

ORIGINAL

NEW APPLICATION



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1 Melissa M. Krueger
 2 Thomas L. Mumaw
 3 Pinnacle West Capital Corporation
 4 400 North 5th Street, MS 8695
 5 Phoenix, Arizona 85004
 6 Tel: (602) 250-3630
 7 Fax: (602) 250-3393
 8 E-Mail: Melissa.Krueger@pinnaclewest.com
 9 Thomas.Mumaw@pinnaclewest.com

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BEFORE THE ARIZONA CORPORATION COMMISSION

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Arizona Corporation Commission

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16 IN THE MATTER OF THE APPLICATION
 17 OF ARIZONA PUBLIC SERVICE
 18 COMPANY FOR A RULING RELATING
 19 TO ITS 2017 DEMAND SIDE
 20 MANAGEMENT IMPLEMENTATION
 21 PLAN.

DOCKET NO. E-01345A-16-0176
APPLICATION

22 Arizona Public Service Company (APS or Company) files its Demand Side
 23 Management Plan (Plan) for 2017 in accordance with A.A.C. R14-2-2405. The Plan
 24 outlines how APS will continue to work toward compliance with the Energy Efficiency
 25 Standard (EES) of 22% by 2020 as set forth in A.A.C. R14-2-2404. For 2017, APS
 26 proposes a number of new measures and enhancements to existing programs and will
 27 continue its existing portfolio of cost effective programs, including those set forth in its
 28 Amended 2016 DSM Plan (2016 Plan) filed on April 1, 2016 in Docket No. E-01345A-
 15-0095.

1 In this Plan, APS makes several minor enhancements to its existing portfolio of
2 energy efficiency programs and measures to improve program effectiveness capture
3 increased savings and offer customers additional choices. Importantly, this Plan strives
4 to move APS's DSM portfolio to programs and measures that address the changing
5 resource needs and load shape caused by increasing amounts of rooftop solar on APS's
6 system. APS intends to deploy three DSM pilot programs in 2017 that are specifically
7 focused on reducing peak demand, shifting load to off-peak periods and educating
8 customers about strategies to manage their energy and demand. As discussed in the
9 Plan, it is critically important that DSM programs be optimized to address these very
10 real challenges.

11 The proposed Plan requests a budget of \$62.6 million for 2017, which is lower
12 than previous years. Highlights of the Plan are briefly discussed below. The complete
13 Plan is attached as Exhibit A.

14 **I. APS CONTINUES TO MOVE TOWARDS COMPLIANCE WITH THE**
15 **EES BY 2020**

16 The Plan is designed to obtain first year energy savings in 2017 of 562,000 MWh.
17 This target is consistent with the smoothed plan toward compliance outlined in APS's
18 Amended 2016 DSM Plan. These anticipated savings, combined with the on-going
19 savings to date from measures installed in 2011 through 2016, represent savings
20 equivalent to more than 14% of APS's forecasted 2016 retail sales. This keeps APS on
21 pace toward the interim benchmark of 14.5% contained in the Energy Efficiency Rules
22 (EE Rules) and making good progress toward compliance with the overall EES of 22%
23 by 2020.

24 **A. APS Requests a Budget of \$62.6 Million**

25 APS requests a budget of \$62.6 million to support its 2017 DSM programs. For
26 the past few years, APS has focused on developing new programs and measures that
27 obtain high energy savings at a low cost, such as the Systems Savings Initiative, codes
28 and standards, behavioral programs, and demand response. Moving forward, APS must

1 also emphasize load shifting and peak load reducing measures to address the changes in
2 load shape caused by rooftop solar. Such measures benefit customers and the electric
3 system as a whole by better aligning APS's DSM portfolio with system resource needs.

4 Table 1: Revenue Sources for Proposed 2017 DSM Budget

5

6 Revenue Source	Budget Contribution (rounded)
7 Base Rates	\$10,000,000 ¹
8 DSMAC	\$52,600,000
	\$62,600,000

9 **II. PROGRAM HIGHLIGHTS FOR 2017**

10 **A. Residential Energy Efficiency Programs**

11 APS will continue its existing portfolio of seven residential energy efficiency
12 programs with only minor modifications for 2017. These programs have high customer
13 involvement and satisfaction and are anticipated to provide approximately 213,000
14 MWh of annual energy savings in 2017. The proposed changes to these programs are
15 summarized below:

- 16
- 17 • Discontinue CFL rebates and incentives;
 - 18 • Expand funding for LED incentives in anticipation of higher demand; and
 - 19 • Modify the Residential New Construction program to keep pace with
20 evolving codes, including making the program's energy efficiency
21 requirements more stringent and decreasing the amount of the incentive.

22 As discussed in the Plan, these enhancements are necessary to adapt to current
23 market conditions and ensure that the programs remain cost-effective. Details regarding
24 these enhancements can be found in the Plan.

25 _____
26 ¹ On June 1, 2016, APS filed a general rate case. See Docket No. E-01345A-16-0036. In its
27 Application, APS requests to increase the amount of funds that are collected from base rates for DSM
28 from \$10 million per year to \$20 million per year. This request does not increase the total amount
requested for DSM, but shifts \$10 million from the DSMAC adjustor to base rates. If this request is
granted, the amount to be collected through the DSMAC could decrease.

1 **B. Non-Residential Energy Efficiency Programs**

2 APS has five non-residential energy efficiency programs that are marketed under
3 the trade name APS Solutions for Business. The Solutions for Business program
4 comprises over 400 individual measures and is projected to generate first year energy
5 savings in 2017 of 228,000 MWh. APS proposes three new prescriptive measures in its
6 non-residential Solutions for Business program. Specifically, APS is expanding the
7 availability of prescriptive incentives for LED lighting in the Solutions for Business
8 program to cover various forms of outdoor lighting for buildings, parking lots and street
9 lighting.

10 APS is also expanding the availability of its Conservation Behavior program to
11 non-residential customers. This program has repeatedly been proven to generate cost-
12 effective savings for residential customers and APS anticipates it will offer similar
13 benefits for its non-residential customers, including small businesses, schools and other
14 commercial entities. This Plan also increases the incentive level for the Energy
15 Information Services (EIS) program for non-residential customers to 100% of first year
16 incremental cost. The EIS program provides non-residential customers with enhanced
17 analytics and data regarding their energy usage, demand and load shape across multiple
18 meters and locations. It enables participating customers to have better management and
19 control over their energy usage. With better information, customers are able to make
20 better choices about their usage and determine how best to engage in energy and demand
21 saving activities.

22 **C. Demand Response Programs**

23 APS continues its existing demand response programs from 2016 without any
24 changes. In 2017, APS projects counting energy savings from its demand response
25 programs of 56,000 MWh toward the EES. The EE Rules limit the total amount of
26 demand response savings that can be counted to a maximum of 10% of a utility's annual
27 benchmark and 2% of the 22% EES needed in 2020. APS's current demand response
28

1 programs provide cost-effective energy savings calculated to be in excess of the current
2 cap.

3 **D. APS Systems Saving Initiatives**

4 APS will continue various systems savings initiatives in 2017. APS intends to
5 continue operation of its Conservation Voltage Reduction systems (CVR) on
6 approximately 31 APS distribution feeders. In addition, APS plans to implement energy
7 efficiency upgrades at certain APS facilities, including the installation of Light Emitting
8 Diode (LED) lighting technologies and high efficiency HVAC systems. APS also
9 intends to upgrade select APS-owned streetlights with LED technologies. LED
10 technologies use less energy, require less maintenance and are therefore less costly to
11 operate long-term. APS anticipates that its systems saving initiatives will generate first
12 year energy savings in 2017 of 20,000 MWh. More information about the potential
13 system savings projects for 2017 is included in the Plan.

