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ARIZONA CORPORATION COMMISSION  
DOCKET CONTROL

TO: THE COMMISSION

FROM: Utilities Division

DATE: December 2, 2010

DOCKETED BY

RE: ARIZONA PUBLIC SERVICE COMPANY - APPLICATION FOR APPROVAL OF 2011 DEMAND SIDE MANAGEMENT IMPLEMENTATION PLAN (DOCKET NO. E-01345A-10-0219)

On June 1, 2010, Arizona Public Service Company ("APS" or "Company") filed an application for approval of the Company's 2011 Demand Side Management Implementation Plan ("2011 Plan"). The 2011 Plan filing was in compliance with the provisions of the Settlement Agreement in the Company's most recent rate case, as approved by the Arizona Corporation Commission in Decision No. 71448.

The proposed 2011 Plan reflects changes to the existing APS DSM portfolio, and sets out the programs and measures by which APS plans to meet the energy savings goals agreed upon in the Settlement Agreement.

The APS DSM Implementation Plan Filings (June 1, June 30 and August 2, 2010)

The first Implementation Plan filing, dated June 1, 2010, was followed by two supplemental filings, on June 30, 2010<sup>1</sup> and on August 2, 2010. (The material filed on August 2<sup>nd</sup> included material originally planned for the August 16th filing.) With respect to changes and enhancements, the scope of each filing is as follows:

- June 1: Proposed Enhancements to Existing Residential and Non-Residential Programs and one new Residential program (Conservation Behavior Pilot Program); preliminary budget and preliminary Demand-Side Management Adjustor Charge ("DSMAC") estimate;<sup>2</sup>
- June 30: Proposed New Prescriptive and Direct Install Measures for Non-Residential Programs and the Bid for Efficiency Pilot;
- August 2: Proposed New Residential Shade Tree Pilot Program and New Measures for the Existing Residential Homes Program; also, Proposed New Residential Multi-

1 The First Supplemental filing was originally scheduled for July 1 (see the Application, page 7) but actually filed on June 30<sup>th</sup>.

2 In addition, Filing 1 requested that costs associated with the Home Energy Information ("HEI") Pilot Program, along marketing costs for certain rates, be recovered through the DSMAC.

Family Homes Program (originally planned for the August 16 filing); final budget and DSMAC estimates.

2011 APS Implementation Plan; Background. The 2011 Plan is being addressed in multiple parts. The initial order, docketed in October, primarily addressed the Conservation Behavior Pilot Program, one of three new Residential behavior-based programs. On November 1, 2010, the Conservation Behavior Pilot program was approved by the Commission (Decision No. 71950). The Company's initial estimates regarding the budget, revenue requirement and DSMAC were also discussed, but no recommendation or order was made regarding the DSMAC.<sup>3</sup> On November 23, 2010, the Commission also acted on the Company's proposals regarding three existing Residential programs, the Consumer Products, Appliance Recycling, and Energy Wise programs.

Scope of Review for this Order. The focus of this Order is the two remaining new Residential programs and enhancements to one existing program: (i) the Multi-Family Energy Efficiency Program (New); (ii) the Shade Tree Pilot Program (New); and (iii) the Residential Existing Homes Heating, Ventilation and Air Conditioning Program (Existing).

#### New Residential Programs

- (i) **Multi-Family Energy Efficiency Program;** APS is proposing a new Residential program to target new and existing multi-family Residential properties.
- (ii) **Shade Tree Pilot Program;** APS is proposing a Residential Shade Tree pilot program, in partnership with a local non-profit agency. The program would provide desert-adapted trees free of charge, but would require participation by customers in workshops focusing on planting to maximize energy savings and maintenance of the trees.

#### Existing Residential Program

- (iii) **Existing Homes Program;** APS proposes to add a measure to the existing Residential Existing Homes Heating, Ventilation and Air Conditioning program ("R-HVAC"). The measure provides a financial incentive to APS Residential customers to have an advanced diagnostic tune-up on their air conditioning or heat pump unit.<sup>4</sup> The program also proposes to provide an incentive payment to contractors who purchase advanced diagnostic equipment.

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<sup>3</sup> The actual DSMAC will be addressed in the final order relating to the 2011 Plan, so that any Commission-ordered modifications or changes can be taken into account when the adjustor rate is reset.

<sup>4</sup> As indicated in the June 1 filing, APS originally planned to propose a Room Pressure Balancing measure to Existing Homes (a.k.a., "R-HVAC"). However, a final review of the measure indicated that the measure was not cost-effective and APS did not file for Commission approval of the measure.

Proposed Recovery of Costs for Demand Response and Home Energy Information Pilot Program. APS is also requesting recovery of the costs associated with the Home Energy Information Pilot Program, along with marketing costs for certain rates, through the DSMAC.<sup>5</sup> Because these requests relate to the type and amount of funding to be recovered through the DSMAC, these will be covered in the final order as part of the adjustor reset.

Scope of Review: Cost-Effectiveness. Measures previously determined by Staff to be cost-effective will not be re-evaluated for cost-effectiveness at this time, unless new information indicates that re-evaluation is necessary.

### **New Residential Programs**

#### **Multi-Family Energy Efficiency Program**

Description. The Multi-Family Energy Efficiency Program (“Multi-Family”), would promote energy efficiency in existing multi-family properties with more than five<sup>6</sup> units, including dormitories. The program focuses on the construction of new energy efficient multi-family housing, and the renovation or retrofit of existing multi-family units.

Multi-Family Housing: Barriers to Energy Efficiency. APS notes that, while approximately 23% of its customers live in multi-family housing, there are significant barriers to reaching this customer segment with energy efficiency programs. The builders who construct rental properties, and the owners who would be responsible for upgrades, do not usually pay the energy bills. Consequently, builders and owners do not directly benefit from the lower energy costs that arise from investing in efficiency measures, which reduces or eliminates their incentive to participate in DSM programs. At the same time, the renters who would benefit from lower energy bills have no direct influence over original construction and, with respect to renovations or retrofits, may not have the authority, the incentive or the means to invest in energy efficiency for housing they do not own.

APS seeks to promote energy efficiency and address existing barriers to participation through the following three program components: (i) Direct Install; (ii) Common Area Retrofits; and (iii) New Construction/Renovation/Retrofits. These components are described in more detail below.

Direct Install. Direct Install provides the following low cost direct install measures to multi-family rental property management companies: (a) CFLs, (b) low flow showerheads, and (c) faucet aerators. The APS implementation contractor would provide guidance and monitoring, while property managers would be responsible for any costs and labor related to installation. In discussions with Staff, APS stated that owners of large multi-family housing properties have indicated that they would be willing to participate in the Direct Install component, based on the

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<sup>5</sup> Critical Peak Pricing, Residential Super Peak Rate, Time of Use Rate, and the Interruptible Rate.

<sup>6</sup> Properties with more than five units usually fall under commercial lending guidelines, and the decision-makers are usually, corporate, institutional or trusts.

potential marketing benefits of such participation. Additional detail regarding the Direct Install measures is provided in the table below.

Measure	Incremental Cost	Incentive
Direct Install CFLs	\$2.00	Provided free of charge to participant. Participant responsible for installation cost.
Direct Install Showerheads	\$52.00/\$31.00	Provided free of charge to participant. Participant responsible for installation cost.
Direct Install Faucet Aerators	\$7.60	Provided free of charge to participant. Participant responsible for installation cost.

*Cost-effectiveness of the Showerhead Measure As Part of the Multi-Family Program.*

Low-flow showerheads were previously approved by the Commission. Staff performed an analysis on the showerhead measure using an updated incremental cost for the measure and the program costs specific to the Multi-Family program. The benefit-cost ratio for the showerhead measure is 1.13, making the measure cost-effective on a projected basis.<sup>7</sup>

In communications with Staff, APS noted that the model selected for the Multi-Family program interrupts the flow once the water is heated up, and reduces water usage as well as saving energy. The Company also noted that property managers were reluctant to install lower-end showerheads, due to potential maintenance problems, and that the model selected for the Multi-Family program is a better design for the Arizona market, being easy to de-calcify and manufactured with better brass components. Review by Staff and the Company also indicated that the price of this item has decreased significantly. (The on-line price of the measure is now \$30.99.) Staff noted that the decreased cost improved the measure's cost-effectiveness.

*Common Area Retrofits.* Common Area Retrofits would leverage on-site work done in connection with the Direct Install component, beginning with an assessment of common areas such as community rooms, offices, pools, and laundry facilities. Unlike the energy costs for individual units, the energy costs associated with common areas are usually paid by owners, meaning that there is a built-in incentive for owners to participate in this component of the proposed Multi-Family program.

The Common Area Retrofit assessment would identify potential energy efficiency savings, and would be followed by referrals to the APS Solutions for Business program. ("APS Solutions for Business" is an umbrella term used for the Company's Non-Residential programs.) The Common Area Retrofit assessment would be paid for by APS Solutions for Business, which

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<sup>7</sup> A "smart" showerhead natural gas measure with the flow-interrupt feature was approved for the Southwest Gas Consumer Products program as a pilot (Decision No. 71289, 10/7/2009). Southwest Gas, in communication with Staff, indicated that it will review data from the pilot and file a report on the measure's cost-effectiveness by 12/30/2010.

would also track the savings from any installations done as part of the Multi-Family program's Common Area Retrofit component.

New Construction/Renovation/Retrofit. New Construction/Renovation/Retrofit would provide incentives to builders for construction of more energy efficient multi-family housing, for existing multi-family properties undergoing major renovations, and for existing multi-family properties undergoing energy efficiency retrofits. The incentives would be provided on a per-unit basis to builders meeting the program's prescriptive energy efficiency standards.

The New Construction/Renovation/Retrofit component of the Multi-family program offers four Builder Option Packages ("BOPs"), discussed below. BOP 1, 2 and 3 apply to either new construction or major renovation projects (such as those requiring structural changes), while the retrofit program is designed for less major, non-structural, energy efficiency upgrades. Additional detail is provided below.

Builder Options; Incentives. The table below lists the incentives for each BOP, the customer incremental cost per unit, incentives as a percentage of the customer's incremental cost, and the measures required for each builder option. (The customer incremental cost per unit listed in the table represents the customer's full incremental cost per unit, without taking into account the proposed incentive.)

