

The *Other* Side of the Street

How Thousands of Coloradans Are Missing
Out on Energy Cost Savings

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Executive Summary

Energy efficiency measures – from lighting systems to better insulation – reduce electricity use and save families and businesses money in the face of rising electricity costs. Moreover, reduced demand for energy can reduce energy prices, benefiting everyone in the state. Even simple efficiency measures can have a big impact—a family swapping their incandescent light bulbs for CFLs can save \$240 per year.¹

However, thousands of Coloradans miss out on energy cost saving programs simply because of the side of the street that they live on. To help homeowners and businesses with their bills, all electric utilities in Colorado should offer comprehensive energy efficiency programs by setting a target to reduce consumer energy demand by 10% by 2020.

Energy costs are rising

Energy costs have increased 61% over the last decade in Colorado. Without action, this trend will continue especially as Colorado's population grows and utilities build more costly, new power generation.

Improving efficiency can reduce energy bills for Colorado families

Energy efficiency can save Coloradans money up-front by investing in it, and it is the cheapest resource utilities can utilize—meaning all Coloradans will save money. Utility programs that promote consumer energy efficiency are very successful. For example, Xcel Energy will cut its consumer demand by 11.5% by 2020, saving its ratepayers \$250 million.

Not all Coloradans have access to energy efficiency programs

Despite the success utility energy efficiency programs have in saving consumer money, not all utilities in Colorado run these programs. This means Coloradans have very different access to important energy efficiency programs. In some cases, this means Coloradans on one side of a street can save hundreds while their neighbors on the other side are left in the dark.

All utilities should have a policy to reduce consumer demand

To save all Coloradans money, all Colorado utilities should have a target to reduce consumer energy demand 10% by 2020.

Energy Efficiency Can Protect Coloradans from Rising Costs

Electricity Prices are Rising

Coloradans are paying increasingly steep prices for electricity. Since 2000, average electricity prices in Colorado have increased 61%.² As a result, Colorado consumers who paid \$494 for electricity in 2000, paid \$793 for the same amount of electricity in 2010.³ Small and large businesses faced an increase in costs since 2000 of 71%.⁴

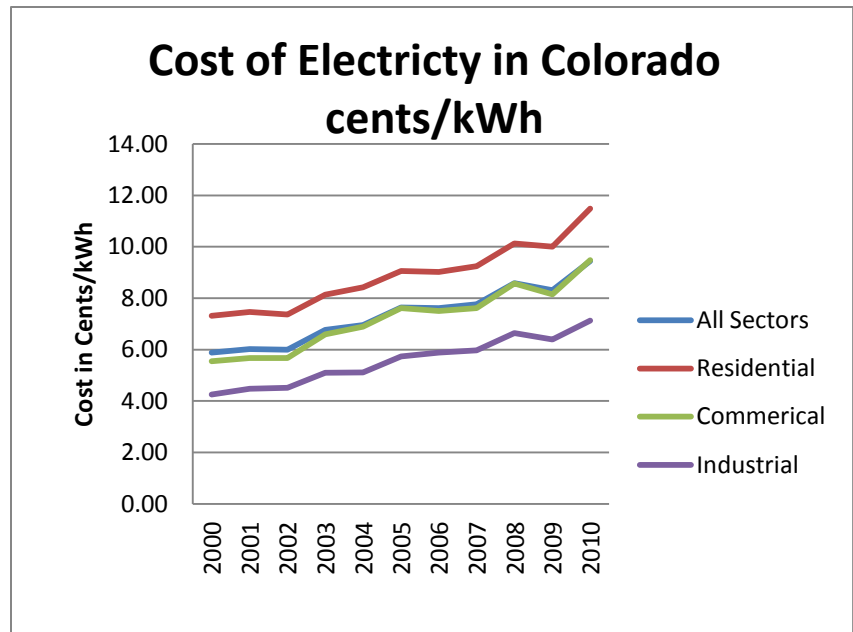
Without action, electricity prices will continue to sharply rise over the next decade as the state's growing population requires increased power generation. Assuming population growth in Colorado remains steady for the next decade, Colorado's population will grow another 17% by 2020, adding approximately 800,000 more people to the state, which will put pressure on utilities to increase energy capacity.⁵

Expanding Colorado's electricity capacity to meet this growing demand will be expensive. The upfront cost of building more power is expensive—based on a recent analysis from Colorado Springs Utilities, a new 150 MW coal fired power plant would cost \$490 million, a similarly sized wind project would cost \$442 million, and the same size large-scale solar installation would cost \$682 million.⁶ If Colorado's energy demand increased by 10%, we would need to build or purchase over 1000 MW of power, and building this capacity would cost \$2.9-\$4.5 billion.⁷

Fuel prices will also increase throughout the next decade. According to the Department of Energy, electricity prices will increase an average of 19% nationwide by 2035.⁸ Colorado may see an even larger increase as a greater percentage of our installed capacity comes from natural gas, which historically has steep price fluctuations. Recent legislation requires that Colorado transition 900 MW of coal to 994 MW of natural gas, which will increase Colorado's overall natural gas generation by 13% by the end of the decade.⁹

Energy Efficiency Saves Coloradans Money

Colorado is rich with opportunities to save energy-- Vast pools of potential energy savings exist within Colorado's homes, businesses and industrial facilities. For example, many light fixtures give off excess heat; air fans operate without the benefit of efficient motors; weaknesses in building insulation allow indoor heat to escape. By correcting these problems, we can effectively increase Colorado's energy resources.