14 **E. APS Pilot Programs**

15 APS introduces three new DSM pilot programs in 2017: (1) Energy and Demand
16 Management Education Pilot (Education Pilot); (2) Transmission and Distribution Pilot
17 (T&D Pilot); and (3) Load Management Technologies Pilot (Load Management Pilot).

18 The Education Pilot and Load Management Pilot will allow APS to explore
19 strategies to help customers adapt to three-part rates while at the same time addressing
20 system needs by (i) developing programs that help address the changing load shape
21 caused by rooftop solar, and (ii) reducing system peak demands. Specifically, the
22 Education Pilot will provide APS customers with additional tools and resources to better
23 manage their demand and energy usage. The Education Pilot will utilize a variety of
24 channels to educate customers about how they can better manage their demand and
25 energy usage, such as personalized videos, an enhanced mobile app, and online energy
26 analysis tools. It will also include technologies that can provide customers with near
27 real time feedback regarding energy usage and demand.

28

1 The Load Management Pilot will deploy load control and load shifting
2 technologies to enable residential and non-residential customers to manage their load
3 and shift load to off-peak and/or lower demand periods. It will employ technologies
4 such as HVAC thermal storage, connected/controlled electric heat pump water heating,
5 connected pool pumps, home energy management systems, and advanced load
6 controllers.

7 The T&D Pilot will target energy saving and load shifting strategies specifically
8 to customers located on constrained distribution feeders. The goal is to utilize focused
9 DSM strategies at a customer level to avoid or defer future system improvements.

10 All three pilots have the potential to positively impact APS customers as well as
11 the grid, resulting in improved reliability and systems operations. The Plan only seeks
12 funding and approval to support the Energy and Demand Education Pilot. APS does not
13 request DSM funding for, or approval of, the T&D Pilot² or Load Management Pilot.
14 APS will measure and report on savings for all three pilots and intends to count cost
15 effective energy savings toward compliance with the EES.

16 **III. CONCLUSION**

17 APS respectfully requests that the Commission expeditiously approve this
18 Application, specifically including the following:

- 19 1. Approve APS's 2017 DSM Plan in its entirety as discussed herein and in
20 Exhibit A; and
- 21 2. Approve a 2017 budget of \$62.6 million and continuation of the DSMAC
22 at existing levels in 2017.

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24
25
26 _____
27 ² The T&D Pilot will, where appropriate, utilize existing programs, measures and funding in the
28 Solutions for Business program to assist APS customers on designated feeders make cost effective
energy efficiency improvements.

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RESPECTFULLY SUBMITTED this 1st day of June 2016.

By: Melissa M. Krueger
Melissa M. Krueger
Thomas L. Mumaw

Attorneys for Arizona Public Service Company

ORIGINAL and thirteen (13) copies
of the foregoing filed this 1st day of
June 2016, with:

Docket Control
ARIZONA CORPORATION COMMISSION
1200 West Washington Street
Phoenix, Arizona 85007

Betsy Morgan

Exhibit A



**Arizona Public Service
Company**

**Demand Side Management
Implementation Plan for
2017**

June 1, 2016

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I. Introduction

Arizona Public Service (APS or Company) is required to file an implementation plan describing how the utility will meet the Energy Efficiency Standard (EES) for the next one to two years.¹ The Company is expected to achieve cumulative energy savings of 22% of its retail sales with Energy Efficiency (EE) and Demand Response (DR) programs by 2020.² APS's 2017 Demand Side Management (DSM) Implementation Plan (Plan) describes and outlines how APS plans to meet compliance with the EE Rules and previous Commission Orders. The 2017 DSM Plan provides a balanced mix of programs targeted to address APS's diverse customer segments and market opportunities for both Residential and Non-Residential customers. These programs are expected to produce cost effective energy and demand savings in 2017. As discussed herein, the 2017 Plan proposes to continue previously approved programs with some modifications, requests approval for 3 new prescriptive measures, and will implement three new pilot programs.

A. Highlights of the Plan

- Discusses changing resource needs, opportunities for DSM programs to assist with integration of rooftop solar on the grid, and the need to better consider the value of load shifting and peak demand reductions.
- Introduces three new DSM pilot programs: 1) Energy and Demand Management Education Pilot; 2) Transmission & Distribution Pilot (T&D Pilot); and 3) Load Management Technologies Pilot.
- Requests continuation of EE and DR programs approved in the most recent DSM Implementation Plan.³
- Proposes three new Non-Residential prescriptive measures.
- Suspends the following Non-Residential measures due to a projected lack of cost effectiveness in 2017: CO2 Sensors and Coin Operated Laundry.
- Terminates incentives for T8 and CFL fluorescent lighting technologies within the Residential and Non-Residential programs and forecasts greater participation in incentives for LEDs, a more efficient technology.
- Reduces incentives for Residential New Construction, Residential and Non-Residential LEDs, Non-Residential Whole Building Design and Non-Residential Custom measures.
- Proposes a smoothed 2017 goal of 562,000 Megawatt Hours of energy savings.
- Proposes a budget of \$62.6 million and maintains the current DSM Adjustor Charge (DSMAC).

All of the proposed or continuing programs and measures have been found to be cost effective, as measured by the Societal Cost Test using the ACC Staff methodology per Decision No. 74406 (March 19, 2014). In addition, APS screened all measures using several alternative methodologies including varying the discount rate to 2%, levelizing the value of future capacity savings, and using more granular 8760 hourly load shapes for all measures to show their savings

¹ A.A.C. R-14-2-2405.

² A.A.C. R-14-2-2404.

³ Decision No. 75323 (November 25, 2015). The Plan also assumes approval of APS's 2016 Amended DSM Plan as proposed.

contribution and avoided cost impacts in all hours of the year. The results of the supplemental analysis are provided in Appendix A, and in work papers submitted to Staff.

B. Changing Resource Needs and DSM Opportunities

APS continuously strives to align DSM programs and energy efficiency resources with APS resource needs. During the planning process for each DSM Implementation Plan, APS is required to review the cost effectiveness of all energy efficiency programs and technology offerings using updated avoided costs. Currently, avoided costs are low due to continuing low natural gas prices, making energy efficiency programs less cost effective than they previously were. In addition, the continued penetration of rooftop solar is causing changes to the system load shape (*i.e.* emerging 'duck curve' shape) which further reduces avoided costs during midday hours, when there is an abundance of low cost energy available on the grid. This change makes avoided costs much more time dependent, requiring the Company to closely examine the time during the day when energy use is reduced.

To stay cost effective and focus program spending on the highest value savings, the DSM portfolio needs to evolve to align with these changing resource needs by focusing programs on reducing the late afternoon and early evening energy usage and peak demand rather than midday reductions when energy is low cost and abundant on the system. In particular, demand side measures that shift consumption into the period of peak solar production, which is also the period of lowest hourly production costs, can have beneficial impacts to the system. These load management measures can have the benefit both of reducing total costs of serving load, and also increasing the ability of the grid to accept more renewable energy. In recognition of these changes in load patterns and renewable generation, APS looks forward to transitioning the current portfolio of energy efficiency measures to peak demand management programs that will provide a high value to customers, and align better with system resource needs

In furtherance of this goal, APS is introducing three distributed energy resource (DER) pilots as part of this Plan including: 1) a pilot to assess the value and potential savings of new consumer education tools to help customers save energy and reduce peak demand, 2) a pilot to study the value of targeted DSM on T&D operations, and 3) a pilot to examine peak load management and load shifting technologies.

