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March 1, 2017

Arizona Corporation Commission
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Docket Control
Arizona Corporation Commission
1200 W. Washington Street
Phoenix, AZ 85007

RE: Arizona Public Service Company's 2016 Demand Side Management (DSM) Progress Report; Docket No. E-00000U-17-0057.

Pursuant to the Electric Energy Efficiency Standard Rules (EERS) and A.A.C. R14-2-2409(A):

> By March 1 of each year, an affected utility shall submit . . . a DSM progress report providing information on each of the affected utility's Commission-approved DSM programs. . .

In addition, Decisions No. 73089, 74006, 74703, and 74813 require the DSM Progress Reports to include supplemental information. As a result, APS submits its 2016 DSM Annual Progress Report incompliance with EERS and the above-referenced decisions.

If you have any questions regarding this information, please contact Kerri A. Carnes at (602) 250-3341.

Sincerely,

Kerri A. Carnes

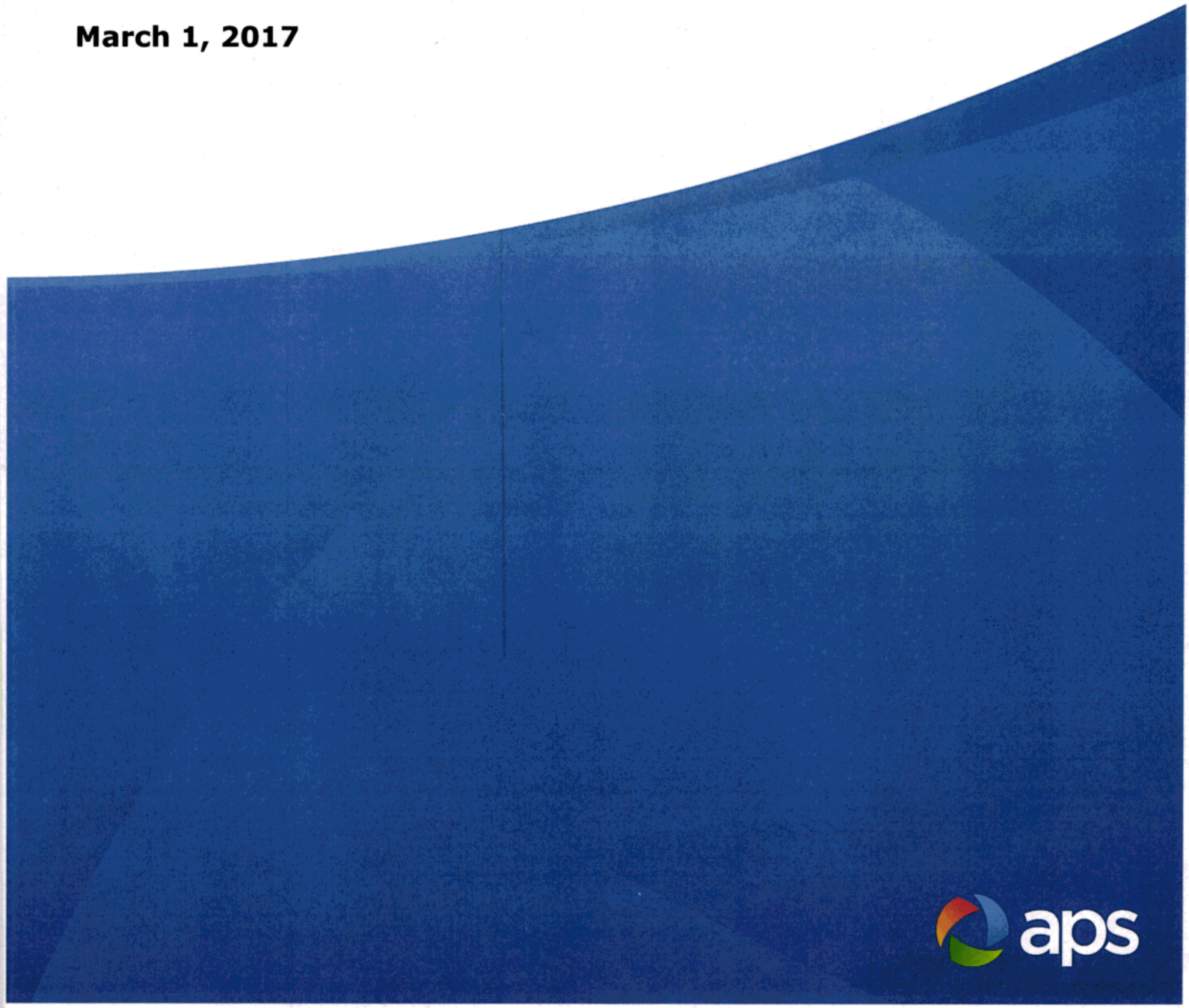
KC/ks

cc: Elijah Abinah
Barbara Keene
Candrea Allen
Terri Ford

ARIZONA PUBLIC SERVICE COMPANY

2016 DEMAND SIDE MANAGEMENT ANNUAL PROGRESS REPORT

March 1, 2017



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I. Introduction

Arizona Public Service Company ("APS" or "Company") is filing this Demand Side Management Annual Progress Report ("Progress Report") for 2016 ("Reporting Period") in compliance with R14-2-2409(A) and the reporting requirements contained in Arizona Corporation Commission ("ACC" or "Commission") Decision Nos. 73089, 74406, 74703, and 74813. This report includes the following information for all APS Demand Side Management ("DSM") programs that were in place during the Reporting Period:

- APS's progress toward meeting the cumulative energy efficiency standard;
- An identification of Commission approved DSM Programs and measures by customer segment;
- A description of the findings from any research projects completed;
- A brief description of the program;
- Program goals, objectives, and savings targets;
- Level of customer participation;
- Costs incurred disaggregated by type of cost, such as administrative costs, rebates, and monitoring costs;
- A description of the results of evaluation and monitoring activities;
- kW and kWh savings;
- Environmental benefits including reduced emissions and water savings;
- Incremental benefits and net benefits in dollars;
- Performance Incentive calculations;
- Problems encountered and proposed solutions;
- A description of modifications proposed for the following year;
- If applicable, program or program measure termination and proposed date of termination;
- Where applicable, reporting requirements included in Commission Decision No. 73089, 74406, 74703, and 74813. Due to the length of Decision No. 74703 reporting requirements, this information has been included in separate work papers; and
- Other significant information.

II. 2016 DSM Program Results

A. Compliance with Energy Efficiency ("EE") Requirements

In Decision No. 75679, the Commission established a cumulative annual EE savings requirement for calendar year 2016 of 11.66% of the utility's 2015 retail kilowatt-hour ('kWh') sales. The 11.66% was slightly lower than the Energy Efficiency Standard prescribed cumulative level of savings of 12.0% due to the evening out of the annual EE savings requirement from 2016 through 2020 as approved by the Commission in Decision No. 75679. A summary of APS's 2016 compliance with the Energy Efficiency Standard is shown in Table 1. In 2016, the Company achieved 101.9% of the Commission's approved annual DSM goal as established in Decision No. 75679. APS exceeded the cumulative megawatt hour ("MWh") savings goal for 2016, achieving cumulative savings of 11.82%

against a goal of 11.66%, while spending $237,680 less than the overall budget approved for 2016 of $70.9 million (Original budget of $68.9 million plus $2 million in funding for the Schools Pilot Program).

Table 1

2016 DSM Savings Goal & Achievement

Goal Calculation	
2015 Retail Sales[1]	27,398,270
2016 Cumulative EE Standard (EES)	12.00%
2016 Goal (MWh)	3,287,792
Less Cumulative Savings from 2011 through 2015[2]	2,579,648
2016 DSM Savings Goal from EES	**708,144**
Less Credit for Pre-EES Savings in 2016	84,993
Original DSM Savings Goal Less Pre-EES Credit	623,151
Revised 2016 DSM Savings Goal based on 5-Year average of Remaining Required Savings from 2016 to 2020[3] (consistent with approved 2016 DSM Implementation Plan)	**562,129**
Results in MWh	
Contribution From Demand Response (10% of Goal)	56,213
Contribution From EE Programs & EE Initiatives	516,555
Total 2016 MWh Achieved	**572,768**
Over or (Under) 2016 Goal	10,639
% of 2016 Savings Goal Achieved	**101.9%**
Results as a % of 2015 Retail Sales	
2011 through 2015 Cumulative Savings %[3]	**9.42%**
2016 Annual Savings % of 2015 Retail Sales	**2.09%**
2016 Credit for Pre-EES Savings	**0.31%**
2016 Cumulative Savings %[4]	**11.82%**
3rd Party MER Verified Savings for 2016	**573,225**
Difference: 2016 MER Verified to 2016 APR	457

Note:

[1]Includes billed and unbilled sales, does not include line losses, excludes Freeport McMoran Mine

[2]Cumulative savings through 2015 are MER Verified MWh savings.

[3]Does not include Pre-EES Credit

[4]Includes Pre-EES Credit

III. Program Results and Program Incentive Calculations

Program expenses are provided in Tables 2a through 3b and DSM program megawatt ("MW") and megawatt-hour ("MWh") savings are provided in Tables 4 and 5. Tables 6 and 7 provide net benefits and Table 8 shows the performance incentive calculation for 2016. Table 9 provides the environmental benefits associated with the lifetime energy savings resulting from DSM programs. Table 10 shows 2016 demand response ("DR") load reduction and savings values.

B. Year-To-Date DSM Program Expenses

Table 2a

Demand Response Program Expenses 2016

Program	Rebates & Incentives	Measurement Evaluation and Research ("MER")	Metering	Program Implementation[1]	Program Marketing	Planning & Administration	Total Program Costs
Marketing & MER of Rate Options	$0	$0	$0	$0	$447	$0	$447
Peak Solutions	$0	$0	$0	$1,611,168	$0	$233,824	$1,844,992
Total	**$0**	**$0**	**$0**	**$1,611,168**	**$447**	**$233,824**	**$1,845,439**

Notes:

[1]Includes the cost for the Implementation Contractor.

Table 2b

Energy Efficiency Program Expenses 2016

Program	Rebates & Incentives	Training & Technical Assistance	Consumer Education	Program Implementation[1]	Program Marketing	Planning & Administration	Total Program Costs
Residential Programs							
Consumer Products	$4,046,298	$0	$0	$3,491,806	$320,419	$536,145	$8,394,668
Existing Homes HVAC	$5,872,631	$93,628	$135,531	$2,085,703	$147,330	$374,731	$8,709,554
Existing Homes - Home Performance	$1,154,890	$3,309	$26,303	$644,062	$68,112	$166,947	$2,063,623
New Construction	$4,422,450	$1,195	$0	$330,538	$68,541	$284,518	$5,107,242
Appliance Recycling[2]	-$75,295	$0	$0	-$38,065	$3,594	$31,550	-$78,216
Conservation Behavior	$0	$0	$0	$1,533,470	$0	$100,241	$1,633,711
Multi-Family	$1,095,574	$5,500	$0	$960,441	$23,779	$110,295	$2,195,589
Prepaid Energy Conservation[3]	$0	$0	$0	$24,248	$0	$45,195	$69,443
Limited Income	$2,381,829	$7,000	$1,551	$50,089	$18,574	$61,988	$2,521,031
Total	**$18,898,377**	**$110,632**	**$163,385**	**$9,082,292**	**$650,349**	**$1,711,610**	**$30,616,645**
Non-Residential Programs							
Large Existing Facilities	$14,706,183	$198,172	$28,684	$3,738,434	$1,037,741	$520,396	$20,229,610
New Construction	$2,940,662	$51,236	$6,280	$654,204	$5,370	$45,968	$3,703,720
Small Business	$1,515,748	$54,482	$4,414	$461,098	$92,165	$40,718	$2,168,625
Energy Information Services	$7,668	$5,000	$0	$96,378	$925	$0	$109,971
Schools[4]	$3,802,046	$45,705	$2,076	$1,809,332	$6,057	$79,808	$5,745,024
Total	**$22,972,307**	**$354,595**	**$41,454**	**$6,759,446**	**$1,142,258**	**$686,890**	**$31,956,950**
Codes & Standards	$0	$0	$0	$43,040	$0	$19,342	$62,382
Total EE Program Costs	**$41,870,684**	**$465,227**	**$204,839**	**$15,884,778**	**$1,792,607**	**$2,417,842**	**$62,635,977**
						Measurement, Evaluation & Research	$1,924,665
						Performance Incentive[5]	$4,223,188
						Total EE Program Expense	$68,783,830
						Total DSM Expense	**$70,629,269**

Notes:

[1]Includes the cost for the Implementation Contractor.

[2]Due to accruals made in 2015 associated with the termination of the program, there were negative program costs in this Reporting Period.

[3]The HEI Pilot incurred carrying cost of $251,215.67 in 2016.

[4]Schools are permitted to receive funding from other Non-Residential programs. Refer to the Schools Program section for additional information regarding total funds allocated to school districts.

[5]Details of the Performance Incentive calculation are provided in Table 8.

Table 2c

2016 Energy Efficiency Program Implementation Costs - APS Compared to Contractor[1]

Program	APS Expense	Contractor Expense	Total Implementation Cost
Residential Programs			
Consumer Products	$63,273	$3,428,533	$3,491,806
Existing Homes HVAC	$134,697	$1,951,006	$2,085,703
Existing Homes - Home Performance	$227,414	$416,648	$644,062
New Construction	$29,096	$301,443	$330,539
Appliance Recycling	-$38,065	$0	-$38,065
Conservation Behavior	$10,186	$1,523,284	$1,533,470
Multi-Family	$86,250	$874,191	$960,441
Prepaid Energy Conservation	$20,000	$4,248	$24,248
Limited Income	$90	$50,000	$50,090
Residential Total	**$532,941**	**$8,549,353**	**$9,082,294**
Non-Residential Programs			
Large Existing Facilities	$0	$3,738,434	$3,738,434
New Construction	$0	$654,204	$654,204
Small Business	$0	$461,098	$461,098
Energy Information Services	$0	$96,378	$96,378
Schools	$0	$1,809,332	$1,809,332
Non-Residential Total	**$0**	**$6,759,446**	**$6,759,446**
Codes & Standards	$8,493	$34,547	$43,040
EE Implementation Costs	**$541,434**	**$15,343,346**	**$15,884,780**

[1]Required by Commission Decision No. 73089.

C. Program–To-Date DSM Program Expenses

Table 3a

Program-To-Date Demand Response Program Expenses: January 2010 - December 2016

Program	Rebates & Incentives	Measurement Evaluation and Research	Metering	Program Implementation[1]	Program Marketing	Planning & Administration	Total Program Costs
HEI Pilot	$596,904	$242,929	$0	$706,433	$129,123	$569,131	$2,244,520
Marketing & MER of Rate Options	$0	$0	$37,756	$147,290	$168,463	$0	$353,509
Peak Solutions	$0	$0	$51,017	$14,676,522	$0	$525,966	$15,253,505
Total	**$596,904**	**$242,929**	**$88,773**	**$15,530,245**	**$297,586**	**$1,095,097**	**$17,851,534**

Table 3b

Program-To-Date: Energy Efficiency Program Expenses: January 2005 - December 2016

Program	Rebates & Incentives	Training & Technical Assistance	Consumer Education	Program Implementation[1]	Program Marketing	Planning & Administration	Total Program Costs
Residential Programs							
Consumer Products	$41,096,520	$4,633	$53,335	$22,679,837	$4,387,161	$2,943,339	$71,164,825
Existing Homes HVAC	$41,829,175	$1,299,522	$1,925,237	$11,529,576	$2,224,636	$1,930,760	$60,738,906
Existing Homes - Home Performance	$12,373,743	$130,770	$33,998	$7,388,818	$997,638	$680,962	$21,605,929
New Construction	$24,116,385	$776,231	$130,597	$3,590,453	$3,112,266	$1,805,362	$33,531,294
Appliance Recycling	$1,445,036	$0	$0	$3,683,392	$1,147,461	$387,826	$6,663,715
Conservation Behavior	$0	$0	$0	$6,171,111	$0	$437,392	$6,608,503
Multi-Family	$3,685,553	$11,011	$101	$4,512,808	$88,170	$538,254	$8,835,897
Shade Tree	$165,813	$0	$3,837	$725,169	$19,407	$57,191	$971,417
Prepaid Energy Conservation	$0	$0	$0	$32,114	$1,744	$93,027	$126,885
Limited Income	$20,387,052	$125,015	$59,315	$879,135	$141,543	$1,196,105	$22,788,165
Total	**$145,099,277**	**$2,347,182**	**$2,206,420**	**$61,192,413**	**$12,120,026**	**$10,070,218**	**$233,035,536**
Non-Residential Programs							
Facilities	$98,643,156	$1,683,507	$336,631	$25,932,495	$5,570,466	$3,601,004	$135,767,259
New Construction	$19,801,548	$323,114	$66,306	$7,136,350	$1,284,241	$950,606	$29,562,165
Small Business	$13,232,024	$240,959	$36,400	$5,487,007	$1,043,012	$680,506	$20,719,908
Building Operator Training	$0	$56,897	$0	$22,043	$15,783	$7,480	$102,203
Energy Information Services	$214,420	$23,317	$1,753	$317,637	$13,611	$29,112	$599,850
Schools[2]	$15,322,752	$306,651	$30,998	$6,526,624	$829,121	$645,876	$23,662,022
Total	**$147,213,900**	**$2,634,445**	**$472,088**	**$45,422,156**	**$8,756,234**	**$5,914,584**	**$210,413,407**
Codes & Standards	$0	$0	$0	$402,763	$0	$103,927	$506,690
Total EE Program Costs	**$292,313,177**	**$4,981,627**	**$2,678,508**	**$107,017,332**	**$20,876,260**	**$16,088,729**	**$443,955,633**
						Measurement, Evaluation & Research	$18,558,860
						Performance Incentive[3]	$51,112,438
						Total EE Program Expense	**$513,626,931**
						Total DSM Expense	**$531,478,465**

Notes:

[1]Includes the cost for the Implementation Contractor.

[2]Schools are permitted to receive funding from other Non-Residential programs. Refer to the Schools Program section for additional information regarding total funds allocated to school districts.

[3]Details of the Performance Incentive calculation are provided in Table 8. The program-to-date performance incentive amount is a summation of the performance incentive amount as calculated during each previous reporting period beginning with the January through June 2005 Progress Report.

