

Public Utilities Commission  
2013 Report to the Colorado General Assembly  
on  
Demand Side Management  
Pursuant to HB 07-1037 (§ 40-3.2-105, C.R.S.)

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## **Executive Summary**

Each year, on or before April 30, the Colorado Public Utilities Commission submits a report to the Colorado General Assembly describing the progress made by the state's investor owned utilities (IOUs) toward meeting their Demand Side Management (DSM) goals. This report summarizes results for the 2012 program year using information provided by the utilities in their annual DSM reports submitted to the Commission by April 1. The utility reports compare actual achievements to Commission-approved targets.

The Commission makes no recommendations at this time to the General Assembly regarding statutory changes needed to further the legislative intent of §§ 40-3.2-103 and 40-3.2-104, C.R.S.. However, as we note below, none of the six IOUs administering natural gas DSM programs met their Commission-approved savings targets in 2012. The Commission is monitoring utility DSM filings and reports to understand how low natural gas prices may affect the cost-effectiveness of gas DSM programs. The Commission further observes that some of these IOUs may be facing additional challenges in sustaining their DSM programs over the long-term.

### *2012 DSM Results*

In 2012, Black Hills and Public Service Company of Colorado (PSCo) exceeded their electric energy savings goals. Combined, they reduced annual energy use by 419 million kilowatt hours (kWh), or 1.3 percent of their combined 2012 retail sales. PSCo also exceeded its demand reduction goal, while Black Hills was short of its goal by only an insignificant amount. Total electric DSM investments made in 2012 are expected to result in net economic benefits to customers of \$103.7 million.<sup>1</sup>

The six utilities administering natural gas DSM programs spent a combined total of \$15.1 million, resulting in total net economic benefits of \$6.6 million. All six gas utilities fell short of

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<sup>1</sup> Net economic benefits compares the monetary benefits of an energy efficiency program to the costs, and represents the monetization of those benefits to consumers after subtracting the utility DSM costs.

their Commission-approved saving goals and none met their projection for customer participation.<sup>2</sup>

## **Introduction**

Colorado's IOUs implement DSM programs pursuant to the directives in §40-3.2-103 C.R.S. for gas utilities and §40-3.2-104 C.R.S. for electric utilities. While differences exist between these statutes (see below for sections on gas and electric DSM), they generally direct the Commission to:

- Allow utilities to establish DSM programs to achieve energy and demand savings;
- Afford opportunities for all customer classes to participate in utility run DSM programs;
- Ensure that DSM programs are cost effective; and,
- Provide that DSM investments are at least as financially beneficial for utilities as other investments.

### *Investing in DSM and Cost-Effectiveness*

DSM programs are one of multiple resources utilities can use to meet their customers' energy needs. Rather than increasing supply by building new power plants or selling and delivering more natural gas, DSM investments help utility customers reduce their energy consumption. DSM delivers benefits to the utility, to customers who participate in programs, to the other utility customers who do not directly participate in DSM programs and to Colorado generally. For the electric utilities, these benefits include avoiding the building of a new power plant or delaying the construction of a new transmission line.

Because Colorado statutes require that DSM investments be made at a lower cost than supply side alternatives, utility customers benefit from DSM through lower bills. In other words, DSM must be cost-effective, which is defined as having a Total Resource Cost Test (TRC) value of greater than 1. The TRC test looks at benefits and costs of a utility's investment from the perspective of all of utility customers. A TRC value of greater than 1 indicates that all utility customers (not just the customer participating in the DSM program) receive more benefits than the utility investment costs.

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<sup>2</sup> Atmos, Black Hills, Colorado Natural Gas (CNG), Eastern Colorado Utility, Public Service Company of Colorado (PSCo) and SourceGas.

### *Cumulative DSM Results (2009-2012)*

Customers have benefited from utility investments in electric DSM based on Staff's review of DSM annual reports. Black Hills and PSCo report combined net economic benefits of \$832 million since the implementation of their electric DSM plans in 2009. From 2009 through 2011, the two electric IOUs spent a total of \$248.5 million and achieved 1.2 billion kWh of energy savings.<sup>3</sup> Combined, Black Hills and PSCo avoided 207.9 MW of demand between 2009 and 2011 with PSCo contributing over 200 MW of that savings. Through 2011, every dollar invested in electric energy efficiency has resulted in \$3.29 of savings to utility ratepayers as a whole during that time.

