Missouri Energy Task Force Meeting

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Today's Topics

- **DSM 101**
  - Why energy efficiency, demand response and affordability programs are an important part of a utility's resource portfolio
  - How to identify potential DSM resources
  - Cost-effectiveness assessment
- **The Iowa Experience**
  - History of programs
  - Joint planning
  - Energy efficiency plans
  - Cost recovery
  - Annual reporting and reconciliation
- **Examples from Other States**

DSM 101

DSM Program Elements

- **Energy Efficiency** programs reduce the energy used by specific end-use devices and systems such as air conditioning, heating, refrigeration, or lighting
  - Substitution of more advanced equipment, processes, or operational strategies to produce the same or an improved level of end-use service with less energy use
- **Demand Response** programs reduce energy consumption at the time of system peak
- **Affordability** programs include programs targeted to low-income consumers that would otherwise not be able to afford Energy Efficiency

Why DSM?

- Cost-effective component of utility resource portfolio
- Flexible resource that can be ramped up or down based on market conditions and resource needs
- Reduces energy costs of residents and businesses – improves affordability and competitiveness
- All other things equal, DSM is more labor intensive than traditional supply options, creating more jobs in Missouri

DSM Potential

Technical Potential

What is the technical DSM potential given baseline consumption patterns and available technologies?

Achievable Potential

What improvements can be actually be achieved economically with available program resources and given customer preferences?

Cost-Effectiveness Analysis

- Total Resource Cost Test
- Utility Cost Test
- Participant Cost Test
- Rate Impact Measure

Total Resource Cost Test

- Provides the most direct comparison to supply-side resource options (i.e., generating plants)
- Considers the full cost of the energy efficient technologies and the cost of delivering programs
- Benefits include the cost avoided by not supplying energy or meeting higher demand
- Societal test is a common variation of the TRC that considers environmental costs (e.g., a % adder to avoided costs)

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Cost-Effectiveness Test Definitions

Test	Benefits	Costs
Total Resource Cost Test	Present Value of Avoided Energy and Capacity Savings	Program Administrative and Marketing Cost + Measure Costs
Utility Cost Test	Present Value of Avoided Energy and Capacity Savings	Program Administrative and Marketing Cost + Incentives
Rate Impact Measure	Present Value of Avoided Energy and Capacity Savings	Program Administrative and Marketing Cost + Present Value of Lost Revenue
Participant Cost Test	Present Value of Bill Savings	Participant Share of Measure Cost

The Iowa Experience

DSM History

- Energy efficiency by Iowa investor-owned utilities has evolved over 20+ years
- Joint utility study to determine state-wide efficiency potential completed in 2002 and provided basis for energy efficiency plans that cover 2004 to 2008
- IOUs are implementing their third round of plans and achieving very good results

IUB Benefit/Cost Analysis

- All benefit/cost perspectives are calculated, but the Total Resource Cost test is key for programs and plans
- Discount rate is tied to U.S. Treasury bonds
- “Adders” to avoided cost account for externalities
- Low-income programs are exempt from B/C by statute

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2005 DSM Results for Iowa IOUs

