

Public Utilities Commission
2012 Report to the Colorado General Assembly on
Demand Side Management (DSM)
Pursuant to HB 07-1037 (§ 40-3.2-105, C.R.S.)

Introduction

In 2007 the General Assembly passed, and the Governor signed into law, legislation directing all Colorado investor-owned gas and electric utilities to implement Demand Side Management (DSM) programs. These programs focus on the demand or consumption component of the utility system, instead of the supply side that provides the electricity or natural gas. The directives concerning these DSM activities are codified in § 40-3.2-103 C.R.S. for gas utilities and § 40-3.2-104 C.R.S. for electric utilities.

The Colorado Public Utilities Commission (CPUC) was directed by § 40-3.2-105 C.R.S. to submit to the Business, Labor, and Technology Committee of the Senate, or its successor committee, and the Business Affairs and Labor Committee of the House of Representatives, or its successor committee, a report on the progress made by the utilities in meeting their DSM goals. The report shall also include any recommended statutory changes the commission deems necessary to further the intent of sections 40-3.2-103 and 40-3.2-104. This report is due by April 30 of each year.

The first report was submitted in 2009 and is a summary of the proposed 2009 DSM plans; the DSM plans were approved but had not been implemented at the time of that report. An electronic copy of the 2009 report can be accessed at:

<http://www.dora.state.co.us/puc/rulemaking/HB07-1037/HB07-1037StaffDSM04-28-09ReportToLegislature.pdf>

The second report, submitted in 2010, presents the actual 2009 DSM program results. An electronic copy of the 2010 report can be accessed at:

<http://www.dora.state.co.us/puc/rulemaking/HB07-1037/HB07-1037StaffDSM04-28-10ReportToLegislature.pdf>

The third report, submitted in 2011, presents the actual 2010 DSM program results. An electronic copy of the 2011 report can be accessed at:

<http://www.dora.state.co.us/puc/rulemaking/HB07-1037/HB07-1037StaffDSM04-28-11ReportToLegislature.pdf>

Utility DSM Goals and Accomplishments, and Comments

Each regulated electric and gas utility has filed its 2011 DSM Annual Report with the Commission. The annual reports provide the Commission with a comparison of DSM results to each utilities approved DSM goals. The following tables compare the approved DSM budget with the actual DSM expenditures; the approved energy savings goal with the actual energy savings; the estimated demand savings goal with the actual demand savings (for electric DSM plans only); and the planned benefit to cost ratio with the actual benefit to cost ratio. This information is presented by market segments, as defined by each utility in its DSM Plan, as well as the overall plan.

The benefit-to-cost ratio (cost-effectiveness) of individual DSM market segments and the utility's overall DSM plan is calculated using a modified Total Resource Cost (MTRC) test. The TRC test, before it is modified, measures the net costs and benefits of a DSM program from the perspective of society, therefore costs and benefits to participants, non-participants and the utility are included. To determine the TRC, system benefits, such as avoided generation costs, transmission and distribution costs, and avoided emission costs, are calculated. Other benefits, such as incremental operations and maintenance savings are included in the overall benefits calculation. The costs that are subtracted from the benefits include DSM program planning and design, administration costs, equipment and installation costs, and measurement and verification costs. Also, the incremental capital costs paid by the participant are included. The TRC is modified with a percentage adder to represent the non-energy benefits, such as pollution reduction, resulting from DSM.

The Planned and Actual Benefit to Cost Ratio values listed in the columns in the tables below are derived from each utility's annual report. These ratios cannot be derived from the information found in the tables themselves.

Summary

The data presented in this 2012 report summarizes the actual 2011 DSM results. For their 2010/2011 Electric DSM Plan, Black Hills Energy spent 67 percent of its approved Electric DSM budget to achieve 80 percent of its demand savings goals and 127 percent of Commission established energy savings goal. In 2011, Public Service Company of Colorado spent 93 percent of its approved budget to achieve 133 percent of its energy savings goal and 107 percent of its demand savings goal. In 2011, Atmos Energy achieved 65 percent of its planned participation, 66 percent of its energy savings goals and spent 147 percent of its approved budget in the course of their 2011 Gas DSM Plan. For its 2011 Gas DSM Plan, Black Hills Energy reported achieving 38 percent of their energy savings targets while spending 60 percent of their approved 2011 budget. Colorado Natural Gas achieved 37 percent of its participation goals while hitting 6 percent of their energy savings targets and spending 85 percent of its approved 2011 portfolio budget. Eastern Colorado Utility achieved 64 percent of its participation goals, 51 percent of its energy savings targets and spent 173 percent of its approved 2011 portfolio budget in the execution of its 2011 Gas DSM Plan. For its 2011 Gas DSM Plan, Public Service Company achieved 131 percent of its energy savings goal and spent 108 percent of their approved Gas

