities were left off the per capita list:

Chicago, IL

Los Angeles, CA

New York City, NY

In fact, New York didn't even make it into the Top 50. Are we to assume that energy efficiency programing, marketing, and promotion are complete failures in these markets when compared to Kansas City? Clearly, the graphic displayed is not representative of the successes and failures of energy efficiency programs or measures, but more of a marketing graphic intended to tout Home Depot's market presence in U.S. cities.

The bottom line is that the Home Depot heat map press release that Mr. Marke chose to cite cannot say much about the forces that transformed Ameren Missouri's market with respect to efficient residential lighting.

Q. What other theories does Mr. Marke credit with market transformation?

A. Mr. Marke's third theory is that the "Ameren Illinois upstream lighting rebate" program transformed the Ameren Missouri CFL market. This is Mr. Marke's most creative theory. Mr. Marke's reasoning is based upon the fact that Ameren Illinois moved more CFLs than Ameren Missouri. Given the geographic proximity between Ameren Illinois and Ameren Missouri, Mr. Marke somehow finds it reasonable to conclude that market effects claimed for the Ameren Missouri LightSavers program should be attributed to Ameren Illinois.

Q. Please discuss Mr. Marke's Ameren Illinois theory.

A. It is important for Mr. Marke to know what he does not know. Ameren Illinois used very minimal mass media advertising to inform and educate Ameren Illinois customers about CFL technology and related discounts. Instead, Ameren Illinois used in-store promotions through its retailers within its services territory. Illinois retailers used the following techniques to create interest in efficient lighting: 1) In-store demonstrations, 2) Point-of-purchase educational signage, 3) Point-of-purchase price mark-downs and 4) High profile multi-pack discounts at the store entrance, on aisle end caps and on special display pallets. Only stores within the Ameren Illinois service territory participated in the Ameren Illinois lighting program. Since Ameren Missouri used mass media to promote residential lighting and Ameren Illinois did not use such media, market effects from the Missouri

program were due in part to the Ameren Missouri media campaigns and not the Ameren Illinois point-of-purchase promotions.

Q. Does Mr. Marke's Ameren Illinois theory have other components?

A. There are two other components. First, Mr. Marke attempted to intertwine the EM&V concept of "leakage" into his arguments for how to quantify NTG. Leakage has no bearing on the quantification of either free ridership or spillover or market effects. Leakage is a term that refers to the situation when a non-Ameren Missouri customer buys a CFL at an Ameren Missouri retail partner store. Therefore, Ameren Missouri should not receive credit for energy savings associated with CFL sales to non-Ameren Missouri customers. Reverse leakage is equally plausible. That is when an Ameren Missouri customer buys a CFL at a non-Ameren Missouri retail partner store. Ameren Missouri has not sought credit for these sales either. The bottom line is that Mr. Marke criticizes the Cadmus evaluation of leakage for the Ameren Missouri LightSavers program because it is lower than the leakage number used by the Arkansas Technical Resource Manual as it relates to CFL sales in Arkansas. There is no logic in Mr. Marke's assertion that Arkansas and not any other jurisdiction in the nation should be the leakage value North Star for Ameren Missouri. There is no more logic in this argument than if Mr. Marke assumed that the long geographic boundary between Ameren Missouri and Ameren Illinois caused high leakage from Ameren Illinois to Ameren Missouri. This theory, by the way, is also untrue.

If Mr. Marke would have reviewed the Ameren Illinois 2012 EM&V report, which is in the public domain, he would have seen the following quantification of leakage for the Ameren Illinois CFL program:

Table 21. Program Bulbs Purchased by Electric Utility Provider Utility	Percent
AIC	90%
Clay Electric	3%
Tri County Electric	2%
Clinton County Electric	1%
Coles Moultrie	1%
Illinois Rural Electric	1%
Village of Rantoul	< 1%
Cornbelt Energy	< 1%
MJM	< 1%
Shelbyville Electric	< 1%
Ameren Missouri	< 1%
Total	100%

The leakage into Ameren Missouri was actually 1 of the 898 bulbs that leaked out of Ameren Illinois. This factual evidence on actual Ameren Illinois CFL leakage data further dispels Mr. Marke's creative theory that CFL market effects in Missouri were caused by the Ameren Illinois CFL program.

Q. What is the second component of Mr. Marke's Illinois theory?

A. The second component in Mr. Marke's Illinois theory is that the Ameren Illinois CFL program saw a decline in their CFL program NTG ratio from 0.83 in 2012 to 0.47 in 2013. Yet, Ameren Missouri's LightSavers program has an NTG of 1.25 in 2013. In Mr. Marke's mind, this is proof positive that the 2013 Ameren Missouri LightSavers program has too high of an NTG ratio. However, what Mr. Marke fails to recognize is that Ameren Illinois went first in terms of rolling out its lighting program. Hence, if there was "leakage" it would have occurred contemporaneously. Clearly, Ameren Missouri's 2013 high NTG ratio for 2013 corresponds to its programming. Moreover, differences in measurement and State specific program parameters play an important role in distinguishing both programs.

Q. Please explain the Ameren Illinois CFL NTG calculation relative to the Ameren Missouri LightSavers NTG calculation.

A. Notice the huge drop in NTG for Ameren Illinois from 2012 to 2013 from 0.83 to 0.47 – a 43% decrease. The difference was due to a change in methodology to calculate NTG for the CFL program. In 2012, a robust multi-state data driven model (as opposed to a customer self-report) was used that incorporates some but not all forms of spillover. Market effects were not included in the 2012 model. In 2013, at the direction of the Illinois Commerce Commission ("ICC") Staff, the Ameren Illinois EM&V contractors were ordered to use customer exit interviews to estimate free ridership only and to exclude all other components of NTG. The Illinois EM&V contractors recommended that this approach would not yield meaningful results but these concerns were overruled by the ICC's Staff. The Ameren Illinois EM&V contractor conducted in-store interviews with 365 customers purchasing lighting at only 10 participating retail locations. The interviews took place on Saturdays, Sundays, and Mondays over the course of four weeks in January 2013. The interview questions were far fewer than interview questions asked in customer self-reporting surveys. Customers were given a store $5 gift card that they could only use that day as an incentive to answer a few questions. Ameren Missouri's EM&V contractors would ascribe no credence to such a superficial approach over such a short timeframe at such few store locations to measure an attribute as important as CFL NTG. It is also important to note that Ameren Illinois did not attempt to estimate participant spillover, non-participant spillover and market effects in its 2013 estimate of CFL NTG.

In defense of the minimalist CFL NTG approach in 2013 order by the ICC, it is important to remember that by Illinois statute, Illinois IOUs are limited to spending no more than 3% of the DSM program budgets on EM&V whereas Ameren Missouri has a 5%

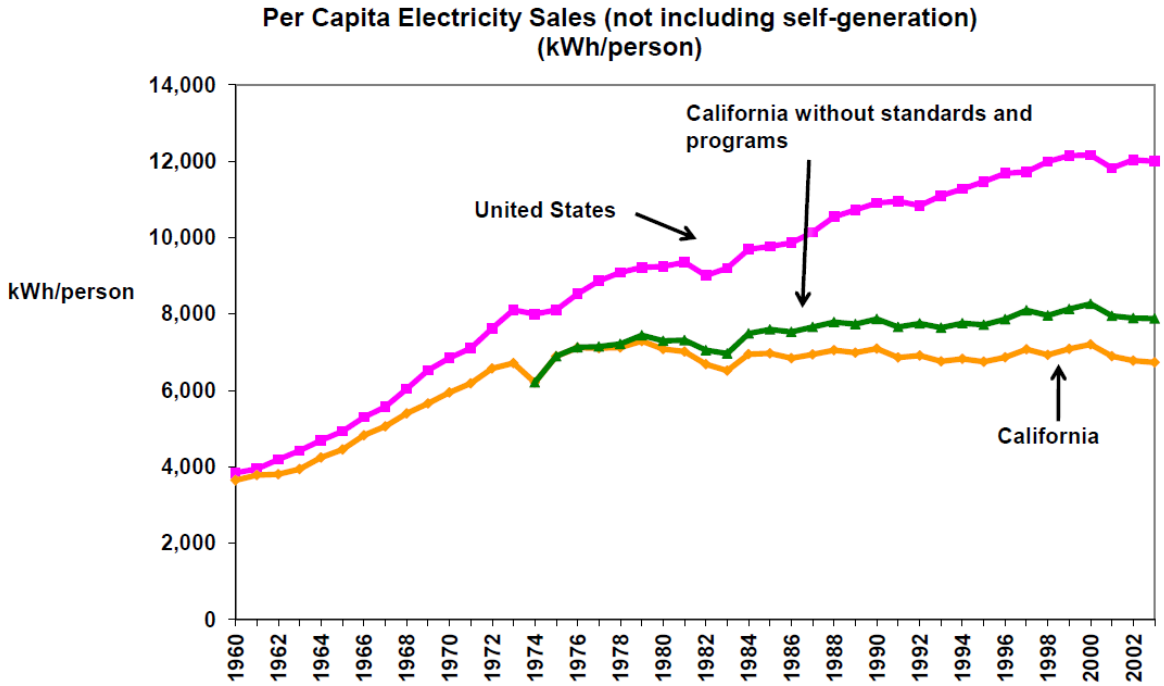
EM&V budget. Consequently, Ameren Illinois is limited by budget on how robustly they can perform EM&V.

Q. What is Mr. Marke's next theory regarding why the market for CFLs is already transformed without any Ameren Missouri intervention?

A. Mr. Marke's next theory is that California transformed the Ameren Missouri market for CFLs as early as 2006.

Q. How can California influence Missouri CFL sales from 1,500 miles away?

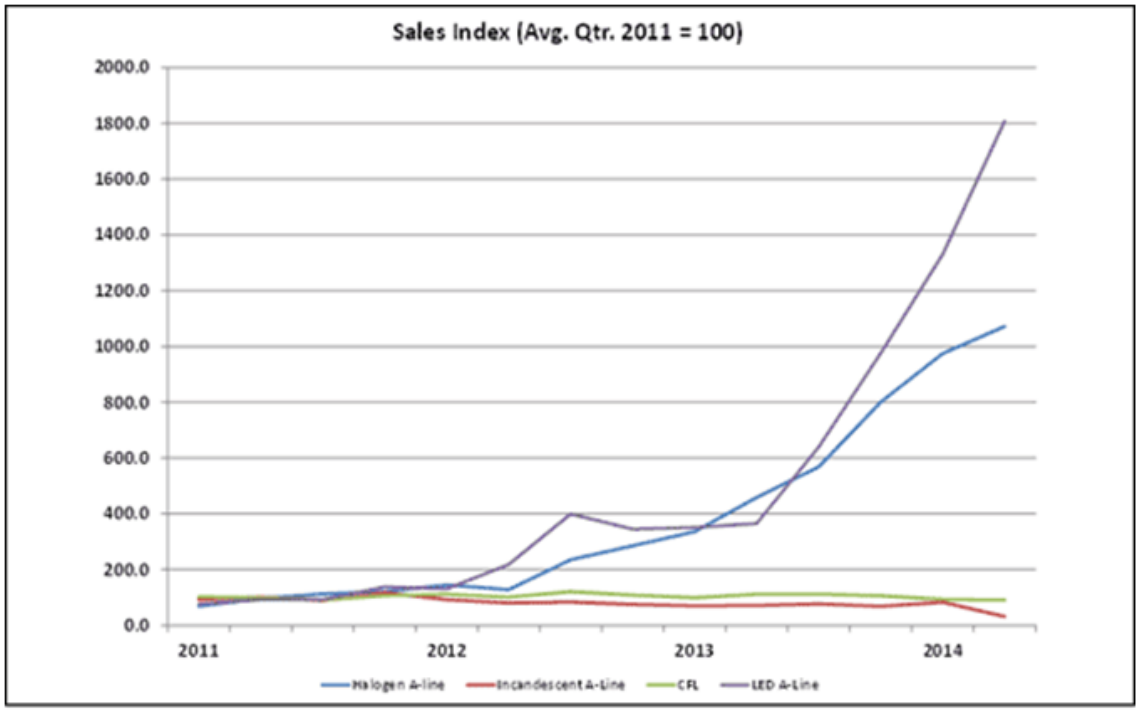
A. It should be obvious that California does not meaningfully influence the Missouri market for CFL sales in 2013. It is unreasonable to compare the most mature energy efficiency market in the U.S. with a less mature Midwestern U.S. market. The state of California has had active EE programs since the mid-1970s.



Q. What is Mr. Marke's final theory regarding why the market for CFLs is already transformed without any Ameren Missouri intervention?

A. Mr. Marke claims that the Energy Independence and Security Act ("EISA") of 2007 transformed the market for CFLs because EISA banned the manufacture of most forms of incandescent light bulb through a phase out manufacturing approach from 2012-2014.

However, Mr. Marke fails to acknowledge that while EISA changed the minimum energy efficiency standards, which ended the manufacture of most standard incandescent light bulbs, it did not set the new efficient baseline at the efficiency level of CFLs. Mr. Marke's testimony does not mention the simple fact that EISA compliant halogen bulbs are the new baseline technology in the U.S. market as a DIRECT result of the EISA legislation. Recent National Electric Manufacturers Association ("NEMA") shipment data demonstrates that Halogen A-Line bulbs are gaining a STRONG market position (26%) relative to both CFLs (36%) and Standard Incandescent bulbs (35%). See NEMA graph below.



For more detail, see: http://www.nema.org/news/Pages/Incandescent-A-Line-Lamps-Decline-Sharply-in-Second-Quarter.aspx

Earlier in my testimony, we provided a GE presentation showing Ameren Missouri Walmart stores' declining CFL sales and increasing halogen sales to further corroborate the NEMA sales data.

The conclusion should be obvious. EISA did not transform the market for CFLs in 2013 as Mr. Marke erroneously conjectured.

Q. Mr. Marke alleges that there exists a "double counting" with respect to market effects. Please explain Mr. Marke's opinion on his double counting allegation.

A. Quoting Mr. Marke's testimony:

> Page 35, Lines 24-26: "Any actions taken that resulted from energy efficiency efforts in preceding years represent sunk costs and are not incremental to the current program being evaluated. Because of these parameters, market effects qualify as double counting of spillover in this evaluation, and thus, overstating the actual energy savings obtained."

As I explain more thoroughly below, this statement leads me to believe that Mr. Marke does not fully understand the concepts of spillover and market effects nor does he understand the methodologies of calculating either.

Q. Please explain the reasons you do not believe Mr. Marke understands spillover or market effects, starting with how Cadmus defines spillover for the LightSavers program.

A. Cadmus defined two types of spillover for the LightSavers Program. Non-participant lighting spillover is additional savings generated from additional energy-efficient measures or activities undertaken without financial assistance that is due to experience participating in a given program. In the case of LightSavers, Cadmus defined non-participant lighting spillover as like spillover, meaning there were increased purchases of efficient lighting products that were not discounted, but occurred due to the program causing an increased availability of the products and providing education about the benefits from energy-efficient lighting. Unlike free ridership, no program costs are associated with spillover savings, but energy-saving benefits can result that increase net savings. The second type of spillover for the LightSavers Program, participant non-lighting spillover, results from additional savings generated by those exposed to program education and advertising about energy efficiency that make additional (non-lighting) energy-savings improvements without receiving a program rebate.

Q. How does Cadmus define market effects for the LightSavers program?

A. Cadmus defines market effects as systemic changes to standard business practices that were caused by program activities and that tend to persist long after program interventions have ended. Specifically, for the LightSavers Program, these market effects are

a result of; (1) retailers' changing their stocking patterns from less efficient to more efficient lighting products, (2) increased customer awareness of the availability and benefits of efficient lighting products, leading to their increased demand for these products, and (3) increased product knowledge of store sales representatives who advise customers about their lighting choices.

Q. Please describe Cadmus' approach for estimating spillover and market effects.

A. As shown in Table 33 of the 2013 LightSavers EM&V report, Cadmus calculated the number of actual CFLs purchased by Ameren Missouri customers over a three-year period based on two home inventory studies: one Cadmus conducted in July 2010, and one in June 2013. Cadmus subtracted program bulbs sold from the estimated count of total bulbs sold to calculate non-program bulbs sold over the three-year period. Cadmus then attributed each of those non-program bulb sales to one of three categories: naturally occurring purchases, spillover, and market effects. Then Cadmus converted the total bulbs by category into rates, dividing the non-program naturally occurring, spillover, and market effects by the total program bulbs sold during the same period. Cadmus applied these final rates to the 2013 annual bulb count. For this approach, Cadmus assumed that naturally occurring, spillover, and market effects, averaged over a recent three-year period, provide a good estimate of naturally occurring, spillover, and market effects resulting from program year 2013.

