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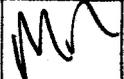
Maricopa Station 8995  
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January 16, 2009

Arizona Corporation Commission  
**DOCKETED**

JAN 16 2009

Docket Control  
Arizona Corporation Commission  
1200 West Washington Street  
Phoenix, Arizona 85007

DOCKETED BY 

RE: REVISIONS TO THE APS RESIDENTIAL EXISTING HOMES HEATING, VENTILATION AND AIR CONDITIONING EFFICIENCY PROGRAM AS REQUIRED BY DECISION NO. 70666  
DOCKET NO. E-01345A-07-0712

On September 30, 2008, Arizona Public Service's ("APS" or "Company") provided the Arizona Corporation Commission ("ACC" or "Commission") the APS Measurement, Evaluation and Research Report ("MER Report") that included the results of an impact and process evaluation study on the Residential Existing Home Heating, Ventilation and Air Conditioning Efficiency Program ("Residential HVAC Program"). The MER Report covered the time period from the program's inception in April 2006 through December 31, 2007. It concluded that as of December 31, 2007, the Residential HVAC program had an actual benefit/cost ratio of less than one (.87), as a result of: 1) program start-up and administration costs being greater than originally planned; 2) higher than expected customer incremental costs for high-efficiency equipment; and, 3) lower than expected savings for high-efficiency equipment. Also, as of the end of 2007 the Quality Installation ("QI") measure had received little participation and the Duct Test & Repair ("DT&R") measure had no participation. Both of these measures are highly cost effective and increased participation would improve the overall cost effectiveness of the program. Nonetheless, the MER Report indicated that rebates for high-efficiency equipment as a stand alone measure did not appear to be cost effective, because the minimum federal efficiency standard is relatively high, which results in smaller energy and demand savings margins. Meanwhile, the incremental costs for high efficiency equipment remain high, and very high efficiency equipment (17 SEER and above) does not have proportionately greater demand savings relative to energy savings.

The Commission Staff reviewed the MER Report and filed a Staff Report in Docket No. E-01345A-07-0712 which raised concern regarding the cost effectiveness of the program. The decision in that matter (Decision No. 70666) was issued December 24, 2008. Pursuant to Decision No. 70666, page 18, Line 25:

"Arizona Public Service Company shall file a plan in Docket Control by January 16, 2009, to 1) promptly implement modifications to the Residential HVAC program that will return the program to cost-effectiveness, or 2) promptly replace the program with an alternate DSM program to benefit Residential customers using funds allocated to the Residential HVAC program, or 3) terminate the program as promptly as possible."

APS is submitting its plan to modify the Residential HVAC program to achieve cost-effectiveness.

The MER Report recommended several changes to the Residential HVAC program to improve its cost effectiveness. The key recommendations were to combine the equipment rebates with the QI rebate, limit the availability of the revised rebate to only the APS Qualified Contractor group that have received training on QI requirements and revise the incentive structure. APS incorporated the MER Report recommendations, updated the inputs for the cost/benefit analysis, conducted focus groups with HVAC

contractors, and took into account suggestions from customers, Commission Staff and the DSM Collaborative Working Group to enhance the Residential HVAC program. As a result, APS requests that the following changes be approved for Residential HVAC Program:

1. Combine the Residential HVAC equipment rebates with the QI rebate.
2. Only offer the combined rebates through the APS Qualified Contractor network.
3. Reduce the current minimum Energy Efficiency Ratio ("EER") requirement to 10.8 for all Seasonal Energy Efficiency Ratio ("SEER") levels.
4. Adopt a revised incentive structure, as detailed in the table below.

	<b>Quality Installation on Standard Equipment (13 SEER, 10.8 EER)</b>	<b>14 - 16 SEER, 10.8 EER Equipment with Quality Installation</b>	<b>17+ SEER, 10.8 EER Equipment with Quality Installation</b>
<b>Customer Incentive</b>	\$175	\$425	\$575
<b>Contractor Incentive</b>	\$50	\$50	\$50

These proposed program modifications yield a Total Resource Cost ("TRC") test result of 1.34 for the combined rebates. Further, using a societal cost discount rate of 5% the TRC Test result increases to 1.66. The DT&R rebate will continue as it is currently structured and APS will continue to place more emphasis on this rebate.

**Program Revision Goals and Rationale**

First, combining the demand and energy savings from QI with the savings from the high efficiency equipment helps offset the high incremental costs of the equipment while allowing for an incentive structure that is more appealing to the customer.

Second, 40–50% of APS' typical residential customer's annual bill is from cooling and heating. APS wants to continue to offer a DSM program that helps our customers directly mitigate that usage in their homes, while maintaining a progressive incentive structure for high efficiency HVAC equipment. The Residential HVAC program is available to a broad group of our customers and has a direct impact on a major part of their energy usage. It also supports improvements in efficiency by developing demand for high efficiency HVAC equipment. HVAC manufacturers must have customer demand for high efficiency equipment to continue to fund the research and development necessary to make their products more energy efficient. The Department of Energy's ENERGY STAR program, federal tax credits and utility programs such as this one are essential in the effort to create customer demand and awareness for high efficiency HVAC equipment.

