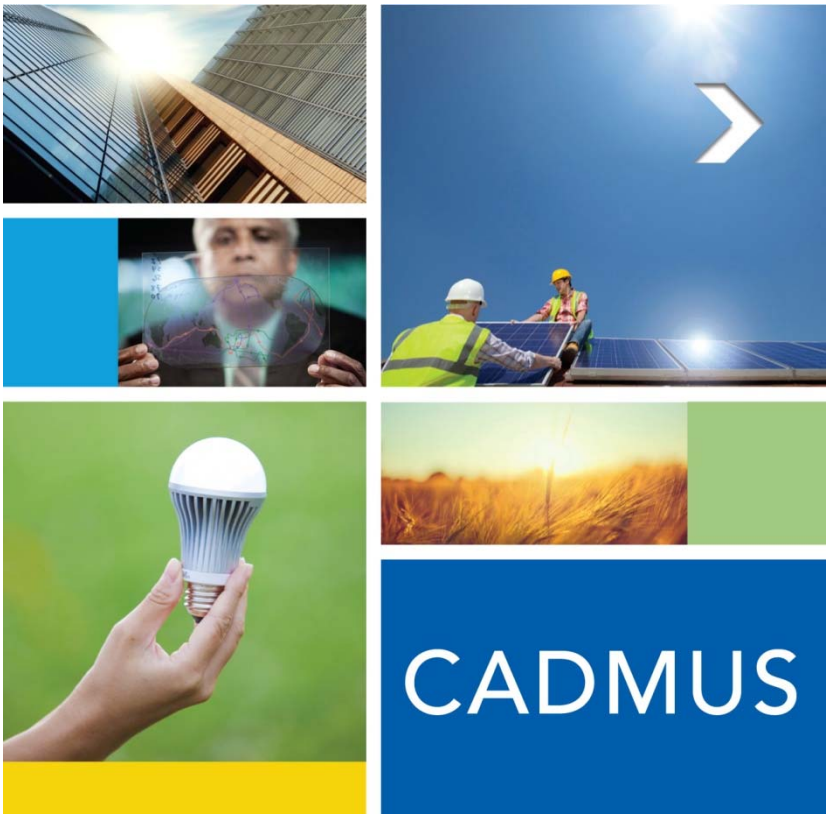

Ameren Missouri Residential Portfolio Evaluation Summary: Program Year 2013

May 15, 2014

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CADMUS

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CADMUS

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EXECUTIVE SUMMARY

Ameren Missouri (Ameren) engaged the Cadmus team (composed of Cadmus and Nexant) to perform annual process and impact evaluations of its seven residential energy-efficiency programs for a three-year period, from 2013 through 2015. This annual summary report presents the key energy savings, demand reduction, and cost-effectiveness results for Program Year 2013 (PY13), the period from January 1, 2013, through December 31, 2013.

In addition to these key impact results, this summary report includes: brief descriptions of each residential program; details regarding the cost-effectiveness analysis; and summaries of the Cadmus team's responses to the five process evaluation questions required by the Missouri Code of State Regulations (CSR).

Separate, program-specific PY13 evaluation reports offer significantly more detail regarding our impact methodologies and results as well as key process evaluation findings, conclusions, and recommendations.

Energy Savings

Table 1 summarizes the *ex ante* gross, *ex post* gross, and *ex post* net energy savings (MWh/year) for each program and for the residential portfolio overall in PY13. The table also compares the Cadmus team's *ex post* net energy savings to the program-specific and residential portfolio net energy savings targets approved by Missouri Public Service Commission (MPSC) and other stakeholders.

As shown in the table, the LightSavers and CoolSavers programs greatly exceeded their PY13 MPSC-approved targets (230% and 138%, respectively) and are responsible for the residential portfolio nearly doubling its target (195%).

Table 1. Summary of PY13 Residential Program Energy Savings (MWh/Year)

Program	MPSC-Approved Target[1]	*Ex Ante* Gross Savings Utility Reported (Prior to Evaluation)[2]	*Ex Post* Gross Savings Determined by EM&V[3]	*Ex Post* Net Savings Determined by EM&V[4]	Percent of Goal Achieved[5]
ApplianceSavers	11,740	9,897	6,963	5,164	44%
CommunitySavers	5,797	7,472	6,149	5,890	102%
ConstructionSavers	679	435	238	67	10%
CoolSavers	17,218	27,876	25,098	23,797	138%
LightSavers	121,258	198,735	227,132	279,127	230%
PerformanceSavers	1,070	428	316	285	27%
RebateSavers	7,512	21,473	8,409	7,787	104%
Portfolio	**165,274**	**266,315**	**274,305**	**322,117**	**195%**

[1] https://www.ameren.com/sites/AUE/Rates/Documents/UECSheet191EEResidential.pdf
[2] Calculated by applying tracked program activity to TRM savings values.
[3] Calculated by applying tracked program activity to Cadmus' evaluated savings values.
[4] Calculated by multiplying Cadmus' evaluated gross savings and the net-to-gross (NTG) ratio, which accounts for free ridership, participant spillover, nonparticipant spillover, and market effects.
[5] Compares MPSC Approved Target and *Ex Post* Net Savings Determined by EM&V.

Demand Reduction

Similarly to the previous table, Table 2 summarizes the *ex ante* gross, *ex post* gross, and *ex post* net demand reductions (kW) for each program and for the residential portfolio overall, and compares Cadmus team's *ex post* net demand reductions to MPSC-approved targets.

