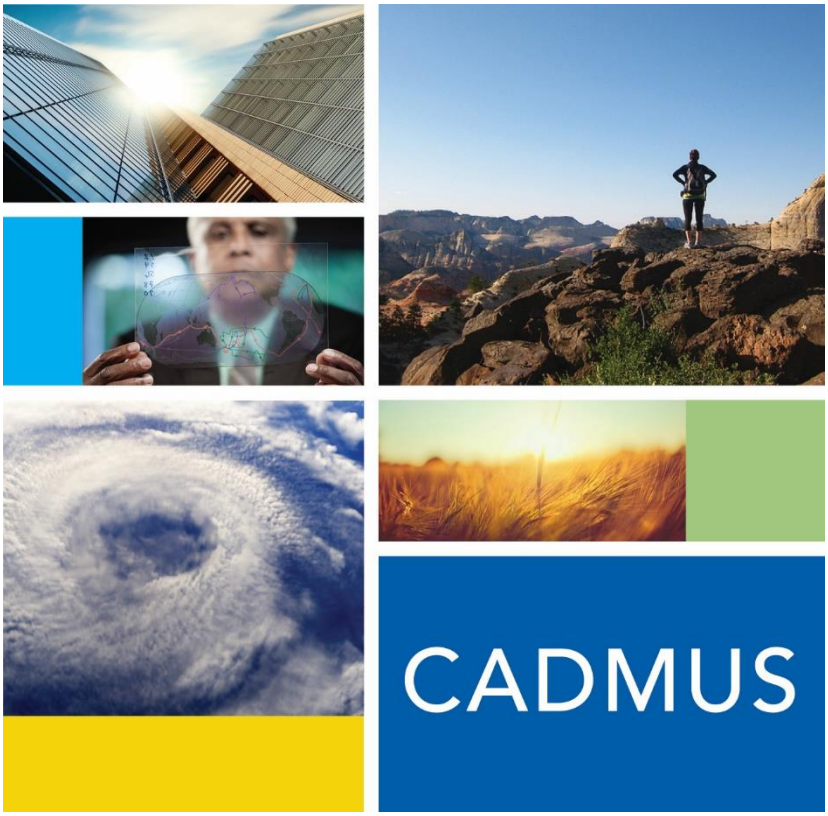

Ameren Missouri Residential Portfolio Evaluation Summary Program Year 2016

July 13, 2017

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CADMUS

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CADMUS

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CADMUS

Introduction

Ameren Missouri engaged Cadmus to perform annual process and impact evaluations of the following residential energy efficiency programs for a three-year period, from 2016 through 2018:

- Heating and Cooling
- Lighting
- Efficient Products (including an evaluation of smart thermostats)
- Energy Efficiency Kits
- Home Energy Reports

This annual summary report presents key energy savings, demand reduction, and cost-effectiveness results for Program Year 2016 (PY16), the period from March 1, 2016, through February 28, 2017. While Cadmus evaluated smart thermostats as a part of the Efficient Products program, this summary report presents findings specific to smart thermostats independently throughout the document.

Separate, program-specific PY16 evaluation reports offer significantly more detail regarding impact methodologies used and results as well as key process evaluation findings, conclusions, and recommendations.

Energy Savings

Table 1 summarizes *ex ante* gross, *ex post* gross, and *ex post* net energy savings (MWh/year) for each program and for the overall residential portfolio in PY16. The table also compares Cadmus' *ex post* net energy savings to the program-specific and residential portfolio net energy savings targets, approved by Missouri Public Service Commission (MPSC).

As the table shows, the residential portfolio achieved 420% of its energy savings target for PY16 when ex ante values for HER is included.

