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December 31, 2012

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

RE: Home Energy Information (HEI) Pilot Assessment and Status Report
Docket No. E-01345A-10-0075

Attached please find Arizona Public Service Company's (APS or the Company) assessment and status report for the HEI Pilot for 2012.

Pursuant to Arizona Corporation Commission (Commission) Decision No. 72215, the Company is required to file:

IT IS FURTHER ORDERED that Arizona Public Service Company shall file, in Docket Control under Docket No. E-01345A-10-0075, an evaluation report for the HEI pilot program by December 31, 2011. This report shall provide a mid-point assessment of information gathered on the program. *Decision No. 72215, page 19, lines 1-4.*

However, in Decision No. 73089 the Commission extended the HEI Pilot for an additional year through December 31, 2013. APS filed a letter in the above docket on December 21, 2011 noting that no information was available at that time for the required filing, and stating that APS would file its mid-point assessment on December 31, 2012. The attached report is that assessment.

If you have any questions regarding this information, please contact me at (602)-250-2661.

Sincerely,

J. W. Johnson FOR JEFF JOHNSON

Jeffrey W. Johnson

JJ/cd

cc: Terri Ford
Brian Bozzo
Parties of Record

Arizona Corporation Commission
DOCKETED

DEC 31 2012

DOCKETED BY *JWJ*

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Arizona Public Service Company

Home Energy Information Pilot Assessment and Status Report

December 2012

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1. Introduction

In March of 2010, Arizona Public Service Company ("APS" or the "Company") requested approval from the Arizona Corporation Commission ("Commission") to implement a demand response ("DR") pilot program aimed at developing, testing, and deploying a group of technologies designed to provide transparent energy information to customers.¹ The Home Energy Information Pilot program ("HEI Pilot" or "Pilot") was approved by the Commission in Decision No. 72214 (March 3, 2011).

The HEI Pilot is designed to test available home area network ("HAN") technologies and determine the communication devices, demand response strategies, and mix of applications that can be most effectively employed in a residential setting in the APS service territory. Using market research strategies, the Pilot will track and assess customer acceptance, value, and frequency of usage of in-home energy displays or other communication devices that can assist the residential customer in managing daily energy usage.

As required by Decisions No. 72215 (March 3, 2011) and 73089 (April 5, 2012), this report is the Company's initial assessment and status report for the HEI Pilot.

2. HEI Pilot Overview

The HEI Pilot is a comprehensive residential DR pilot that is studying and evaluating new technologies and consumer behavior over a period of two full successive summer seasons. The Pilot is comprised of programs utilizing various technologies including the use of HAN technology, smart thermostats, in-home displays ("IHD"), web portals and smart phones. It leverages APS's existing investment in Advanced Metering Infrastructure ("AMI") as well as the Company's existing Customer Information System.

The overall goal of the HEI Pilot is to introduce customers to a variety of technologies that may help them manage their usage and allow APS to collect and report the findings, resulting in future programs that are both beneficial to customers and advantageous to the APS system. The Pilot's five study areas each target these outcomes with a unique technological or behavioral approach. If successful, the HEI Pilot will help customers understand their real time usage, price signals and how to better manage their load. APS will benefit through a better understanding of customer willingness to participate in new energy conservation and demand response tools alongside traditionally used resources.

A key element of the HEI Pilot deserves particular mention, and that is the requirement for two successive summer seasons of study in producing conclusive data. Program persistence, an industry term used to describe the year to year durability of customer behavior or efficiency gains, can only be measured over two successive summer seasons of the same pilot as the summer season drives peak demand in the Company's service territory. If, for example, a large percentage of customers stay enrolled in a program over the course of two successive summers

¹ In Decision No. 71448 (December 30, 2009), the Commission required the Company to file a proposal for Commission consideration to add at least 250 MW of demand response programs to APS's overall energy efficiency portfolio.

and similar results are realized for both years, the program would have high persistence. Conversely, if a number of customers drop from a program study area after one year of participation, persistence would be deemed low for that program. Because the HEI Pilot is examining the viability and customer acceptance of certain technologies to help manage their usage, it is imperative that persistence data be valid for this study to be useful to APS and its customers. This data also helps APS determine future customer consumption impacts.