The above chart demonstrates the increase in Colorado electricity prices between 2000 and 2010. (Based on U.S. Energy Information Administration data)

Even small changes can make a big difference. For example, switching to all CFLs would save a household up to 80 percent on lighting costs.¹⁰ Assuming a household had thirty light fixtures, this would mean a \$240 annual savings, and a savings of over \$2,000 over the lifetime of the bulbs.¹¹ Collectively, Americans saved \$1.5 billion on the energy bills by switching to CFLs in 2007 alone.¹²

It also saves everyone money because energy efficiency is the cheapest resource to invest in. A study of the Southwest indicated that energy efficiency costs utilities \$0.02 kWh (2000 dollars)¹³—this is far cheaper than current retail electricity rate of \$0.0831 kWh.¹⁴ Energy efficiency also quickly cuts costs for consumers. The American Council for an Energy-Efficient Economy estimates that a policy path that reduces U.S. natural gas demand by 4 percent in five years would slash wholesale natural gas prices by one quarter, saving the American economy \$100 billion in return for a \$30 billion government and private-sector investment.¹⁵

Energy Efficiency Benefits Colorado's Economy

Increased energy efficiency and economic growth go hand in hand. In the late 1970s in America, a mix of higher energy prices and government programs such as tighter appliance and automobile efficiency standards created conditions for both reduced energy consumption *and* robust economic growth. From 1979 to 1982, total energy use in the U.S. consistently declined, and energy consumption did not surpass its 1979 level again until 1988.¹⁶ Over that nine-year period of 1979 to 1988, the nation's inflation-adjusted gross domestic product (GDP) increased by 30 percent.¹⁷

The nationwide trend continues today. Over the past two decades, America has consistently used less energy to produce more economic wealth. In 1980, the U.S. used 15,000 BTU for every dollar in gross domestic product; by 2006, we were using only 8,750 BTU – a drop of more than one-third.¹⁸ However, the United States still remains a profligate user of energy compared to many of our peers in the industrialized world. America's economy remains 50 percent more energy-intensive than that of the United Kingdom and more than twice as energy-intensive as that of Japan.¹⁹ On a per-capita basis, the United States uses more energy than the vast majority of industrialized countries, surpassed only by Norway, Luxembourg, Iceland and Canada.²⁰ By improving energy efficiency, we could achieve more economic benefits, including cheaper energy, more jobs, and improved economic stability.

Jobs and Economic Growth

In addition to saving money on energy, investments in efficiency will generate jobs for Colorado workers and economic development for Colorado communities. The reason is simple: energy efficiency gives people extra money to spend, which can stimulate Colorado's economy and create jobs. Investments in efficiency also replace expenditures for fuel (a significant amount of which is imported from out of state) with expenditures for labor and materials produced at home.

Energy efficiency investments also create jobs directly. Workers are necessary to improve insulation and sealing of homes; skilled architects and builders are required to perform energy efficient new construction and remodeling; and trained manufacturing workers are needed to build energy-efficient appliances.

One 2005 study estimates that a national clean energy strategy, coupled with a shifting of federal energy subsidies to renewables and efficiency, could create as many as 154,000 new jobs in the United States and increase net wages by \$6.8 billion.²¹

Improved Economic Stability

Energy efficiency would reduce Colorado’s exposure to price spikes, supply disruptions and other repercussions of our reliance on fossil fuels. Rate increases, such as those that have affected Colorado’s electricity consumers in the past few years, would have smaller consequences in a highly efficient system. Energy efficiency could also insulate Colorado from the impacts of unpredictable events, like the damage Hurricane Katrina caused to natural gas drilling infrastructure in the Gulf of Mexico in 2005.

Other Benefits

Energy efficiency reduces many of the indirect costs imposed on society by energy production and consumption. Investments in energy efficiency, for example, reduce the need for additional transmission infrastructure for Colorado’s electric system, which are very expensive. Reductions in power plant pollution result in reduced public health costs for the treatment of asthma and other diseases that are triggered by air pollutants. And, energy efficiency can help reduce the cost of compliance with future programs aimed at reducing the state’s contribution to global warming.

Finally, energy efficiency measures often improve the quality of indoor environments or equipment design – improving home comfort and indoor air quality; reducing waste and increasing employee productivity; and reducing maintenance expenses while increasing property values.

Energy Efficiency Programs Overcome Obstacles to Saving Energy

A variety of obstacles tend to limit the ability of Colorado families and businesses to tap into all available opportunities to use energy efficiency measures and to save money. High up-front costs are a major factor. Significant energy efficiency upgrades can be expensive, especially if they substantially reduce energy use. For example, re-insulating a home can have an upfront cost of \$900-\$1,440.²² The average annual savings from this investment is \$400 so the investment will be paid off in 3-5 years—meaning significant benefits for an individual or business.²³ However, the initial upfront cost limits the number of Colorado residents and businesses that choose to re-insulate their homes or workplaces.