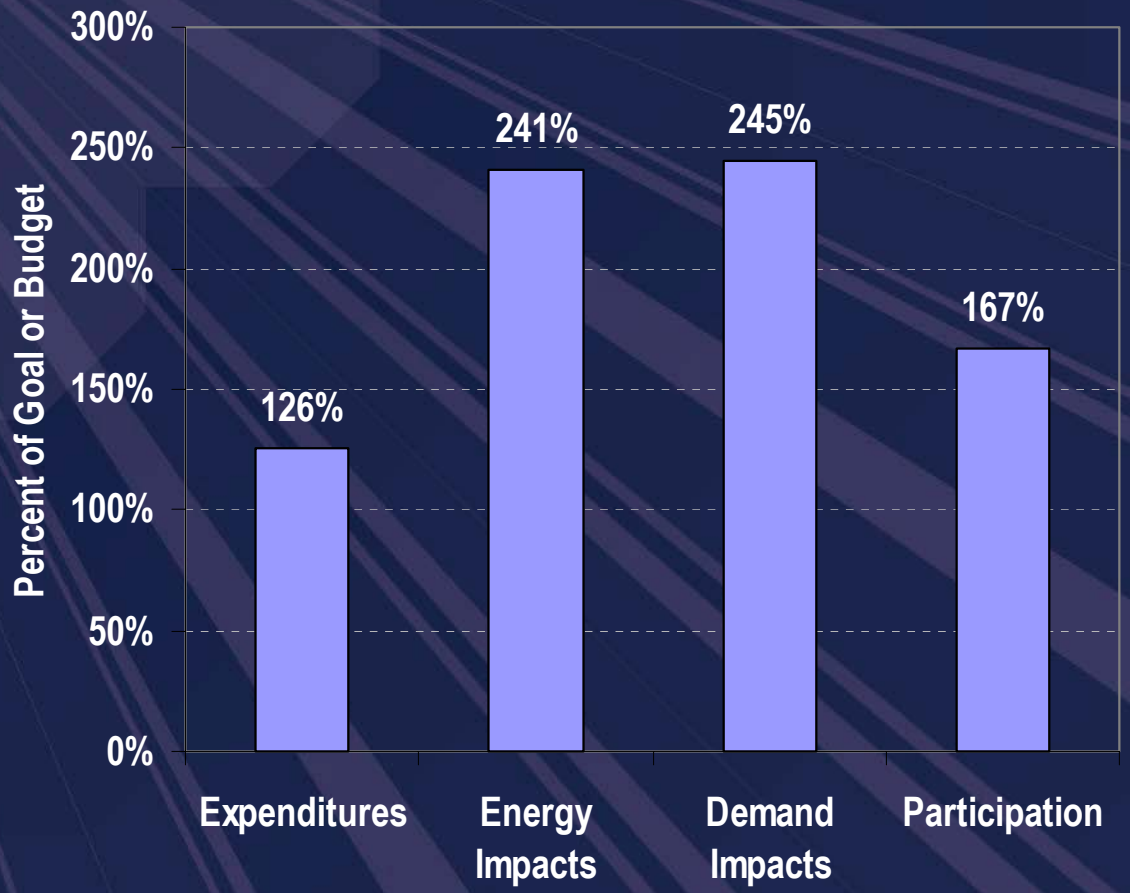
- Cumulative effects of 15+ years of IOU DSM
- 1,600 GWh – about 5% of retail MWh sold in 2005 – equivalent of a power plant
- 7,000,000 MCF – about 6.6% of retail sales in 2005 – enough to supply approximately 80,000 homes
- Benefit/cost ratios averaged about 2.0 and NEW net societal benefits of about $100 million per year
- IOU customers saved about $106,000,000 in retail electric and $81,000,000 in retail gas costs in 2005

DSM Budgets

- **Budgets were initially set at percentages of revenue: 2% electric, 1.5% natural gas**
- **Changed to energy and capacity goals**
- **Cost recovery – contested until 1997**
- **Now, costs are expensed and recovered concurrently**
  - Program costs are allocated within the sector
  - Special programs (low-income, research and development) are allocated across all customers
  - Cost recovery surcharge recalculated annually based on historical collections and expenditures and planned budgets

Annual Status Report

- Reports on spending, participation and impacts
- Compares actual performance to plan goals
- Aquila 2005 results