The HEI Pilot is targeting up to 2,800 customers comprising a representative mix of APS's overall residential customer base. The Pilot consists of five separate study programs that will be evaluated in terms of their value and ease of customer acceptance. The Pilot results will assist APS to develop future plans for full-scale customer programs and present those plans to the Commission for approval. All study programs are voluntary and have been designed to provide participating customers with education on energy conservation, and to provide tools and options to help customers manage their energy needs and costs while also providing APS a cost effective and environmentally friendly option for reducing or managing peak capacity.

The following table summarizes the Commission approved Pilot programs and participation levels:

Study Program	Description	Maximum Participation
A	Peak Event Pricing: Smart Thermostat for Customer Energy Control	0-300
B	In-home Display: Energy Information	0-300
C	Direct Load Control: Smart Thermostat for Utility Energy Control	0-300
D	Qualifying Smart Phone & Computer: Energy Information	0-300
E	Prepay Energy Services	600-2,000

A. Peak Event Pricing with Smart Thermostat for Customer Energy Control

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Under this Pilot program (referred to in this report as "Study A"), voluntarily participating customers already enrolled in APS's Peak Event Pricing plan ("PEP")² elect to receive a free smart thermostat, including installation, from APS. Customers then pre-program the thermostat to achieve cost savings by automatically modifying their air conditioner set point to consume less energy during higher-cost hours. Higher

² The APS PEP rate plan (Rate Schedule CPP-RES, Critical Peak Pricing – Residential) was designed to serve APS customers who can significantly limit energy use between 2 p.m. and 7 p.m. on peak event days and allows participating APS customers to achieve cost savings during those hours by reducing their usage. PEP existed prior to and is separate from the HEI pilot.

cost during these hours is driven by extremely high electrical demand, major generation or transmission outages, energy market disruptions, or other critical events during peak event periods. This technology offers a "set it and forget it" concept that supports the customer's existing PEP plan to help save more energy and money, and assists APS in reducing system load in summer months when demand for energy is at its highest.

Through this portion of the Pilot, customers will be able to control one of their largest energy consuming appliances – the air conditioner – with an automated response to peak event pricing. During peak events, APS remotely communicates to the smart thermostat to activate the customer's pre-programmed response, which the participating customer may override at any given time.

B. In-Home Display of Energy Information

In the In-home Display ("IHD") of Energy Information Pilot program (referred to in this report as Study B), APS is providing participating customers a stand-alone device to use in their homes that visually displays various energy usage and cost information to assist the customer to manage energy consumption more efficiently.

This technology study provides real-time feedback on how the individual customer is consuming electricity and the associated cost with consumption during different hours of the day.

Industry research has demonstrated that IHD technology not only increases customer awareness, but also produces a demonstrable impact on consumer home energy usage, in some cases up to a 6.5% reduction in energy usage.

Accordingly, APS anticipates that the IHD study results will reflect a sustained energy reduction and a potential measureable customer peak shift over the two successive summers.

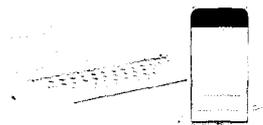
C. Smart Thermostat with APS Direct Load Control of Air Conditioner

In the APS Direct Load Control ("DLC") with a smart thermostat for utility energy control study (referred to in this report as "Study C"), customers elect to have APS provide and install a smart thermostat in the home. The goal of the program is to allow customers to save money by shifting energy usage to off-peak hours.

Once installed, the smart thermostat allows APS the capability to modify the thermostat set point through a remote signal, which APS activates during periods of extremely high electrical demand, and according to a set limit of events per summer. In each instance, the voluntarily participating customer can override the remote signal from APS.

D. Smart Phone and Computer Application ("App")

In the qualifying Smart Phone and Computer Energy Information study, or Smart Application (referred to in this report as "Study D"), APS is providing participating customers an App for their qualifying smart phone and computer that will provide them with visual real-time energy usage and cost information to assist them in managing their energy consumption more efficiently.



The smart application study is similar in nature to the IHD study and provides customers with real-time energy usage, current electricity price and cost of their whole home electricity consumption and associated cost. APS anticipates that this Pilot program may reflect a sustained

energy reduction and measurable individual customer peak shift over the two successive summers.

E. Prepay Energy Service

The Prepay Energy Service study (referred to in this report as "Study E" or "Prepay") provides customers a daily billing offering with energy conservation information to help participants better understand and manage their energy dollars. Customers periodically prepay an amount towards their electric service in lieu of paying a monthly bill. In turn, APS provides participating customers with frequent feedback on their energy usage, costs, payments and account balance information to assist them in managing their energy consumption more efficiently.