Increasingly, the future of DSM involves an integrated approach to DERs for managing energy demand and shifting load on the grid. In such a changing environment, it is important to maintain an open dialogue about how the EES can be flexibly applied to better value the benefits of load management in meeting resource needs and achieving credit toward EE goals.

II. 2017 Estimated Savings Goal

For the 2017 Plan, APS proposes an annual savings target of 562,000 MWhs, consistent with the 5-year average savings goal that APS proposed in the 2016 DSM plan. This was calculated by dividing the total savings needed to meet EES compliance in 2020 equally over the five year remaining timeframe starting in 2016, as can be seen below in Table 1 line 7 titled "APS Proposed Annual Savings Goal (MWh)".

Table 1
Calculating 2017 Estimated Savings Goal

	Program Year	2015**	2016	2017	2018	2019	2020
1	Projected Retail Sales (MWh)*	27,398,270	27,904,566	28,357,791	28,907,142	29,467,496	29,947,215
2	Cumulative Annual EES Savings Targets (%)	9.50%	12.00%	14.50%	17.00%	19.50%	22.00%
3	Cumulative EES Savings (MWh)	2,578,312	3,287,792	4,046,162	4,820,824	5,636,893	6,482,849
4	Annual EES Savings Targets	552,069	709,480	758,370	774,662	816,068	845,956
5	Less Credit for Pre-EES Savings	-	84,993	169,986	226,648	283,310	328,955
6	Annual EES Savings Goals (MWh)	552,069	624,487	588,384	548,014	532,758	517,001
7	APS Proposed Annual Savings Goal (MWh)	552,069	562,129	562,129	562,129	562,129	562,129
8	Total Cumulative Savings - APS Proposed	2,578,312	3,225,434	3,957,549	4,746,326	5,591,765	6,482,849
9	Cumulative EES Savings (%)	9.55%	11.77%	14.18%	16.74%	19.34%	22.00%

*Excludes line losses and sales to Freeport McMoran facilities that are exempt from the EES.

** 2015 Retail Sales and Annual EES Savings are actuals achieved in 2015.

The Plan is targeted to save an estimated first year 562,000 MWh of energy (rounded to the nearest 1,000 MWh), which is estimated to be equivalent to more than 14% of forecasted retail sales for 2016, when added to 2011 through 2015 actual reported DSM savings. In 2017, APS expects to achieve savings of 441,000 MWh from DSM programs, 56,000 MWh from DR programs, 41,000 MWh from Codes and Standards, 20,000 MWh from APS System Savings, and 4,000 MWh from the Energy and Demand Management Education and Load Management Technologies Pilots.

The EE Rules require that the Company's Plan include a description of APS's compliance with the requirements of the EE Rules for the previous calendar year.⁴ APS's DSM program results for 2015 are fully described and documented in the Company's Demand Side Management Annual Progress Report ("2015 DSM APR"), which APS filed with the Commission on March 1, 2016.⁵

Prior to filing, APS discussed this Plan with various members of the DSM Collaborative group whose membership includes EE experts and stakeholder representatives, as well as Commission Staff.

¹ A.A.C. R14-2-2405(B).

⁵ See Docket No. E-000000U-15-0553

III. Demand Side Management Portfolio

APS estimates the 2017 DSM Portfolio will produce first year savings of 562,000 MWhs of energy from the measures installed during 2017. These savings, together with the savings estimated to be achieved from measures installed in 2011 through 2016, are equal to more than 14.0% of APS's estimated 2016 retail sales.

APS's existing DSM program portfolio includes the following programs (For more information see the Description of Previously Approved Programs in Appendix B):

Residential Programs

- (1) Consumer Products;
- (2) Existing Homes HVAC;
- (3) Home Performance with ENERGY STAR;
- (4) Residential New Construction;
- (5) Low Income Weatherization;
- (6) Conservation Behavior;
- (7) Multi-Family Energy Efficiency;

Non-Residential Programs (Solutions for Business)

- (1) Large Existing Facilities;
- (2) New Construction and Renovation;
- (3) Small Business;
- (4) Schools; and
- (5) Energy Information Services

Energy Savings Initiatives

- (1) Building Codes and Appliance Standards;
- (2) APS System Savings

APS intends to continue the already approved programs which were approved in the most recent DSM Implementation Plan.⁶ APS also intends to complete the Schools Pilot Program in 2017 as ordered in Decision No. 75323 (November 25, 2015). This Plan addresses the new or expanded measures and the new pilot programs.

A. RESIDENTIAL EE PROGRAMS

1. Previously Approved Residential Programs

APS is not proposing any modifications or new measures to the programs listed below:

- (1) Existing Homes HVAC Program
- (2) Home Performance with ENERGY STAR
- (3) Conservation Behavior Program

⁶ Decision No. 75323 (November 25, 2015). The Plan also assumes approval of APS's 2016 Amended DSM Plan as proposed.

- (4) Limited Income Weatherization Program
- (5) Multifamily Energy Efficiency Program

2. Termination and Modification

a. Terminate Measure: Compact Fluorescent Lamps (CFLs)

APS proposes to terminate CFLs as a measure in all Residential Program where they were previously approved and cease offering incentives for CFLs starting January 1, 2017. While CFLs may offer cost effective savings, they are no longer the most energy efficient or cost effective option for customers looking for new lighting due to the continued advancements of LED lighting technology. Today's LEDs offer better light quality, longer life, better control and dimming ability, safer operation and disposal, and greater energy savings than CFLs making them a better choice for incentives. In addition, LED prices have decreased substantially in the past year and with new lower priced ENERGY STAR rated 'value LEDs' now becoming available, the prices are continuing to decline. Earlier this year, GE signaled that it will stop making CFLs in 2017 due to declining market interest in the bulbs. For these reasons, APS proposes to terminate CFLs as a measure starting in 2017 and cease offering incentives on CFL bulbs at retail locations and no longer offer CFL giveaway bulbs in all programs after existing supplies are depleted. APS has provided increased funding for LED bulb incentives in the 2017 Plan in anticipation of greater demand for these bulbs.

b. Program Modification: Residential New Construction Incentive Structure

APS proposes to modify the qualification requirements and incentive structure of the APS ENERGY STAR new homes program in response to increasingly stringent building codes throughout the state. Many municipalities throughout the state have adopted the 2012 International Energy Conservation Code (IECC) and some cities have started to adopt the 2015 IECC. These codes are more stringent than earlier codes and as compliance with these new codes increases, the APS ENERGY STAR homes program requirements need to be increased to maintain program savings levels above the code.

Therefore, APS proposes to increase the energy efficiency qualification requirements for the program to the following levels:

- All homes must meet all of the current requirements for the EPA ENERGY STAR Homes program at the time of construction and receive certification as EPA ENERGY STAR Homes.
 - All homes in DOE Zone 2 (Phoenix metro, Yuma) must meet a maximum Home Energy Rating System (HERS) score of 65 or less.
 - All homes in DOE Zones 4 and 5 (Prescott, Flagstaff) must meet a maximum Home Energy Rating System (HERS) score of 70 or less.
 - All homes must include Wi-Fi enabled smart thermostats to control the home's HVAC equipment.

APS proposes to change the program incentive structure as follows:

- Participating homes that meet all minimum program requirements as outlined above are eligible to receive a builder incentive of \$500 and a HERS rater incentive of \$50 per home.

