

**Statewide Economic Impact Analysis
of Six Colorado Counties'
Energy Programs**

Summary Report

Prepared for

Boulder County Commissioner's Office, Sustainability Office
and Colorado Affiliated Energy Smart Programs in
Denver County, Eagle County, Garfield County,
Gunnison County and Pitkin County

By

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Purpose

This study was undertaken to analyze the Energy Smart programs in Boulder, Denver, Eagle, Garfield, Gunnison and Pitkin Counties and document the statewide economic impacts that occurred as a result. The analysis reviewed project upgrade costs, including homeowner, business and commercial property owner investments, county and utility rebates, energy loans and estimated energy bill savings to better understand how spending on energy efficiency upgrades and renewable energy benefits residents, business and the Colorado economy. Statewide impacts on jobs, worker earnings¹ and output² – the quantity of goods and services produced in Colorado, were evaluated, both for the short-term installation period as well as annually, on an ongoing basis.³

Program Descriptions

Boulder County

The *EnergySmart* program provides energy advising and financial assistance to households and businesses in all Boulder County communities, including the cities of Boulder, Lafayette, Longmont and Louisville, the towns of Erie, Jamestown, Lyons, Nederland, Superior and Ward, and unincorporated Boulder County. *EnergySmart* helps residents and businesses identify, prioritize, and implement energy efficiency projects. The program provides a variety of services including rebates, loans, step-by-step energy advising, personalized energy assessments, assistance with finding and working with contractors, technical assistance, and project monitoring and verification.

Boulder County, in collaboration with the City of Boulder Local Environmental Action Division, City of Longmont and Boulder County Public Health, designed the *EnergySmart* program to increase awareness of potential energy savings and to address the barriers that residents and businesses face when considering energy efficiency projects. In addition to addressing these barriers, program goals include:

- Increasing energy efficiency investment in Boulder County
- Creating jobs and stimulating local economic growth
- Advancing energy independence through energy upgrades
- Leveraging federal seed funding to generate at least a 5:1 match in energy efficiency retrofits
- Reaching 3,000 businesses and 10,000 households by June 2013, representing about 26% of business sites and 8% of households in Boulder County

The program was formally launched on January 25, 2011. *EnergySmart* is currently funded by the American Recovery and Reinvestment Act (ARRA) through the U.S. Department of Energy's BetterBuildings Neighborhood Program (BBNP) grant, combined with

¹ Earnings include wages and salaries and employer paid benefits.

² Output is a measure of overall economic activity and thus refers to all sales of goods and services, including production, distribution and consumption.

³ Companion reports for each of the six counties were also prepared to assess the county specific benefits of these programs in each of the respective counties.

contributions from the City of Boulder's Climate Action Plan (CAP) tax and the City of Longmont.

Denver County

The *Denver Energy Challenge* is a free energy program provided by the City and County of Denver's Environmental Health Department. The program was designed to help residents and businesses in the City and County of Denver reduce their energy use by 15% or more.

Program participants receive access to free energy advising, rebates and exclusive, low-cost loans to help make much-needed energy improvements. In addition to helping residents and businesses reduce energy use, program goals include:

- stimulating local economic growth
- increasing energy efficiency investment in Colorado
- advancing the state's energy independence through large-scale energy upgrades

The *Denver Energy Challenge* program is currently funded by the American Recovery and Reinvestment Act (ARRA) through the U.S. Department of Energy's BetterBuildings Neighborhood Program (BBNP) grant and local partnerships.

Garfield County

Garfield County's Better Buildings Neighborhood program is run through Colorado's first clean energy inter-governmental authority, the Garfield Clean Energy Collaborative. Its 10 local government members are all working to be more energy efficient for a more resilient local economy. CLEER: Clean Energy Economy for the Region, a nonprofit in Carbondale, administers the program under contract to Garfield Clean Energy.

Garfield Clean Energy's residential, commercial and public facilities programs employ three primary components:

- Measure and manage energy use in public buildings and empower people to make a difference.
- Provide free Energy Coaching services.
- Offer financing for clean energy capital investments.

Energy coaching services are offered to home and commercial property owners to help them make wise choices on energy efficiency investments. Energy Coaches help households and businesses get started with an energy assessment, prioritize the identified efficiency upgrades, evaluate bids from contractors, and apply for Better Buildings and utility rebates.

Eagle, Pitkin and Gunnison Counties

Energy Smart Colorado (ESC) is a regional single-family and multi-family energy efficiency retrofit program established in 2011 in Eagle, Pitkin and Gunnison Counties with \$4.9 million in start-up funding from DOE BBNP program to make energy improvements simple and affordable. Founded upon providing access to information, financing, and a skilled workforce, the program hosts local energy resource centers in each county to provide grass roots marketing and outreach, training, owner and contractor assistance, coaching, and administration.

ESC utilizes certified analysts to complete BPI home energy assessments and quick - fix direct install items. Participants are provided access to rebates and Energy Smart loans from their \$1 million Revolving Loan Fund. The program is expanding to serve multi-family structures and businesses, and into Lake and Summit Counties. To date, over 3300 homes have been visited and 1700 retrofits have been reported through rebates through the program. In a recent participant survey completed by CCI, 72% of participants completed energy improvements in 2013, up from 60% in 2012.

ESC is currently securing local government and utility partnerships to continue services in 2014 and beyond.

Economic Impact Analysis

The economic tool used to analyze the impacts of the combined six programs is called an input-output (I-O) model. In this instance, the I-O model, designed specifically to analyze in-state expenditures on upgrades⁴ and energy efficiency measures eligible for rebates and loans, was used to identify spending patterns and interactions between all sectors of the Colorado economy.⁵ For example, the model shows how homeowner spending on attic insulation or high efficiency windows can create business for contractors and vendors, and others in the supply chain, including wholesalers and manufacturers. To the extent these upgrades are installed by Colorado contractors or are purchased from local manufacturers or retail or wholesale vendors, there is additional benefit to the state's economy.