Third, APS wants to make the program more accessible for lower income customers while still improving the program's cost effectiveness. APS believes this objective can be met by including an incentive for QI on 13 SEER equipment. The current Residential HVAC program QI rebate is only available on equipment that is at least 14 SEER and 11.5 EER. This means that the QI rebate is not currently available for 13 SEER equipment. Based on information from local HVAC Contractors almost half of the equipment they sell are 13 SEER units; the remainder are higher efficiency units. As a result, a significant amount of new equipment is being installed at standards that are below the requirements of the APS QI program. Those are lost opportunities for demand and energy savings that APS could capture by including a QI incentive for 13 SEER equipment in the incentive structure. This modification would increase the availability of DSM incentives to lower income customers and those with fixed incomes, who are more likely to purchase lower priced 13 SEER HVAC units. Because the combined rebates will only be offered through the APS

Qualified Contractor network, APS will actively recruit high volume, high quality HVAC contractors to participate in APS Qualified Contractor network in both the metro Phoenix area and the larger towns throughout the APS service territory. APS will continue to provide condensed training for HVAC contractors outside of the metro Phoenix area to make it easier for them to become part of the network (APS has added 14 non-metro Qualified Contractors since 2006.). The combined rebates and continued condensed training should allow for continued growth in APS Qualified Contractor's outside of metro Phoenix.

Fourth, APS wants to enhance the value of the program for the contractors that participate. The MER Report confirms that the HVAC contractors are the customer's main source of information on high efficiency equipment. The program works best if these contractors gain enough business from participating in the program to offset their cost of participation. Participating in the program requires specialized training, equipment, more time at each job, and a higher level of sales skill. APS believes that by limiting the availability of the new combined rebates to just the APS Qualified Contractors accomplishes several goals. It gives the participating contractor something they can offer customers (the APS rebate) that non-participating contractors cannot which creates a strong financial incentive for existing participants. Equally important, it creates an incentive for new contractors to join the APS Qualified Contractor network and get their technicians trained, which speeds the market transformation effort. Also, the \$50 incentive to the contractor will help offset the administrative cost of processing the applications and other associated costs. The focus groups APS held with contractors indicated that they value the new incentive structure.

The last goal is to alleviate customer concern and confusion regarding the minimum EER requirement. The current incentive structure requires at least 11.5 EER for 14 – 15 SEER equipment and 12.25 EER for 16+ SEER equipment. The EER requirement was set at those levels to help the equipment-only based rebate pass the cost benefit tests. Over the last year, it has been APS' experience that customers are disappointed when they find that a 16 SEER or higher piece of equipment they are considering does not qualify for the APS rebate because the EER for many of those high SEER units are below 11.5. A sentiment that is expressed frequently is "How can one of the most efficient air conditioner's on the market not qualify for your high efficiency AC rebate?" APS has targeted customer and contractor education on this topic including creating and advertising a phone number customers can call to get the SEER and EER ratings. This has improved the situation, but customers still struggle with the minimum EER requirement.

The desert southwest is somewhat unique because of the substantial amount of cooling that is required in the summer. A four ton HVAC unit was the average size of those units receiving a rebate. A four ton unit can often have a lower EER rating than a two or three ton unit because it has a larger compressor. For background, EER is a measure of a unit's energy efficiency based on a temperature of 95 degrees as well as other parameters. SEER is a measure of a unit's efficiency over an extended time period. The Air-Conditioning, Heating and Refrigeration Institute ("AHRI") is an independent agency that tests all the equipment and publishes the SEER and EER ratings. Equipment manufactures have focused on optimizing their equipment for a higher SEER rating because that is what is most relevant to most climates in the country. This practice does, however, create an issue in the desert southwest because some of the equipment designs used to increase the SEER level can reduce the EER rating. An example is a dual compressor type of unit. It uses two compressors to provide cooling. It has a small compressor that runs the majority of the time the unit is active and a second, larger compressor that takes over during extreme conditions. Since the unit uses the small compressor the majority of the time, its energy usage is reduced significantly, resulting in a high SEER rating. The trade-off is that at 95 degrees, which is the temperature that the EER is measured, the large compressor is operating so the EER is often low, especially for four and five ton units commonly sold in the desert southwest. Manufacturers of dual compressor units have argued with the AHRI that their testing of dual compressor units should weight the ratings of both the small and large compressors by the typical run time of each compressor. Doing that would improve the EER rating because the large compressor runs a small percentage of the time. However, AHRI is not likely to change their testing process so these types of units will continue to have low EER ratings.

This is important for the APS Residential HVAC program because dual compressor style units are currently the most commonly available four and five ton high efficiency units in this market but they typically do not qualify for the APS rebate due to low EER ratings. However, these dual compressor units still provide significant demand and energy savings for customers and APS. APS has filed the combined equipment and QI rebate with a lower minimum EER requirement to address this issue.