Energy efficiency programs are crucial to overcome this barrier. The best energy efficiency programs systematically drive the penetration of efficient technologies and practices into the marketplace where they can make the greatest difference. These programs reduce electricity and natural gas consumption through a variety of strategies, including:

- Educating consumers about energy efficiency;
- Providing discounts or incentives for the purchase of highly efficient products and equipment;
- Offering energy audits and weatherization assistance to homeowners;
- Consulting with businesses and industry on energy efficient practices; and
- Improving the efficiency of design and materials in new schools and commercial buildings.

In Colorado, some utilities have robust energy efficiency programs for residents and businesses that are successful, and their customers have reaped the benefits in two ways. First, customers immediately save money by taking advantage of the rebates and discounts. For example, one energy efficiency program offered by Xcel Energy—Colorado’s largest electric and gas utility - will cover 20% of the costs of a new, efficient insulation.²⁴ Depending on the insulation, this 20% rebate is worth up to \$350, and the insulation will save consumers up to \$400 annually as it lowers their energy use by 10% or

more.²⁵ Second, as more utility customers take advantage of energy efficiency programs and reduce their energy use, all of the utility customers benefit because overall demand is lowered, reducing the community's potential need for costly new power generation or increased fuel use.

A great model illustrating the impact of strong energy efficiency programs comes from Xcel Energy. Xcel has an energy efficiency target of 11.5% reduction by 2020.²⁶ In 2012-2013 alone, Xcel projects its energy efficiency program will result in incrementally cutting 186 MW of energy use²⁷—this is roughly the capacity equivalent of the coal fired Arapahoe Power Plant in the south Denver Metro.²⁸ If this power plant were built today it would cost over \$600 million.²⁹

Energy Efficiency Makes Sense, Why Aren't Utilities Doing More of It?

There is an old joke in which two economists are walking down the street when one of them spies a \$20 bill lying on the ground. He says to his friend, "Hey, there's a \$20 bill on the ground!" To which the other economist replies, "That's impossible. If there were a \$20 bill on the ground, someone would have already picked it up."

When it comes to energy efficiency in across Colorado, there are \$20 bills lying all around us. Yet most of these opportunities currently go unrealized. Why?

Here are 7 reasons why economically beneficial energy efficiency investments aren't made as often as they should be:

- 1. No utility incentives** – Many of the utilities with poor energy efficiency programs have no financial incentive to reduce energy use. They are also mainly unregulated and do not have to abide by Public Utility Commission regulations. Finally, bureaucratic inertia within the utility favors the status quo—not implementing strong energy efficiency programs.
- 2. Split incentives** – Often, the person who is the most logical candidate to install energy efficiency improvements is least likely to benefit from them. Consider landlords, who maintain buildings but whose tenants generally pay the energy bills. Or builders, who (in the absence of good consumer benchmarks (see #4), face incentives to minimize construction costs rather than make buildings as energy efficient as possible.
- 3. "Sticker shock"** – Consumers often value lower sticker prices for products, appliances and homes, even when they can save money in the long run by purchasing more energy-efficient models. This is particularly true when it is hard to differentiate between the efficiency of two different products (#4) or when it is hard to predict future savings (#5).
- 4. The "invisibility problem"** – Even consumers who want to buy more energy efficient products sometimes find it difficult to tell which products are truly energy savers. While the Energy Star® program helps consumers make good choices for appliances and new homes, many products – including existing homes – are not "labeled" for their energy efficiency performance. In addition, consumers might not even be aware of new technologies that can tap renewable energy resources.
- 5. The "crystal ball" problem** – Energy prices are notoriously volatile, making it hard for consumers and businesses to make educated decisions about future investments. Investing in a fuel-efficient vehicle, for example, appears a lot more attractive when gasoline prices are at \$3 per gallon than when they are \$1.50 a gallon. Yet, there is no guarantee that gasoline prices will remain high over any given period of time, thereby justifying the investment.
- 6. The "small potatoes" problem** – For some businesses, energy costs are such a small part of their overall costs (compared, for example, to labor) that they attract little managerial attention. There may simply be no one whose job it is to look for ways to save energy cost-effectively – even when those opportunities exist. In addition, some businesses may lack access to capital to finance energy efficiency improvements.

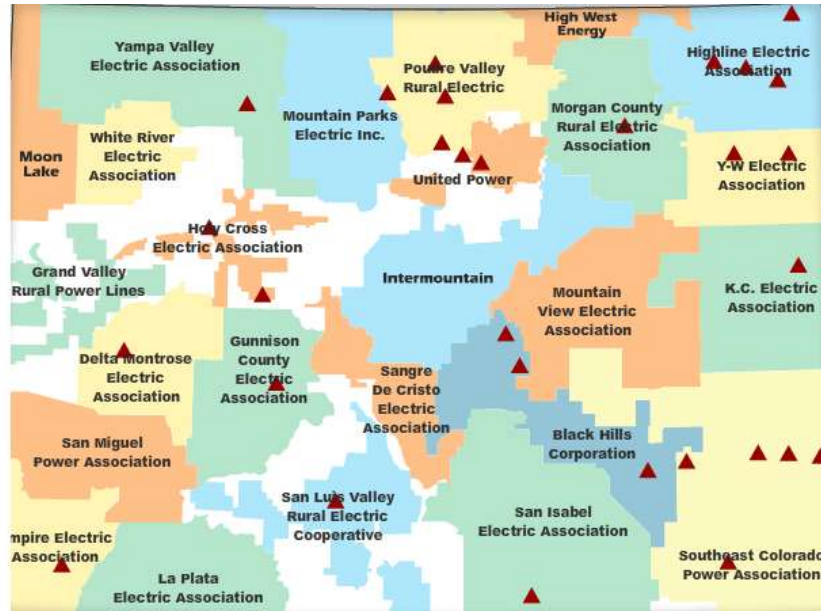
7. The “pain in the neck” factor – For some individuals, time is a more precious commodity than money. If installing a solar water heating system or making energy efficiency improvements is too hard or too time-consuming, only the most dedicated consumers will do it.