When residents and businesses pay their utility bills, most of the money leaves the local area to purchase fuels, maintain power plants, and support utility operations throughout Colorado and in other areas. When residents and businesses achieve savings on their utility bills they are able to spend some of the savings purchasing other goods and services, on business upgrades, loan repayments and investments in the state's economy.

Key findings of the six county statewide analysis indicate that:⁶

The Energy programs are helping create and support jobs throughout Colorado.

- With almost 99 percent of program spending on residential/single-family and commercial/multi-family building energy upgrades, remodels and quick installs spent in Colorado,⁷ this spending supported 320 full-time equivalent (FTE)⁸ jobs throughout the state during the upgrade period.⁹ These jobs include work for

⁴ In some instances, non-energy related improvements (e.g., a home remodel) were undertaken in conjunction with energy improvements. In these instances, since there was no data available to separate the expenditures, the analysis included all spending.

⁵ For a more detailed discussion of the methodology used to analyze program impacts see the Appendix.

⁶ For more detailed results see tables in the Appendix to this report.

⁷ The remainder of the program spending (including payments to contractors and suppliers) occurred outside of Colorado.

⁸ Full-time equivalent (FTE) jobs refer to one person (or the equivalent) being employed full time (40 hours per week for 52 weeks) for one year, a total of 2,080 hours. For example, two persons, each working half time for a full year equal 1 FTE job; or 2 persons, each working full time for six months equal 1 FTE job. As a result, the actual total number of people working (part time and or full time) during the installation period may be significantly greater than the FTE number noted.

⁹ Jobs created or supported during the upgrade period are considered short term jobs since they only reflect

electrical and window contractors, insulation installers, HVAC contractors, workers at wholesale and retail suppliers (e.g., lumber yards, hardware stores, etc.), as well as jobs at grocery stores, restaurants, clothing stores and other businesses where workers spend their paychecks and businesses purchase goods and services.

- Residential/single-family upgrade spending accounted for 178 of the full time equivalent jobs (56 percent) supported throughout Colorado during the upgrade period.
- Commercial and multi-family property owner upgrade spending accounted for 142 of the full time equivalent jobs (44 percent) supported throughout Colorado during the upgrade period.

The Energy programs increased worker income in Colorado.

- Total program spending in Colorado was responsible for almost \$21.3 million in worker earnings¹⁰ for the 320 full time equivalent jobs supported during the upgrade period.
- Residential/single-family upgrade spending accounted for just over \$13.2 million of the worker earnings (62 percent) during the upgrade period.
- Commercial and multi-family property owner upgrade spending accounted for just under \$8.0 million (38 percent) of the worker earnings during the upgrade period.

The Energy programs stimulated overall economic activity throughout Colorado.

- Total program spending in Colorado was responsible for adding almost \$51.2 million in the production of goods and services to the state's economy during the upgrade period.
- Residential/single-family spending accounted for \$27.6 million in the production of goods and services to the state's economy during the upgrade period.
- Commercial/multi-family property owner spending accounted for \$23.6 million in production of goods and services to the state's economy during the upgrade period.
- Total spending on efficiency and upgrade measures in Colorado generated over \$639,000 in sales tax. This included \$458,653 in state sales taxes and \$180,970 in local county sales tax.

The Energy programs are reducing electricity and gas usage and providing significant utility bill saving for state residents and businesses.

- Reductions in energy usage will save program participants over \$5.4 million on their electricity and gas utility bills during the first year measures are in place.¹¹
- Residential/single-family residences saved an average of just over \$150 each in the first year on their utility bills due to installation of efficiency upgrades.
- Commercial/multi-family buildings saved an average of just over \$1,700 each in the first year on their utility bills due to installation of efficiency upgrades.
- Utility bill savings will continue for the full 20-30 year lifetime of the installations.

spending that occurs during the installation period and do not continue beyond this period.

¹⁰ Worker earnings include wages, salaries and worker paid benefits (health insurance, social security, retirement, workers compensation, Medicare, etc.)

¹¹ Utility bill savings are based on average electric and natural gas costs in Colorado in 2012. If utility rates continue to rise, the resulting bill savings and related impacts will increase as well.

Spending of utility bill savings support permanent jobs in Colorado and will continue to benefit Colorado businesses for years to come.

- Estimated utility bill savings will support 23 full time equivalent jobs throughout Colorado each year for the next 20 to 30 years. These jobs are in all areas of the economy. They include jobs at retail stores (clothing, grocery, appliance, hardware, lumber, and car dealers, among others), service providers (restaurants, hotels, auto repair, appliance repair, landscapers, real estate and finance, among others), as well as in wholesale and manufacturing sectors.
- Estimated utility bill savings support over \$0.6 million in worker earnings each year for the 23 full time equivalent jobs throughout the state.
- Twenty-three jobs is the equivalent of adding two new businesses to the state.¹²
- Estimated energy bill savings contribute just under \$0.8 million annually to the County's economy in the production of goods and services.¹³

County program rebates and utility rebates leverage significant private investments.

- For each \$1 of rebate provided, on average, another \$3.31 in private investment by residents and businesses in the six counties was spent on efficiency and related upgrades, a total of \$4.31 in spending.
- Each \$1 million of program rebates (county and utility) supported an average of more than 40 FTE jobs during the upgrade period and an average of 3.0 FTE ongoing jobs throughout the state.¹⁴
- In 5 years, the sum of all annual residential and commercial utility bill savings will be 3.5 times as much as the amount initially paid in rebates.
- In 10 years, the sum of all annual residential and commercial utility bill savings will be 6.9 times as much as the amount initially paid in rebates.
- In 20 years, the sum of all annual residential and commercial utility bill savings will be more than 13.9 times as much as the amount initially paid in rebates.
- For each \$1 spent on program upgrades by program participants, just under \$0.99 was spent in Colorado, benefitting in-state contractors, suppliers and the state as a whole.

¹² According to the US Census Bureau, in 2011 the average private nonfarm establishment (business) in Colorado had just over 13 employees. See <http://quickfacts.census.gov/qfd/states/08/08031.html>.