Q. What is the basis for Mr. Marke's allegation of the EM&V Contractor double counting of market effects as spillover?

A. While I cannot speak for Mr. Marke's understanding of the market effects calculation methodology, it is imperative to realize that no sales of CFLs prior to 2013 are included in the market effects calculation. Rather, Cadmus used a three-year history of actual Ameren Missouri service territory CFL sales to calculate the ***rate*** of CFL sales attributable to market effects, spillover and naturally occurring energy efficiency. In no way, shape or form were sales of CFLs prior to 2013 included in the energy savings attributable to the 2012 Ameren Missouri LightSavers program.

Q. Is it a valid and reasonable approach to use historical rates to estimate current program impacts?

A. Yes.

Q. Where else is this technique used?

A. One example of this technique is in estimating lighting installation rates. The Uniform Methods Project for Lighting (Exhibit B) states:

> For upstream programs, calculate in-service rates through an in-home audit. Because program bulbs cannot be easily identified, evaluators can calculate the in-service rate as the number of installed bulbs purchased in a recent 12-month period divided by the total number of bulbs purchased in the same 12-month period. If the sample size of homes with bulbs purchased in the recent 12-month period is insufficient to provide the necessary levels of confidence and precision, apply a long-term, in-service rate using all bulbs, regardless of the time of purchase.[7]

As indicated by this protocol, it is often challenging to estimate what is actually occurring during the program year as it occurs, and it recommends using average data over a longer time period in such cases.

[7] Scott Dimetrosky, Katie Parkinson, and Noah Lieb, NERL *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measure,* Chapter 6, p.-22.

Another example that regularly occurs is for applying NTG results to savings. Most program evaluators do not calculate a new NTG value each year, but will apply previously calculated results to current programs, unless the program changes materially. Evaluators will also sometimes average NTG estimates from other regions to apply to a current evaluation.

Q. Are there any other reasons why using a historical average is appropriate for estimating market effects?

A. Yes. Market effects are, by definition, long-term impacts. Therefore, the market effects resulting from this program (or any program) are not necessarily measurable during the current program year, but rather occur over time.

Q. Since we are discussing the methodology used to calculate market effects, please explain the differences in the magnitude of market effects as calculated by Cadmus versus the magnitude calculated by the Commission's EM&V Auditor.

A. First, it is important to understand that Cadmus and the Auditor both agree that market effects are real and can be quantified in a reasonable manner. Second, both Cadmus and the Auditor agree with the methodology used to estimate market effects for the 2013 LightSavers program. The distinction between the two reports lies in the analytical approach used in each - i.e., the inputs used - to estimate the number of non-program CFLs sold in 2013, and additionally the means by which non-participant spillover is allocated.

Q. How is the Auditor's approach to calculating market effects similar and how is it different than what is presented in the Cadmus final LightSavers report for 2013?

A. The Auditor and Cadmus both agree as to the inclusion of market effects, but their approaches as to measuring those effects depart from one another. The methodologies employed by the Auditor and Cadmus are discussed in their respective reports and need not be reiterated in detail in this testimony. The underlying basis for the Auditor's approach to calculating market effects is through the use of a proprietary database, called "LightTracker", whereas Cadmus relied on data that was not developed through the use of such a database. There is also disagreement between the Auditor and Cadmus regarding non-participant spillover (which I discuss in more detail below). The joint position agreed upon by Staff and the Company calls for final EM&V results that fall between the two approaches, while at the same time, setting forth a collaborative path to resolve the professional disagreements as to what approach to use going forward.

Q. Please explain the differences with respect to non-participant spillover that you noted above.

A. Non-participant spillover can be allocated at the program level or left at the portfolio level. It may be acceptable for many portfolios throughout the country to leave non-participant spillover at the portfolio level rather than allocate it to specific programs. Likewise, many portfolios leave "below the line" costs, such as general marketing and evaluation, at the portfolio level. However, as part of the discussion of calculating program cost effectiveness, it is our understanding Staff specifically wanted those "below the line" costs allocated at the program level to ensure program level cost effectiveness included all costs associated with the portfolio. The final EM&V report reflects these "below the line" costs allocated to each program in the present value of Utility Cost Test ("UCT") lifetime

benefits. The Auditor takes a different approach to allocation for the purpose of EM&V, and this has material implications.

Q. Please explain the approach used by the State Auditor to allocate non-participant spillover across the programs?

A. Page 3 of the State Auditor report states "the nonparticipant spillover calculation for the residential programs should be revised to be allocated evenly across all programs." That is, the 2.8% calculated for NPSO should be applied to the NTG for every program. The State Auditor also stated on page 3 of the Audit Report that "in this way one program is not being given preference over another in terms of the final savings calculations and cost-effectiveness analysis."

Q. Please explain the Cadmus approach.

A. On pages 55 through 60 of the Cadmus LightSavers final report it explains the Cadmus methodology and results using program marketing budget and program size as the determining allocation factors. Specifically, Cadmus describes their approach on page 58 as follows: "The final allocation approach we considered—and eventually chose to use—assigns overall NSPO as a function of each program's marketing and program budget. This approach remains consistent with the theory that NPSO results from the cumulative effect of program-specific and ActOnEnergy marketing and program activity over a period of time, not necessarily by a single, program-specific marketing effort. In addition, while NPSO is most commonly associated with mass media marketing campaigns, the scale of program activity also proves to be a factor." With respect to the approach recommended of the Auditor, Cadmus states on page 57 of the LightSavers final report: "it inherently assumes all programs contributed equally to generating the observed NPSO. However, given the

significant differences between the programs' marketing tactics and budgets as well as the programs' designs and scales, an alternative approach is likely to produce a better estimate of attribution."

Q. What is the Company's position with respect to non-participant spillover?

A. The Company supports the *Stipulation* as a way to resolve the difference in this case with respect to the specific 2013 results and also provide a path to address the issue going forward in a collaborative manner rather than through litigation. The Company has expressed concern that the method advocated by the Auditor actually gives preference to programs that are highly unlikely to lead to non-participant spillover by increasing the percent of non-participant spillover applied to them. Non-participant spillover is allocated primarily to the programs most likely to cause it; the larger programs and those with the greatest marketing spend. Programs like PerformanceSavers, which is smaller and has less marketing because it has a smaller target audience and has customers that are served by Ameren Missouri for both electric and gas, does not receive an unfair advantage of having too much non-participant spillover allocated to them. In addition, CoolSavers had a large marketing budget and is a much larger program. Accordingly, the Company has advocated for an approach consistent with or similar to that used by Cadmus. The Company feels the best approach is to reach a compromise position in this case with respect to results, and discuss allocation methodology with the goal to reach consensus for future cases.

Q. How does the disagreement between the Auditor and Cadmus relate to the Stipulation and Agreement entered into between the Staff and the Company?

A. The Company believes seeking resolution to the proper allocation of non-participant spillover going forward as a collaborative effort will be beneficial and discussions will be productive to this end. The Company accepts a compromise position in this proceeding and looks forward to working with Staff and stakeholders on resolving the issue going forward.

V. Free Ridership and the significance of the issue with respect to EM&V results

Q. First, describe the free ridership issue.

A. Free ridership is the component of the NTG equation that attempts to quantify the number of CFLs sold by Ameren Missouri in 2013 that customers would have purchased in the absence of an Ameren Missouri CFL program. For some, but not all, 2013 Ameren Missouri residential and business programs, the Ameren Missouri EM&V Contractors, Cadmus and ADM, estimated free ridership using an EM&V technique known as a customer "self-reporting" survey. If it could be boiled down to a single question, the customer self-reporting survey asks customers the hypothetical question of what energy efficiency action, if any at all, would they have taken with the intervention of Ameren Missouri. If the customer, in the case of CFLs, responds that they would have bought a CFL even without the Ameren Missouri program, that customer would be considered 100% a free rider.

A customer self-reporting survey consists of approximately 20 minutes of questions administered either via telephone or online survey instruments to customers by EM&V contractors. The well-known, well-established issue with customer self-reporting surveys is that they overestimate free ridership. People have a tendency to speak with their hearts but act with their wallets.

In the 2013 EM&V reports, Cadmus documents several examples in several programs where Cadmus has specific data for those programs showing that customer self-reporting surveys reported biased free ridership estimates. Ameren Missouri submitted a 2013 Change Request to the Commission to adjust free ridership scores determined by customer self-reporting surveys.

Q. What is Mr. Marke's opinion?

A. Mr. Marke does an about face on his view of Cadmus' ability to estimate free ridership relative to Cadmus' inability to estimate market effects. Mr. Marke thinks Cadmus does a fine job in accurately quantifying free ridership when using customer self-reports and recommends no changes.

Q. On what basis does Mr. Marke think Cadmus does a fine job in estimating free ridership when using customer self-reporting surveys?

A. Mr. Marke follows a similar approach as he did when attempting to provide evidence on his opinions that CFL market effects were caused by non-Ameren Missouri sources – some as far away as California. Mr. Marke attempts to discredit the source of adjustments that Ameren Missouri proposes to be made in the free ridership scores. Mr. Marke did not consider the FERC 2009 National Assessment of Demand Response Potential study. Having worked on this project and other energy efficiency and demand response studies with FERC staff, I find it hard to believe that FERC would either work with or cite a subject matter expert, the same subject matter expert on whose work Ameren Missouri calculated adjustments to free ridership scores predisposed to minimize the potential of energy efficiency.

Q. Is Mr. Marke's analysis consistent with what is actually in the 2013 Ameren Missouri EM&V reports?

A. No. Mr. Marke does not give proper consideration to the actual methodologies and work product provided by Cadmus in support of its analyses. For example, Mr. Marke accuses Cadmus of understating free ridership due to his misconception that Cadmus did not account of partial and deferred free riders in their analysis of free ridership. However, the EM&V reports and the customer self-reporting survey questions on which free ridership scores are based did assess all forms of free ridership. Cadmus did in fact consider some customers partial free riders and accounted for customers that would have deferred the purchase without the program. An example from the CoolSavers report, p.54:

> "We assigned a partial free ridership score (ranging from 12.5% to 75%) to customers who already had plans to install the measure, but who said their decision about which product to purchase or when they would purchase it was influenced by the program. To customers who were highly likely to install the energy-efficient equipment right away and for whom the program had less influence over their decisions, we assigned a higher free ridership percentage than to those for whom the program may not have been as large an influence (or whose purchase may have occurred later in the program's absence)."

Q. Does Mr. Marke even attempt to refute the specific evidence of free ridership bias in the 2013 EM&V reports cited in the Ameren Missouri Change Requests?

A. No. Mr. Marke addresses the free ridership issue only at a high level to an extent too ephemeral to actually present a meaningful analysis. Mr. Marke takes issue theoretically and in general terms without actually explaining what the proper measure of free ridership should be and how the approaches of Ameren Missouri specifically depart

from that approach. He presents absolutely no analysis or evidence of any type to refute the Ameren Missouri Change Request on free ridership.

Q. Should Mr. Marke's concerns about Free Ridership call into question the results agreed upon by Staff and the Company?

A. No. The agreement reflects results lower than the Company's original Change Request position. While the Company believes its perspective on free ridership is valid, it nonetheless has accepted a results total less than it has originally advocated because there is competing evidence on the issue. The issue of free ridership is one among many, and considering the results called for by the Auditor, Cadmus, and between Staff and the Company's original Change Requests, the total results remain well supported by the plurality of data at hand. Further, Mr. Marke has failed to present any arguments that would call into question the merits of my original claims in a manner warranting wholesale reconsideration of the EM&V results reflected in the Company's and the Staff's changed positions. Free ridership is an important issue going forward that all parties have an interest in getting right, and the Company looks forward to constructive discussion concerning how to properly account for free ridership.

VI. Mr. Marke's Concern That The 2013 Shared Net Benefits Cannot Be Calculated Without An Offsetting Adjustment To Reflect The Performance Incentive Amount

Q. OPC testified that the net shared benefits are not being calculated correctly. Do you agree that is a valid criticism?

A. No. In support of his conclusion, Mr. Marke mixes important terminologies and definitions.

Q. What terminologies and definitions is Mr. Marke mixing?

A. First, the definition that Mr. Marke cites for net shared benefits (4 CSR 240-20.093(1)(C)) is in fact consistent with the utility cost test not the total resource cost test. Mr. Marke goes on to mix the term "incentives" with the term "performance incentive", and then he mixes the concept of cost-effectiveness screening with rewarding utility performance. I am concerned that Mr. Marke's imprecise use of these terms will lead to major confusion. I will explain each of these, in turn, below.

Q. Can you please explain how the definition of "Net Shared Benefits" is consistent with the utility cost test as opposed to the total resource cost test?

A. Yes. There is only one major difference between the total resource cost test and the utility cost test. That one difference is that the total resource cost test includes the out-of-pocket costs of customers while the utility cost test only considers the costs to the utility. Typically a total resource cost definition will reference "incremental measure costs" while the utility cost test will reference "program costs" or "costs to deliver the program." The MEEIA law's total resource cost definition is below which demonstrates my point.

> (6) "Total resource cost test", a test that compares the sum of avoided utility costs and avoided probable environmental compliance costs to the <u>sum of all incremental costs of end-use measures</u> that are implemented due to the program, as defined by the commission in rules. [Emphasis Added].

In contrast, the definition from the MEEIA rules is clearly limited to the program costs, which means the calculation is meant to be consistent with the utility cost test not the total resource cost test. The definition goes on to list the types of costs associated with program delivery. Later in my testimony, I demonstrate that the term "incentives" in this definition is referring to rebates paid to customers as an incentive to get the customers to participate in the program and not the "performance incentive" paid to the utility.

> Annual net shared benefits means the utility's avoided costs measured and documented through evaluation, measurement, and verification (EM&V) reports for approved demand-side programs less the sum of the programs' costs including design, administration, delivery, end-use measures, incentives, EM&V, utility market potential studies, and technical resource manual on an annual basis. [Emphasis Added].

Q. Please explain how Mr. Marke is mixing the terms "incentive" and "performance incentive."

A. Mr. Marke points to the Commission definition of Net Shared Benefits and says that since it includes the word "incentives" then the performance incentive itself must be part of the calculation. As I explained above, the definition that Mr. Marke cites references programs costs and then goes on to list some major types of program costs which include "incentives." In that context, it is clear that the word "incentives" is referring to the rebates paid to customers. In energy efficiency literature, it is common to see the terms "incentives" and "rebates" used interchangeably because the rebates are incentives given to customers to induce a certain behavior (e.g. paying for a portion of the up-front cost of an energy-efficient light bulb).

To demonstrate this point, I copied the table below from the "Understanding Cost-Effectiveness of Energy Efficiency Programs" from the National Action Plan for Energy Efficiency. The table includes the component called "Incentive Payments", similar to the category included in the definition from the Commission's rules. The table below illustrates what the different components mean based on the perspective of the cost-effectiveness test. The Participant Cost Test ("PCT") refers to the perspective of the customer participating in the program while the Program Administrator Cost test ("PACT" or "Utility Cost Test") refers to the perspective of the utility administering the program. Looking at the table below, it is apparent that "incentive payments" are a cost to the utility and a benefit to the

participant. The only way this could be true is if the "incentive" represents the rebate costs because it would make no sense for Ameren Missouri's performance incentive to be a cost to itself and a benefit to customers. Furthermore, the table below demonstrates that "incentives" are normally not part of the Total Resource Cost test definition because the rebate amounts paid are implicit in the incremental equipment cost. In short, this table illustrates that the definition in the Commission rules referenced by Mr. Marke is in fact the definition of the PACT which is commonly referred to as the Utility Cost Test and that test does not include the "performance incentive" as a cost.

Table 3-2. Summary of Benefits and Costs Included in Each Cost-Effectiveness Test

Component	PCT	PACT	RIM	TRC	SCT
Energy- and capacity-related avoided costs		Benefit	Benefit	Benefit	Benefit
Additional resource savings				Benefit	Benefit
Non-monetized benefits					Benefit
Incremental equipment and installation costs	Cost			Cost	
Program overhead costs		Cost	Cost	Cost	Cost
Incentive payments	Benefit	Cost	Cost		
Bill savings	Benefit		Cost		

"Incentives", a.k.a. "Rebates" are payments from the utility (i.e. a cost) to the participant (i.e. a benefit)

*PCT – Participant Cost Test

PACT – Program Administrator Cost Test, a.k.a. Utility Cost Test

RIM – Ratepayer Impact Measure

TRC – Total Resource Cost test

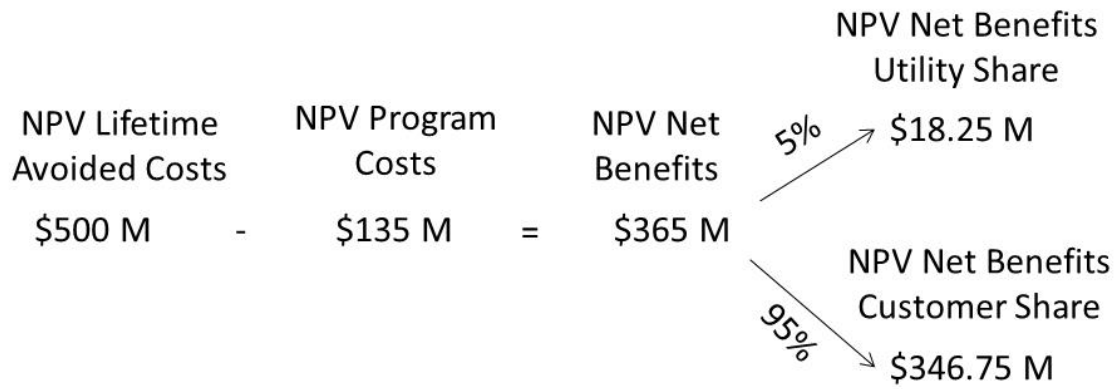
SCT – Societal Cost Test

Q. You mentioned that Mr. Marke is mixing the concepts of cost-effectiveness with rewarding utility performance; could you please explain?