- Builders who install additional energy efficiency measures at the time of construction to achieve a HERS rating of 60 or less are eligible to receive a builder incentive of \$1200 and a HERS rater incentive of \$50 per home.

The program achieves a benefit to cost ratio of 1.12 using ACC Staff methodology.

B. NON-RESIDENTIAL EE PROGRAMS

1. Previously Approved Non-Residential EE Programs

APS has five Non-Residential Programs that are marketed under the trade name APS Solutions for Business: Large Existing Facilities Program; New Construction and Renovation Program; Small Business Program; Schools Program; and Energy Information Services Program.

2. Additions, Modifications and Terminations.

a. Discontinue Incentives for Fluorescent Lighting Technologies:

For 2017 APS proposes to terminate incentives for premium T8 and CFL fluorescent lighting technologies. This change will provide more opportunities to expand the more efficient LED options that now exist.

The fluorescent lamps that will be discontinued include:

- Screw-in CFLs
- Hardwired CFLs
- Cold Cathode
- Premium T8/T5 linear fluorescent lamps
- T8/T5 linear fluorescent lamps High Bay

b. Addition of New Prescriptive Measures for LED and Conservation Behavior

Outdoor Lighting: The LED lighting technology saves energy and replacement costs on outdoor lighting systems. APS customers have recently been investigating and adding high efficiency outdoor lighting to the exterior of their buildings and parking lots. The Solutions for Business program currently has evaluated and paid custom incentives for these high efficiency lighting applications. APS proposes to add a prescriptive incentive that will pay \$90 per lamp. The outdoor LED lighting measure yields energy savings and is cost effective.

The measure achieves a benefit to cost ratio of 1.53 using ACC Staff methodology.

Street Lighting: Similar to the LED outdoor lighting measure, LED street lighting also saves substantial energy. APS is proposing to include 3rd party owned (such as municipalities) LED street lighting in the Solutions for Business Program as a prescriptive measure. LED street lighting yields cost effective energy savings. It has been extensively evaluated and custom incentives have been paid for high efficiency street light applications. APS proposes to add a prescriptive incentive that will pay \$120 per fixture.

The measure achieves a benefit to cost ratio of 1.03 using ACC Staff methodology.

Conservation Behavior Measure: The Non-Residential Conservation Behavior measure provides owners, employees, and other participating individuals of facilities with periodic reports containing information designed to help motivate them to adopt energy conservation behaviors at their workplace.

APS intends to use a number of tactics to encourage conservation behavior in the workplace. One approach, similar to the Residential Conservation Behavior program, will provide direct-mailed reports to small business participants that show how the energy usage in their facilities compares with similar businesses. In addition to providing these benchmarks, the reports will also highlight energy efficiency measures and actions that participants can take to improve the energy efficiency at their business. These tips serve as an energy conservation idea list and education tool to encourage behavioral changes.

The estimated savings from the conservation behavior measure are based on results from similar non-residential behavioral programs in other areas.

The measure achieves a benefit to cost ratio of 3.58 using ACC Staff methodology.

c. Modifications to the Energy Information Services Program

Energy Information Services: This Plan proposes to increase the Energy Information Services (EIS) incentive. EIS software provides Non-Residential customers a convenient analysis tool to view their energy use and demand across multiple facilities or sub-metered end-use loads. This information helps them make changes in their operations to maximize energy and demand savings.

The Solutions for Business program currently covers 75% of the incremental cost to set up and maintain EIS for the first year of services. This incentive is paid on meters having a peak monthly billed demand over 100 kW. The EIS customer incentive cap is \$12,000 per customer per year. This first year cost for EIS is typically \$240 per participating meter, and the current incentive amount is \$180 per meter, leaving a customer cost of \$60 per meter.

APS proposes to increase the EIS incentive to 100% of the first year incremental cost (incentive equal to \$240 per meter). In this proposed plan, customers will pay for future year EIS subscription at a rate of \$240 per meter per year. Customers that actively use EIS can realize savings that far exceed this annual subscription rate. The 100 kW requirement and the incentive cap of \$12,000 per customer per year will remain unchanged.

C. DEMAND RESPONSE AND LOAD MANAGEMENT PROGRAMS

APS proposes to continue current demand response and load management programs including the APS Peak Solutions[®] program, Peak Event Pricing, and Time-of-Use Rates. APS plans to meet 10% of the overall 2017 DSM energy savings goal from DR programs and rates.

D. OTHER DSM INITIATIVES

1. 2017 System Savings Projects

APS proposes the following System Savings Projects in 2017:

- Upgrades to selected APS-owned community streetlights throughout the APS service territory;
- Operation of Conservation Voltage Reduction systems on an estimated 31 distribution feeders throughout the APS service territory in 2017;
- Energy efficiency upgrades to APS facilities that are the same as measures in the Solutions for Business program, including LED lighting upgrades, installation of new Energy Management System controls, new higher efficiency HVAC air handlers, approximately 55 package HVAC unit replacements, and installation of variable frequency drives.

APS intends to count towards the EES, an estimated 20,000 MWhs of annual energy savings from APS System Savings projects in 2017.

2. Building Codes and Appliance Standards

The Building Codes and Appliance Standards (“C&S”) Initiative encourages 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. In 2017, APS intends to continue current program efforts and tracking codes and standards related savings. APS estimates 40,500 MWhs of savings from the Energy Codes and Appliance Standards initiative in 2017.

3. DSM Pilot Programs

APS is introducing three new DSM pilot programs in 2017 to begin moving programs to align with changing resource needs and market trends: 1) the Energy and Demand Management Education pilot, 2) the T&D pilot, and 3) the Load Management Technologies pilot.

In the 2017 Plan, APS is requesting approval for the Energy and Demand Management Education Pilot to be funded from the DSM budget, and will fund the two additional pilots outside of the DSM budget, and therefore is not requesting approval in this plan. APS will work with a third party to conduct independent evaluation of the savings and cost effectiveness of all three pilots. APS will measure and report savings for all the pilots, and intends to count verified energy savings from all the pilots towards compliance with the EES.

a. Energy and Demand Management Education Pilot

New energy information tools and resources can provide customers enhanced feedback to help better manage their energy use and demand. These tools can help educate customers about the ways that they use energy and point out opportunities for savings. The result is a more informed consumer who better understands how to manage their energy use and demand, improve efficiency and save energy costs.

The program will pilot new energy information tools including web based energy and demand analyzers, personalized videos to guide customers through targeted savings opportunities that match their usage profiles, and an enhanced mobile phone app that can provide near real time feedback on a home's demand and energy use.

A key objective of the pilot will be to measure the energy efficiency savings that result from behavioral changes in energy use that occur when customers receive enhanced energy information. This is in accordance with R14-2-2412(F) of the Arizona Energy Efficiency Rules (EE Rules) which states that, “[e]ducational programs shall be analyzed for cost effectiveness based on estimated energy and peak demand savings resulting from increased awareness about energy use and opportunities for saving energy.” The data gathered from the pilot will be used to inform future program planning efforts. A detailed discussion of the Energy and Demand Management Education Pilot is contained in Appendix C.

b. Transmission & Distribution Pilot

R14-2-2412(C) of the EE Rules states that “[t]he analysis of a DSM program’s or measure’s cost effectiveness may include costs and benefits associated with **reliability, improved system operations**, environmental impacts, and customer service.” (*emphasis added*). This pilot seeks to better understand the potential benefits of concentrating the installation of DSM measures at multiple customer sites served by the same constrained substation as a method to reduce or defer distribution system capital investments.