¹³ The contribution to the state's economy is less than the actual total energy bill savings because only a portion of the actual spending of the savings occurs in Colorado.

¹⁴ These jobs do not account for public sector jobs associated with actual program administration.

Appendix

1. Methodology

To capture the full economic impacts of the Energy programs in the six counties and throughout Colorado, the economic analysis evaluates all program spending on energy-efficiency measures, renewable energy technologies and other related upgrades that occurred in Colorado.¹⁵ This includes work completed by Colorado contractors, do-it-yourself (DIY) projects, county and utility quick installs¹⁶, equipment tune-ups and measures covered under the county's energy loan programs since November 2010.¹⁷

The actual expenditures for each measure were first grouped by measure or upgrade type and then sorted by contractor location. This provided the basis for separating expenditures that occurred in Colorado from those that occurred outside of the state. Spending attributed to out-of-state contractors and suppliers was treated as a monetary leakage since the expenditures are spent outside of Colorado. This spending does not benefit Colorado contractors, suppliers or other businesses and therefore is not included in the analysis.

The analysis was completed using a Colorado specific input-output (I-O) model in which the Colorado expenditures are matched with appropriate Colorado industry multipliers.¹⁸ The model analyzes three separate effects (i.e., direct, indirect and induced) for each expenditure. The sum of these three effects includes all changes in consumer and business spending during the actual installation of efficiency measures and yields the total effect from a single expenditure.¹⁹

1. The direct effect refers to the on site or immediate effect produced by expenditures. In the case of installing energy efficiency upgrades in a home, the direct effect is the on

¹⁵ All program project cost and savings data was provided by representatives of the respective counties. These include: Collin Tomb and Lea Yancey of the Boulder County Commissioners' Office, Sustainability Dept., June 2013; Elizabeth Babcock, Community Sustainability and Energy Administrator, Denver Department of Environmental Health, Environmental Quality Division and Sharon Procopio, Commercial Program Administrator, Denver Energy Challenge, Denver Department of Environmental Health, June 2013; Erica Sparhawk, Program Director, Clean Energy Economy for the Region (CLEER), July 2013. CLEER manages the Garfield Clean Energy programs; and Adam Palmer, Environmental Policy Planner for Eagle County, April 2013, for Eagle, Pitkin and Gunnison Counties.

¹⁶ Cost and staffing data for Denver County residential Quick Installs was provided by Sally Lambert, Project Manager and Audrey Cole, Controller for Populus, LLC, in June 2013. According to Ms. Cole, equipment/measures installed by Populus (CFLs and low flow showerheads) were obtained from suppliers outside of Colorado. Utility and commercial Quick Installs cost and staffing data was unavailable, and thus not included in this analysis. Equipment purchases are assumed to be from suppliers outside of Colorado. Ms. Cole also provided similar cost, staffing and supplier origin data for Boulder County.

¹⁷ Actual program start and end dates for purposes of this analysis varied by program. Most program/project data began sometime in 2011 and ended in the first half of 2013.

¹⁸ In this study we adapted industry multipliers and expenditure ratios derived from the IMPLAN V3 software using 2011 Colorado state data (the most current available at the time the analysis was done). See Minnesota IMPLAN Group, Hudson, WI, www.implan.com.

¹⁹ For a more complete description of the methodology employed in this analysis, see a similar Boulder County study by MRG & Associates undertaken for the National Renewable Energy Laboratory in 2010. *Economic Impacts from the Boulder County Climate Smart Loan Program, Using Property Assessed Clean Energy Financing*. 2011.

site expenditures and jobs of the construction or trade contractors hired to carry out the work.

2. The indirect effect refers to the increase in economic activity that occurs when a contractor or vendor receives payment for goods or services delivered and he or she is able to pay others who support the businesses. This includes the equipment manufacturer or wholesaler who provides the products (solar panels, insulation, heating system, windows, etc.). It also includes the bank that provides financing to the contractor, the vendor's accountant, and the building owner where the contractor maintains its local offices, and so on.
3. The induced effect results from the spending of worker earnings associated with direct and indirect spending related to energy efficiency expenditures. This includes spending on food, clothing, housing, transportation, recreation, and other goods and services that workers typically spend their paychecks on.

In this analysis, the installation-related impacts are based on projects completed during a two to two and a half year period beginning in November 2010 and running into May 2013. The analysis is based on program data which includes \$18.4 million in residential/single-family upgrades and \$15.5 million in commercial/multi-family property upgrades; a total of \$33.9 million in spending.²⁰ Typically, 85 to 90 percent of construction related projects, including energy efficiency and renewables, are completed by local contractors and supplied by local vendors (wholesale and retail). However, given the proximity to the Denver metro area and large number of contractors and suppliers in Colorado, the analysis found that almost 99 percent of the total, just over \$33.5 million, was spent within the state of Colorado. This included payments to Colorado contractors and equipment and materials suppliers.

In addition to the actual spending on upgrades, the analysis also includes spending of utility bill savings.²¹ The spending of utility bill savings is ongoing, that is, the efficiency measures and upgrades continue to reduce energy use and utility bills. The analysis assumes residents and businesses have the same or similar level of utility bill savings each year for the life of the measures, typically 20 to 30 years. When residents and businesses pay their utility bills, most of the money leaves the local area to purchase fuels, maintain power plants, and support utility operations throughout Colorado and in other areas. When residents and businesses achieve savings on their utility bills they are able to spend some of the savings purchasing other goods and services, on business upgrades, loan repayments and investments within the Colorado economy.

The ongoing job impacts from these utility bill savings are derived in the same manner as the upgrade investments – matching expenditures with industry specific multipliers, both for consumer and business spending and with the utility sector. The impacts are in large part derived from the difference between jobs that would have been created or supported within the utility and fuel supply sectors, if the utilities received the additional revenues, and jobs that are supported throughout Colorado by the spending of utility bill savings on goods and services in the state's economy. For purposes of estimating current and future energy bill

²⁰ The analysis does not include costs associated with each county's administration of the program or spending on initial project assessments.