Incentive per unit	Customer Incremental Cost Per Unit	Incentive as a Percentage of the Incremental Cost	Builder Option Package 1 Measures
\$650	\$902.95	72%	<ul style="list-style-type: none"> <li>• Wall Insulation</li> <li>• Window U-Factor</li> <li>• Window Solar Heat Gain Coefficient</li> <li>• Reduced Infiltration Rates</li> <li>• Reduced Duct Leakage</li> <li>• Higher Air Conditioning Efficiency (14 SEER minimum)</li> <li>• Higher Furnace Efficiency (where applicable)</li> <li>• Higher Heat Pump Heating Efficiency (where applicable)</li> <li>• Reduced Lighting Power Density</li> <li>• Reduced Miscellaneous Appliance Power Density</li> <li>• Higher Water Heating Efficiency</li> </ul>
			Builder Option Package 2
\$800	\$1,186.50	67%	All of the BOP1 measures PLUS: <ul style="list-style-type: none"> <li>• Significant Additional Reduction to Lighting Power Density</li> </ul>
			Builder Option Package 3
\$900	\$1,366.60	66%	All of the BOP1 measures PLUS: <ul style="list-style-type: none"> <li>• Duct Leakage Reduced to 0% (ducts inside the conditioned space)</li> <li>• Higher Air Conditioner ("AC") Efficiency (15 SEER minimum)</li> </ul>

			<b>Retrofit Builder Option Package 4</b>
\$650	\$896.37	73%	<ul style="list-style-type: none"> <li>• Reduced Duct Leakage</li> <li>• Higher AC Efficiency (14 SEER minimum)</li> <li>• Higher Furnace Efficiency (where applicable)</li> <li>• Higher Heat Pump Heating Efficiency (where applicable)</li> <li>• Reduced Lighting Power Density</li> <li>• Miscellaneous Appliance Power Density</li> <li>• Higher Hot Water Heating Efficiency</li> </ul>

*Proposed Budget.* The Multi-Family budget covers costs for dwelling audits, costs for handling, warehousing and shipping components, technical and field support, follow-up verifications, working with manufacturers, and tracking and reporting performance. The proposed budget is shown in the table below:

Program	Multi-Family
Rebates and Incentives	\$590,000
Training and Technical Assistance	\$10,000
Consumer Education	\$25,000
Program Implementation <sup>8</sup>	\$555,000
Program Marketing	\$62,000
Planning and Administration <sup>9</sup>	\$35,000
Financing	\$0
Program Total Cost	\$1,277,000

*Cost-Effectiveness.* The Multi-Family program will rely on measures already found cost-effective by the Commission. Because the Multi-Family program is not only a new program, but also features a new delivery model, Staff reviewed the benefit-cost ratio to confirm that cost-effectiveness would be maintained. Staff’s review indicated a benefit-cost ratio for the Direct Install component of 1.73, and 1.07 for the Builder Option Packages component, indicating that, based on projected benefits and costs, the Multi-Family program is cost-effective. (As noted elsewhere, herein, costs and savings associated with the Common Area Retrofit component, other than the cost of the audit, will not be tracked within the Multi-Family program but, instead, will be tracked with existing Non-residential programs, as part of “APS Solutions for Business.”)

*Environmental Savings.* The estimated environmental savings for the Multi-Family program are listed in the table below:

8 Implementation includes costs associated with program delivery, including Program Outreach, Field Assessments, Direct Install Program Component Logistics, Direct Install Component Handling, Technical/Field Support, Component Verification Follow-up and Reporting and Tracking.

9 Planning and Administration includes the Company’s costs to plan, develop and administer programs, including management of program budgets, oversight of the RFP process and implementation contract, program development, program coordination and general overhead expenses.

Projected Lifetime Savings for Measures Installed in 2011	Quantities
Water Savings	11,000,000 Gallons
SOx	160 Lbs.
NOx	3,044 Lbs.
CO2	32,000,000 Lbs.
PM10	889 Lbs.

*Bill Impact.* The proposed budget for the Multi-Family program is \$1,277,000. Based on this budget and on average usage by Residential customers, the monthly bill impact of this program would be approximately 5.4 cents. The annual impact would be approximately 65 cents.

*Recommendation.* The Multi-Family program is cost-effective, as designed, and has the potential to promote energy efficiency in a sector of the customer community that has been difficult to reach with DSM programs. Staff recommends that the Multi-Family program be approved.

*Reporting.* The status of the program, including data on whether it is cost-effective, should be reported in semi-annual reports, or in any succeeding form of report ordered by the Commission. Information reported should include, but not be limited to, the types of information and data currently covered in the current semi-annual reports for existing programs. Staff also recommends that the semi-annual reports, or any succeeding form of DSM report ordered by the Commission, include detailed information regarding the Implementation costs for the Multi-Family program, including information on: (i) the program-specific costs included in the Implementation category; (ii) how much Implementation funding is retained by APS; and (ii) how much Implementation funding is paid to outside contractors.

*Additional Recommendation.* Most Arizona apartment complexes are electric-only, and APS has indicated that it does not anticipate that it will encounter many instances where a gas appliance, such as a water heater, could be replaced by an electric appliance. In order to limit fuel switching issues, and due to concerns over the efficiency of replacing gas water heaters with electric water heaters, Staff recommends that the Multi-Family program not be used to replace gas appliances with electric appliances.

### **Shade Tree Pilot Program**

*Description.* APS is proposing a Shade Tree program, which it plans to implement as a pilot in partnership with the Permaculture Guild, a local non-profit agency. APS proposes to offer workshops on planting and maintaining trees, and will provide APS customers attending the workshops with vouchers for up to three desert-adapted trees. The APS Shade Tree program has been designed to focus heavily on education, in order to limit tree mortality and enhance savings.

The program would commence within six to eight weeks of receiving Commission approval, with measurement, evaluation and research (“MER”) being conducted on an ongoing basis. At the conclusion of a twelve-month pilot APS will submit a MER report to the Commission, with suggestion on program redesign or expansion.

Eligibility and Participation. APS customers in single-family residential homes will be eligible to participate in the program. APS estimates that 5,000 trees would be planted during the pilot program.

Delivery and Incentives. In lieu of a monetary investment by program participants<sup>10</sup>, the APS Shade Tree program would require participants to take part in workshops, (between half and hour and an hour long) designed to educate customers about the energy savings potential for shade trees, and on how to plant and care for the trees. APS customers would also be responsible for picking up their trees at specific “tree pickup events,” as well as being responsible for planting and maintaining the trees.

Workshops. Although tree pickup events will be limited to the appropriate planting seasons, tree workshops will be offered year-round. The workshop curriculum is described in more detail, below.

Selecting desert-adapted shade trees: Trees should require low water-use and offer sufficient canopy size and density for shade. (The proposed APS program will be restricted to only Mesquite and Palo Verde trees, but the workshops will train on tree-selection to promote the selection of appropriate desert-adapted shade trees in the future):

- *Planting techniques:* Customers will learn how to plant trees to maximize survivability;
- *Planting locations:* Program requirements are that the shade trees be planted on the south, west and east sides, and within 15 feet, of customers’ homes. Customers will also be taught to plant in front of windows and away from patios and major overhangs, as well as learning how to plant away from power lines and underground utilities;
- *Tree maintenance:* Customers will be taught to prune and water trees to encourage growth and health, without wasting water; and
- *Fire control:* Customers will learn how to trim trees and shrubs and how to safely dispose of the trimmings to minimize fire hazards.

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<sup>10</sup> In comparison, the TEP Shade Tree program (in existence since 1992) charges \$8.00 per tree, and delivers the trees. Under the UNS Electric program, customers purchase the trees on a retail basis and receive a \$15.00 bill credit (for trees costing approximately \$20.00).

Participants receive a voucher for two five-gallon desert-adapted trees, unless they live in a home built prior to 1980. Participants living in these older, and generally less energy efficient homes, would receive up to three vouchers.

Western Resource Advocates (“WRA”) and Sierra Club Comments: The Sierra Club filed comments supporting the proposed Shade Tree pilot as cost-effective, and for the additional environmental benefits that the program would provide to the Phoenix area. The WRA also filed comments in support of the proposed pilot, recommending that the list of eligible tree species be expanded to offer more choices, and recommending that, following the pilot, APS make any appropriate modifications and expand the scale of the program.

Eligible Trees and Program Expansion. APS currently plans to offer vouchers for only Mesquite and Palo Verde trees. Staff recommends that APS be allowed to offer additional types of desert-adapted shade trees if the cost-effectiveness of the Shade Tree program is maintained while doing so. Staff recommends that APS submit appropriate plans to expand the Shade Tree program as part of its MER report following the pilot, if the pilot program is determined to be cost-effective.

Proposed Budget. As stated herein, rebates and incentives are not directly paid to program participants. The \$50,000 listed for rebates and incentives covers the cost of the trees provided under the program. In discussions with Staff, APS indicated that purchasing the program trees in bulk and directly from the grower resulted in higher quality trees and lower tree mortality. With respect to Implementation, \$200,000 of the \$244,000 cost would be paid to the Permaculture Guild to cover training and pickup events, while \$44,000 would cover the Company’s internal labor, and covers the cost of a half-time program coordinator. The Training and Technical Assistance and Consumer Education categories cover education and educational materials for customers, while the Marketing costs would cover items such as bill inserts. Planning and Administration includes the Company’s overhead and planning costs.

The proposed budget for the Shade Tree Pilot Program is set out in the table below:

Program	Shade Tree
Rebates and Incentives	\$50,000
Training and Technical Assistance	\$45,000
Consumer Education	\$25,000
Program Implementation	\$244,000
Program Marketing	\$55,000
Planning and Administration	\$25,000
Financing	\$0
Program Total Cost	\$444,000

Incentive and Non-Incentive Costs. Staff expressed concern about implementation costs being high, relative to costs for rebates and incentive. In communication with Staff, APS

explained that its proposed Shade Tree pilot is weighted toward implementation costs due to the program's:

“emphasis on the community education component. The APS Shade Tree Pilot Program utilizes a model that offers home owners. . .workshops on how to plant, locate, and maintain shade trees. APS believes that this model will optimize tree placement and decrease tree mortality rates. . .”  
[The Company believes that its approach will] “optimize the energy saving potential of each tree . . .while at the same time promoting the importance of energy efficiency as a whole.”