A. Yes. When Ameren Missouri presented its MEEIA programs for approval, it calculated the total resource cost test for each of its programs. Because each program passes that cost-effectiveness threshold, the programs were eligible for Commission approval. Then the DSIM needed to be designed to align the utility's financial incentives with helping customers use energy more efficiently, as MEEIA requires. Following the Commission's rules, the sharing percentage was calculated based on the net benefits from the utility cost test. At that point, it would have been technically possible to use the net benefits from the total resource cost test to determine the sharing percentage (with the appropriate rule waiver) and the result would have been a higher sharing percent (because the total resource costs net benefits are lower than the utility cost test net benefits). Regardless, the sharing percentage was calculated following the rules and thus must be implemented on the same basis. Ameren Missouri's original MEEIA filing and workpapers (which were adopted with only a few changes) were abundantly clear about the basis for the net shared benefits calculations and how the benefits and costs flow to customers.

The diagram below illustrates the process. At the end of the three-year MEEIA program period, the total lifetime avoided costs (i.e. the benefits) will be computed using Ameren Missouri's DSMore model. Then, Ameren Missouri subtracts the program costs, which are recorded on its accounting books. The result of that calculation (which is done on a present value basis) is the net present value of the net benefits which represents the net benefits eligible for sharing. Based on the Company's performance, a portion of those benefits are then shared between the Company and its customers. In short, the Company's

share is an outcome of the performance incentive calculation and therefore cannot be an input into the calculation of net benefits. The diagram below demonstrates that the net benefits flowing to customers is abundantly clear, so Mr. Marke's concern about not properly stating how much benefits will result from the program is unfounded.



*NPV = Net Present Value

Q. How is Net Shared Benefits defined in the 2012 *Stipulation*?

A. In Paragraph 5.b.i, Net Shared Benefits is defined as "the present value of the lifetime avoided costs (i.e., avoided energy, capacity, transmission and distribution, and probable environmental compliance costs) for the approved MEEIA Programs using the deemed values in the TRM less the present value of **all utility costs of administering the MEEIA Programs."** [Emphasis Added]. It is clear from this definition that the customer out-of-pocket costs are not to be included as part of the calculation, which again demonstrates that the net shared benefits is not being calculated from a total resource cost perspective. Also, in the 2012 *Stipulation*, the Performance Incentive is clearly a distinct term completely separate from the definition of Program Costs (which are defined as the

utility's costs of administering the programs) meaning that the Performance Incentive cannot be a subset of administration costs contemplated for the calculation of Net Shared Benefits.

Q. Is Mr. Marke trying to change the terms of the 2012 *Stipulation* and the MEEIA rider that OPC agreed upon and is bound by?

A. Yes, he certainly is. As the 2012 *Stipulation* shows, utility costs are not part of the Net Shared Benefits Calculation. OPC knows this, or should, as Ameren Missouri was and has been transparent about how the net benefit and performance incentive calculations work. In short, Mr. Marke's proposal is revisionist and unworkable.

Q. Can Ameren Missouri's performance incentive be calculated at this time?

A. No, because the performance incentive is based on the three-year cumulative MWh energy savings and this case is only about the results of the first year.

Q. At the end of the current three-year MEEIA program period, will the Commission see the net benefits attributable to Ameren Missouri's energy efficiency programs?

A. Absolutely. After the evaluations are complete, the Commission will see the net benefits calculation. The Commission will be well aware of how Ameren Missouri performed relative to its performance goals and how that performance translates into its share of net benefits. It will be totally transparent what portion of net benefits is awarded to the utility and therefore how many benefits were generated for its customers.

VII. Policy Implications Associated with EM&V results, market effects, and OPC's Objection

Q. What MWH adjustment for the 2013 Ameren Missouri RES Lighting program does Mr. Marke recommend?

A. Mr. Marke recommends the removal of market effects (downward adjustment of 12,254 MWH if taken by itself) and the removal of Self-Reporting bias within Free Ridership responses (downward adjustment of 7,460 MWH if taken by itself), for a total downward adjustment of 19,714 MWH. It should be noted that the MWH quantities in this example are first year MWH quantities.

Q. What is the financial impact in terms of the opportunity Ameren Missouri has to earn a financial performance incentive according to Mr. Marke's recommendation?

A. Mr. Marke's recommendation for the removal of market effects reduces the Net Shared Benefits by $4,762,423 (if taken by itself) and his recommendation for the removal of Self-Reporting bias within Free Ridership responses reduces the Net Shared Benefits by $3,669,085 (if taken by itself), for a total reduction in Net Shared Benefits of $5,729,978. Note that this total reduction is less than the sum of the individual component adjustments (which add up to $8,431,508) as the mix of energy efficient measures, and effective useful life of those measures, which comprise each scenario, is changed with each scenario.

Q. Is such an adjustment in customers' best interests?

A. No.

Q. Why?

A. In answering this question, one must look beyond MEEIA and look forward to how energy efficiency will be used to comply with certain environmental regulations. In a carbon-constrained world as would exist under the proposed EPA Greenhouse Gas ("GHG") reduction rules, taking a downward biased view of the components of the NTG equation will

cost customers far more than any savings in terms of a reduced payment of a financial performance incentive to Ameren Missouri. The proposed rules allow for energy efficiency to be included in the determination of a utility's actual emission rate, thus decreasing the cost of compliance with the GHG rule. If energy efficiency represents the lowest cost option to reduce greenhouse gases, any artificial lowering of energy efficiency MWh savings, as proposed by Mr. Marke, necessarily requires that greenhouse gas reductions come from the next lowest cost greenhouse gas emission reduction technology.

Q. In other words, rather than saving costs to customers, Mr. Marke's recommendation to take a biased estimate in the form of a lower NTG could materially increase costs to customers in a carbon-constrained framework. Is that correct?

A. Yes. Mr. Marke’s consternation concerning the potential incentive awarded to the utility is myopic, and he fails to consider the broader implications to customers over the long term by selling short the measurement of energy savings that are properly attributable to Ameren Missouri’s MEEIA programs.

Q. Does this conclude your testimony?

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric Company d/b/a Ameren Missouri's Filing to Implement Regulatory Changes Furtherance of Energy Efficiency as allowed by MEEIA.	)))	File No. EO-2012-0142

AFFIDAVIT OF RICHARD A. VOYTAS

STATE OF MISSOURI)
) **ss**
CITY OF ST. LOUIS)

Richard A. Voytas, being first duly sworn on his oath, states:

1. My name is Richard A. Voytas. I work in the City of St. Louis, Missouri and I am employed by Ameren Services Company as Director of Energy Efficiency/Demand Response.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Union Electric Company d/b/a Ameren Missouri consisting of 63 pages and Schedule(s) RAV-1 & RAV-2, all of which have been prepared in written form for introduction into evidence in the above-referenced docket.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct.

Richard A. Voytas

Subscribed and sworn to before me this 22nd day of October, 2014.

Julie Irby
Notary Public

My commission expires: 11/15/2017

Julie Irby - Notary Public
Notary Seal, State of
Missouri - St. Louis County
Commission #13753418
My Commission Expires 1/15/2017

MEEIA Filing

Technical Conference #1

2/10/2012

Ameren MISSOURI

FOCUSED ENERGY. For life.

Technical Conference #1 Goals

- Step Through Key Aspects of Analysis/Filing
- Probe Issues to Facilitate Deeper Understanding
- Identify Issues for Future Explanation
- Next Steps/Schedule

- Not the time for debating positions

Agenda

- Key Plan Elements
- Demand-Side Investment Mechanism
- Program Analysis
- Technical Resource Manual
- Tariffs
- Waivers
- Next Steps/Schedule

Key Plan Elements

- Realistic Achievable Potential
  - 3-Year Plan (2013-2015)
  - 3-Year Cumulative Target - 793,100 MWh
  - Budget - $145MM ($35, $46, $64)
  - Based on primary market research
- Demand-Side Investment Mechanism
  - Program Costs – Expense Tracker ($48MM In Rates)
  - Performance Mechanism - Shared Net Benefits (Tracker)
    - 20.2% share at 100% Performance
      - 15.4% ($32MM) In Rates
      - 4.8% Deferred for future recovery
- Technical Resource Manual
  - Deemed Measure Attributes (kwh, incremental cost, useful life, etc.)
  - Deemed Net-To-Gross (Net=Gross; NTG=1)

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Demand-Side Investment Mechanism

- Throughput Disincentive
- Program Cost Recovery
  - Revenue Requirements/Allocations
- Performance Mechanism
  - Design
  - Revenue Requirements/Allocations
  - Implementation
- Customer Impacts
- Residential Customer Charge

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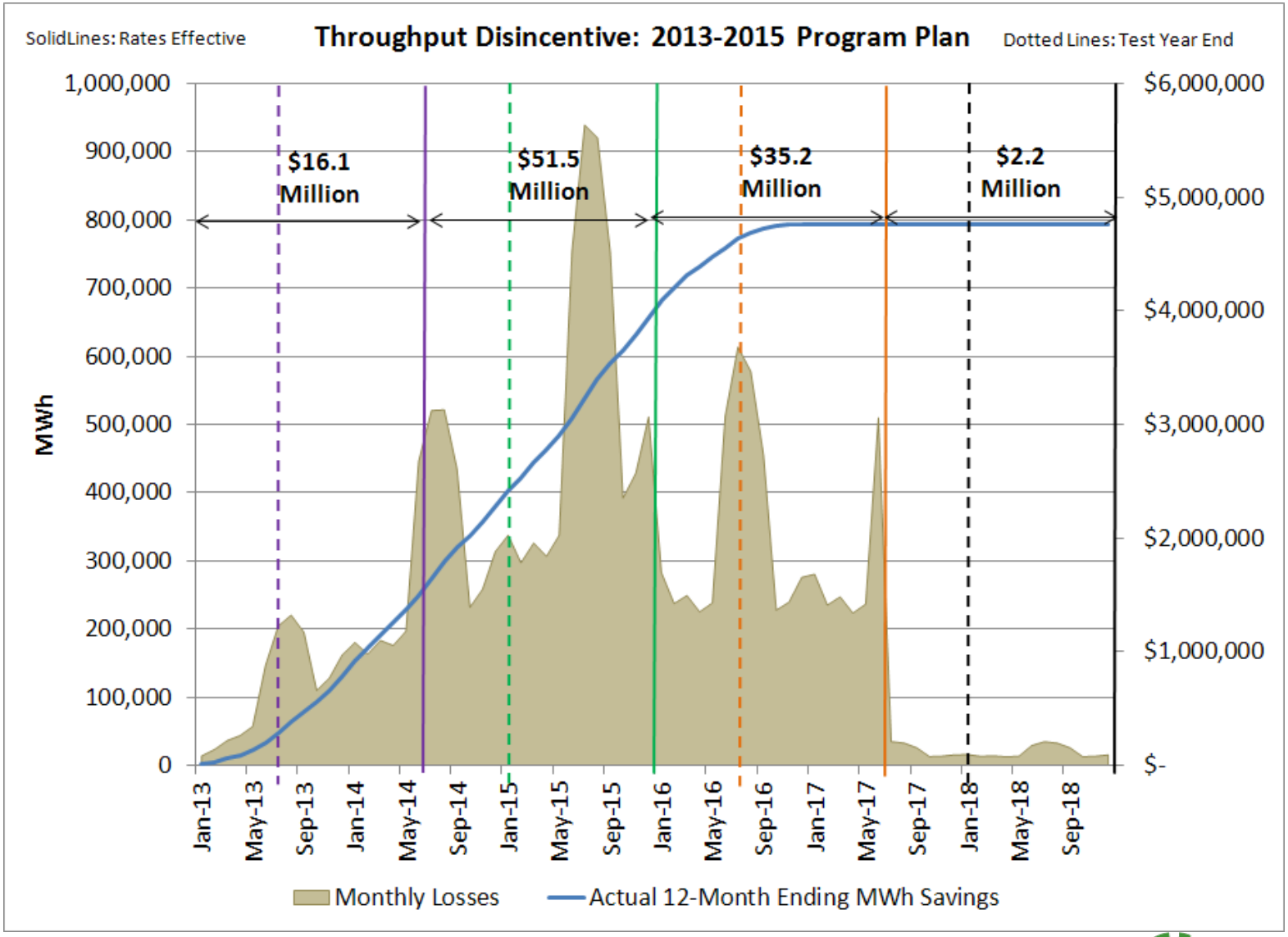

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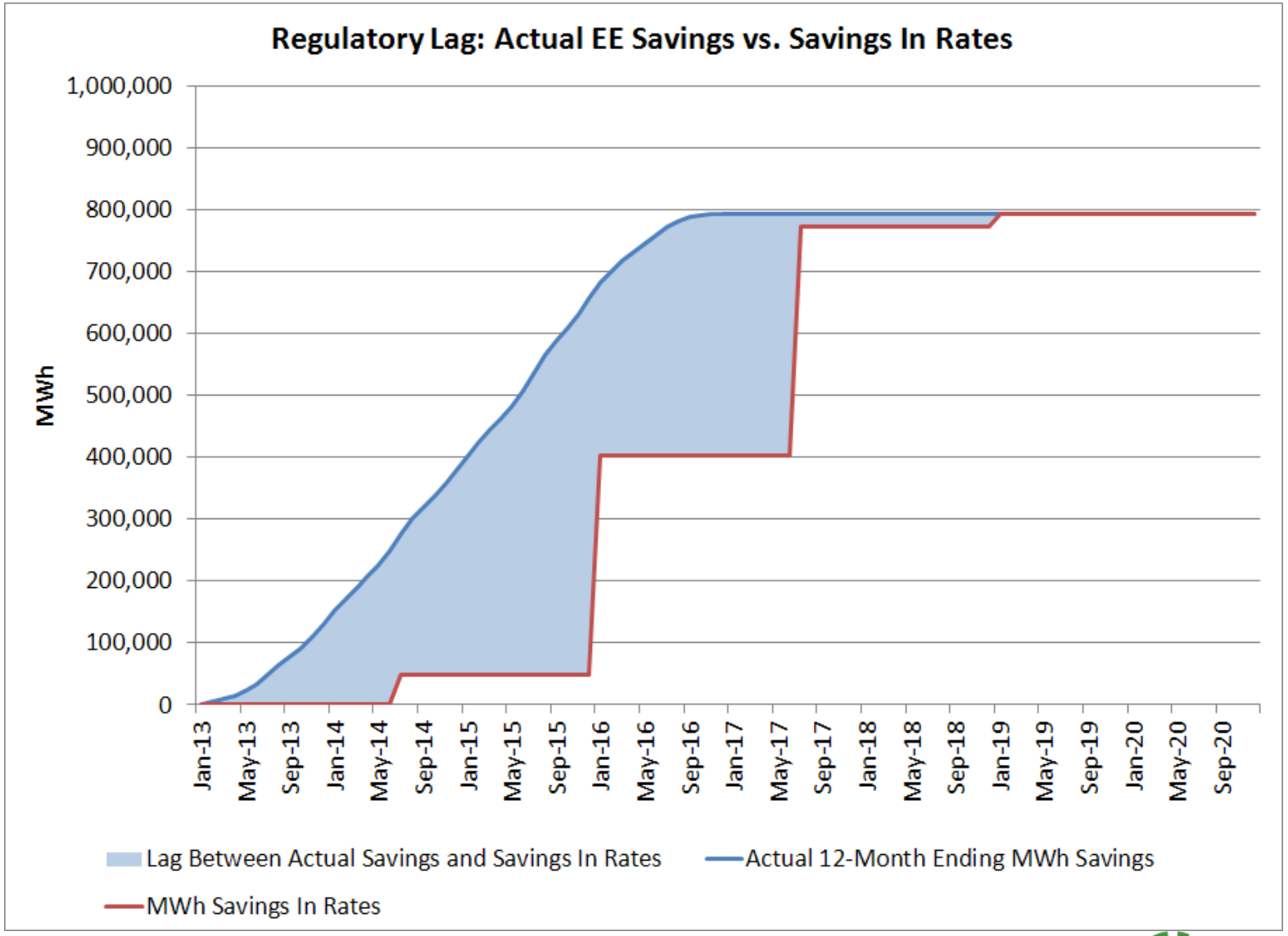