DSM budget. SourceGas Distribution achieved 59 percent of its participation goals, 50 percent of its energy savings targets and spent 125 percent of its approved 2011 portfolio budget for its 2011 Gas DSM Plan.

These results indicate difficulties for a few of the natural gas utilities who failed to achieve a benefit cost ratio of 1.0 or greater, indicating that their collective gas DSM portfolios were not cost effective. Three of the natural gas utilities experienced unusual difficulties in the execution of their DSM portfolios and reported modified TRC benefit cost ratios of less than 1.0. Starting at the end of 2010, Eastern Colorado Utility, SourceGas Distribution and Atmos Energy first noticed an increase in applications for insulation rebates under their Efficient Natural Gas Rebate Programs. The structure of the rebate programs allowed for a lag of approximately 45 days between the date that the insulation work began and the time at which a given Company became aware that a rebate was in order. The increase in the participation in the insulation rebate program could be linked primarily to two contractors who accounted for approximately 70 to 80 percent of all rebates. This particular contractor marketed the combination of the federal tax credits and bundling rebates between the gas utilities and the Governors Energy Office (available through federal American Relief and Recovery Act funds).

These same gas utilities pooled their resources and hired Navigant Consulting to perform and Measurement and Verification (M&V) Analysis of its Natural Gas Rebate Program from 2009 to 2010. The results of this M&V Analysis were used to calculate the savings and benefits of all the entire Natural Gas Rebate Program for the 2011 Plan year. When measuring the effectiveness of programs most utilities use the modified TRC test. Gas energy savings is the primary benefit associated with the modified TRC test, while the incremental costs to the customer are the primary costs to the program. In 2009 and 2010, the average cost of insulation installation was approximately \$1,300 per customer. In 2011, the average cost of installation increased \$1,600 per customer, roughly a 20 percent increase. The average cost per customer associated with the contractor responsible for a majority of the insulation rebates was approximately \$1,800 while the average cost for the remaining contractors remained around \$1,300. The energy savings attributable to these insulation installations did not increase proportionately to the increased in cost and therefore analysis of the Residential Insulation program resulted in a significant reduction in the modified TRC.

In response to the high levels of participation in the insulations programs, the Atmos Energy, Eastern Colorado Utility and SourceGas Distribution were forced to halt rebates to their insulation and air seal programs in the spring of 2011. By the mid to late 2011, the Natural Gas Rebate Programs were forecasted to go or over budget.

Atmos Energy was forced to shut down all of its program offerings in October 2011. As a result, Atmos Energy did not pursue its propane-to-gas conversion component of the Income Qualified Program, yielding zero participation and mTRC of 0.00 as indicated in the tables below. Likewise, SourceGas Distribution was limited in its ability to continue to offer its other programs. As a result, SourceGas did not implement its Energy-Efficiency Kits Program in 2011 resulting in a mTRC of 0.00 and zero energy savings for the program, as reflected in the table below. Eastern Colorado utility was forced to shut down all of its program offerings in June

2011. As a result Eastern also elected not to implement the Energy Efficiency Kits program in 2011. Both Companies plan on re-launching this program for 2012.

Collaboratively Atmos Energy, Eastern Colorado Utility and SourceGas Distribution have worked together to establish better controls on the rebate programs. Some of the changes to the rebate process include:

- All applications are now required to be completed by the utility customer, using their customer ID number, online or over the phone.
- Detailed, customer-specific information is required for the application, which should prevent any single contractors from being able to submit multiple rebate invoices at once.
- The application process is now very similar to a reservation program: a customer may apply for a rebate “reservation,” and then has 60 days to submit the necessary proof of purchase or a copy of the invoice along with completed application forms to qualify for the rebate and payment. The available funds are automatically reserved as associated with a measure, and are deducted from the program level budget allocated to that measure. If the reservation is not cleared within 60 days, then the funds become available for some else to submit a reservation for a rebate.

