

NEW APPLICATION



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BEFORE THE ARIZONA CORPORATION COMMISSION

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Arizona Corporation Commission

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MAR 11 2005

DOCKETED BY

E-01345A-05-0182

IN THE MATTER OF THE APPLICATION OF
ARIZONA PUBLIC SERVICE COMPANY FOR
APPROVAL OF A DEMAND SIDE MANAGEMENT
STUDY

Docket No. E-01345A-05-_____

APPLICATION

Arizona Public Service Company ("APS" or "Company") hereby submits for review and approval a proposed Demand Side Management Assessment ("DSM Study").¹ This DSM Study is a fundamental step for APS to fulfill its Demand Side Management ("DSM") obligations under the Proposed Settlement Agreement currently pending before the Arizona Corporation Commission ("Commission") in Docket No. E-01345A-03-0437.

The Proposed Settlement Agreement obligates APS to spend a total of at least \$48 million on approved eligible DSM-related items during the calendar years 2005 – 2007.² This request for approval of the DSM Study is contingent upon Commission approval of the Proposed Settlement Agreement, as the DSM Study would be funded as part of the DSM budget set forth in the Proposed Settlement Agreement.³

In light of the anticipated, substantial expenditures on DSM programs that would result from the approval of the Proposed Settlement Agreement, APS believes that a market assessment

¹ The proposed DSM Baseline and Opportunities Assessment plan is attached as Exhibit A.

² A Recommended Opinion and Order ("ROO") was issued on February 28, 2005, and a Commission Order is expected in the near future.

³ See Appendix B to the Proposed Settlement Agreement, which is the Preliminary Energy Efficiency DSM Plan. This plan has specifically allocated funds for "Measurement, Evaluation, and Research," including baseline studies.

1 of key target markets and APS customer segments is necessary. The DSM Study will provide a
2 baseline of current efficiency levels and practices to assist in the development and evaluation of
3 new DSM programs. In the spirit of the Proposed Settlement Agreement, APS has reviewed the
4 proposed DSM Study with the group of stakeholders that it anticipates will be part of the DSM
5 work group once the Proposed Settlement Agreement is approved. Those stakeholders
6 participated in the development of the DSM Study plan for which APS is seeking approval in this
7 docket.

8 The proposed DSM study will form the basis for developing, supporting and evaluating
9 future expanded DSM programs. It will provide a baseline for evaluating the market presence of
10 energy efficient technologies and practices in the residential, commercial, and industrial customer
11 segments. The study will assess the potential for improving the market penetration of those
12 technologies and practices, estimate the kWh energy and kW demand savings for each efficiency
13 improvement, and estimate the cost to achieve those savings.

14 This study is an important component of a well-designed DSM plan. It will provide a clear
15 understanding of current market conditions and establish a standard to measure progress against.
16 In addition, it will define the market potential for DSM and indicate areas of focus for achieving
17 the most cost-effective results with future DSM expenditures. APS will issue a Request for
18 Proposals ("RFP") for the completion of the DSM Study. The successful bidder(s) will be
19 expected to determine the state of energy efficiency implementation and the potential for
20 additional energy savings through the following activities: analyze industry data on the sales of
21 energy technologies; conduct surveys with home and business owners; conduct on-site
22 inspections; interview builders, developers, architects and engineers; meet with manufacturers
23 and vendors of technologies; and conduct energy simulations. Copies of all final reports will be
24 provided to Commission Staff.

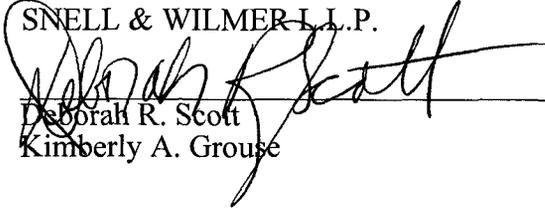
25 APS anticipates that the completion of the study will take several months. Based on the
26 results of the DSM Study, a DSM working group will review potential programs. Commission

1 approval will be sought prior to implementation of any new programs that are developed as a
2 result of the study. As a result, prompt approval of the DSM Study is critical to ensuring that
3 APS can comply with the 2005 DSM spending requirements of the Proposed Settlement
4 Agreement.