APS also noted that the pilot will include an evaluation of its delivery methodology and will compare that methodology with other Shade Tree programs in Arizona.

Tree mortality or planting trees outside program parameters could significantly impact savings from shade tree programs, but a reasonable balance should be maintained between non-incentive and incentive costs. (In this case, incentive costs are not costs paid directly to participants but, instead, represent the cost of the trees supplied to participants.)

Staff recommends that the pilot program's MER report include, but not be limited to: (i) the impact of the workshops on program participation; (ii) the impact of the workshops on compliance with the program's requirements for planting parameters; and (iii) the impact of the workshops on energy savings and cost-effectiveness. In particular, the MER report should include data regarding whether the mandatory workshops improve mortality and enhance savings sufficiently to justify this program design, or whether a larger portion of the program funding should be shifted from workshops into the rebates and incentives category, in order to provide more trees.

*Cost-Effectiveness.* In addition to providing other societal benefits, as discussed herein, shade trees conserve energy in the following ways:

- Shading reduces the radiant energy absorbed and stored by surfaces, including walls, pavement and gravel yards;
- Transpiration, which converts liquid water in leaves into vapor, thereby cooling the air; and
- Trees reduce wind velocity and slow the infiltration of outside air into inside spaces.

Staff estimates the benefit-cost ratio of the proposed APS Residential Shade Tree Pilot program at approximately 1.15, making the program (as designed) cost-effective. The environmental savings and other program benefits are also discussed herein.

Environmental Savings. The estimated environmental savings for the Shade Tree program are listed in the table below:

Projected Lifetime Savings for Measures Installed in 2011	Quantities
Water Savings	6,000,000 Gallons
SOx	86 Lbs.
NOx	1,632 Lbs.
CO2	17,000,000 Lbs.
PM10	477 Lbs.

Additional Benefits. In addition to the kWh and air emissions savings, the following benefits arise from the program. While these benefits are not monetized, they are part of the overall benefits of the Shade Tree program. Shade trees:

- provide habitat for wildlife;
- absorb air and water pollution;
- control stormwater runoff;
- control soil erosion and wind; and
- provide aesthetic benefits.

Reporting. The status of the program should be reported in semi-annual reports, or in any succeeding form of report ordered by the Commission. Information reported should include, but not be limited to, the types of information and data currently covered in the current semi-annual reports for existing programs. Staff also recommends that the semi-annual reports, or any succeeding form of DSM report ordered by the Commission, include detailed information regarding the Implementation costs for the Shade Tree program, including information on: (i) the program-specific costs included in the Implementation category; (ii) how much Implementation funding is retained by APS; and (iii) how much Implementation funding is paid to outside contractors.

Bill Impact. The proposed total budget for the Shade Tree Pilot Program is \$444,000. Based on this budget and on average usage by Residential customers, the monthly bill impact of this program would be approximately 1.9 cents. The annual impact would be approximately 23 cents.

Recommendations. Staff recommends that the APS Residential Shade Tree Pilot Program be approved, as modified herein. Staff recommends that the program continue during the period that the data from the first twelve months are being evaluated.

**Existing Residential Program**

**Existing Homes**

*Description of Existing Program.* The Residential Existing Homes Heating, Ventilation and Air Conditioning (“R-HVAC”) program consists of: (i) Residential HVAC, including air conditioning rebates and Duct Test and Repair; and (ii) Home Performance with Energy Star (“HPwES”). R-HVAC promotes energy efficient equipment and a Quality Installation measure designed to maximize HVAC operating efficiency. HPwES<sup>11</sup> promotes a whole house approach to energy efficiency, beginning with a \$99 comprehensive home energy assessment. HPwES identifies potential energy efficiency measures, such as air sealing, insulation, shade screens, faucet aerators, and low flow showerheads, and provides homeowners with information on APS energy efficiency rebates and access to financing.

*Description of Proposed Changes.* APS is proposing to add an advanced diagnostic air conditioning tune-up measure to the R-HVAC program. The measure provides a financial incentive to APS Residential customers to have an advanced diagnostic tune-up on their air conditioning or heat pump unit, and an incentive to participating contractors to offset the cost of equipment required to perform the tune-up.

*Advanced Diagnostic Tune-up:* Normal diagnostic tune-ups vary in the types of service provided and may be as limited as a visual inspection that does not include an actual tune-up, and does not provide verification of what work has been done. The advanced diagnostic tune-up provides the following services:

Number	Service
1.	Checking thermostat operation;
2.	Cleaning or replacement of filter (customer supplied);
3.	Verification of air flow with advanced diagnostic equipment or flow hood;
4.	Checking for refrigerant leaks and repair of leaks;
5.	Verification of refrigerant charge with advanced diagnostic equipment and correction, if needed;
6.	Cleaning of outdoor condenser coil;
7.	Inspection of fused disconnect;
8.	Inspection of wiring and tightening of electrical connections;
9.	Inspection of contactors, relays, and pressure controls;
10.	Inspection of electrical safety circuits;
11.	Checking voltage and amperage to all motors;
12.	Inspection and cleaning of indoor blower wheel and motor for dirt build-up;
13.	Inspection of bearings and lubrication of all moving parts, as required;
14.	Inspection of belt and adjustment of tension, as required;
15.	Inspection and cleaning of condensate drain;

11 The HPwES program component was approved by the Commission in Decision No. 71460, on January 26, 2010.

16.	Inspection of duct seal at unit and securing of panels;
17.	Checking evaporative cooler duct block-off, as required; and
18.	Explaining and documenting all necessary repairs.

APS states that most tune-ups are primarily visual inspections, and that it is rare for technicians to test the refrigeration system to verify the charge, check the airflow, clean the condenser coil, or verify the work that was done. The APS measure requires all four main components of an advanced diagnostic tune-up, as well as requiring that pre-tune-up and post-tune-up performance data be recorded for verification purposes.

Eligibility. The Residential Diagnostic Measure targets APS Residential customers in existing single family homes, with heating and cooling equipment that is at least three years old. The units may be package or split systems and must be two to five tons in size and connected to a duct system. Tune-ups can not be performed more often than every three years, as the Company does not believe that more frequent tune-ups would be beneficial.

Participation. In the first year, APS plans to limit participation to 5,300 participants, to verify the measure’s performance in the field. If the program meets requirements, APS anticipates annual participation in the range of 10,000 to 50,000. Units on multi-family homes are eligible to participate in cases where there is a Residential account.

Residential Incentive. The proposed incentive for the new Diagnostic measure is \$100, to offset the cost of an advanced diagnostic and tune-up of a customer’s heat pump or air conditioner. The cost of these services generally runs from \$150-\$180, meaning that the incentive would equal from 67% to 55% of the measure cost.

Contractor Incentive. The Company also proposes to offer a contractor equipment incentive of \$1,000 to companies purchasing advanced diagnostic equipment, to offset the \$3,600 cost of the equipment. Based on discussions with APS, the “Stargate” (or equivalent) device is considered integral to the proposed measure and would be used to verify that the work required for the tune-up had been performed.<sup>12</sup> Contractors would be limited to two \$1,000 equipment incentives per company, and are eligible for the incentives only once they have completed “20 advanced diagnostic jobs that have been verified and accepted by APS.” Contractors must undergo training on advanced diagnostic equipment, and be current participants in the APS R-HVAC program, before they can offer the Diagnostic measure to customers.

Initial Limitation on Contactor Participation. Only 40 contractors are allowed to participate in the program during the first phase, which would begin in the spring of 2011 and continues until 5,300 Diagnostic rebates have been paid. Once the first phase is complete, the Diagnostic measure will be evaluated to determine if it is cost-effective. APS is limiting

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12 A Stargate site states: “The SG3000 analyzer is designed to be used on residential capillary tube and TXV values (Thermostatic Expansion Value) air conditioning refrigeration systems that use refrigerants. . .The SG3000 analyzer can also be used as a service tool to read pressure and temperature values.”

participation during the first phase because it “ensures that the initial 40 contractors will have the opportunity to secure enough jobs to cover the initial expense of participating in this measure.”

Issues Regarding the “Stargate” (or Equivalent) Device. Staff has concerns with respect to the “Stargate” (or equivalent) incentive proposed in connection with the Diagnostic measures. First, within the context of a DSM program, incentives are normally offered directly in connection with measures that have been found to be cost-effective. In the R-HVAC program proposal, the “Stargate” (or equivalent) device is not treated as a measure, and there is insufficient information to show that this device would increase energy savings enough to justify the associated costs. Other concerns are: (i) there is insufficient information to support a conclusion that a \$1,000 incentive is necessary to promote participation by contractors; (ii) there are no overall limits on the number of incentives that would be paid for the “Stargate” (or equivalent) device once the first phase of the roll-out is completed and evaluated,<sup>13</sup> meaning that the overall cost of providing the incentive during full rollout of the program is unknown; and (iii) although APS customers would be paying the cost of the incentives, the “Stargate” or equivalent devices could be used outside the Company’s service territory, particularly as the program expands.

Budget Background. The original budget approved for the R-HVAC program in early 2010 was \$5,907,000. On September 27, 2010, APS filed an application for approval of an increase in the 2010 Energy Efficiency Implementation Plan Funds, with respect to the R-HVAC program. An increase of \$3,000,000 was requested for the program, in order to accommodate unexpectedly high levels of customer demand, and to avoid suspension of the program once funding was exhausted (estimated to occur in late 2010). In addition to the budget increase, funds were transferred from less active Residential programs. On November 8, 2010, in Decision No. 71960, the increase in budget was approved, and the Commission ordered that transfers among all the Residential programs be allowed (with the exception of the Low-income Weatherization program) to permit more efficient allocation of Residential DSM funds.

Proposed Budget. The 2010 and proposed 2011 budgets are shown in the table below. The Company estimates that the proposed new Diagnostic measure would cost \$1,089,000, bringing the total budget to \$14,812,000.

