Arizona Public Service Co.

DSM Update

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Profile: Arizona Public Service

- Largest electric utility in Arizona
- 1.1 million customers
- Peak demand of 7,500 MW
- Annual sales of 30,000 GWH
- Annual sales growth rate higher than national average – but slowed in 2008
- $3.5 billion in annual revenue
- 0.7% of annual revenue spent on Energy Efficiency ($25 M)
What’s New Since Last Year?

- Regulatory filings
- Spending / Savings update
- Program evaluation results
- Program enhancements in 2008
- Demand response program
Regulatory Filings

1. “13-month” filing
   - Seeks final approval of Non-Residential programs
   - Filed March 2007; still pending

2. 2008-2010 Portfolio Update filing
   - Seeks budget approval by program
   - Filed December 2007; still pending

3. Rate Case filing
   - DSM portion seeks removal of financial disincentive for increasing spending in DSM
   - Filed June 2008; still pending
# Spending / Savings Update

($MM) including Performance Incentive

<table>
<thead>
<tr>
<th></th>
<th>Annual Spending</th>
<th>Cum. Spending</th>
<th>Annual * MWh Savings</th>
<th>Cum. * MWh Savings</th>
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<tr>
<td>2005</td>
<td>$ 3.2</td>
<td>$ 3.2</td>
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<td>2006</td>
<td>$10.6</td>
<td>$13.8</td>
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<td>2007</td>
<td>$19.4</td>
<td>$33.2</td>
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<td>2008 est.</td>
<td>$23.4</td>
<td>$56.6</td>
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<tr>
<td>2009 est.</td>
<td>$25.6</td>
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<td>2010 est.</td>
<td>$27.5</td>
<td>$109.7</td>
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- Spending and savings continue to increase each year
- Expect to have approx. 1 million MWh saved by 2010; after 6 years of program implementation

* Before MER Adjustment
## Current EE Programs

### Residential
- **Consumer Products**
  - CFLs
- **Existing Home HVAC**
  - Rebates (SEER)
  - Quality install
  - Duct test & repair
- **New Construction**
  - Energy Star
- **Low Income**
  - Bill assistance
  - Weatherization

### Features
- Upstream buydown of retail price of bulbs
- $250 rebate for 14 SEER
- $400 rebate for 16 SEER
- $100 rebate for Quality Install
- Up to $250 for testing and repairing duct leaks
- $400 builder incentive to build home using at least 15% less energy than standard home
- Provide free weatherization for limited income households and occasional bill assistance
Current EE Programs

Non-Residential

- Large Existing Facilities
  - > 200 kW
- Small Businesses
  - <= 200 kW
- Schools
- New Construction

- Building Operator Training
- Energy Information Services

Features

- Prescriptive or custom incentives for installation of high efficiency...
  - Lighting
  - Cooling
  - Refrigeration
  - Motors

- Education for facility managers on energy efficient operations
- Information on hourly usage patterns

Energy Efficiency
Program Evaluation Results

- Measurement Evaluation Research (MER) completed for 2005-2007 program results
- Separate reports written for each program and filed with ACC in Sept.
- Both Impact and Process evaluation for each program
- Results used to adjust MW and MWh savings estimates going forward and to update benefit/cost ratios
<table>
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<th>GWh Savings</th>
<th>Realization Rate</th>
<th>TRC</th>
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<tr>
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<td>Reported</td>
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<tr>
<td><strong>RESIDENTIAL</strong></td>
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<td>Consumer Products:</td>
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<tr>
<td>Lifetime Savings</td>
<td>1,467</td>
<td>1,123</td>
<td>77%</td>
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<td></td>
<td></td>
<td></td>
<td>4.10</td>
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<td>New Construction:</td>
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<td>Lifetime Savings</td>
<td>135</td>
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<td><strong>NON-RESIDENTIAL</strong></td>
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<td>Solutions for Business:</td>
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<td>Lifetime Savings</td>
<td>1,367</td>
<td>1,304</td>
<td>95%</td>
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Key Findings – MER Reports

- Generally positive findings; programs largely achieving reported results; most still cost effective
- Overall portfolio TRC of approx. 2.4
- Some program modifications needed:
  - Residential HVAC program – TRC < 1.0
  - Small Business program – need Direct Install due to low participation
  - Other programs should improve after start-up phase is over and costs come down
- Customers satisfied with program participation; some process improvement needed
Program Enhancements in 2008