5 For the reasons stated above, APS requests that the Commission expeditiously approve the
6 proposed DSM Study.

7 Respectfully submitted this 9th day of March, 2005.

8 SNELL & WILMER L.L.P.

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10 Deborah R. Scott
11 Kimberly A. Grouse

12 PINNACLE WEST CAPITAL CORP.
13 Law Department

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17 **ORIGINAL and 13 copies of the foregoing**
18 filed this 11th day of March 2005, with:

19 Docket Control
20 Arizona Corporation Commission
21 1200 West Washington
22 Phoenix, AZ 85007

23 A COPY of the foregoing was hand-delivered
24 this 11th day of March, 2005, to:

25 Lyn Farmer
26 Chief Administrative Law Judge
Hearing Division
ARIZONA CORPORATION COMMISSION
1200 West Washington
Phoenix, Arizona 85007

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A COPY of the foregoing was mailed
this 11th day of March, 2005, to:

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ARIZONA PUBLIC SERVICE COMPANY

DSM Baseline and Opportunities Assessment

I. PURPOSE OF THE PROJECT

This study will evaluate the market presence of energy efficient technologies and practices in the residential, commercial, industrial and institutional customer segments, assess the potential for improving the market penetration of those technologies and practices, estimate the kWh energy and kW demand savings for each efficiency improvement and estimate the cost to achieve those savings in the APS service territory.

To the full extent possible, the baseline study will use existing information and focus new research on key areas of need where gaps exist in our understanding of current market conditions and installation practices. The result will be a DSM market assessment of key target markets and APS customer segments to provide a baseline of current efficiency levels and practices in order to assist DSM program development and evaluation.

It is important to conduct a baseline and opportunities assessment at this time to:

- Evaluate the current cumulative impacts of historical and current DSM/MT efforts
- Provide a comprehensive study that updates old information and fills important gaps
- Inform key decisions on program spending and design of new DSM programs
- Determine current market prices for energy efficient products and incremental cost as compared to standard efficiency products
- Assess current state of the market and provide a baseline against which to measure program impacts
- Examine the likely impact of expected near-future building code and appliance standard changes

II. PROJECT DESCRIPTION

APS will submit a Request for Proposals (RFP) to qualified vendors to commission an independent comprehensive study (or studies) to assess the market presence and potential of energy efficient measures (technologies, services and practices) in residential and non-residential customer segments (including commercial, industrial and institutional customers). APS has identified several potential vendors who have performed similar studies in other states. The expectation is that the successful bidder (or bidders) will analyze industry data on sales of energy technologies; conduct surveys with home and business owners; conduct on site inspections; interview builders, developers, architects and engineers; meet with manufacturers and vendors of technologies, and conduct energy simulations to determine the state of energy efficiency implementation and the potential for additional energy savings.

The process will be to use existing data where applicable and collect new data as required. The RFP will be structured to allow potential vendors to bid on all or part of the work. This may allow for the study to be done in phases or the work to be divided among vendors to best utilize resources and vendor skill sets. APS will instruct the winning bidder (or bidders) to first review and assess existing information before conducting any new research. However, it will be important to make sure that energy saving potential and other data is calibrated for the APS service territory; national and regional data is often not applicable due to Arizona's unique climate. It is also important to update old APS market information with new research.

The results of the assessment will be used to evaluate the feasibility of promoting specific energy efficient measures, to guide program design and implementation and serve as a baseline against which progress can be measured. This study will help provide a basis for directing the DSM program, or for measuring the results against the current conditions and DSM potential.

III. PROJECT OBJECTIVES

The basic purpose of this project is to develop current end-use data and market information for APS' residential, commercial, industrial and institutional customer classes, by segment, and to establish baseline efficiency levels and assess the DSM potentials for each of these segments. Specific objectives include:

1. Develop/assess baseline end use data including unit consumption levels, shares, and hourly load shapes for the residential, commercial, industrial and institutional sectors.
2. Evaluate the current market penetration of specific energy efficiency measures in the residential and nonresidential segments.
3. Identify a set of appropriate and currently available DSM technologies and practices for each customer segment/end use.
4. Estimate the gross and net technical potential energy savings in the APS service area, including evaluating potential impacts of anticipated changes in energy codes and standards.
5. Assess current market prices and the incremental first cost for energy efficiency purchases and upgrades.
6. Evaluate free market activity, and assess the appropriateness and cost effectiveness of using DSM funds to promote specific energy efficiency measures.
7. Determine the economic market potential for DSM from the perspective of the societal cost test.

8. Verify current field installation practices and assess their impact on energy efficiency.
9. Identify the potential impact of future building codes and product efficiency standards.