3. Status of HEI Pilot Programs

As noted earlier, APS received Commission approval to design the HEI Pilot in March 2011. After receiving this approval, APS worked to develop the business, functional and technical requirements to successfully launch the Pilot.

As part of the development considerations, APS determined it necessary to manage the HEI Pilot as two distinct efforts: the Home Energy Information group of programs and the Prepay program. This separation of programs allowed APS to manage the Pilot's complex technology offerings in Studies A, B, C and D independently, while the Prepay program ("Study E") was developed through collaboration with the Commission and external stakeholders.

The Prepay program was deployed in July of 2012. Programs A through D remain in the testing phase and are anticipated to be deployed in the second quarter of 2013.

A. Studies A, B, C, and D

APS selected General Electric ("GE") as the HEI Pilot technology contractor to develop and deploy Demand Response Management System ("DRMS") and HAN devices for Studies A through D. The contractor is responsible for HAN device

procurement, installation and customer support, and system integration between the DRMS and the Company's AMI. GE is currently providing program-level management for this Pilot and is establishing a customer call center to schedule installations and provide support during the technology testing period.

The HEI Pilot was planned to be in effect for testing in the 2011 summer season. As Pilot approval occurred later than anticipated, APS requested a one-year extension for the Pilot in November 2011. The request was approved by the Commission in April of 2012, and the HEI Pilot term was extended through December 31, 2013 to allow APS the ability to conduct a comprehensive two summer-season study.

APS and GE conducted extensive laboratory tests from the second quarter of 2011 through the first quarter of 2012, and made a number of routine and typical modifications to the technology to support actual field deployment in the summer of 2012. From March 2012 to June 2012, APS began actual field trials, with pre-Pilot volunteers, to demonstrate field performance prior to deployment with a larger group of APS customers. The pre-Pilot field trial provided APS an opportunity to look closely at the customer experience, education and technology in a real-home environment. During this pre-Pilot field testing, a number of deficiencies and interdependencies between GE hardware and software, APS systems, vendor support solutions and system upgrades were revealed that had not been experienced in prior lab testing.

For example, APS expected consistent illustration of the Company's rate plans via smart thermostat color LEDs as an indicator for each price tier in order to accurately inform the customer of the associated impact of cost and air conditioner energy usage. This did not occur. It was expected that a green LED would illustrate lower cost or off-peak time of day (Tier 1 energy indicators), an orange LED would illustrate medium to high cost or on-peak time of day (Tiers 2 and 3 energy indicators), and a red LED would illustrate highest cost or peak price time of day (Tier 4 energy indicator). The pre-Pilot field trial identified limitations and non-continuous illustration of the green LED display that had not occurred in the lab testing.

APS values consistency, accuracy and a satisfactory customer experience. As a result of the pre-Pilot field trial, APS and GE launched an intensive study to determine the root cause of the field difficulties. The conclusion from those investigations revealed that while the GE solution had worked in previous applications with other utilities and in APS's lab, the extent and broad diversity of APS's TOU rate choices created new scenarios that exposed GE hardware and software limitations. Ultimately, it was determined that a new version (2.0) of GE's DRMS needed to be developed and deployed to address the limitations of the existing system.

Due to these necessary enhancements, APS is requesting an additional one-year extension for Studies A through D until December 2014, which will allow the two summer seasons to be fully tested. APS is also requesting additional funding to cover the Pilot program costs associated with the extension. These costs are summarized in the Costs and Budget section below.

1. Future Development

APS continues to work closely with GE to adopt the necessary changes to devices/technology, system upgrades and implementation plan and schedule. GE continues to integrate with the Company's AMI system and network, which are near completion in their development cycle. APS is scheduled to complete another phase of factory and lab testing in February and March of 2013, followed with another pre-Pilot volunteer test period in April 2013. APS plans to begin the APS customer recruitment process in May 2013 followed with technology installation and broader Pilot deployment in June 2013.

APS has developed and will utilize a measurement, evaluation, and research ("MER") plan to evaluate the impact, process and technology components of Studies A through D of the HEI Pilot. This plan will include such elements as secondary research activities, refinement of proposed approaches, use of data collection instruments, logistics of data collection, analysis of validation of data, and reporting of findings and recommendations. APS will share these results at the conclusion of the Pilot.