While energy savings and demand reductions do not move in perfect lockstep (as the measure mix for some programs generate more peak savings), LightSavers and CoolSavers program again exceeded their PY13 MPSC-approved targets (624% and 104%, respectively) and drove the residential portfolio's overall performance (193%). The high number of upstream CFLs installed in non-residential locations greatly increased the demand savings generated by the program (as these bulbs are used more frequently during peak hours).

Table 2. Summary of PY13 Residential Program Demand Reductions (kW)

Program	MPSC-Approved Target[1]	*Ex Ante* Gross Savings Utility Reported (Prior to Evaluation)[2]	*Ex Post* Gross Savings Determined by EM&V[3]	*Ex Post* Net Savings Determined by EM&V[4]	Percent of Goal Achieved[5]
ApplianceSavers	1,636	1,800	1,338	992	61%
CommunitySavers	774	728	928	889	115%
ConstructionSavers	82	73	83	23	28%
CoolSavers	12,361	9,826	13,612	12,906	104%
LightSavers	3,647	7,909	18,509	22,746	624%
PerformanceSavers	352	35	21	19	5%
RebateSavers	1,273	2,026	1,444	1,337	105%
Portfolio	**20,125**	**22,396**	**35,934**	**38,913**	**193%**

[1] https://www.ameren.com/sites/AUE/Rates/Documents/UECSheet191EEResidential.pdf
[2] Calculated by applying tracked program activity to TRM savings values.
[3] Calculated by applying tracked program activity to Cadmus' evaluated savings values.
[4] Calculated by multiplying Cadmus' evaluated gross savings and NTG ratio, which accounts for free ridership, participant spillover, nonparticipant spillover, and market effects.
[5] Compares MPSC Approved Target and *Ex Post* Net Savings Determined by EM&V.

Cost Effectiveness

To analyze the cost-effectiveness of the PY13 programs and residential portfolio, the Cadmus team worked with Morgan Marketing Partners (MMP), which utilized DSMore to assess cost-effectiveness through the following five tests (as defined by the California Standard Practice Manual):

- Total Resource Cost (TRC) test
- Utility Cost Test (UCT)
- Ratepayer Impact Measure (RIM)
- Societal Test
- Participant Test (PART)

As shown in Table 3, four of the seven PY13 residential programs proved cost-effective (benefit/cost ratios greater than 1.0) using the TRC test, the primary test in Missouri. All four of these programs had TRC values greater than 2.0, led by LightSavers at 12.42. The three programs found not to be cost-effective were: a low-income offering (CommunitySavers, 0.97), a program in its first year (ConstructionSavers, 0.18), and a pilot effort (PerformanceSavers, 0.89).

Collectively, these seven programs resulted in: a cost-effective residential portfolio (3.64), a cost of conserved energy of $0.010, and almost $86 million dollars in net lifetime benefits.

Table 3. Summary of PY13 Residential Program Cost-Effectiveness

	TRC	UCT	RIM	Societal	PART	CCE— $/kWh	Net Lifetime Benefits
ApplianceSavers	2.56	2.56	0.60	2.93	NA	$0.020	$1,648,098
CommunitySavers	0.97	0.97	0.42	1.19	NA	$0.051	-$102,044
ConstructionSavers	0.18	0.18	0.16	0.22	1.62	$0.437	-$333,638
CoolSavers	2.12	4.75	0.81	2.61	2.95	$0.016	$12,454,731
LightSavers	12.42	12.60	0.60	32.26	14.30	$0.003	$92,591,867
PerformanceSavers	0.89	0.79	0.38	1.12	4.13	$0.132	-$32,929
RebateSavers	2.03	4.22	0.59	2.37	4.23	$0.010	$2,979,841
Portfolio	**3.64**	**4.76**	**0.60**	**4.25**	**9.90**	**$0.009**	**$85,962,558**

PROGRAM DESCRIPTIONS

The following section describes Ameren's seven PY13 residential programs.

ApplianceSavers

The ApplianceSavers program offers Ameren's residential customers a $50 incentive and a free pickup service for recycling an operable refrigerator and standalone freezer (up to a total of three per customer per year). Appliance Recycling Centers of America, Inc. (ARCA) implements ApplianceSavers. Customers also may recycle a working room air conditioner or dehumidifier, along with a qualifying refrigerator or freezer (with a limit of three per customer per year). Incentives are not provided for air conditioners or dehumidifiers.

During PY13, ApplianceSavers recycled 6,881 appliances (5,237 refrigerators and 1,644 freezers). Under this program, ARCA also collected some room air conditioners (RACs) (23) and dehumidifiers (48). The program's scale in PY13 was considerably larger than in PY12. The latter program-year period was shortened as it was a bridge year for all Ameren programs—between those completed in 2009–2011 and those in the 2013–2015 program cycles. However, PY13 experience less participation than PY11 (9,084), the last 12-month program year.

CommunitySavers

Through CommunitySavers, Ameren delivers energy-efficiency services to low-income multifamily properties with three or more dwelling units. Honeywell Smart Grid Solutions (Honeywell), the program implementer, contracts the direct installation of all energy-efficiency measures (EEMs) to multiple contractors. The EEMs consist of low-cost measures such as the following:

- Lighting (compact fluorescent lamps [CFLs]);
- Insulation of hot water heaters and pipes;
- Showerheads and faucet aerators;
- Programmable thermostats; and
- Smart power strips (newly offered in PY13).