Table 1. Summary of PY16 Residential Programs' Energy Savings (MWh/Year)

Program	MPSC-Approved Target	*Planning* Gross Savings Utility Reported[1]	*Ex Post* Gross Savings Determined by EM&V[2]	*Ex Post* Net Savings Determined by EM&V[3]	Percent of Goal Achieved[4]
Efficient Products	4,760	2,883	2,940	2,195	46%
Smart Thermostats	2,087	3,788	3,732	3,201	153%
Energy Efficiency Kits	6,194	4,773	5,478	4,217	68%
Home Energy Reports	33,750	33,750	33,750[5]	33,750[5]	100%
Heating and Cooling	31,399	49,539	44,661	58,443	186%
Lighting	24,923	27,810	38,439	25,562	103%
Portfolio w/HER	103,113	122,543	432,755	432,755	420%
Portfolio w/o HER	69,363	88,794	95,250	93,618	135%

[1] Documented by the Vision database.

[2] MWh calculated by applying verified program activity to the Cadmus' evaluated savings values.

[3] Calculated by multiplying Cadmus' evaluated gross savings and evaluated net-to-gross (NTG) ratio, and adding program-level nonparticipant spillover to each program.

[4] Compares MPSC-approved target and *ex post* net savings, determined by evaluation, measurement, and verification (EM&V).

[5] *Ex ante* value.

Demand Reduction

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

Energy savings and demand reductions do not perfectly correlate (as the measure mix for some programs generates more peak savings). The portfolio exceeded its demand reduction target for PY16: 130% when HER is included and 151% when HER is not included.

Table 2. Summary of PY16 Residential Program Demand Reductions (kW)

Program	MPSC-Approved Target	*Planning* Gross Savings (Prior to Evaluation)[1]	*Ex Post* Gross Savings Determined by EM&V[2]	*Ex Post* Net Savings Determined by EM&V[3]	Percent of Goal Achieved[4]
Efficient Products	1,399	655	748	537	38%
Smart Thermostats	1,981	3,589	3,535	2,964	150%
Energy Efficiency Kits	1,017	1,201	995	811	80%
Home Energy Reports	15,720	15,720	15,720[5]	15,720[5]	100%
Heating and Cooling	20,032	32,578	30,332	34,088	170%
Lighting	3,711	4,151	5,782	4,115	111%
Portfolio w/HER	43,860	57,894	57,112	57,112	130%
Portfolio w/o HER	28,140	42,174	41,392	42,515	151%

[1] Documented by the Vision database

[2] Demand reductions (kW) calculated by applying coincident factors Ameren Missouri 2016-2018 Energy Efficiency Plan. MPSC file number EO-2015-0055 Appendix E to evaluated energy savings.

[3] Calculated by multiplying Cadmus' evaluated gross savings and evaluated NTG ratio.

[4] Compares MPSC approved target and *ex post* net savings, determined by EM&V.

Cost Effectiveness

Using final PY16 program participation and implementation data as well as *ex post* gross and net savings estimates presented in this report. Ameren Missouri determined the PY16 programs' and the residential portfolio's cost-effectiveness using DSMore (a financial analysis tool designed to evaluate costs, benefits, and risks from demand-side management [DSM] programs and services). As shown in the Cost-Effectiveness Details section, Ameren Missouri assessed cost-effectiveness using all five of DSMore's standard perspectives:

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

All cost-effectiveness results shown include the program's share of portfolio-level or indirect costs, determined using the present value of each program's UCT lifetime benefits (i.e., the present value 2016 dollars of avoided generation costs as well as deferral of capacity costs for capital, transmission, and distribution). The Cost-Effectiveness Details section provides further details.

Collectively, the five residential programs resulted in UCT and TRC cost-effective ratios of 6.26 and 4.00, respectively, at a portfolio level (shown in Table 3). In total, the residential portfolio generated just over $99.1 million dollars in annual net shared benefits, as shown in Table 4.[1]

Table 3. Summary of PY16 Residential Program Cost-Effectiveness

Program	UCT	TRC	RIM	SCT	PART*
Efficient Products	1.41	1.00	0.44	1.36	3.66
Smart Thermostats	3.42	1.99	0.80	2.56	2.92
Energy Efficiency Kits	3.57	5.73	0.52	11.14	N/A
Home Energy Reports	2.68	2.68	0.48	2.68	N/A
Heating and Cooling	7.47	4.01	0.86	5.56	5.74
Lighting	5.91	5.91	0.49	8.83	N/A
Portfolio	6.26	4.00	0.72	5.66	9.18

* Home Energy Reports have no participant costs. Lighting program's lifetime participant costs are lower, even though upfront costs are higher.