This pilot will be targeted to reach both residential and non-residential customers who are served by substations that are facing future capacity constraints due to projected load growth. It will deploy currently approved measures that have been found to be cost effective by ACC Staff. The pilot seeks to enhance the benefits that these measures provide by targeting them to areas where they have the most value in helping to reduce or defer T&D infrastructure costs. Therefore, it is expected that the pilot will produce incrementally higher cost effectiveness results as compared to the same DSM measures installed elsewhere on the system.

The pilot will provide information on benefits from improved system operations that may be gained by targeting demand side management opportunities at the substation level. Data will be collected to measure the reliability of the resulting load reduction impacts compared to planning estimates at the substation level to assist in future planning efforts. The results of the DSM pilot will be compared and measured against the anticipated load on the substation and traditional ‘wires alternative’ capital construction projects that would have been needed to serve the predicted capacity. Data on total project cost and performance will be used to compare the costs and benefits of the DSM solution to the traditional wires alternative. APS intends to track and report the pilot project cost and benefits to determine the incremental cost effectiveness value that can be gained with this targeted approach.

c. Load Management Technologies Pilot

The increasing market penetration of rooftop solar has created rapidly changing system load shapes and a need for more flexible energy resources as a backup for intermittent solar generation. Demand Side Management opportunities such as load control, demand management, and load shifting can help meet these resource needs by limiting peak demand and shifting energy use to lower demand periods – providing DSM benefits and allowing better integration of

rooftop solar on the grid. These types of DSM opportunities are included in the EE Rules; R14-2-2401(13) defines a DSM measure as “ any material, device, technology, educational program, pricing option, practice, or facility alteration designed to result in **reduced peak demand**, increased energy efficiency, or **shifting of electricity consumption to off-peak periods**. . .” (*emphasis added*).

The pilot will deploy commercially available load control and load shifting technologies for residential and non-residential customers. The pilot will focus on understanding the potential benefits of these technologies in meeting APS’ flexible resource needs. APS will field test the value of select utility controlled and/or price responsive load management technologies to gather data on energy and demand savings, reliability of load reductions, and systems operations benefits.

APS will implement the load management pilot program as an extension of current DSM program implementation efforts. Load management technologies for non-residential customers will be promoted and implemented through the Solutions for Business program. Technologies for residential customers may be promoted through each of the current APS residential DSM programs including Residential Existing Homes HVAC, Residential New Construction, Home Performance, Consumer Products, Multi-Family, and/or Limited Income Weatherization programs.

Below is a non-exhaustive list of potential technologies that are to be included in the pilot:

- HVAC Thermal Storage
- Connected/Controlled Electric Heat Pump Water Heating
- Home Energy Management Systems
- Connected Pool Pumps
- Advanced Load Controllers

IV. Budget

A. DSM BUDGET

Table 2 (below) shows the anticipated 2017 DSM spending by program. The budget in this Plan represents the estimated spending required to meet the 2017 DSM savings goal of 562,000 MWh. These projections are based on APS's best estimates of market penetration for each program measure. Table 2 includes the anticipated budget by program, broken down by spending category.

Table 2
Estimated 2017 DSM Spending by Program

Program	Rebates and Incentives (\$)	Training & Technical Assistance (\$)	Consumer Education (\$)	Program Implementation (\$)	Program Marketing (\$)	Planning and Administration (\$)	Financing (\$)	Total Program Cost (\$)
RESIDENTIAL								
Consumer Products Program	\$3,865,000	\$32,000	\$0	\$2,500,000	\$650,000	\$550,000	\$0	\$7,597,000
Home Performance with ENERGY STAR	\$1,724,000	\$2,000	\$0	\$1,039,000	\$70,000	\$100,000	\$2,000	\$2,937,000
Limited Income Weatherization	\$2,275,546	\$15,000	\$25,000	\$50,000	\$35,000	\$78,000	\$0	\$2,478,546
Multifamily	\$732,600	\$0	\$0	\$856,000	\$30,000	\$100,000	\$0	\$1,718,600
Residential Behavior	\$0	\$0	\$0	\$1,547,210	\$0	\$80,000	\$0	\$1,627,210
Residential HVAC	\$3,826,500	\$150,000	\$0	\$1,533,000	\$210,000	\$366,000	\$0	\$6,085,500
Residential New Construction	\$3,250,000	\$100,000	\$0	\$325,000	\$225,000	\$470,000	\$0	\$4,370,000
Totals for Residential	\$15,673,646	\$299,000	\$25,000	\$7,850,210	\$1,220,000	\$1,744,000	\$2,000	\$26,813,856
NON-RESIDENTIAL								
EIS	\$54,600	\$5,000	\$0	\$24,000	\$3,000	\$2,000	\$0	\$88,600
Large Existing	\$13,520,637	\$275,000	\$25,000	\$4,565,000	\$1,000,000	\$450,000	\$0	\$19,835,637
New Construction	\$2,570,633	\$50,000	\$5,000	\$408,000	\$20,000	\$70,000	\$0	\$3,123,633
Schools	\$1,316,865	\$20,000	\$5,000	\$640,000	\$30,000	\$80,000	\$0	\$2,091,865
Small Business	\$1,166,069	\$50,000	\$5,000	\$630,000	\$200,000	\$98,000	\$0	\$2,149,069
Totals for Non-Residential	\$18,628,803	\$400,000	\$40,000	\$6,267,000	\$1,253,000	\$700,000	\$0	\$27,288,803
ENERGY SAVINGS INITIATIVES								
Codes and Standards	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$150,000
Energy and Demand Education Pilot	\$150,000	\$0	\$400,000	\$300,000	\$100,000	\$50,000	\$0	\$1,000,000
Demand Response Programs	\$0	\$0	\$0	\$2,100,000	\$0	\$0	\$0	\$2,100,000
System Savings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Load Management Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
T&D Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Totals for Energy Savings Initiatives	\$150,000	\$0	\$400,000	\$2,550,000	\$100,000	\$50,000	\$0	\$3,250,000
Segment Totals	\$34,452,449	\$699,000	\$465,000	\$16,667,210	\$2,573,000	\$2,494,000	\$2,000	\$57,352,659

Program Costs	\$57,352,659
Measurement, Evaluation & Research	\$2,200,000
Performance Incentive	\$3,010,400
TOTAL	\$62,563,058

B. DEMAND SIDE MANAGEMENT ADJUSTMENT CHARGE

APS is proposing no change to the current DSMAC charges, which are currently set at \$0.001845 per kWh and \$0.696 per kW. Table 3 below shows the 2017 revenue requirements for the DSM Adjustor Charge.

APS currently estimates a balance of \$24,000,000 in the DSMAC balancing account at the end of the DSMAC collection year (February 28, 2017).

Table 3 - 2017 Revenue Requirements for DSMAC

Total 2017 DSM Budget	\$62,563,058
Amount Recovered in Base Rates ⁷	<u>(\$10,000,000)</u>
Subtotal	\$52,563,058
Less Gain on Sale of Assets Balance	<u>(\$0)</u>
Total Revenue Requirement for 2017 DSMAC	\$52,563,058

C. PERFORMANCE INCENTIVE

The Performance Incentive is an important tool that provides an incentive to encourage and reward exemplary performance in meeting or exceeding the MWh savings goal. The current Performance Incentive structure was approved in Decision No. 74406. The Performance Incentive is earned based on the amount of energy saved and the amount of customer net benefits (total program benefits minus total program costs) generated by the portfolio, as shown in Table 4. The 2017 Performance Incentive calculation does not include any net benefits generated by Codes and Standards, APS System Savings, Demand Response or Pilot Programs. Table 4 shows how the estimated performance incentive for 2017 of \$3,010,400 is calculated.