Program	Initial 2010 Existing Homes (“R-HVAC”)	2010 Budget Following Increase	2011 Budget Existing Homes
Rebates and Incentives	\$3,519,000	\$6,875,000	\$9,715,000
Training and Technical Assistance	\$88,000	\$220,000	\$334,000
Consumer Education	\$279,000	\$229,000	\$365,000

<sup>13</sup> \$29,000 in contractor incentives are projected for first phase of the rollout. Staff notes that, because this is a program cost, as it increases, measure costs also increase, negatively impacting cost-effectiveness.

Program Implementation	\$1,200,000	\$1,808,000	\$3,129,000
Program Marketing	\$598,000	\$473,000	\$807,000
Planning and Administration	\$223,000	\$102,000	\$257,000
Financing	\$0	\$0	\$205,000
Program Total Cost	\$5,907,000	\$9,707,000 <sup>14</sup>	\$14,812,000

Cost-Effectiveness of the R-HVAC Program. The R-HVAC program was previously determined to be cost-effective, and the program's overall cost-effectiveness has not been reviewed for this filing.

Cost-Effectiveness of the Proposed Diagnostic Measure. Staff estimated the benefit-cost ratio of the proposed new Diagnostic measure at 0.996, putting the benefit-cost ratio at just under 1.0. However, this level of cost-effectiveness would be achieved only if the projected lifespan and related energy savings are realized, and the lifespan of the Diagnostic measure is uncertain.

Impact of Lifespan. The lifespan of a measure equals the number of years that it produces energy savings and, for this reason, it has a major role in determining a measure's overall energy savings and cost-effectiveness. The impact on cost-effectiveness is particularly significant for measures, such as the proposed Diagnostic measure, with relatively low energy savings as compared to the program and incremental costs. As an example, should the lifespan of the Diagnostic measure drop to five years, the benefit-cost ratio drops to 0.70, well below the level required for cost-effectiveness.

Although the Company cites DEER data supporting a ten-year lifespan for a refrigerant charge measure (which is only one of 18 services required as part of the proposed Diagnostic measure), that is insufficient to support the six-year lifespan cited for the Diagnostic measure as a whole. Another issue, in addition to the general lack of data, is that a number of the 18 listed services required for the proposed Diagnostic measure (such as cleaning evaporator and condenser air conditioning coils) would need to be done *annually*, not every six years (see the Energy Star recommended Maintenance Checklist).

There is insufficient information to support a conclusion that this measure, as currently proposed, would be cost-effective.

Environmental Savings. The estimated environmental savings for the R-HVAC program as a whole are listed in the table below:

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14 Includes both the Commission-approved \$3,000,000 increase in funding and transfers from other, less-active, Residential programs.

Projected Lifetime Savings for Measures Installed in 2011	Quantities (Entire Program)
Water Savings	81,000,000 Gallons
SOx	1,139 Lbs.
NOx	21,645 Lbs.
CO2	230,000,000 Lbs.
PM10	6,323 Lbs.

The estimated environmental savings for the Diagnostic measure alone are listed in the table below:

Projected Lifetime Savings for Measures Installed in 2011	Quantities (Entire Program)
Water Savings	6,000,000 Gallons
SOx	85 Lbs.
NOx	1,614 Lbs.
CO2	3,000,000 Lbs.

**Reporting.** The status of the existing R-HVAC program should continue to be reported in semi-annual reports, or in any succeeding form of report ordered by the Commission. Information reported should include, but not be limited to, the types of information and data currently covered in the current semi-annual reports. Staff also recommends that the semi-annual reports, or any succeeding form of DSM report ordered by the Commission, include detailed information regarding the Implementation costs for the R-HVAC program, including information on: (i) the program-specific costs included in the Implementation category; (ii) how much Implementation funding is retained by APS; and (iii) how much Implementation funding is paid to outside contractors.

**Bill Impact.** The proposed budget for the total R-HVAC program, with the proposed new Diagnostic measure, is \$14,812,000. Based on this budget, and on average usage by Residential customers, the monthly bill impact of this program would be approximately \$0.63. The annual impact would be approximately \$7.54. For the proposed R-HVAC Diagnostic measure, by itself, the monthly bill impact for Residential customers would be approximately 4.6 cents, while the approximate annual cost would be 55 cents.

Without the Diagnostic measure, the total R-HVAC budget would be \$13,723,000. Based on this budget and on average usage by Residential customers, the monthly bill impact of this program would be approximately \$0.58. The annual impact would be approximately \$6.98.

**Recommendations.** In discussions with Staff, APS has expressed the willingness to treat the proposed Diagnostic measure as a pilot. Staff is concerned, however, that even in pilot form, there are serious questions about the measure's cost-effectiveness and the proposed contractor incentive.

Given the Diagnostic measure's doubtful cost-effectiveness, and the issues with the contractor incentive for the "Stargate" (or equivalent) device, Staff recommends against approval of the Diagnostic measure at this time.

### **Summary of Recommendations**

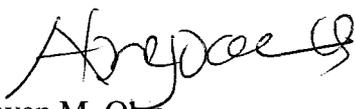
- Staff recommends that the Multi-Family Energy Efficiency Program be approved.
- Staff also recommends that the Multi-Family program not be used to replace gas appliances with electric appliances.
- Staff recommends that the APS Residential Shade Tree Pilot Program be approved as a twelve-month pilot, and evaluated to ensure that, in practice, it is cost-effective and should be continued.
- Staff recommends that APS be allowed to offer additional types of desert-adapted shade trees, if the cost-effectiveness of the Shade Tree program can be maintained while doing so.
- Staff also recommends that APS submit appropriate plans to expand the Shade Tree program as part of its measurement, evaluation and research report following the pilot program, if the pilot program is determined to be cost-effective.
- Staff recommends that the APS Residential Shade Tree Pilot Program continue during the period that the data from the first twelve months are being evaluated.
- Staff recommends that the pilot program's measurement, evaluation and research report include, but not be limited to: (i) the impact of the workshops on program participation; (ii) the impact of the workshops on compliance with the program's requirements for planting; and (iii) the impact of the workshops on energy savings and cost-effectiveness. In particular, the measurement, evaluation and research report should include data regarding whether the mandatory workshops improve mortality and enhance savings sufficiently to justify the pilot's program design, or whether a larger portion of the program funding should be shifted from workshops into the rebates and incentives category, in order to provide more trees.
- Staff recommends that the semi-annual reports, or any succeeding form of DSM report ordered by the Commission, include detailed information regarding the Implementation costs for each program, including information on what program-specific costs are included in the Implementation category for that program and, for each program, how much Implementation funding is retained by APS and how much is paid to outside contractors.

THE COMMISSION

December 2, 2010

Page 18

- Staff recommends against approval of the Residential Diagnostic measure proposed for inclusion in the Residential Existing Homes Heating, Ventilation and Air Conditioning program.

*for*   
Steven M. Olea  
Director  
Utilities Division

SMO:JMK:red\WVC

ORIGINATOR: Julie McNeely-Kirwan

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**BEFORE THE ARIZONA CORPORATION COMMISSION**

KRISTIN K. MAYES  
Chairman  
GARY PIERCE  
Commissioner  
PAUL NEWMAN  
Commissioner  
SANDRA D. KENNEDY  
Commissioner  
BOB STUMP  
Commissioner

IN THE MATTER OF THE APPLICATION )  
OF ARIZONA PUBLIC SERVICE )  
COMPANY FOR APPROVAL OF THE )  
COMPANY'S 2011 DEMAND SIDE )  
MANAGEMENT IMPLEMENTATION )  
PLAN )

DOCKET NO. E-01345A-10-0219  
DECISION NO. \_\_\_\_\_  
ORDER

Open Meeting  
December 14 and 15, 2010  
Phoenix, Arizona

BY THE COMMISSION:

FINDINGS OF FACT

Background

1. Arizona Public Service Company ("APS" or "the Company") provides electric service within portions of Arizona, pursuant to authority granted by the Arizona Corporation Commission ("Commission").
2. APS provides service in the counties of Apache, Cochise, Coconino, Gila, La Paz, Maricopa, Navajo, Pima, Pinal, Yavapai and Yuma. The Company services over 1.1 million customers in Arizona, including approximately 984,000 Residential and 120,000 Commercial customers.
3. On June 1, 2010, APS filed an application for approval of the Company's 2011 Demand Side Management Implementation Plan (the "2011 Plan"). The 2011 Plan filing was in

1 compliance with the provisions of the settlement agreement in the Company's most recent rate  
2 case, as approved by the Arizona Corporation Commission in Decision No. 71448.

3 4. The proposed 2011 Plan reflects changes to the existing APS DSM portfolio, and  
4 sets out the programs and measures by which APS plans to meet the energy savings goals agreed  
5 upon in the Settlement Agreement.

6 The APS DSM Implementation Plan Filings (June 1, June 30 and August 2, 2010)

7 5. The first Implementation Plan filing, dated June 1, 2010, was followed by two  
8 supplemental filings, on June 30, 2010<sup>1</sup> and on August 2, 2010. (The material filed on August 2<sup>nd</sup>  
9 included material originally planned for the August 16th filing.) With respect to changes and  
10 enhancements, the scope of each filing is as follows:

- 11 • June 1: Proposed Enhancements to Existing Residential and Non-  
12 Residential Programs and one new Residential program (Conservation  
13 Behavior Pilot Program ); preliminary budget and preliminary Demand-Side  
14 Management Adjustor Charge ("DSMAC") estimate;<sup>2</sup>
- 15 • June 30: Proposed New Prescriptive and Direct Install Measures for Non-  
16 Residential Programs and the Bid for Efficiency Pilot;
- 17 • August 2: Proposed New Residential Shade Tree Pilot Program and New  
18 Measures for the Existing Residential Homes Program; also, Proposed New  
19 Residential Multi-Family Homes Program (originally planned for the  
20 August 16 filing); final budget and DSMAC estimates.

21 6. 2011 APS Implementation Plan; Background. The 2011 Plan is being addressed in  
22 multiple parts. The initial order, docketed in October, primarily addressed the Conservation  
23 Behavior Pilot Program, one of three new Residential behavior-based programs. On November 1,  
24 2010, the Conservation Behavior Pilot program was approved by the Commission (Decision No.  
25 71950). The Company's initial estimates regarding the budget, revenue requirement and DSMAC

26 \_\_\_\_\_  
27 <sup>1</sup> The First Supplemental filing was originally scheduled for July 1 (see the Application, page 7) but actually filed on  
June 30<sup>th</sup>.