Types of questions to be answered by this research include:

- What is the standard level of efficiency currently being purchased in the marketplace?
- What is the baseline level of efficiency in current building stock and new construction among targeted market segments?
- What are current installation practices (new and retrofit) and how do these practices influence energy efficiency?
- What are the existing market barriers to greater adoption of energy efficiency?
- What is the current incremental cost of energy efficiency upgrades?
- What is the appropriate level (or type) of incentive to use to encourage behavior?
- What is the real potential of new technologies and practices?
- Other detailed questions are included in the appendix chart on page 8

The study provides value to a number of areas including:

- For program evaluators – the study establishes a baseline of current conditions and provides valuable data to measure program impact and effectiveness
- For resource planners – The study gives valuable information to help substantiate DSM as a resource to meet energy needs
- For program implementers – The study provides information to guide program development and evaluation
- For trades – APS can use information to help target areas of potential efficiency improvements (i.e. training programs to improve installation practices)

IV. TARGET MARKETS

All residential, commercial, industrial and institutional customer segments in APS service areas.

- The following are expected to be included.
 - Residential
 - Single family, low country
 - Single family, high country
 - Apartments, low country
 - Apartments, high country
 - Manufactured homes, low country
 - Manufactured homes, high country
 - Commercial
 - Restaurants
 - Quick service/sit down

- Schools
 - Primary/secondary
- Offices
 - Large/small
- Retail
 - Large/small
- Groceries
 - Large /small
- Hotel/Resorts
- College/Universities
- Health care facilities
- Industrial/Manufacturing
- Institutional/Government

V. IMPLEMENTATION PLAN

The plan is to solicit RFPs from qualified vendors and select the best proposal or proposals that meet the objectives of the study within the budget parameters.

Responses to the RFP will include at a minimum the following items:

- A statement of the vendor's qualifications and experience in designing and implementing baseline and opportunity studies for electric utility companies.
- What tasks of the RFP the proposal covers.
- An outline of the customer segments to be surveyed.
- Energy efficiency measures to be evaluated including any or all of the following (each vendor may only choose to bid on a portion of the segments shown below):
 - Residential
 - Equipment, controls and practices for:
 - Cooling/Heating
 - Lighting
 - Appliances, specifically but not necessarily limited to
 - Refrigerators
 - Pool pumps
 - All appliances with Energy Star ratings
 - Building envelope
 - Insulation levels/installation practices
 - Windows
 - Air infiltration
 - Duct tightness
 - Framing practices (new homes only)
 - Air conditioning sizing
 - Commercial and industrial
 - Equipment, controls and practices for:
 - Cooling/Heating
 - Ventilation

- Interior lighting
- Exterior lighting
- Building Design:
 - Building envelope
 - Insulation levels and practices
 - Windows/shading
 - Cool materials
 - Miscellaneous design issues
- Building Equipment/Processes
 - Water heating
 - Refrigeration
 - Cooking
 - Office equipment
 - Industrial processes
 - Compressed air
 - Water pumping
 - Miscellaneous
- Technical and economic potential for each end use in all customer segments.
- Interviews/surveys with key market players to collect information about potential DSM program elements that they would find valuable and effective (one example is to interview builders to find out what specific program benefits would encourage them to participate)
- DSM supply curves for targeted end uses and energy efficiency measures
- A plan for collecting APS specific data. This plan will include:
 - Use of existing data from governments, manufacturers, vendors, trade associations, energy services companies and builders.
 - Surveys by phone, internet and/or mail.
 - On site surveys and measurements
 - Engineering estimates and computer simulations
 - An assessment of the free market activity in installing energy efficiency measures and potential for free riders
- Project budget and timeline for completion of the research project.
- A list of project tasks and deliverables

This study will form the basis for developing, supporting and evaluating DSM programs. This study will be used by APS solely for the purposes of DSM planning and will not be marketed outside the company. APS will provide commission staff with copies of all project deliverables.

VI. MEASURES OF PROGRESS OR SUCCESS/MONITORING AND EVALUATION

The results of this study will form the basis for assessing current market conditions and measuring progress of upcoming expanded DSM programs.

The measure of progress and success for this research will be the successful completion of the study that results in an accurate portrayal of the current level of the various energy efficiency measures in the APS customer base, an assessment of the kWh energy savings potential and kW demand savings potential for each energy efficiency measures, and the estimated cost to achieve those savings.

This study is an essential component of a well-designed DSM plan. It provides a clear understanding of current market conditions and establishes a baseline to measure progress against. In addition, it dimensions the market potential for DSM and indicates areas of focus that will achieve the most cost-effective results with future DSM expenditures. Finally, it provides assistance to resource planners seeking to develop the optimal portfolio mix to meet future energy needs within the APS service area.

DSM program activities will likely include both direct installations of new technology as well as indirect efforts such as education and information to help transform the market for energy efficiency. To accurately assess program impacts, it is necessary to have a baseline of current market conditions to determine the overall effectiveness of the program in the future, including the impact from those who do not report direct energy efficiency measure installations to APS. In many cases, the only way to measure the impact of DSM efforts such as education and training is to have a before and after picture of relative market share of energy efficient products and practices.