**Table 4
2017 Estimated Performance Incentive**

Achievement Relative to DSM Goal	Performance Incentive (% of Net Benefits)	Performance Incentive Cap (\$0.0125 per kWh saved)
96% to 105%	7%	562,100,000 kWh x \$0.0125
Net Benefits (Prior to PI, Codes & Standards, System Savings)	\$43,005,712	
Performance Incentive	\$3,010,400	\$7,026,250

Notes:

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

⁷ On June 1, 2016, APS filed a general rate case. See Docket No. E-01345A-16-0036. In its application, APS requests to increase the amount of funds for DSM that are collected from base rates from \$10 million per year to \$20 million per year. This request does not increase the total amount requested for DSM, but shifts \$10 million from the DSMAC adjustor to base rates. If this request is granted, the amount to be collected through the DSMAC could decrease.

V. DSM Energy Savings and Benefits

Table 5 provides details of the expected annual and lifetime energy savings and peak demand savings from each DSM program and energy savings initiative and a summary of the net benefits generated for 2017. These are in addition to energy savings, costs and net benefits associated with APS DSM activities undertaken during the 2005 through 2016 timeframe, which are reported each year in APS's Semi-Annual DSM Report filings. The lifetime energy savings are the estimated savings that will result over the expected lifetime of all program measures installed in 2017.

Table 5
2017 DSM Savings and Benefits

Program	Annual Coincident Demand Savings at Generator (MW)	Annual Savings at Generator (MWh)	Lifetime Energy Savings (MWh)	Cost Test Benefits (\$)	Cost Test Costs (\$)	Lifetime Net Benefits (\$)
RESIDENTIAL						
Consumer Products Program	14.8	101,272	1,053,336	38,931,606	17,026,066	21,905,540
Home Performance with ENERGY STAR	3.8	8,267	107,016	5,172,930	4,898,812	274,118
Limited Income Weatherization	0.7	1,431	25,751	961,490	961,490	0
Multifamily	1.5	8,607	120,361	4,897,397	3,048,909	1,848,488
Residential Behavior	23.5	67,519	67,519	1,867,183	1,652,367	214,816
Residential HVAC	10.5	15,031	172,370	8,201,242	8,004,504	196,738
Residential New Construction	5.2	10,899	217,983	9,094,747	8,145,429	949,318
Totals for Residential	60.1	213,027	1,764,336	69,126,595	43,737,578	25,389,017
NON-RESIDENTIAL						
EIS	5.7	84	421	450,025	242,100	207,924
Large Existing	35.9	164,975	2,198,064	64,588,916	53,355,594	11,233,322
New Construction	7.2	29,713	413,059	11,954,095	7,646,718	4,307,377
Schools	3.3	15,541	224,056	6,292,790	5,207,179	1,085,612
Small Business	4.3	17,527	200,132	6,366,964	5,584,505	782,459
Totals for Non-Residential	56.4	227,840	3,035,733	89,652,790	72,036,095	17,616,695
ENERGY SAVINGS INITIATIVES						
Codes and Standards	11.4	40,566	0			
Energy and Demand Education Pilot	2.4	3,328	3,328			
Demand Response Programs	0.0	56,200	0			
System Savings	6.9	20,000	200,876			
Load Management Technologies Pilot	1.3	1,168	14,174			
T&D Pilot	0.0	0	0			
Totals for Energy Savings Initiatives	22.0	121,262	218,378	0	0	0
TOTAL	138.6	562,129	5,018,447	158,779,385	115,773,673	43,005,712

Appendix A

Appendix A

Comparison of Benefit-to-Cost Ratios -- Alternative Scenarios

	A	B	C	D	E
Program	ACC Staff Methodology WACC=7.2%; Non-Levelized Capacity	ACC Staff Methodology; Societal=2.0%; Non-Levelized Capacity	ACC Staff Methodology; WACC=7.2%; Levelized Capacity	ACC Staff Methodology; Societal=2.0%; Levelized Capacity	Alternative Hourly Method; Societal=2.0%; Levelized capacity; Hourly energy
1 Consumer Products Program	2.29	2.59	2.34	2.88	3.72
2 Residential HVAC	1.02	1.09	1.09	1.47	1.61
3 Home Performance with ENERGY STAR	1.06	1.29	1.13	1.66	1.89
4 Residential New Construction	1.12	1.42	1.21	1.85	2.16
5 Residential Behavior	1.13	1.13	1.25	1.26	1.23
6 Multifamily	1.61	1.93	1.66	2.20	2.64
7 Limited Income Weatherization	1.00	1.00	1.00	1.00	1.00
8 Non-Res Large Existing	1.21	1.43	1.26	1.69	1.96
9 Non-Res New Construction	1.56	1.86	1.64	2.24	2.74
10 Non-Res Small Business	1.14	1.33	1.19	1.60	1.82
11 Non-Res Schools	1.21	1.46	1.26	1.75	2.06
12 Non-Res EIS	1.86	1.51	2.51	2.94	3.51
13 Energy & Demand Mgmt Education Pilot	0.11	0.11	0.13	0.13	0.13
14 Load Mgmt Technologies Pilot	0.37	0.38	0.40	0.53	0.55
Total Portfolio	1.34	1.57	1.40	1.85	2.17

Column A: ACC Staff methodology; Weighted average cost of capital (WACC) discount rate of 7.20%;
Non-levelized avoided cost of capacity.

Column B: ACC Staff methodology; Societal discount rate of 2.0%;
Non-levelized avoided cost of capacity.

Column C: ACC Staff methodology; Weighted average cost of capital (WACC) discount rate of 7.20%;
Levelized avoided cost of capacity.

Column D: ACC Staff methodology ; Societal discount rate of 2.0%;
Levelized avoided cost of capacity.

Column E: Alternative methodology (using hourly energy savings load shapes); Societal discount rate of 2.0%;
Levelized avoided cost of capacity; hourly energy avoided costs.

Appendix B

Appendix B

Description of Previously Approved DSM Programs

RESIDENTIAL PROGRAMS

1. Consumer Products Program

The primary target market for the Consumer Products program is APS residential customers who are contemplating the purchase of energy-using products for their homes. The program provides customers with education and incentives to purchase products, such as light bulbs, pool pumps and other consumer products that use less energy. APS implements the program through participating retailers within the APS service territory.

The lighting element of the Consumer Products program promotes high-efficiency Environmental Protection Agency (EPA)/Department of Energy (DOE) ENERGY STAR® approved lighting. APS solicits discount pricing from compact fluorescent lamp (CFL) and light emitting diodes (LED) manufacturers and distributes bulbs through local retailers. Customers are referred to participating retailers to purchase qualifying products. Discount pricing is passed on to consumers through a negotiated agreement with lighting manufacturers and retailers. The program also provides sales training for participating retailers and consumer education, including in-store point-of-sale displays.

The pools element of the Consumer Products program promotes ENERGY STAR® qualified energy efficient variable-speed pool pumps to residential pool owners providing customers with significant cost effective savings. The program provides incentives to consumers, retailers, and installers to help overcome the higher initial cost of these pool products and to promote their increased adoption in the market place.

