



2010

Crowley County Green Implementation Plan

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Executive Summary

This document is intended to serve as a summary of selected recommendations made in the Crowley County Green Plan. The recommendations have been focused on the target groups (residential, governmental, and commercial/agricultural) and have been listed in order by the benefits with regard to the cost and ease of implementation. Further information can be found in the full report “Green Community Plan. Crowley County, Colorado.”

With regard to energy efficiency, the local government, residents and businesses should take advantage of the rebates, incentives and grants provided by the federal and state governments. The programs offered change frequently and can be researched on the Governor's Energy Office (GEO) website (see RechargeColorado.com).

For energy production, many incentives provided are directly through the local utilities, this has been increasing due to house bill 1001 signed in March 2010, and the percentages set under the Renewables Portfolio Standard (RPS) have increased. Currently, investor-owned utilities need to supply 30% of the provided electricity by renewable sources by 2020 and Electric cooperatives need to provide 10% by 2020. (Colorado House Bill 10-1001)

The move to green energy has the added benefit of providing a new sector of jobs to the area and an added resilience to the community through diverse and local energy supplies. In a study by the ASES (American Solar Energy Society) and MISI (Management Information Services, Inc.), it was predicted that the number of jobs created in Colorado under various scenarios to be between 192-612 million in 2030 (ASES and MISI, 2008) translating to a six-fold growth from 2007.

Residential

Energy Efficiency

The first steps in improving energy efficiency is for a homeowner to contact an energy audit firm to perform an **energy audit** to determine (1) how much energy their home consumes and (2) what measures to take to ensure his home is as **efficient as possible**.

In a study conducted by SWEEP (Southwest Energy Efficiency Program), ACEEE (American Council for an Energy Efficiency Economy) and Tellus, the **potential electric savings is 14%** -- over 8 years. (National Action Plan for Energy Efficiency, 2007.)

For example, a residential four-plex located south of the Crowley County Nursing Center underwent various energy efficiency measures. These included the installation of CFL light bulbs, furnace replacement, and the addition of wall and roof insulation -- resulting in an **annual savings \$1,720 with a payback period of 4 years**.

- **Furnaces**, if they are greater than 10 years old, can be replaced to achieve **savings of over 40%**. On average, a new furnace costs approximately \$1100, and the installation cost around \$2000.
- **Programmable thermostats** can provide savings of **\$180 a year** simply by being set up properly. They cost on average \$92 and between \$100 and \$120 for installation.
- **Water heaters** can provide savings of up to **\$30 -65** annually with total one time costs of between \$650 – 1,300.
 - High efficiency gas storage water
 - Gas condensing
 - Whole home gas tankless
 - Solar
 - Heat pump
- **Weatherization**; programs can often lead to a 30% savings on utility bills which would be around \$20/month based on the Colorado average.
 - Replacing door and windows. The retail price of ENERGY STAR rated windows is between \$89 -430 with an installation cost is between \$300 -700 per window replaced (using existing window framing).
 - Adding insulation and sealing leaks. Insulation materials can cost between \$100 -500, with installation costs of between \$2,500 -5,500.

Through funds from the American Reinvestment and Recovery Act and the Colorado Governor's Energy Office (GEO) partnerships, The GEO has established a rebate for residential energy monitors, among other energy efficiency measures, until the funds are exhausted.

Renewable Energy

In a recent study by the NREL (National Renewable Energy Laboratory), the goal of tapping into wind and solar energy to produce 35% of the Western States' electricity by 2017 is obtainable. The study found that while proactive measures were required, no insurmountable barriers to reaching 20% from wind power were identified (GE Energy, 2010).

- **Solar PV** - According to NREL PV Solar Radiation data, Crowley County is ranked at 5.5-6.0 kWh/m²/day annually, which is above average solar energy capacity. Both Southeast Colorado Power Association and Black Hills Energy have incorporated many solar projects into their grids and offer attractive rebates for solar installations.
 - A 5.7kW solar system installed in Pueblo in July 2010 by Rocky Mountain Solar and Wind, cost \$38,635 with \$29,545 coming from rebates and incentives resulting in a cost of \$9,090 to the resident and a payback period of 6 years.