28 <sup>2</sup> In addition, Filing 1 requested that costs associated with the Home Energy Information ("HEI") Pilot Program, along  
marketing costs for certain rates, be recovered through the DSMAC.

1 were also discussed, but no recommendation or order was made regarding the DSMAC.<sup>3</sup> On  
2 November 23, 2010, the Commission also acted on the Company's proposals regarding three  
3 existing Residential programs, the Consumer Products, Appliance Recycling, and Energy Wise  
4 programs.

5 7. Scope of Review for this Order. The focus of this Order is the two remaining new  
6 Residential programs and enhancements to one existing program: (i) the Multi-Family Energy  
7 Efficiency Program (New); (ii) the Shade Tree Pilot Program (New); and (iii) the Residential  
8 Existing Homes Heating, Ventilation and Air Conditioning Program (Existing).

9 8. New Residential Programs

10 (i) **Multi-Family Energy Efficiency Program;** APS is proposing a new  
11 Residential program to target new and existing multi-family Residential  
12 properties.

13 (ii) **Shade Tree Pilot Program;** APS is proposing a Residential Shade Tree  
14 pilot program, in partnership with a local non-profit agency. The program  
15 would provide desert-adapted trees free of charge, but would require  
16 participation by customers in workshops focusing on planting to maximize  
17 energy savings and maintenance of the trees.

18 Existing Residential Program

19 (iii) **Existing Homes Program;** APS proposes to add a measure to the existing  
20 Residential Existing Homes Heating, Ventilation and Air Conditioning  
21 program ("R-HVAC"). The measure provides a financial incentive to APS  
22 Residential customers to have an advanced diagnostic tune-up on their air  
23 conditioning or heat pump unit.<sup>4</sup> The program also proposes to provide an  
24 incentive payment to contractors who purchase advanced diagnostic  
25 equipment.

26 <sup>3</sup> The actual DSMAC will be addressed in the final order relating to the 2011 Plan, so that any Commission-ordered  
27 modifications or changes can be taken into account when the adjustor rate is reset.

28 <sup>4</sup> As indicated in the June 1 filing, APS originally planned to propose a Room Pressure Balancing measure to Existing  
Homes (a.k.a., "R-HVAC"). However, a final review of the measure indicated that the measure was not cost-effective  
and APS did not file for Commission approval of the measure.

1           9.     Proposed Recovery of Costs for Demand Response and Home Energy Information  
2 Pilot Program. APS is also requesting recovery of the costs associated with the Home Energy  
3 Information Pilot Program, along with marketing costs for certain rates, through the DSMAC.<sup>5</sup>  
4 Because these requests relate to the type and amount of funding to be recovered through the  
5 DSMAC, these will be covered in the final order as part of the adjustor reset.

6           10.    Scope of Review: Cost-Effectiveness. Measures previously determined by Staff to  
7 be cost-effective will not be re-evaluated for cost-effectiveness at this time, unless new  
8 information indicates that re-evaluation is necessary.

9     New Residential Programs

10    Multi-Family Energy Efficiency Program

11           11.    Description. The Multi-Family Energy Efficiency Program (“Multi-Family”),  
12 would promote energy efficiency in existing multi-family properties with more than five<sup>6</sup> units,  
13 including dormitories. The program focuses on the construction of new energy efficient multi-  
14 family housing, and the renovation or retrofit of existing multi-family units.

15           12.    Multi-Family Housing; Barriers to Energy Efficiency. APS notes that, while  
16 approximately 23% of its customers live in multi-family housing, there are significant barriers to  
17 reaching this customer segment with energy efficiency programs. The builders who construct  
18 rental properties, and the owners who would be responsible for upgrades, do not usually pay the  
19 energy bills. Consequently, builders and owners do not directly benefit from the lower energy  
20 costs that arise from investing in efficiency measures, which reduces or eliminates their incentive  
21 to participate in DSM programs. At the same time, the renters who would benefit from lower  
22 energy bills have no direct influence over original construction and, with respect to renovations or  
23 retrofits, may not have the authority, the incentive or the means to invest in energy efficiency for  
24 housing they do not own.

25           13.    APS seeks to promote energy efficiency and address existing barriers to  
26 participation through the following three program components: (i) Direct Install; (ii) Common

27 <sup>5</sup> Critical Peak Pricing, Residential Super Peak Rate, Time of Use Rate, and the Interruptible Rate.

28 <sup>6</sup> Properties with more than five units usually fall under commercial lending guidelines, and the decision-makers are usually, corporate, institutional or trusts.

1 Area Retrofits; and (iii) New Construction/Renovation/Retrofits. These components are described  
2 in more detail below.

3 14. Direct Install. Direct Install provides the following low cost direct install measures  
4 to multi-family rental property management companies: (a) CFLs, (b) low flow showerheads, and  
5 (c) faucet aerators. The APS implementation contractor would provide guidance and monitoring,  
6 while property managers would be responsible for any costs and labor related to installation. In  
7 discussions with Staff, APS stated that owners of large multi-family housing properties have  
8 indicated that they would be willing to participate in the Direct Install component, based on the  
9 potential marketing benefits of such participation. Additional detail regarding the Direct Install  
10 measures is provided in the table below.

Measure	Incremental Cost	Incentive
Direct Install CFLs	\$2.00	Provided free of charge to participant. Participant responsible for installation cost.
Direct Install Showerheads	\$52.00/\$31.00	Provided free of charge to participant. Participant responsible for installation cost.
Direct Install Faucet Aerators	\$7.60	Provided free of charge to participant. Participant responsible for installation cost.

17 15. Cost-effectiveness of the Showerhead Measure As Part of the Multi-Family  
18 Program. Low-flow showerheads were previously approved by the Commission. Staff performed  
19 an analysis on the showerhead measure using an updated incremental cost for the measure and the  
20 program costs specific to the Multi-Family program. The benefit-cost ratio for the showerhead  
21 measure is 1.13, making the measure cost-effective on a projected basis.<sup>7</sup>

22 16. In communications with Staff, APS noted that the model selected for the Multi-  
23 Family program interrupts the flow once the water is heated up, and reduces water usage as well as  
24 saving energy. The Company also noted that property managers were reluctant to install lower-  
25 end showerheads, due to potential maintenance problems, and that the model selected for the  
26

27 <sup>7</sup> A "smart" showerhead natural gas measure with the flow-interrupt feature was approved for the Southwest Gas  
28 Consumer Products program as a pilot (Decision No. 71289, 10/7/2009). Southwest Gas, in communication with Staff, indicated that it will review data from the pilot and file a report on the measure's cost-effectiveness by 12/30/2010.

1 Multi-Family program is a better design for the Arizona market, being easy to de-calcify and  
2 manufactured with better brass components. Review by Staff and the Company also indicated that  
3 the price of this item has decreased significantly. (The on-line price of the measure is now  
4 \$30.99.) Staff noted that the decreased cost improved the measure's cost-effectiveness.

5 17. Common Area Retrofits. Common Area Retrofits would leverage on-site work  
6 done in connection with the Direct Install component, beginning with an assessment of common  
7 areas such as community rooms, offices, pools, and laundry facilities. Unlike the energy costs for  
8 individual units, the energy costs associated with common areas are usually paid by owners,  
9 meaning that there is a built-in incentive for owners to participate in this component of the  
10 proposed Multi-Family program.

11 18. The Common Area Retrofit assessment would identify potential energy efficiency  
12 savings, and would be followed by referrals to the APS Solutions for Business program. ("APS  
13 Solutions for Business" is an umbrella term used for the Company's Non-Residential programs.)  
14 The Common Area Retrofit assessment would be paid for by APS Solutions for Business, which  
15 would also track the savings from any installations done as part of the Multi-Family program's  
16 Common Area Retrofit component.

17 19. New Construction/Renovation/Retrofit. New Construction/Renovation/Retrofit  
18 would provide incentives to builders for construction of more energy efficient multi-family  
19 housing, for existing multi-family properties undergoing major renovations, and for existing multi-  
20 family properties undergoing energy efficiency retrofits. The incentives would be provided on a  
21 per-unit basis to builders meeting the program's prescriptive energy efficiency standards.

22 20. The New Construction/Renovation/Retrofit component of the Multi-family program  
23 offers four Builder Option Packages ("BOPs"), discussed below. BOP 1, 2 and 3 apply to either  
24 new construction or major renovation projects (such as those requiring structural changes), while  
25 the retrofit program is designed for less major, non-structural, energy efficiency upgrades.  
26 Additional detail is provided below.

27 21. Builder Options; Incentives. The table below lists the incentives for each BOP, the  
28 customer incremental cost per unit, incentives as a percentage of the customer's incremental cost,

1 and the measures required for each builder option. (The customer incremental cost per unit listed  
 2 in the table represents the customer's full incremental cost per unit, without taking into account the  
 3 proposed incentive.)

Incentive per unit	Customer Incremental Cost Per Unit	Incentive as a Percentage of the Incremental Cost	<b>Builder Option Package 1</b> Measures
\$650	\$902.95	72%	<ul style="list-style-type: none"> <li>• Wall Insulation</li> <li>• Window U-Factor</li> <li>• Window Solar Heat Gain Coefficient</li> <li>• Reduced Infiltration Rates</li> <li>• Reduced Duct Leakage</li> <li>• Higher Air Conditioning Efficiency (14 SEER minimum)</li> <li>• Higher Furnace Efficiency (where applicable)</li> <li>• Higher Heat Pump Heating Efficiency (where applicable)</li> <li>• Reduced Lighting Power Density</li> <li>• Reduced Miscellaneous Appliance Power Density</li> <li>• Higher Water Heating Efficiency</li> </ul>
\$800	\$1,186.50	67%	<b>Builder Option Package 2</b> All of the BOP1 measures PLUS: <ul style="list-style-type: none"> <li>• Significant Additional Reduction to Lighting Power Density</li> </ul>
\$900	\$1,366.60	66%	<b>Builder Option Package 3</b> All of the BOP1 measures PLUS: <ul style="list-style-type: none"> <li>• Duct Leakage Reduced to 0% (ducts inside the conditioned space)</li> <li>• Higher Air Conditioner ("AC") Efficiency (15 SEER minimum)</li> </ul>
\$650	\$896.37	73%	<b>Retrofit Builder Option Package 4</b> <ul style="list-style-type: none"> <li>• Reduced Duct Leakage</li> <li>• Higher AC Efficiency (14 SEER minimum)</li> <li>• Higher Furnace Efficiency (where applicable)</li> <li>• Higher Heat Pump Heating Efficiency (where applicable)</li> <li>• Reduced Lighting Power Density</li> <li>• Miscellaneous Appliance Power Density</li> <li>• Higher Hot Water Heating Efficiency</li> </ul>

22. Proposed Budget. The Multi-Family budget covers costs for dwelling audits, costs  
 24 for handling, warehousing and shipping components, technical and field support, follow-up  
 25 verifications, working with manufacturers, and tracking and reporting performance. The proposed  
 26 budget is shown in the table below:

27 ...  
 28 ...