2. Existing Homes HVAC Program

The Residential Existing Homes Program Heating, Ventilation, and Air Conditioning (Residential HVAC) measures use 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 Sealing and HVAC Diagnostics portions of the program include measures supporting energy efficient residential air conditioning and heating systems through the proper installation, maintenance and repair of HVAC systems. This program also provides APS customers with referrals to contractors who meet strict program requirements for professional standards, technician training, and customer satisfaction.

3. Home Performance with ENERGY STAR Program

The Home Performance with ENERGY STAR® (HPwES) program promotes a whole house approach to energy efficiency by offering incentives and financing for improvements to the building envelope of existing residential homes within the APS service territory. The current program includes measures to improve the energy efficiency of the home such as air sealing, insulation, duct sealing, and low flow showerheads. The HPwES program provides APS customers with referrals to specially credentialed contractors who meet strict program requirements for professional standards, technician training, and customer satisfaction.

Appendix B

Description of Previously Approved DSM Programs

4. Residential New Construction Program

The Residential New Construction program promotes high efficiency construction practices for new homes. It offers incentives to builders that meet program EE standards in order to increase the penetration of high efficiency homes. The program emphasizes the “whole building” approach to improving EE and includes field testing of homes to ensure compliance with APS performance standards. 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 new home and the features to consider.

5. Limited Income Weatherization Program

APS’s Energy Wise Limited Income Weatherization (LIW) Program is designed to improve the energy efficiency, safety, and health attributes of homes occupied by customers whose income falls within 200% of the Federal Poverty Guidelines (FPG). The weatherization component of this program serves low income customers with various home improvement measures, including cooling system repair and replacement, insulation, sunscreens, water heaters, window repairs and improvements, as well as other general household repairs. Non-profit agencies and municipal entities owning and operating low income multifamily housing are also able to benefit from funds set-aside to weatherize their complexes. In addition, there is a Crisis Bill Assistance component serving customers whose income falls below 150% of the FPG. These programs elements are administered by various community action agencies throughout APS’s service territory.

6. Conservation Behavior Program

The Residential Conservation Behavior program provides participating residential customers with periodic reports containing information designed to motivate them to adopt energy conservation behaviors. To drive conservation behavior, the program provides direct-mailed reports to participants that show how the energy usage in their homes compares with energy efficient homes and other similar homes. In addition to providing these benchmarks, the reports also highlight energy efficiency measures and actions that participants can take to improve the energy efficiency of their homes. These tips serve as an energy conservation idea list and education tool to encourage behavioral changes. Participants are also encouraged to visit a program web portal for additional information.

7. Multi-Family Energy Efficiency Program

The Multifamily Energy Efficiency Program (MEEP) aims to improve the efficiency of multifamily properties and dormitories by using a comprehensive approach designed to target existing and new construction multifamily buildings.

The MEEP takes a two-track approach to address the challenges of reaching the multifamily market. The first track targets existing multifamily properties by providing retrofit items that include energy efficient CFL and LED light bulbs, showerheads, and faucet aerators to retrofit each dwelling in a community. These measures are provided at no cost to the multifamily community, but must be installed by the facility personnel. In addition, this track works through

Appendix B

Description of Previously Approved DSM Programs

the Non-Residential APS Solutions for Business programs to provide energy assessments to assist communities in identifying additional energy saving opportunities and available APS rebates within the multifamily complex but outside of the individual dwelling units (e.g. common area buildings, swimming pools, outdoor lighting, and laundries).

The second track is a new construction/major renovation program that offers a per dwelling incentive for projects that build or renovate to a higher level of energy efficiency. Incentives increase as a higher level of energy efficiency is achieved.

NON-RESIDENTIAL PROGRAMS

1. Large Existing Facilities Program

The primary targets for the Non-Residential Existing Facilities program are customers who have an aggregated monthly peak demand greater than 100 kW. This program provides prescriptive incentives to owners and operators of large Non-Residential facilities for EE improvements in lighting, HVAC, motors, building envelope, and refrigeration measures. Custom incentives are also provided for EE measures not covered by the prescriptive incentives. Incentives are also provided to customers who conduct qualifying energy studies. The largest customers (electric usage > 40,000 MWh per year) may qualify to self-direct the amount they pay toward DSM funds for their own EE projects. All customers may qualify to receive program arranged financing for their EE projects. Customers may participate in the Direct Install (Direct Install can pay up to 90% of project cost) family of measures in the areas of lighting and refrigeration for any facilities with a peak monthly demand of 400 kW and less.

2. New Construction and Renovation Program

The Non-Residential New Construction program includes three components: 1) design assistance; 2) prescriptive measures; and 3) custom efficiency measures. Design assistance involves efforts to integrate energy-efficiency into a customer's design process to influence equipment/systems selection and specification as early in the design process as possible. Prescriptive incentives are available for EE improvements in measures such as lighting, HVAC, motors, building envelope, and refrigeration applications. Whole Building Design is a component within the New Construction custom efficiency measures that influences customers, developers, and design professionals to design, build and invest in higher performing buildings through a stepped performance incentive structure with the financial incentives becoming larger as the building performance improves. The APS Whole Building Design incentives are designed to complement the Leadership in Energy and Environmental Design (LEED) green building certification system which was developed by the United States Green Building Council.

3. Small Business Program

The primary targets for the Small Business Program are customers that have a maximum peak aggregated demand of 100 kW or less. This program provides prescriptive incentives to small business owners for EE improvements in lighting, HVAC, motors, building envelope, and refrigeration applications through a simple and straightforward mechanism. In addition, a customer in the Small Business Program may participate in the Direct Install (Direct Install can

Appendix B

Description of Previously Approved DSM Programs

pay up to 90% of project cost) family of measures in the areas of lighting and refrigeration and may also qualify to receive APS arranged program financing for their EE projects. Small Business customers are also eligible to receive incentives for energy studies and custom efficiency measures.

4. Schools Program

This program is designed to set aside funding for K-12 school buildings, including public schools, private schools, and charter schools. If schools fully subscribe this program budget or if they reach their incentive cap of \$100,000 per year under this program, they can participate in other Non-Residential programs. EE incentives are the same as the Large Existing Facilities (for existing school facilities) and New Construction (for new school construction and major renovations). In addition, any size school may participate in the Direct Install measure incentives and may also qualify to receive APS arranged program financing for their EE projects.

5. Energy Information Services Program

The Energy Information Services (“EIS”) program provides 15-minute interval electric usage data to large Non-residential customers through a web-based energy information tool. This tool provides users with information that can be used to improve or monitor energy usage patterns, reduce energy use, reduce demands during on-peak periods, and to better manage their overall energy operations.

ENERGY SAVINGS INITIATIVES

1. Codes and Standards Initiative

The Energy Codes and Appliance Standards (“C&S”) Initiative encourages 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.

2. Demand Response Programs

APS currently implements several demand response programs and rates that are counted towards annual EES compliance. These include the Peak Solutions demand control program, Critical Peak Pricing rates, and Time of Use rates.

3. APS System Savings Initiative

APS System Savings projects include many of the same types of energy savings measures as those that are being installed at customer sited facilities – but implemented at APS facilities. System Savings projects include but are not limited to APS generation, transmission, distribution, and facilities energy efficiency improvements.

Appendix C

Appendix C
Energy and Demand Management Education Pilot

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<p>Appendix C Energy and Demand Management Education Pilot</p>
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Energy and Demand Management Education Pilot

Program Concept and Description

New energy information tools and resources can provide customers enhanced feedback to help better manage their energy use and demand. These tools can help educate customers about the ways that they use energy and point out opportunities for savings. The result is a more informed customer who better understands how to manage their energy use, improve efficiency and save energy costs.