Additionally, the program offers replacements of older appliances—such as refrigerators and air conditioners (both room and through-the-wall units)—with ENERGY STAR® models. This year, the program also began offering tune-ups for central air conditioning systems (CAC) and heat pumps (HPs).

To qualify for CommunitySavers, participating property owners and/or managers committed to implementing standard lighting installations in common areas, as applicable, through Ameren's Business Energy Efficiency Program. This commitment, albeit nonbinding, bridges Ameren's residential and commercial program offerings to provide comprehensive, whole-building energy savings in the low-income multifamily sector.

ConstructionSavers

Ameren added the ConstructionSavers program to its residential Act On Energy portfolio in PY13. The program, implemented by ICF International (ICF), promotes energy-efficient new home construction. Targeting builders, the program offers a package of training, technical assistance, marketing assistance, and incentives for constructing ENERGY STAR homes. The program is designed to increase consumer awareness of and demand for ENERGY STAR version 3.0 single-family homes, while increasing the building industry's willingness and ability to construct ENERGY STAR homes. To verify energy savings and program compliance, ConstructionSavers uses independent, third-party, Home Energy Rating System (HERS) raters.

All homebuilders constructing new homes or conducting a major renovation of existing single-family homes (or townhouses) within Ameren's service territory are eligible to participate in ConstructionSavers. The program provides two tiers for building options:

- Tier I homes are eligible for a $500 rebate and must meet the previous version (version 2.5) of ENERGY STAR guidelines.
- Tier II homes are eligible for an $800 dollar rebate and must meet the current ENERGY STAR guidelines.

The program has two paths through which to qualify a project:

- The prescriptive path allows participants to choose their savings measures from the ENERGY STAR Reference Design Specifications.
- The performance path requires calculations of savings for the proposed measures using approved modeling software that determines a HERS score for the home.

ConstructionSavers provides builder training and supports builders through the use of the ENERGY STAR brand. (Note that ENERGY STAR branding only applies to Tier II homes.)

CoolSavers

CoolSavers offers Ameren customers living in single-family homes, condos, or townhomes incentives for installing high-efficiency CACs or HPs through a participating program heating, ventilation and air conditioning (HVAC) contractor. The program also offers incentives for:

- Diagnostic testing and tuning of existing HVAC systems to manufacturer specifications;
- Installing variable-speed fan motors; and
- Installing programmable thermostats.

To participate, a residential customer must have a measure installation performed by a participating contractor listed on Ameren's website. The participating contractor submits all required paperwork for incentive processing. To become a participating contractor, an HVAC company representative need only attend a program training session, conducted by ICF.

LightSavers

LightSavers primarily is an upstream markdown lighting program, designed to increase sales of energy-efficient lighting products through a variety of retail channels. Ameren works with Applied Proactive Technologies (APT), the implementer, to provide a per-unit discount for eligible CFLs and light-emitting diode (LED) bulbs and lighting occupancy sensors. In addition to reducing prices, APT leverages its relationships with participating retailers to relocate discounted lighting to prominent locations within stores, with Ameren signage and marketing materials nearby. Energy Federation Incorporated (EFI) also assists in program implementation by maintaining the tracking system and selling discounted lighting products through an online store.

For retailers without a point-of-sale system (that tracks all purchases through computer software), Ameren provides coupons that customers complete at the register to receive a discount.

In addition to the program's upstream markdown and coupon elements, LightSavers includes a social marketing distribution element, which provides an avenue to distribute free CFLs to income-eligible customers through partnerships with community organizations.

PerformanceSavers

The PerformanceSavers pilot program encourages residents of single-family homes to reduce energy consumption by making improvements to: weatherization, lighting, HVAC, and water-heating appliances fueled by natural gas. The program provides some energy-efficient measures at no cost to participants and offers rebates for other measures (e.g., air sealing, ceiling insulation, and energy-efficient windows). Honeywell implements PerformanceSavers.

Targeting high-use accounts in older homes (which offer the greatest energy savings potential) and using a whole-house approach to saving energy, PerformanceSavers provides the following:

- Low-cost home-energy audits ($25) and some free direct-install measures;
- Marketing and education about existing Ameren energy-efficiency programs; and
- Lists of local contractors capable of completing measures identified in the audit.

RebateSavers

The RebateSavers program began in Cycle 1 (2009–2012) as the energy-efficient product rebate component of the combined PY09 Lighting and Appliance program. To implement the program, Ameren partners with two third-party contractors:

- APT, which implements the program, and manages a network of retail partners that sell qualifying equipment.
- EFI, which processes the rebates on Ameren's behalf.

Beginning in PY12, Ameren dropped the appliance portion of the combined Lighting and Appliance program, thus focusing exclusively on lighting products. Ameren and APT reintroduced RebateSavers in

PY13 as a new standalone appliance program, designed to promote a variety of energy-efficient products in the marketplace. The program provides incentives that encourage customers to purchase technologies that can save money, improve comfort, and save energy. The program also seeks to educate customers about energy-efficient product options and energy-savings tips.

In PY13, the program provided downstream rebates for:

- ENERGY STAR-certified RACs;
- ENERGY STAR-certified HP water heaters;
- Electric storage water heaters with an Energy Factor of 0.93 or higher; and
- Programmable thermostats.

