MidAmerican Energy Company
Evaluation, Measurement, and Verification

- Reporting activities in Iowa
- Cost effectiveness tests
- How results are measured and verified

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Evaluation, Measurement, and Verification
Iowa Activities

- Iowa Annual Report (May 1 filing date) contains a summary of impacts and program results
  - Impacts and incentives by program and by measure within each program
  - Summary of impacts and expenses compared to budget by program
  - Cost effectiveness test results by program
- In addition, a process evaluation and an impact evaluation are done on the entire portfolio of programs once during every five year plan cycle

Cost Effectiveness Tests

- Participant test
  - Bill savings plus incentives received compared to cost of equipment
- Ratepayer Impact Test
  - Avoided utility cost compared to cost of the program paid by all customers plus lost revenue that must be made up later
- Utility Test
  - Avoided utility cost compared to cost of the program
- Total Resource Test
  - Avoided utility cost compared to administrative cost of the program plus cost of equipment
- Societal Test
  - Same as total resource test but includes 10% externalities and a lower discount rate for NPV calculations

Cost Effectiveness Tests
Inputs Needed

- Savings by measure within each program
- Estimated load shape for each measure
- Avoided energy and capacity costs
- Marginal rates by rate class
- Administrative costs
- Customer incentives
- Cost of equipment installed by measure

Cost Effectiveness Test Results

- Iowa concentrates primarily on societal test results
  - Value greater than or equal to 1.0 passes
  - No formal disincentive or penalty for programs that do not achieve 1.0
  - Expected improvement for non-passing programs
- No comparison of cost effectiveness results to projected or budgeted results
- No calculations of the delivered cost (cents/kWh or cents/therm) of energy efficiency programs

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Measurement of Results

- Results are determined through a variety of measurement techniques
  - Savings algorithms
    - Engineering-style equations that depend on
      - Operating parameters of the equipment or measure (Mbtu capacity, AFUE, SEER, square feet of insulation installed, etc.)
      - Weather parameters affecting equipment use (normal HDD and CDD)
      - Adjustment factor to match general algorithms to known service territory results
    - Deemed savings
      - Low flow showerhead is assumed to provide 19.2 therms in savings
  - Modeling
    - Primarily for new construction programs
  - Direct metering
    - Primarily for curtailment programs

Measurement of Results (cont.)

- Reported impacts are gross savings and represent the estimated annualized savings associated with all measures installed in a given year
  - No gross to net adjustments are made in Iowa
- Impact estimates are audited via a third-party review of the application of savings algorithms and deemed savings estimates to individual customer information
  - Ensures that algorithms are calculating savings as intended
  - Ensures that customer-specific parameters are being reflected in savings algorithms appropriately
- Statistical billing analysis can be used to determine if the savings algorithms are correct
  - Mainly comes down to the adjustment factors in the algorithms and the deemed savings estimates
  - Results are used as feedback for use in future planning estimates and future savings calculations