Table 4 details program benefits and costs used to determine annual net shared benefits for the UCT, in 2016 dollars. Annual net shared benefits are net of costs borne by the utility, but not costs borne by other parties. For example, the report includes the incentive cost, which the utility accrued. It does not include remaining incremental measure costs if the incentive did not fully cover them (hence the participant paid the costs).

Table 4. Summary of PY16 Annual Net Shared Benefits (2016 Dollars)

Program	UTC Net Lifetime Benefits[1]	Program Costs[2]	Annual Net Shared Benefits[3]
Efficient Products	$1,314,304	$930,908	$383,397
Smart Thermostats	$3,957,191	$1,155,502	$2,801,689
Energy Efficiency Kits	$3,114,245	$873,538	$2,240,707
Home Energy Reports	$1,622,880	$606,171	$1,016,708
Heating and Cooling	$84,766,821	$11,341,947	$73,424,874
Lighting	$23,104,689	$3,909,723	$19,194,966
Portfolio[4]	$117,880,131	$18,817,790	$99,062,340

[1] UTC Net Lifetime Benefits equal the value (in 2016 dollars) of utility-avoided costs over the measure's lifetime, based on evaluated net savings applied at the measure level.

[2] Program costs at the portfolio level include costs in addition to the program-level costs.

[3] Annual net shared benefits, as defined in 4 CSR 240-20.094(1)(C), when using avoided costs or avoided utility costs defined in 4 CSR 240-20.094(1)(D), are the same as UCT Net Lifetime Benefits Minus Costs.

[4] May not sum exactly due to rounding.

[1] Annual net shared benefits, as defined in 4 CSR 240-20.093(1), are the utility's avoided costs, measured and documented through 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 manuals) on an annual basis. Annual net shared benefits equal lifetime benefits (based on evaluated net savings), less program costs.

By program, Table 5 details costs and benefits pertaining to TRC test results, which include all costs paid by either the utility or the participant. For example, this would include both incentive costs and incremental measure costs. Though TRC costs are higher than UCT costs (as they include more costs), benefits stay the same.

Table 5. Summary of TRC Benefits and Costs (2016 Dollars)

Program	TRC Net Lifetime Benefits	Costs[1]	TRC Net Lifetime Benefits Less Costs[3]
Efficient Products	$1,314,304	$1,319,358	($5,054)
Smart Thermostats	$3,957,191	$1,511,686	$2,445,505
Energy Efficiency Kits	$3,114,245	$0	$3,114,245
Home Energy Reports	$1,622,880	$606,171	$1,016,708
Heating and Cooling	$84,766,821	$21,126,994	$63,639,827
Lighting	$23,104,689	$3,909,723	$19,194,965
Portfolio[2]	$117,880,131	$29,497,816	$88,382,315

[1] The portion of portfolio costs distributed across programs are included in this table's program (see Table 7 summarizes PY16 electric spending by program and by other portfolio-related activities. Table 7 for details).

[2] May not sum exactly due to rounding.

The UCT and TRC receive the most analysis in this report as they are the most common cost-effectiveness tests used. Cadmus, however, also reports on the RIM, SCT, and PCT. Table 6 shows costs included in each test reviewed in this report.

Table 6. Costs Associated with Each Cost-Effectiveness Test

Test	Costs Included
UCT	All costs paid by the utility directly.
TRC	All costs paid by the utility or the participant.
RIM	All costs paid by the utility or the participant, and the revenue loss associated with reduced sales.
SCT	All costs paid by the utility or the participant.
PCT	All costs paid by the participant.

Cost-Effectiveness Details

Methodology

As discussed, Ameren Missouri assessed cost-effectiveness using five tests, as defined by the California Standard Practice Manual:[2]

- TRC
- UCT
- RIM
- SCT
- PART

DSMore takes hourly prices and hourly energy savings from specific measures installed through the Residential Portfolio, and correlates prices and savings to 33 years of historic weather data. Using long-term weather ensures that the model captures low-probability, high-consequence weather events, and appropriately values these. As a result, the model produces an accurate evaluation of the demand-side efficiency measure relative to other alternative supply options.