In addition to mail-in and online rebates, RebateSavers offers a free home energy kit to customers with electric hot water heaters. The kit contains: 12 CFLs, a smart power strip, pipe wrap, up to three faucet aerators, and up to two efficient showerheads. Smart power strips can also be purchased at a discounted price through Ameren's online store.

COST-EFFECTIVENESS DETAILS

The following appendix presents the critical technical data used to develop the cost effectiveness test results, at the portfolio and program level.

Table 4. Ameren Missouri Spending Data 2013

Ameren Missouri Energy Efficiency Expenses 2013			
Residential EE PROGRAM COSTS 2013	**Non-Incentive Costs**	**Incentive Costs**	**Total Costs**
Appliance Savers	$1,058,783	$0	$1,058,783
Community Savers	$3,818,888	$0	$3,818,888
Construction Savers	$361,549	$46,900	$408,449
Cool Savers	$2,041,496	$2,922,505	$4,964,001
Light Savers	$2,752,349	$5,241,157	$7,993,505
Performance Savers	$172,989	$163,787	$336,777
Rebate Savers	$714,539	$678,473	$1,393,012
Total Residential Programs	$10,920,593	$9,052,822	$19,973,416
OTHER PORTFOLIO COSTS			
2013			
Evaluation	$2,029,425	$0	$2,029,425
Educational Outreach	$64,394	$0	$64,394
Portfolio Administration	$1,961,424	$0	$1,961,424
Potential Study Costs	$664,856	$0	$664,856
Data Tracking Costs	$213,824	$0	$213,824
Total Other	$4,933,924	$0	$4,933,924
Total Portfolio Costs	**$15,854,517**	**$9,052,822**	**$24,907,340**

Table 5 below is a summary of benefit and cost inputs for each cost test.

Table 5. Summary of Benefits and Costs Included in each Cost Effectiveness Test

Test	Benefits	Costs
UCT	**Perspective of utility, government agency, or third party implementing the program**	
	▪ Energy-related avoided costs, ▪ Capacity-related costs avoided by the utility, including generation, transmission, and distribution	▪ Program overhead costs ▪ Utility/program administrator incentive costs, ▪ Utility/program administrator installation costs
TRC	**Perspective of all utility customers (participants and non-participants) in the utility service territory**	
	▪ Energy-related avoided costs, ▪ Capacity-related avoided costs, including generation, transmission, and distribution, ▪ Additional resource savings ▪ Applicable tax credits	▪ Program overhead costs, ▪ Program installation costs, ▪ Incremental measure costs (Whether paid by the customer of utility)
RIM	**Impact of efficiency measure on non-participating ratepayers overall**	
	▪ Energy-related avoided costs, ▪ Capacity-related avoided costs, including generation, transmission, and distribution	▪ Program overhead costs, ▪ Utility/program administrator incentives, ▪ Utility/program administrator installation costs, ▪ Lost revenue due to reduced energy bills
PCT	**Benefits and costs from the perspective of the customer installing the measure**	
	▪ Bill savings, ▪ Incremental installation costs ▪ Applicable tax credits or incentives	▪ Incentive payments, ▪ Incremental equipment costs

*Incentives are considered in the incremental measure costs

The majority of costs and savings are presented on a net basis, meaning that the net-to-gross ratio was applied to account for the impact of free ridership and spillovers. However, the participant borne costs, as applied to the Participant Cost Test (PCT), are presented on a gro6ss basis.

Residential Portfolio Level Cost Test Inputs

The portfolio passes all cost-effectiveness tests, with the exception of the RIM test.

Table 6. Utility Cost Test (UCT) Inputs and Results

UCT Calculations		
	Benefits	**Costs**
Avoided Electric Production	$97,986,019	
Avoided Electric Capacity	$9,472,629	
Avoided T&D Electric	$6,016,900	
Avoided Gas Production	$146,486	
Avoided Gas Capacity	$6,236	
Incentives		$9,052,822
Program overhead costs		$15,854,846
Total	$113,628,270	$24,907,669
UCT Benefit - Cost Ratio	4.56	

Table 7. Total Resource Cost Test (TRC) Inputs and Results

TRC Calculations		
	Benefits	Costs
Avoided Electric Production	$97,986,019	
Avoided Electric Capacity	$9,472,629	
Avoided T&D Electric	$6,016,900	
Avoided Gas Production	$146,486	
Avoided Gas Capacity	$6,236	
Participant Costs (Net)		$16,742,897
Program overhead costs		$15,854,846
Total	$113,628,270	$32,597,743
TRC Benefit - Cost Ratio	3.49	

Table 8. Ratepayer Impact Measure Test (RIM) Inputs and Results

RIM Calculations		
	Benefits	Costs
Avoided Electric Production	$97,986,019	
Avoided Electric Capacity	$9,472,629	
Avoided T&D Electric	$6,016,900	
Program overhead costs		$15,854,846
Incentives		$9,052,822
Lost Revenue		$166,333,253
Total	$113,475,548	$191,240,921
RIM Benefit - Cost Ratio	0.59	

Table 9. Participant Cost Test (PCT) Inputs and Results

PCT Calculations		
	Benefits	Costs
Participant Bill Savings (Electric) (gross)	$146,902,376	
Participant Bill Savings (Gas) (gross)	$215,131	
Incentives	$9,052,822	
Participant Costs (Gross)		$16,273,110
Total	$156,170,329.72	$16,273,110
PTC Benefit - Cost Ratio	9.60	

ApplianceSavers Program Level Cost Test Inputs

The program passes all cost-effectiveness tests, with the exception of the RIM test. There are no participant costs, therefore the benefit-cost ratio for the PCT test is “N/A” however net benefits are positive.