²¹ Energy bill savings are based on Deemed savings for electricity (kWh) and gas (therms) for each measure, applied to utility rates. Rates vary by area, but on average vary from \$0.09 to \$0.10 per kWh for residential and commercial electricity customers and \$0.90 per therm for residential gas customers and \$0.90 to \$0.976 per therm for commercial gas customers.

savings, the analysis assumes energy prices remain at 2012 levels. To the extent energy prices rise in the future, the savings will be even larger.

2. All Projects Summary Data and Impacts

Table A-1 Colorado County Energy Programs – All Projects Data Summary

Measure	Total Project Cost/Investment	Colorado Project Cost/Investment	Percent of Total in Colorado	Total Rebates	Estimated Annual Utility Bill Savings
HVAC	\$11,083,999	\$11,083,999	100.0%	\$1,658,169	\$460,965
Lighting	\$9,373,889	\$9,370,580	99.9%	\$3,171,668	\$3,113,165
Appliances and other DIY	\$803,110	\$803,110	100.0%	\$130,823	\$59,761
Doors and Windows	\$3,441,993	\$3,441,993	100.0%	\$434,050	\$170,258
Solar Electric	\$1,394,936	\$1,394,936	100.0%	\$130,541	\$52,508
Solar Hot Water	\$274,877	\$274,877	100.0%	\$61,908	\$3,290
Insulation	\$7,529,967	\$7,145,002	94.9%	\$2,222,563	\$968,471
Assessments	\$6,453	\$6,453	100.0%	\$49,419	\$3,384
Office Equipment	\$10,634	\$10,634	100.0%	\$3,051	\$5,165
Quick Installs	\$175	\$175	100.0%	na	\$608,627
Total	\$33,920,033	\$33,531,758	98.9%	\$7,862,193	\$5,445,596

Notes:

All dollar values are 2012 dollars.

The energy program data includes Boulder, Denver, Garfield, Eagle, Gunnison and Pitkin Counties. The data includes residential/single-family and commercial/multi-family projects. Colorado Project Cost/Investment refers to the project expenditures spent within Colorado (i.e., on Colorado contractors and suppliers). Totals may not add up due to independent rounding.

Table A-2 Colorado County Energy Programs – All Projects Economic Impact Summary

Upgrade/Installation Phase

Measure	Jobs	Earnings	Output	Sales Tax
HVAC	89	\$6,555,724	\$16,442,424	\$255,064
Lighting	89	\$5,050,731	\$14,433,928	\$192,996
Insulation	87	\$6,497,276	\$11,736,620	\$92,810
Doors and Windows	34	\$2,143,949	\$5,187,617	\$64,471
Solar Electric	12	\$653,766	\$1,965,820	\$5,992
Appliances and other DIY	6	\$248,299	\$1,053,247	\$26,266
Solar Hot Water	2	\$137,745	\$396,146	\$1,726
Assessments	0	\$5,016	\$11,505	\$0
Office Equipment	0	\$3,232	\$13,887	\$300
Quick Installs	na	na	na	na
Total	320	\$21,295,738	\$51,241,194	\$639,623

Notes:

All dollar values are 2012 dollars.

Impacts are based on analysis of residential/single-family and commercial/multi-family projects completed during Nov. 2010 and May 2013, and include work done by Colorado (in-state) contractors and purchases from Colorado suppliers (retail and wholesale). Jobs are full-time equivalent (FTE) for 1 year. Earnings are wages, salaries and benefits. Output is economic activity (production of goods and services). Upgrade/Installation Phase impacts are short term (i.e., they are not ongoing). Sales tax includes state and county/local taxes. Totals may not add up due to independent rounding.

Table A-3 Colorado County Energy Programs – All Projects Economic Impact Summary

Annual Utility Bill Saving - Ongoing

Measure	Jobs	Earnings	Output
Lighting	13	\$369,604	\$455,125
Insulation	4	\$114,980	\$141,584
Quick Installs	3	\$72,258	\$88,977
HVAC	2	\$54,727	\$67,390
Doors and Windows	1	\$20,214	\$24,891
Appliances and other DIY	0	\$7,095	\$8,737
Solar Electric	0	\$6,234	\$7,676
Office Equipment	0	\$613	\$755
Assessments	0	\$402	\$495
Solar Hot Water	0	\$391	\$481
Total	23	\$646,516	\$796,111

Notes:

All dollar values are 2012 dollars.

Impacts are based on analysis of estimated utility bill savings for residential/single-family and commercial/multi-family projects completed during Nov. 2010 and May 2013. Jobs are full-time equivalent (FTE) for 1 year. Earnings are wages, salaries and benefits. Output is economic activity (production of goods and services). Totals may not add up due to independent rounding.

3. Residential/Single-family Projects Data and Economic Impacts

Table A-4 Colorado County Energy Programs - Residential/Single-family Projects Data

Measure	Total Project Cost/Investment	Colorado Project Cost/Investment	Percent of Total in Colorado	Total Rebates	Estimated Annual Utility Bill Savings
Insulation	\$6,793,291	\$6,408,326	94.3%	\$2,087,082	\$890,282
HVAC	\$6,672,790	\$6,672,790	100.0%	\$704,261	\$144,309
Doors and Windows	\$2,911,462	\$2,911,462	100.0%	\$336,269	\$117,207
Solar Electric	\$1,013,956	\$1,013,956	100.0%	\$119,101	\$47,801
Appliances and other DIY	\$702,981	\$702,981	100.0%	\$115,605	\$40,182
Lighting	\$160,237	\$160,237	100.0%	\$26,127	\$42,572
Solar Hot Water	\$128,641	\$128,641	100.0%	\$18,715	\$1,301
Assessments	\$6,453	\$6,453	100.0%	\$49,419	\$3,384
Quick Installs	\$175	\$175	100.0%	na	\$428,590
Total	\$18,389,986	\$18,005,020	97.9%	\$3,456,579	\$1,715,628

Notes:

All dollar values are 2012 dollars.

Colorado Project Cost/Investment refers to the project expenditures spent within Colorado.

Totals may not add up due to independent rounding.