D. Year-To Date DSM Electric Savings

Table 4

DSM Electric Savings 2016[1, 3, 5]

Program	Gross Peak MW Capacity Savings	Gross Annual MWH Savings	Gross Lifetime MWH Savings[2]	Net Peak MW Capacity Savings[4]	Net Annual MWH Savings[4]	Net Lifetime MWH Savings[2, 4]
Residential Programs						
Consumer Products	16.3	120,447	1,201,078	16.3	120,447	1,201,078
Existing Homes HVAC	15.8	21,397	278,645	15.8	21,397	278,645
Existing Homes - Home Performance	3.4	6,042	79,237	3.4	6,042	79,237
New Construction	4.9	10,220	204,408	4.9	10,220	204,408
Appliance Recycling	-	-	-	-	-	-
Conservation Behavior	12.3	60,433	60,433	12.3	60,433	60,433
Multi-Family	1.1	9,567	147,289	1.1	9,567	147,289
Prepaid Energy Conservation	0.2	1,243	1,243	0.2	1,243	1,243
Limited Income	0.2	996	17,427	0.2	996	17,427
Total	**54.2**	**230,345**	**1,989,760**	**54.2**	**230,345**	**1,989,760**
Non-Residential Programs						
Large Existing Facilities	33.4	172,672	2,162,301	47.3	172,672	2,162,301
New Construction	4.4	33,376	505,530	5.2	33,376	505,530
Small Business	2.8	15,387	175,983	4.3	15,387	175,983
Energy Information Services	2.2	33	163	2.2	33	163
Schools	4.1	18,451	266,469	4.7	18,451	266,469
Total	**46.9**	**239,919**	**3,110,446**	**63.7**	**239,919**	**3,110,446**
Codes & Standards	10.7	41,539	437,827	10.7	41,539	437,827
System Savings	0	4,752	4,752	0	4,752	4,752
DR Contribution		56,213			56,213	
Total DSM Savings	**111.8**	**572,768**	**5,542,785**	**128.6**	**572,768**	**5,542,785**

Notes:

[1]Savings for 2008 and after are MER adjusted, per Decision No. 69663, and savings prior to 2008 are not MER adjusted.

[2]Refers to savings over the expected lifetime of all program measures.

[3]Savings are adjusted for line losses (energy 7.0%, demand 11.7%) and a capacity reserve factor of 15%.

[4]Based on 2010 MER net to gross ratio ("NTGR") analysis, APS is utilizing a NTGR of 1.0 for all DSM programs and measures.

[5]Measure level savings are too voluminous to include in this report and are provided to Commission Staff as part of Annual Progress Report workpapers.

E. Program-To-Date DSM Electric Savings

Table 5

Program-To-Date DSM Electric Savings: January 2005 - December 2016[1, 3]

Program	Gross Peak MW Capacity Savings	Gross Annual MWH Savings	Gross Lifetime MWH Savings[2]	Net Peak MW Capacity Savings[4]	Net Annual MWH Savings[4]	Net Lifetime MWH Savings[2, 4]
Residential Programs						
Consumer Products	170.2	1,469,628	9,828,538	151.8	1,323,535	8,995,129
Existing Homes HVAC	99.4	144,219	1,906,534	89.1	133,489	1,746,608
Existing Homes - Home Performance	22.6	39,307	543,062	22.4	38,902	538,605
New Construction	53.4	103,372	2,067,443	52.5	101,368	2,027,357
Appliance Recycling	10.0	66,195	397,166	9.2	60,756	364,532
Conservation Behavior	40.7	211,278	211,278	40.7	211,278	211,278
Multi-Family	5.1	45,451	499,942	5.1	45,451	499,942
Shade Tree	1.1	2,005	60,114	1.1	2,005	60,114
Prepaid Energy Conservation	0.6	3,172	3,172	0.6	3,172	3,172
Limited Income	2.4	15,572	281,555	2.4	15,572	281,555
Total	**405.5**	**2,100,199**	**15,798,804**	**374.9**	**1,935,528**	**14,728,292**
Non-Residential Programs						
Large Existing Facilities	208.5	1,331,365	17,807,954	217.1	1,285,150	17,173,998
New Construction	43.9	317,926	4,591,445	41.4	282,565	4,087,665
Small Business	30.6	146,238	1,949,569	31.4	142,092	1,892,258
Building Operator Training	0.2	1,001	12,447	0.1	701	8,713
Energy Information Services	10.8	2,925	42,367	10.8	2,925	42,367
Schools	26.9	135,238	1,918,325	26.6	129,950	1,838,196
Total	**320.9**	**1,934,693**	**26,322,107**	**327.4**	**1,843,383**	**25,043,197**
Codes & Standards	34.6	149,187	1,366,032	34.6	149,187	1,366,032
System Savings	0.1	7,865	21,074	0.1	7,865	21,074
DR Contribution		310,345			310,345	
Total DSM Savings	**761.1**	**4,502,289**	**43,508,017**	**737.0**	**4,246,308**	**41,158,595**

Notes:

[1]Savings for 2008 and after are MER adjusted, per Decision No. 69663, and savings prior to 2008 are not MER adjusted.

[2]Refers to savings over the expected lifetime of all program measures.

[3]Savings are adjusted for line losses (energy 7.0%, demand 11.7%) and a capacity reserve factor of 15%.

[4]Based on 2010 MER Net to Gross Ratio ("NTGR") analysis, APS is utilizing a NTGR of 1.0 for all DSM programs and measures.

F. Year-To-Date Energy Efficiency Societal Benefits

Table 6

Energy Efficiency Societal Benefits 2016

Program	Program Cost	Societal Benefits	Societal Cost	Net Benefits	Benefit/Cost Ratio
Residential Programs					
Consumer Products	$8,394,668	43,923,646	21,973,282	$21,950,364	2.00
Existing Homes HVAC	$8,709,554	$14,678,105	$11,681,794	$2,996,311	1.26
Existing Homes - Home Performance	$1,154,890	$3,932,889	$3,840,933	$91,956	1.02
New Construction	$5,107,242	$8,688,240	$7,577,399	$1,110,841	1.15
Appliance Recycling	-$78,216	$0	-$78,216	$78,216	0.00
Conservation Behavior	$1,633,711	$1,578,013	$1,523,983	$54,030	1.04
Multi-Family	$2,195,589	4,551,253	$3,283,244	$1,268,009	1.39
Prepaid Energy Conservation[1]	$69,443	$37,650	$64,778	-$27,128	0.58
Limited Income[2]	$2,521,031	$2,521,031	$2,521,031	$0	1.00
Total	**$29,707,912**	**$79,910,827**	**$52,388,228**	**$27,522,599**	**1.53**
Non-Residential Programs					
Large Existing Facilities	$20,229,610	$70,716,670	$50,066,949	$20,649,721	1.41
New Construction	$3,703,720	$20,369,887	$8,480,955	$11,888,932	2.40
Small Business	$2,168,625	$5,703,489	$3,782,087	$1,921,402	1.51
Energy Information Services	$109,971	$184,621	$154,012	$30,609	1.20
Schools	$5,745,024	$8,652,713	$8,410,056	$242,657	1.03
Total	**$31,956,950**	**$105,627,380**	**$70,894,059**	**$34,733,321**	**1.49**
Codes & Standards	$62,382	$13,454,345	$62,382	$13,391,963	215.9
Measurement, Evaluation & Research	$1,924,665	$0	$1,924,665	-$1,924,665	
Performance Incentive	$4,263,998	$0	$4,263,998	-$4,263,998	
Total Energy Efficiency Societal Benefits	**$67,915,907**	**$198,992,552**	**$129,533,332**	**$69,459,220**	**1.54**

Notes:

[1]PrePaid Energy Conservation Program was suspended during this reporting period. This resulted in reduced participation which affected the program cost effectiveness during the period. For more information, see Pages 36-37 of this report.

[2]APS analysis is consistent with Decision No. 68647. Program Costs include weatherization and bill assistance. Societal Costs do not include bill assistance because it does not contribute to electric savings.

G. Program-To-Date EE Societal Benefits

Table 7

Program-To-Date Energy Efficiency Societal Benefits: January 2005 - December 2016

Program	Program Cost	Societal Benefits	Societal Cost	Net Benefits
Residential Programs				
Consumer Products	$71,164,825	$431,323,997	$126,995,614	$304,328,383
Existing Homes HVAC	$60,738,906	$121,629,171	$86,507,580	$35,121,591
Existing Homes - Home Performance	$20,697,196	$44,605,837	$36,137,486	$8,468,351
New Construction	$33,531,294	$122,546,003	$68,514,910	$54,031,093
Appliance Recycling	$6,663,715	$17,548,709	$5,144,627	$12,404,082
Conservation Behavior	$6,608,503	$6,706,942	$6,384,955	$321,987
Multi-Family	$8,835,898	$21,333,850	$11,997,193	$9,336,657
Shade Tree	$970,668	$4,512,595	$2,357,226	$2,155,369
Prepaid Energy Conservation	$126,885	$96,059	$122,220	-$26,161
Limited Income[1, 2]	$22,788,165	$20,752,053	$20,752,053	$0
Total	**$232,126,055**	**$791,055,216**	**$364,913,864**	**$426,141,352**
Non-Residential Programs				
Large Existing Facilities	$135,767,259	$695,683,011	$321,799,649	$373,883,362
New Construction	$29,562,165	$178,723,998	$61,475,911	$117,248,087
Small Business	$20,719,908	$97,368,185	$31,552,917	$65,815,268
Building Operator Training	$102,203	$424,302	$183,392	$240,910
Energy Information Services	$599,849	$3,443,792	$1,013,875	$2,429,917
Schools	$23,662,022	$84,469,755	$47,876,141	$36,593,614
Total	**$210,413,406**	**$1,060,113,043**	**$463,901,885**	**$596,211,158**
Codes & Standards	$506,690	$52,972,932	$30,597,017	$22,375,915
Measurement, Evaluation & Research	$18,558,860	$0	$18,558,860	-$18,558,860
Performance Incentive	$ 51,110,811	$0	$51,110,811	-$51,110,811
Total Energy Efficiency Societal Benefits	**$512,715,822**	**$1,904,141,191**	**$929,082,437**	**$975,058,754**

Notes:

[1]Program Costs include weatherization and bill assistance. Societal Costs do not include bill assistance because it does not contribute to electric savings.

[2]APS analysis is consistent with Decision No. 68647.

H. 2016 Performance Incentive Calculation

Table 8

2016 Performance Incentive

Achievement Relative to Performance Incentive Level	
Total MWh Saved in 2016	572,768
Less System Savings	4,752
Total MWh Saved less System Savings	**568,016**
Total MWh Saved less System Savings as % of 2016 Goal	**101.0%**

Achievement Relative to DSM Goal	Performance Incentive as % of Net Benefits	Performance Incentive Capped at No More Than $0.0125 per kWh saved
96% to 105%	7%	526,477,000 kWh x $0.0125
Net Benefits (Prior to PI, Codes & Standards, and System Savings)	$60,331,255	
Calculation of Performance Incentive	$4,223,188	$6,580,963
Performance Incentive Amount for 2016 (Min. of % of Net Benefits or Capped amount at $0.0125 per kWh)	**$4,223,188**	

Notes:

[1]The Performance Incentive methodology/calculation was approved in Decision No. 69663 and was modified in Decision No. 71448 and Decision No. 74406.

I. Net Environmental Benefits

Table 9

2016 Net Environmental Benefits

Reporting Period	Water (Mil Gal)	SOx (Lbs)	NOx (Lbs)	CO2 (Mil Lbs)	PM10 (Lbs)
Year-to-Date: Jan - Dec	1,757	24,666	468,647	4,983	136,908
Program-to-Date: Since Jan 2005	13,047	183,156	3,479,964	37,002	1,016,619

Notes:

[1]The environmental reductions are based on the net energy savings of all program measures installed during the Reporting Period over their expected lifetimes.

[2]Some measures will result in customer water savings, which this calculation does not include. Only utility water savings are included in this calculation.

J. Demand Response Load Reduction and Energy Savings

Table 10

Demand Response Program

Load Reduction and Energy Savings 2016

Program/Initiative	Load Reduction (MW)	Energy Savings (MWh)[1]
APS Peak Solutions	27.8	121,823
Critical Peak Pricing	0.3	832
Time of Use Rates & Super Peak	178.6	789,889
Total	206.7	912,544

Maximum Demand Response Counted Towards the EES (10% of annual goal)[2]	**56,213**

Notes:

[1]Energy Savings (MWh) = Load reduction (MW) X (8,760/2) hours which is a 50% load factor.

[2]Per ACC Decision No. 71436, the credit for demand response and load management peak reductions shall not exceed 10% of the EE standard for any year.

K. Supplemental Charts

Table 11

DSM Funds Billed by Customer Class: January - December 2016

	DSM Funds Collected by Class ($000)*	
Residential	$	24,342,222
Commercial	$	23,421,047
Industrial	$	3,458,737
Irrigation	$	37,986
Streetlights	$	264,773
Other Public Authority	$	5,068
Total DSM Funds	$	51,529,833

* Does not include $10 million collected in base rates through the system benefits charge.

Table 12

Retail Sales by Customer Class: January - December 2016

Retail Sales	Year End 2016
Residential	13,195,346
Commercial	12,411,366
Industrial	2,256,413
Irrigation	11,275
Hwy Lighting & Other Public Authority	147,602
Total Retail Sales (MWhs)	28,022,002

Table 13

EE Savings for the Following Rate Schedules: January - December 2016

Rate Schedule	MW Savings	Annual MWh Savings	Lifetime MWh Savings
E-32 L	10.6	66,750	900,073
E-32 TOU	1.0	5,432	75,830
E-34	2.1	10,158	152,374
E-35	8.0	14,048	168,542
E36 XL	0.0	0	0
GS on E-30	0.0	32	485
Lighting Services	1.1	7,351	95,970

Note: this table contains a subset of all non-residential rates, therefore the totals do not match Table 4.

Terms and Definitions Used in Tables 1-13

Consumer Education: Funds allocated to support general consumer education about EE improvements and programs.
Free-riders: Program participants who would have installed the energy-efficient DSM measures anyway, even if the program were not in operation.
Gross Savings: Demand and energy savings related to the DSM programs prior to accounting for reductions for free riders and additions for spillover.
Measurement, Evaluation & Research ("MER"): Activities that will identify current baseline energy efficiency levels and the market potential of DSM measures, perform process evaluations, verify that energy-efficient measures are installed, track savings, and identify additional EE research.
Net Savings: Demand and energy savings related to the DSM programs after accounting for reductions for free-riders and additions for spillover.
Performance Incentive: Percentage share of DSM net economic benefits (benefits minus costs), capped at a percent of total DSM expenditures, depending on the percent of MWh savings goal achieved.
Planning and Administration: APS's costs to plan, develop and administer programs, which includes management of program budgets, oversight of the RFP process and implementation contractor, program development, program coordination and general overhead expenses.
Program Implementation: Program delivery costs associated with implementing the program - includes implementation contract labor and overhead costs, as well as other direct program delivery costs.
Program Marketing: Expenses related to program marketing and increasing DSM consumer awareness (direct program marketing costs as opposed to general consumer education).
Rebates and Incentives: Money allocated for customer rebates and incentives, installation of low income weatherization and low income bill assistance.
Spillover: Refers to indirect energy impacts of the program and estimated savings from customers who implement energy-efficient savings strategies as a result of knowledge of APS's program but who do not receive an incentive through the program.
Training and Technical Assistance: Cost of EE training and technical assistance.

IV. Residential Energy Efficiency Programs

1. Consumer Products Program

Description

The Consumer Products Program is made up of three program elements – Residential Lighting, Residential Pool Pumps, and Residential Smart Thermostats. The Residential Lighting element of the program promotes high-efficiency ENERGY STAR® Compact Fluorescent Light Bulbs ("CFLs") and Light Emitting Diodes ("LEDs"). CFLs and LEDs use an average of 75%-90% less energy than standard incandescent bulbs and last up to twenty-five times longer, typically saving consumers between $35 - $80 in energy costs over the life of each 60 Watt equivalent bulb. The program offers discounts on CFLs and LEDs through cooperative agreements with retailers and lighting manufacturers. This provides consumers with reduced retail prices on energy efficient lighting at local retailers.

As part of the Lighting Program element, APS offers CFL recycling in partnership with participating retailers and Veolia Environmental Services, which operates a recycling facility in Phoenix. Customers may take their burned out CFLs to participating retail locations throughout the APS service territory for free recycling. Home Depot and Lowe's support their own corporate CFL recycling programs, while select Ace and True Value hardware stores utilize the APS recycling services.

The Residential Pool Pump element of the program is designed to improve residential pool operations while saving energy and maintaining equivalent or better standards for pool sanitation and cleanliness. The program promotes the installation and optimal calibration of energy-efficient, variable-speed pool pumps with a rebate of $100 per pump.

The Smart Thermostat program element is designed to encourage customer adoption of this new technology. A $75 rebate is being made available for each thermostat purchased through retail channels and/or installed by HVAC or home performance contractors. Rebates are paid directly to customers who have their eligible thermostat(s) successfully installed and registered with the smart thermostat manufacturer and complete an online application.

Program Goals, Objectives and Savings Target

The goal of the lighting program element is to promote the purchase of high-efficiency CFLs and LEDs while increasing awareness on the benefits of ENERGY STAR® rated lighting products.

The goal of the Energy-Efficient Pool Pump program element is to promote the purchase of high-efficiency ENERGY STAR variable-speed pool pumps. In a typical Arizona home with a pool, the pool pump energy use can make up a substantial portion of annual energy use, often second after heating and cooling costs.

The goal of the Smart Thermostat program element is to promote the purchase of smart thermostats that provide energy efficiency and peak demand savings for the leading energy consuming system in a residential home – air conditioning. In addition to their significant energy savings features, smart thermostats also offer capabilities for demand response and load management.

Table 14 - Consumer Products Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
14.50	109,700	1,080,000

*Based on 2016 program goals and objectives as approved in Decision No. 75679

Levels of Customer Participation

During this Reporting Period, the energy-efficient lighting element of the program resulted in sales of 776,589 CFLs and 1,182,971 LEDs through participating retail locations. In addition, APS distributed 79,740 CFLs and 12,523 LEDs during community outreach events. The combined total of CFLs and LEDs distributed during 2016 was 2,056,367. In 2016, approximately 272 retail outlets participated throughout the APS service territory. Participating retailers during this Reporting Period included: Family Dollar, Ace Hardware, Costco, Dollar Tree, Goodwill Industries, Home Depot, Lowe's, Sam's Club, Target, and Wal-Mart.