Ameren Missouri used evaluated results for model inputs (e.g., PY16 program-specific participation counts, per-unit gross savings, NTG, and NPSO).

Measure load shapes particularly drove model assumptions, as indicated when the model applied savings during the day. This ensured that load shapes for an end use matched system peak impacts of that end use, providing the correct summer coincident savings. Ameren Missouri used measure lifetime assumptions and incremental costs based on the program database, the Ameren Missouri TRM, or the original Batch Tool.

A key step in the analysis process required PY16 Ameren Missouri program-spending data: actual spending, broken down into contractor administration, incentives, and marketing costs. Ameren Missouri applied contractor administration, marketing, and other costs —including R&D, EM&V, Educational Outreach, Portfolio Administration, Potential Study, and Data Tracking— at the program level, while incentives were applied at the measure level.

Table 7 summarizes PY16 electric spending by program and by other portfolio-related activities.

[2] *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects*. October 2001.

Table 7. Ameren Missouri PY16 Spending Data

2016 Residential Program Costs	Non-Incentive Costs	Incentive Costs	Total Costs
Efficient Products	$479,514	$435,870	$915,384
Smart Thermostats	$288,761	$820,000	$1,108,761
Energy Efficiency Kits	$253,634	$583,119	$836,753
Home Energy Reports	$587,002	$0	$587,002
Heating and Cooling	$3,822,678	$6,518,025	$10,340,703
Lighting	$1,395,823	$2,240,993	$3,636,817
Total Residential Programs[1]	$6,827,412	$10,598,007	$17,425,420
2016 Other Portfolio Costs			
General	$443,211	$0	$443,211
Marketing	$201,751	$0	$201,751
EM&V	$766,970	$0	$766,970
Total Other[1]	$1,411,932	$0	$1,411,932
Total Portfolio Costs[1]	$8,239,344	$10,598,007	$18,837,352

[1] May not sum exactly due to rounding.

Table 8 summarizes benefit and cost inputs for each cost-effectiveness test.

Table 8. Summary of Benefits and Costs Included in Each Cost-Effectiveness Test

Test	Benefits	Costs
UCT	**Perspective of utility, government agency, or third-party program implementer**	
	• 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 nonparticipants) 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 customer or utility)[1]
RIM	**Impact of efficiency measure on nonparticipating 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
SCT	**Perspective of all utility customers (participants and nonparticipants) in the utility service territory (uses a societal discount rate)**	
	• Energy-related avoided costs	• Program overhead costs • Program installation costs

Test	Benefits	Costs
	• Capacity-related avoided costs, including generation, transmission, and distribution • Additional resource savings • Applicable tax credits • Non-energy benefits	• Incremental measure costs (whether paid by customer or utility)[1]
PCT	**Perspective of the customers installing the measures**	
	• Bill savings • Incremental installation costs • Applicable tax credits or incentives	• Incentive payments • Incremental equipment costs

[1] Incentives are considered in the incremental measure costs

As the report presents the majority of costs and savings on a net basis, the NTG ratio was applied to account for free ridership, spillover, and market effect impacts. The report, however, presents participant-borne costs, as applied to the PCT, on a gross basis.

Residential Portfolio

Table 9 through Table 13 show total benefits and costs for the residential portfolio, along with benefit/cost ratios for each cost-effectiveness test. As shown, applying the residential portfolio to the UCT, TRC, PART, and SCT tests resulted in generation of more than $117 million in UCT gross lifetime benefits and $109 million in UCT net lifetime benefits.