**Table A-5 Colorado County Energy Programs – Residential/Single-family
Projects Economic Impacts**

Upgrade/Installation Phase

Measure	Jobs	Earnings	Output	Sales Tax
Insulation	78	\$6,023,921	\$10,517,675	\$46,126
HVAC	53	\$4,452,076	\$9,912,949	\$117,163
Doors and Windows	30	\$1,879,298	\$4,386,343	\$45,709
Solar Electric	9	\$489,772	\$1,414,266	\$0
Appliances and other DIY	5	\$217,864	\$922,487	\$19,812
Lighting	2	\$103,430	\$241,409	\$2,516
Solar Hot Water	1	\$74,823	\$185,698	\$0
Assessments	0	\$5,016	\$11,505	\$0
Quick Installs	na	na	na	na
Total	178	\$13,246,201	\$27,592,332	\$231,325

Notes:

All dollar values are 2012 dollars.

Impacts are based on analysis of projects completed during Nov. 2010 and May 2013, and include work done by local (in County) contractors and purchases from local suppliers (retail and wholesale). Jobs are full-time equivalent (FTE) for 1 year.

Earnings are wages, salaries and benefits. Output is economic activity (production of goods and services). Upgrade/Installation Phase impacts are short term (i.e., they are not ongoing). Sales tax includes state and county/local taxes. Totals may not add up due to independent rounding.

**Table A-6 Colorado County Energy Programs – Residential/Single-family
Projects Economic Impacts**

Annual Utility Bill Saving - Ongoing

Measure	Jobs	Earnings	Output
Insulation	4	\$105,697	\$130,154
Quick Installs	2	\$50,883	\$62,657
HVAC	1	\$17,133	\$21,097
Doors and Windows	1	\$13,915	\$17,135
Solar Electric	0	\$5,675	\$6,988
Lighting	0	\$5,054	\$6,224
Appliances and other DIY	0	\$4,771	\$5,874
Assessments	0	\$402	\$495
Solar Hot Water	0	\$154	\$190
Total	7	\$203,684	\$250,814

Notes:

All dollar values are 2012 dollars.

Impacts are based on analysis of estimated utility bill savings for projects completed during Nov. 2010 and May 2013.

Jobs are full-time equivalent (FTE) for 1 year. Earnings are wages, salaries and benefits. Output is economic activity (production of goods and services). Totals may not add up due to independent rounding.

4. Commercial/Multi-family Projects Data and Economic Impacts

Table A-7 Colorado County Energy Programs – Commercial/Multi-family Projects Data

Measure	Total Project Cost/Investment	Colorado Project Cost/Investment	Percent of Total in Colorado	Total Rebates	Estimated Annual Utility Bill Savings
Lighting	\$9,213,652	\$9,210,343	99.9%	\$3,145,541	\$3,070,593
HVAC	\$4,411,208	\$4,411,208	100.0%	\$953,908	\$316,656
Insulation	\$736,676	\$736,676	100.0%	\$135,482	\$78,189
Windows	\$530,531	\$530,531	100.0%	\$97,781	\$53,051
Solar Electric	\$380,980	\$380,980	100.0%	\$11,440	\$4,707
Solar Hot Water	\$146,236	\$146,236	100.0%	\$43,194	\$1,989
Appliances	\$100,129	\$100,129	100.0%	\$15,218	\$19,579
Office Equipment	\$10,634	\$10,634	100.0%	\$3,051	\$5,165
Quick Installs	na	na	na	na	\$180,037
Total	\$15,530,047	\$15,526,738	100.0%	\$4,405,614	\$3,729,967

Notes:

All dollar values are 2012 dollars.

Colorado Project Cost/Investment refers to the project expenditures spent within Colorado.

Totals may not add up due to independent rounding.

Table A-8 Colorado County Energy Programs – Commercial Projects Economic Impacts

Upgrade/Installation Phase

Measure	Jobs	Earnings	Output	Sales Tax
Lighting	87	\$4,947,301	\$14,192,518	\$131,679
HVAC	36	\$2,103,648	\$6,529,476	\$78,895
Insulation	9	\$473,355	\$1,218,944	\$5,302
Doors and Windows	5	\$264,650	\$801,274	\$8,329
Solar Electric	4	\$163,994	\$551,555	\$0
Solar Hot Water	1	\$62,922	\$210,448	\$0
Appliances and other DIY	0	\$30,435	\$130,760	\$2,822
Office Equipment	0	\$3,232	\$13,887	\$300
Quick Installs	na	na	na	na
Total	142	\$8,049,537	\$23,648,862	\$227,328

Notes:

All dollar values are 2012 dollars. Impacts are based on analysis of projects completed during Nov. 2010 and May 2013, and include work done by Colorado (in-state) contractors and purchases from in-state suppliers (retail and wholesale). Jobs are full-time equivalent (FTE) for 1 year. Earnings are wages, salaries and benefits. Output is economic activity (production of goods and services).

Upgrade/Installation Phase impacts are short term (i.e., they are not ongoing). Sales tax includes state and county/local taxes. Totals may not add up due to independent rounding.

Table A-9 Colorado County Energy Programs– Commercial Projects Economic Impacts

Annual Utility Bill Saving - Ongoing

Measure	Jobs	Earnings	Output
Lighting	13	\$364,549	\$448,901
HVAC	1	\$37,594	\$46,293
Quick Installs	1	\$21,375	\$26,320
Insulation	0	\$9,283	\$11,431
Doors and Windows	0	\$6,298	\$7,756
Appliances and other DIY	0	\$2,324	\$2,862
Office Equipment	0	\$613	\$755
Solar Electric	0	\$559	\$688
Solar Hot Water	0	\$236	\$291
Assessments	0	\$0	\$0
Total	16	\$442,832	\$545,297

Notes:

All dollar values are 2012 dollars.

Impacts are based on analysis of estimated utility bill savings for projects completed during Nov. 2010 and May 2013.

Jobs are full-time equivalent (FTE) for 1 year. Earnings are wages, salaries and benefits. Output is economic activity (production of goods and services). Totals may not add up due to independent rounding.