The gas utilities and the Staff of the Commission entered into a Joint Settlement Agreement that was filed into Docket Nos. 10A-278G, 11A-746G, and 10A-286G agreeing to the restructuring of the rebate application program as outlined above to reduce the potential for a rebate problem similar to the 2011 Insulation Rebate problem from reoccurring in the future.

2011 ELECTRIC DSM PERFORMANCE

Black Hills Energy 2010/2011 Electric DSM								
Market Segment	Proposed (Approved) Expenditure	Actual Expenditure	Energy Savings Goal (kWh)	Actual Energy Savings (kWh)	Demand Reduction Goal (kW)	Actual Demand Reduction (kW)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Residential	\$1,327,526	\$631,684	5,889,115	5,670,892	2,603	1,419	3.86	1.79
Nonresidential	\$1,698,287	\$1,083,034	6,967,941	10,596,626	1,857	2,265	1.97	1.71
Special (Low-Income/ School Energy Education)	\$446,650	\$437,936	815,174	1,028,029	441	231	1.50/ 2.23	1.12/ 0.74
Marketing, Promotion & Admin	\$350,000	\$391,571						
Total	\$3,822,463	\$2,544,244	13,672,230	17,295,547	4,901	3,915	2.87	1.57

Pursuant to Decision R09-0542, Docket No. 08A-518E, Black Hills Energy's 2010 DSM plan runs from July 1, 2010 to June 30, 2011. Each plan year is measured from July 1 to June 30. Therefore, Black Hills' performance information from July 1, 2010 to June 30, 2011 is reflected in this report and the Black Hills' performance information from July 1, 2010 to June 30, 2011 will be reflected in the 2012 annual DSM report to the Colorado General Assembly.

Total Financial Incentive: \$506,596

Public Service Company of Colorado 2011 Electric DSM								
Market Segment	Proposed (Approved) Expenditure	Actual Expenditure	Energy Savings Goal (kWh)	Actual Energy Savings (kWh)	Demand Reduction Goal (kW)	Actual Demand Reduction (kW)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Business	\$36,334,530	\$34,103,558	161,706,399	179,143,313	35,447	33,639	2.71	2.64
Residential	\$21,712,770	\$21,020,685	65,302,859	109,612,139	33,055	39,722	3.12	4.67
Low Income	\$2,377,425	\$2,317,014	13,068,915	11,848,032	881	983	2.36	2.00
Indirect	8,109,209	\$6,381,841	15,829,466	11,039,684	1,379	1,314		
Total	\$68,533,933	\$63,823,098	237,464,291	311,643,169	70,762	75,659	2.64	2.85

Total Financial Incentive: \$18,746,647

2011 GAS DSM PERFORMANCE

Atmos Energy Corporation 2011 Gas DSM						
Market Segment	Proposed (Approved Expenditure)	Actual Expenditure	Energy Savings Goal (Dth)	Actual Energy Savings (Dth)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Residential Energy Audit	\$75,547	\$28,681	1,502	509	1.07	1.28
Efficient Rebate Program	\$274,284	\$626,189	11,016	7,073	2.10	0.62
Income Qualified Program/Fuel Conversion	\$252,566	\$211,562	3,006	2,670	1.38/52.98 ¹	0.88/0.00
TOTAL	\$588,629	\$866,432	15,525	10,252	2.64	0.69

Total Financial Incentive: \$0

Black Hills Energy 2011 Gas DSM						
Market Segment	Proposed (Approved Expenditure)	Actual Expenditure	Energy Savings Goal (Dth)	Actual Energy Savings (Dth)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Residential	\$1,131,000	\$625,070	27,511	9,225	1.11	1.07
Non-Residential	\$254,000	\$165,521	10,340	2,551	2.52	1.18
Special (Low- Income/School Energy Education)	\$307,000	\$154,030	3,315	3,904	0.63/ 1.14	1.85/ 3.41
Training, Marketing and Administration	\$154,000	\$167,436				
TOTAL	\$1,846,000	\$1,112,057	41,158	15,680	1.22	1.15

Total Financial Incentive: \$0

¹ These utilities have fuel conversion programs under these categories. Calculating the cost effectiveness of fuel conversions is problematic, from a DSM perspective, since it is increasing the use of natural gas, yet, is decreasing the use of another fuel (propane in this case). These mTRC values appear so high because they include the high cost of propane in the calculation.