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Program Cost Recovery

- Two-Way Expense Tracker
  - Differences tracked in regulatory asset/liability
  - Accrues AFUDC (both reg. asset/liability)
  - Implemented in Rate Case (effective Jan. 2013)

Year	Total ($MM)	RES ($MM)	BUS ($MM)
2013	$35.24	$19.54	$15.70
2014	$45.97	$27.35	$18.62
2015	$64.09	$36.06	$28.03
Average	**$48.43**	**$27.65**	**$20.78**

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Program Cost Recovery Revenue Requirement

Rate Class	Revenue Req.	Allocation	Allocated Rev. Req.	Summer ($/kWh)	Winter ($/kWh)
RES	$27.65	100%	$27.6	$0.0027	$0.0017
SGS	$20.78	19.8%	$4.1	$0.0015	$0.0010
LGS		46.0%	$9.6	$0.0016	$0.0009
SPS		19.5%	$4.0	$0.0016	$0.0010
LPS		14.7%	$3.1	$0.0015	$0.0010
LTS	*$0.0*	*100%*	*$0.0*	*$0.0000*	*$0.0000*
Lighting	*$0.0*	*100%*	*$0.0*	*$0.0000*	*$0.0000*

Business revenue requirement allocated on class energy using rate case Class Cost of Service Study

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Performance Mechanism

- Shared Net Benefits
  - 20.2% Sharing at 100% Performance
  - 15.4% In Rates (effective Jan. 2013)
- True-up based on 3-Year performance
  - 793,100 MWh
- Customers retain 91% of net benefits

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Income Statement Analysis

SCHEDULE RAV-1

	Present Value	2013	2014	2015	2016	2017	2018
Program Cost Recovery	$134	$35.2	$46.0	$64.1	$0.0	$0.0	$0.0
Retail Non-Fuel Revenues	($94)	($8.2)	($22.4)	($39.0)	($25.7)	($11.7)	($1.5)
Retail Fuel Revenues	($22)	($1.8)	($5.0)	($8.9)	($5.9)	($3.0)	($0.3)
FAC Sharing Revenues	$3	$0.2	$0.6	$1.2	$0.9	$0.5	$0.1
Total Retail Revenues	$21	$25.4	$19.2	$17.4	($30.7)	($14.2)	($1.7)
Off-System Sales Revenues	$180	$5.7	$18.3	$35.6	$48.9	$55.0	$61.0
Total Revenues	$201	$31.1	$37.5	$53.0	$18.2	$40.8	$59.3
Net Fuel Cost	($158)	($3.9)	($13.3)	($26.7)	($43.0)	($52.0)	($60.7)
Program Expenses	$134	$35.2	$46.0	$64.1	$0.0	$0.0	$0.0
Income Taxes	($35)	($3.1)	($8.3)	($14.5)	($9.5)	($4.3)	($0.5)
Net Income (Earnings)	**($56)**	**($5.0)**	**($13.4)**	**($23.3)**	**($15.3)**	**($6.9)**	**($0.9)**

Significant financial losses without regulatory changes

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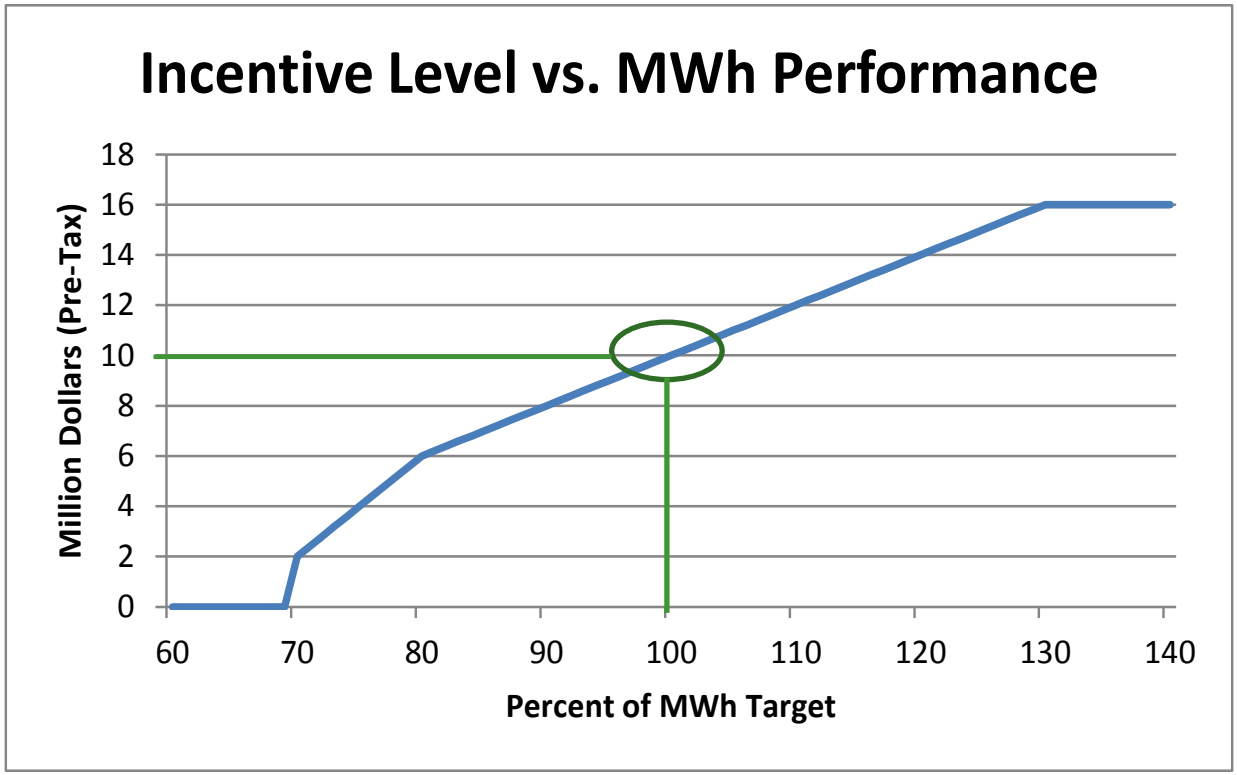
Earnings Opportunity



$10M is comparable to generation alternative

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Shared Net Benefits

Reductions to Retail Revenue Requirement

	Customer Benefits
Avoided Energy	$370.3M
Avoided Capacity	$ 91.2M
Avoided T&D	$ 37.1M
Total Benefits	**$499.6M**
Utility Program Costs	**$134.3M**
Net Benefits	**$364.3M**
Throughput Disincentive	****$56M**
Perf. Incentive	****$17M**

20% Shared Net Benefits

* All Numbers are Present Value
** After Tax

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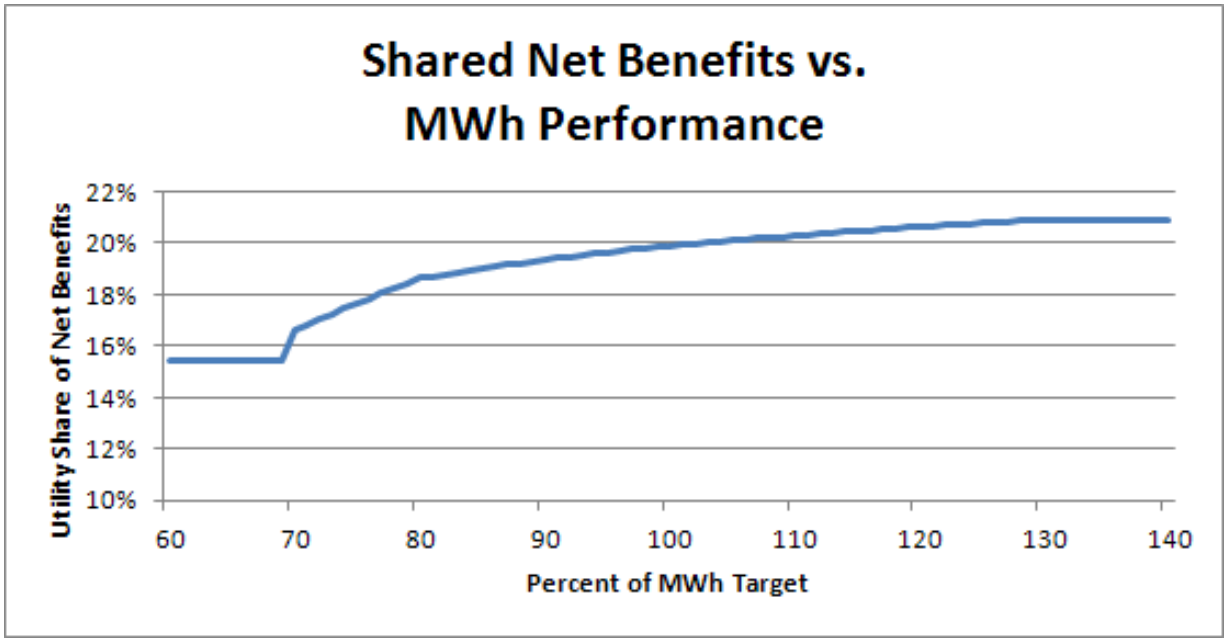
Performance Mechanism Design

- Annual performance targets (MWh) based on RAP
  - Maximum Award – 20.9% (30% above target)
  - Minimum Award - 15.4% (30% below target)
- Ameren Missouri incentive to save more for less cost



	Present Value	2013	2014	2015	2016	2017	2018
Program Cost Recovery	$134	$35.2	$46.0	$64.1	$0.0	$0.0	$0.0
Retail Non-Fuel Revenues	($94)	($8.2)	($22.4)	($39.0)	($25.7)	($11.7)	($1.5)
Performance Mechanism	**$118**	**$32**	**$32**	**$32**	**$32**	**$0**	**$0**
Retail Fuel Revenues	($22)	($1.8)	($5.0)	($8.9)	($5.9)	($3.0)	($0.3)
FAC Sharing Revenues	$3	$0.2	$0.6	$1.2	$0.9	$0.5	$0.1
Total Retail Revenues	$139	$57.9	$51.7	$49.9	$1.4	($14.2)	($1.7)
Off-System Sales Revenues	$180	$5.7	$18.3	$35.6	$48.9	$55.0	$61.0
Total Revenues	$318	$63.6	$70.0	$85.5	$50.3	$40.8	$59.3
Net Fuel Cost	($158)	($3.9)	($13.3)	($26.7)	($43.0)	($52.0)	($60.7)
Program Expenses	$134	$35.2	$46.0	$64.1	$0.0	$0.0	$0.0
Income Taxes	$10	$9.4	$4.1	($2.0)	$2.8	($4.3)	($0.5)
Net Income (Earnings)	**$17**	**$15.1**	**$6.6**	**($3.3)**	**$4.5**	**($6.9)**	**($0.9)**

Financial Incentives Aligned

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Performance Mechanism Revenue Requirement

Net Benefit* (PV)	$364	
Initial Sharing Percent	15.4%	
Initial Sharing Amount* (PV)	$56	
Initial Allocation	**RES**	**BUS**
	63.7%	36.3%
After-Tax Rev. Req.* (PV)	$36	$20
Marginal Income Tax Rate (Federal and State)	38.39%	38.39%
Before-Tax Rev. Req.* (PV)	$58	$33
Revenue Requirement* (3-Year Annuity)	**$20.70**	**$11.78**

Initial Allocation based on 3-year cumulative goals

* Million Dollars

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Performance Mechanism Revenue Requirement

Rate Class	Revenue Req.	Allocation	Allocated Rev. Req.	Summer ($/kWh)	Winter ($/kWh)
RES	$20.70	100%	$20.7	$0.0020	$0.0013
SGS	$11.78	8.9%	$1.0	$0.0004	$0.0003
LGS		46.2%	$5.4	$0.0009	$0.0005
SPS		24.5%	$2.9	$0.0011	$0.0007
LPS		20.5%	$2.4	$0.0012	$0.0008
LTS	*$0.0*	*100%*	*$0.0*	*$0.0000*	*$0.0000*
Lighting	*$0.0*	*100%*	*$0.0*	*$0.0000*	*$0.0000*

Business revenue requirement allocated on historical savings by rate class

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Performance Mechanism Implementation

Category	Update?	Description
Avoided Costs	✘	The avoided energy, capacity, and T&D values are deemed
Measure Attributes	✘	The TRM provides the deemed values or protocols for all measures
DSMore Software	✘	XLS Version 5.0.14, GCG Version 5.0.23
Number of Measures	✓	The number of measures will be measured as part of the evaluation process
Program Admin. Costs	✓	The direct program costs will be tracked
Measure Rebate Costs	✓	Measure rebates are included in the direct program costs
Net-to-Gross Factors	✘	The TRM provides the deemed values
Customer Opt-Out	✓	The final performance goals shall be adjusted based on final opt-out estimates
Discount Rate	✘	The discount rate shall remain 6.95%

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Example - Business Opt-Out True-Up

- Performance Target – 793,100 MWh
  - RES – 505,470 MWh
  - BUS – 287,630 MWh
- BUS Target Includes 20% Opt-Out
  - BUS Target w/ Zero (0%) Opt-Out
    - 287,630 / 0.8 = 359,537 MWh
  - BUS Target w/ 7.4% Opt-Out
    - 359,537 * 0.926 = 332,931 MWh
- Opt-Out Adjusted Performance Target (7.4% opt-out)
  - 505,470 + 332,931 = **838,401 MWh**

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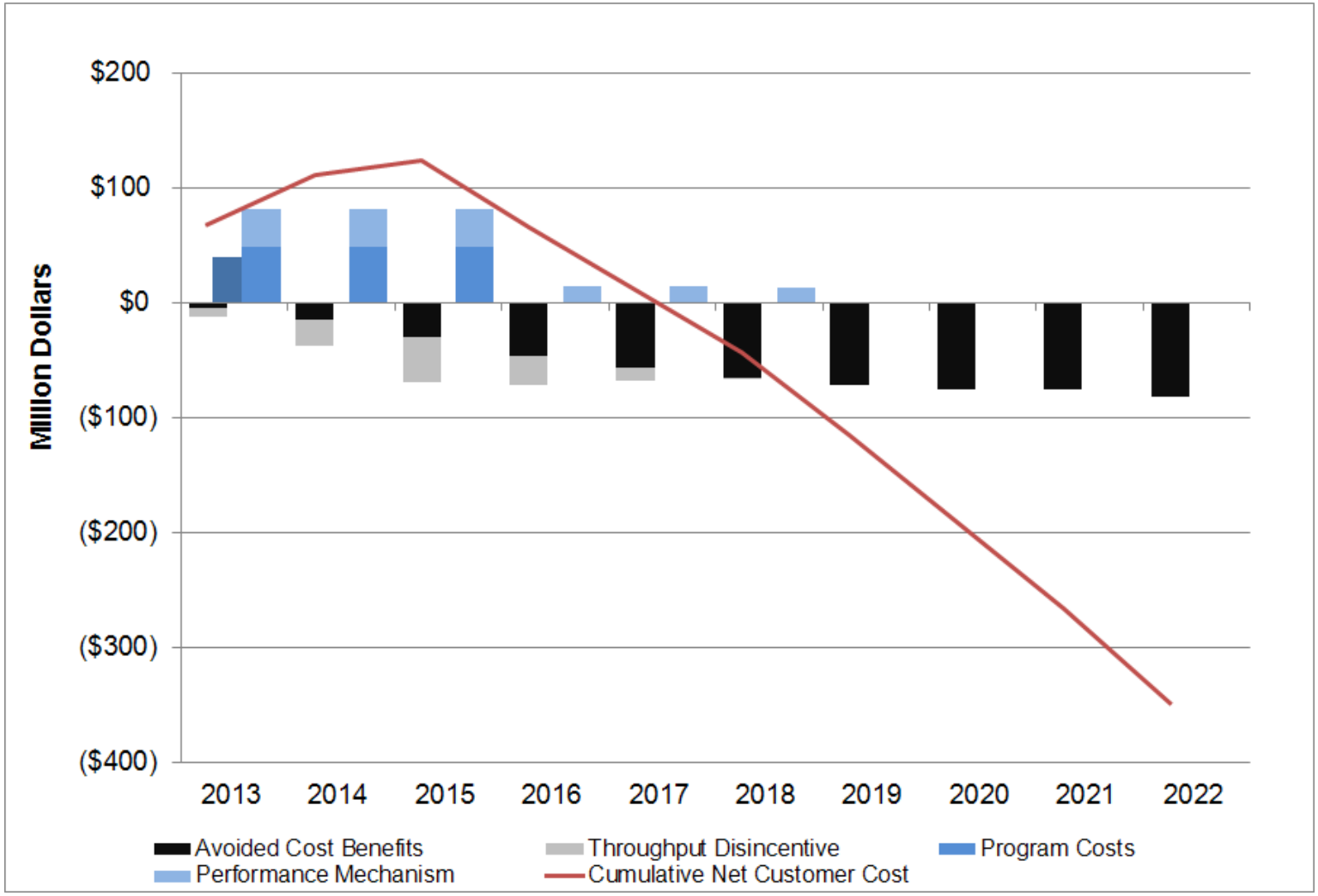
Total Customer Cost