Table 10. Utility Cost Test (UCT) Inputs and Results

UCT Calculations		
	Benefits	Costs
Avoided Electric Production	$1,999,169	
Avoided Electric Capacity	$458,402	
Avoided T&D Electric	$249,310	
Incentives		$0
Program overhead costs		$1,058,783
Total	$2,706,881	$1,058,783
UCT Benefit - Cost Ratio	2.56	

Table 11. Total Resource Cost Test (TRC) Inputs and Results

TRC Calculations		
	Benefits	Costs
Avoided Electric Production	$1,999,169	
Avoided Electric Capacity	$458,402	
Avoided T&D Electric	$249,310	
Participant Costs (Net)		$0.00
Program overhead costs		$1,058,783
Total	$2,706,881	$1,058,783
TRC Benefit - Cost Ratio	2.56	

Table 12. Ratepayer Impact Measure Test (RIM) Inputs and Results

RIM Calculations		
	Benefits	Costs
Avoided Electric Production	$1,999,169	
Avoided Electric Capacity	$458,402	
Avoided T&D Electric	$249,310	
Program overhead costs		$1,058,783
Incentives		$0
Lost Revenue		$3,483,897
Total	$2,706,881	$4,542,680
RIM Benefit - Cost Ratio	0.60	

Table 13. Participant Cost Test (PCT) Inputs and Results – Portfolio Level

PCT Calculations		
	Benefits	Costs
Participant Bill Savings (Electric) (gross)		
Participant Bill Savings (Gas) (gross)	$0	
Incentives	$0	

Participant Costs (Gross)		$0
Total	$4,709,533.41	$0.00
PTC Benefit - Cost Ratio	N/A	

CommunitySavers Program Level Cost Test Inputs

The program is cost-effective from the PCT perspective where net benefits are positive; however the benefit-cost ratio for the PCT test is "N/A." as there are no participant costs.

Table 14. Utility Cost Test (UCT) Inputs and Results

UCT Calculations		
	Benefits	**Costs**
Avoided Electric Production	$2,978,168	
Avoided Electric Capacity	$457,580	
Avoided T&D Electric	$281,096	
Incentives		$0
Program overhead costs		$3,818,888
Total	$3,716,844	$3,818,888
UCT Benefit - Cost Ratio	0.97	

Table 15. Total Resource Cost Test (TRC) Inputs and Results

TRC Calculations		
	Benefits	**Costs**
Avoided Electric Production	$2,978,168	
Avoided Electric Capacity	$457,580	
Avoided T&D Electric	$281,096	
Participant Costs (Net)		$0.00
Program overhead costs		$3,818,888
Total	$3,716,844	$3,818,888
TRC Benefit - Cost Ratio	0.97	

Table 16. Ratepayer Impact Measure Test (RIM) Inputs and Results

RIM Calculations		
	Benefits	Costs
Avoided Electric Production	$2,978,168	
Avoided Electric Capacity	$457,580	
Avoided T&D Electric	$281,096	
Program overhead costs		$3,818,888
Incentives		$0
Lost Revenue		$4,942,286
Total	$3,716,844	$8,761,174
RIM Benefit - Cost Ratio	0.42	

Table 17. Participant Cost Test (PCT) Inputs and Results – Portfolio Level

PCT Calculations		
	Benefits	Costs
Participant Bill Savings (Electric) (gross)	$5,148,211	
Participant Bill Savings (Gas) (gross)	$0	
Incentives	$0	
Participant Costs (Gross)		$0
Total	$5,148,211	$0.00
PTC Benefit - Cost Ratio	N/A	

ConstructionSavers Program Level Cost Test Inputs

Only the PCT passes the cost-effectiveness threshold of 1.0.

Table 18. Utility Cost Test (UCT) Inputs and Results

UCT Calculations		
	Benefits	Costs
Avoided Electric Production	$39,426	
Avoided Electric Capacity	$25,337	
Avoided T&D Electric	$9,720	
Incentives		$46,900
Program overhead costs		$361,549
Total	$74,483	$408,449
UCT Benefit - Cost Ratio	0.18	

Table 19. Total Resource Cost Test (TRC) Inputs and Results

TRC Calculations		
	Benefits	Costs
Avoided Electric Production	$39,426	
Avoided Electric Capacity	$25,337	
Avoided T&D Electric	$9,720	
Participant Costs (Net)		$46,571
Program overhead costs		$361,549
Total	$74,483	$408,120
TRC Benefit - Cost Ratio	0.18	

Table 20. Ratepayer Impact Measure Test (RIM) Inputs and Results

RIM Calculations		
	Benefits	Costs
Avoided Electric Production	$39,426	
Avoided Electric Capacity	$25,337	
Avoided T&D Electric	$9,720	
Program overhead costs		$361,549
Incentives		$46,900
Lost Revenue		$62,054
Total	$74,483	$470,503
RIM Benefit - Cost Ratio	0.16	

Table 21. Participant Cost Test (PCT) Inputs and Results – Portfolio Level

PCT Calculations		
	Benefits	Costs
Participant Bill Savings (Electric) (gross)	$219,253	
Participant Bill Savings (Gas) (gross)	$0	
Incentives	$46,900	
Participant Costs (Gross)		$164,548
Total	$266,153	$164,548
PTC Benefit - Cost Ratio	1.62	

CoolSavers Program Level Cost Test Inputs

The program passes all cost-effectiveness tests, with the exception of the RIM test.