The Pool Pump measure provided rebates for 4,299 variable-speed pool pumps purchased by customers during this Reporting Period and currently includes over 200 participating pool retailers, distributors, and pool builders. During this Reporting Period, 6 pump calibration training seminars were held with a total of more than 77 pool professionals trained. In addition, program representatives routinely conducted retail visits to inform pool professionals and provide updates regarding the APS rebate program.

The Smart Thermostat measure provided rebates for 245 devices purchased by customers between the program launch in the 4th quarter and end of the reporting period. The measure currently offers the customer the option of eight different manufacturer's thermostats and over 20 different models - the market leaders included are Nest, ecobee and Honeywell.

Evaluation/Monitoring Activities and Research Results

- Updated incremental material cost and avoided incandescent replacement cost assumptions for CFL and LED measures offered.
- Quantified the percentage of program lamps installed outside of APS service territory (i.e. leakage) based on a geographic distribution analysis of sales data.
- Updated savings for program lamps to reflect the portion being sold and installed in commercial building applications.
- Adjusted incremental material cost and O&M cost savings for variable speed pool pumps, based on a mix of manufacturer and pump sizes derived from the implementation tracking data.
- Completed surveys with Pools Program participants to assess customer satisfaction and motivation for participation, and to identify further process improvements. The survey also identified any modifications made to pool pump scheduling and calibration after the initial install.

- Adjusted pool pumps savings to reflect survey findings which showed a re-calibration penalty was no longer appropriate.
- Continued to review and update CFL, LED, Pool Pump, and Smart Thermostat Measure Analysis Spreadsheets and Analytic Databases.
- Refined savings and costs for smart thermostats based on initial implementation tracking data.
- Continued to hold Quarterly Lighting meetings but expanded these meetings to include all CPP measures and implementers.

Consumer Education and Outreach

The program conducted retailer visits and retailer trainings during the Reporting Period to educate retail sales staff, assess inventories of merchandise, check point of purchase displays, address availability of qualified product, and communicate with retail sales staff.

In addition to the bulb sales at retail locations, APS has purchased a supply of CFLs and LEDs to use for the low income program and for customer education and awareness building purposes.

APS supported 224 community education and customer outreach events during this reporting period to promote the Consumer Products programs and educate customers about APS programs, rebates, and opportunities for saving energy and money. For a comprehensive list of events and dates, please refer to the work-papers provided to ACC Staff.

Advertising and article placements for the Lighting program element included the following:

- Finalized updates to the lighting savings calculator to become a 'responsive' website: https://portal.efficiency.ecova.com/APSLightingCalculator or aps.com/calculator. The responsive functionality allows the website to be optimally viewed regardless of whether a customers is viewing it on their mobile device or computer. The calculator provides customers with a way to predict the savings they could achieve by switching to energy efficient lighting. The calculator provides recommendations on which type of EE light bulb to use for replacing each bulb in the home and then the tool will either email or print out a customized shopping list.
- Implemented 10-day promotion of 6-pack of LEDs for $10, communicated via three eblast campaigns to 60,000 APS customers; following up with a survey to the participants
- Articles in the Lifestyles Residential newsletters/e-newsletters: May Article 2, LED tip in the July article.
- Point of sale signage at participating lighting retail locations, including specialty signage at Target
- Produced three bill inserts with different calls to action that went out to customers in February, April and October, highlighting APS discounted CFLs and LEDs.
- Produced bill messages (printed directly on customer bills) for February and October
- Held 68 store trainings and performed 347 store visits in September and October, resulting in increased sales and awareness
- Sent geo-targeted lighting messaging through social media to promote retail events in April for Earth Day, and in October for fall home shows.

- Posted general lighting messaging on social media to promote changing out incandescent bulbs to LEDs in February, May, and October – promoting the ENERGY STAR Change the World Tour)
- Ran print ads in the Yuma market highlighting weekend LED promotion events at the local Lowe's and Home Depot stores.

The program also conducted a range of marketing and advertising activities to raise awareness about variable-speed pool pumps including:

- Finalized the responsive pool pump calculator website: https://portal.efficiency.ecova.com/apscalculator/ or aps.com/poolsavings. The calculator provides customers with a way to predict the savings they could achieve by switching from a single-speed pump to an ENERGY STAR certified variable-speed pump.
- Provided program brochures for consumers at outreach events
- Direct mail and eblast campaign to target market of pool customers in May
- Posted general pool pump messaging on social media in January, May and September
- Posted pool pump messaging promoting the calculator on social media in April and July
- Produced pool pump bill insert that went out to customers in April, and bill insert that went out in July, sharing messaging with the Home Performance program
- Maintained program web pages on aps.com including basic information, online application forms, video content, answers to frequently asked questions, and a list of participating Pool Retailers.
- Produced collateral for point-of-sale materials, including many different styles and sizes of store signage.

In addition, the program conducted a range of marketing and advertising activities to launch the smart thermostat program element including:

- Created point of sale signage at participating smart thermostat retail locations, including a breakroom poster
- Trained 342 store associates in December, resulting in increased awareness
- Created program web pages on aps.com including basic information, upcoming events, a search tool listing participating brick-and-mortar retailers, answers to frequently asked questions
- Worked closely with Energy Hub to develop a microsite listing all partners and links for customers to get the rebate
- Featured the program on the Nest rebate website: www.nest.com/rebates

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Program Modifications/Terminations

In accordance with ACC Decision No. 74406, APS reduced incentive levels for variable speed pool pumps to $100 per unit effective on January 1, 2016. Smart thermostats were approved as a new measure in the program on August 5, 2016 in Decision No. 75679, and they were subsequently launched to APS residential customers on November 10, 2016.

In the 2017 DSM Plan (filed June 1, 2016 and amended on January 27, 2017), APS informed the ACC of intent to terminate compact fluorescent lamps (CFLs) as a measure in the program – this measure was subsequently terminated on December 31, 2016 and APS is no longer offering incentives for CFLs in 2017.

Other Significant Information

The Smart Thermostat measure was started in the fourth quarter of 2016. Due to startup costs and low participation volume in the reporting period, the measure's cost effectiveness in 2016 was negatively impacted. It is anticipated that the measure will be cost effective in 2017 with a full year of implementation.

MER Adjusted Gross kW and kWh Savings

Table 15 - MER Adjusted Gross MW and MWh Savings - Consumer Products Program

Measure	# Units	Annual Gross MWh Savings[2]	Lifetime Gross MWh Savings[2]	MW Peak Demand Savings[2]
CFLs – Retail[1]	776,589	30,338	151,692	5.0
CFLs - Giveaway	79,740	3,583	17,915	0.6
LEDs	1,182,971	65,578	918,095	9.0
LEDs - Giveaway	12,523	582	8,154	0.1
2016 In-Service CFLs	N/A	11,289	11,289	1.1
2016 In-Service LEDs	N/A	1,338	1,338	0.1
Smart Thermostats	245	134	1,343	0.1
Variable Speed Pool Pumps	4,299	7,604	91,251	0.3
TOTAL	**2,056,367**	**120,447**	**1,201,078**	**16.3**

[1]The total number of units is adjusted for 1) bulbs not yet placed into service and 2) bulbs installed outside APS territory. Please refer to work papers for the complete list of units in this reporting period.

[2]Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c).

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

2. Appliance Recycling Program

Description

This program provided customers a $30 incentive and free pick-up service to remove old, inefficient appliances from the grid.

APS' partnered with JACO Environmental, Inc. to provide this recycling service. In November 2015, JACO formally went into Receivership and discontinued operation. This program was terminated in 2015; however, some additional incentives were paid in 2016 to those customers who were in the queue at the time the program was being discontinued.

Program Goals, Objectives and Savings Targets

There were no program goals and objectives for 2016 since the program had been discontinued.

Table 16 - Appliance Recycling Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
0.0	0	0

Levels of Customer Participation

There were no customers participating in this program during the reporting period.

Evaluation/Monitoring Activities and Research Results

There were no evaluation or monitoring activities conducted during the reporting period.

Consumer Education and Outreach

No consumer education and outreach was made during this reporting period.

Problems Encountered and Proposed Solutions

JACO Environmental formally went into Receivership and discontinued operation on November 23rd, 2015. Efforts were made to accommodate all customers that were in the queue at the time the program was being discontinued and issue rebate checks due to them. This program closeout effort carried into early 2016. Since this time, the program has not been operational.

Program Modifications/Terminations

No program modifications were made during this reporting period.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c). The costs incurred during this reporting period were used for program decommissioning and closeout. Commission Decision No. 73089 requires APS to report spending for non-EE measures in the Appliance Recycling Program. There were no non-EE measures or associated spending in this program during this Reporting Period.

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

3. Residential New Home Construction

Description

This program promotes high-efficiency construction practices for new homes. It offers incentives to builders that meet the program's EE standards. The program emphasizes the whole building approach to improving EE and includes field testing of homes to ensure performance. Participating builders are trained to apply building science principles to assure that high efficiency homes also have superior comfort and performance. The program also provides education for prospective homebuyers about the benefits of choosing an energy-efficient home and the features to consider.

The program takes advantage of the national ENERGY STAR® brand name, and promotes the U.S. Environmental Protection Agency ("EPA") ENERGY STAR® label to prospective homebuyers. To encourage builders to meet the program's high-efficiency standards, APS provides builder incentives of $600 per home for ENERGY STAR® version 3 compliant homes. To encourage builders to meet even higher EE standards, the program also offers a second tier incentive of $1,500 per home for builders that meet the higher savings level of Home Energy Rating System ("HERS") 60.

Program Goals, Objectives and Savings Targets

The program objective is to increase the penetration of homes built to high-efficiency standards. The rationale for this program is that residential new construction in the APS service territory, particularly the Phoenix metro area, has historically been one of the biggest drivers of APS's system load growth. It is more cost-effective to work with builders to implement EE at the time of construction rather than to attempt to retrofit efficiency after a home has been built. For many new home measures, such as building envelope improvements, the benefits of EE upgrades will be sustained for the life of the home to produce cost-effective savings.

Table 17 - Residential New Construction Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
5.5	10,500	211,000

*Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

During this Reporting Period, APS signed 4,763 homes that are committed to being built to ENERGY STAR® V3 and ENERGY STAR® V3 – HERS 60 program standards. At the end of this Reporting Period, there were 65 homebuilders and 282 subdivisions actively participating. The program currently includes ENERGY STAR® communities throughout the APS service territory including the Phoenix metro area, Yuma, Casa Grande, Florence, Prescott, Verde Valley, and Flagstaff.

Specifically, in 2016 APS paid builder incentives for the following completed homes:

- 3,284 ENERGY STAR Version 3
- 1,478 ENERGY STAR Version 3 – HERS 60

Evaluation/Monitoring Activities and Research Results

- Developed and re-calibrated energy simulation models based on most recent program participants billing records, building characteristics, and HERS scores.
- Updated baseline efficiency assumptions and energy savings impacts for non-participant homes based on new building code adoptions across all APS jurisdictions, as well as non-participant billing records, climate zones, and square footages.
- Initiated Quality Assurance/Quality Control research to identify building characteristics driving variation in home energy rating scores.
- Continued to review and update Residential New Construction Measure Analysis Spreadsheets and Analytic Database.
- Continued support on data requirements of implementation tracking system to meet evaluation needs.

Consumer Education and Outreach

Program marketing and education efforts during this Reporting Period include the following:

- *2016 Homebuilders Association Member Directory* - print ad to promote the APS ENERGY STAR® Home program to builders
- *Provided Sales Agent Training* - for APS ENERGY STAR® Home builder sales staff.
- *Distributed APS ENERGY STAR® Home Program Sales Book* - for builder sales agents to use in selling the features of ENERGY STAR® Homes to prospective homebuyers.
- *Distributed APS ENERGY STAR® Model Home Materials* - for builders to put in model homes to advertise the different features and benefits of an ENERGY STAR® homes.
- *Distributed a homebuyer brochure* - that is targeted to new buyers and discusses the features and benefits of an ENERGY STAR® home. The brochures are being distributed at community events and at participating builders' model home sales offices.

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Program Modifications/Terminations

Program modifications that went into effect in 2016 included adding a maximum allowed HERS score for ENERGY STAR® V3 homes to ensure energy savings requirements of the program are being met. To qualify for an incentive ENERGY STAR® V3 homes' HERS score may not exceed 70 in Climate Zone 2 and 74 in Climate Zones 4 & 5.

APS also integrated support for Ekotrope, an energy simulation software used by raters to certify homes ENERGY STAR, in our program tracking platform. This program development gives rater partners the flexibility to choose the software platform that they use.

Other Significant Information

In recognition of the ongoing success of the APS DSM program portfolio and the APS ENERGY STAR® Homes and Home Performance with ENERGY STAR Programs, APS was selected by the US Environmental Protection Agency ('EPA') as a 2016 and 2017 ENERGY STAR® Partner of the Year, Sustained Excellence Award winner. This is the highest award that can be earned by an ENERGY STAR® partner, and is bestowed on partners who show

sustained excellence in their commitment to EE and whose organization is a national model of best practices in advancing EE. APS has now earned ENERGY STAR® awards for eleven consecutive years. In October, APS participated in the Southwest Builder Show trade expo and met with builders, HERS raters, and other industry partners.

MER Adjusted Gross kW and kWh Savings

Table 18 - MER Adjusted Gross MW and MWh Savings
Residential New Construction Program

Measure	# Units	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
APS ENERGY STAR Homes V3	3,284	5,639	112,774	2.7
APS ENERGY STAR Homes HERS60	1,478	4,582	91,633	2.2
TOTAL	**4,762**	**10,220**	**204,408**	**4.9**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

In addition, program consumer education and homebuilder training efforts produce significant additional energy savings and benefits that are not quantified here.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c).

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

4. Residential Existing Homes Heating, Ventilation, and Air Conditioning Program

Description

The Residential Existing Homes Heating, Ventilation, and Air Conditioning Program ("Residential HVAC") uses a combination of financial incentives, contractor training and consumer education to promote the proper installation and maintenance of energy-efficient HVAC systems. The Air Conditioner ("AC") Rebate, Duct Test and Repair, Prescriptive Duct Repair, Residential Diagnostic and Western Cooling Control measures support energy-efficient Residential air conditioning and heating systems along with the proper installation, maintenance and repair of these systems.

The Residential Existing Homes HVAC program provides APS customers with referrals to contractors who meet strict program requirements for professional standards, technician training, and customer satisfaction.

The AC Rebate with Quality Installation ("QI") measure offers financial incentives to homeowners for buying energy efficient HVAC equipment that is installed in such a manner that it meets the program requirements for air flow, refrigerant charge and sizing. The Duct Test and Repair ("DTR") measure provides financial incentives to customers for having their HVAC system's duct work tested for leakage and repaired. The Prescriptive Duct Repair ("PDR") measure provides financial incentives to customer for having the HVAC system sealed to reduce are leakage. It does not require a full test in and test out of the HVAC system like the DTR measure. The Residential Diagnostic ("RD") measure provides a financial incentive for an advanced diagnostic tune-up on existing air conditioning and heat pump equipment to ensure that it operates more efficiently. The main components of this measure are the correction of the refrigeration charge, leak repair, condenser coil cleaning and air flow verification. Finally, the Western Cooling Control ("WCC") measure provides a financial incentive to install a retrofit device that optimizes HVAC operation for the dry Southwest climate by running the HVAC unit's fan for a few additional minutes after the compressor shuts off to capture cooling from the coil and improve efficiency.

Program Goals, Objectives and Savings Targets

The Existing Homes HVAC program uses a combination of financial incentives, contractor training and consumer education to promote high-efficiency HVAC systems. The program focuses on the proper installation of equipment, increasing existing equipment efficiency, and the testing, sealing and repair of duct work in existing Residential homes.

Table 19 - Existing Homes HVAC Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
10.2	14,200	173,400

* Based on 2016 programs goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

- A total of 20,052 rebates were paid through the HVAC element of the program in 2016. APS has paid:
  - Quality Installation: 12,115 of the $245 AC rebates

  - Residential Diagnostics: 284 of the $95 Residential Diagnostic rebates.
  - Duct Test and Repair participation levels in 2016:
    - 7,643 DTR reported rebates. There were 8,028 total rebates, 385 were for tests without repairs. Only the repair rebates (7,643) are used for calculating the demand and energy savings shown in the savings tables.
    - No Prescriptive Duct Repair rebates were completed in 2016.
  - Western Cooling Control: 10 of the $70 rebates.
- There are currently 131 contractors that can offer the APS AC Rebate of which 107 are APS Qualified Contractors. There are 24 Rebate Eligible contractors that entered the program through the application process approved by the ACC in October 2009, which does not require membership in the Arizona Heat Pump Council. There are currently 23 contractors that can offer the rebates outside the Phoenix metropolitan area.
- There are currently 56 active Duct Test and Repair contractors. There are 13 contractors that can provide the duct repair rebate outside of the Phoenix metropolitan area.

Evaluation and Monitoring Activities and Research Results

- Launched a residential end-use metering study to collect data to support development of residential HVAC hourly load shapes using residential HVAC program participants.
- Assessed cost-effectiveness of multifamily duct sealing projects using performance test data.
- Characterized the energy and demand impacts and incremental measure costs of the Western Cooling Control for inclusion as a new measure in this program.
- Continued to review and update Residential HVAC Measure Analysis Spreadsheets and Analytic Database including Quality Installation, Duct Test and Repair, Prescriptive Duct Repair, Residential Diagnostic Tune Up, and Western Cooling Control measure offerings.

Consumer Education and Outreach

Residential Existing Home HVAC program marketing and consumer/contractor education efforts for this Reporting Period include:

- Articles in APS FYI Newsletter for March (AC, Residential Diagnostic), June (DTR), July (AC), August (AC), September (DTR) and November (DTR).
- Targeted Direct Mail and/or E-mail campaign for March (Residential Diagnostic), May (Residential Diagnostic), June (AC), July (AC), September (DTR), and October (WCC).
- Facebook ads in January (DTR), February (DTR), March (Residential Diagnostic), April (Residential Diagnostic), June (AC), July (AC), October (AC, DTR, WCC) and November (DTR).
- Online Banner Ads and/or search engine marketing (SEM) in February (DTR), March (Residential Diagnostic), April (Residential Diagnostic), June (AC), July (AC), August (AC), September (DTR), October (AC, DTR, WCC) and November (DTR).
- Bill Inserts for January (DTR), June (AC).
- Presentations on the APS Residential DSM programs to numerous community groups. Most of the consumer education events listed under Consumer Products also include information on the AC Rebate and other APS Residential programs.