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Total Customer Cost

	Lifetime Present Value	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Ongoing (Present Value)
Program Cost Recovery	**$136**	$48.4	$48.4	$48.4	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0**
Performance Mechanism	**$122**	$32	$32	$32	$14.5	$13.5	$12.6	$0.0	$0.0	$0.0	$0.0	**$0**
Retail Non-Fuel Revenues	**($94)**	($8.2)	($22.4)	($39.0)	($25.7)	($11.7)	($1.5)	$0.0	$0.0	$0.0	$0.0	**$0**
FAC Sharing	**$3**	$0.2	$0.6	$1.2	$0.9	$0.5	$0.1	$0.0	$0.0	$0.0	$0.0	**$0**
Net Fuel Savings	**($461)**	($3.9)	($13.3)	($26.7)	($43.0)	($52.0)	($60.7)	($66.6)	($70.8)	($71.6)	($78.3)	**($130)**
Avoided T&D	**($37)**	($1.0)	($2.4)	($4.6)	($4.7)	($4.8)	($4.9)	($4.9)	($4.6)	($4.3)	($4.2)	**($8)**
Net Customer Cost	**($331)**	$68.0	$43.4	$11.8	($57.9)	($54.4)	($54.4)	($71.4)	($75.5)	($75.9)	($82.4)	**($138)**

Customer Net Benefit Retention: $331/$364 = **91%**

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Residential Customer Charge

- Request $12/month customer charge approved in MEEIA case
  - Implemented in rate case
- Integral assumption in analysis
- Sharing increases by 0.6% if rejected

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Program Analysis

- Cost-Effectiveness Results
- Energy Efficiency Plan
- Avoided Costs
- Measure Screen
- Net-to-Gross

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Cost-Effectiveness Tests

Component	TRC	UCT	PCT	RIM
Energy and capacity related avoided costs	Benefit	Benefit		Benefit
Incremental equipment and installation costs	Cost		Cost	
Program overhead costs*	Cost	Cost		Cost
Customer Rebates		Cost	Benefit	Cost
Bill Savings			Benefit	Cost

TRC - Total Resource Cost test
UCT - Utility Cost Test
PCT - Participant Cost Test
RIM - Ratepayer Impact Measure
*Includes Program Administration, EMV, Marketing, Education

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Program Analysis Results ($MM, Present Value)

	Total		Residential		Business	
	UCT	TRC	UCT	TRC	UCT	TRC
Avoided Cost Benefits	$499	$499	$307	$307	$192	$192
Program Admin. Cost	$79	$79	$45	$45	$34	$34
Customer Rebates	$55	$55	$31	$31	$24	$24
Net Participant Cost		$106		$60		$46
Total Cost	$134	$241	$77	$137	$58	$104
Net Benefits	**$364**	**$258**	**$230**	**$170**	**$134**	**$88**
Benefit/Cost Ratio	**3.71**	**2.07**	**4.00**	**2.24**	**3.33**	**1.85**

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Program Analysis Results

	TRC	UCT	PCT	RIM
RES-Lighting	3.66	6.01	10.18	0.56
RES-Efficient Products	1.55	3.90	2.85	0.62
RES-HVAC	2.11	4.61	2.63	0.94
RES-Refrigerator Recycling	2.23	2. 93	11.67	0.63
RES-HEP	1.64	3.00	3.11	0.68
RES-New Homes	1.26	1.77	3.61	0.57
RES-Low Income	0.84	0.84	2.85	0.43
RES-Total	**2.24**	**4.00**	**4.52**	**0.68**
BUS-Standard	2.14	3.15	4.10	0.75
BUS-Custom	1.77	3.55	2.62	0.82
BUS-RCx	1.70	3.77	2.51	0.79
BUS-New Construction	1.36	2.22	2.42	0.71
BUS-Total	**1.85**	**3.33**	**2.98**	**0.79**
Portfolio Total	**2.07**	**3.71**	**3.86**	**0.72**

For program descriptions see Report pages 11/12

For program details see Appendix B – Program Templates

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Program Analysis – Energy Savings

	2013	2014	2015
Retail Sales (MWh*)	37,476,879	37,844,450	38,146,206
Incremental Energy Savings (MWh*)	240,397	255,445	297,260
Incremental Energy Savings (%)	0.6%	0.7%	0.8%
MEEIA Rules^ (%)	0.3%	0.5%	0.7%
Cumulative Energy Savings (MWh*)	240,397	495,842	793,102
Cumulative Energy Savings (%)	0.6%	1.3%	2.1%
MEEIA Rules^ (%)	0.3%	0.8%	1.5%

*Excludes system losses (i.e. at the meter)
^Assumes MEEIA rules begin 2013 instead of 2012

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Program Analysis – Peak Demand Savings

	2013	2014	2015
Retail Peak Demand (MW*)	7,533	7,591	7,640
Incremental Peak Demand Savings (MW*)	39	54	77
Incremental Peak Demand Savings (%)	0.5%	0.7%	1.0%
MEEIA Rules^ (%)	1%	1%	1%
Cumulative Peak Demand Savings (MW*)	39	93	170
Cumulative Peak Demand Savings (%)	0.5%	1.2%	2.2%
MEEIA Rules^ (%)	1%	2%	3%

*Excludes system losses (i.e. at the meter)
^Assumes MEEIA rules begin 2013 instead of 2012
†Ameren Missouri is not proposing Demand Response programs for this implementation period

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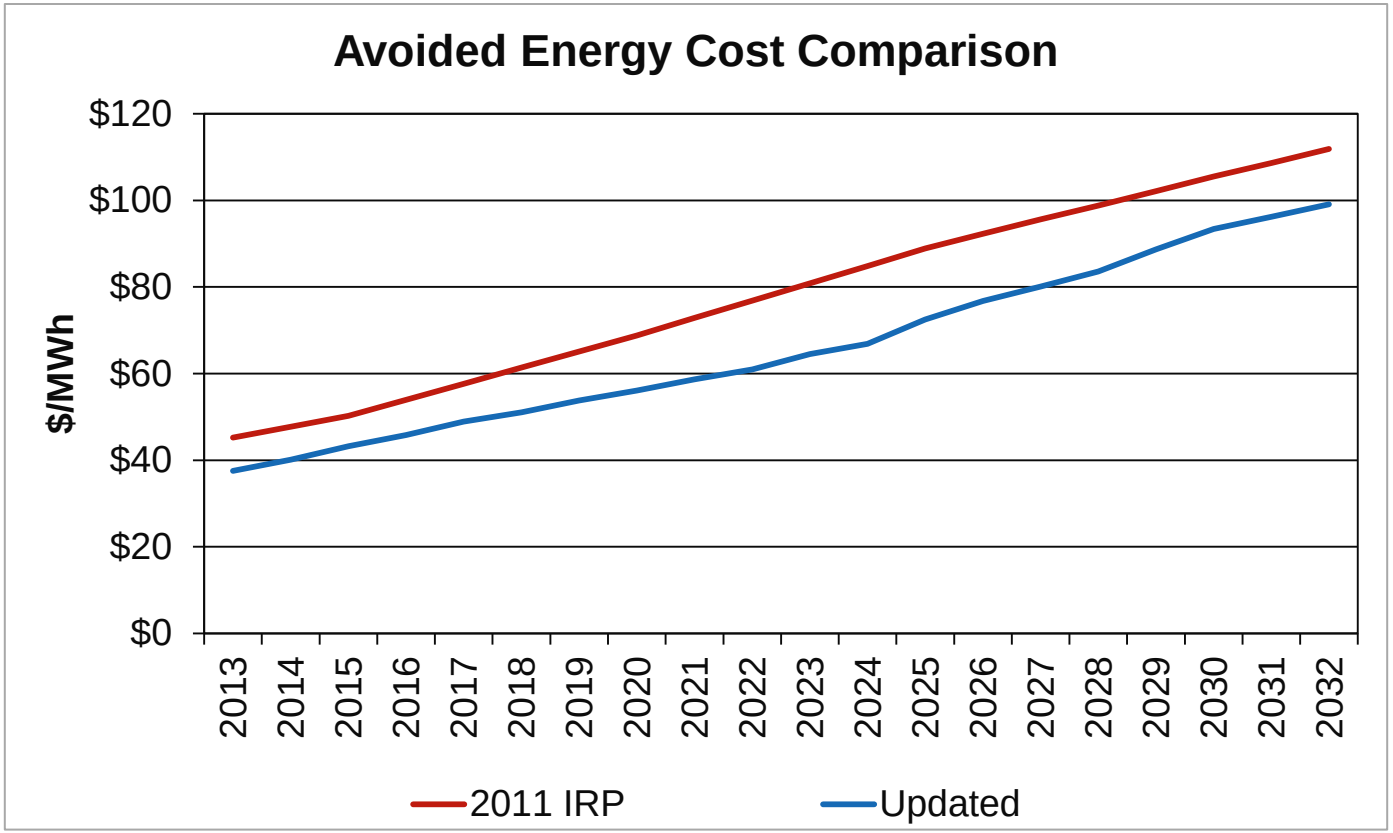
Avoided Costs



- Avoided T&D – Same as 2011 IRP
- Avoided Capacity (HC) – Same process as 2011 IRP with minor updates

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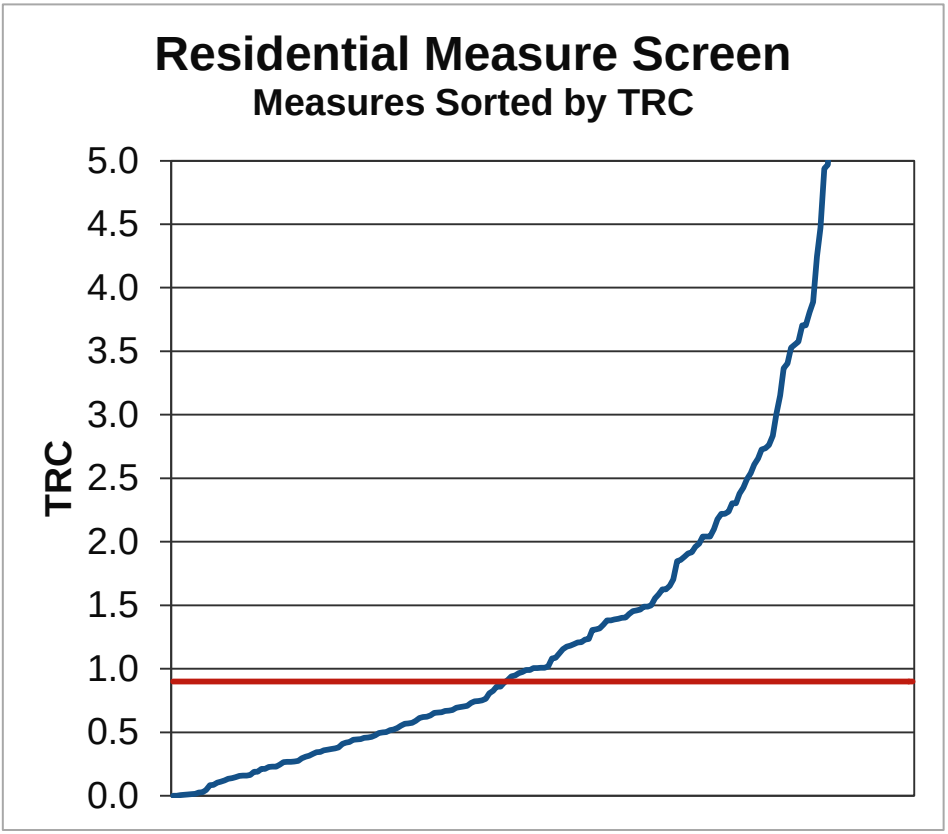
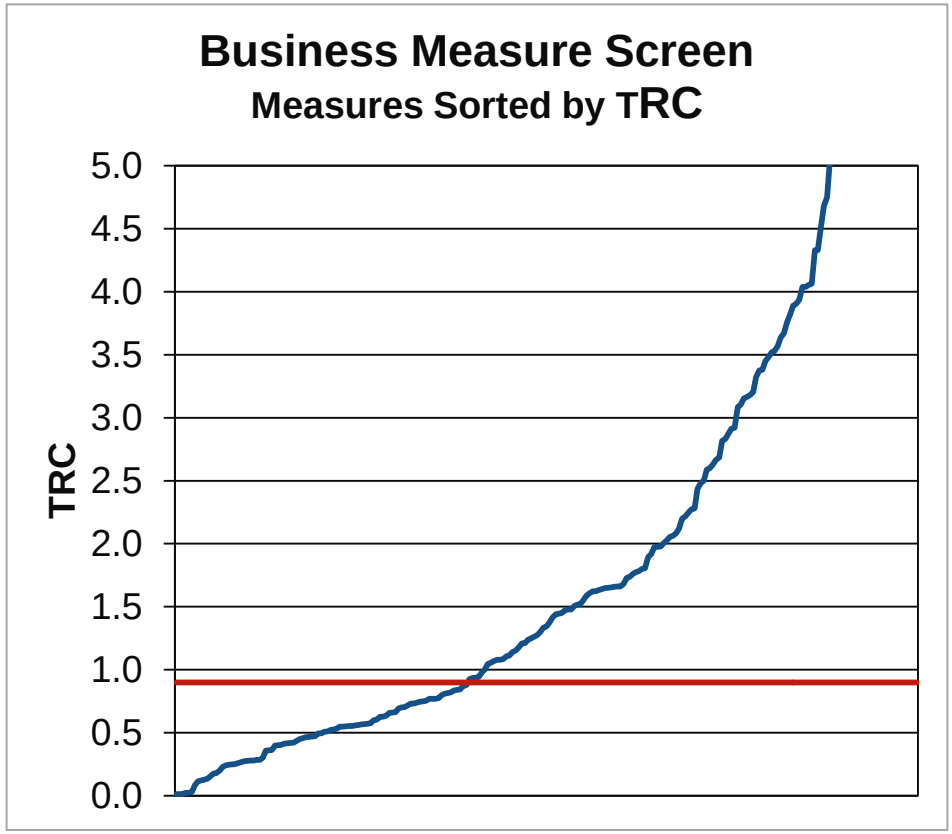
Measure Screen



111 of 202 (55%) Passed the 0.9 TRC Screen



146 of 241 (61%) Passed the 0.9 TRC Screen

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Net-to-Gross

- Answers the question: How much of the savings are attributable to the utility program?
  - Need to consider spillover, freeridership, and market effects
- Ameren Missouri proposes net-to-gross = 1.0
  - Exception: Appliance Recycling – 0.64
- Although rarely quantified, Ameren Missouri EMV and other studies indicate significant presence of spillover and/or market effects
- Only recognizing freeridership undervalues utility energy efficiency programs
- EMV can still evaluate freeridership and spillover to inform program design

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Evaluation, Measurement, and Verification (EMV)

- Include EMV contractors at the time of program design
- Draft and final reports will be delivered to all parties simultaneously
- Reduced EMV budget based on use of TRM
- One EMV cycle will be used to update the TRM for next MEEIA filing
- New interaction with Commission auditor
  - See recommended scope and schedule on page 110

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Technical Resource Manual

- Determine reasonable estimates based on best available information at the time
- Reduces EMV costs (and Statewide TRM cost)
- TRM values change based on EMV for next MEEIA filing
- 91% of planned measure installs and 71% of planned energy savings are based on Ameren Missouri EMV results
- Includes:
  - Baseline measures
  - Incremental kwh, kw, measure costs
  - Useful life
  - Algorithms for “Custom” measures
  - Data sources

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Tariffs

- Tariffs need to provide implementation flexibility to allow fair opportunity to meet the 3-year savings goal
- Shared Net Benefits provides adequate economic signals to manage programs
- Avoids unnecessary disputes about rebate levels or measure offerings
- Ameren Missouri's website is a more appropriate place to document EE programs
- DSIM is a tracker and therefore no tariff is necessary (just like all other trackers)

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Waivers

- Retrospective Recovery
  - Does not diminish role of EMV
  - TRM improves performance transparency
  - Analysis demonstrates immediate financial losses
    - Delayed recovery creates financial disincentive
  - Adequate reporting and modification standards
- Net Shared Benefits
  - Annual vs. Lifetime
- Technical Resource Manual
  - TRM is source of measure attributes for performance measurement
- DSIM Rate
  - Needs to include historical costs

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Next Steps/Schedule

Schedule (week of:)

- Feb. 13 – Technical Conference (list of items from today)
- Feb. 20 – Technical (settlement?) Conference
- Feb. 27 – Technical (settlement?) Conference
- Mar. 5 – Other parties file comments
- Mar. 12 – Settlement Conference
- Mar. 19 – Settlement Conference
- Mar. 26 – Responses filed
- Apr. 2 – Settlement Conference
- Apr. 9 – Hearings

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For more information

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  - wtatro@ameren.com
- DSIM
  - Bill Davis (314.554.4280)
  - wdavis2@ameren.com
- Program Analysis/TRM
  - Rick Voytas (314.554.3025)
  - rvoytas@ameren.com
- Program Implementation
  - Dan Laurent (314.554.4812)
  - dlaurent@ameren.com

FOCUSED ENERGY. For life.