In additional, this research will provide insights into the true installed savings potential of DSM measures. To be accurate, energy savings estimates must reflect how energy efficiency technologies are actually used by customers. Simple engineering calculations which do not take customer behaviors into account have been shown to misstate savings in many cases. For example, compact fluorescents and programmable thermostats are known to be used in sub optimal manners that yield smaller savings than theoretical calculations indicate.

VII. ESTIMATES OF PROJECT COSTS

Based on the cost of similar research at other utilities and historical costs for comparable prior APS studies, it is estimated that the baseline and market potential research will be completed in approximately six months within a budget range of \$500,000-\$700,000. An RFP will be issued for the project and APS intends to select the most cost-effective proposal(s) which meets all project criteria. Vendors will be encouraged to bid on all or part of the project. If after review of all proposals APS determines that no bids meet all key project criteria then APS intends to re-issue an updated RFP.

APS is committed to expanding DSM efforts. This baseline and market potential research study represents a small fraction of the anticipated DSM program budget. For this cost, the study provides significant value by informing DSM decisions, providing a

benchmark to measure program progress and helping to channel DSM dollars to areas that will produce the greatest impact.

This study will provide a basis for moving forward with additional DSM program spending, and is similar to studies conducted prior to undertaking additional spending during the early 1990's. In recent years, there has not been a comprehensive study to fully assess the impacts of market transformation efforts, and during this time there have been significant changes in the APS service territory, DSM technologies, and customer energy usage patterns. These changes necessitate a study to accurately assess current conditions and DSM potential.

While this study will provide an overview of all market segments, it is anticipated that this initial study will need to be supplemented by future studies that will focus more in-depth on specific end uses and DSM technologies and practices.

VIII. ANNUAL ENERGY SAVINGS ESTIMATES

This study will provide the information needed to develop and implement the most cost effective DSM programs. It will document baseline conditions and potential energy/peak demand savings from energy efficiency measures to help accurately assess the energy savings from APS DSM implementation efforts.

Appendix

The table below provides a list of some of the specific information that needs to be better understood to guide DSM program development and evaluation.

Residential, New Construction	Residential, Existing Homes
<ol style="list-style-type: none">1. Efficient air conditioning equipment2. Availability of 14 SEER3. Cost of 14 SEER4. Performance of energy efficient homes. (May be available when Advanced Energy/EPA study is complete.)5. Energy efficient HVAC systems, i.e. sealed ducts, proper air flow, proper sizing, proper refrigerant charge6. Energy efficient homes7. Efficient lighting8. Low E windows9. Sun screens10. Programmable thermostats11. Energy Star appliances12. Heat pumps13. Current installation practices that impact efficiency levels14. Cost of standard practices and energy efficiency upgrades	<ol style="list-style-type: none">1. Efficient air conditioning2. Efficient lighting3. Efficient replacement windows4. Sunscreens5. Programmable thermostats6. Energy Star appliances7. Heat pumps8. Assessment of attic insulation9. Assessment of % of HVAC systems that are upgraded when equipment is replaced. i.e. air flow, duct sealing, duct insulation, return sizing.10. Update saturation survey data related to energy efficiency11. Current installation practices that impact efficiency levels12. Cost of standard practices and energy efficiency upgrades

Commercial, New Construction	Commercial, Existing Buildings
<ol style="list-style-type: none"> 1. Profile of air conditioning equipment efficiency being installed. 2. Profile of lighting efficiency being installed, type of lighting and watts/square foot 3. Assessment of efforts to install efficient cooling systems, i.e. sealed ducts, no building cavities for returns, insulated ducts, proper air flow, refrigerant charge, etc. 4. Cool roofs 5. Energy efficient designs 6. Energy efficient windows 7. Current installation practices that impact efficiency levels 8. Cost of standard practices and energy efficiency upgrades 	<ol style="list-style-type: none"> 1. Efficient air conditioning equipment 2. Estimate available market for efficient air conditioning equipment, i.e. is the market transformed? 3. Cooling energy cost per square foot 4. Efficient lighting equipment 5. Estimate available market for efficient lighting equipment 6. Assess free market activity in lighting, i.e. is the market transformed? 7. Lighting energy cost per square foot 8. Energy Star office equipment 9. Cool roofs 10. Effectiveness of cool roofs 11. Assessment of energy efficient exit signs, pro active replacement & emergency replacement 12. Current installation practices that impact efficiency levels 13. Cost of standard practices and energy efficiency upgrades