Not All Coloradans Have Equal Access to Utility Energy Efficiency Programs

The reasons mentioned above highlight why many Colorado utilities do not have adequate consumer energy efficiency programs, even though these programs are incredibly successful.

Xcel and Black Hills Energy, Colorado’s two state-regulated, investor-owned utilities, have state-required targets to reduce consumer demand, and therefore offer robust consumer energy efficiency programs. However, they only supply electricity to 62.8% of the state.³⁰ The other 37.2% of the state is supplied by a patchwork of municipal utilities and rural electric cooperatives. These utilities are unregulated and have no state-required energy efficiency goals.³¹ Some of their programs are good, but most are quite poor compared to Xcel and Black Hills.

Unlike mowing services, security systems or roofers, residents and businesses cannot shop around for a utility company without selling their house or business and moving. They are stuck with utilities that offer insufficient energy programs. In many parts of the state, neighbors on one side of the street have access to large cost savings from their utility and neighbors on the other side of the street are left in the dark. To ensure all Coloradans have access to adequate consumer energy efficiency programs, all utilities should have a goal to reduce energy demand be 10% by 2020.



Colorado Electric Utilities—The white area is Xcel Energy’s territory, and the red triangles represent municipals. (Courtesy of the Governor’s Energy Office)

The Other Sides of the Street

The following section offers comparisons between various utility consumer energy efficiency programs. There are many ways to compare energy efficiency areas programs, but this section outlines the various programs that consumers can access through their utilities. The report compares the following utility programs:

Energy Audits—Utility programs that offer free or low cost audits to consumers to help them identify areas in their home or building that could be more efficient and cut energy costs.

Lighting Rebates—These programs range from rebates on residential CFL light bulbs to rebates for businesses to convert all of their lighting to LEDs.

Heating and Cooling Rebates—These programs offer consumers rebates on heaters and air conditioning units that achieve a certain Seasonal Energy Efficiency Rating (SEER).

Water Heating Rebates—These are often applied to tankless and electric water heaters that are more efficient than gas heated units.

Appliance Rebates—These rebates are offered for new ENERGY STAR rated home appliances such as refrigerators, washers and dryers, and dishwashers.

Programmable Thermostats or Other Energy Monitoring Systems—These rebates are applied to systems that ensure the temperature of the house is not too hot or cold depending on the season or to systems that coordinate home energy use to ensure it is efficient.

Insulation and Other Weatherization Programs—These rebates apply to better insulation to cut heating costs or to other weatherization measures like sealing ducts and leaks.

Holistic Energy Efficient Renovations—Some programs offer rebates or substantial financing options to holistically renovate homes or businesses as opposed to just making certain feature more efficient. This often entails energy efficiency modeling to coordinate how to make the entire building more efficient.

New Energy Efficient Construction—These are often rebates builders can use to build ENERGY STAR qualified buildings or building with a certain Home Energy Rating Score (HERS).

145th Avenue, Thornton, CO

In Thornton, CO Xcel’s service territory meets United Power Rural Electric Cooperative along 145th Avenue. Residents on the south side of 145th live in Xcel’s service territory and benefit from its robust energy efficiency program. Residents to the north live in United Power’s territory and have access to some energy efficiency programs, but they are far more limited in scope.

Location Map³⁵



The following chart compares the programs run by Xcel and United Power. The chart compares common types of energy efficiency programs.

Comparison of Xcel and United Power’s Energy Efficiency Programs									
Utility	Audits	Lighting Rebates	Heating and Cooling Appliance Rebates	Water Heating Rebates	Appliance Rebates	Programmable Thermostats/Energy Monitoring System Rebates	Insulation and Other Weatherization Rebates	Holistic Efficiency Renovation Programs	Efficient New Construction Programs
Xcel	X	X	X	X	X	X	X	X	X
UP	X	X	X	X	X				

North 8th Street, Carbondale, CO

In Carbondale Colorado, Xcel's service territory meets Holy Cross Energy's on North 8th Street. Residents who live to the south end of the street have access to Xcel's robust energy efficiency program. Residents to the north have access to Holy Cross's program, which is good but more limited than Xcel's.

Location Map³⁷



The following chart compares the programs run by Xcel and Holy Cross Energy. The chart compares common types of energy efficiency programs.

Comparison of Xcel and Holy Cross Energy's Energy Efficiency Programs									
Utility	Audits	Lighting Rebates	Heating and Cooling Appliance Rebates	Water Heating Rebates	Appliance Rebates	Programmable Thermostats/Energy Monitoring System Rebates	Insulation and Other Weatherization Rebates	Holistic Efficiency Renovation Programs	Efficient New Construction Programs
Xcel	X	X	X	X	X	X	X	X	X
HCE	X	X		X	X	X	Proposed for 2012	Proposed for 2012	

West Horsetooth Road, Fort Collins, CO

In Fort Collins, CO Fort Collins Municipal Utility’s service territory meets Poudre Valley Rural Electric Association’s (REA) along West Horsetooth Road. Residents on the north side of the road have access to Fort Collins’ robust energy efficiency program, while residents to the south have more limited options from Poudre Valley REA.