Table 9. Utility Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$56,709,875	
Avoided Electric Capacity	$48,987,528	
Avoided T&D Electric	$12,182,727	
Incentives		$8,265,592
Program Overhead Costs		$10,552,198
Total	$117,880,131	$18,817,790
UCT Benefit/Cost Ratio	6.26	

Table 10. Total Resource Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$56,709,875	
Avoided Electric Capacity	$48,987,528	
Avoided T&D Electric	$12,182,727	
Participant Costs (Net)		$17,705,290
Program Overhead Costs		$11,792,526
Total	$117,880,131	$29,497,816
TRC Benefit/Cost Ratio	4.00	

Table 11. Ratepayer Impact Measure Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$56,709,875	
Avoided Electric Capacity	$48,987,528	
Avoided T&D Electric	$12,182,727	
Program Overhead Costs		$10,552,198
Incentives		$8,265,592
Lost Revenue		$144,155,067
Total	$117,880,131	$162,972,858
RIM Benefit/Cost Ratio	0.72	

Table 12. Societal Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$77,717,769	
Avoided Electric Capacity	$66,628,035	
Avoided T&D Electric	$15,476,778	
Program Overhead Costs		$10,552,198
Participant Costs (Net)		$17,705,290
Total	$159,822,582	$28,257,489
SCT Benefit/Cost Ratio	5.66	

Table 13. Participant Cost Test Inputs and Results

	Benefits	Costs
Participant Bill Savings (Electric, Gross)	$179,386,617	
Incentives	$8,265,592	
Participant Costs (Gross)		$20,430,888
Total	$187,652,209	$20,430,888
PCT Benefit/Cost Ratio	9.18	

Efficient Products

Table 14 through Table 18 show total benefits and costs for the Efficient Products program (excluding smart thermostats), along with the benefit/cost ratio for each cost-effectiveness test. Smart thermostats are shown separately in the following section.

Table 14. Utility Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$822,282	
Avoided Electric Capacity	$385,236	
Avoided T&D Electric	$106,786	
Incentives		$425,230
Program Overhead Costs		$505,678
Total	$1,314,304	$930,908
UCT Benefit/Cost Ratio	**1.41**	

Table 15. Total Resource Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$822,282	
Avoided Electric Capacity	$385,236	
Avoided T&D Electric	$106,786	
Participant Costs (Net)		$675,682
Program Overhead Costs		$643,677
Total	$1,314,304	$1,319,358
TRC Benefit/Cost Ratio	**1.00**	

Table 16. Ratepayer Impact Measure Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$822,282	
Avoided Electric Capacity	$385,236	
Avoided T&D Electric	$106,786	
Program Overhead Costs		$505,678
Incentives		$425,230
Lost Revenue		$2,088,157
Total	$1,314,304	$3,019,065
RIM Benefit/Cost Ratio	**0.44**	

Table 17. Societal Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$1,002,765	
Avoided Electric Capacity	$481,433	
Avoided T&D Electric	$125,779	
Program Overhead Costs		$505,678
Participant Cost (net)		$675,682
Total	$1,609,978	$1,181,360
SCT Benefit/Cost Ratio	**1.36**	

Table 18. Participant Cost Test Inputs and Results

	Benefits	Costs
Participant Bill Savings (Electric, Gross)	$2,880,606	
Participant Bill Savings (Natural Gas, Gross)		
Incentives	$425,230	
Participant Costs (Gross)		$902,623
Total	$3,305,836	$902,623
PCT Benefit/Cost Ratio	**3.66**	

Smart Thermostats

Table 19 through Table 23 show total benefits and costs for smart thermostats provided through the Efficient Products program, along with the benefit/cost ratio for each cost-effectiveness test.

Table 19. Utility Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$1,221,529	
Avoided Electric Capacity	$2,129,350	
Avoided T&D Electric	$606,313	
Incentives		$820,000
Program Overhead Costs		$335,502
Total	$3,957,191	$1,155,502
UCT Benefit/Cost Ratio	**3.42**	

Table 20. Total Resource Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$1,221,529	
Avoided Electric Capacity	$2,129,350	
Avoided T&D Electric	$606,313	
Participant Costs (Net)		$1,511,686
Program Overhead Costs		$480,642
Total	$3,957,191	$1,992,329
TRC Benefit/Cost Ratio	**1.99**	