- CFL recycling program kick-off
- Duct test and repair measure added
- Home Performance with Energy Star introduced
- Residential HVAC program revisions
- Planning to file Energy Star Plus program
CFL Recycling

- Kicked-off on April 17 with media event
- Over 30 Ace Hardware, True Value Hardware, and Home Depot stores participating
- Partnership with Veolia Recycling Services to recycle 99% of all materials in CFLs, including mercury
- Customer drops burned out CFL in bin at participating store; store sends bulbs to Veolia center in Phoenix for recycling
- Lots of positive press regarding recycling of CFLs
- Over 2,000 CFLs collected to date
Duct Test and Repair

- Added measure to HVAC program starting 1/1/08
- On average, 15% of cooling energy is wasted due to duct leakage
- Customer pays BPI certified contractor to do test and perform repairs
- APS rebates 75% of job cost up to $250 per system
- Savings can be as high as $200 per year for customers who have repairs done
- Have had over 350 customers participate so far, with positive testimonials of savings and comfort improvements
Home Performance with Energy Star

- Introduced October 4 as new program delivery channel in HVAC program
- Customer gets referral from APS for contractor who is qualified to conduct whole house energy audit
- Contractor charges customer for audit and report with recommended energy saving actions
- Customer takes action and saves on energy bill, may take advantage of any APS rebates
- Fewer than 50 customers have participated so far, plan to expand marketing in 2009
Residential HVAC Program Revisions

- Changes currently being considered:
  - Combine Quality Install (QI) and AC Equipment rebates to improve cost/benefit ratio for program & reduce free-riders
  - Limit program to APS Qualified Contractors who are trained on Quality Installation
  - Continue to place greater emphasis on Duct Test and Repair (DTR) rebate
  - Re-examine overall incentive structure and put greater emphasis on paying incentives for QI and DTR measures, due to larger savings
  - Include other benefits in results, such as gas savings, societal benefits, A/C tune-up, and remaining equipment life
Energy Star Plus

- A second-tier energy efficient new home that produces more energy savings than current Energy Star standard home
- For builders looking to differentiate themselves in difficult sales market
- Can be coupled with renewable technologies (e.g. solar water heating or photovoltaic) to further reduce or replace nearly all current energy use
- Stays ahead of increasing IECC standards
The Path to “Zero Energy”

- Terms
  - Near zero energy homes
  - “Net zero” energy homes
  - Zero emission/Carbon neutral homes
  - “Renewable ready”

- Clear hierarchy
  - Energy efficiency first – “get the building right”
  - Add renewables second – hot water and PV

- DOE Building America program and “Builders Challenge” initiative launched Feb 2008
Path to Zero Energy

Current new home built to 2006 IECC code

ENERGY STAR standard – at least 15% better than current code (2009 IECC standard)

ENERGY STAR PLUS
Same as DOE Builder’s Challenge level

30% represents feasible limit of energy efficiency improvement?

Net Zero Energy Home with renewable energy
**APS “ENERGY STAR Plus” Potential Program Design**

- Based on DOE Builder’s Challenge efficiency level –
  - HERS score of 70
  - 30% more efficient than 2006 IECC code
  - Must meet all APS ENERGY STAR requirements (e.g. thermal bypass checklist, etc.)
  - Builders can choose to participate in DOE program or not, but must meet 70 HERS score to get APS incentive

- APS would pay a higher incentive
  - Perhaps $1000 per home or more

- Program design and incentive levels currently being evaluated for ACC filing
**Demand Response Program**

- Program filed with ACC on November 6; Commission approval required for implementation
- First DR program for APS
- C & I customers only; direct load control
- 100 MW of peak load reduction by 2012; ramp up beginning in 2010
- Callable in summer season; up to 80 hours per year
- Implemented by Alternative Energy Resources (AER -- aka Comverge)
- Cost recovery through DSM Adjuster
Summary

- Programs continue to grow
- Enhancements to programs ongoing; new programs subject to approval by ACC
- MER results provide finding of cost effectiveness and recommendations for some changes
- Goal is to give all customers various cost effective energy efficiency options to help manage bills
- Continued program expansion dependent on equitable financial treatment of DSM in rate case