- The aps.com homepage prominently features APS EE programs. These programs are grouped in one section of the homepage entitled "Save Energy and Money."

Problems Encountered and Proposed Solutions

During this Reporting Period there was no contractor interest or customer participation in the Prescriptive Duct Repair rebate. Due to the lack of market interest, APS plans to suspend this measure effective on May 1, 2017 and re-allocate the associated budget to other Residential Existing Home measures.

Program Modifications/Terminations

In 2016, the minimum SEER and EER requirements for the AC Rebate with Quality Installation measure were changed to match the new regional HVAC appliance standards. The Western Cooling Control measure was approved by the ACC in Decision No. 75679 on August 5, 2016 and available to customers on Oct. 10, 2016.

MER Adjusted Gross kW and kWh Savings

Table 20 - MER Adjusted Gross MW and MWh Savings - Existing Homes HVAC Program

Measure	# Units	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
AC with Quality Installation	12,115	13,079	130,789	6.9
Residential Diagnostics	284	151	907	0.1
Duct Test and Repair	7,643	8,162	146,908	8.8
Prescriptive Duct Test and Repair	0	0	0	0.0
Western Cooling Control	10	5	41	0.0
TOTAL	**20,052**	**21,397**	**278,645**	**15.8**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

** Duct Test and Repair number of units shows only rebates paid for repair work. Rebates paid for duct tests only are not included.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c).

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

5. Home Performance with ENERGY STAR®

Description

The Home Performance with ENERGY STAR program promotes a whole house approach to energy efficiency by offering incentives for improvements to the building envelope and mechanical systems of existing Residential homes within the APS service territory. HPwES includes measures that improve the EE of the home with air sealing, insulation and duct sealing.

The program offers home owners a $99 comprehensive home energy checkup to help identify ways to improve energy efficiency and comfort throughout the home. This program element offers a direct install feature that includes 10 LED's and one low-flow showerhead that are installed at the time of the checkup. Additional financial incentives are available for duct sealing, air sealing, and insulation once a home owner has completed an HPwES checkup. After measures are installed, rigorous testing and quality assurance protocols then verify installation quality and performance. The program also includes the Energy Analyzer which offers residential customers a free on-line energy audit tool that provides home energy efficiency recommendations customized for their home and lifestyle, including savings tips and behavioral savings opportunities that participants can pledge to complete.

Program Goals, Objectives and Savings Targets

The HPwES measures promote a whole house approach to EE by offering education, technical assistance and financial incentives for improvements to the building envelope of existing Residential homes within the APS service territory.

Table 21 - Existing Homes - Home Performance Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
5.1	7,700	124,000

*Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

During this Reporting Period:

- A total of 3,087 contractor incentives were paid through HPwES for completed and approved energy audits. Each home that received a $99 home energy audit, also received a direct install bag containing one low-flow showerhead and ten 9-watt LED light bulbs
- The APS HPwES program paid rebates for measures installed in 1,339 participating homes. This indicates an approximate 43% of homes that completed an audit during the Reporting Period took steps to install additional measures as a result of the audit. The total number of customer rebates paid was 2521. Specifically, APS has paid:
  - 1,542 duct sealing and repair rebates.
  - 35 air sealing and insulation rebates.
  - 890 insulation only rebates.
  - 46 Western Cooling Control Devices

- There are currently 35 qualified HPwES contractors. Contractors must complete the Building Performance Institute's Building Analyst certification and undergo a mentorship prior to becoming active. HPwES currently serves Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Navajo, Pima, Pinal, Santa Cruz, Yavapai, and Yuma counties. We continue to promote contractor participation in underserved areas to provide options for customers.
- During this reporting period, the APS Home Performance answer line received 1,134 referral inquires by telephone.
- During 2016 Energy Analyzer received 15,523 verified customers that logged into APS.com and calibrated the survey to their actual use. Of those, 1,153 continued on to participate in the full Home Performance with ENERGY STAR program.

Evaluation/Monitoring Activities and Research Results

- Launched a residential end-use metering study with HPwES participants to collect data to support development of residential HVAC and appliance hourly load shapes.
- Continued review of program tracking bases and provided guidance on structuring data exports of participant audit data containing building characteristics, including insulation levels, blower door test results, window types, HVAC system type and efficiency, to support annual savings analysis and verification process.
- Developed and re-calibrated energy simulation models based on most recent program participants billing records, building characteristics, and installed weatherization measures.
- Characterized the energy and demand impacts and incremental measure costs of the Western Cooling Control for inclusion as a new measure in this program.
- Continued to review and update program Measure Analysis Spreadsheets and Analytic Database.

Consumer Education and Outreach

HPwES marketing and consumer/contractor education efforts for this Reporting Period include:

- Utilized the Energy Analyzer online audit tool on aps.com and social media channels as a lead generator for the HPwES program. Educated customers on how their home uses energy and what energy efficiency program recommendations are available to them. When customers receive a recommendation to consider an on-site energy audit, customers can apply immediately from the results page to enter into the HPwES program and receive contractor referrals.
- From initial engagement to project completion, APS provides customers with a simple, streamlined process to help guide them- including a "My Project" dashboard that helps track their project status, review program documents and receive digital coaching throughout their program participation.
- Employed search engine marketing (SEM) and digital ads to better target customers actively searching for ways to improve their energy efficiency.
- Continued with a "hometown" concept for homeowners that match them with one contractor whose service area includes their neighborhood. This feature was designed to eliminate confusion for customers looking at an entire list of contractors.

The new referral tool now captures the contractors' bio, website link, BBB profile and logo for a more thorough description.

- Distributed HPwES brochures through community events, trade allies, contractors, and other industry partners.
- Executed trigger based direct email communications to customers with a high propensity to participate in the program.
- Using the APS call center, we held a call center campaign to promote Energy Analyzer to qualified customers that called during the summer months. A script is now used by call center associates during high bill calls to promote the program.
- Maintained the aps.com/checkup program page and continued to make it more customer friendly. A stand-alone website is available at www.azhomeperformance.com.
- Placed articles in: APS newsletter and e-newsletter for several months throughout the year for both Home Performance and Energy Analyzer.
- Delivered presentations on the APS Residential DSM programs to numerous community groups. Most of the consumer education events listed under Consumer Products included information on the HPwES and other APS Residential programs.
- Delivered presentations to several Real Estate and Lender groups on the benefits of adding Home Performance into the sale of an existing home, and the value of the new Home Performance with ENERGY STAR Certificate of Energy Improvements which is provided to participating homeowners who complete energy efficiency home upgrades through the program.
- The APS Home Performance program was the focus in a Department Of Energy Better Buildings Network case study highlighting the improvements of our program through the use of HPxML technology and contractor support for high quality work in homes.

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Program Modifications/Terminations

APS continues to lead the Home Performance with ENERGY STAR® program nationally as a leader in the implementation of the national data standards (BPI 2100 and BPI 2200), otherwise known as HPxML. The APS program was also one of the first programs nationally to add the Home Performance with ENERGY STAR Certificate of Energy Improvements. This HPxML based, real estate MLS, and appraisal Green Addendum compliant certificate is an official record of the energy upgrades performed to a home through the Home Performance program. A digital record of these certificates is stored with the Home Performance state sponsor, and a hard copy offered to customers by the participating contractors. These can be provided to an appraiser at the time of sale of the home for consideration of increased value as "green features".

The Western Cooling Control measure was approved by the ACC in Decision No. 75679 on August 5, 2016 and available to customers on Oct. 10, 2016.

Other Significant Information

The Home Performance with ENERGY STAR® program is a valuable program to assist residential customers in improving the energy efficiency of their homes and in supporting a

local network of home performance contractors who can help deliver efficiency services. The program is a driver for customers to participate in energy efficiency and often customer's first experience and entry point with APS when trying to diagnose high bill concerns or comfort problems inside their home. By channeling customers into the program, we are able to provide important services and education to help rate payers manage their bill and provide solutions. In addition to electric energy savings the program also generates significant additional savings for customers such as health and safety and indoor air quality.

In recognition of the ongoing success of the APS EE program portfolio and the APS Home Performance with ENERGY STAR® and ENERGY STAR Homes Programs, APS was selected by the EPA as a 2016 and 2017 ENERGY STAR® Partner of the Year, Sustained Excellence Award winner. This is the highest award that can be earned by an ENERGY STAR® partner, and is bestowed on partners who show sustained excellence in their commitment to EE and whose organization is a national model of best practices in advancing EE.

APS works closely with other utilities in the state to coordinate the delivery of HPwES statewide. In 2016, APS continued to work closely with Salt River Project as we coordinated program implementation to optimize delivery across both electric service territories. This coordination allowed us to further ensure market consistency, while enhancing the customer experience through a joint program delivery.

MER Adjusted Gross kW and kWh Savings

Table 22 - MER Adjusted Gross kW and kWh Savings - Existing Homes - Home Performance

Measure	# Units	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Direct Install Low Flow Showerhead	3,087	229	2,292	0.01
Direct Install LED's	23,405	1,345	20,201	0.14
Energy Analyzer Behavioral Savings	15,523	1,845	1,845	1.03
Duct Repair	1,542	1,434	25817	1.50
Insulation / Air Sealing weighted	932	1,166	28,900	0.71
Western Cooling Control	46	23	235	0.02
TOTAL	**44,535**	**6,042**	**79,237**	**3.41**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

In addition to the savings shown above, HPwES conducts a number of market transformation efforts, such as contractor training and customer education activities designed to transform the EE market. This results in spillover which produces additional energy savings and net benefits which are not quantified here.

6. Residential Conservation Behavior Program

Description

The Residential Conservation Behavior Program provides participating residential customers with periodic reports containing information designed to motivate them to change their energy usage behavior to save energy.

To drive conservation behavior, this program direct mails comparative Home Energy Reports to participants that show how the energy usage in that customer's home compares with similar homes. Coupled with the comparison data, customers receive recommendations for specific and targeted actions they can take to save energy.

Derived from best practices in behavioral science research, this program uses the power of normative messaging to successfully engage and motivate conservation actions of targeted individuals. Comparing an individual's energy use to what is "normal" has proven to be an effective mechanism to attract attention and motivate action. Normative messaging on energy use, combined with recommendations on how to improve, is the basis of the concept for the Conservation Behavior program. The program provides a benchmark for customers to achieve and instills a sense of competition to produce sustained conservation behaviors.

Program Goals, Objectives, and Savings Targets

The goal of this Program is to motivate Program participants to save energy by changing their energy use behavior.

Table 23 - Conservation Behavior Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
6.5	61,400	61,400

*Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

The 2016 program was targeted to reach an average of approximately 270,000 residential (both single and multi-family) customers with a control group average of approximately 60,000 additional customers. In April 2016, approximately 44,000 customers were added to the program as a 'refill' group to replace prior participants who left the program for any reason (i.e. moves, changes in service, opt-outs, etc.). The highest customer count for the year was 295,647. Customers are able to "opt out" of the program at any time. One thousand three (1,003) participants opted out of the program in 2016.

Evaluation/Monitoring Activities and Research Results

- Validated that customers added to the program in 2016 are consistent with a Randomized Controlled Trial, as required to support evaluation of program savings.
- Reviewed and confirmed statistical modelling approach for verifying demand impacts resulting from peak day events.
- Conducted statistical analysis of monthly billing records to verify implementation contractor model savings estimates.

- Continued to review model employed by implementation contractor to assess accuracy and reasonableness of model outputs.
- Continued to review and update program Measure Analysis Spreadsheets and Analytic Database.
- Instituted quarterly Residential Behavior meetings with APS staff and implementers to coordinate on topics of interest and program changes for current residential behavior program and potential future behavioral programs.

Consumer Education and Outreach

Participants receive periodic, direct mailed reports that provide energy usage benchmarks and customized energy efficiency tips to educate and help them reduce consumption. Participants also have access to a web portal that provides even greater insight into usage, comparisons (both personal and with similar homes) and variety of energy savings tips.

APS layered email reports on top of the printed reports for approximately 65,000 aps.com activated program participants. The email reports are sent monthly and provide additional energy usage context and tips for greater energy savings potential.

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Program Modifications/Terminations

Approximately 44,000 customers were added to the program in 2016 to refill participation to account for attrition and to achieve 2016 program savings goals.

During the Reporting Period, APS tested event-based messaging to approximately 47,000 report recipients with the specific goal of achieving peak demand reductions and added energy efficiency savings on the highest system peak days of the year ('Behavioral Demand Response'). Event days were called Peak Days. Within 24 hours preceding a day during which system demand was expected to peak, APS sent selected customers a communication (i.e. e-mail or voice recording based on customer preference) informing them that demand for energy was likely to spike the following day during specified hours. Customers were asked to reduce their energy usage during those hours and household-specific tips were provided. Within a few days after the peak event, customers received feedback informing them how much they reduced their usage during the event compared to their neighbors in similar dwellings. APS called two events (August 30th and September 9th) in 2016. This resulted in over 16 MWh of energy savings in 10 combined hours on peak days. Savings achieved during these events is included in the overall program savings figures.

Other Significant Information

In addition to conservation behavior savings, one of the key benefits of this program is that it promotes the wide array of APS rebate programs in the tips offered on each report.

MER Adjusted Gross kW and kWh Savings

Table 24 - MER Adjusted Gross kW and kWh Savings - Conservation Behavior Program

Measure	# Participants	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Home Energy Reports	270,164	60,433	60,433	12.3
TOTAL	**270,164**	**60,433**	**60,433**	**12.3**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c).

7. Prepaid Energy Conservation Program

Description

The Residential Prepaid Energy Conservation Program ("Prepay Program") is a 'pay as you go' billing program that provides participants with energy efficiency and conservation information to help them better understand and manage their electric utility budget. Customers periodically prepay for electric service in lieu of paying a monthly bill. APS provides participating customers with frequent feedback on the balance in their prepaid energy account via text, email and/or phone call alerts to assist them in managing their energy consumption. This combination of energy information/education and direct feedback on energy spend is a powerful tool that helps participating customers save energy and reduce energy costs.

In Decision No. 75323, the Arizona Corporation Commission granted approval for APS to discontinue this program by December 31, 2016 to allow for the transition into a new customer billing system in early 2017.

Program Goals, Objectives, and Savings Targets

The goal of this Program is to motivate Program participants to save energy by providing frequent cost and energy usage feedback.

Table 25 – Prepaid Energy Conservation Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
0.50	2600	2600

*Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

An average of nine hundred eighty three customers participated in the Prepaid Energy Conservation Program over the twelve months of 2016. The highest average monthly customer participation was 1,331 in January. The lowest average monthly customer participation was zero customers in December due to program suspension by year end 2016.

Evaluation/Monitoring Activities and Research Results

Continued to review and update program Measure Analysis Spreadsheets.

Consumer Education and Outreach

Due to ACC Decision No. 75323, APS did not actively promote the program to customers in 2016. Customers who met the minimum eligibility requirements were allowed to enroll in the Program and were informed of the Program suspension date of December 31st. In the early Fall, APS notified all active Program participants of the suspension and transitioned all Customers to monthly billing before year end.

Throughout the year, active Prepay customers had 24 hour, 7 day access to their account balance by calling the APS automated phone system, speaking with an associate or checking

their aps.com 'My Prepay' web portal. APS provided customer cost feedback by sending proactive alerts to help customers manage their account balance.

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Program Modifications/Terminations

The Prepay Program was suspended in mid-December 2016 in accordance with Arizona Corporation Commission Decision No. 75323.

Other Significant Information

In addition to conservation behavior savings, one of the key benefits of this program is that it allowed customers to have more control over and budget their monthly utility costs.

Outbound calls were made to remaining active Prepay customers in the fall of 2016 to transition them to monthly billing.

MER Adjusted Gross kW and kWh Savings

Table 26 - MER Adjusted Gross kW and kWh Savings – Prepaid Energy Conservation Program

Measure	# Participants	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Prepaid Energy Conservation Program	983	1,243	1,243	0.24
TOTAL	**983**	**1,243**	**1,243**	**0.24**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

Savings reported during this Reporting Period are based on the most recent disconnect analysis completed by Navigant where deemed savings are 1,182 kWh (7.168% of average annual usage) per participant per year. The number of participants reported is the annual average number of participants.

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c).

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

8. Multifamily Energy-Efficiency Program

Description

The Multifamily Energy Efficiency Program ("MEEP") is a program that encourages energy efficiency improvements in multifamily complexes within the APS service territory. The MEEP received ACC approval in Commission Decision No. 72060 (January 6, 2011).

MEEP uses a three-track approach to promote EE within the multifamily market segment.

- ***Track 1*** Provides free direct install measures to retrofit the residential dwellings of existing communities. Participating communities receive enough CFLs, low flow showerheads, and faucet aerators to retrofit every community dwelling. Facility personnel, with implementation contractor field support, conduct all direct install installations.
- ***Track 2*** Provides complementary energy assessments of the community common area commercial facilities. The energy assessment identifies opportunities for additional EE savings and the applicable Solutions for Business incentives that are available.
- ***Track 3*** Targets new construction and major renovation multifamily projects. This track builds from the success of the APS ENERGY STAR® New Homes program and encourages energy efficient building principles by paying an incentive to builders on a per unit basis for building to the energy efficiency standards outlined in one of three builder option packages ("BOP"). Higher incentives are offered for achieving increasingly higher levels of energy efficiency.

Program Goals, Objectives, and Savings Targets

The MEEP program objectives are to:

- Reduce peak demand and overall energy consumption in the multifamily housing market segment.
- Promote existing community EE retrofits of both dwelling units and common areas.
- Promote higher efficiency construction standards in the development of new multifamily projects.
- Increase overall awareness about the importance and benefits of EE improvements to the landlord and property ownership community.

Table 27 - Multi-Family Energy Efficiency Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
1.44	9,400	131,000

*Based on 2016 goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

A total of 125 multifamily properties participated in the direct install program in 2016 totaling 13,342 apartment dwellings. In total there were 31,457 CFLs, 62,028 LEDs, 5,142 faucet aerators, and 2,819 showerheads installed in multifamily dwellings.

The New Construction/Major renovation program saw 16 projects participate in 2016. A total of 1,872 units received rebates in 2016.