Program	Multi-Family
Rebates and Incentives	\$590,000
Training and Technical Assistance	\$10,000
Consumer Education	\$25,000
Program Implementation <sup>8</sup>	\$555,000
Program Marketing	\$62,000
Planning and Administration <sup>9</sup>	\$35,000
Financing	\$0
Program Total Cost	\$1,277,000

23. Cost-Effectiveness. The Multi-Family program will rely on measures already found cost-effective by the Commission. Because the Multi-Family program is not only a new program, but also features a new delivery model, Staff reviewed the benefit-cost ratio to confirm that cost-effectiveness would be maintained. Staff's review indicated a benefit-cost ratio for the Direct Install component of 1.73, and 1.07 for the Builder Option Packages component, indicating that, based on projected benefits and costs, the Multi-Family program is cost-effective. (As noted elsewhere, herein, costs and savings associated with the Common Area Retrofit component, other than the cost of the audit, will not be tracked within the Multi-Family program but, instead, will be tracked with existing Non-residential programs, as part of "APS Solutions for Business.")

24. Environmental Savings. The estimated environmental savings for the Multi-Family program are listed in the table below:

Projected Lifetime Savings for Measures Installed in 2011	Quantities
Water Savings	11,000,000 Gallons
SOx	160 Lbs.
NOx	3,044 Lbs.
CO2	32,000,000 Lbs.
PM10	889 Lbs.

25. Bill Impact. The proposed budget for the Multi-Family program is \$1,277,000. Based on this budget and on average usage by Residential customers, the monthly bill impact of

<sup>8</sup> Implementation includes costs associated with program delivery, including Program Outreach, Field Assessments, Direct Install Program Component Logistics, Direct Install Component Handling, Technical/Field Support, Component Verification Follow-up and Reporting and Tracking.

<sup>9</sup> Planning and Administration includes the Company's costs to plan, develop and administer programs, including management of program budgets, oversight of the RFP process and implementation contract, program development, program coordination and general overhead expenses.

1 this program would be approximately 5.4 cents. The annual impact would be approximately 65  
2 cents.

3 26. Recommendation. The Multi-Family program is cost-effective, as designed, and  
4 has the potential to promote energy efficiency in a sector of the customer community that has been  
5 difficult to reach with DSM programs. Staff has recommended that the Multi-Family program be  
6 approved.

7 27. Reporting. The status of the program, including data on whether it is cost-effective,  
8 should be reported in semi-annual reports, or in any succeeding form of report ordered by the  
9 Commission. Information reported should include, but not be limited to, the types of information  
10 and data currently covered in the current semi-annual reports for existing programs. Staff has also  
11 recommended that the semi-annual reports, or any succeeding form of DSM report ordered by the  
12 Commission, include detailed information regarding the Implementation costs for the Multi-  
13 Family program, including information on: (i) the program-specific costs included in the  
14 Implementation category; (ii) how much Implementation funding is retained by APS; and (ii) how  
15 much Implementation funding is paid to outside contractors.

16 28. Additional Recommendation. Most Arizona apartment complexes are electric-only,  
17 and APS has indicated that it does not anticipate that it will encounter many instances where a gas  
18 appliance, such as a water heater, could be replaced by an electric appliance. In order to limit fuel  
19 switching issues, and due to concerns over the efficiency of replacing gas water heaters with  
20 electric water heaters, Staff has also recommended that the Multi-Family program not be used to  
21 replace gas appliances with electric appliances.

## 22 Shade Tree Pilot Program

23 29. Description. APS is proposing a Shade Tree program, which it plans to implement  
24 as a pilot in partnership with the Permaculture Guild, a local non-profit agency. APS proposes to  
25 offer workshops on planting and maintaining trees, and will provide APS customers attending the  
26 workshops with vouchers for up to three desert-adapted trees. The APS Shade Tree program has  
27 been designed to focus heavily on education, in order to limit tree mortality and enhance savings.

28 ...

1           30.     The program would commence within six to eight weeks of receiving Commission  
2 approval, with measurement, evaluation and research (“MER”) being conducted on an ongoing  
3 basis. At the conclusion of a twelve-month pilot APS will submit a MER report to the  
4 Commission, with suggestion on program redesign or expansion.

5           31.     Eligibility and Participation. APS customers in single-family residential homes  
6 will be eligible to participate in the program. APS estimates that 5,000 trees would be planted  
7 during the pilot program.

8           32.     Delivery and Incentives. In lieu of a monetary investment by program  
9 participants<sup>10</sup>, the APS Shade Tree program would require participants to take part in workshops,  
10 (between half and hour and an hour long) designed to educate customers about the energy savings  
11 potential for shade trees, and on how to plant and care for the trees. APS customers would also be  
12 responsible for picking up their trees at specific “tree pickup events,” as well as being responsible  
13 for planting and maintaining the trees.

14           33.     Workshops. Although tree pickup events will be limited to the appropriate planting  
15 seasons, tree workshops will be offered year-round. The workshop curriculum is described in  
16 more detail, below.

17           34.     Selecting desert-adapted shade trees: Trees should require low water-use and offer  
18 sufficient canopy size and density for shade. (The proposed APS program will be restricted to  
19 only Mesquite and Palo Verde trees, but the workshops will train on tree-selection to promote the  
20 selection of appropriate desert-adapted shade trees in the future);

- 21                   • *Planting techniques:* Customers will learn how to plant trees to maximize  
22                   survivability;
- 23                   • *Planting locations:* Program requirements are that the shade trees be  
24                   planted on the south, west and east sides, and within 15 feet, of customers’  
25                   homes. Customers will also be taught to plant in front of windows and

26  
27 <sup>10</sup> In comparison, the TEP Shade Tree program (in existence since 1992) charges \$8.00 per tree, and delivers the trees.  
28 Under the UNS Electric program, customers purchase the trees on a retail basis and receive a \$15.00 bill credit (for trees costing approximately \$20.00).

1 away from patios and major overhangs, as well as learning how to plant  
2 away from power lines and underground utilities;

- 3 • *Tree maintenance*: Customers will be taught to prune and water trees to  
4 encourage growth and health, without wasting water; and
- 5 • *Fire control*: Customers will learn how to trim trees and shrubs and how to  
6 safely dispose of the trimmings to minimize fire hazards.

7 35. Participants receive a voucher for two five-gallon desert-adapted trees, unless they  
8 live in a home built prior to 1980. Participants living in these older, and generally less energy  
9 efficient homes, would receive up to three vouchers.

10 36. Western Resource Advocates ("WRA") and Sierra Club Comments: The Sierra  
11 Club filed comments supporting the proposed Shade Tree pilot as cost-effective, and for the  
12 additional environmental benefits that the program would provide to the Phoenix area. The WRA  
13 also filed comments in support of the proposed pilot, recommending that the list of eligible tree  
14 species be expanded to offer more choices, and recommending that, following the pilot, APS make  
15 any appropriate modifications and expand the scale of the program.

16 37. Eligible Trees and Program Expansion. APS currently plans to offer vouchers for  
17 only Mesquite and Palo Verde trees. Staff has recommended that APS be allowed to offer  
18 additional types of desert-adapted shade trees if the cost-effectiveness of the Shade Tree program  
19 is maintained while doing so. Staff has also recommended that APS submit appropriate plans to  
20 expand the Shade Tree program as part of its MER report following the pilot, if the pilot program  
21 is determined to be cost-effective.

22 38. Proposed Budget. As stated herein, rebates and incentives are not directly paid to  
23 program participants. The \$50,000 listed for rebates and incentives covers the cost of the trees  
24 provided under the program. In discussions with Staff, APS indicated that purchasing the program  
25 trees in bulk and directly from the grower resulted in higher quality trees and lower tree mortality.  
26 With respect to Implementation, \$200,000 of the \$244,000 cost would be paid to the Permaculture  
27 Guild to cover training and pickup events, while \$44,000 would cover the Company's internal  
28 labor, and covers the cost of a half-time program coordinator. The Training and Technical

1 Assistance and Consumer Education categories cover education and educational materials for  
 2 customers, while the Marketing costs would cover items such as bill inserts. Planning and  
 3 Administration includes the Company's overhead and planning costs.

4 39. The proposed budget for the Shade Tree Pilot Program is set out in the table below:

Program	Shade Tree
Rebates and Incentives	\$50,000
Training and Technical Assistance	\$45,000
Consumer Education	\$25,000
Program Implementation	\$244,000
Program Marketing	\$55,000
Planning and Administration	\$25,000
Financing	\$0
Program Total Cost	\$444,000

11 40. Incentive and Non-Incentive Costs. Staff expressed concern about implementation  
 12 costs being high, relative to costs for rebates and incentive. In communication with Staff, APS  
 13 explained that its proposed Shade Tree pilot is weighted toward implementation costs due to the  
 14 program's:

15 "emphasis on the community education component. The APS Shade Tree  
 16 Pilot Program utilizes a model that offers home owners. . .workshops on  
 17 how to plant, locate, and maintain shade trees. APS believes that this  
 18 model will optimize tree placement and decrease tree mortality rates. . ."  
 19 [The Company believes that its approach will] "optimize the energy  
 20 saving potential of each tree . . .while at the same time promoting the  
 21 importance of energy efficiency as a whole."

22 41. APS also noted that the pilot will include an evaluation of its delivery methodology  
 23 and will compare that methodology with other Shade Tree programs in Arizona.