FOCUSED ENERGY. *For Life.*

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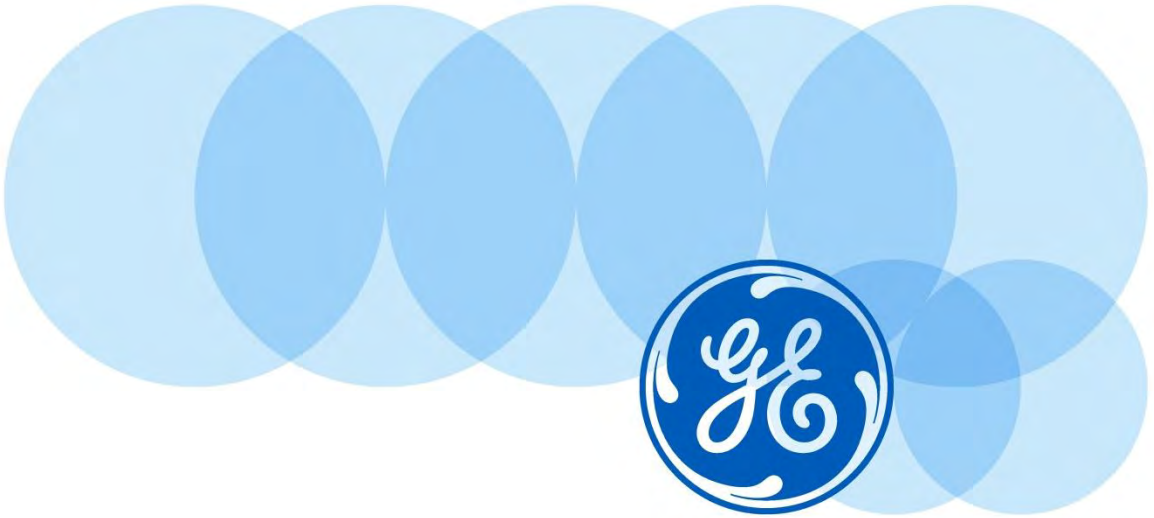
GE-Walmart Program
July 23, 2014

Walmart
Save money. Live better.

Walmart

Save money. Live better.

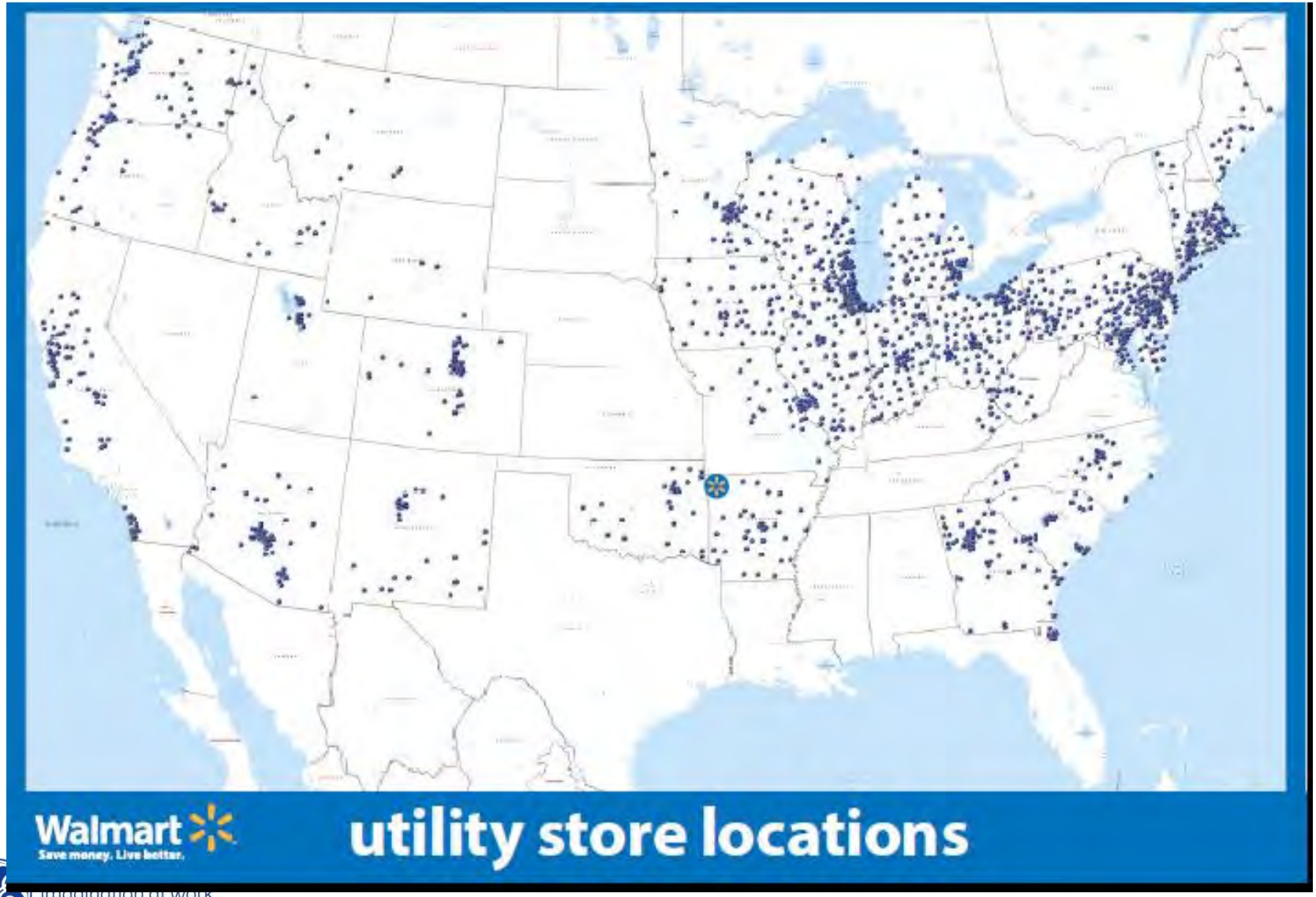
Market & Trends



imagination at work

Current Utility Store Locations

SCHEDULE RAV-2



imagination at work

Who is Walmart?

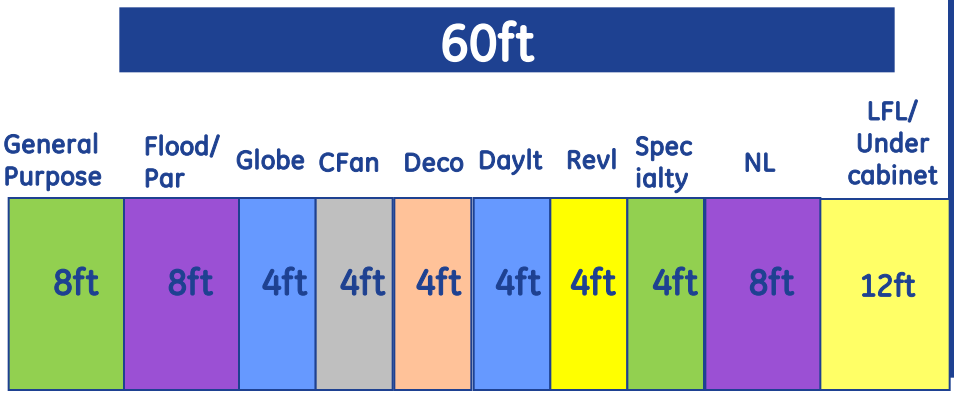
Retailer Snapshot

- 4,049 US Stores
- Average Set Size - 60 ft .. Also 20-72ft sets
- Set Location – Hardware (back corner of store)
- 560 sku's - Brands: GE, Great Value, OSI

Retail Strategy

- Balanced Approach
  - Incandescent
  - CFL
  - LED
  - Energy Efficient Halogen

Merchandising



Shopper Profile

Demographics:

- High School Graduates
- Less than $75,000 Household Income
- 38% of Shoppers have Children
- Blue Collar and Rural Living Lifestyles
- Female Shopper Age: 25-54
- 29% of Female Shoppers are Homemakers
- Male Shopper Age: 25-64
- 46% of Male Shoppers are Full Time Employees

General Purpose – What is happening

- Walmart "king" of Incandescent 4pks
- Q4 "SURGE" in PR / Sales
- January strong – Across all Categories
  - MUST KEEP THE SHOPPER
- Significant POS softening March-June

- Estimated 3.2 Billion A-line sockets to shift

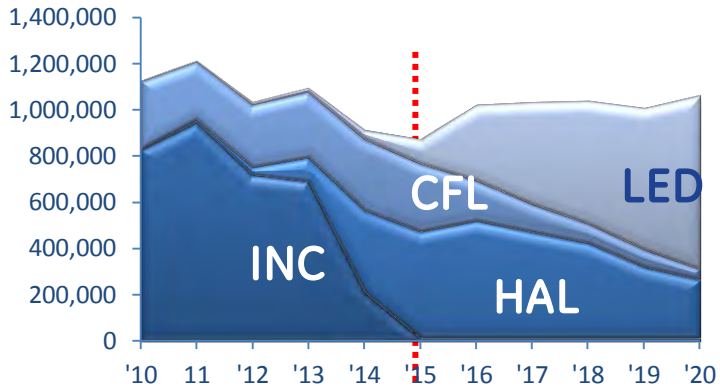
- Halogen (EESW) will replace Incandescent

Projected 85% Shift into EESW

  - Initial Shift of 10% into CFL; post 2016 cannibalized by LED/ EESW

- **LED activation 2014-15**
  - Mass adoption 2018

Projected Split by Technology*



Media Activity - January

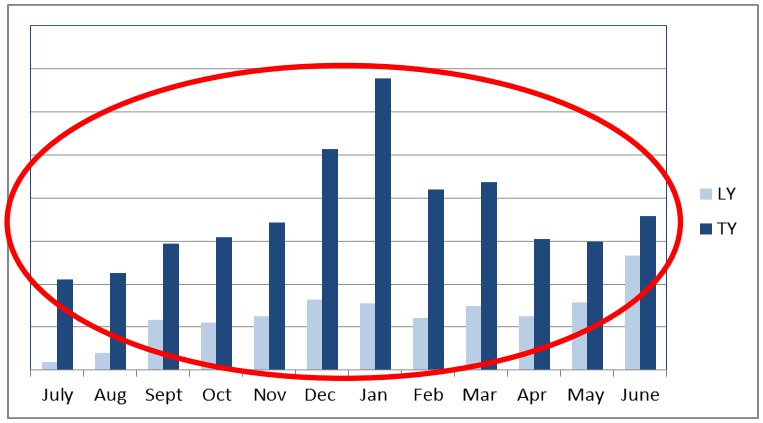
Lighting legislation has created a "Shift" that will forever change the lighting industry

*Split projections based on Lamp Shipments – Total Market

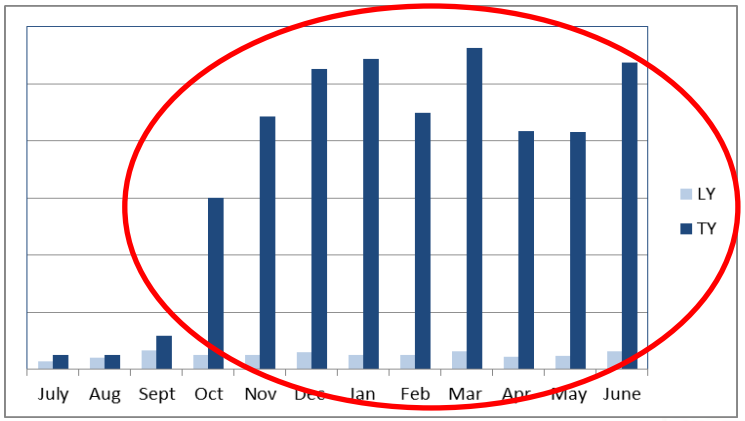
POS Shift -- Starting

Walmart
Save money. Live better.