Evaluation/Monitoring Activities and Research Results

- Updated building energy simulation models and adjusted savings based on building characteristics, performance testing results, and customer billing records for actual program participants.
- Conducted on-site inspections of non-participant, multifamily new construction projects to inform the baseline for calculating energy and demand impacts. Data collected included the following building characteristics:
    - Window solar heat gain coefficient (SHGC) and U-Value
    - Infiltration rates
    - Wall and ceiling insulation levels
- Developed survey instruments for interviews with existing buildings and new construction property managers to assess program satisfaction and influence, motivation for program participation, barriers to participation, verify installation and persistence rates for direct installation measures, and assess baseline conditions for new construction projects.
- Continued review of implementation program tracking database and supporting HERS rating documentation to refine savings assumptions.
- Continued to review and update program Measure Analysis Spreadsheets and Analytic Database.

Consumer Education and Outreach

MEEP consumer education and outreach efforts for this Reporting Period include:

- Distribution of MEEP brochures to customers.
- Direct calling and door to door outreach was utilized to get program messaging out in the market place and to secure many of the program's participants.
- Maintained a presence on aps.com to give customers a point of reference for all program information.
- Provided customer educational leave behind materials promoting EE in all dwellings that were retrofitted.
- MEEP presentations at community events.
- Offered a Success with Energy Star for Multifamily building training
- Developed and distributed Direct Install and New Construction case studies
- Developed a common area improvement program brochure
- Distributed promotional leave behinds for residents to inform them of other APS EE program offerings
- Developed a commercial lender sell sheet to promote the program in the lender markets.

- Utilized a landing page for aps.com/meep designed to make it easy for customers to get immediate assistance with program enrollment.
- Distributed recognition plaques for MEEP New Construction projects completed in 2016
- Website Banner ad on the AMA website
- Developed and distributed outreach savings kits that included samples of all direct install products
- Posted Ads on Facebook
- Promoted the program at the AMA Education Conference and Income Property Manager Expo
- Developed and distributed window clings for all multifamily communities retrofitted in 2016

Problems encountered and Proposed Solutions

During this reporting period the Builder Option Package 2 was not cost effective due to lower kWh savings and avoided costs. This measure will be redesigned in the new year to return it to cost effectiveness.

Program Modifications/Terminations

In the 2017 DSM Plan (filed June 1, 2016 and amended on January 27, 2017), APS informed the ACC of intent to terminate compact fluorescent lamps (CFLs) as a measure in the program – this measure was subsequently terminated on December 31, 2016 and APS is no longer offering direct install CFLs as a program measure.

MEEP New Construction Optional Measures Installed

In Commission Decision 73089, APS was directed to report the number and type of optional measures that builders/developers are choosing to install, as well as energy savings, coincident demand savings, and actual cost for each optional measure selected by Multifamily New Construction participants.

A total of 16 multifamily new construction projects received rebates in 2016. All but three projects were rebated through the performance path. The performance path allows builders or developers of Multifamily new construction projects to use any building design to reach program compliance as long as the building's performance, when tested by a certified HERS rater, meets the minimum performance HERS scores standards established for each BOP. Thus performance path projects don't select optional items from the prescriptive list. Three projects elected to use the prescriptive path. The optional measures chosen and other required information are included in the table below. Note that because builders are unwilling to share construction cost data, actual costs for the optional measures isn't available. However APS has included an estimate of incremental costs in the table below for each optional item using industry cost data.

Table 28 - Optional Measures Selected by MEEP New Construction Participants

Projects	HVAC Equip	Lighting and/or Windows	Lighting, Windows and/or Fan Motor	Ducts	Annual Kwh/Unit	kW Demand/ Unit	Incremental Cost
Portland on the Park	✓	✓		✓	403.87	0.042	$795.52
Madison Heights	✓	✓		✓	403.87	0.042	$795.52
Highland Square	✓	✓		✓	403.87	0.042	$795.52

MER Adjusted Gross kW and kWh Savings

Table 29 - MER Adjusted Gross kW and kWh Savings - Multi-Family Energy Efficiency Program

Measure	# Units	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Direct Install Low Flow Showerhead	2,819	656	6,556	0.04
Direct Install Low Flow Faucet Aerators	5,142	246	2,464	0.01
Direct Install CFLs	31,457	1,227	7,363	0.17
Direct Install LEDs	62,028	3,569	53,540	0.36
Builder Option Package (BOP) 1	717	1,302	26,036	0.19
Builder Option Package (BOP) 2	501	1,032	20,648	0.11
Builder Option Package (BOP) 3	654	1,534	30,682	0.22
TOTAL	**103,318**	**9,566**	**147,289**	**1.10**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

Other Significant Information

No information to report at this time.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c).

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

9. Energy Wise Limited Income Weatherization

Description

APS's Energy Wise Limited Income Assistance Program is designed to improve the EE, safety and health attributes of homes for customers whose income falls within the defined federal poverty guidelines. This program serves low income customers with various home improvements including cooling system repair and replacement, insulation, sunscreens, water heaters, window repairs and improvements as well as other general repairs. Per Commission Decision No. 68647, the program is conducted in accordance with the rules of the federal Weatherization Assistance Program ("WAP"). WAP incorporates a performance-based energy audit procedure that focuses on optimizing investment in energy efficiency through a systems approach. Participating agencies utilize a Department of Energy site specific REM Design energy audit procedure that ensures that the overall Savings to Investment Ratio ("SIR") for the entire package of materials/measures including the cost of incidental repairs is greater or equal to one. In addition, participating agencies also use a prescriptive priority list developed by the Arizona Department of Housing to determine which cost effective measures to install. There is also a multifamily housing component designed to extend the benefits of weatherization to these types of complexes. The program is administered by various community action agencies throughout APS's service territory.

Program Goals, Objectives, and Savings Targets

- To improve the EE of homes for customers whose income falls within the defined poverty guidelines.
- To provide customers information on energy management and conservation.

Table 30 - Limited Income Weatherization Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
0.25	1,500	29,000

* Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

A total of 410 households received assistance during the Reporting Period. A single household may have received more than one type of assistance.

Table 31 - Limited Income Weatherization Program Participation

Type of Assistance	Number of Households
Health and Safety	0
Repair and Replace	0
Weatherization	410
Total	**410**

Evaluation/Monitoring Activities and Research Results

Weatherization measures must pass the cost effectiveness test that is detailed in the federal government's Weatherization Assistance Program (WAP) rules. These rules allow certain

prescriptive measures, which vary with the climate zone and type of housing construction. Measures not on the prescriptive list must be assessed by a computer analysis to determine the economic feasibility.

The Arizona Governor's Office of Energy Policy ("GOEP"), which has been incorporated into the Arizona Department of Housing, with information from APS, has been analyzing the electric energy used in weatherized homes before and after the weatherization measures were implemented. It takes a year of data before the weatherization and another year of data after the weatherization to get an accurate gauge of the impact of the measures. As the data base grows over time, a more accurate picture of the impact of the weatherization activities will emerge.

Information from the GOEP report for fiscal year 2014, submitted January 2016 is provided below:

Utility Bill Analysis

This report includes jobs completed across Arizona using data provided by APS, TEP, Unisource Gas and Electric and Southwest Gas utility data. This analysis is ongoing, new data will be updated to these values on a quarterly basis.

Provided are Savings to Investment Ratios (SIR) for total investment from all funding spent (diagnostics, energy measures and health and safety measures) and for energy related measure only (diagnostics and energy measures).

Assumptions

Present value is based on 17.5 years measure life, discount rate of 3% and a utility cost escalation rate of 3%.

Results Summary

The combined SIR of all jobs reviewed to date for funds (LIHEAP, DOE, Utilities, CDBG, URRD, SERC) spent on diagnostics, energy measures and health and safety measures is currently at 1.0. Health and safety represented 19% of expenditures.

The combined SIR of all jobs reviewed to date for funds spent on energy measures and diagnostics only (not including health and safety measures) was 1.22

The average saving per home reviewed was 2270 kWh and 33 therms of natural gas (gas therms average includes all electric homes).

It should be noted that, GOEP study savings are based on an average of all homes located throughout the state that participated in the study.

Consumer Education and Outreach

Program marketing efforts and outreach included:

- Weatherization outreach and field visits to participating CAP offices
- Sponsored a weatherization workshop with Red Feather on Hopi Nation
- Sponsored weatherization workshops with Red Feather in the Tuba City area for Navajo Nation and Hopi Nation customers
- Participated in Arizona Department of Housing State Weatherization Policy Advisory Committee meetings for developing the Department of Energy State plan
- Attended Weatherization Peer to Peer meetings.

Problems Encountered and Proposed Solutions

An on-going issue which has been raised by the agencies serving rural areas is the additional costs incurred to serve these customers. There are costs related to increased time and travel which have a negative impact on their ability to deliver weatherization services in a cost effective manner. These additional costs are being borne by the agency and impact their ability to provide other services. APS will work with these agencies to attempt to identify potential solutions.

Program Modifications/Terminations

No programs or measures were modified or terminated during this Reporting Period.

MER Adjusted Gross kW and kWh Savings

Table 32 - MER Adjusted Gross kW and kWh Savings - Low Income Weatherization

Measure	# Homes	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Weatherization	410	996	17,427	0.2
TOTAL	**410**	**996**	**17,427**	**0.2**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

The kW factor used to calculate the savings are based on data from the Arizona Energy Office study. The annual energy demand savings per home in this study are estimated to be 0.3 kW. A 17.5 years measure life and kWh savings factor of 2,270 kWh per home, from the current GOEP report, has been utilized to determine the appropriate kWh savings.

Benefits and Net Benefits/Performance Incentive Calculation

The net benefits for this program are provided in Tables 6 and 8.

Costs Incurred

Costs incurred for this program during the current Reporting Period are listed below:

Table 33 – Costs Incurred - Low Income Weatherization

Activity	Incentives	Training & Technical Assistance	Consumer Education	Program Implementation	Program Marketing	Planning & Admin	Program Total Cost
Bill Assistance							$ -
Health & Safety							$ -
Repair and Replace							$ -
Weatherization	$ 2,381,829	$ 7,000	$ 1,551		$ 18,574		$2,408,954
3rd Party Manager Arizona Community Action Association				$ 50,089			$ 50,089
APS Program Support						$ 61,988	$ 61,988
TOTAL	**$2,381,829**	**$ 7,000**	**$ 1,551**	**$ 50,089**	**$ 18,574**	**$ 61,988**	**$2,521,031**

Note: This table displays all Energy Wise Program costs, including Health and Safety, and Repair and Replace. However, these categories are not included in Table 2.

Commission Decision No. 73089 requires APS to report spending for non-EE measures in the Energy Wise Program. There were no non-EE measures or associated spending in this program during this timeframe.

V. Non-Residential Programs

10. Large Existing Facilities

Description

The Large Existing Facilities Program provides prescriptive incentives for owners and operators of large (more than 100 kW aggregated peak monthly demand) Non-Residential facilities to promote energy efficiency improvements in technologies such as lighting, HVAC, motors and refrigeration applications. The Direct Install approach is available for facilities that are individually metered with a peak demand of 400 kW and less. For EE applications not covered by the prescriptive incentives, the program offers custom incentives that are evaluated individually based on energy savings. The program also provides incentives to reduce the cost of an energy study that identifies energy-saving opportunities. The program provides educational and promotional materials designed to assist facility and business owners and operators in making decisions to improve the EE of their facilities.

Program Goals, Objectives and Savings Targets

- Promote and support EE opportunities for existing large Non-Residential customers.
- Promote the installation of high-efficiency technologies including, but not limited to lighting, HVAC equipment, motors and refrigeration systems.
- Promote market transformation through APS trade allies, customer outreach and technical training classes.

Table 34 - Large Existing Facilities Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
26.65	167,000	2,353,000

*Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

The Large Existing Facilities Program has delivered the most savings of any Non-Residential program since its inception. During this Reporting Period, APS paid $14,706,183 in Large Existing program incentives. This figure represents a total of 1,588 paid applications from 570 unique customers and includes projects implemented through Direct Install. Payments to school districts and charter schools comprised 40 of the 1,588 applications.

Table 35 - Large Existing Facilities Program Incentives Paid

Incentive Status by Fund for Paid Applications	Incentives Paid
Large Existing – Prescriptive & Custom	$14,309,724
Large Existing – Studies	$ 260,573
Large Existing – Retro-commissioning Studies	$ 135,886
Total Large Existing Funds	**$14,706,183**

In Commission Decision No. 70637, APS was required to track DSM applications resulting from studies for which incentives have been paid and to report results to the Commission. During this Reporting Period, APS paid incentives for 62 study applications from 32 customers including 55 feasibility studies and 7 retro commissioning studies. Seven (7) of the 62 studies have already resulted in implementation of the associated measures. Since the program's inception, 494 studies have been completed. Of those 494 studies, 196 have resulted in EE project applications to date.

In Commission Decision No. 73089, APS was required to report the type of measures installed by customers after a study was completed. The following measures were installed for studies completed in 2016: custom, custom lighting, and variable speed drives.

Evaluation/Monitoring Activities and Research Results

- Completed advanced lighting controls (ALC) research to refine savings estimates, identify program incentive structures offered by other utilities, and identify current trends in the lighting controls market. Findings from the research was used to enhance the program design for Energy Management Systems.
- Conducted on-site investigations to assess potential and verify performance of rebated Energy Management System (EMS) projects. Investigations included in-depth interviews with facility and energy managers, observations of EMS operation and functionality, and data collection of facility construction and energy systems that would support further analysis of EMS measures.
- Initiated building-specific hourly load shape development for commercial lighting measures to identify impacts of efficient lighting on overall system load.
- Continued to support program implementer through a "Parallel Path" engineering review of large custom projects, to identify appropriate baselines, savings calculations, and incremental costs.
- Conducted ongoing review and analysis of implementation contractor participation databases.
- Reviewed and updated non-residential Measure Analysis Spreadsheets and Analytic Database.
- Calculated energy and demand impacts and researched incremental costs to determine the cost effectiveness of new prescriptive measures including: outdoor LED lighting, LED street lighting, and conservation behavior.

Consumer Education and Outreach

The focal point of program development activities is centered on specific market segments. The program developed technical resources, information, trainings and advertisements to engage and educate these specific segments.

The program continued to develop and foster relationships with industry and stakeholder associations to enhance outreach efforts and connections with members. During the 2016 Reporting Period, these activities included estimated participation in the following:

- Feb 17 – Southwest Building and Facilities Management Expo (150 attendees)
- April 27 – Greater Phoenix Chamber of Commerce Evening Mixer (50 attendees)
- May 5 – Arizona Small Business Association Awards Luncheon (200 attendees)
- May 24 – Arizona Small Business Association Mixer (35 attendees)

- June 7 – APS Energy Update Meeting, Metro (246 attendees)
- June 14 – APS Energy Update Meeting, Yuma (20 attendees)
- June 15 – APS Energy Update Meeting, Prescott (22 attendees)
- June 16 – APS Energy Update Meeting, Flagstaff (25 attendees)
- June 16 – Arizona Small Business Association AZ Speaks Event (250 attendees)
- June 22 – BOMA of Greater Phoenix (100 attendees)
- July 11-13 – Governor's Conference on Tourism (300 attendees)
- August 23-26 – AZ League of Cities & Towns (300 attendees)
- September 27 – Arizona Hispanic Chamber of Commerce DATOS Event (1,000 attendees)
- Oct 14 – American Institute of Architects Annual Awards Program (200 attendees)
- Nov 3 - APS Energy Update Meeting (100 attendees)
- Nov 15 – Arizona Hispanic Chamber of Commerce Business Diversity Summit (500 attendees)

Customer Awareness and Advertising

In 2016, the Solutions for Business program developed and implemented multi-channel media campaigns to increase awareness among APS business customers. The campaign consisted of an overarching umbrella awareness effort designed to reach the larger business community for broad exposure, while more targeted media tactics and customized messaging focused on engaging customers within select business segments: Restaurant, Hospitality, , Medical/Assisted Living, Personal Care, Convenience/grocery stores, , and Property Management. S4B Marketing also provided strategic communications support for ongoing outreach through supplier contractors, Trade Allies and APS Key Account Managers (KAMs). This included updating and creating key outreach tools to promote the program, customer case studies, bill communications, and a Trade Ally web portal:

- Launched a new awareness campaign, "APS has a rebate for that," which was executed primarily through paid media. A strategic mix of online banner ads, radio, print, search engine marketing (SEM), newsletters, direct mailers and email drove traffic to the Solutions for Business website.
- Created an infographic and video to educate customers on the concept and benefits of energy efficiency. Both are resources available on the Solutions for Business website and were promoted through an email campaign.
- Developed seven new customer case studies.
- Conducted a contest in partnership with the Arizona Diamondbacks to build awareness and increase program participation. Customers requested a facility walk-through in exchange for a chance to win a VIP experience at a Diamondbacks home game.
- Developed bill communications to promote S4B to customers when energy costs are top of mind. Bill communications included six APS 'FYI' newsletters, monthly bill inserts as well as messages printed directly on the bill. The messaging across these owned communications aimed to build customer awareness of the program.
- Engaged and communicated with Trade Allies through our online portal and introduced a quarterly e-newsletter to provide timely updates on program health and changes.
- Promoted the program to customer and contractors through customized 2017 Arizona Highways calendars. The calendar included two program-specific back pages. One page highlighted the non-energy benefits of energy efficiency and the other

included the program Quick Look. Additionally, energy efficiency tips were included each month.

- Updated and produced giveaway items and collateral for program outreach teams to use when visiting with customers.
- Produced and printed large checks for presentations to recognize participation and help raise awareness of the program at customer events.
- Provided individual energy assessments via direct mail to 400 restaurants and 150 hospitality customers. These remote assessments were conducted using First Fuel analytic software and identified individual energy saving measures for each of these customers. These assessment reports directed customers to contact Solutions for Business Outreach personnel in order to take the next steps in implementing these measures.

Technical Training

Training courses help customers and trade allies understand technologies and potential for energy savings. This understanding promotes quicker adoption of energy efficiency technologies and encourages customers to undertake more in-depth and holistic projects. Classes allow interaction among customers, topic experts and contractors who can perform work, thus facilitating the contracting process. Feedback from this educational series indicates that customers are more likely to adopt energy efficiency technology following such presentations and the knowledge gained from them.

APS continued to work closely with the Arizona Chapter of the Association of Energy Engineers ("AEE-AZ") to promote and manage registration of the APS Technical Training series. AEE-AZ provided access to their membership to promote the trainings and the Solutions for Business program and provided APS with turnkey registration support for the training classes that occurred during this Reporting Period. Attendance remained strong during this Reporting Period with many repeat attendees.