The current equipment rebates require a minimum EER rating of at least 11.5. The combined equipment and QI rebate passes the TRC and other benefit cost tests with a lower minimum EER requirement of 10.8. In fact, the cost benefit analysis that is filed in support of APS' proposed modifications used a dual compressor unit as the basis for the costs and savings for a 16 SEER unit and it is cost effective with that equipment's typical EER rating. The analysis filed in support of this request shows the efficient EER rating for each SEER level. These numbers are the average EER ratings associated with the given SEER ratings. So, for example, a split A/C furnace with an SEER of 16 had an EER of 10.89 without any minimum EER requirement. That means the 16 SEER units had an average EER rating of 10.89, based on the data we have from 2006 – 2007 equipment installations. When a minimum EER requirement of 10.8 is included in the analysis, the average EER improves to 11.63. The same process was used for each SEER level. All of the SEER levels pass the benefit/cost test using this approach. APS believes that changing the minimum EER requirement from 11.5 to 10.8 for all SEER levels will improve customer satisfaction while maintaining cost effectiveness and significant energy and demand savings. Additionally, the supporting analysis indicates that the incentives are all below 75% of incremental costs as required by Decision No. 68648.

### **Program Budget**

It is possible that this program will experience a short-term reduction in rebate volume after the changes are implemented due to a smaller number of contractors offering the rebate and until contractor education regarding program changes can occur. The MER Report shows that the contractors are the main source of information about the rebate program, therefore as mentioned above; APS is focusing on education and recruitment of contractors to mitigate any potential rebate volume reduction. On the other hand, adding a customer incentive for the Quality Installation on a standard 13 SEER unit might increase the rebate volume. The actual level of program spending is dependent to a large degree on the volume of rebates which is difficult to predict, especially given the current economic conditions. Therefore, not enough is known about the net change in rebate volume at this time to justify a change to the previously filed budget for this program. APS will closely monitor the budget and should it become clear that it will deviate significantly from the budget approved by Decision No. 70666, APS will notify the Commission through the Semi-Annual Report or, if necessary, a separate filing.

### **Cost Benefit Analysis**

Copies of the cost benefit analysis contain confidential information and are being provided to Commission Staff for review. The demand and energy savings in the analysis reflects the results of the MER Report analysis. The MER Report analysis verified the equipment installations from the APS rebate program from 2006 through 2007. Then, a linear regression analysis was used to develop an equation from that data to determine the EER value for a given SEER value. The SEER and EER values are used to determine the average kW and kWh savings by SEER level using regression analysis. The equations from the MER analysis are used to calculate the kW and kWh savings shown on the cost benefit analysis spreadsheets.

APS recently became aware of a 2008 study in California that found the amount of energy savings associated with correcting an over, or, undercharge of refrigeration coolant in high efficiency equipment was less than expected if that equipment had a thermal expansion valve. APS and Summit Blue, our MER contractor, have looked into this issue. It is not clear at this point where the California research will lead, but the new data was taken into account for this analysis and the savings associated with the APS

QI requirements were reduced approximately 2%. APS will continue to monitor the research while moving forward with additional field research here in Arizona with the assistance of Summit Blue. One of the MER Report recommendations was further field research on QI, which APS has begun to implement this year.

One item of note regarding the cost benefit analysis is that the Total Resource Cost ("TRC") test results are lower for the 16+ SEER split A/C and heat pumps, as compared to lower SEER units. This results from the higher incremental cost of these high SEER units without a corresponding increase in demand and energy savings to offset those costs. The 16+ SEER levels assume the equipment is a dual compressor type of unit which is often a manufacturer's top of the line model. It is possible the cost for 16+ SEER equipment will come down as manufacturers introduce new high efficiency equipment using improved compressor technology. Lower costs will improve the TRC results. Such compressor technology exists and is being introduced in the Phoenix market. The TRC results for the program with the combined QI and equipment rebate is 1.34, which indicates the combined program is cost effective including a rebate on 16+ SEER equipment. APS will continue to monitor this and the refrigeration charge issues and report on them in the next MER report APS files with the Commission.

The avoided costs used for this analysis are based on the methodology filed in the APS 2007 PURPA 210 Filing filed with the Commission on June 30, 2008. For the purpose of this filing, the on-peak time period utilized was changed to reflect APS residential rates. APS uses this same avoided cost methodology to evaluate resources of all types including DSM programs, utility scale renewable resources and small scale distributed energy resources. This methodology is also consistent with the methodology used in the bi-annual PURPA 210 filing.

#### **Implementation Timing**

APS requests that these HVAC program modifications be approved to go into effect before April 2009. The reason for this request is that HVAC contractors often have difficulty making changes to their business processes during their peak season (spring and summer). In addition, APS needs some time for contractors that are not currently part of the APS Qualified Contractor network to get their technicians trained and, in some cases, purchase the necessary equipment for QI. APS is planning to offer some condensed training classes to help mitigate this issue.

If you or your staff have any questions regarding the enclosed information, please call Jeff Johnson at (602) 250-2661.

Sincerely,



Leland R. Snook

LRS/jah

CC: Ernest Johnson  
Brian Bozzo  
Terri Ford  
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