In a solar assessment conducted by iCAST for neighboring city of Rocky Ford, out of the 26 locations considered, it was recommended that the City of Rocky Ford pursue the installation of solar energy at three feasible locations. Additionally, it was recommended to engage in discussions with the local public utility to determine their flexibility concerning rate changes and metering - to ultimately determine the feasibility of the three identified locations (iCAST, 2008). The simple payback can range from 8.5-12 years for a solar system depending on the already existing efficiency of the home, as shown in table 1.1.

Table 1.1 – Payback time for solar on inefficient and efficient homes in Crowley County. (Solar for your Home or Business in Crowley County. An iCAST publication.)

	System Size kW	System Output kWh/yr	Avg. Usage in Crowley County kWh/yr	Est. Total Cost \$7.25/Watt	Est. Utility Incentive \$3/Watt	Est. Fed. Tax Credit 30%	Net Investment	Est. 10 years of Elec. Bills w/o Solar	Simple Payback Years
Inefficient Home	5.0	7,825	7,340	\$36,250	\$15,050	\$6,360	\$14,840	\$11,588	10 to 12
Efficient Home	2.5	3,912	7,340	\$18,125	\$7,525	\$3,180	\$7,420	\$11,588	8.5 to 10.5

- **Wind** - In terms of small-scale uses for homes and ranches, wind energy can be one of the most cost effective resources of renewable energy. It can be used to **lower electricity costs by 50-90%**, while providing clean and non-polluting energy. Some of the basic requirements for small-scale energy usage are: class 4 wind or greater, at least one acre of land, at least \$150 in monthly electricity bill, and the willingness to commit to a long/medium-term investment.
 - A 3.7kW system that was installed in Wiley, CO by All Solar Inc. in July 2009 had a total cost to the consumer of \$18,000 after rebates.

Financing

There are various options for financing Energy Efficiency and Renewable Energy projects that should be discussed with local developers/installers. They can also be financed through loans from local and national bank branches that offer special rates. U.S. Bank for example has “green home equity loan” rate, which offers customers a 3/8% rate reduction for qualified “green” home improvement projects. For other incentives and grants, see RechargeColorado.

References

- GE Energy. 2010. Western Wind and Solar Integration Study. Prepared for the NREL. <http://www.nrel.gov/wind/systemsintegration/wwsis.html>
- Mosenthal, P. and Loiter, J. 2005. National Action Plan for Energy Efficiency. Guide for Conducting Energy Efficiency Potential Studies. Prepared by Optimal Energy, Inc. <http://www.epa.gov/eeactionplan>
- ASES (American Solar Energy Society) and MISI (Management Information Services, Inc) 2008. Defining, estimating, and forecasting the renewable energy and energy efficiency industries in the U.S. and in Colorado.
- iCAST. 2008. Solar Energy Assessment For the City of Rocky Ford, CO

Governmental

Energy Efficiency

In a study conducted by SWEEP (Southwest Energy Efficiency Program), ACEEE (American Council for an Energy Efficiency Economy) and Tellus, the electric savings can be between 19-20% as a percent over 8 years. (National Action Plan for Energy Efficiency, 2007.)

The easiest and quickest way to reduce energy costs is by implementing energy efficiency measures. The quickest payback will come from replacing old or inefficient thermostats, vent dampers, commercial furnaces, boilers, commercial cooking equipment, water heaters, insulation, infiltration control, and doors.

- **Combined Heat and Power (CHP)** systems, which capture and utilize heat losses from generating electricity, can reach efficiencies of up to **85%**. In contrast, standard electric generation efficiency is approximately 33% and separate on-site heating and purchased electricity has an overall efficiency of 51%.
 - An example of a 115-kW Renewable CHP Application is with Colorado Pork LLC in Lamar, CO. Resulting in an annual savings of \$25,000-\$40,000 and a simple **payback period of 6-9 years**. (Intermountain, 2004)

- **Lighting**
 - In Pueblo, Black Hills Energy, in partnership with the City of Pueblo and Colorado State University - Pueblo, has installed nearly 20 LED lights to monitor energy efficiency over a period of two years. This innovative pilot program is designed to determine savings or efficiency measures associated with energy costs, reduced emissions and quality of lighting for city roadways.