The classes held during this Reporting Period attracted 470 attendees at Technical Training events:

- January 13 - Energy Information Services (48 attendees)
- February 20 - Data Center IT Opportunities (28 attendees)
- March 9 - Building Envelope (34 attendees)
- March 30 - ENERGY STAR Benchmarking (25 attendees)
- April 20 - Motor Systems Management (33 attendees)
- May 18 - Energy Efficiency Economics & Financing (33 attendees)
- June 15 - Energy Modeling 101 (19 attendees)
- June 16 - Energy Modeling 201 (15 attendees)
- July 13 - Lighting Controls (44 attendees)
- August 10 - Energy 101 (39 attendees)
- September 14 - Retro-Commissioning (41 attendees)
- October 12 - Energy Studies (41 attendees)
- October 17-21 - Business Energy Professional (16 attendees)
- November 9 - Refrigeration (32 attendees)
- December 7 - Commercial Provisions of 2015 IECC (22 attendees)

The program sponsored the following training organizations and related classes:

- AEE – Certified Energy Manager series – semester-long class with 26 participants
- AEE – Business Energy Professional series – week-long class with 16 participants

Commission Decision No. 73089 requires APS to report Energy Management System ("EMS") and LED measures, annual savings, capacity savings and measure life individually. See Table 36 below:

Table 36 - Large Existing Facilities Program Measures

Measure	Quantity	kWh Savings	kW Savings	Measure Life
EMS - DDC Replacing Pneumatic or Manual Thermostat	435,535 sq. ft.	1,503,780	123	15
EMS - DDC Replacing Programmable Thermostat or Digital System	1,686,873 sq. ft.	5,071,542	475	15
EMS - Integrated Lighting Control	242,000 sq. ft.	441,055	0	10
LED - Non-reflector	56,773	10,278,699	1,999	14
LED – Reflector	29,901	5,592,581	1,089	14
LED - MR16	6,320	885,449	173	14
Linear LED 2 Foot	187	7,724	1	17
Linear LED 3 Foot	455	33,708	6	17
Linear LED 4Foot	15,551	2,872,699	476	17
Linear LED 8 Foot	28	1,983	0	17

Commission Decision No. 68488 requested that APS inform staff when incentives were paid out that exceeded 50% of the incremental cost of the measure. During 2016, APS did not raise the rebate amount for any measures causing it to exceed 50% of the incremental cost of the measure.

Problems Encountered and Proposed Solutions

No problems were encountered during this reporting period.

Program Modifications/Terminations

The prescriptive water-cooled chiller and lighting occupancy sensor specifications were modified during this reporting period, and are listed below. These modifications ensure a benefit to cost ratio of greater than one in order to continue to offer incentives under prescriptive program.

- Increased water-cooled chiller minimum efficiency requirements
- Occupancy sensors, added minimum of 500 connected watts per sensor requirement

The following measures were found to have a benefit to cost ratios of less than one during this reporting period and were removed from the prescriptive program.

- Single phase AC & HP units
- Outside air economizers
- Night covers for reach-in refrigerated cases
- High-efficiency ice-maker
- Smart strips
- LED channel strips
- LED pedestrian lights

ACC Decision No. 75679, dated August 5, 2016 approved the addition of the following new measures to the prescriptive program:

- Smart Thermostats
- Cool Control (Western Cooling Control)
- Linear LED tubes
- Electronically Commutated (EC) motor retrofits for HVAC applications

Self-Direction

On January 23, 2009, the Commission issued Decision No. 71444 approving Self-Direction. In this Reporting Period, no customers participated in Self-Direction.

Freeport McMoran Opt-Out Provision

Commission Decision No. 74813 exempted Freeport McMoran from paying into the DSMAC and participating in the Solutions for Business program for their Bagdad mine. It was furthered ordered by the ACC that Freeport McMoran continue to obtain and report energy efficiency activities and savings on an annual basis for their Bagdad mine. During this reporting period, Freeport McMoran reported installing high-efficiency motors, variable speed drives and LED lighting. Based upon the information provided by Freeport McMoran, APS estimates that the Freeport McMoran Bagdad mine saved approximately 652 MWh annually. As ordered, these savings from the Freeport McMoran Bagdad mine are not included in the savings values reported as part of this Demand Side Management portfolio.

Direct Install

The Direct Install measures were launched in April 2009. While these measures are targeted to small businesses, program rules allow small facilities (under 400 kW demand) of large customers to participate. K-12 school buildings of any size can also participate in Direct Install measures. In this Reporting Period, 158 Direct Install projects for Large Existing Facilities were paid a total of $959,391 in incentives. Pursuant to Commission Decision No. 73089, APS has provided a breakdown of required Direct Install program information within the Small Business section.

Trade Allies

Trade Allies are contractors and other industry professionals who deliver EE solutions to customers. The program incorporates a Trade Ally program to ensure an informed and engaged network of service provider's work with APS's customers. To be listed as a Solutions for Business Trade Ally, a company must submit an application and attend program training. To remain on the list, the company must participate in the rebate program and attend an annual refresher training. Additionally each Trade Ally must maintain good customer service performance and represent the Solutions for Business program appropriately in accordance with the APS Solutions for Business Policies and Procedures. Outreach is conducted through strategic partnerships within the energy and contracting industry as well as trade show and event participation. In house Trade Ally

training is provided monthly which consists of educating contractors on utilization and promotion of the program.

In addition to the monthly training classes and multiple on-site contractor hosted events, the program produced and participated in the following Trade Ally focused events:

- Jan 27 – Associated Minority Contractors of America Event(75)
- April 13 – Electric League of Arizona Luncheon (100)
- April 26 - Mechanical Contractors Trade Association Annual Utility Rebate Panel (100)
- May 20 – APS Solutions for Business Annual Trade Ally Event (190 attendees)
- December 6 – Mechanical Contractors Trade Association of Arizona Annual Trade Show (200 attendees)

Also as a result of the program's focus on Trade Ally development and recruiting efforts, 38 new trade allies (companies) were approved during this Reporting Period for a total at the end of this Reporting Period of 248 trade allies (companies).

MER Adjusted Gross kW and kWh Savings

The following table reflects the MER adjusted total energy and demand saving achievements in this Reporting Period for the Large Existing Facilities program. Only savings from projects that were completed and incentives paid are counted in this Progress Report.

Table 37 - MER Adjusted Gross kW and kWh Savings - Large Existing Facilities

Program	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Large Existing Facilities	172,672	2,162,301	33.4
TOTAL	**172,672**	**2,162,301**	**33.4**

*Savings are adjusted for line losses (energy 7.0%, demand 11.7%) and a capacity reserve factor of 15%.

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

Costs Incurred During the Reporting Period

Cost information is provided in Tables 2(b) and 2(c).

11. New Construction and Major Renovations

Description

The Non-Residential New Construction and Major Renovations program includes four elements: 1) design assistance and feasibility studies, 2) custom measures, 3) prescriptive measures, and 4) whole building applications (construction & design incentives). Design incentives involve efforts to integrate EE into a customer's design process to influence equipment/systems selection and specification as early in the process as possible. Custom and prescriptive incentives are available for EE improvements in lighting, HVAC, motors and refrigeration applications. Whole building applications are intended to promote integrated design strategies.

Program Goals, Objectives and Savings Targets

- Promote integrated design and integrated analysis of alternative high-efficiency design packages through design assistance in new construction and major renovation applications.
- Assist the customer design team in examining alternative high-efficiency design packages through the provision of the design incentive.
- Promote market transformation through APS trade allies, customer outreach and technical training classes.

Table 38 - New Construction Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
5.62	23,800	328,000

*Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

The majority of new construction and major renovation projects under way are choosing the Whole Building application. Many of these new projects are highly energy efficient and will receive significant incentives. In this Reporting Period, APS paid a total of $2,940,662 in New Construction incentives. This represents 134 applications from 83 unique customers. One (1) of the 134 applications was from a school district.

Incentive status is provided below.

Table 39 - New Construction Program Incentives Paid

Incentive Status for Paid Applications	Incentives Paid
Large New Construction – Prescriptive & Custom	$2,851,873
Large New Construction – Studies	$88,789
Total Large New Construction Funds	**$2,940,662**

Commission Decision No. 70637 required APS to continue tracking DSM customer applications resulting from studies for paid incentives, and report the semi-annual and

cumulative results of its program-to-date tracking efforts. During this Reporting Period, 8 design assistance studies were paid a total of $68,789 and two commissioning studies were paid for $20,000. Five (5) of these 10 applications have resulted in EE projects to date. Since program inception, 96 studies have been completed. Of those 96 studies, 64 resulted in applications for EE projects.

Commission Decision No. 73089 required APS to report the type of measures installed subsequent to the receipt of study or design assistance incentives. The following measure was installed for studies completed in 2016: whole building.

APS Solutions for Business launched the whole building incentive in January 2010. During this Reporting Period, the program received 8 Whole Building Pre-Notification applications and 10 Whole Building Final-Notification applications; 10 Whole Building projects were paid incentives.

Evaluation and Monitoring Activities and Research Results

- Completed advanced lighting controls (ALC) research to refine savings estimates, identify program incentive structures offered by other utilities, and identify current trends in the lighting controls market. Findings from the research was used to enhance the program design for Energy Management Systems.
- Conducted on-site investigations to assess potential and verify performance of rebated Energy Management System (EMS) projects. Investigations included in-depth interviews with facility and energy managers, observations of EMS operation and functionality, and data collection of facility construction and energy systems that would support further analysis of EMS measures.
- Initiated building-specific hourly load shape development for commercial lighting measures to identify impacts of efficient lighting on overall system load.
- Conducted ongoing review and analysis of implementation contractor participation databases.
- Reviewed and updated non-residential Measure Analysis Spreadsheets and Analytic Database.

Consumer Education and Outreach

Strategic partnerships with industry organizations such as the American Institute of Architects (AIA) and U.S. Green Building Council (USGBC) continue to play an important role in New Construction outreach. During this Reporting Period, APS continued to sponsor the Energy Award at the annual awards of AIA. This partnership will help the program attract allies in the architectural sector and promote the Whole Building incentive. Architects can access low cost Continuing Education Units through the APS Technical Training program.

In addition to many of the marketing and outreach activities described for the Large Existing program, outreach activities for the New Construction program focus on educating potential program participants from the following customer segments: owner-occupied buildings, government buildings (schools, county, city, state) and signature projects.

Additional New Construction program events:

- June 15 - Energy Modeling 101 (19 attendees)
- June 16 - Energy Modeling 201 (15 attendees)
- Oct 14 – American Institute of Architects Annual Awards Program (200 attendees)

Problems Encountered and Proposed Solutions

No problems were encountered during this reporting period.

Program Modifications/Terminations

The prescriptive water-cooled chiller and lighting occupancy sensor specifications were modified during this reporting period, and are listed below. These modifications ensure a benefit to cost ratio of greater than one in order to continue to offer incentives under the prescriptive program.

- Increased water-cooled chiller minimum efficiency requirements
- Occupancy sensors, added minimum of 500 connected watts per sensor requirement

ACC Decision No. 75679, dated August 5, 2016 approved the addition of Electronically Commutated (EC) motor retrofits for HVAC applications to the prescriptive program. This measure was added in September. The following measures were found to have a benefit to cost ratio less than one during this reporting period and were removed from the prescriptive program.

- Single phase AC & HP units
- Outside air economizers
- Night covers for reach-in refrigerated cases
- High-efficiency ice-maker

MER Adjusted Gross kW and kWh Savings

The following table reflects the MER adjusted total energy and demand saving achievements in this Reporting Period for the Large New Construction Program. Only savings from projects that were completed and incentives paid are counted in this Progress Report.

Table 40 - MER Adjusted Gross kW and kWh Savings
Non-Residential New Construction and Major Renovation

Program	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
New Construction and Major Renovation	33,376	505,529	4.4
TOTAL	**33,376**	**505,529**	**4.4**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c).

12. Small Business Program

Description

The Non-Residential Small Business Program provides prescriptive incentives for small Non-Residential customers (≤100 kW of aggregated peak monthly demand) for EE improvements in lighting, HVAC, motors and refrigeration applications through a simple and straightforward mechanism for program participation. Small Business customers are also eligible for custom incentives to implement EE measures. The program provides incentives for conducting an energy study that identifies energy saving opportunities. Direct Install measures were introduced to the Small Business market in April 2009.

Program Goals, Objectives and Savings Targets

- Promote and support EE opportunities for small Non-Residential customers.
- Promote the installation of high-efficiency lighting, packaged HVAC equipment, motors and refrigeration systems.
- Provide customers with direct energy saving opportunity identification and implementation services through the Direct Install family of measures.
- Promote cross-training and EE assessment and referral opportunities among lighting and refrigeration contractors.
- Promote market transformation through APS trade allies and customer outreach.

Table 41 - Small Business Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
2.43	12,400	158,000

*Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

While the program offers a pre-notification process, final applications are only processed after the project is completed and all required documentation is submitted and approved.

Table 42 - Small Business Program Incentives Paid

Incentive Status for Paid Applications	Incentives Paid
Small Business – Prescriptive & Custom	$1,495,748
Small Business – Studies	$20,000
Small Business – Retro commissioning Studies	$0
Total Small Business Funds	**$1,515,748**

Of the 653 small business projects paid, 536 were conducted through the Classic prescriptive/custom program and 117 were conducted through Direct Install. None of the 653 applications were from school districts.

APS paid incentives on 653 applications from 481 unique customers during this Reporting Period.

Commission Decision No. 70637, required APS to continue tracking DSM customer applications resulting from studies for paid incentives, and report the semi-annual and cumulative results of its program-to-date tracking efforts. There were ten study incentives paid in the Small Business program during this Reporting Period and two of these resulted in a DSM application. Twenty-one (21) studies have been completed since program inception, of which 8 study applications have resulted in EE projects.

In Commission Decision No. 73089, required APS to report the type of measures installed by customers after a study was completed. The following measure was installed as a result of the studies completed: Custom lighting and lighting.

Evaluation and Monitoring Activities and Results

- Completed advanced lighting controls (ALC) research to refine savings estimates, identify program incentive structures offered by other utilities, and identify current trends in the lighting controls market. Findings from the research was used to enhance the program design for Energy Management Systems.
- Conducted on-site investigations to assess potential and verify performance of rebated Energy Management System (EMS) projects. Investigations included in-depth interviews with facility and energy managers, observations of EMS operation and functionality, and data collection of facility construction and energy systems that would support further analysis of EMS measures.
- Initiated building-specific hourly load shape development for commercial lighting measures to identify impacts of efficient lighting on overall system load.
- Continued to support program implementer through a "Parallel Path" engineering review of large custom projects, to identify appropriate baselines, savings calculations, and incremental costs.
- Conducted ongoing review and analysis of implementation contractor participation databases.
- Calculated energy and demand impacts and researched incremental costs to determine the cost effectiveness of new prescriptive measures including: outdoor LED lighting, LED street lighting, and conservation behavior.
- Reviewed and updated non-residential Measure Analysis Spreadsheets and Analytic Database.

Direct Install

Pursuant to Commission Decision No. 73089, APS is providing a breakdown of required direct install program information below. Direct Install incentives were paid on 117 projects for Small Business customers during this Reporting Period. While small businesses are the primary target for the Direct Install offering, large customers with facilities of 400 kW or less premise demand qualify for Direct Install measure incentives, and schools of any size can participate. In addition to the 117 projects paid to small businesses, 169 Direct Install projects for Large Businesses and Schools were paid.

Projects implemented through Direct Install during this Reporting Period saved 10,338 MWh annually and 138,875 MWh over the lifetime of the measures.

1. Active Number of Contractors and Contractor Identification: Direct Install contractor participation from approved contractors has remained consistent. During this Reporting Period, 17 approved contractors participated in Direct Install. Contractors participating during the current Reporting Period include the following:

- Alliance Electrical, Inc.
- Atom Electrical Services
- ATS Electric Inc.
- Bulldog Energy Solutions
- Burden Electric LLC
- D & H Electric Inc.
- Demand Drop
- Inline Electrical Resources
- J and S Electric
- Kortman Electric Inc.
- Midstate Energy LLC
- Red Mountain Lighting and Energy Services Inc.
- Rob Love Electric Inc.
- Stone Kat Development
- US Energy Services Inc.
- Westmoor Electric, Inc.
- Wilson Electric Services Corp

Three Express Solutions contractor training meetings were held for parties interested in participating in Direct Install this year. However, program changes are communicated with all Direct Install trade allies and contractor training is provided on an adhoc basis for any questions that arise from the contractor community. No new companies were approved for Direct Install measure participation during the 2016 program year.

2. Number of Direct Install Jobs Completed: A total of 286 Direct Install projects were paid incentives during this Reporting Period.

3. Dollar Value of the Direct Install Incentives Paid to Contractors: During this Reporting Period, $1,447,228 in Direct Install incentives were paid to contractors. This represents 56% of the total project costs.

4. Dollar Value of the Direct Install Jobs Paid by the Customer: The total cost of the Direct Install projects during this Reporting Period was $2,660,973. Customers paid $1,153,745 toward these Direct Install projects during this Reporting Period.

5. Quantity of Each Direct Install measure for which incentives were paid:

Table 43 - Direct Install Measures

Direct Install Measure	Quantity
Delamping	1,019
T8 Lighting	2,741
LED Lighting	18,345
Occupancy Sensors	623
Exit Signs	45
Refrigerated Case Fan Motors	1,326
Anti-Sweat Heater Controls	1,055
Refrigerated Novelty Case Controls	98
Refrigerated Case Evaporator Fan Controls	98
Hard-Wired CFL	2,265
Occupancy Sensors - Vending Machines	3

6. Number of Instances Where Incentives Were Reduced Because of Eligibility for Incentives Paid by Other Entities:

No known occurrences during this Reporting Period.

7. Spending and Savings Numbers Attributable to Direct Install for the Period and Year-to-Date and Program-to-Date:

Table 44 - Direct Install Savings Year-to-Date

kW Savings	Annual kWh Savings	Lifetime kWh Savings
1,789	10,337,724	138,875,051

Table 45 - Direct Install Savings MER Adjusted Program-to-Date

kW Savings	Annual kWh Savings	Lifetime kWh Savings
31,988	162,976,508	2,305,323,414

MER savings are adjusted for line losses (energy 7.0%, demand 11.7%) and a capacity reserve factor of 15%

Rebate spending for Direct Install was $1,447,229 in 2016 and was $18,505,119 program to date.

8. Descriptions of the Types of Businesses Participating in Direct Install:
The "Grocery" sector participated in the Direct Install measure at the highest rate of frequency within identified business segments and accounted for 37% of Direct Install projects paid during this Reporting Period.