Location Map³⁸



The following chart compares the programs run by Fort Collins and Poudre Valley REA. The chart compares common types of energy efficiency programs.

Comparison of Xcel and Grand Valley Power’s Energy Efficiency Programs									
Utility	Audits	Lighting Rebates	Heating and Cooling Appliance Rebates	Water Heating Rebates	Appliance Rebates	Programmable Thermostats/Energy Monitoring System Rebates	Insulation and Other Weatherization Rebates	Holistic Efficiency Renovation Programs	Efficient New Construction Programs
FC	X	X	X	X	X		X	X	
PREA	X	X		X	X				

Appendix 1—Colorado Utilities’ Consumer Energy Efficiency Programs

The following charts detail different consumer energy efficacy programs offered by the utilities highlighted in the report.

Xcel Energy

Xcel Energy is the largest electric and utility in Colorado.³⁹ It is an investor-owned, for-profit company meaning it is regulated by the state’s Public Utilities Commission (PUC). Xcel serves much of the Denver metro, certain mountain communities along I-70, the Grand Junction area, and parts of the San Luis Valley. Beginning in 2007, the Colorado legislature set state energy efficiency goals that applied to Xcel. Xcel originally was required to reduce demand by 10% by 2020. However, the company was outpacing the goals and in early 2011 the PUC increased the target to 11.5%.⁴⁰ These new standards are expected to save Xcel consumers \$250 million by 2020.⁴¹

Xcel Energy’s Energy Efficiency Program*		
Product	Product Requirements for Rebate	Rebate Level
Business ENERGY STAR Certified Computers	ENERGY STAR certified	\$5-\$20 depending on the ENERGY STAR Certification level
Businesses Efficient Air Conditioner and Cooling Units	ENERGY STAR certified	\$65/ton for specified energy efficiency levels
Businesses Energy Management Systems	Application for system must be approved by Xcel	\$600 per kW saved for software systems that holistically control and monitor a building’s energy use
Business Lighting Efficiency	Must be CFL/LED or meet other efficiency standards	\$1-\$275 for smaller fixtures \$25,000 for lighting redesign consulting \$400 for every kilowatt saved
Recomssioning Studies for Businesses	Application for project must be approved by Xcel	Up to \$25,000 to study building inefficiency concerning energy systems that can be inexpensively improved \$400 per kW saved from implementing the findings
New Commercial Construction	Application for project must be approved by Xcel	\$4,000-\$12,000 to match efficient design consulting projects depending on the building size
ENERGY STAR New Homes	ENERGY STAR certified	\$250-\$1,300 for builders depending on HERS attainment level for builders
Evaporative Cooling	Must have a minimum Industry Standard Rated Airflow of 2,500 cubic feet per minute or higher	\$250-\$1,000 depending on the system

High Efficiency Air Conditioners	Must meet certain Seasonal Energy Efficiency Ratio (SEER) standards	\$500-\$1,000 depending on the SEER rating level
Refrigerator Recycling Program	Program run by the utility	\$50 to remove an inefficient, second refrigerator
Water Heater	Must meet certain industry requirement specifications	\$25-\$450 depending on water heater efficiency
Insulation	Must meet thermal resistance (R-Value) standards	20% of the cost of the project up to \$300
Energy Savings Kit	Provided by Xcel	Free for qualified LEAP/LIHEAP customers, free CFLs and highlight efficient faucets and shower heads
Single Family Weatherization	Provided by Xcel	Free services for qualified LEAP/LIHEAP customers including attic and wall insulation and furnace replacement
Residential Energy Audit	Must be approved by Xcel	\$100-\$200 rebate depending on the audit type
Business Energy Analysis and Audit	Must be approved by Xcel	75% of the audit cost up to \$25,000

**This is Xcel's proposed 2012 plan, and this is not an all-inclusive list of their programs. Some programs are only available for businesses customers or residential customers. For an exact list of current rebate programs visit and for details on how to participate in the programs please visit*

[http://www.xcelenergy.com/Save Money & Energy/Find a Rebate](http://www.xcelenergy.com/Save_Money_&_Energy/Find_a_Rebate).

Intermountain Rural Electric Association

Intermountain Rural Electric Association is the 3rd largest utility in the state in terms of megawatt hours sold.⁴² It serves a customer base that encompasses the South Denver Metro, portions of the central foothills near I-70, and rural communities just east of Denver. IREA serves most of Douglas County, which experienced the largest population growth of any county in the state of 64% between 2000 and 2009.⁴³ IREA purchases its electricity from Xcel Energy and the Western Area Power Administration, although Xcel's energy efficiency goals do not have bearing on IREA.⁴⁴

Unlike Xcel, IREA is a rural electric association (REA) that is not for-profit and not regulated by the state. Consequently, the utility sets its own energy efficiency programs, and IREA's are lacking in consumer options and the scale of the overall savings resulting from the programs. IREA's programs are almost exclusively audit and education programs and they offer no rebates.