5. All Projects Metrics Summary

Table A-10 Colorado County Energy Programs – All Projects Metrics Summary

Upgrade/Installation Phase

Measure	Jobs/\$Million Rebate	\$Earnings/\$Rebate	\$Output/\$Rebate	Total \$Investment/\$Rebate	\$Sales Tax/\$Rebate
Solar Electric	92.2	\$5.01	\$15.06	\$10.69	\$0.05
Doors and Windows	79.4	\$4.94	\$11.95	\$7.93	\$0.15
HVAC	54.0	\$3.95	\$9.92	\$6.68	\$0.15
Appliances and other DIY	42.5	\$1.90	\$8.05	\$6.14	\$0.20
Insulation	39.2	\$2.92	\$5.28	\$3.39	\$0.04
Solar Hot Water	36.1	\$2.22	\$6.40	\$4.44	\$0.03
Lighting	28.0	\$1.59	\$4.55	\$2.96	\$0.06
Office Equipment	15.5	\$1.06	\$4.55	\$3.49	\$0.10
Assessments	1.9	\$0.10	\$0.23	\$0.13	\$0.00
Quick Installs	na	na	na	na	na
Average	40.7	\$2.71	\$6.52	\$4.31	\$0.08

Notes:

All dollar values are 2012 dollars.

Metrics are based on residential/single-family and commercial/multi-family project data and economic impacts. They do not necessarily imply a direct cause and effect, but rather a correlation based on the results of the impact analysis. Metric indicates the relationship between the item (jobs, earnings, etc.) and dollars of rebates provided. For example, for HVAC, Jobs/\$Million rebates indicates that each \$1 million of rebates supports \$4.0 jobs, based on the current Colorado County Energy programs economic impact analysis. Similarly, for each dollar of rebates provided for HVAC, \$6.68 of total investment (project spending) occurred. Totals may not add up due to independent rounding.

Table A-11 Colorado County Energy Programs - All Projects Metrics Summary

Upgrade/Installation Phase

Measure	Rebate \$ Spent/Job	Rebate \$ Spent/\$Earnings	Rebate \$ Spent/\$Output	Rebate \$ Spent/\$Investment
Assessments	\$523,123	\$9.85	\$4.30	\$7.66
Office Equipment	\$64,452	\$0.94	\$0.22	\$0.29
Lighting	\$35,689	\$0.63	\$0.22	\$0.34
Solar Hot Water	\$27,711	\$0.45	\$0.16	\$0.23
Insulation	\$25,538	\$0.34	\$0.19	\$0.30
Appliances and other DIY	\$23,527	\$0.53	\$0.12	\$0.16
HVAC	\$18,531	\$0.25	\$0.10	\$0.15
Doors and Windows	\$12,601	\$0.20	\$0.08	\$0.13
Solar Electric	\$10,849	\$0.20	\$0.07	\$0.09
Quick Installs	na	na	na	na
Average	\$24,585	\$0.37	\$0.15	\$0.23

Notes:

All dollar values are 2012 dollars.

Metrics are based on residential/single-family and commercial/multi-family project data and economic impacts. They do not necessarily imply a direct cause and effect, but rather a correlation based on the results of the impact analysis. Metric indicates the relationship between each rebate dollar provided and the item (jobs, earnings, etc.) supported. For example, for Lighting, Rebate\$ Spent/Job indicates that \$35,689 of rebates was provided for each job supported. Similarly, \$0.34 of rebates was provided for each dollar of investment (project spending). Totals may not add up due to independent rounding.

Table A-12 Colorado County Energy Programs – All Projects Metrics Summary

Annual Utility Bill Saving - Ongoing

Measure	Jobs/\$Million Rebate	\$Earnings/\$Rebate	\$Output/\$Rebate	\$Annual Utility Bill Savings/\$Rebate
Office Equipment	7.3	\$0.20	\$0.25	\$1.69
Lighting	4.2	\$0.12	\$0.14	\$0.98
Appliances and other DIY	2.0	\$0.05	\$0.07	\$0.46
Insulation	1.9	\$0.05	\$0.06	\$0.44
Doors and Windows	1.7	\$0.05	\$0.06	\$0.39
Solar Electric	1.7	\$0.05	\$0.06	\$0.40
HVAC	1.2	\$0.03	\$0.04	\$0.28
Assessments	0.3	\$0.01	\$0.01	\$0.07
Solar Hot Water	0.2	\$0.01	\$0.01	\$0.05
Quick Installs	na	na	na	na
Average	3.0	\$0.08	\$0.10	\$0.69

Notes:

All dollar values are 2012 dollars.

Metrics are based on residential/single-family and commercial/multi-family project data and economic impacts. They do not necessarily imply a direct cause and effect, but rather a correlation based on the results of the impact analysis. Metric indicates the relationship between the item (jobs, earnings, etc.) and dollars of rebates provided. For example, for Solar Electric, Jobs/\$Million rebates indicates that each \$1 million of rebates supports 1.7 ongoing jobs, based on the current Colorado County Energy programs economic impact analysis of estimated utility bill savings. Similarly, for each dollar of rebates provided for Solar Electric, \$0.40 of annual utility bill savings occurred. Totals may not add up due to independent rounding.

Table A-13 Colorado County Energy Programs – All Projects Metrics Summary**Rebate Payback - Ratio of Utility Bill Savings to Rebate Cost**

Measure	5 Years	10 Years	20 Years
Office Equipment	8.5	16.9	33.9
Lighting	4.9	9.8	19.6
Appliances and other DIY	2.3	4.6	9.1
Insulation	2.2	4.4	8.7
Solar Electric	2.0	4.0	8.0
Doors and Windows	2.0	3.9	7.8
HVAC	1.4	2.8	5.6
Assessments	0.3	0.7	1.4
Solar Hot Water	0.3	0.5	1.1
Quick Installs	na	na	na
Average	3.5	6.9	13.9

Notes:

All dollar values are 2012 dollars.

A value of 1.0 indicates combined annual utility bill savings equal the initial rebate amount.