The six natural gas IOUs together saved 2.1 million dekatherms (Dth) between 2009 and 2012. They have spent a total of \$139 million and report combined net economic benefits of \$42 million since the implementation of the electric DSM plans in 2009. PSCo, the largest of the gas IOUs, was responsible for 82 percent of the savings and \$39.6 million of the net economic benefits. Between 2009 and 2011, every dollar invested in gas efficiency has resulted in \$1.30 of savings to utility ratepayers as whole during that time.

This report presents tables that compare:

- Approved DSM budget to actual DSM expenditures;
- Approved energy savings goal to actual energy savings;
- Estimated demand savings goal to actual demand savings (electric DSM only);
- Planned benefit to cost ratio to actual benefit to cost ratio.

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.

Previous reports to the legislature can be found on the Commission's website.

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<sup>3</sup> These are first year savings for each of the 2009, 2010, and 2011 programs. Measures installed in those years will achieve additional savings over time.

### *Electric DSM requirements*

§40-3.2-104 C.R.S. directs the Commission to permit electric IOUs to implement cost-effective DSM programs that will reduce retail sales by 5 percent by 2018 from a baseline year of 2006. The statute also permits the Commission to establish other goals “taking into account the utility's cost-effective DSM potential, the need for electricity resources, the benefits of DSM investments, and other factors as determined by the commission.” As noted, statute defines cost-effective as having a Total Resource Cost Test (TRC) value of greater than 1. The law also requires the Commission to establish demand savings goals equal to a 5 percent reduction from the Company’s peak demand in 2006.

<b>Minimum Electric Savings</b>
PSCo: 1,132 GWh
Black Hills: 93.9 GWh
Minimum energy savings set by §40-3.2-104 C.R.S.

Pursuant to its interpretation of statute regarding utility investments in DSM, the Commission provided a three-part incentive mechanism for electric utilities to achieve all cost effective savings.<sup>4</sup> This mechanism includes a disincentive offset, current cost recovery, and a performance incentive that grants the utility a percentage of the net economic benefits that result from its DSM investments. The Commission structured the incentive to signal the utilities that they should pursue aggressively all cost-effective DSM, while also tempering the incentive so that it does not raise rates more than necessary to achieve the desired results. For example, DSM costs for residential customers have averaged 1 percent of their monthly bill for each of the last three years.<sup>5</sup>

### *Gas DSM requirements*

While the statute governing electric DSM prescribed a minimum savings target to be achieved, the statute governing gas DSM focused on establishing a minimum spending requirement for each utility. When enacted, the gas statute (§40-3.2-103(1) C.R.S.) directed the Commission to commence a rulemaking proceeding on or before September 30, 2007 to establish (i) expenditure targets, (ii) savings targets, and (iii) a bonus structure for gas DSM programs. Because the statute required a minimum spending from utilities, the Commission

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<sup>4</sup> Section 40-3.2-104(5), C.R.S., states that the “Commission shall allow an opportunity for a utility’s investment in cost-effective DSM programs to be more profitable to the utility than any other utility investment that is not already subject to special incentives.”

<sup>5</sup> This assumes a residential customers using 500kWh per month. While this is below average monthly use for PSCo customers, the percent impact does not change for residential customers who use additional kWh per month.

determined during the rulemaking that the best process to set goals was to have each utility propose goals as part of its DSM plan filings. The Commission approves these goals when it approves the Company's DSM plan.<sup>6</sup> For many of the smaller gas DSM programs the minimum spending requirement dictates the amount of energy savings they strive to attain.

### *Statewide Progress in 2012*

For 2012, the electric DSM plans continued to have success with both Black Hills and Public Service Company of Colorado (PSCo or Xcel) exceeding their energy savings goals. Gas DSM continues to struggle; all six gas utilities fell short of their approved saving goals. Two utilities had gas DSM programs that did not meet minimum cost-effective requirements. We do note that this is down from last year when three utilities had programs that did not reach a benefit to cost ratio of 1.0 or greater. In addition, customer participation in the gas DSM programs was below projections for all six of the utilities. The Commission continues to pay close attention to customer participation figures as these are key contributors of overall savings and cost-effectiveness of programs.

The tables below present detailed results for each utility. Here we present a high-level overview of their respective savings achievements.