- **Geothermal Heat Pumps (GHP)** take advantage of the fact that the earth has a relatively constant temperature throughout the year. GHP technology transfers heat from the ground into the building in the winter and out of the building and into the ground in the summer. GHP's use anywhere from 25 – 50% less electricity that conventional heating and cooling systems. The investment can be quite high, but the payback period can be between 3 and 5 years. (DOE/GO-10099-727)

Renewable Energy

Crowley County governmental buildings that consumed the highest amount of energy were determined to be -- the Crowley County High School, 40 HP Wells, Crowley County Nursing Center and the CC Water Association.

- **Solar PV** -
According to NREL's PV Solar Radiation data, Crowley County is ranked at 5.5-6.0 kWh/m²/day annually, which is above average solar energy capacity. Both Southeast Colorado Power Association and Black Hills Energy have incorporated solar systems into their grids and offer attractive rebates for solar installations.
- **Wind** - In terms of small-scale uses, wind energy can be one of the most cost-effective resources of renewable energy. It can be used to lower electricity costs by 50-90%, while providing clean and non-polluting energy. Some of the basic requirements for small scale energy usage are: class 3 wind or greater, at least one acre of land, at least \$150 in monthly electricity bill, a consistent energy load throughout the year and willingness to commit to a long-term investment.

Education

Education is the building block of the future. If jobs are not created through both education and workforce development, the current retention challenges the community faces will only increase. The community has been divided into three educational categories: youth (primary school programs), adult, and secondary education. Pursuing further education is a short-term opportunity because educational programs around energy can be implemented immediately. There are limitless resources for all ages and disciplines ranging from elementary to graduate programs. An educated community is inherently forward thinking and more sustainable overall. Locally trained citizens will likely remain in the community and workforce development will be an anticipated benefit.

- Expand efforts to improve public awareness and adoption of energy efficiency measures. (Example: CFL light bulb giveaway in Denver)
- Youth Education
- Adult Programs
- Secondary Education

Policy

Local governments have significant power to influence their energy choices. Through administering and regulate water supply, waste collection, infrastructure and owning land, buildings and fleet vehicles.

Encouraging energy efficiency measures is a start, but few have enhanced the deployment of renewable energy projects within the administrative boundary. As demand for energy services continues to grow, the energy infrastructure that every city and town depends upon will need to be expanded and be upgraded. This provides the opportunity to increase the deployment of renewable energy technologies and distributed energy systems, and hence gain multiple benefits. (Sims, 2010)

- Remove barriers to clean energy use
- Promote green energy use
- Cultivate clean energy jobs/businesses
- Stay in line with the [Federal Energy Independence & Security Act](#)
- *Buy local* – ordering inventory that has traveled less than 500 miles. Use local suppliers whenever practical.

Networks / Partnerships

By joining networks and partnerships, there is increased pressure to adhere to the promises made and to take the next step in addressing the energy needs in an environmentally responsible way. By networking with other similarly minded and pioneering communities, a platform will exist to exchange best practices, benchmarks of working and implemented projects -- which can be cross loaded across communities and even states to the local government.

- **"ICLEI - Local Governments for Sustainability"** (www.iclei.org) is an international association of local governments, as well as national and regional local government organizations, who have made a commitment to sustainable development. ICLEI provides technical consulting, training, and information services to build capacity, share knowledge, and support local government in the implementation of sustainable development at the local level.
- **Local Agenda 21** was developed in 1992, at the Earth Summit in Rio de Janeiro. It is a local-government-led, community-wide, and participatory effort to establish a comprehensive action strategy for environmental protection, economic prosperity and community well being in the local jurisdiction or area. This requires the integration of planning and action across economic, social and environmental spheres. Key elements are full community participation, assessment of current conditions, target setting for achieving specific goals, monitoring and reporting.
- **U.S. Conference of Mayors Climate Protection Agreement.** Under the Agreement, participating cities commit to take following three actions:
 - Strive to meet or beat the Kyoto Protocol targets in their own communities, through actions ranging from anti-sprawl land-use policies to urban forest restoration projects to public information campaigns;
 - Urge their state governments, and the federal government, to enact policies and programs to meet or beat the greenhouse gas emission reduction target suggested for the United States in the Kyoto Protocol - 7% reduction from 1990 levels by 2012; and
 - Urge the U.S. Congress to pass the bipartisan greenhouse gas reduction legislation, which would establish a national emission trading system