Colorado Natural Gas 2011 Gas DSM						
Market Segment	Proposed (Approved Expenditure)	Actual Expenditure	Energy Savings Goal (Dth)	Actual Energy Savings (Dth)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Residential Energy Audit	\$5,669	\$7,297.45	125	27	1.01	0.23
Efficient Rebate Program	\$78,788	\$90,294.17	8,916	574	1.30	0.37
Low-Income Kits	\$3,563	\$1,939	86	-	1.75	-
Low-Income Fuel Conversion	\$27,651	\$23,221	N/A	N/A	56.73 ¹	22.40
Energy Efficiency Kits	\$4,886	\$2,659	360	0	3.56	-
Custom Energy Efficiency Prog.	\$76,170	41,450	1,080	0	1.21	-
TOTAL	\$196,717	\$166,860.62	10,567	12,002	5.82	2.61

Total Financial Incentive: \$0

Eastern Colorado Utility 2011 Gas DSM						
Market Segment	Proposed (Approved Expenditure)	Actual Expenditure	Energy Savings Goal (Dth)	Actual Energy Savings (Dth)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Energy Audit Program	\$3,060	\$1,161	53	1	1.05	0.08
Efficient Rebate Program	\$6,553	\$33,037	259	234	1.72	0.36
Income Qualified Prog.	\$12,646	\$4,236	145	0	43.68 ¹	0.00
TOTAL	\$22,259	\$38,434	426	164	6.02	0.33

Total Financial Incentive: \$0

Public Service Company of Colorado 2011 Gas DSM						
Market Segment	Proposed (Approved Expenditure)	Actual Expenditure	Energy Savings Goal (Dth)	Actual Energy Savings (Dth)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Business	\$2,695,332	\$2,188,525	84,735	81,562	1.33	1.26
Residential	\$5,137,459	\$8,320,589	170,279	299,944	1.29	1.21
Low-Income	\$4,403,546	\$4,327,466	77,528	101,494	1.28	1.52
Indirect	\$3,570,838	\$2,254,910	35,685	0 ²		
TOTAL	\$15,807,175	\$17,091,491	368,227	454,238	1.16	1.21

Total Financial Incentive: \$2,308,948

SourceGas Distribution LLC 2011 Gas DSM						
Market Segment	Proposed (Approved Expenditure)	Actual Expenditure	Energy Savings Goal (Dth)	Actual Energy Savings (Dth)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Residential Energy Audit	\$33,212	\$56,994	646	1,558	1.11	1.74
Efficient Rebate Program	\$129,345	\$747,189	6,168	10,119	1.91	0.73
Income Qualified	\$169,529	\$11,089	7,173	0	2.86	0.00
Energy Efficiency Kits	\$23,328	\$162	2,102	0	5.23	0.00
Custom Program	\$345,706	\$59,261	12,610	2,667	1.57	2.97
TOTAL	\$701,120	\$874,696	28,699	14,344	2.64	0.91

Total Financial Incentive: \$0

Overall Cost-Effectiveness

a. Cost Effectiveness of the 2009/2010 Electric DSM Programs

The total benefits of the 2011 Public Service Company of Colorado Electric DSM program and the 2010/2011 Black Hills Energy Electric DSM programs were \$358,776,656. The total cost of these two programs was \$128,957,627, which net a benefit of \$229,819,029.

For each \$1 invested in electric DSM, \$2.78 in benefits resulted.

² The Indirect Program includes products and services that support the overall Plan but most of these products and services do not directly produce energy or demand savings and are not independently evaluated for cost-effectiveness. This segment has two areas: Education/Market Transformation and Planning & Research.

b. Cost Effectiveness of the 2011 Gas DSM Programs

The total 2011 benefit of the six gas DSM programs was \$59,377,113. The total cost of these six programs was \$50,774,115, which net a benefit of \$8,602,998.

For each \$1 invested in gas DSM, \$1.18 in benefits resulted.

Comments and Recommendations

As noted previously, each annual report is to include any recommended statutory changes the Commission deems necessary to further the intent of the gas and electric demand side management programs, as required by § 40-3.2-105 C.R.S. Based upon the Commission and Commission Staff's experience to date implementing the existing statute, we do not recommend any statutory changes at this time.