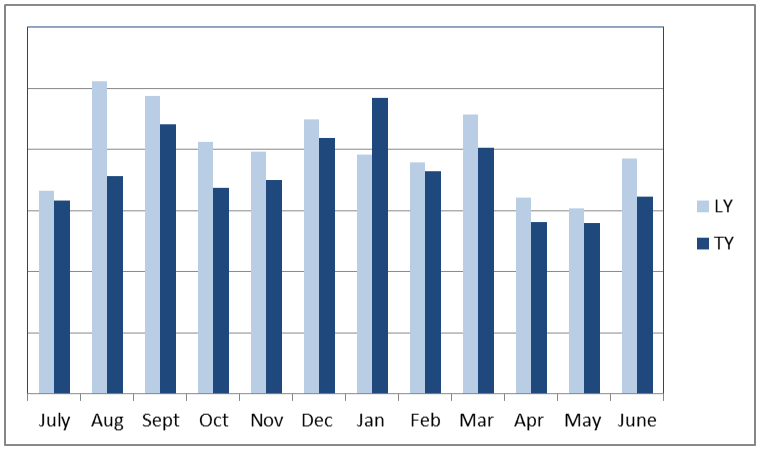
EESW Growth TY vs LY



LED Growth TY vs LY



CFL Growth TY vs LY



Utility Program Rebates

Driver in Shift

The Value of Ameren MO…

SCHEDULE RAV-2

Ameren MISSOURI

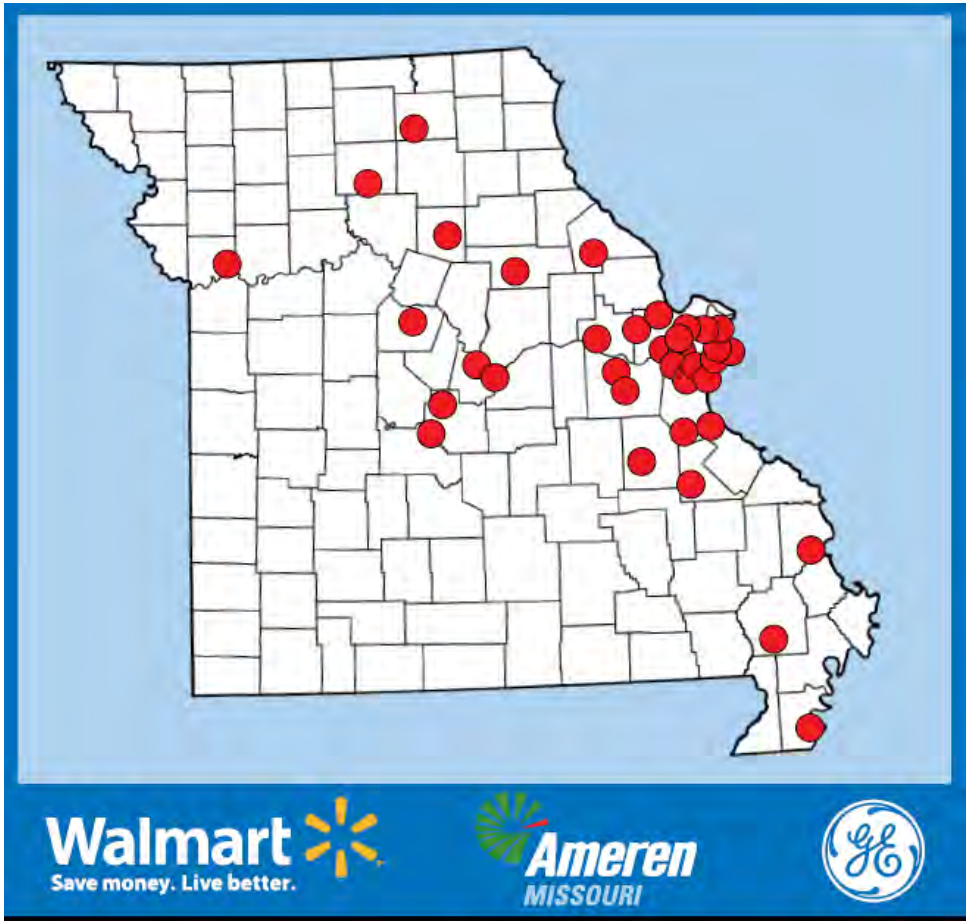
Utility Growth 3X

Key Geographic Area

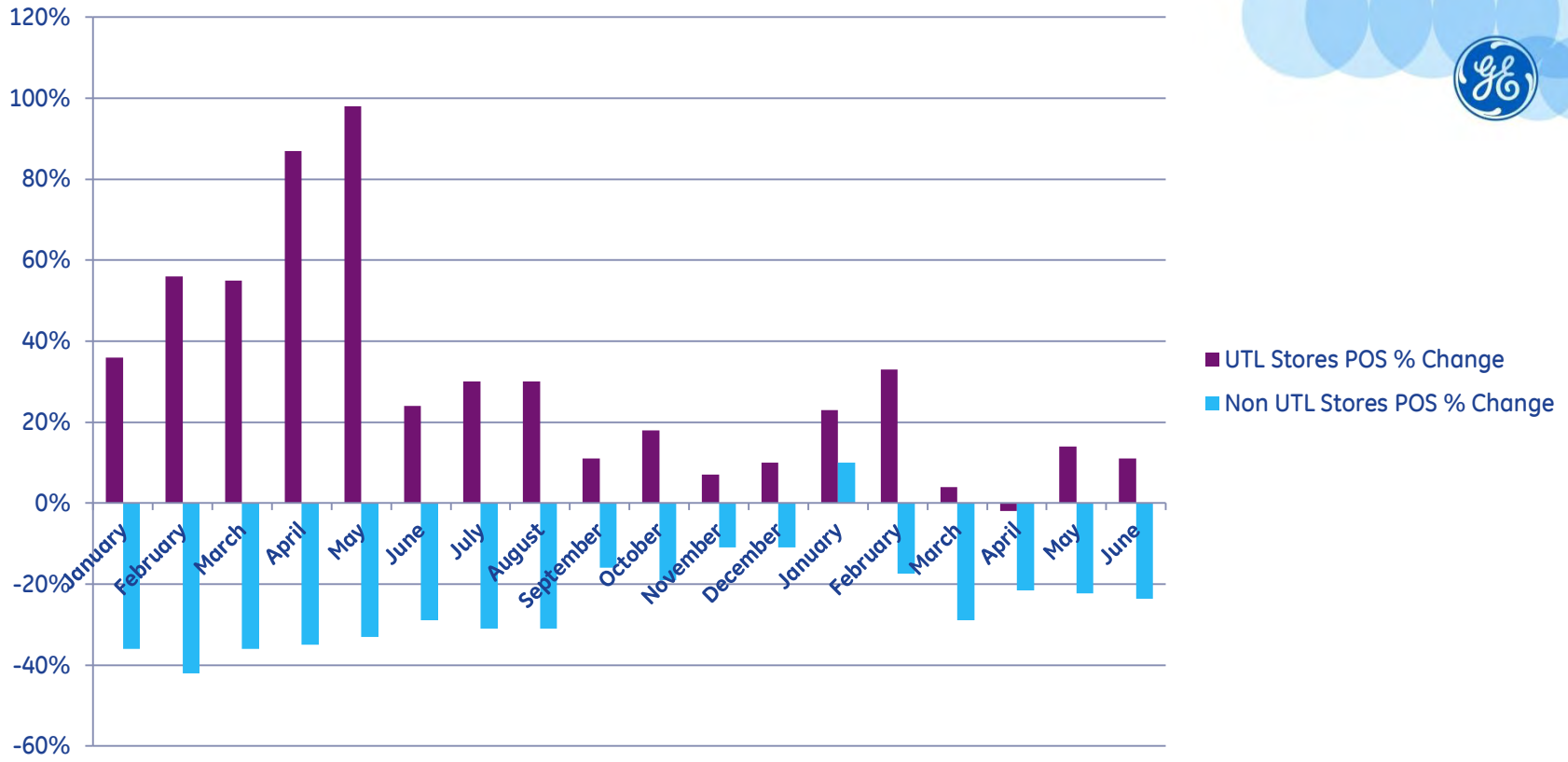
Walmart "backyard"

Critical to Sales Growth

Field Team Strength



Utility Programs Current Trends…



Utility Programs

KEY to Walmart's Sales Goals

KEY to Energy Saving Product Growth

imagination at work

Year Beginning Meeting
Featuring… UTLILTY PROGRAMS

YBM14 – Orlando, FL
March 10-12th
EVERY store manager attends + plus 1 one associate (5000 attendees)

APT Featured
As a BEST PRACTICE

On the Floor at YBM!!

Walmart
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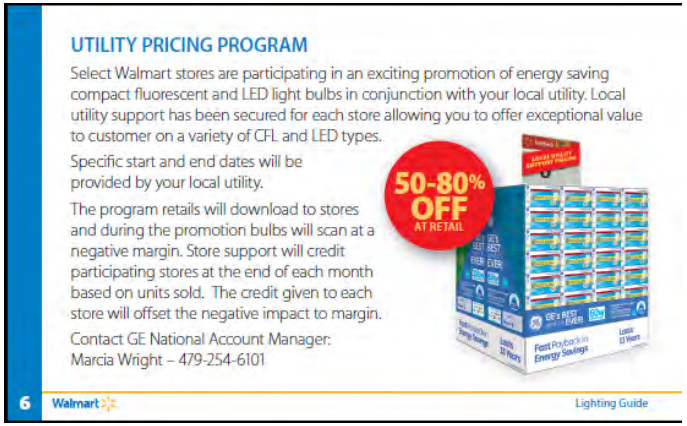
Associate Education and Engagement

Why Utility Programs – Want to GROW 3X

Shopper Benefits (better price, education)

Associate Benefits (education, support)



Utility Process – STORE MARGIN RESTORED

The Initial Store View

Utility Coop Process

CO-OP Agreement

Actual Store GP

COOP Incentive booked to Purchase Inventory account monthly

Utility Coop Example

Original Price	$13.44
Sale Price	$7.44
Cost	$10.20
MU%	**-37.1%**

Utility Incentive: $6.00/Retail Unit

Final GP%: 43.5%

Co-Op based on your stores Sales

WAL-MART STORES, INC.
WAL-MART - SAM'S CO-OP AGREEMENT
Corporate Accounts Receivable Dept 0685, 1301 S.E. 10th St., Bentonville AR 72716-0685
CO-OP Nbr : 1617257
CO-OP Status : FINALIZED, SENT TO MARS FOR BILLING

Store Journal

		Cost Amount
	Department	100001/11
		HARDWARE
	Fiscal year/period	011.2014
		DEC
	Parent ID	COOPALLO
		COOPS Allocation
	Reference Document Number	000000001617257
GL Account		$
1351030	Purchase Inventory	(353)

YBM14 – Utility Focus
More Signing, Demo's Allowed…

imagination at work

YBM14 – Utility Focus
More Off-Shelf Support….

SCHEDULE RAV-2

Ameren MISSOURI

Store Engagement & Push

Ameren MISSOURI

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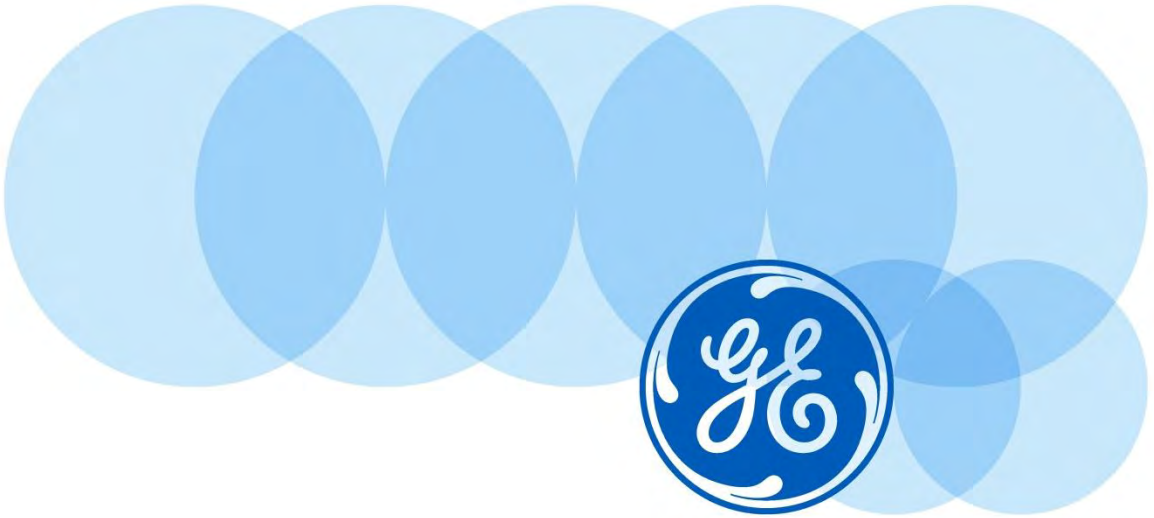
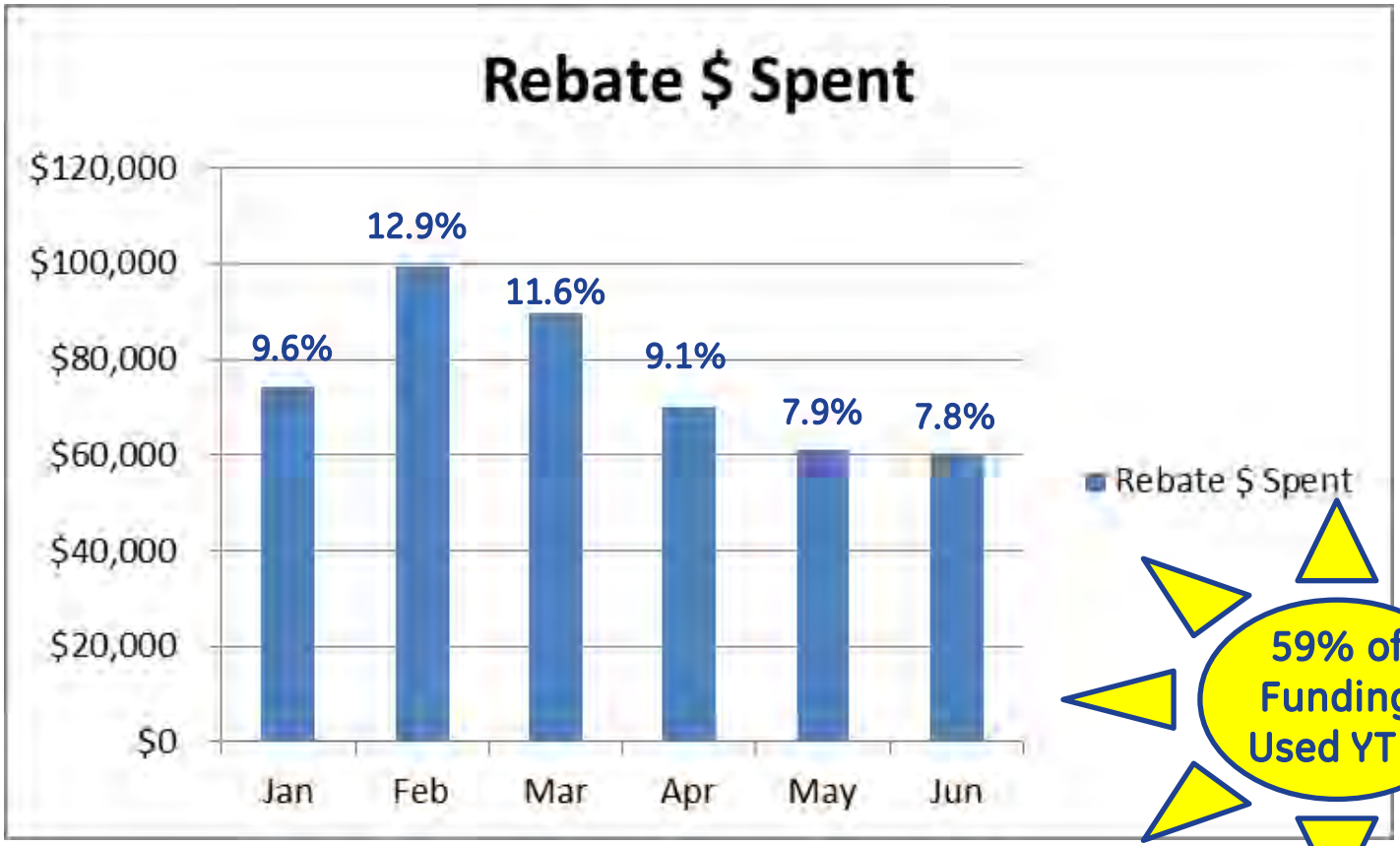
Ameren Missouri Results