The program will pilot new energy information tools including an enhanced mobile phone app that can provide near real time feedback on a home's demand and energy use, personalized videos that guide customers through targeted savings opportunities that match their usage profiles, and enhanced energy analysis tools available at aps.com.

A key objective of the Pilot will be to measure the energy efficiency savings that result from behavioral changes in energy use that occur when customers receive enhanced energy information. The data gathered from the Pilot will be used to verify and count these savings towards compliance and to inform future program planning efforts.

Target Market

The Energy and Demand Education Pilot will be targeted to reach all customers who are looking for information on their energy use and opportunities to save energy. There will be opportunities for both residential and non-residential customers to participate in Pilot program offerings. Some offerings will be specifically targeted to customers whose usage profile shows the highest potential for cost effective savings opportunities.

Current Baseline Conditions

APS currently provides many tools and resources for customers to help them save energy. The Pilot will add new channels including an expanded mobile phone app, personalized videos, and enhanced energy auditing tools on aps.com. The current baseline condition does not include these new energy information and education tools. The Pilot will provide an enhanced menu of energy use information above the current baseline, and measure the resulting customer experience and energy savings.

Program Eligibility

All customers will be eligible to access general energy information resources. At this time, the expanded mobile app feature will only be available for customers who have electric meters that are compatible with this technology.

Program Rationale and Objectives

The rationale for this Pilot is that there are new energy information tools available that can provide customers with enhanced feedback on their energy use to help them better manage energy costs while driving energy savings and peak demand reductions. The objective of the Pilot is to implement these tools on a limited scale and measure the energy and demand savings that can result.

Appendix C

Energy and Demand Management Education Pilot

Program Implementation

APS will implement the Energy and Demand Management Education Pilot as an extension of current program implementation efforts. Energy and demand management education resources will be promoted to customers through current EE programs and customer outreach efforts including customer newsletters, business offices, call center associates, aps.com, social media, direct mail/email and other campaigns.

The key information tools and elements of the Pilot will include the following:

- **Mobile App Energy Management Information and Bridge Device Add-On** – APS recently launched a new mobile phone app, which provides customers with next day feedback on their energy use and demand. Customers can use this information to better manage their use and save energy. A recent study of the DTE Energy Insight App showed that customers who accessed the app saved an average of 1.08% of their annual energy use. This pilot will study and measure the energy and demand savings that APS customers are experiencing. In addition, as an enhancement to the app, customers who purchase an energy bridge gateway device can use it to access near real time information from their meter. DTE offers this enhanced mobile phone app in their Energy Insight program, and customers who used this enhanced app were found to save an additional 3.21% of their annual energy use. In the Pilot, APS intends to study both the app and enhanced app to measure the resulting energy and peak demand savings.
- **Personalized Videos and Outreach Tools** – Personalized videos and other customizable educational tools have great applications for DSM. They provide the ability to personalize and target energy savings information to customers based on their energy profiles and rate plan. APS will pilot these videos to deliver highly actionable information that guides customers to the best energy savings actions that fit their individual needs, and measure the resulting energy and peak demand savings.
- **Enhanced Online Education and Energy Analysis Tools** – APS currently provides an online Energy Analyzer auditing tool that can help residential customers survey their home to find the best opportunities for savings. The Pilot will enhance the current online Energy Analyzer tool with new features to focus on peak demand management, as well as incorporate it into a more comprehensive suite of energy information content. In addition, APS will pilot a new web based energy audit survey tool for Non-Residential customers. The objective will be to create a more comprehensive set of energy analysis tools for both residential and non-residential customers while studying and measuring the resulting energy and peak demand savings.

Appendix C

Energy and Demand Management Education Pilot

Incentive Design

Educational tools and resources (including enhanced mobile phone apps, personalized videos, and online content) will be developed with pilot program funding and provided free of charge to participating customers. No other incentives will be provided for these measures. For the enhanced mobile app, customers may need to install additional equipment, such as an energy bridge gateway device at a cost of approximately \$100. APS will offer to provide incentives of up to 100% of the cost of such a device up to a \$100 maximum incentive for pilot participants.

Delivery Strategy and Administration

APS plans to deliver and administer the Energy and Demand Management Education Pilot in-house with assistance from Implementation and Evaluation contractor partners.

- APS will work with existing DSM implementation contractors and through existing communications channels to promote and implement the Pilot program outreach.
- APS will work with Navigant as a third party evaluation contractor to assist in collecting and analyzing data for the Pilot and measuring the resulting energy savings.

How to Leverage with Existing Programs

The Pilot program will be integrated with current EE program efforts and implemented with assistance from current program implementation contractors, so it will leverage the existing program delivery and evaluation infrastructure.

Marketing and Communications

- The Pilot's program marketing and communications will be integrated with other EE programs, messages and communications channels.
- APS will work with current program implementation contractors to ensure they are familiar with the new educational resources, how to access them, and how to promote their benefits for customers.
- APS will utilize customer communications tools including bill messages/inserts, social media, customer newsletters, earned media and other outreach to promote new educational tools and resources to customers.
- APS will conduct targeted outbound communications to proactively reach customers with the highest potential savings based on their usage profiles.

Program Implementation Schedule

APS will begin implementation of the Energy and Demand Management Education Pilot after ACC approval. APS plans to implement the Pilot using existing program implementation contractors and delivery channels. This will ensure the Pilot is integrated with other DSM opportunities for customers, it leverages other program infrastructure, and that APS can begin offering enhanced education to customers soon after approval.

Measurement, Evaluation and Research Plan

The Measurement, Evaluation, and Research (MER) for this Pilot will measure electric energy and demand reductions and assess customer engagement and satisfaction for pilot

Appendix C
Energy and Demand Management Education Pilot

technologies and program delivery. Impacts resulting from Pilot offerings will be evaluated through a statistical comparison of energy consumption data for program participants and a control group. The evaluation will leverage AMI data and customers' monthly billing data to determine energy saving impacts. Customer engagement and program satisfaction will be assessed through participant and non-participant surveys and interviews. Surveys will identify behavioral changes of participants, determine barriers to participation, and quantify program awareness, customer satisfaction, and level of engagement.

Program Budget

The 2017 proposed budget is detailed below.

Table 1 – 2017 Energy and Demand Education Pilot Budget

	2017
Rebates and Incentives	\$150,000
Training and Technical Assistance	\$0
Customer Education	\$400,000
Program Implementation	\$300,000
Program Marketing	\$100,000
Planning and Administration	\$50,000
Total	\$1,000,000

Estimated Energy Savings

The Pilot is currently estimated to provide energy savings of approximately 3300 MWhs annually. This is based on savings results from the DTE Energy Insights program. This is a conservative preliminary savings estimate that does not account for all of the anticipated savings from all measures in the pilot. One key objective of the Pilot will be to refine energy savings estimates based on the data collected.

Cost Effectiveness

APS conducted preliminary cost effectiveness screening on the Pilot using ACC Staff methodology as well as alternative inputs as shown in Appendix A. The Pilot is currently not screening as cost effective using any of the methodologies. This is largely due to three factors: 1) the current estimates of participant savings which are very conservative due to a lack of measured data, 2) the cost of one-time technology set up that is included in the Pilot budget but would not be needed in subsequent years, 3) the small participation volume in the Pilot. Cost effectiveness will improve with better savings estimates and higher volumes of participants that would be expected in a full program implementation. APS will conduct the Pilot and collect data on the resulting energy savings and costs to better inform future cost effectiveness analysis.