Table 22. Utility Cost Test (UCT) Inputs and Results

UCT Calculations		
	Benefits	Costs
Avoided Electric Production	$16,560,734	
Avoided Electric Capacity	$4,167,093	
Avoided T&D Electric	$2,826,998	
Incentives		$2,922,505
Program overhead costs		$2,041,496
Total	$23,554,824	$4,964,001
UCT Benefit - Cost Ratio	4.75	

Table 23. Total Resource Cost Test (TRC) Inputs and Results

TRC Calculations		
	Benefits	Costs
Avoided Electric Production	$16,560,734	
Avoided Electric Capacity	$4,167,093	
Avoided T&D Electric	$2,826,998	
Participant Costs (Net)		$9,058,597.05
Program overhead costs		$2,041,496.16
Total	$23,554,824	$11,100,093
TRC Benefit - Cost Ratio	2.12	

Table 24. Ratepayer Impact Measure Test (RIM) Inputs and Results

RIM Calculations		
	Benefits	Costs
Avoided Electric Production	$16,560,734	
Avoided Electric Capacity	$4,167,093	
Avoided T&D Electric	$2,826,998	
Program overhead costs		$2,041,496
Incentives		$2,922,505
Lost Revenue		$24,121,966
Total	$23,554,824	$29,085,967
RIM Benefit - Cost Ratio	0.81	

Table 25. Participant Cost Test (PCT) Inputs and Results

PCT Calculations		
	Benefits	Costs
Participant Bill Savings (Electric) (gross)	$24,950,775	
Participant Bill Savings (Gas) (gross)	$0	
Incentives	$2,922,505	
Participant Costs (Gross)		$9,438,415
Total	$27,873,278	$9,438,415
PTC Benefit - Cost Ratio	2.95	

LightSavers Program Level Cost Test Inputs

The program passes all cost-effectiveness tests, with the exception of the RIM test.

Table 26. Utility Cost Test (UCT) Inputs and Results

UCT Calculations		
	Benefits	Costs
Avoided Electric Production	$92,511,268	
Avoided Electric Capacity	$4,836,291	
Avoided T&D Electric	$3,349,330	
Incentives		$5,241,157
Implementation costs		$916,291
Program overhead costs		$1,836,058
Total	$100,696,890	$7,993,505
UCT Benefit - Cost Ratio	12.60	

Table 27. Total Resource Cost Test (TRC) Inputs and Results

TRC Calculations		
	Benefits	Costs
Avoided Electric Production	$92,511,268	
Avoided Electric Capacity	$4,836,291	
Avoided T&D Electric	$3,349,330	
Implementation costs		$916,291
Participant Costs (Net)		$5,332,724
Program overhead costs		$1,836,058
Total	$100,696,890	$8,085,073
TRC Benefit - Cost Ratio	12.42	

Table 28. Ratepayer Impact Measure Test (RIM) Inputs and Results

RIM Calculations		
	Benefits	Costs
Avoided Electric Production	$92,511,268	
Avoided Electric Capacity	$4,836,291	
Avoided T&D Electric	$3,349,330	
Program overhead costs		$2,752,349
Incentives		$5,241,157
Lost Revenue		$125,006,516
Total	$100,696,890	$133,000,021
RIM Benefit - Cost Ratio	0.60	

Table 29. Participant Cost Test (PCT) Inputs and Results

PCT Calculations		
	Benefits	Costs
Participant Bill Savings (Electric) (gross)	$130,898,561.6	
Participant Bill Savings (Gas) (gross)	$0	
Incentives	$5,241,157	
Participant Costs (Gross)		$4,220,248
Total	$130,898,561	$4,220,248
PTC Benefit - Cost Ratio	32.26	

PerformanceSavers Program Level Cost Test Inputs

Only the PCT passes the cost-effectiveness threshold of 1.0.

Table 30. Utility Cost Test (UCT) Inputs and Results

UCT Calculations		
	Benefits	Costs
Avoided Electric Production	$91,567	
Avoided Electric Capacity	$15,448	
Avoided T&D Electric	$6,678	
Avoided Gas Production	$146,486	
Avoided Gas Capacity	$6,236	
Incentives		$163,787
Implementation / Participation Costs		$13,683
Program overhead costs		$159,306
Total	$266,415	$336,777
UCT Benefit - Cost Ratio	0.79	

Table 31. Total Resource Cost Test (TRC) Inputs and Results

TRC Calculations		
	Benefits	Costs
Avoided Electric Production	$91,567	
Avoided Electric Capacity	$15,448	
Avoided T&D Electric	$6,678	
Avoided Gas Production	$146,486	
Avoided Gas Capacity	$6,236	
Participant Costs (Net)		$126,354
Implementation / Participation Costs		$13,683
Program overhead costs		$159,306
Total	$266,415	$299,344
UCT Benefit - Cost Ratio	0.89	

Table 32. Ratepayer Impact Measure Test (RIM) Inputs and Results

RIM Calculations		
	Benefits	Costs
Avoided Electric Production	$91,567	
Avoided Electric Capacity	$15,448	
Avoided T&D Electric	$6,678	
Avoided Gas Production	$146,486	
Avoided Gas Capacity	$6,236	
Program overhead costs		$159,306
Implementation / Participation Costs		$13,683
Incentives		$163,787
Lost Revenue (Electric)		$158,064
Lost Revenue (Gas)		$207,234
Total	$266,415	$702,074
RIM Benefit - Cost Ratio	0.38	

Table 33. Participant Cost Test (PCT) Inputs and Results – Portfolio Level

PTC Calculations		
	Benefits	Costs
Participant Bill Savings (Electric) (gross)	$204,748	
Participant Bill Savings (Gas) (gross)	$215,131	
Incentives	$163,787	
Participant Costs (Gross)		$141,455
Total	$583,666.53	$141,455
PTC Benefit - Cost Ratio	4.13	

RebateSavers Program Level Cost Test Inputs

The program passes all cost-effectiveness tests, with the exception of the RIM test.