Intermountain Rural Electric Association's Energy Efficiency Program*		
Product	Product Requirement	Rebate Level
Consumer Guide and Tips	N/A	Consumer Guide Provided By IREA
Residential Energy Audit	N/A	Audits Provided By IREA
Business Energy Analysis and Audit	N/A	Audits Provided By IREA

*Consumers should visit <http://www.intermountain-rea.com/> to learn how to participate in the programs.

United Power

United Power is a rural electric cooperative that services parts of the north Denver Metro, including parts of Adams County, rural communities to the north of Denver, and some West-Denver mountain communities. It purchases power from Tri-State Generation and Transmission Association. In 2010, Tri-State approved a new integrated resource plan that expanded its energy efficiency programs. United Power members benefit from the programs run by Tri-State and United Power. Though it is an improvement, the programs are still limited in comparison to Xcel.

United Power Energy Efficiency Program*		
Product	Product Requirement for Rebate	Rebate Level
Commercial Lighting and LED Replacements	Must be CFL, LED or meet other efficiency requirements	Up to \$20,000 depending on the program
ENERGY STAR New Appliances	ENERGY STAR certified	Refrigerator--\$40 from Tri-State Refrigerator Recycling--\$40 from Tri-State and \$35 from United Power Clothes Washer--\$40 per item Clothes Dryer--\$40
Heat Pumps	Must meet certain Seasonal Energy Efficiency Ratings (SEER)	\$150-\$2,500 from Tri-State and United Power depending on the system
Electric Water Heaters	Must meet Department of Energy efficiency factors	\$20-\$500 depending on the system
Kill-a-Watt kits to show consumers how much electricity various appliances use	Provided by utility at certain community locations	Free for customers
Home Energy Audit	Provided by the utility	Free for members

**For a detailed list of programs and to learn how to participate in the programs please visit*

<http://www.unitedpower.com/mainNav/yourEnergyOptions/rebate.aspx#h2o>

Grand Valley Power

Grand Valley Power (GVP) serves residents of the Western Slope in Garfield, Delta, and Mesa counties. They do not provide power to most of Grand Junction, but they serve the area around Grand Junction. They purchase almost all of their power from Xcel. However, they control their own energy efficiency program, and it is not affected by the Xcel program. The program in place is quite limited, and just consists of audits for residential and commercial members.

Grand Valley Power's Energy Efficiency Program		
Product	Product Requirement	Rebate Level
Home Energy Audit	Provided by GVP	Free for members
Commercial Energy Audit	Provided by GVP	Free for members

****To learn more about the programs and how to participate please visit*

http://www.gvp.org/energy_tips/help.php

Holy Cross Energy

Holy Cross Energy is an REA that supplies the mountain communities surrounding Vail, Aspen, Glenwood Springs, and Carbondale. It purchases power from Xcel and the Western Area Power Administration. However, it controls its own energy efficiency programs. Currently, Holy Cross primarily provides audits and ENERGY STAR appliance rebates. However, they recently released a five year energy efficiency plan that will provide more comprehensive energy efficiency measures beginning in mid-2012.

Holy Cross Energy's Energy Efficiency Program*		
Product	Product Requirements for Rebates	Rebate Level
Commercial Lighting and LED Replacements	LED lighting	Up to \$20,000 depending on the program
ENERGY STAR Appliances	ENERGY STAR certified	\$75 for a refrigerator \$25-75 for a dishwasher \$25-75 for a dryer
Compact Florescent Lights	Limit on the number of bulbs	Up to \$25
Programmable Thermostats	2 for electric heat, 1 for other types of heat	\$25
Energy Efficient Conventional Water Heaters	Must meet .92 or higher energy factor	\$75
Home Energy Audit	Run by the utility	Free for members
Commercial Audit (Limited)	Run by the utility	Free for members

**It is important to note that Holy Cross recently released a new energy efficiency plan that will expand its existing energy efficiency efforts to include more aggressively marketed energy audits, home weatherization, business renovations including lighting and HVAC projects, and large energy efficiency grants to Holy Cross's largest industrial and commercial consumers. These programs will be finalized and initiated in mid-2012. For full program details and to learn how to participate please visit <http://www.holycross.com/wecare>*

Fort Collins Utility Program

The City of Fort Collins is the fourth largest electricity provider in the state, and supplies the residents of Fort Collins and some of the surrounding areas. The city has made energy efficiency a priority, and it is certainly reflected in their energy efficiency programs. Fort Collins has one of the most robust utility energy efficiency programs in the state. They offer extensive programs for their consumers ranging from appliance rebates to whole building renovations. Fort Collins is a useful model in terms of the successful energy efficiency programs that can be achieved by a publically owned utility.