B. Study E (Prepay Service)

APS launched the HEI Pilot Prepay program on July 17, 2012 to qualifying customers who had expressed an interest in Prepay. As of December 18, APS has 1162 customers enrolled in the Prepay Pilot. Customers have been enrolling in the program at a steady rate since the July 2012 launch. During the Pilot, all current residential rate plans are eligible for Prepay with the exception of those that include a demand component (Rate Schedules ECT-1R and ECT-2). Additionally, Prepay cannot be used in conjunction with Rate or Adjustment Schedules CPP-RES, GPS-1, GPS-2, Solar-3, EPR-2, EPR-6, and E-4.

Prior to enrollment in the Pilot, APS ensures that all customers adequately understand the program by reviewing the Prepay Service Agreement with the individual customer. Customers must clearly state consent on each item in the agreement before being enrolled. APS also provides a welcome packet to each new participant that includes the Prepay Program Guidelines, the Prepay Service Agreement and brochures on how the program works and how to save energy with APS Prepay.

Customers have 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 provides customer safeguards by sending proactive alerts to help customers manage their account balance and usage. Customers identify their preferred alert medium (email, phone or text message) and may designate another family member or friend to also receive alerts. Customer contact information for alerts may be changed as often as desired at no charge.

APS also offers a number of convenient customer payment options that are not limited by geography or business hours. A chart included in the welcome brochure clarifies the processing fees (if any) and lag time for payments. Payment options include APS offices, aps.com, APS automated payment system via phone, kiosks at local retailers, electronic funds transfer, authorized pay stations, and by U.S. mail.

An evaluation plan has been developed and data is being collected to begin the Pilot measurement and evaluation. APS will share these results at the conclusion of the Pilot. APS Prepay will continue recruiting customers for the Pilot until the maximum of 2,000 customers is close to being achieved. During the Pilot period, APS will monitor the program and will make refinements as necessary. APS will also work with the third party evaluator to collect data and analyze the Pilot results. Detailed analysis will be performed to determine energy efficiency impacts, disconnect and reconnect activity, technology use by the customer to access account information, customer payment channel choice, effectiveness of alert studies, and customer contact preferences. Customer feedback received thus far indicates that the participants are pleased with the program, and the advance payment process assists the customer with both budget and energy consumption control.

4. Costs and Budget

As described above, integration of technologies and testing has resulted in a longer implementation than previously expected. As a result, in APS's 2013 Demand Side Management Implementation Plan Supplemental filing dated December 13, 2012 in Docket No. E-01345A-12-0224, APS requests that the Commission: (1) extend the HEI Pilot Programs A-D for an additional year, through the end of 2014, so that it may have two full, successive summer seasons of data for its MER study; (2) authorize APS to continue to recover the carrying costs associated with HEIP through the DSMAC up until the next rate case proceeding; (3) approve an additional \$310,000 in non-capital program costs through the extension period; and (4) approve an additional \$1,051,000 of capital costs through the extension period ending December 31, 2014, plus the amortization and recovery through the DSMAC of carrying costs associated with this additional capital spending by APS over the 48 months ending July 1, 2016. Only the non-capital costs and the carrying costs associated with the capital spending are collected through the DSMAC. In its DSM Supplement, APS requested that in 2013 it be allowed to collect \$2.84M related to the HEI Pilot through the DSMAC.

5. Summary

As discussed in this report, during initial development of the Pilot the Company determined that management of the individual programs would be improved by separating the Pre-Pay component of the Pilot from the more technologically complex programs. The Company successfully launched the Pre-Pay component (Study E) of the HEI Pilot during the summer of 2012, and market research information is being compiled to allow the Company to determine the impact to household energy usage and any customer behavioral changes resulting from the ability to pay for energy services in advance.

For the remainder of the HEI Pilot programs, APS is requesting Commission approval of (i) an additional one-year extension as discussed in this report for programs A through D and (ii) an increased budget for the Pilot.³ The Company remains confident that these programs will continue to provide valuable data regarding the

³ See APS's 2-13 Demand Side Management Implementation Plan Supplement, filed on December 13, 2012 in Docket No. E-01345A-12-0224.

complex interaction between technologically advanced systems and customer acceptance of these technologies.