Table 46 - Direct Install Participation

Participation included the following business types:	
Grocery	107
Hotel/Motel	13
K-12 School	22
Medical	2
Miscellaneous	20
Office	6
Process Industrial	3
Restaurant	27
Retail	81
Warehouse	5

9. Estimate of Avoided Marketing or Other Program or Administration Costs:
The costs to implement and market the Small Business program prior to implementing the Direct Install measures were higher on a $/kWh basis as compared to the classic program. This is because low participation resulted in low kWh savings over which to spread implementation costs. From the program inception through 2008 because Direct Install was not available, implementation and marketing costs for Small Business was $1.41M (excluding incentives). Program net annual savings achieved were 5,544,000 kWh. This resulted in non-incentive program costs of $.25/kWh saved for the Small Business program.

In this Reporting Period, estimated Direct Install implementation and marketing costs were $0.063/kWh saved, due to increased kWh savings and lower costs of the Direct Install process. The total Small Business program cost savings is estimated to be $1,933,154 over the 2008 program cost rate. [Reduced program costs = ($0.25 - $0.063) x 10,337,724 net annual savings.]

Consumer Education and Outreach

In 2016, specific marketing activities targeted small- and medium-size customers to promote program awareness and participation. In addition to the broad awareness advertising campaign that was aimed toward a small-mid audience, specific Express Solutions marketing efforts for 2016 included:

- Developing and producing case studies highlighting small business customers and their energy-saving projects.
- Executing a direct mail and email campaign specifically promoting Express Solutions.
- Updating the project completion letter to encourage additional energy-saving projects in the future.

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Program Modifications/Terminated

Commission Decision No. 73089 requires APS report the number of EMS and LED measures installed, the annual energy and capacity savings, and measure life on an individual basis. Please see the table below:

Table 47 – Small Business Program Modifications

Measure	Quantity	kWh Savings	kW Savings	Measure Life
EMS - DDC Replacing Pneumatic or Manual T-stat	20,667 sq. ft.	55,801	6	15
LED - non-reflector	6,963	1,262,475	247	14
LED – reflector	3,589	673,148	131	14
LED - MR16	1,225	172,832	34	7
Linear LED2 Foot	7	724	0	16
Linear LED4 Foot	4,581	1,021,972	167	17
Linear LED8 Foot	1	330	0	16

Commission Decision No. 68488 requested that APS inform staff when incentives were paid out that exceeded 50% of the incremental cost of the measure. During 2016, APS did not raise the rebate amount for any measures causing it to exceed 50% of the incremental cost of the measure.

The prescriptive water-cooled chiller and lighting occupancy sensor specifications were modified during this reporting period, and are listed below. These modifications ensure a benefit to cost ratio of greater than one in order to continue to offer incentives under the prescriptive program.

- Increased water-cooled chiller minimum efficiency requirements
- Occupancy sensors, added minimum of 500 connected watts per sensor requirement

The following measures were found to have a benefit to cost ratios of less than one during this reporting period and were removed from the prescriptive program.

- Single phase AC & HP units
- Outside air economizers
- Night covers for reach-in refrigerated cases
- High-efficiency ice-maker
- Smart strips
- LED channel strips
- LED pedestrian lights

ACC Decision No. 75679, dated August 5, 2016 approved the addition of the following new measures to the prescriptive program.

- Smart Thermostats
- Cool Control (Western Cooling Control)
- Linear LED tubes
- Electronically Commutated (EC) motor retrofits for HVAC applications

MER Adjusted Gross kW and kWh Savings

The following table reflects the total energy and demand saving achievements in this Reporting Period for the Small Business Program. Only savings from projects that were completed and incentives paid are counted in this Progress Report.

Table 48 - MER Adjusted Gross kW and kWh Savings
Non-Residential Small Business Program

Program	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Small Business	15,387	175,983	2.75
TOTAL	**15,387**	**175,983**	**2.75**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c).

13. Schools Program

Description

The Schools program includes a dedicated budget for schools and provides assistance for reducing the energy used in school buildings, including public, private and charter schools ("K-12"). The incentives available for schools include the same DSM measures that are available for all Non-Residential customers, as well as Direct Install measures for K-12 schools of any size.

Program Goals, Objectives and Savings Targets

- Maximize the energy savings that can be attained with available DSM funds by providing schools incentives to upgrade lighting, HVAC, refrigeration, and any other energy consuming systems.
- Provide educational and training materials to facility managers and trade allies in order to aid schools in other energy conservation projects.
- Promote market transformation through APS trade allies, customer outreach and technical training classes.
- Provide incentives for other cost effective DSM projects by allowing schools to participate in any Non-Residential DSM Program including Direct Install.

Table 49 - Schools Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
2.7	14,100	195,000

*Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

In this Reporting Period, APS paid incentives for 242 applications from schools, of which 201 were paid from the schools fund category. This represents 63 unique school districts and charter schools. Schools continued to have had a very high level of participation in the program.

The self-reported size of the school entity (based on the number of students) for approved applications paid in this Reporting Period are:

Table 50 - Schools Program Applications

Division	Programs	# of Applications	# of Students
Non Metro	Custom Measures - Retrofit, Prescriptive Measures - Retrofit	4	1160
Non Metro	Custom Measures - Retrofit, Prescriptive Measures - Retrofit	2	650
Non Metro	Custom Measures - Retrofit, Express Solutions, Prescriptive Measures - Retrofit	13	3937
Metro	Express Solutions	12	5615
Metro	Express Solutions, Prescriptive Measures - New Construction,Prescriptive Measures - Retrofit	9	34815
Metro	Custom Measures - Retrofit, Express Solutions, Prescriptive Measures - Retrofit	6	1249
Non Metro	Custom Measures - Retrofit, Express Solutions, Prescriptive Measures - Retrofit	5	902
Metro	Prescriptive Measures - Retrofit	1	5379
Non Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit	14	8733
Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit	3	27035
Metro	Prescriptive Measures – Retrofit	1	1506
Metro	Custom Measures - Retrofit, Prescriptive Measures – New Construction Prescriptive Measures – Retrofit, Technical Assistance & Studies	9	10857
Non Metro	Prescriptive Measures – New Construction	1	10857
Non Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit	18	5557
Metro	Prescriptive Measures - New Construction	1	45
Metro	Custom Measures - Retrofit, Prescriptive Measures – New Construction, Prescriptive Measures – Retrofit	14	32808
Non Metro	Prescriptive Measures - Retrofit	1	421
Metro	Prescriptive Measures - New Construction	2	116
Metro	Prescriptive Measures - Retrofit	1	3441
Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit, Technical Assistance & Studies	7	943
Non Metro	Custom Measures - Retrofit	3	3500

Table 50 - Schools Program Applications (cont.)

Division	Programs	# of Applications	# of Students
Metro	Custom Measures – Retrofit, Prescriptive Measures - Retrofit	2	209
Non Metro	Custom Measures - Retrofit	1	173
Metro	Custom Measures - Retrofit	1	12002
Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit, Technical Assistance & Studies	3	1952
Metro	Custom Measures - Retrofit, Technical Assistance & Studies	2	584
Non Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit, Technical Assistance & Studies	10	6395
Non Metro	Custom Measures - Retrofit, Technical Assistance & Studies	6	2919
Non Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit, Technical Assistance & Studies	3	1774
Metro	Technical Assistance and Studies	1	617
Non Metro	Technical Assistance and Studies	1	391
Metro	Custom Measures - Retrofit, Technical Assistance & Studies	3	6105
Non Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit, Technical Assistance & Studies	3	1507
Non Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit, Technical Assistance & Studies	3	470
Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit, Technical Assistance & Studies	3	14027
Metro	Custom Measures - Retrofit	1	1156
Non Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit, Technical Assistance & Studies	5	1156
Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit	2	402
Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit	6	863
Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit	7	23324
Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit	7	25151
Non Metro	Custom Measures - Retrofit	1	107
Non Metro	Custom Measures - Retrofit	1	94
Non Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit	7	220
Metro	Custom Measures - Retrofit, Prescriptive Measures – Retrofit	3	37164
Non Metro	Custom Measures - Retrofit	1	342

Table 50 – Schools Program Applications (cont.)

Division	Programs	# of Applications	# of Students
Non Metro	Custom Measures - Retrofit, Prescriptive Measures - Retrofit	2	27
Metro	Prescriptive Measures - New Construction	1	231
Metro	Custom Measures - Retrofit, Prescriptive Measures - Retrofit	3	1689
Non Metro	Custom Measures - Retrofit	1	1689
Non Metro	Custom Measures - Retrofit, Prescriptive Measures - Retrofit	3	102
Metro	Prescriptive Measures - Retrofit	1	390
Metro	Custom Measures - Retrofit, Prescriptive Measures - Retrofit	3	6507
Non Metro	Custom Measures - Retrofit	2	458
Non Metro	Custom Measures - Retrofit	1	596
Metro	Prescriptive Measures - Retrofit	1	152
Non Metro	Custom Measures - Retrofit	2	757
Metro	Custom Measures - Retrofit, Prescriptive Measures - Retrofit	2	241
Metro	Prescriptive Measures - Retrofit	1	655
Non Metro	Technical Assistance & Studies	1	2392
Metro	Prescriptive Measures - New Construction	1	11494
Metro	Prescriptive Measures - Retrofit	1	177

When an incentive application is received from a school district and deemed eligible, funding is first allocated from the Schools budget up to a maximum of $100,000. Any additional funding required to cover the application is then allocated from the appropriate Large Existing, New Construction or Small Business program budget.

APS paid $5,022,072 in incentives to schools during the Reporting Period, of which $1,808,734 was paid from the Schools program budget and $1,993,312 was from the Schools Pilot program. The remaining $1,220,027 was paid to schools from the Large Existing program and New Construction program budgets (see Tables below).

Table 51 - Schools Program Incentives Paid from Program Budget

Incentive Status by Fund for Paid Applications	Incentives Paid
Schools Budget – Prescriptive, Custom, and Direct Install	$1,533,847
Schools Budget – Feasibility, Design Assistance	$206,887
Schools Budget – Retro commissioning Studies	$68,000
Total School Funds	**$1,808,734**

Table 52 – Total Schools Program Incentives Paid

Schools Funding Summary:	Incentives Paid
Schools – School Funds	$1,808,734
Schools – Large Existing Funds	$1,216,321
Schools – New Construction Funds	$3,705
Schools – Small Business Funds	$0
Schools – School Pilot Funds	**$1,993,312**
Total Paid to Schools	**$5,022,072**

In Commission Decision No. 70637, the Commission ordered APS to continue tracking DSM applications resulting from studies for which incentives have been paid, and report the semi-annual and cumulative results of its program-to-date tracking efforts. Twenty (20) feasibility study incentives and two (2) commissioning were paid from the school funds during this Reporting Period for a total of $274,887. These applications resulted in 14 energy efficiency projects. Since program inception, 67 studies have been completed at schools; of those 68 studies, 54 have resulted in EE projects at schools.

In Commission Decision No. 73089, the ACC requested that APS report the type of measures installed after a study was completed. The following measures were installed for studies completed in 2016: custom and lighting.

Schools Pilot Program

Decision No. 75323 ordered APS to implement a pilot program for schools. The Schools Pilot Program helped schools that were unable to participate in our energy efficiency programs due to lack of available funding. The Schools Pilot Program rebates, in addition to the APS Schools rebates, paid 100% of the school's cost for energy efficiency projects. In 2016, 66 K-12 schools participated in the Schools Pilot program receiving $3.0 million in fully funded energy efficiency audits and upgrades. Of the $3.0 million, $2.0 million were from the Schools Pilot Program and $1.0 million was funded through the APS Solutions for Business Schools program. Collectively, these schools are projected to save more than 8.73 GWh and $570,000 in annual energy costs. This Schools Pilot program launched and was completed in 2016.

Schools Direct Install

Direct Install incentives were paid on 22 school projects during this Reporting Period. Of the 22 projects, 11 were paid from the Schools fund. Direct Install activities for this period are described in the Small Business Program report.

Pursuant to Commission Decision No. 73089, APS is providing a breakdown of required direct install program information within the Small Business section.

Evaluation and Monitoring Activities and Research Results

- Compared potential savings derived from remote and on-site audits for a sample of schools in APS service territory to assess predictive capabilities of a remote audit service.

- Completed advanced lighting controls (ALC) research to refine savings estimates, identify program incentive structures offered by other utilities, and identify current trends in the lighting controls market. Findings from the research was used to enhance the program design for Energy Management Systems.

- Conducted on-site investigations to assess potential and verify performance of rebated Energy Management System (EMS) projects. Investigations included in-depth interviews with facility and energy managers, observations of EMS operation and functionality, and data collection of facility construction and energy systems that would support further analysis of EMS measures.

- Initiated building-specific hourly load shape development for commercial lighting measures to identify impacts of efficient lighting on overall system load.

- Continued to support program implementer through a "Parallel Path" engineering review of large custom projects, to identify appropriate baselines, savings calculations, and incremental costs.

- Conducted ongoing review and analysis of implementation contractor participation databases.

- Calculated energy and demand impacts and researched incremental costs to determine the cost effectiveness of new prescriptive measures including: outdoor LED lighting, LED street lighting, and conservation behavior.

- Reviewed and updated non-residential Measure Analysis Spreadsheets and Analytic Database.

Consumer Education and Outreach

In addition to many of the marketing outreach activities described for the large existing program, marketing activities associated with the Schools program centered on four areas of focus:

Customer awareness and project generation

During this Reporting Period, over 330 contacts were made including phone calls, e-mails, face to face visits, and meetings with public school districts, private and charter school leadership and associations, and other key stakeholders to identify potential new projects. Staff supported booths and networking events, establishing and/or nurturing relationships with school officials, decision makers, and contractors at the following Arizona Association of School Board Officials ("AASBO") and Arizona School Administrator's ("ASA") event locations:

- January - Winter Conference in Fountain Hills – AASBO
- April - Spring Conference in Bullhead City – AASBO
- June – Summer Conference in Tucson – ASA booth
- July – Annual Conference in Tucson - AASBO
- October – Fall Conference in Prescott – ASA booth

Coordination with the Schools Facility Board ("SFB")

Staff attends all SFB meetings to stay abreast of school EE projects, both funding and progress. Emergency repairs approved by SFB include equipment covered by program specifications such as cooling systems. As these are approved, Solutions for Business follows up with the districts to see how they can assist in planning the upgrades, scoping projects, reviewing plans, and completing the rebate application; to produce the deepest savings and rebates possible through the program.

Coordination with the APS Schools Key Account Manager

Program staff coordinates with the APS Key Account Managers ("KAM") who have schools assigned to them, to optimize the customer's time and value during planned meetings, focused emails, and phone calls. The partnership with the APS's Schools KAMs has facilitated troubleshooting of other related customer issues or concerns, a direct approach to schools related issues and concerns, and the cross-selling of other DSM programs which will benefit the schools, while improving their energy efficiency.

Attended Arizona Association of School Board Officials (AASBO) meetings

Program staff has attended AASBO bi-monthly meetings where school business and finance professionals meet. The latest news on legislative and financial issues pertaining to schools is disseminated at these meetings, and contacts have been made with school business officials to keep them abreast of all available rebates or funding that can help with energy efficiency upgrades; and the value of improvements at a reduced cost to the schools.

Problems Encountered and Proposed Solutions

No problems were encountered during this reporting period.

Program Modifications/Terminations

During this Reporting Period, EMS and LED measures were installed. Commission Decision No. 73089 requires APS report the number of these measures installed, the annual energy and capacity savings, and measure life on an individual basis. Please see Table 53 below:

Table 53 –Schools Program Measures Savings

Measure	Quantity	kWh Savings	kW Savings	Measure Life
EMS - DDC Replacing Pneumatic or Manual T-stat	156,722 sq. ft.	598,869	44	15
EMS - DDC Replacing Programmable T-stat or digital system	461,217 sq. ft.	1,411,324	130	15
EMS - Integrated Lighting Control	223,523 sq. ft.	407,380	0	10
LED - non-reflector	919	165,635	32	14
LED – reflector	217	40,371	8	14
LED - MR16	0	0	0	14
Linear LED 2 Foot	60	7,837	2	16
Linear LED 3 Foot	0	0	0	17
Linear LED 4 Foot	6141	894,183	192	17
Linear LED 8 Foot	12	3,926	1	16

See the Large Existing, New Construction and Direct Install program sections for a list of program changes.

MER Adjusted Gross kW and kWh Savings

The following table reflects the total energy and demand saving achievements for schools projects completed and paid during this Reporting Period.

Table 54 - MER Adjusted Gross kW and kWh Savings - Non-Residential Schools Program

Program	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Schools - School Program Funds	18,451	266,469	4.1
Schools - Large Existing Program Funds	11,776	174,793	2.9
Schools - New Construction Program Funds	29	487	0
Schools - Small Business Program Funds	0	0	0.0
TOTAL	**30,256**	**441,749**	**7.0**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c).

14. Energy Information Services ("EIS") Program

Description

The EIS Program started in November 2006 with an objective to help customers (>100 kW) save energy through better understanding and control of their facilities' electrical usage. EIS is a tool that provides data regarding usage (kWh) and demand (kW). This detailed information allows customers the ability to fine-tune equipment use, operations and produce summaries to document the impact of usage and demand modifications. Participating customers monitor their electric usage through a web-based dashboard that allows them to view historical 15-minute interval usage and demand graphics from the previous day. This information can be used to improve and monitor energy usage patterns, reduce energy use, reduce demands during on-peak periods and better manage overall facility energy operations.

APS is encouraging customers to take advantage of the EIS program by providing a one-time incentive of up to a maximum of $12,000 per year or 75% of the cost of installing metering and communications equipment necessary to participate in the program.

Program Goals, Objectives and Savings Targets

- Provide monthly energy usage information to participating Non-Residential customers.
- Participants identify strategies to lower energy cost by reducing energy usage and demand.
- Educate EIS program participants about utility rate concepts and how managing or reducing their energy consumption through EE measures and operational practices can reduce their energy expenses.
- Educate participants on how to download billing history information and create spreadsheets to chart and graph their energy use, as well as to identify consumption trends and savings opportunities.
- Educate EIS participants about creating reports for management that justify energy-efficient capital expenses intended to produce operations and maintenance savings.
- Facilitate analysis of what-if scenarios to help facility manager to assess the benefits of capital improvements or operating adjustments to promote energy efficient changes.

Table 55 - Energy Information Services Program Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
5.75	100	400

*Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

Several customers were added and several opted out of the program in 2016. The result was no net change in the number of EIS customers. The number of enrolled meters was increased by 58 in 2015. A total of 69 customers comprised of 294 meters are currently enrolled in the EIS program.