Metrics are based on residential/single-family and commercial/multi-family project data and the sum total of all annual estimated utility bill savings for the number of years noted. Totals may not add up due to independent rounding.

6. Residential/Single-family Projects Metrics

**Table A-14 Colorado County Energy Programs – Residential/Single-family
Projects Metrics Summary**

Upgrade/Installation Phase

Measure	Jobs/\$Million Rebate	\$Earnings/\$Rebate	\$Output/\$Rebate	\$Investment/\$Rebate	Total \$Investment/\$Rebate	\$Sales Tax/\$Rebate
HVAC	75.9	\$6.32	\$14.08		\$9.47	\$0.17
Lighting	62.7	\$3.96	\$9.24		\$6.13	\$0.10
Appliances and other DIY	44.2	\$1.88	\$7.98		\$6.08	\$0.17
Doors and Windows	88.4	\$5.59	\$13.04		\$8.66	\$0.14
Solar Electric	71.5	\$4.11	\$11.87		\$8.51	\$0.00
Solar Hot Water	62.5	\$4.00	\$9.92		\$6.87	\$0.00
Insulation	37.5	\$2.89	\$5.04		\$3.25	\$0.02
Assessments	1.9	\$0.10	\$0.23		\$0.13	\$0.00
Quick Installs	na	na	na		na	na
Average	51.5	\$3.83	\$7.98		\$5.32	\$0.07

Notes:

All dollar values are 2012 dollars.

Metrics are based on residential/single-family project data and economic impacts. They do not necessarily imply a direct cause and effect, but rather a correlation based on the results of the impact analysis. Metric indicates the relationship between the Item (jobs, earnings, etc.) and dollars of rebates provided. For example, for HVAC, Jobs/\$Million rebates indicates that each \$1 million of rebates supports 75.9 jobs, based on the current Colorado County Energy programs economic impact analysis. Similarly, for each dollar of rebates provided for HVAC, \$9.47 of total investment (project spending) occurred. Totals may not add up due to independent rounding.

**Table A-15 Colorado County Energy Programs – Residential/Single-family
Projects Metrics Summary**

Upgrade/Installation Phase

Measure	Rebate \$ Spent/Job	Rebate \$ Spent/\$Earnings	Rebate \$ Spent/\$Output	Rebate \$ Spent/\$Investment
Assessments	\$523,123	\$9.85	\$4.30	\$7.66
Insulation	\$26,678	\$0.35	\$0.20	\$0.31
Appliances and other DIY	\$22,602	\$0.53	\$0.13	\$0.16
Solar Hot Water	\$16,006	\$0.25	\$0.10	\$0.15
Lighting	\$15,961	\$0.25	\$0.11	\$0.16
Solar Electric	\$13,983	\$0.24	\$0.08	\$0.12
HVAC	\$13,182	\$0.16	\$0.07	\$0.11
Doors and Windows	\$11,306	\$0.18	\$0.08	\$0.12
Quick Installs	na	na	na	na
Average	\$19,426	\$0.26	\$0.13	\$0.19

Notes:

All dollar values are 2012 dollars.

Metrics are based on residential/single-family project data and economic impacts. They do not necessarily imply a direct cause and effect, but rather a correlation based on the results of the impact analysis. Metric indicates the relationship between each rebate dollar spent and the item (jobs, earnings, etc.) supported. For example, for Lighting, Rebate\$ Spent/Job indicates \$15,961 of rebates was provided for each job supported. Similarly, \$0.16 of rebates was provided for each dollar of investment (project spending). Totals may not add up due to independent rounding.

**Table A-16 Colorado County Energy Programs – Residential/Single-family
Projects Metrics Summary**

Annual Utility Bill Saving - Ongoing

Measure	Jobs/\$Million Rebate	\$Earnings/\$Rebate	\$Output/\$Rebate	\$Annual Utility Bill Savings/\$Rebate
Lighting	7.0	\$0.19	\$0.24	\$1.63
Insulation	1.8	\$0.05	\$0.06	\$0.43
Solar Electric	1.7	\$0.05	\$0.06	\$0.40
Appliances and other DIY	1.5	\$0.04	\$0.05	\$0.35
Doors and Windows	1.5	\$0.04	\$0.05	\$0.35
HVAC	0.9	\$0.02	\$0.03	\$0.20
Solar Hot Water	0.3	\$0.01	\$0.01	\$0.07
Assessments	0.3	\$0.01	\$0.01	\$0.07
Quick Installs	na	na	na	na
Average	2.1	\$0.06	\$0.07	\$0.50

Notes:

All dollar values are 2012 dollars.

Metrics are based on residential/single-family project data and economic impacts. They do not necessarily imply a direct cause and effect, but rather a correlation based on the results of the impact analysis. Metric indicates the relationship between the item (jobs, earnings, etc.) and dollars of rebates provided. For example, for insulation, Jobs/\$Million rebates indicates that each \$1 million of rebates supports 1.8 jobs, based on the current Colorado County Energy programs economic impact analysis of estimated utility bill savings. Similarly, for each dollar of rebates provided for insulation, \$0.43 of annual utility bill savings occurred. Totals may not add up due to independent rounding.

**Table A-17 Colorado County Energy Programs – Residential/Single-family
Projects Metrics Summary**

Rebate Payback - Ratio of Utility Bill Savings to Rebate Cost

Measure	5 Years	10 Years	20 Years
HVAC	1.0	2.0	4.1
Lighting	8.1	16.3	32.6
Appliances and other DIY	1.7	3.5	7.0
Doors and Windows	1.7	3.5	7.0
Solar Electric	2.0	4.0	8.0
Solar Hot Water	0.3	0.7	1.4
Insulation	2.1	4.3	8.5
Assessments	0.3	0.7	1.4
Quick Installs	na	na	na
Average	2.5	5.0	9.9

Notes:

All dollar values are 2012 dollars.

A value of 1.0 indicates combined annual utility bill savings equal the initial rebate amount. Metrics are based on residential/single-family project data and the sum total of all annual estimated utility bill savings for the number of years noted. Totals may not add up due to independent rounding.