Table 34. Utility Cost Test (UCT) Inputs and Results

UCT Calculations		
	Benefits	Costs
Avoided Electric Production	$4,979,699	
Avoided Electric Capacity	$568,557	
Avoided T&D Electric	$324,774	
Incentives		$678,473
Program overhead costs		$714,539
Total	$5,873,030	$1,393,012
UCT Benefit - Cost Ratio	4.22	

Table 35. Total Resource Cost Test (TRC) Inputs and Results

TRC Calculations		
	Benefits	Costs
Avoided Electric Production	$4,979,699	
Avoided Electric Capacity	$568,557	
Avoided T&D Electric	$324,774	
Participant Costs (Net)		$2,178,649.90
Program overhead costs		$714,538.60
Total	$5,873,030	$2,893,189
TRC Benefit - Cost Ratio	2.03	

Table 36. Ratepayer Impact Measure Test (RIM) Inputs and Results

RIM Calculations		
	Benefits	Costs
Avoided Electric Production	$4,979,699	
Avoided Electric Capacity	$568,557	
Avoided T&D Electric	$324,774	
Program overhead costs		$714,539
Incentives		$678,473
Lost Revenue		$8,558,470
Total	$5,873,030	$9,951,482
RIM Benefit - Cost Ratio	0.59	

Table 37. Participant Cost Test (PCT) Inputs and Results

PCT Calculations		
	Benefits	Costs
Participant Bill Savings (Electric) (gross)	$9,094,478	
Participant Bill Savings (Gas) (gross)	$0	
Incentives	$678,473	
Participant Costs (Gross)		$2,308,444
Total	$9,772,951.39	$2,308,444
PTC Benefit - Cost Ratio	4.23	

CSR PROCESS EVALUATION SUMMARIES

According to the Missouri Code of State Regulations (CSR), demand-side programs operating as part of a utility's preferred resource plan are subject to ongoing process evaluations that address, at a minimum, the five questions listed in Table 38 through Table 44. This section offers the Cadmus team's summary responses for the specified CSR requirements for each of the seven PY13 residential programs.

Table 38: ApplianceSavers: Summary CSR Responses

CSR Requirement Description	Summary Response
1. What are the primary market imperfections common to the target market segment?	The primary market imperfection common to the target market is an inadequate understanding of the operating costs of old or secondary refrigerators, and, in many cases, the inability to physically discard the appliance without assistance.
2. Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?	Yes, the target market segment is appropriately defined as it serves all single-family residential customers regardless of the appliance's usage type (primary or secondary).
3. Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?	Yes, the current mix of end-use measures included in the program is appropriate. In PY13, the program began collecting RACs and dehumidifiers with eligible refrigerators and freezers, providing additional benefits for customers and savings for Ameren. However, providing energy-efficiency kits (including CFLs and other easy-to-install measures) could further improve customers' awareness and participation in other programs.
4. Are the communication channels and delivery mechanisms appropriate for the target market segment?	The implementer ARCA handles the scheduling and pickup for appliances recycled through the program. Participants expressed very high satisfaction with the program, suggesting the communication channels and delivery mechanisms are appropriate.
5. What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?	Customer acceptance and awareness of appliance operating costs can be increased through additional online advertising (such as Google AdWords or Pandora targeted ads) and through earned media (e.g., partnerships with local nonprofit organizations).

Table 39: CommunitySavers: Summary CSR Responses

CSR Requirement Description	Summary Response
1. What are the primary market imperfections common to the target market segment?	The primary market imperfections include: split incentives between property managers and tenants; and the work required by property manager/maintenance staff to facilitate installations.
2. Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?	The low-income multifamily market could be merged with a low-income single-family market if concerns about serving non-low-income households can be resolved.
3. Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?	The mix of measures provides cost-effective electric savings in multifamily buildings housing low-income residents. Current measures address: lighting, water heating, appliances, electronics, heating, and cooling. Additional measures could be supplied for households with natural gas heating or water heating if natural gas utilities co-sponsored the program. Program stakeholders have also suggested including air-sealing measures.
4. Are the communication channels and delivery mechanisms appropriate for the target market segment?	The communication channels for the target market include direct contact with property managers by Honeywell staff. Communication with tenants is handled by: property managers, through workshops with Honeywell staff; and directly with installation contractors in apartments. The delivery mechanism is direct installation, performed by program subcontractors. The communication and delivery mechanisms are necessarily direct and hands-on, as both tenants and property managers are considered a hard-to-reach population and have split incentives.
5. What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?	The CommunitySavers design and implementation has experiences great success for several years, achieving high levels of participation and tenant acceptance of new measures, such as CFLs and advanced power strips. While many federally-subsidized properties have been treated, LIHTC properties still can be served through the program. Contacts can help these property managers understand their eligibility for the program.