Evaluation and Monitoring Activities and Research Results

- Completed the following data collection activities:
  - Reviewed EIS online portal and log-in data to assess engagement and usability
  - Observed user training session to identify process improvements and recruit for in-depth interviews
  - Conducted in-depth telephone interviews to verify energy efficient equipment/settings, and obtain interval energy consumption data analysis to support impact analysis
- Updated savings impacts based on the results of in-depth interviews and data provided by the customer
- Conducted ongoing tracking and review of program participation data.
- Continued to review and update program Measure Analysis Spreadsheets and Analytic Database.

Consumer Education and Outreach

Implementation contractor provided onsite consultations with product demonstrations and online product demonstrations.

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Program Modifications/Terminations

No programs or measures were modified or terminated during this Reporting Period.

MER Adjusted Gross kW and kWh Savings

Table 56 - MER Adjusted Gross kW and kWh Savings
Non-Residential Energy Information Services Program

Program	# Meters	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Energy Information Services	58	32.6	163	2.2
TOTAL	**Total**	**32.6**	**163**	**2.2**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

Costs Incurred

Cost information is provided in Tables 2(b) and 2(c).

VI. Demand Response Programs

Time of Use ("TOU") Rates Including Super Peak Pricing ("SPP")

Description

TOU rates are designed 1) to reflect the time variation in the cost of producing electricity, to more accurately match those costs with the service being provided to the customer thereby encouraging efficient use of energy, and 2) to encourage customers to reduce consumption during peak hours or to shift energy usage to off-peak periods.

APS currently offers five Residential TOU rates:

a. Two "Series 1" rates that have on-peak hours from 9:00 a.m. to 9:00 p.m. and have been offered since 1982. The Series 1 rates were closed to new customers on January 1, 2010,
b. Two "Series 2" rates that have on-peak hours from 12:00 pm Noon to 7:00 p.m. and have been offered since 2006. These rates offer customers 40% fewer on-peak hours; and
c. One Super-Peak Pricing TOU rate that went into effect on January 1, 2010. The Super Peak periods are pre-determined and set forth in the rate schedule. Participating customers will pay higher charges during the "Super-Peak" periods, but will pay lower charges during off-peak periods. The "Super-Peak" period is 3:00 p.m. to 6:00 p.m., Monday thru Friday during June, July, and August (excluding holidays).

Program Goals, Objectives and Savings Targets

The program is estimated to provide a 2016 load reduction amount of approximately 178.6 MW from the Series 1 and 2 rates and 1.7 MW from the Super Peak rate. The 178.6 MW total load reduction provides a calculated estimate of 789,889 MWh in annual savings from January through December 2016. Load reduction and savings targets are summarized in Table 10 – Demand Response Program/Initiatives Load Reduction and Energy Savings 2016.

Levels of Customer Participation

Approximately 573,000 customers are enrolled in the TOU rates of which 2,000 are super peak customers. As of December 2016, 134 schools were enrolled in the TOU school rates.

Evaluation/Monitoring Activities and Research Results

No evaluation of TOU rates was performed during this Reporting Period.

Consumer Education and Outreach

The TOU marketing outreach is outlined below:

- Lifestyles Newsletter in the April "At Your Service" article
- Rate Brochures

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Programs or Measures Modifications/Terminations

No programs or measures were modified or terminated during this Reporting Period.

APS Peak Solutions® Program

Description

APS Peak Solutions® is a commercial and industrial demand response ("DR") program for APS's Yuma and Phoenix metro customers utilizing direct load control and manual load reduction.

The program began on June 1, 2010 and is available for the summer months of June through September between 12:00 noon and 8:00 p.m. (Sunday - Saturday) daily. Customers are notified approximately two hours prior to the start of a Peak Solutions® event. Events are limited to minimum of one hour and maximum of four hours per day and 80 event-hours during the season. The program is required to have one test at the start of the season between June 1 and July 15 lasting for four hours.

Customers are paid an incentive check at the end of the season for their load reduction amount based on $/kW or $/ton of air conditioning.

Program Goals, Objectives and Savings Targets

In 2016, a 27.8 MW load reduction provided a calculated 121,808 MWh of annual savings from January through December 2016. Load reduction and savings targets are summarized in Table 10 – Demand Response Program/Initiatives Load Reduction and Energy Savings 2016.

Levels of Customer Participation

Approximately 769 customers are enrolled in the program.

Evaluation/Monitoring Activities and Research Results

During this Reporting Period one Peak Solutions® test was called in June 2016.

Consumer Education and Outreach

Customer program enrollment has been accomplished; outreach is primarily to customers enrolled in the program in preparation of an event.

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Programs or Measures Modifications/Terminations

No programs or measures were modified or terminated during this Reporting Period.

Critical Peak Pricing – General Service and Residential

Description

Critical Peak Pricing ("CPP"), or its marketing name of Peak Event Pricing, is a DR program for both APS's business (or General Service) and Residential customers in the Yuma and Phoenix metro areas utilizing manual load reduction. CPP is a Pilot program which became effective on January 1, 2010.

The program provides a price signal to incent customers to reduce their usage during events initiated by APS. CPP events will take place during June through September, weekdays between 2 p.m. and 7 p.m. (Monday through Friday), excluding holidays. Customers will be notified of an event by telephone or e-mail by 4:00 p.m. of the day prior to the CPP event. Peak Events are limited to 80 hours during the season. APS is required to initiate a minimum of six events and a maximum of 18 events.

Customers receive a kWh discount incentive off of their existing rate for all of the electricity usage during the program months of June through September.

Program Goals, Objectives and Savings Targets

The program is estimated to provide a 2016 load reduction amount of 0.34 MW. The 0.34 MW load reduction will provide 1,687 MWh of calculated annual savings. Load reduction and savings targets are summarized in Table 10 – Demand Response Program/Initiatives Load Reduction and Energy Savings 2016.

Levels of Customer Participation

Approximately 415 Residential and no business customers are enrolled in the program.

Evaluation/Monitoring Activities and Research Results

18 CPP events were called during this Reporting Period and resulted in an average of 0.93 kW load reduction/customer per event.

Consumer Education and Outreach

Customers in the program were emailed energy reduction tips during event periods.

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Programs or Measures Modifications/Terminations

No programs or measures were modified or terminated during this Reporting Period.

VII. Financing Programs

Non-Residential Energy Efficiency Financing

On January 26, 2010, the Commission issued Commission Decision No. 71460, which approved the Non-Residential Customer Repayment Financing option. The option was approved for schools, municipalities and small businesses. Commission Decision No. 72088 expanded eligibility for the financing program to include all Non-Residential customers.

APS has partnered with National Bank of Arizona ("NBAZ") to offer this financing option. The Financing option was launched in May of 2010. More than half of the program trade allies have participated in financing training. The program developed educational materials for bankers, customers and trade allies to facilitate the process. Non-Residential loans made in 2014 are summarized below:

Table 57 – Non-Residential Financing Programs

Category	Number of Loans	Total Loan Value	Amount in Default
Large Existing	0	$0	0
Small	0	$0	0
Schools	0	$0	0
Total	**0**	**$0**	**0**

Residential Energy Efficiency Financing

On September 1, 2010, the Commission issued Decision No. 71866, which approved the Residential Energy Efficiency Financing ("REEF") Program. Through this program, APS customers who participate in the Home Performance with ENERGY STAR® program can gain access to financing for energy efficient home improvements.

Launched in February 2011, APS partnered with NBAZ to deliver the REEF program throughout the APS territory.

No customers defaulted in 2016 and APS will continue to monitor defaults closely. Residential loans are summarized below:

Table 58 – Residential Financing Programs

Category	Number of Loans	Total Loan Value
Loans issued Jan - Dec. 31, 2016	14	$93,499
Jobs in default	0	0
Jobs deemed unrecoverable	0	0

VIII. Energy Efficiency Initiatives

APS System Savings Initiative

Description

The APS System Savings Initiative was approved by the Arizona Corporation in Decision No. 75323. The initiative is designed to save energy through energy efficiency upgrades to APS generation facilities. The transmission and distribution system, and APS owned streetlights, buildings and facilities.

Program Goals, Objectives and Savings Targets

The objective of the APS System Savings Initiative is to take advantage of opportunities for savings energy within APS generation, transmission, distribution and operations facilities. The initiative offers the potential for significant cost effective energy savings that can help lower EES compliance costs for ratepayers while meeting the energy savings objectives of the EE Standard.

Table 59 – System Savings Initiative Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
12.0	36,500	36,500

*Based on 2016 program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

By the end of 2016, there were a total of 11 APS distribution feeders that were installed and operating with Conservation Voltage Reduction.

Evaluation/Monitoring Activities and Research Results

During the program approval process, APS worked closely with ACC Staff and independent third party evaluators to review and confirm the energy savings and cost effectiveness calculations for this initiative. As projects have been implemented, APS has used the same processes to calculate and report savings that are currently being used for similar measures in the Non-Residential Solutions for Business program. All documentation of APS System Savings projects has been provided to the independent third party evaluator for review and verification.

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Program Modifications/Terminations

No programs or measures were modified or terminated during this Reporting Period.

Consumer Education & Outreach/Codes Support Activities

Not applicable.

Other Significant Information

No other significant information to report at this time.

MER Adjusted Gross kW and kWh Savings

Table 60 - MER Adjusted Gross kW and kWh Savings – APS System Savings Initiative

Project	# Units	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Conservation Voltage Reduction	11 feeders	4,752	4,752	0.0
TOTAL		**4,752**	**4,752**	**0.0**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

Benefits and Net Benefits/Performance Incentive Calculation

Pursuant to Decision No. 75323, APS does not currently calculate net benefits or earn a performance incentive on energy savings from the APS System Savings Initiative.

Costs Incurred

There were no costs incurred for this program that are being collected through the DSMAC.

Consumer Education and Outreach

Not applicable.

Energy Code and Appliance Standards Initiative

Description

The Energy Codes and Appliance Standards ("C&S") Initiative delivers energy savings by supporting better compliance with energy codes and appliance standards in jurisdictions throughout the APS service area by working with code officials, building professionals and other market actors to develop strategies for achieving better code compliance more cost effectively.

C&S can be one of most cost-effective ways of promoting EE. C&S activities may be utilized to deliver low cost energy savings while supporting Arizona building officials, the construction community, customers and stakeholders. APS supports C&S activities with a multifaceted approach that provides unbiased support, information, resources, and expertise to jurisdictions and trade allies within the APS service area.

- **Residential and Commercial Energy Codes** - Activities are intended to support building officials, the builder community, and interested stakeholders. Targeted activities include providing technical support, research, subject matter expertise, resources, and training. Training classes are customized to meet local jurisdictional needs and are based on the climate zone and code that is currently being adopted. The classes help to translate building code requirements into a process for builders to follow with subcontractors in the field to ensure that each trade knows their role in code compliance and how to properly install construction details to meet code.

- **Appliance Standards** – Activities target appliance standards where the efficiency standard for that appliance is being updated. APS quantifies savings created from recently updated standards where APS participated in the standard rulemaking or EE programs have helped create market demand and market readiness for new appliance standards in Arizona.

Utility programs are inextricably linked to building codes and appliance standards. Utility EE programs act as a catalyst to ready the market for new technologies or standards that are not currently common practice in the market place. By providing incentives, trade ally training and educating consumers, utility programs help to increase adoption of new energy efficient technologies and practices. Over time these practices become the commonly accepted business practice and the market adopts higher C&S as a result. While this helps to further the goal of energy efficiency, it also has a direct impact on the available market potential from utility programs. This is due to the fact that utility program savings are calculated using current building codes and appliance standards as the "baseline" for comparison.

In general, energy savings for utility program measures are calculated by taking the efficiency differential from the baseline product (typically represented by current building codes and appliance standards) as compared to the high efficiency product being promoted by the utility program. For example the APS Pools program promotes energy efficient variable speed pool pumps. When the program started in 2010, the pump savings were compared to a single speed pump as the baseline efficiency level. Starting in 2012, Arizona enacted a new appliance standard that sets dual speed pumps as the minimum efficiency requirement. As a result, the new 'baseline' for calculating variable speed pump savings is now based on a higher efficiency dual speed pump, since it is now the minimum efficiency level that someone can legally purchase. It also means that APS now counts less EE program savings from variable speed pumps based on this higher baseline efficiency level, even though customers who are replacing single speed pumps with variable speed will still see the full savings in their bills. Because of this, increases to building codes and appliance standards can make it more difficult to cost effectively meet utility program EE goals without some consideration being given for code and standards changes in the EE rules.

Program Goals, Objectives and Savings Targets

The goal of the APS Codes and Standards Initiative is to promote increased energy efficiency in the APS service territory through advancement of building codes and appliance standards, including increasing code awareness and better code compliance. Savings are quantified through independent MER evaluation. During this reporting period, energy savings are being reported resulting from codes and standards efficiency increases in Residential New Construction, Commercial New Construction, General Service Lamps, Linear Fluorescents, Motors, and HVAC.

Table 61 - Codes Initiative Goals and Objectives

Peak Demand Savings (MW)	Annual Energy Savings (MWh)	Lifetime Energy Savings (MWh)
6.9	34,900	249,100

*Based on program goals and objectives as approved in Decision No. 75679.

Levels of Customer Participation

Participation levels are identified in APS's Codes and Standards Report for 2016 issued by Navigant Consulting. This report will be submitted to the Commission in a subsequent filing.

Evaluation/Monitoring Activities and Research Results

Evaluation, monitoring, and research results are identified in APS's Codes and Standards MER Report for 2016, as issued by Navigant Consulting. This report will be submitted to the Commission in a subsequent filing. MER activities included:

- Updated savings impacts based on the results of in-depth interviews and data provided by the customer.
- Conducted ongoing tracking and review of program participation data.
- Continued to review and update program Measure Analysis Spreadsheets and Analytic Database.

Problems Encountered and Proposed Solutions

No problems were encountered during this Reporting Period.

Program Modifications/Terminations

No measures were modified or terminated during this Reporting Period.

Consumer Education & Outreach

- Provided scholarships for a class titled "Taking the Performance Path"
- Utility Title Sponsor for the Association of Energy Service Professionals (AESP) Conference
- Attended Central Arizona Chapter of the International Conservation Code Chapter Meetings and participated on various committees
- Attended Grand Canyon International Conservation Code Chapter Meetings
- Primary sponsor of the Residential Energy Services Network (RESNET) Conference
- Sponsored the Energy Codes Conference held in Tucson
- Hosted a "Success with the 2015 IECC" training class at the Arizona Association of Building Officials (AZBO) Spring Educational Institute
- Provided light bulbs to the City of Phoenix in support of building safety month
- Attended Maricopa Association of Governments Codes Committee Meeting
- Sponsored an Energy & Environmental Building Alliance (EEBA) 2-day training class entitled "EEBA Local Toolbox"
- Attended the AZBO Annual Business Meeting held on July 13th & 14th in Prescott
- Hosted a "Success with the 2012" IECC training in Casa Grande
- Major sponsor of "Proof is Possible Tour" hosted by Efficiency First Arizona
- Hosted a Commercial Provisions of the 2015 IECC Training Class in partnership with the APS Solutions for Business Training Series
- APS was a signatory on a comment letter to support the development of a federal appliance standard for Ceiling fans
- APS was a signatory on a comment letter to support the development of a federal appliance standard for General Service Lamps
- APS was a signatory on a comment letter to support the development of a federal appliance standard for Uninterruptible Power Supplies
- CS promotional flyers were distributed to promote the Success with 2015 IECC and commercial code classes.

Other Significant Information

No other significant information to report at this time.

MER Adjusted Gross kW and kWh Savings

Table 62 - MER Adjusted Gross kW and kWh Savings

Building Codes and Appliance Standards Initiative

Measure	# Units	Annual Gross MWh Savings	Lifetime Gross MWh Savings	MW Peak Demand Savings
Residential New Construction	12,677	4,539	90,780	2.30
Commercial New Construction	469	4,297	85,940	0.98
General Service Lamps	670,210	18,628	37,256	2.76
Linear Fluorescents	1,239,613	8,846	132,690	2.27
Motors	6,624	987	14,805	0.36
HVAC	33,607	4,242	76,356	2.07
TOTAL	**1,963,200**	**41,539**	**437,827**	**10.74**

*Savings are adjusted for line losses (Energy 7.0%, Demand 11.7%) and a capacity reserve factor of 15%.

Benefits and Net Benefits/Performance Incentive Calculation

The MER adjusted net benefits and performance incentive are provided in Tables 6 and 8.

Costs Incurred

Costs incurred for this program during this Reporting Period are shown in Tables 2b and 2c.

IX. Measurement Evaluation and Research

Description

Navigant Consulting provides MER Services for APS's DSM programs. These Measurement and Evaluation activities include, but are not limited to:

- Performing process evaluation research to indicate how well programs are working to achieve their objectives;
- Performing impact evaluation research to verify that energy-efficient measures are installed as expected; measuring savings on installed projects to monitor the actual program savings that are achieved; and conducting research activities to refine savings and cost benefit models and identify additional opportunities for EE;
- Performing and tracking savings measurements to monitor the actual program savings that are achieved; and
- Researching additional opportunities for EE and DR.
- Conducting updates and maintenance of Measure Analysis Spreadsheets and Analytic Databases for all APS programs and measures. Updates include calculation of electric energy and demand impacts, hourly end-use load-shapes, natural gas impacts, water impacts, incremental equipment costs, and operation & maintenance (O&M) cost impacts.
- Providing support for program design options to be included in the annual DSM Program Portfolio including program design, technology research, energy efficiency measure analysis, and cost-effectiveness analysis.
- Updating the Technical Reference Manual (TRM) detailing savings algorithms, performance variables, and incremental cost assumptions for new and existing measures rebated through APS DSM programs.
- Assessing new and emerging technologies to support current and future program offerings.

The approach for measurement and evaluation of the DSM programs is to integrate data collection and tracking activities directly into the program implementation process.

The APS MER Verification Report for 2016, prepared by Navigant Consulting, will be provided as a separate filing.

CERTIFICATION BY APS OF DSM ANNUAL PROGRESS REPORT FOR THE PERIOD:

JANUARY THROUGH DECEMBER 2016

Pursuant to Decision No. 67744 (April 7, 2005), I certify that to the best of my knowledge and based on the information made available to me, the DSM Annual Progress Report is complete and accurate in all material respects.

3/1/17

Date

Stacy Derstine
Vice President Customer Service and Chief Customer Officer