

Energy Efficiency Program Recommendations for Tri-State

Howard Geller



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Outline

- Background
- DSM policies/efforts of other Co-ops
- DSM proposal for Tri-State's Resource Plan
- DSM program recommendations for Tri-State implementation

Electric Utility DSM Expenditures in the Southwest

State	Electric DSM Program Spending/Budgets (million \$ per year)					
	2002	2004	2006	2007	2008	2009
AZ	4	4	19	32	40	50
CO	11	21	18	32	28	57
NV	3	11	30	27	55	60
NM	1	1	1	4	10	16
UT	9	16	27	28	36	60
WY	~0	~0	~0	~0	1	2
Region	29	54	95	123	170	245

Source: SWEEP data

Impacts of Electric Utility DSM Programs in the Southwest

Year	First Year Energy Savings (GWh/yr)	Energy Savings from Cumulative Programs (GWh/yr)	Net Economic Benefits from Annual Programs (Million \$)	Avoided CO2 Emissions (1000 metric tons)
2003	175	175	113	122
2004	239	414	146	290
2005	280	694	189	486
2006	476	1,170	256	819
2007	743	1,913	332	1,339
2008	1,046	2,959	459	2,071
2009	1,510	4,469	674	3,128
Total	4,469	--	2,169	8,255

Assumes average benefit-cost ratio of 2.5 under TRC test and avoiding equal shares of coal-fired and natural gas-fired generation; 700 metric tons of avoided CO2 per GWh saved.

Colorado PUC goals for Xcel Energy and Black Hills Energy

- ❑ PUC adopted energy savings goals: savings of 0.76% of retail sales in 2010, 1.0% in 2015, 1.2% by 2019
- ❑ For Xcel, total savings of 3,669 GWh/yr by 2020 (from 2009-2020 programs); equal to about 12.5% of 2010 sales
- ❑ Utility shareholder incentives tied to meeting/exceeding the savings goals

Xcel Energy 2009 DSM Results

- ❑ Savings of about 204 GWh/yr and 55 MW at customer level
- ❑ Energy savings equal to about 0.75% of retail sales (125% of PUC goal)
- ❑ DSM expenditure of \$44 million
- ❑ Overall benefit-cost ratio under TRC test of 4.1; net economic benefits of \$215 million for customers (prior to utility incentive of ~\$9 million)

Iowa Rural Electric Cooperatives

- ❑ 40 Iowa cooperatives have been implementing DSM programs for years; spent \$10.8 million in 2008
- ❑ Recent legislation requires co-ops to assess maximum cost-effective energy savings potential, establish energy savings goals, and implement programs to meet the goals
- ❑ Utilities filed goals and detailed DSM plans for 2010-14 on Dec. 31, 2009

Iowa Rural Electric Co-ops DSM Plan

- Iowa co-ops plan to spend \$72 million on DSM programs over 5 years
 - 64% on audit and incentive programs
 - 22% on demand response programs
 - 14% on education, R&D and evaluation
- Average annual savings during 5-year effort = 60 GWh/yr (~1% of total sales per year; 1.2% of sales to applicable customer base)
- Savings per DSM \$: 4.2 kWh/yr per \$

Arizona Energy Efficiency Resource Standards

- ❑ AZ adopted an EE resource standard of 20% electric savings by 2020, from DSM programs implemented during 2006-2020, for IOUs
- ❑ Electric distribution cooperatives must meet 75% of the standards for IOUs, meaning achieving 15% savings by 2020
- ❑ Standards start in 2011 and ramp up each year
- ❑ IOUs must file annual implementation plans, cooperatives file biennial plans
- ❑ Utilities get to count savings from CHP and building codes up to a certain limit, with the details to be determined

DSM Recommendations for Tri-State Resource Plan

- ❑ Use Maximum Achievable Potential Scenario from the Nexant study
- ❑ Provides 1,605 GWh/yr of savings in 2020, 11.7% of 2010 sales
- ❑ Slightly below PUC goal for the IOUs
- ❑ Has same benefit-cost ratio as more modest DSM scenarios; maximizes energy savings, net economic benefits for customers, and program participation

DSM Budget and Energy Savings Projections

Year	DSM Budget (Million \$ per yr)	Energy Savings (GWh/yr)	Peak Reduction (MW/yr)
2011	20	60	12
2012	32	90	18
2013	42	125	24
2014	54	150	30
2015	64	180	35
2016-2020	72	200	38
Total	572	1,605	309

Source: Nexant DSM Potential Study (with minor changes)

DSM Recommendations for Tri-State Resource Plan (cont.)

- ❑ Nexant's energy savings/DSM cost coefficient is ~ 2.8 kWh/DSM \$ - LOW
- ❑ Xcel Energy (2009): 4.65 kWh/DSM \$
- ❑ IA co-ops plan: 4.2 kWh/DSM \$
- ❑ Tri-State should analyze an alternative scenario at 4.2 kWh/DSM \$, meaning a total DSM budget of \$382 million during 2011-2020, not \$572 million, for the same level of energy savings

Residential Program Recommendations

- ❑ Discounted CFLs and ENERGY STAR light fixtures in supermarkets, hardware stores, and big box retailers
- ❑ Rebates for ENERGY STAR appliances
- ❑ Second refrigerator and freezer recycling
- ❑ Consumer information and feedback
- ❑ Low-cost audits and retrofit incentives for homes with electric space heating and/or central AC
- ❑ Incentives for evaporative cooling

Commercial/Industrial/Ag Program Recommendations

- ❑ Comprehensive prescriptive incentives
- ❑ Custom incentives (pay for savings) for projects that aren't covered by prescriptive incentives
- ❑ Discounted energy assessments
- ❑ Direct installation for small businesses
- ❑ CHP incentives (including waste heat recovery)

Demand Response Program Recommendations

- ❑ Residential CAC and electric WH cycling control
- ❑ Irrigation load control
- ❑ Third party DR aggregation for larger C/I/A customers

SWEEP:

Dedicated to More Efficient Energy Use in the Southwest

Resources available online at:

www.swenergy.org

Howard Geller, Executive Director

303-447-0078x1

hgeller@swenergy.org