24 42. Tree mortality or planting trees outside program parameters could significantly  
 25 impact savings from shade tree programs, but a reasonable balance should be maintained between  
 26 non-incentive and incentive costs. (In this case, incentive costs are not costs paid directly to  
 27 participants but, instead, represent the cost of the trees supplied to participants.)

28 43. Staff has recommended that the pilot program's MER report include, but not be  
 limited to: (i) the impact of the workshops on program participation; (ii) the impact of the  
 workshops on compliance with the program's requirements for planting parameters; and (iii) the

1 impact of the workshops on energy savings and cost-effectiveness. In particular, the MER report  
 2 should include data regarding whether the mandatory workshops improve mortality and enhance  
 3 savings sufficiently to justify this program design, or whether a larger portion of the program  
 4 funding should be shifted from workshops into the rebates and incentives category, in order to  
 5 provide more trees.

6 44. Cost-Effectiveness. In addition to providing other societal benefits, as discussed  
 7 herein, shade trees conserve energy in the following ways:

- 8 • Shading reduces the radiant energy absorbed and stored by surfaces,  
 9 including walls, pavement and gravel yards;
- 10 • Transpiration, which converts liquid water in leaves into vapor, thereby  
 11 cooling the air; and
- 12 • Trees reduce wind velocity and slow the infiltration of outside air into inside  
 13 spaces.

14 45. Staff estimates the benefit-cost ratio of the proposed APS Residential Shade Tree  
 15 Pilot program at approximately 1.15, making the program (as designed) cost-effective. The  
 16 environmental savings and other program benefits are also discussed herein.

17 46. Environmental Savings. The estimated environmental savings for the Shade Tree  
 18 program are listed in the table below:

19 Projected Lifetime Savings for Measures Installed in 2011	Quantities
20 Water Savings	6,000,000 Gallons
21 SOx	86 Lbs.
22 NOx	1,632 Lbs.
23 CO2	17,000,000 Lbs.
PM10	477 Lbs.

24 47. Additional Benefits. In addition to the kWh and air emissions savings, the  
 25 following benefits arise from the program. While these benefits are not monetized, they are part of  
 26 the overall benefits of the Shade Tree program. Shade trees:

- 27 • provide habitat for wildlife;
- 28 • absorb air and water pollution;

- 1 • control stormwater runoff;
- 2 • control soil erosion and wind; and
- 3 • provide aesthetic benefits.

4 48. Reporting. The status of the program should be reported in semi-annual reports, or  
5 in any succeeding form of report ordered by the Commission. Information reported should  
6 include, but not be limited to, the types of information and data currently covered in the current  
7 semi-annual reports for existing programs. Staff has also recommended that the semi-annual  
8 reports, or any succeeding form of DSM report ordered by the Commission, include detailed  
9 information regarding the Implementation costs for the Shade Tree program, including information  
10 on: (i) the program-specific costs included in the Implementation category; (ii) how much  
11 Implementation funding is retained by APS; and (iii) how much Implementation funding is paid to  
12 outside contractors.

13 49. Bill Impact. The proposed total budget for the Shade Tree Pilot Program is  
14 \$444,000. Based on this budget, and on average usage by Residential customers, the monthly bill  
15 impact of this program would be approximately 1.9 cents. The annual impact would be  
16 approximately 23 cents.

17 50. Recommendations. Staff has recommended that the APS Residential Shade Tree  
18 Pilot Program be approved, as modified herein. Staff has recommended that the program continue  
19 during the period that the data from the first twelve months are being evaluated.

## 20 Existing Residential Program

### 21 Existing Homes

22 51. Description of Existing Program. The Residential Existing Homes Heating,  
23 Ventilation and Air Conditioning (“R-HVAC”) program consists of: (i) Residential HVAC,  
24 including air conditioning rebates and Duct Test and Repair; and (ii) Home Performance with  
25 Energy Star (“HPwES”). R-HVAC promotes energy efficient equipment and a Quality Installation  
26 measure designed to maximize HVAC operating efficiency. HPwES<sup>11</sup> promotes a whole house  
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28 <sup>11</sup> The HPwES program component was approved by the Commission in Decision No. 71460, on January 26, 2010.

1 approach to energy efficiency, beginning with a \$99 comprehensive home energy assessment.  
 2 HPwES identifies potential energy efficiency measures, such as air sealing, insulation, shade  
 3 screens, faucet aerators, and low flow showerheads, and provides homeowners with information  
 4 on APS energy efficiency rebates and access to financing.

5 52. Description of Proposed Changes. APS is proposing to add an advanced diagnostic  
 6 air conditioning tune-up measure to the R-HVAC program. The measure provides a financial  
 7 incentive to APS Residential customers to have an advanced diagnostic tune-up on their air  
 8 conditioning or heat pump unit, and an incentive to participating contractors to offset the cost of  
 9 equipment required to perform the tune-up.

10 53. Advanced Diagnostic Tune-up: Normal diagnostic tune-ups vary in the types of  
 11 service provided and may be as limited as a visual inspection that does not include an actual tune-  
 12 up, and does not provide verification of what work has been done. The advanced diagnostic tune-  
 13 up provides the following services:

Number	Service
1.	Checking thermostat operation;
2.	Cleaning or replacement of filter (customer supplied);
3.	Verification of air flow with advanced diagnostic equipment or flow hood;
4.	Checking for refrigerant leaks and repair of leaks;
5.	Verification of refrigerant charge with advanced diagnostic equipment and correction, if needed;
6.	Cleaning of outdoor condenser coil;
7.	Inspection of fused disconnect;
8.	Inspection of wiring and tightening of electrical connections;
9.	Inspection of contactors, relays, and pressure controls;
10.	Inspection of electrical safety circuits;
11.	Checking voltage and amperage to all motors;
12.	Inspection and cleaning of indoor blower wheel and motor for dirt build-up;
13.	Inspection of bearings and lubrication of all moving parts, as required;
14.	Inspection of belt and adjustment of tension, as required;
15.	Inspection and cleaning of condensate drain;
16.	Inspection of duct seal at unit and securing of panels;
17.	Checking evaporative cooler duct block-off, as required; and
18.	Explaining and documenting all necessary repairs.

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26 54. APS states that most tune-ups are primarily visual inspections, and that it is rare for  
 27 technicians to test the refrigeration system to verify the charge, check the airflow, clean the  
 28 condenser coil, or verify the work that was done. The APS measure requires all four main

1 components of an advanced diagnostic tune-up, as well as requiring that pre-tune-up and post-  
2 tune-up performance data be recorded for verification purposes.

3 55. Eligibility. The Residential Diagnostic Measure targets APS Residential customers  
4 in existing single family homes, with heating and cooling equipment that is at least three years old.  
5 The units may be package or split systems and must be two to five tons in size and connected to a  
6 duct system. Tune-ups can not be performed more often than every three years, as the Company  
7 does not believe that more frequent tune-ups would be beneficial.

8 56. Participation. In the first year, APS plans to limit participation to 5,300  
9 participants, to verify the measure's performance in the field. If the program meets requirements,  
10 APS anticipates annual participation in the range of 10,000 to 50,000. Units on multi-family  
11 homes are eligible to participate in cases where there is a Residential account.

12 57. Residential Incentive. The proposed incentive for the new Diagnostic measure is  
13 \$100, to offset the cost of an advanced diagnostic and tune-up of a customer's heat pump or air  
14 conditioner. The cost of these services generally runs from \$150-\$180, meaning that the incentive  
15 would equal from 67% to 55% of the measure cost.

16 58. Contractor Incentive. The Company also proposes to offer a contractor equipment  
17 incentive of \$1,000 to companies purchasing advanced diagnostic equipment, to offset the \$3,600  
18 cost of the equipment. Based on discussions with APS, the "Stargate" (or equivalent) device is  
19 considered integral to the proposed measure and would be used to verify that the work required for  
20 the tune-up had been performed.<sup>12</sup> Contractors would be limited to two \$1,000 equipment  
21 incentives per company, and are eligible for the incentives only once they have completed "20  
22 advanced diagnostic jobs that have been verified and accepted by APS." Contractors must  
23 undergo training on advanced diagnostic equipment, and be current participants in the APS R-  
24 HVAC program, before they can offer the Diagnostic measure to customers.

25 59. Initial Limitation on Contactor Participation. Only 40 contractors are allowed to  
26 participate in the program during the first phase, which would begin in the spring of 2011 and

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28 <sup>12</sup> A Stargate site states: "The SG3000 analyzer is designed to be used on residential capillary tube and TXV values (Thermostatic Expansion Value) air conditioning refrigeration systems that use refrigerants. . .The SG3000 analyzer can also be used as a service tool to read pressure and temperature values."

1 continues until 5,300 Diagnostic rebates have been paid. Once the first phase is complete, the  
2 Diagnostic measure will be evaluated to determine if it is cost-effective. APS is limiting  
3 participation during the first phase because it “ensures that the initial 40 contractors will have the  
4 opportunity to secure enough jobs to cover the initial expense of participating in this measure.”

5 60. Issues Regarding the “Stargate” (or Equivalent) Device. Staff has concerns with  
6 respect to the “Stargate” (or equivalent) incentive proposed in connection with the Diagnostic  
7 measures. First, within the context of a DSM program, incentives are normally offered directly in  
8 connection with measures that have been found to be cost-effective. In the R-HVAC program  
9 proposal, the “Stargate” (or equivalent) device is not treated as a measure, and there is insufficient  
10 information to show that this device would increase energy savings enough to justify the  
11 associated costs. Other concerns are: (i) there is insufficient information to support a conclusion  
12 that a \$1,000 incentive is necessary to promote participation by contractors; (ii) there are no  
13 overall limits on the number of incentives that would be paid for the “Stargate” (or equivalent)  
14 device once the first phase of the roll-out is completed and evaluated, meaning that the overall cost  
15 of providing the incentive during full rollout of the program is unknown<sup>13</sup>; and (iii) although APS  
16 customers would be paying the cost of the incentives, the “Stargate” or equivalent devices could be  
17 used outside the Company’s service territory, particularly as the program expands.