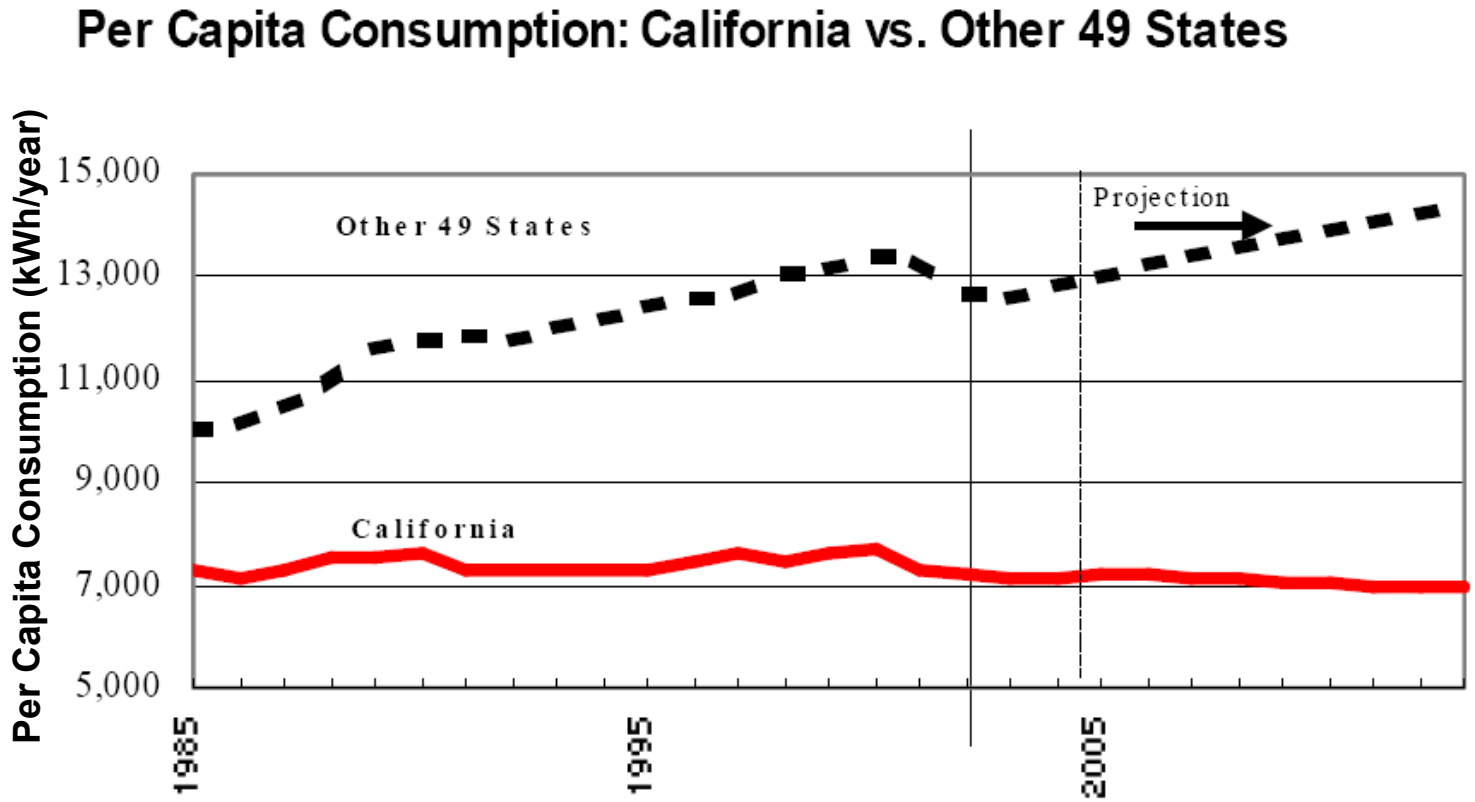


Examples from Other States

California

- **Goal: Meet 100% of California's energy growth over the next decade through energy efficiency, demand response, and renewable resources**
- **Cost: $1.00 - $1.50 per person per month**
- **Savings:**
  - 2,500 MW (5 power plants)
  - 444 MMth (enough to supply a city of 500,000)
  - 9 million tons of CO2 (the equivalent of 1.8 million vehicles)
- **Economic Benefit: $10 billion**

California vs. United States



Illinois

- **A 1998 American Council for an Energy Efficient Economy Study (ACEEE) found that cost effective energy efficiency investments in Illinois would result in:**
  - Reduced energy use in Illinois by just under 32 percent
  - A net savings of more than $38.5 billion over the 1999-2015 period
  - The creation of nearly 60,000 jobs

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2002/2003 DSM Expenditures - Selected States		
	Annual Budgets ($MM)	% of Revenues
AZ	2.0	0.10%
CA	240.0	1.50%
CT	89.0	3.10%
DC	2.2	0.30%
IL	2.0	0.02%
ME	2.9	0.30%
MA	135.0	3.00%
MI	7.8	0.10%
MT	14.3	2.00%
NH	5.2	0.50%
NJ	99.6	1.50%
NY	129.0	1.30%
NV	11.2	0.50%
OH	14.3	0.10%
OR	19.1	0.90%
RI	16.4	2.70%
TX	69.0	0.40%
VT	16.8	3.30%
WI	49.7	1.40%
Weighted Average		**1.74%**

Usage Comparison