GE Program Results YTD - CFL

SCHEDULE RAV-2

Ameren MISSOURI

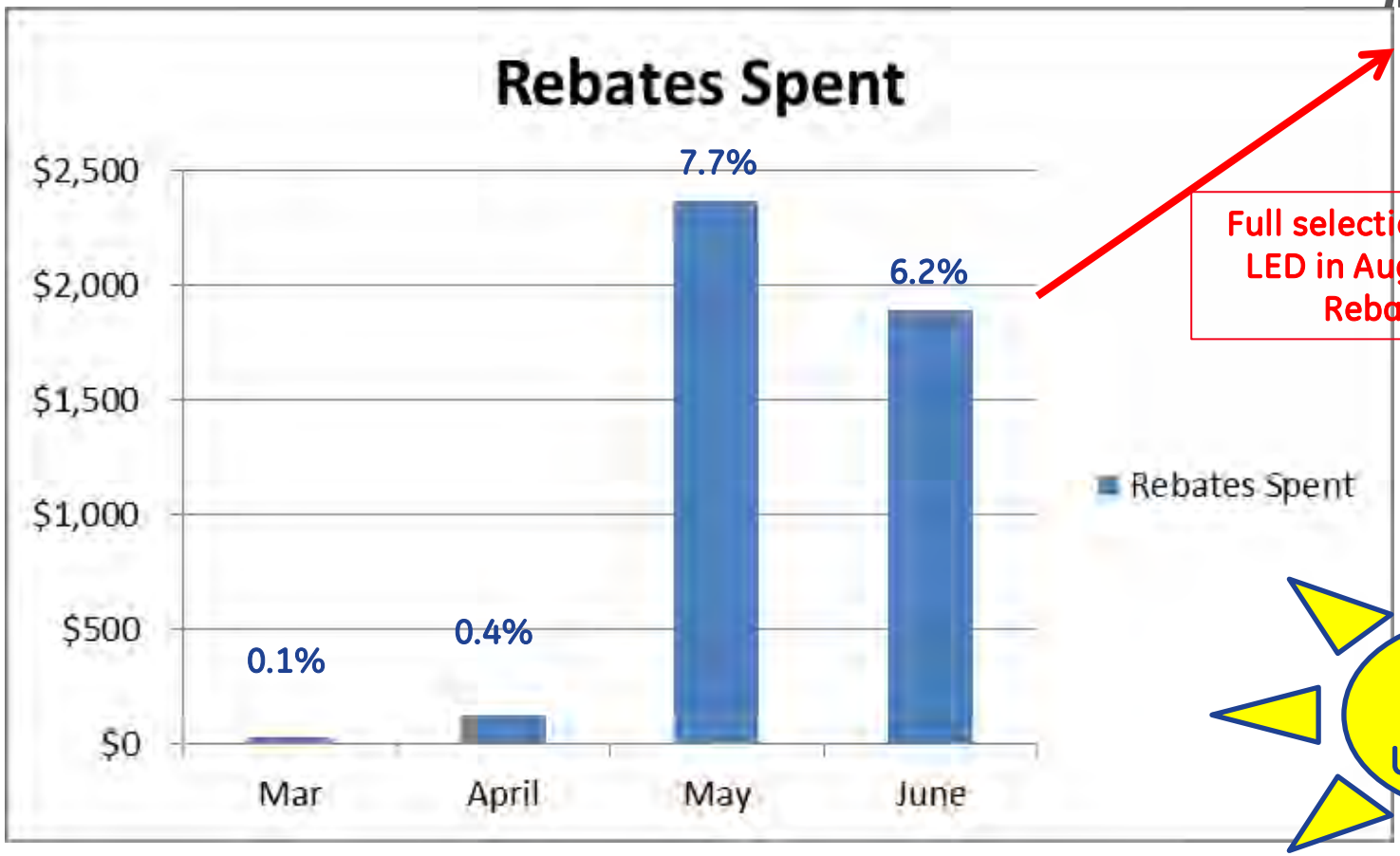


59% of Funding Used YTD

GE Program Results YTD - LED

SCHEDULE RAV-2

Ameren MISSOURI



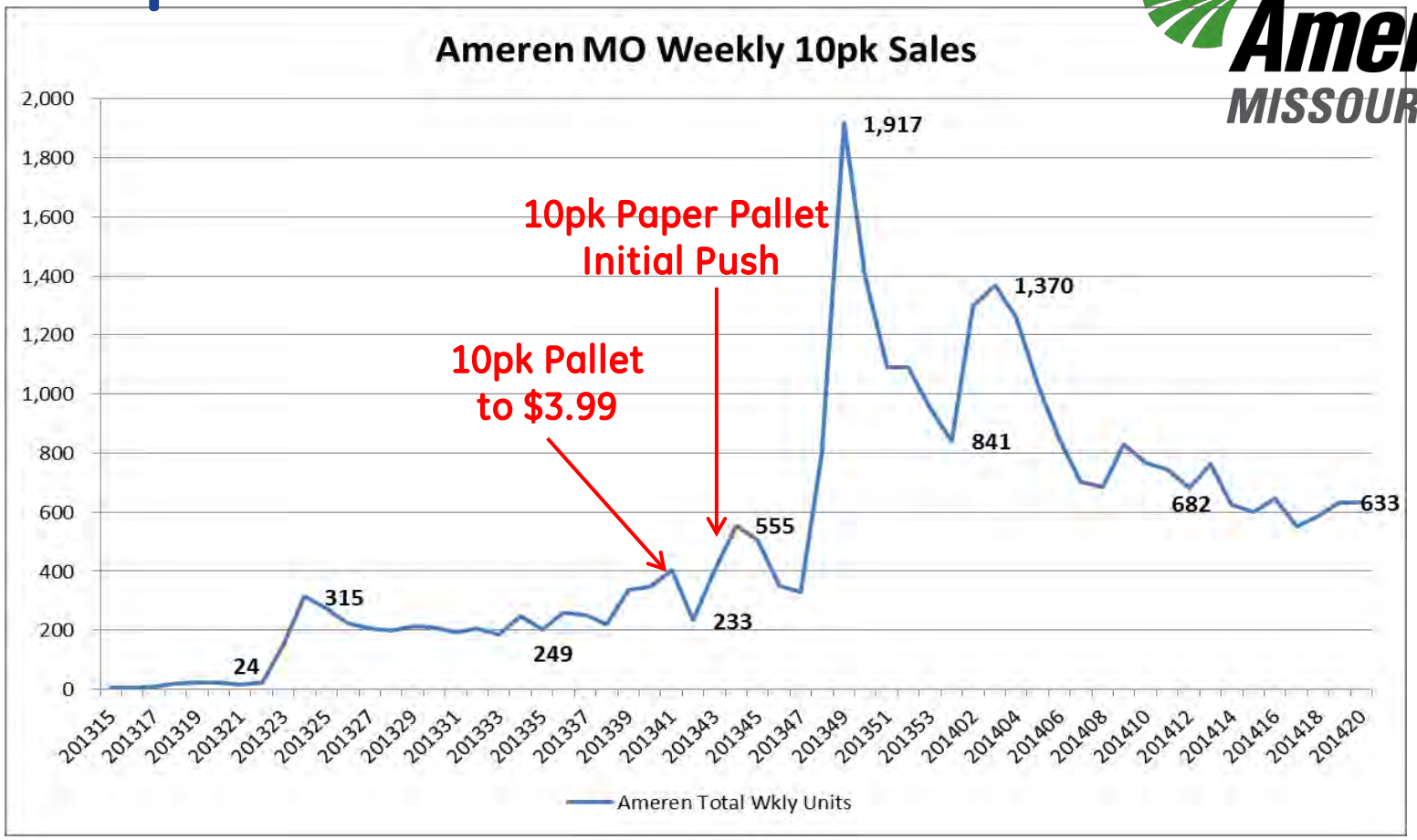
Full selection/all stores of LED in Aug will improve Rebate Spend

14% of Funding Used YTD

GE 10pk Results

SCHEDULE RAV-2

Ameren MISSOURI

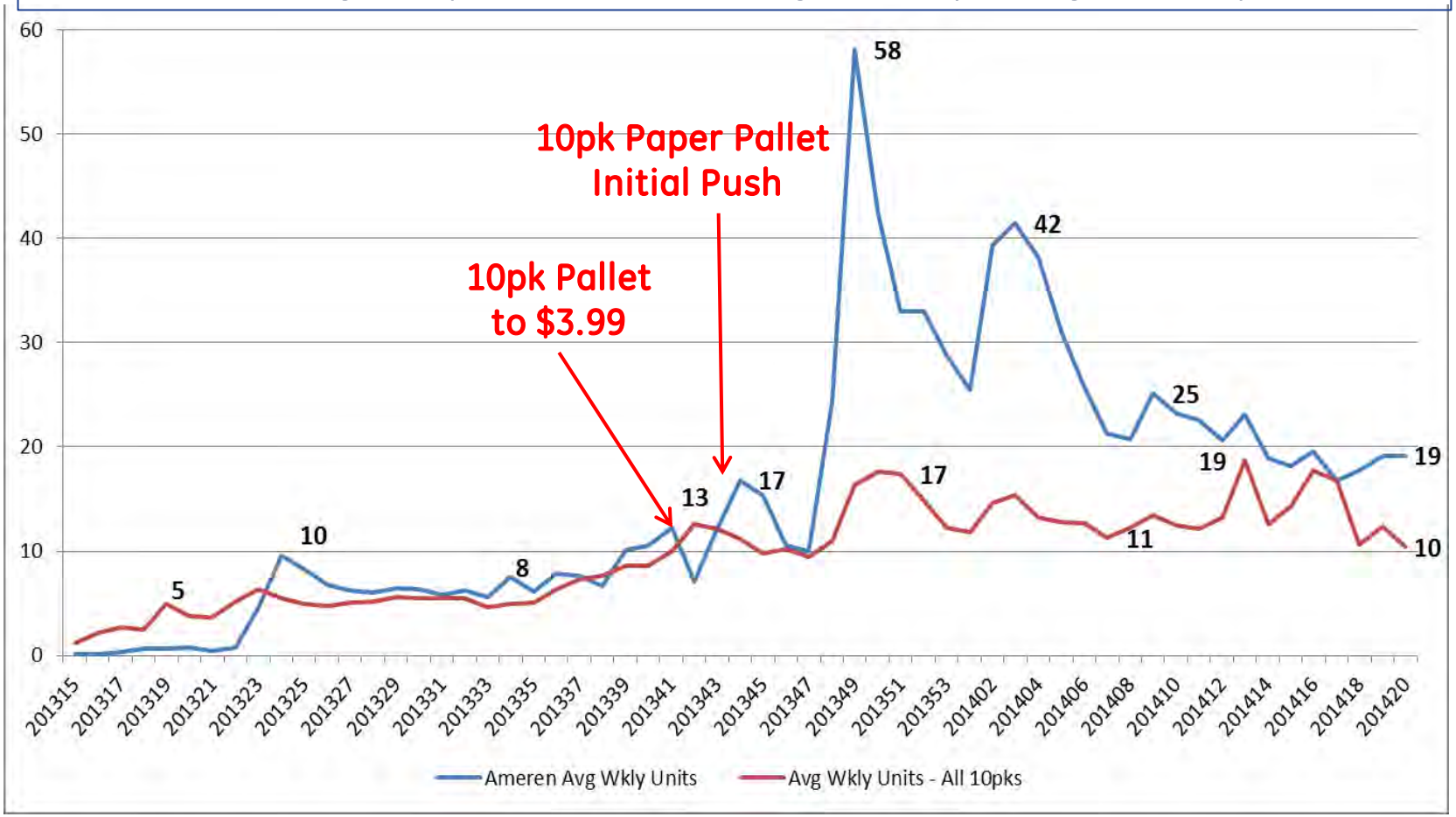


- POS Timing = May 4th, 2013 – June 20th, 2014
- 10pk Final Retail to $3.99 WM WK 41 – September 30, 2013
- First pallet shipments to all stores WM WK 43 – November 2013
- **Strongest POS week – WM WK 50 – January 6, 2014**
- Total 10pks sold during this timeframe = 30,469 (304,690 bulbs)

GE 10pk Results

SCHEDULE RAV-2
Ameren MISSOURI

Ameren Average 10pk POS Vs Average Utility Program 10pk Sales



- Average Weekly 10pk Utility Program POS has Ranged from 1 – 19 Over the Past Year
- Ameren's Average Weekly POS has ranged from 1 – 58 Over the Past Year

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Changes & Promotions..

Permanent LED/CFL – Pallet

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Recent Changes….

Timing

1000 Stores May
1000 Stores June
GE Omni Aline / R30 Daylight- August

Product

GE and Great Value
CFL & LED

Benefits

Looping Video Unit**
Unique SKUs LED & CFL
10pk for Utility Stores
Can do UNIQUE signing – GE side
** Fixture RETRO-FIT

imagination at work

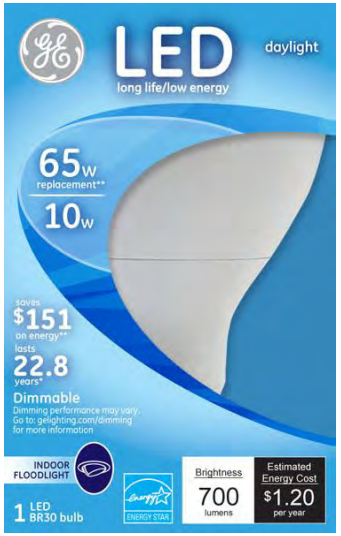
Walmart-GE Programs
August Changes….

Full GE LED Line – All Stores
Expanded offering of Energy Star Aline Retail Reductions

Walmart-GE Programs

August Changes….

GE LED Softwhite & Daylight Energy Star
GE LED Fixtures
Retail REDUCTIONS!



GE Product Focus – Utility Programs

LED

Strategy
- Encourage trial by making LEDs more approachable
- Focus on how LED makes life better / saves energy
- Utility Rebates / Secure Funding
- Lower retails – affordable!

Product & Packaging
- Simplified branding, new packaging with stopping power
- Smaller footprint box with large window
- Energy Star 1.0 qualified
- Unique Utility SKUs – Multipacks 2015
- Fixture Expansion

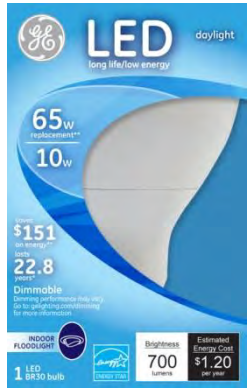
Campaigns and Tactics
- Digital advertising, including tagged Walmart ads
- Walmart circulars
- FSI & Facebook
- PR and Walmart Promotions (endcaps & pallets)

CFL

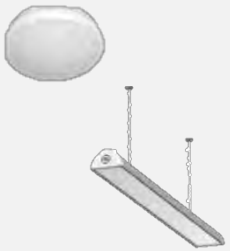
Strategy
- Transition to Energy Star 1.0
- Balanced approach at Shelf
- Phase out of CFL Specialty – Switch to LED

Product & Packaging
- Blister to Box – All SKUs
- Energy Star 1.0 qualified
- Unique Utility SKUs
- Utility Pallet Graphics Update – Keep it FRESH

Campaigns and Tactics
- Digital advertising, including tagged Walmart ads
- Walmart circulars
- FSI & Facebook
- PR and Walmart Promotions (endcaps & pallets)



GE LED Roadmap

	General Purpose	Directional	Decorative	Fixtures/Other
				
ENERGY STAR Qualified	1. A19 40W equivalent 2. A19 60W equivalent 3. A21 75W equivalent 4. A21 100W equivalent	1. BR30 2. BR40 3. PAR38 75W equivalent 4. PAR38 120W equivalent 5. reveal® BR30 6. PAR20 7. PAR30	1. CAC 25W & 40W 2. CAM 25W & 40W 3. G16.5 4. G25.	1. 6" recessed can 2. reveal® 6" recessed can
Other LEDs	 1. reveal® A19 2. A19 800 lumens with Zigbee controls	 1. GU10 & MR16 35W 2. GU10 & MR16 50W 3. BR30 with Zigbee controls 4. PAR38 90W equivalent with Zigbee controls	1. A15	 1. Work light 2. Flush mount fixtures
In Development			• 60W equivalents • reveal®	• T8 replacement • Plug in replacement

Fall Promotion Calendar 2014

SCHEDULE RAV-2

Sept	Oct	Nov	Dec
No CFL/LED Features Endcap: EESW 4pk	SW T2 6pk - Endcap Pallet Placement: EESW 4pk	SW T2 3pk - Endcap	LED 2pk - Endcap

4Way for Utility Programs + 10pk Pallets

Incandescent Focus 1st Half 2014
Energy Efficient Halogen Fall

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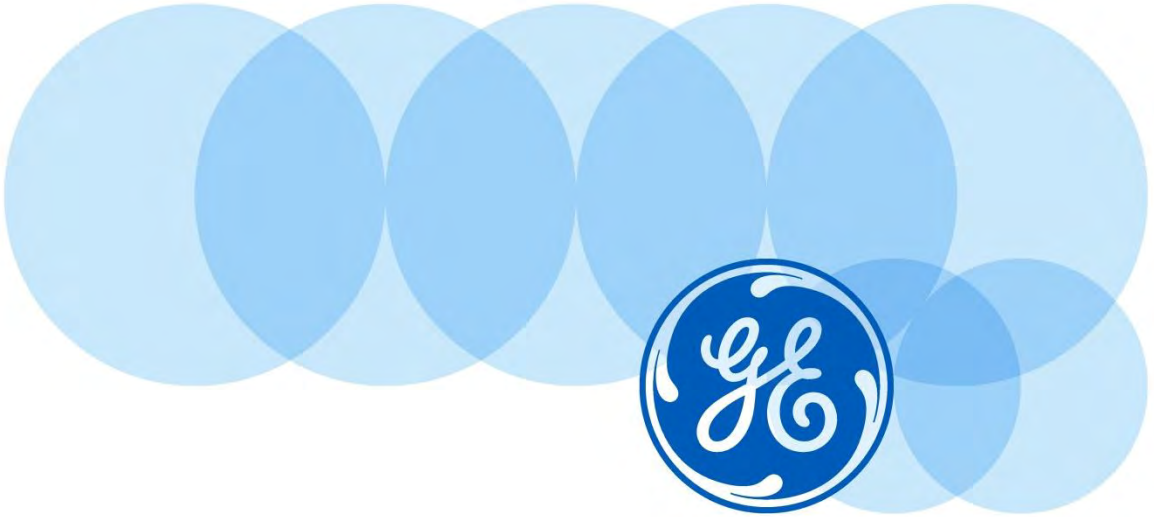
In Store Discussion



In Store Tips & Discussion

"bad store"

Education – YBM & Field Teams

NEW SYSTEM SETTINGS!!!

Pictures Speak

Report Issues - APT

Relationships

APT LOOK BOOK GUIDE

Tools – Lighting Guide, Buttons, Lanyards

GE Program Value – we will help

A Bulb in Every Basket

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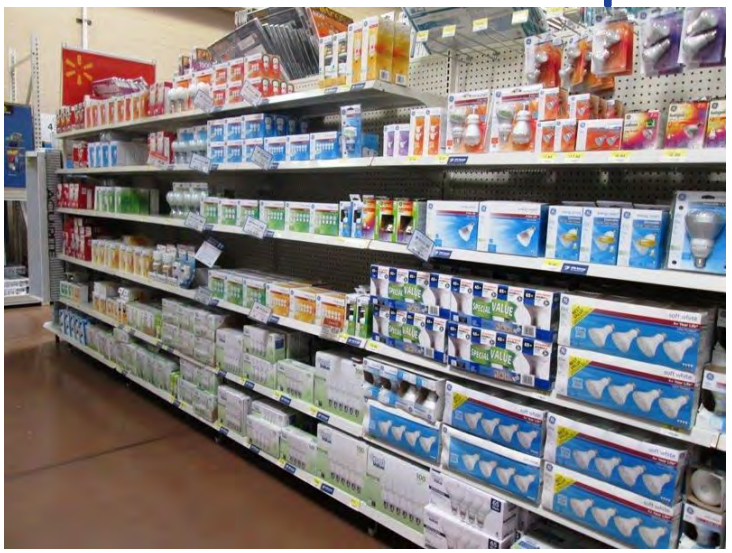

"better store"

In Store Tips & Discussion

Margin Back to Stores… "show them the money" trail.

Utility Coop Process

The Initial Store View		CO-OP Agreement		Actual Store GP
	+		=	COOP Incentive booked to Purchase Inventory account monthly

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A Bulb in Every Basket

Light bulbs GROWTH Category

Utility Programs KEY to GROWTH

Focus, Signs, Placement..

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3 Key Elements Driving Growth

1 price – (Focus)

Tell the customer – (Signs & Demos)

Show the customer – (Placement)

Walmart Supports ALL!

imagination at work

Thank you!

Marcia Wright
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E: marcia.wright@ge.com