18 61. Budget Background. The original budget approved for the R-HVAC program in  
19 early 2010 was \$5,907,000. On September 27, 2010, APS filed an application for approval of an  
20 increase in the 2010 Energy Efficiency Implementation Plan Funds, with respect to the R-HVAC  
21 program. An increase of \$3,000,000 was requested for the program, in order to accommodate  
22 unexpectedly high levels of customer demand, and to avoid suspension of the program once  
23 funding was exhausted (estimated to occur in late 2010). In addition to the budget increase, funds  
24 were transferred from less active Residential programs. On November 8, 2010, in Decision No.  
25 71960, the increase in budget was approved, and the Commission ordered that transfers among all  
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28 <sup>13</sup> \$29,000 in contractor incentives are projected for first phase of the rollout. Staff notes that, because this is a  
program cost, as it increases, measure costs also increase, negatively impacting cost-effectiveness.

1 the Residential programs be allowed (with the exception of the Low-income Weatherization  
2 program) to permit more efficient allocation of Residential DSM funds.

3 62. Proposed Budget. The 2010 and proposed 2011 budgets are shown in the table  
4 below. The Company estimates that the proposed new Diagnostic measure would cost \$1,089,000,  
5 bringing the total budget to \$14,812,000.

Program	Initial 2010 Existing Homes ("R-HVAC")	2010 Budget Following Increase	2011 Budget Existing Homes
Rebates and Incentives	\$3,519,000	\$6,875,000	\$9,715,000
Training and Technical Assistance	\$88,000	\$220,000	\$334,000
Consumer Education Program	\$279,000	\$229,000	\$365,000
Implementation	\$1,200,000	\$1,808,000	\$3,129,000
Program Marketing	\$598,000	\$473,000	\$807,000
Planning and Administration	\$223,000	\$102,000	\$257,000
Financing	\$0	\$0	\$205,000
Program Total Cost	\$5,907,000	\$9,707,000 <sup>14</sup>	\$14,812,000

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16 63. Cost-Effectiveness of the R-HVAC Program. The R-HVAC program was  
17 previously determined to be cost-effective, and the program's overall cost-effectiveness has not  
18 been reviewed for this filing.

19 64. Cost-Effectiveness of the Proposed Diagnostic Measure. Staff estimated the  
20 benefit-cost ratio of the proposed new Diagnostic measure at 0.976, putting the benefit-cost ratio at  
21 just under 1.0. However, this level of cost-effectiveness would be achieved only if the projected  
22 lifespan and related energy savings are realized, and the lifespan of the Diagnostic measure is  
23 uncertain.

24 65. Impact of Lifespan. The lifespan of a measure equals the number of years that it  
25 produces energy savings and, for this reason, it has a major role in determining a measure's overall  
26 energy savings and cost-effectiveness. The impact on cost-effectiveness is particularly significant  
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28 <sup>14</sup> Includes both the Commission-approved \$3,000,000 increase in funding and transfers from other, less-active, Residential programs.

1 for measures, such as the proposed Diagnostic measure, with relatively low energy savings  
 2 compared to the program and incremental costs. As an example, should the lifespan of the  
 3 Diagnostic measure drop to five years, the benefit-cost ratio drops to 0.689, well below the level  
 4 required for cost-effectiveness.

5 66. Although the Company cites DEER data supporting a ten-year lifespan for a  
 6 refrigerant charge measure (which is only one of 18 services required as part of the proposed  
 7 Diagnostic measure), that is insufficient to support the six-year lifespan cited for the Diagnostic  
 8 measure as a whole. Another issue, in addition to the general lack of data, is that a number of the  
 9 18 listed services required for the proposed Diagnostic measure (such as cleaning evaporator and  
 10 condenser air conditioning coils, and lubricating moving parts) would need to be done *annually*,  
 11 not every six years (see the Energy Star recommended Maintenance Checklist).

12 67. There is insufficient information to support a conclusion that this measure, as  
 13 currently proposed, would be cost-effective.

14 68. Environmental Savings. The estimated environmental savings for the R-HVAC  
 15 program as a whole are listed in the table below:

Projected Lifetime Savings for Measures Installed in 2011	Quantities (Entire Program)
Water Savings	81,000,000 Gallons
SOx	1,139 Lbs.
NOx	21,645 Lbs.
CO2	230,000,000 Lbs.
PM10	6,323 Lbs.

21 69. The estimated environmental savings for the Diagnostic measure alone are listed in  
 22 the table below:

Projected Lifetime Savings for Measures Installed in 2011	Quantities (Entire Program)
Water Savings	6,000,000 Gallons
SOx	85 Lbs.
NOx	1,614 Lbs.
CO2	3,000,000 Lbs.

27 70. Reporting. The status of the existing R-HVAC program should continue to be  
 28 reported in semi-annual reports, or in any succeeding form of report ordered by the Commission.

1 Information reported should include, but not be limited to, the types of information and data  
2 currently covered in the current semi-annual reports. Staff has also recommended that the semi-  
3 annual reports, or any succeeding form of DSM report ordered by the Commission, include  
4 detailed information regarding the Implementation costs for the R-HVAC program, including  
5 information on: (i) the program-specific costs included in the Implementation category; (ii) how  
6 much Implementation funding is retained by APS; and (ii) how much Implementation funding is  
7 paid to outside contractors.

8 71. Bill Impact. The proposed budget for the total R-HVAC program, with the  
9 proposed new Diagnostic measure, is \$14,812,000. Based on this budget, and on average usage by  
10 Residential customers, the monthly bill impact of this program would be approximately \$0.63.  
11 The annual impact would be approximately \$7.54. For the proposed R-HVAC Diagnostic  
12 measure, by itself, the monthly bill impact for Residential customers would be approximately 4.6  
13 cents, while the approximate annual cost would be 55 cents.

14 72. Without the Diagnostic measure, the total R-HVAC budget would be \$13,723,000.  
15 Based on this budget and on average usage by Residential customers, the monthly bill impact of  
16 this program would be approximately \$0.58. The annual impact would be approximately \$6.98.

17 73. Recommendations. In discussions with Staff, APS has expressed the willingness to  
18 treat the proposed Diagnostic measure as a pilot. Staff is concerned, however, that even in pilot  
19 form, there are serious questions about the measure's cost-effectiveness and the proposed  
20 contractor incentive.

21 74. Given the Diagnostic measure's doubtful cost-effectiveness, and the issues with the  
22 contractor incentive for the "Stargate" (or equivalent) device, Staff recommends against approval  
23 of the Diagnostic measure at this time.

#### 24 Summary of Recommendations

- 25 • Staff has recommended that the Multi-Family Energy Efficiency Program be  
26 approved.
- 27 • Staff has also recommended that the Multi-Family program not be used to replace  
28 gas appliances with electric appliances.

- 1           •       Staff has recommended that the APS Residential Shade Tree Pilot Program be  
2                   approved as a twelve-month pilot, and evaluated to ensure that, in practice, it is  
3                   cost-effective and should be continued.
- 4           •       Staff has recommended that APS be allowed to offer additional types of desert-  
5                   adapted shade trees, if the cost-effectiveness of the Shade Tree program can be  
6                   maintained while doing so.
- 7           •       Staff has also recommended that APS submit appropriate plans to expand the Shade  
8                   Tree program as part of its measurement, evaluation and research report following  
9                   the pilot program, if the pilot program is determined to be cost-effective.
- 10          •       Staff has recommended that the APS Residential Shade Tree Pilot Program  
11                   continue during the period that the data from the first twelve months are being  
12                   evaluated.
- 13          •       Staff has recommended that the pilot program's measurement, evaluation and  
14                   research report include, but not be limited to: (i) the impact of the workshops on  
15                   program participation; (ii) the impact of the workshops on compliance with the  
16                   program's requirements for planting; and (iii) the impact of the workshops on  
17                   energy savings and cost-effectiveness. In particular, the measurement, evaluation  
18                   and research report should include data regarding whether the mandatory  
19                   workshops improve mortality and enhance savings sufficiently to justify the pilot's  
20                   program design, or whether a larger portion of the program funding should be  
21                   shifted from workshops into the rebates and incentives category, in order to provide  
22                   more trees.
- 23          •       Staff has recommended that the semi-annual reports, or any succeeding form of  
24                   DSM report ordered by the Commission, include detailed information regarding the  
25                   Implementation costs for each program, including information on what program-  
26                   specific costs are included in the Implementation category for that program and, for  
27                   each program, how much Implementation funding is retained by APS and how  
28                   much is paid to outside contractors.



1           IT IS FURTHER ORDERED that the pilot program’s measurement, evaluation and  
2 research report include, but not be limited to: (i) the impact of the workshops on program  
3 participation; (ii) the impact of the workshops on compliance with the program’s requirements for  
4 planting; and (iii) the impact of the workshops on energy savings and cost-effectiveness. In  
5 particular, the measurement, evaluation and research report should include data regarding whether  
6 the mandatory workshops improve mortality and enhance savings sufficiently to justify the pilot’s  
7 program design, or whether a larger portion of the program funding should be shifted from  
8 workshops into the rebates and incentives category, in order to provide more trees.

9           IT IS FURTHER ORDERED that the Residential Diagnostic measure proposed for  
10 inclusion in the Residential Existing Homes Heating, Ventilation and Air Conditioning program is  
11 not approved.

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IT IS FURTHER ORDERED that the semi-annual reports, or any succeeding form of DSM report ordered by the Commission, include detailed information regarding the Implementation budget for each program, including information on the program-specific costs included in the Implementation budget category for that program and, for each program, how much Implementation funding is retained by APS and how much is paid to outside contractors.

IT IS FURTHER ORDERED that this Decision shall become effective immediately.

**BY THE ORDER OF THE ARIZONA CORPORATION COMMISSION**

CHAIRMAN

COMMISSIONER

COMMISSIONER

COMMISSIONER

COMMISSIONER

IN WITNESS WHEREOF, I, ERNEST G. JOHNSON, Executive Director of the Arizona Corporation Commission, have hereunto, set my hand and caused the official seal of this Commission to be affixed at the Capitol, in the City of Phoenix, this \_\_\_\_\_ day of \_\_\_\_\_, 2010.

\_\_\_\_\_  
ERNEST G. JOHNSON  
EXECUTIVE DIRECTOR

DISSENT: \_\_\_\_\_

DISSENT: \_\_\_\_\_

SMO:JMK:red/WVC

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