In 2012 Black Hills and Public Service Company of Colorado (PSCo) exceeded their electric energy savings goals. Combined they reduced energy use by 419 million kilowatt hours (kWh). PSCo also exceeded its demand reduction goal while Black Hills was short of its goal by only 122 kilowatts (kW). Total electric DSM investments resulted in net economic benefits of \$103.7 million, which are resulting benefits to customers after the cost of DSM programs are subtracted.

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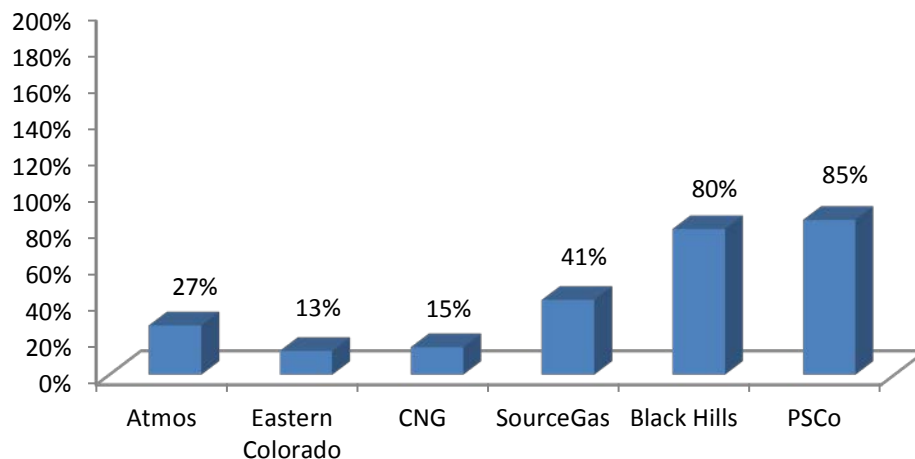
<sup>6</sup> The statute directs the Commission to adopt "DSM program expenditure targets equal to at least one-half of one percent of a natural gas utility's revenues from its full service customers in the year prior to setting such targets". Rule 4 CCR 723-4-4753(g)(I), states that, "The utility's annual expenditure target for DSM programs shall be, at a minimum two percent a natural gas utility's base rate revenues (exclusive of commodity costs), from its sales customers in a 12-month calendar year period prior to setting the targets, or one-half of one percent of total revenues from its sales customers in the 12-month calendar period prior to setting the targets, whichever is greater."

	Percent of Energy Goal Achieved	Percent of Demand Goal Achieved	Percent of Budget Spent
Black Hills	112%	97%	82%
PSCo	122%	114%	102%

Six utilities under Commission jurisdiction administer gas DSM programs. Combined they spent \$15.1 million resulting in total net economic benefits of \$6.6 million. All six gas utilities fell short of their approved saving goals and no utility met its projections for customer participation.<sup>7</sup>

The Commission recognizes that customer participation is an important element in the success of a DSM plan and that it is a factor that is outside the control of the utilities. The gas only local distribution companies (LDCs)<sup>8</sup> and Black Hills experienced lower than planned participation (see Figure 1), which led to lower energy savings than were forecast in their plans.

**Figure 1: Participation as a Percent of Projected Participation for Gas DSM Rebate Measures**



<sup>7</sup> Atmos, Black Hills, Colorado Natural Gas (CNG), Eastern Colorado Utility, Public Service Company of Colorado (PSCo) and SourceGas.

<sup>8</sup> These include SourceGas, Colorado Natural Gas, Atmos, and Eastern Colorado.

The four gas LDCs attribute the low participation numbers to several factors, including:

- A late start to their joint marketing campaign (late February/early March);
- Customers may not have been aware that the rebates were once again available;<sup>9</sup>
- Warmer winter temperatures, which lowered participation in key months; and,
- Low cost of natural gas.

The four gas only LDCs report that it has taken time for their DSM programs that were shuttered in late 2011 to regain the momentum they had prior to the program stoppage. The 2012 Legislative Report (last year's report) addressed an issue of unusually high participation in the insulation rebate programs for Eastern Colorado Utility, SourceGas Distribution Company and Atmos Energy that caused them to close their 2011 DSM programs early (i.e., before the end of the year). In accordance with a PUC approved Stipulation and Settlement Agreement, the companies have implemented new control procedures designed to help them monitor and regulate rebate applications. The utilities report that the 2012 re-launch of their DSM programs, and the implementation of these new procedures, have gone smoothly. Despite aggressive marketing campaigns, participation in 2012 was lower than projected.