Fort Collins Utility's Energy Efficiency Program*		
Product	Requirements for Rebate	Rebate Level (For Electric Rebate Program only)
Appliances	ENERGY STAR certified	Dishwasher--\$25 bill rebate Clothes washer--\$50
Air Sealing	Based on tiers of air leakage reduction levels of 25% 33% 50%	25% reduction--\$300 33% reduction--\$400 50% reduction--\$500
Home Insulation	Must meet thermal resistance (R-Value) standards	Up to \$200-\$1000 based specific insulation program
Lighting	Qualifying ENERGY STAR CFLs	Discounts offered at local retailers
Sliding Glass Door Replacement	ENERGY STAR certified	Up to \$750-\$1000
Window Film	Must meet ENERGY STAR guidelines	Up to \$300
Air conditioners	Must meet certain Seasonal Energy Efficiency (SEER) standards	\$250-\$550 based on the efficiency of the unit and if is new or being replaced
Air Conditioner "Tune Up"	Inspector must be certified by "Check Me"	\$50 credit on a utility bill
Heat Pumps	Must meet certain Seasonal Energy Efficiency (SEER) standards	\$500
Whole House Fan	Must have motorized, insulated dampers	\$500
Evaporative Cooler	Must be new or replacing A/C unit	\$500
Mechanical Ventilation		20% of the cost up to \$400
Audits	Includes a blower door test and infrared energy scan	Residents must pay \$60
Refrigerator Recycling		\$35 bill credit for recycling an old refrigerator through the city
Commercial Building Retro-Commissioning	Must be pre-approved by the city and the participant must be willing to spend at least \$4,000	Depends on the project

Commercial Energy Efficient Appliances	Must be approved by the city	Depends on kilowatt hours savings during peak demand
Commercial Integrated Design Assistance	The city works with business owners to maximize energy efficiency in the building design	Free or subsidized depending on the project

**For a full list of programs and to learn how to participate please visit*

<http://www.fcgov.com/utilities/residential/conserves/energy-efficiency/home-efficiency-program/rebates>

Poudre Valley Rural Electric Association (REA)

Poudre Valley REA serves much of the rural areas of Larimer country as well as parts of Weld and Boulder Counties. It purchases its power from Tri-State Generation and Transmission Association. It therefore recently started offering expanded options because of Tri-State's new energy efficiency programs. However, their programs are still limited in comparison to one of its neighbors—Fort Collins Utilities.

Poudre Valley REA's Energy Efficiency Program*		
Product	Product Requirements for Rebate	Rebate Level (For Electric Rebate Program only)
ENERGY STAR Appliances	ENERGY STAR certified	Refrigerators--\$40 Clothes washers--\$40 Dishwashers--\$30
Electric Heat Pumps	Minimum Seasonal Energy Efficiency (SEER) standards must be met	\$85-\$150 for certain unit types \$125-\$400 for other unit types
Air conditioners	ENERGY STAR certified	\$150
Electric Heaters	Must have off-peak use controls	\$10-\$20/kW depending on the system type
Commercial LED refrigerated light case	Limits of 50 doors per project	\$60 per door
Commercial LED Streetlights	Must be LED	\$33-475 depending on the watts of the fixtures
Commercial Lighting Retrofit	Project must be approved by PVREA	\$250/kW saved or %50 of the invoice for the lights, whichever is less
Audits	Different audits types available from PVREA	Free-\$100 depending on the audit type

**For program details and to learn how to participate please visit*

<http://www.pvrea.com/programs/index.html>

Report Calculations

Appendix 2

Calculated based on the average cost of electric in Colorado in 2000 and 2010 and multiplying it by an estimated average monthly use of 700kW multiplied by twelve for the annual use.

2000 cost= $700 * 12 * .0588 = \$494$ ⁴⁵

2010 cost= $700 * 12 * .0945 = \$793$ ⁴⁶

Appendix 3

Calculated based on what Colorado Springs Utilities estimated as the cost per installed new kilowatt of generation capacity and multiplied to determine what the cost of a new 150 MW of the source would be.⁴⁷

New coal-- $\$3,271 * 1,000 * 150 \text{ MW} = \$490,650,000$

New wind-- $\$2,949 * 1,000 * 150 \text{ MW} = \$442,350,000$

New large-scale solar-- $\$4,547 * 1,000 * 150 \text{ MW} = \$682,050,000$

Appendix 4

Used the same calculations as Appendix 2, but multiplied by 1,000 MW instead of 150 MW.

New coal-- $\$3,271 * 1,000 * 1,000 \text{ MW} = \$3,271,000,000$

New wind-- $\$2,949 * 1,000 * 1,000 \text{ MW} = \$2,949,000,000$

New large-scale solar-- $\$4,547 * 1,000 * 1,000 \text{ MW} = \$4,547,000,000$

Appendix 5

This calculation was based on shifting Colorado's current capacity profile to account for how it would change based on the Clean Air Clean Jobs (CACJ) legislation. Doing this would change the state's electricity composition such that natural gas would account for 13% more of the generation capacity. This calculation does not account for percentage shifts in other fuel source and is therefore an approximation.⁴⁸

CO 2009 Installed Capacity	
Fuel Type	Installed Capacity (MW)
Coal	5,010
Petroleum	178
Natural Gas	5,357
Hydroelectric	666
Other Renewables ¹	1,265
Pumped Storage	563

CO 2009 Installed Capacity (Shifted for CACJ)	
Fuel Type	Installed Capacity (MW)
Coal	4,110
Petroleum	176
Natural Gas	6,351
Hydroelectric	610
Other Renewables ¹	31
Pumped Storage	563