Table 21. Ratepayer Impact Measure Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$1,221,529	
Avoided Electric Capacity	$2,129,350	
Avoided T&D Electric	$606,313	
Program Overhead Costs		$335,502
Incentives		$820,000
Lost Revenue		$3,770,545
Total	$3,957,191	$4,926,047
RIM Benefit/Cost Ratio	**0.80**	

Table 22. Societal Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$1,434,317	
Avoided Electric Capacity	$2,591,000	
Avoided T&D Electric	$699,598	
Program Overhead Costs		$335,502
Participant Cost (Net)		$1,511,686
Total	$4,724,915	$1,847,189
SCT Benefit/Cost Ratio	**2.56**	

Table 23. Participant Cost Test Inputs and Results

	Benefits	Costs
Participant Bill Savings (Electric, Gross)	$4,548,558	
Participant Bill Savings (Natural Gas, Gross)		
Incentives	$820,000	
Participant Costs (Gross)		$1,836,800
Total	$5,368,558	$1,836,800
PTC Benefit/Cost Ratio	**2.92**	

Energy Efficiency Kits

Table 24 through Table 28 show total benefits and costs for the Energy Efficiency Kits program, along with the benefit/cost ratio for each cost-effectiveness test.

Table 24. Utility Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$2,068,154	
Avoided Electric Capacity	$837,238	
Avoided T&D Electric	$208,854	
Incentives		$502,336
Program Overhead Costs		$371,202
Total	$3,114,245	$873,538
UCT Benefit/Cost Ratio	**3.57**	

Table 25. Total Resource Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$2,068,154	
Avoided Electric Capacity	$837,238	
Avoided T&D Electric	$208,854	
Participant Costs (Net)		
Program Overhead Costs		$543,240
Total	$3,114,245	$543,240
TRC Benefit/Cost Ratio	**5.73**	

Table 26. Ratepayer Impact Measure Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$2,068,154	
Avoided Electric Capacity	$837,238	
Avoided T&D Electric	$208,854	
Program Overhead Costs		$371,202
Incentives		$502,336
Lost Revenue		$5,067,699
Total	$3,114,245	$5,941,237
RIM Benefit/Cost Ratio	**0.52**	

Table 27. Societal Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$2,766,712	
Avoided Electric Capacity	$1,107,299	
Avoided T&D Electric	$259,865	
Program Overhead Costs		$371,202
Participant Cost (Net)		
Total	$4,133,875	$371,202
SCT Benefit/Cost Ratio	**11.14**	

Table 28. Participant Cost Test Inputs and Results

	Benefits	Costs
Participant Bill Savings (Electric, Gross)	$6,976,180	
Participant Bill Savings (Natural Gas, Gross)	$0	
Incentives	$502,336	
Participant Costs (Gross)		
Total	$7,478,516	
PCT Benefit/Cost Ratio	**N/A**	

Home Energy Report

Table 29 through Table 33 show total benefits and costs for the Home Energy Report program, along with the benefit/cost ratio for each cost-effectiveness test. For purposes of cost effectiveness, Ameren Missouri used ex ante savings as an input, since annual evaluated savings were not available.

Table 29. Utility Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$1,065,047	
Avoided Electric Capacity	$188,547	
Avoided T&D Electric	$369,285	
Incentives		
Program Overhead Costs		$606,171
Total	$1,622,880	$606,171
UCT Benefit/Cost Ratio	**2.68**	

Table 30. Total Resource Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	Benefits	Costs
Avoided Electric Capacity	$1,065,047	
Avoided T&D Electric	$188,547	
Participant Costs (Net)	$369,285	
Program Overhead Costs		
Total		$606,171
TRC Benefit/Cost Ratio	**2.68**	

Table 31. Ratepayer Impact Measure Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$1,065,047	
Avoided Electric Capacity	$188,547	
Avoided T&D Electric	$369,285	
Program Overhead Costs		$606,171
Incentives		
Lost Revenue		$2,781,532
Total	$1,622,880	$3,387,703
RIM Benefit/Cost Ratio	**0.48**	

Table 32. Societal Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$1,065,047	
Avoided Electric Capacity	$188,547	
Avoided T&D Electric	$369,285	
Program Overhead Costs		$606,171
Participant Cost (Net)		
Total	$1,622,880	$606,171
SCT Benefit/Cost Ratio	**2.68**	

Table 33. Participant Cost Test Inputs and Results

	Benefits	Costs
Participant Bill Savings (Electric, Gross)	$2,781,532	
Incentives		
Participant Costs (Gross)		
Total	$2,781,532	
PCT Benefit/Cost Ratio	**N/A**	

Heating and Cooling

Table 34 through Table 38 show total benefits and costs for the Heating and Cooling program, along with the benefit/cost ratio for each cost-effectiveness test.