7. Commercial/Multi-family Projects Metrics

**Table A-18 Colorado County Energy Programs – Commercial/Multi-family
Projects Metrics Summary**

Upgrade/Installation Phase

Measure	Jobs/\$Million Rebate	\$Earnings/\$Rebate	\$Output/\$Rebate	Total \$Investment/\$Rebate	\$Sales Tax/\$Rebate
Solar Electric	307.3	\$14.34	\$48.21	\$33.30	\$0.00
Insulation	64.9	\$3.49	\$9.00	\$5.44	\$0.04
Doors and Windows	48.1	\$2.71	\$8.19	\$5.43	\$0.09
HVAC	37.8	\$2.21	\$6.84	\$4.62	\$0.08
Appliances and other DIY	29.3	\$2.00	\$8.59	\$6.58	\$0.19
Lighting	27.7	\$1.57	\$4.51	\$2.93	\$0.04
Solar Hot Water	24.7	\$1.46	\$4.87	\$3.39	\$0.00
Office Equipment	15.5	\$1.06	\$4.55	\$3.49	\$0.10
Quick Installs	na	na	na	na	na
Average	32.2	\$1.83	\$5.37	\$3.53	\$0.05

Notes:

All dollar values are 2012 dollars.

Metrics are based on commercial/multi-family project data and economic impacts. They do not necessarily imply a direct cause and effect, but rather a correlation based on the results of the impact analysis. This metric indicates the relationship between the item (jobs, earnings, etc.) and dollars of rebates provided. For example, for Lighting, Jobs/\$Million rebates indicates that each \$1 million of rebates supports 27.7 jobs, based on the current Colorado County Energy programs economic impact analysis. Similarly, for each dollar of rebates provided for Lighting, \$2.93 of total investment (project spending) occurred. Totals may not add up due to independent rounding.

**Table A-19 Colorado County Energy Programs – Commercial/Multi-family
Projects Metrics Summary**

Upgrade/Installation Phase

Measure	Rebate \$ Spent/Job	Rebate \$ Spent/\$Earnings	Rebate \$ Spent/\$Output	Rebate \$ Spent/\$Investment
Office Equipment	\$64,452	\$0.94	\$0.22	\$0.29
Solar Hot Water	\$40,563	\$0.69	\$0.21	\$0.30
Lighting	\$36,059	\$0.64	\$0.22	\$0.34
Appliances and other DIY	\$34,144	\$0.50	\$0.12	\$0.15
HVAC	\$26,456	\$0.45	\$0.15	\$0.22
Doors and Windows	\$20,794	\$0.37	\$0.12	\$0.18
Insulation	\$15,398	\$0.29	\$0.11	\$0.18
Solar Electric	\$3,254	\$0.07	\$0.02	\$0.03
Quick Installs	na	na	na	na
Average	\$31,055	\$0.55	\$0.19	\$0.28

Notes:

All dollar values are 2012 dollars. They do not necessarily imply a direct cause and effect, but rather a correlation based on the results of the impact analysis. Metrics are based on commercial/multi-family project data and economic impacts. This metric indicates the relationship between each rebate dollar spent and the item (jobs, earnings, etc.) supported. For example, for HVAC, Rebate\$ Spent/Job indicates \$26,456 of rebates was provided for each job supported. Similarly, \$0.18 of rebates was provided for each dollar of investment (project spending). Totals may not add up due to independent rounding.

**Table A-20 Colorado County Energy Programs – Commercial/Multi-family
Projects Metrics Summary**

Annual Utility Bill Saving - Ongoing

Measure	Jobs/\$Million Rebate	\$Earnings/\$Rebate	\$Output/\$Rebate	\$Annual Utility Bill Savings/\$Rebate
Office Equipment	7.3	\$0.20	\$0.25	\$1.69
Appliances and other DIY	5.5	\$0.15	\$0.19	\$1.29
Lighting	4.2	\$0.12	\$0.14	\$0.98
Insulation	2.5	\$0.07	\$0.08	\$0.58
Doors and Windows	2.3	\$0.06	\$0.08	\$0.54
Solar Electric	1.8	\$0.05	\$0.06	\$0.41
HVAC	1.4	\$0.04	\$0.05	\$0.33
Solar Hot Water	0.2	\$0.01	\$0.01	\$0.05
Quick Installs	na	na	na	na
Average	3.6	\$0.10	\$0.12	\$0.85

Notes:

All dollar values are 2012 dollars.

Metrics are based on commercial/multi-family project data and economic impacts. They do not necessarily imply a direct cause and effect, but rather a correlation based on the results of the impact analysis. This metric indicates the relationship between the item (jobs, earnings, etc.) and dollars of rebates provided. For example, for Lighting, Jobs/\$Million rebates indicates that each \$1 million of rebates supports 4.2 jobs, based on the current Colorado County Energy programs economic impact analysis of estimated utility bill savings. Similarly, for each dollar of rebates provided for Lighting, \$0.98 of annual utility bill savings occurred. Totals may not add up due to independent rounding.

**Table A-21 Colorado County Energy Programs – Commercial/Multi-family
Projects Metrics Summary**

Rebate Payback - Ratio of Utility Bill Savings to Rebate Cost

Measure	5 Years	10 Years	20 Years
Office Equipment	8.5	16.9	33.9
Appliances and other DIY	6.4	12.9	25.7
Lighting	4.9	9.8	19.5
Insulation	2.9	5.8	11.5
Doors and Windows	2.7	5.4	10.9
Solar Electric	2.1	4.1	8.2
HVAC	1.7	3.3	6.6
Solar Hot Water	0.2	0.5	0.9
Quick Installs	na	na	na
Average	4.2	8.5	16.9

Notes:

All dollar values are 2012 dollars.

A value of 1.0 indicates combined annual utility bill savings equal the initial rebate amount. Metrics are based on commercial/multi-family project data and the sum total of all annual estimated utility bill savings for the number of years noted. Totals may not add up due to independent rounding.