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<sup>9</sup> See below for a discussion, but the Companies had to cancel their DSM program in late 2011 due to higher than projected rebates in insulation programs.



## 2012 ELECTRIC DSM PERFORMANCE

<b>Black Hills Energy 2011/2012 Electric DSM</b>								
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	\$1,316,813	\$942,744	8,738,885	9,761,958	2,552	1,317	N/A	1.79
Nonresidential	\$1,749,235	\$1,509,605	6,967,941	8,094,902	1,857	3,093	N/A	2.12
Special (Low-Income/ School Energy Education)	\$449,749	\$423,951	815,174	704,396	441	319	1.50	0.83
Marketing, Promotion & Admin	\$350,000	\$312,877						
<b>Total</b>	<b>\$3,865,797</b>	<b>\$3,189,177</b>	<b>16,522,000</b>	<b>18,561,256</b>	<b>4,850</b>	<b>4,728</b>	<b>2.09</b>	<b>1.82</b>

Net benefits: \$4.92 million.

Total Financial Incentive: \$318,495

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, 2011 to June 30, 2012 is reflected in this report. In Docket 12A-100E, Black Hills filed a 1.5 year plan for July 1, 2012 through December 31, 2013 to be followed by one year plans for 2014 and 2015, and allow them to be on a cycle congruent with the calendar year and the other Colorado Utilities.

<b>Public Service Company of Colorado 2012 Electric DSM</b>								
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	\$40,011,734	\$44,303,724	198,529,968	226,798,373	35,667	45,780	2.17	2.18
Residential	\$27,531,932	\$27,084,085	110,975,610	151,293,814	41,883	41,104	4.31	3.63
Low Income	\$2,807,620	\$1,944,610	11,240,941	6,734,197	1,063	748	1.74	1.21
Indirect	\$6,902,097	\$6,072,960	8,560,821	15,849,525	684	3,014		
<b>Total</b>	<b>\$77,523,382</b>	<b>\$79,405,379</b>	<b>329,307,341</b>	<b>400,675,909</b>	<b>79,297</b>	<b>90,647</b>	<b>2.49</b>	<b>2.38</b>

Net benefits: \$188.8 million.

Total Financial Incentive: \$22,688,263

## 2012 GAS DSM PERFORMANCE

<b>Atmos Energy Corporation 2011 Gas DSM</b>						
Market Segment	Proposed (Approved Expenditure)	Actual Expenditure	Energy Savings Goal (therms)	Actual Energy Savings (therms)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Residential Energy Audit	\$79,743	\$42,074	15,860	5,632	1.07	1.40
Efficient Rebate Program	\$283,378	\$110,626	113,820	21,172	2.10	1.41
Income Qualified Program/Fuel Conversion	\$253,237	\$295,810	30,220	38,528	1.38	1.52
<b>TOTAL</b>	<b>\$616,358</b>	<b>\$448,510</b>	<b>159,900</b>	<b>65,332</b>	<b>2.64</b>	<b>1.38</b>

Net benefits: \$143,866.

Total Financial Incentive: \$0 (Atmos Energy did not reach the 80 percent threshold for energy savings goal attainment to qualify for a Gas DSM Bonus)

<b>Black Hills Energy 2012 Gas DSM</b>						
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	\$1,515,700	\$1,380,742	24,528	20,443	2.58	1.11
Non-Residential	\$198,400	\$41,604	4,929	2,633	1.22	2.97
Special (Low- Income/School Energy Education)	\$126,900	\$41,604	3,209	3,642	3.77	3.55
Training, Marketing and Administration	\$230,000	\$297,504				
<b>TOTAL</b>	<b>\$2,071,000</b>	<b>\$1,818,547</b>	<b>32,666</b>	<b>26,717</b>		<b>1.08</b>

Net benefits: \$208,187.

Total Financial Incentive: \$1,734

**Eastern Colorado Division of Colorado Natural Gas  
2012 Gas DSM**

Market Segment	Proposed (Approved Expenditure)	Actual Expenditure	Energy Savings Goal (therms)	Actual Energy Savings (therms)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Energy Audit Program	\$3,631	\$0	610	0	1.05	n/a
Efficient Rebate Program	\$6,711	\$3,493	2,700	513	1.72	0.53
Income Qualified Prog.	\$12,844	\$7,385	1,540	386	1.63	0.60
<b>TOTAL</b>	<b>\$23,184</b>	<b>\$10,877</b>	<b>4,850</b>	<b>899</b>	<b>6.02</b>	<b>0.59</b>

Net benefits: \$-7,335.