Table 40: ConstructionSavers: Summary CSR Responses

CSR Requirement Description	Summary Response
1. What are the primary market imperfections common to the target market segment?	The primary market imperfection common to the target market is inadequate information and/or knowledge regarding the benefits of high-efficiency, new construction homes. Additionally, a lack of marketing infrastructure exists to expose the target market segment to these benefits.
2. Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?	The current target segment market could benefit from additional stratification. However, it may be difficult to successfully define and segment additional strata to builder types, such as high-efficiency/green builders.
3. Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?	No. The program should include additional end-use technologies, including appliances.
4. Are the communication channels and delivery mechanisms appropriate for the target market segment?	Yes, current communication channels are appropriate.
5. What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?	Additional networking with the target market segment to spread program awareness is needed.

Table 41. CoolSavers: Summary CSR Responses

CSR Requirement Description	Summary Response
1. What are the primary market imperfections common to the target market segment?	The primary market imperfection common to the target market is inadequate information and/or knowledge regarding the energy-saving benefits of proper HVAC maintenance and high-efficiency HVAC systems for cooling and electric heating. Additionally, the investment/cost of installing a new HVAC unit deters customers from ultimately making the decision to purchase until absolutely necessary. Further, when customers replace a system, the greater upfront cost of high-efficiency systems can cause them to purchase a lower-efficiency unit, even if the lifetime operating costs of the system are greater.
2. Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?	Yes, the target market segment is appropriately defined and comprehensively serves the single-family residential market. Specifically, the CoolSavers program is designed to help customers maintain the efficiency of operable systems (through tune-ups), and offers tiered incentives for customers replacing a failed and functional system (early retirements).
3. Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?	The program targets the primary end-use technologies within the targeted market segment. However, the program precludes incentives for installation of HP HVAC systems, which could decrease participation and limit energy-savings potential.
4. Are the communication channels and delivery mechanisms appropriate for the target market segment?	Yes, current communication channels are appropriate as the program uses both mass media marketing to generate demand and interest in the program along with targeted marketing through trained local HVAC contractors.
5. What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?	The current marketing materials allocate a significant proportion of resources specific to the targeted market. However, the most common suggestion for improvements from program participants surveyed addressed the need to increase program awareness and benefits, which indicates these efforts should continue.

Table 42. LightSavers: Summary CSR Responses

CSR Requirement Description	Summary Response
1. What are the primary market imperfections common to the target market segment?	Customers lack information about energy-efficient lighting options (e.g., differences in hours-of-use, energy use, lighting quality), and prices for some energy-efficient bulbs remain much higher than the incandescent baseline.
2. Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?	The LightSavers market is broadly defined, though the program moves in the direction of targeting bulbs to new audiences (such as discount retail shoppers). New market research indicates younger customers could offer a more interested audience.
3. Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?	Yes. The program offers a diversity of products, representing the majority of common consumer lighting needs, including a range of wattages, specialty bulbs (such as dimmables, globes, and reflectors), and LED bulbs. This year, the program added occupancy sensors.
4. Are the communication channels and delivery mechanisms appropriate for the target market segment?	Retailers report Ameren's signage is effective. New market research indicates greater online activity could effectively target younger customers.
5. What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?	Ameren continues to reach out to more retailers and audiences and to expand the list of eligible measures, but program awareness remains low. Ameren has commissioned market research to identify market segments and should use this information to experiment with new messaging and market channels.

Table 43. PerformanceSavers: Summary CSR Responses

CSR Requirement Description	Summary Response
1. What are the primary market imperfections common to the target market segment?	The primary market imperfection common to the target market is inadequate information and/or knowledge regarding the benefits of increasing energy efficiency within existing homes.
2. Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?	Yes, the current market segment is appropriately designed. The program may realize higher audit rates through segmentation and targeted marketing of the current target market.
3. Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?	Yes, the mix of end-use measures offered through the program is appropriate. However, the program sets specific restrictions (e.g., electric water heater customers not eligible for hot water measures) that should be reviewed for appropriateness.
4. Are the communication channels and delivery mechanisms appropriate for the target market segment?	Yes, current communication and delivery channels are appropriate.
5. What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?	Additional customer education and awareness are needed regarding the benefits—both financial and non-financial—of increasing the efficiency of their homes.

Table 44. RebateSavers: Summary CSR Responses

CSR Requirement Description	Summary Response
1. What are the primary market imperfections common to the target market segment?	The primary market imperfections common to the target market are lack of energy-efficiency awareness and the higher upfront costs of energy-efficient products
2. Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?	The target market of all residential customers is appropriate for the mail-in rebate programs. Efficiency Kits are limited to those with electric water heating; this is appropriate for this program.
3. Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?	Between the mail-in rebates and free kit measures, the program rebates provide at no cost a total of nine energy-efficient home technologies. This is a highly diverse program. Depending on the potential for energy savings, the program may be expanded to cover air purifiers, water coolers, and pool pumps.
4. Are the communication channels and delivery mechanisms appropriate for the target market segment?	The delivery channels are appropriate but can be improved to overcome market barriers. For example, survey results show that many customers already know the type of product they want to purchase before entering a retail store. The online survey showed that listing rebates on the website allowed the program to reach more customers than otherwise would have contacted solely through store advertising.
5. What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?	Provide more marketing to alert customers about available rebates before they go to stores; provide more education on certain measures, such as smart strips.