Notes

- ¹ Energy Star *Life Cycle Estimate Costs for CFLs*
http://www.energystar.gov/ia/partners/promotions/change_light/downloads/bulb.html
- ² U.S. Energy Information Administration *Colorado Electricity Profile*
http://www.eia.gov/cneaf/electricity/st_profiles/colorado.html
- ³ See Appendix 2
- ⁴ U.S. Energy Information Administration *Colorado Electricity Profile*
http://www.eia.gov/cneaf/electricity/st_profiles/colorado.html
- ⁵ U.S. Census The Denver Post *Population Growth in Colorado Cities, Towns, and Counties*
http://www.denverpost.com/census_growth?appSession=6746412996849
- ⁶ See Appendix 3
- ⁷ See Appendix 4
- ⁸ U.S. Energy Information Administration *Electricity Demand* <http://205.254.135.24/steo/>
- ⁹ See Appendix 5
- ¹⁰ EnergyStar.gov *Light Bulbs*
http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=LB
- ¹¹ EnergyStar.gov *CFL Calculator—Energy Star*
http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/CalculatorCFLs.xls
- ¹² EnergyStar.gov *Savings* http://www.energystar.gov/index.cfm?c=cfls.pr_cfls_savings
- ¹³ Howard Geller et al, Southwest Energy Efficiency Project, *The New Mother Lode: The Potential for More Efficient Electricity Use in the Southwest*, November 2002.
- ¹⁴ U.S. Energy Information Administration *Colorado Electricity Profile*
http://www.eia.gov/cneaf/electricity/st_profiles/colorado.html
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- ¹⁷ U.S. Department of Commerce, Bureau of Economic Analysis, *National Economic Accounts: Gross Domestic Product*, downloaded from www.bea.doc.gov/bea/dn/home/gdp.htm, 2 March 2005.
- ¹⁸ In constant 2000 dollars. U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 2006*, Table 1.5: Energy Consumption, Expenditures, and Emissions Indicators, 1949–2006, June 2007.
- ¹⁹ U.S. Department of Energy, Energy Information Administration, *International Energy Annual 2005*, 1 October 2007.
- ²⁰ Ibid.
- ²¹ U.S. PIRG Education Fund, *Redirecting America's Energy: The Economic and Consumer Benefits of Clean Energy Policies*, February 2005.
- ²² JEA.com *Attic Insulation Upgrade* <http://www.jea.com/about/pub/downloads/AtticInsulationUpgrade.pdf>
- ²³ JEA.com *Attic Insulation Upgrade* <http://www.jea.com/about/pub/downloads/AtticInsulationUpgrade.pdf>
- ²⁴ Xcel Energy *2012/2013 Biennial ENERGY EFFICIENCY Program*
http://www.xcelenergy.com/About_Us/Rates_&_Regulations/Regulatory_Filings/CO_ENERGY_EFFICIENCY
- ²⁵ JEA.com *Attic Insulation Upgrade* <http://www.jea.com/about/pub/downloads/AtticInsulationUpgrade.pdf>
- ²⁶ American Council for and Energy Efficient Economy *State Energy Efficiency Policy Database—Colorado*
<http://www.aceee.org/sector/state-policy/colorado>
- ²⁷ Xcel Energy *2012/2013 Biennial ENERGY EFFICIENCY Program*
http://www.xcelenergy.com/About_Us/Rates_&_Regulations/Regulatory_Filings/CO_ENERGY_EFFICIENCY
- ²⁸ Xcel Energy *Arapahoe Generating Station*
http://www.xcelenergy.com/About_Us/Our_Company/Power_Generation/Arapahoe_Generating_Station
- ²⁹ Colorado Springs Utility *New Resources* <http://www.csu.org/residential/energy/electric/eirp/library/item14262.pdf>
- ³⁰ Colorado Governor's Energy Office *2010 Colorado Utilities Report*
http://rechargecolorado.com/images/uploads/pdfs/2010_Colorado_Utilities_Report_7-26-10.pdf
- ³¹ Colorado Governor's Energy Office *2010 Colorado Utilities Report*
http://rechargecolorado.com/images/uploads/pdfs/2010_Colorado_Utilities_Report_7-26-10.pdf

³² Intermountain Rural Electric Association *Intermountain Rural Electric Association Board of Director Districts Service Area Overall 2011 Alignment*

<http://www.intermountainrea.com/userfiles/DirDistMaps.pdf>

³³ Intermountain Rural Electric Association *Intermountain Rural Electric Association Board of Director Districts Service Area Overall 2011 Alignment*

<http://www.intermountainrea.com/userfiles/DirDistMaps.pdf>

³⁴ Intermountain Rural Electric Association *Intermountain Rural Electric Association Board of Director Districts Service Area Overall 2011 Alignment*

<http://www.intermountainrea.com/userfiles/DirDistMaps.pdf>

³⁵ United Power *United Power Outage Viewer* https://ebill.unitedpower.com/outage_external/

³⁶ Grand Valley Power *Service Area* http://www.gvp.org/electrical_services/service_area_detail.php

³⁷ Garfield Clean Energy *Garfield County Energy Inventory 2009*

<http://www.garfieldcleanenergy.org/energy-inventory-09-1-purpose.html>

³⁸ Poudre Valley *REA Service Area Map* http://www.pvrea.com/images/territory_large.gif

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<http://www.aceee.org/sector/state-policy/colorado>

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⁴⁶ U.S. energy Information Administration *Electric Power Monthly August 2011*

<http://205.254.135.24/cneaf/electricity/epm/epm.pdf>

⁴⁷ Colorado Springs Utility *New Resources*

<http://www.csu.org/residential/energy/electric/eirp/library/item14262.pdf>

⁴⁸ U.S. Energy Information Administration *Colorado Electricity Profile*

http://www.eia.gov/cneaf/electricity/st_profiles/colorado.html