Total Financial Incentive: \$0 (The Eastern Colorado Division of Colorado Natural Gas did not reach the 80 percent threshold for energy savings goal attainment to qualify for a Gas DSM Bonus)

**Colorado Natural Gas  
2012 Gas DSM**

Market Segment	Proposed (Approved Expenditure)	Actual Expenditure	Energy Savings Goal (therms)	Actual Energy Savings (therms)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Residential Energy Audit	\$6,292	\$3,371	1,380	54	1.01	0.11
Efficient Rebate Program	\$26,746	\$46,042	18,890	4,401	1.30	0.66
Low-Income Kits	\$3,644	\$6,319	880	776	1.75	0.46
Low-Income Fuel Conversion	\$4,520	\$4,376	n/a	n/a	56.73	0.00
Energy Efficiency Kits	\$5,117	\$98	3,780	18	3.56	1.17
Custom Energy Efficiency Prog.	\$154,940	\$0	21,600	0	1.21	n/a
<b>TOTAL</b>	<b>\$201,259</b>	<b>\$60,205</b>	<b>46,530</b>	<b>5,249</b>	<b>5.82</b>	<b>0.60</b>

Net benefits: \$-32,876.

Total Financial Incentive: \$0 (Colorado Natural Gas did not reach the 80 percent threshold for energy savings goal attainment to qualify for a Gas DSM Bonus)

Colorado Natural Gas started out strong out of the gate but has experienced a severe drop off in participation and energy savings achieved over the past few years. The Colorado Natural Gas DSM program has reached over one-third of its eligible customers and it will be increasingly expensive and difficult for Colorado Natural Gas to achieve significant and cost-effective savings with its current levels of market penetration. As one of the smaller gas utilities, Commission Staff is monitoring the other gas DSM programs and anticipating other programs may eventually reach similar levels of market penetration in the upcoming years.

<b>Public Service Company of Colorado 2012 Gas DSM</b>						
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	\$1,627,048	\$1,305,792	104,291	67,462	1.43	1.21
Residential	\$5,940,706	\$5,926,669	245,279	213,932	1.35	1.19
Low-Income	\$3,701,422	\$3,590,685	61,726	77,578	1.39	1.30
Indirect	\$1,949,157	\$1,637,379	23,758	72,524		
<b>TOTAL</b>	<b>\$13,218,333</b>	<b>\$12,460,525</b>	<b>435,054</b>	<b>431,496</b>	<b>1.31</b>	<b>1.18</b>

Net benefits: \$5.7 million.

Total Financial Incentive: \$1,132,801

<b>SourceGas Distribution LLC 2012 Gas DSM</b>						
Market Segment	Proposed (Approved Expenditure)	Actual Expenditure	Energy Savings Goal (therms)	Actual Energy Savings (therms)	Planned Benefit to Cost Ratio	Actual Benefit to Cost Ratio
Residential Energy Audit	\$34,509	\$41,416	6,700	3,957	1.11	0.75
Efficient Rebate Program	\$138,124	\$107,371	65,700	47,624	1.91	1.41
Income Qualified	\$177,943	\$70,976	75,070	35,175	2.86	2.80
Energy Efficiency Kits	\$24,393	\$1,526	21,800	2,124	5.23	8.33 <sup>10</sup>
Custom Program	\$350,970	\$138,529	126,100	50,003	1.57	1.57
<b>TOTAL</b>	<b>\$725,939</b>	<b>\$359,717</b>	<b>295,370</b>	<b>138,883</b>	<b>2.64</b>	<b>1.83</b>

Net benefits: \$586,368.

Total Financial Incentive: \$0 (SourceGas Distribution did not reach the 80 percent threshold for energy savings goal attainment to qualify for a Gas DSM Bonus)

## **Comments and Recommendations**

The Commission does not make any recommendations in this year's report. However, as we note above, none six of the IOUs administering gas DSM programs met their Commission approved savings targets in 2012. Our discussion recognized several possible factors including low natural gas prices and lower than forecast customer participation.