Table 34. Utility Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$32,935,083	
Avoided Electric Capacity	$41,778,055	
Avoided T&D Electric	$10,053,683	
Incentives		$6,518,025
Program Overhead Costs		$4,823,922
Total	$84,766,821	$11,341,947
UCT Benefit/Cost Ratio	**7.47**	

Table 35. Total Resource Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$32,935,083	
Avoided Electric Capacity	$41,778,055	
Avoided T&D Electric	$10,053,683	
Participant Costs (Net)		$15,517,922
Program Overhead Costs		$5,609,073
Total	$84,766,821	$21,126,994
TRC Benefit/Cost Ratio	**4.01**	

Table 36. Ratepayer Impact Measure Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$32,935,083	
Avoided Electric Capacity	$41,778,055	
Avoided T&D Electric	$10,053,683	
Program Overhead Costs		$4,823,922
Incentives		$6,518,025
Lost Revenue		$87,332,149
Total	$84,766,821	$98,674,097
RIM Benefit/Cost Ratio	**0.86**	

Table 37. Societal Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$43,532,044	
Avoided Electric Capacity	$56,803,302	
Avoided T&D Electric	$12,857,119	
Program Overhead Costs		$4,823,922
Participant Cost (Net)		$15,517,922
Total	$113,192,465	$20,341,844
SCT Benefit/Cost Ratio	**5.56**	

Table 38. Participant Cost Test Inputs and Results

	Benefits	Costs
Participant Bill Savings (Electric, Gross)	$95,075,562	
Incentives	$6,518,025	
Participant Costs (Gross)		$17,691,464
Total	$101,593,587	$17,691,464
PCT Benefit/Cost Ratio	**5.74**	

Lighting

Table 39 through Table 43 show total benefits and costs for the Lighting program, along with the benefit/cost ratio for each cost-effectiveness test.

Table 39. Utility Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$18,597,781	
Avoided Electric Capacity	$3,669,102	
Avoided T&D Electric	$837,805	
Incentives		$1
Program Overhead Costs		$3,909,722
Total	$23,104,689	$3,909,723
UCT Benefit/Cost Ratio	**5.91**	

Table 40. Total Resource Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$18,597,781	
Avoided Electric Capacity	$3,669,102	
Avoided T&D Electric	$837,805	
Participant Costs (Net)		$1
Program Overhead Costs		$3,909,723
Total	$23,104,689	$3,909,723
TRC Benefit/Cost Ratio	**5.91**	

Table 41. Ratepayer Impact Measure Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$18,597,781	
Avoided Electric Capacity	$3,669,102	
Avoided T&D Electric	$837,805	
Program Overhead Costs		$3,909,722
Incentives		$1
Lost Revenue		$43,114,985
Total	$23,104,689	$47,024,709
RIM Benefit/Cost Ratio	**0.49**	

Table 42. Societal Cost Test Inputs and Results

	Benefits	Costs
Avoided Electric Production	$27,916,883	
Avoided Electric Capacity	$5,456,454	
Avoided T&D Electric	$1,165,131	
Program Overhead Costs		$3,909,722
Participant Cost (net)		$1
Total	$34,538,469	$3,909,723
SCT Benefit/Cost Ratio	**8.83**	

Table 43. Participant Cost Test Inputs and Results

	Benefits	Costs
Participant Bill Savings (Electric, Gross)	$67,124,180	
Incentives	$1	
Participant Costs (Gross)		$1
Total	$67,124,181	$1
PCT Benefit/Cost Ratio	**N/A**	