References

- Department of Energy. 1999. Geothermal Heat Pumps. DOE/GO-10099-727
- The United States Conference of Mayors <http://www.usmayors.org/climateprotection/revise/>
- Intermountain CHP Application Center. 2004. Colorado Pork Case Study. www.intermountainCHP.org/casestudies
- Sims, Ralph. 2010. Yes, In My Front Yard. Renewable Energy World International Magazine. Volume 13 Issue 3.

Agriculture/Commercial/Industrial

Energy Efficiency

In a study conducted by SWEEP (Southwest Energy Efficiency Program), ACEEE (American Council for an Energy Efficiency Economy) and Tellus, the potential electric savings of between 19-20% as a percent of sales over 8 years. (National Action Plan for Energy Efficiency, 2007.)

Many of the local utilities offer rebates for set back thermostats, vent dampers, commercial furnaces, boilers, commercial cooking equipment, water heaters, insulation, infiltration control, doors, pool covers, spa covers, and other measures which depend on the savings achieved.

In addition to the mentioned measures, depending on the specific situation the following systems could provide additional energy efficiencies:

- **Variable Frequency Drives (VFD)** offers higher efficiency, which result in energy savings. They are typically used in industrial, pumping, agricultural, irrigation, and water/wastewater applications to control the speed of fans and pumps. The payback period for utilizing VFD's can range from 1-3 years, depending on the use, application and motor size (HP).
- **Combined Heat and Power (CHP) systems**, which capture and utilize heat losses from generating electricity, can reach efficiencies of up to 85%. In contrast, standard electric generation efficiency is approximately 33% and separate on-site heating and purchased electricity has an overall efficiency of 51%.
 - An example of a 115-kW Renewable CHP Application is with Colorado Pork LLC in Lamar, CO. Resulting in an annual savings of \$25,000-\$40,000 and **a simple payback period of 6-9 years.** (Intermountain, 2004)

Renewable Energy

As a long-term strategic opportunity, commercial solar deployment in Crowley County can be leveraged to offset the current energy use in the county. Through the establishment of large photovoltaic facilities, the county could potentially produce and sell electricity to the utility company. The county can also export electricity to the large consumers in the county to offset their current demand. The largest incentive that will attract most investors to this kind of projects is the 30% Federal Investor Tax Credit (FITC).

- **Solar**
 - Two locations identified as having high-energy demand and sufficient characteristics for solar applications.
 - Arkansas Valley Correctional Facility
 - Crowley Correctional Facility
 - In a 10kW commercial solar installation done by YES Solar in West Pueblo, CO the total cost of the installation was \$54,000. After rebates and a grant, the cost was \$2,800, giving a return of investment of about 4 years.

- A scenario was run using find-solar.org using 835kWh/month with a total cost of \$17,103 after the rebates after the incentives resulting in a payback of between 23-25 years and an energy savings of over \$1,000/year.
- **Biogas** - Over the years, Crowley County focus has changed from crops to ranching. Besides using a waste stream to create new revenues, converting manure to energy has the added benefit of helping ranchers comply with waste management laws.
 - Case study: Ordway Cattle Feeders was deemed to be feasible due to high-density animal population, thus making the manure collection possible.
 - Five Star Dairy and Emerald Dairy have been in operation since 2005 producing methane, which is sold to coop members. (iCAST, 2009)
- **Wind** - Smaller wind turbines from 1kW to 50kW could be employed on the mesa to the west of Olney Springs and north of the I-96 corridor pending a more in depth analysis of wind speed.
 - In a case study done by iCAST for an Industrial Farm load with an 18.15kW turbine. The total cost was 45,000 with a simple payback of 21 years (iCAST Wind Resource Guide, 2007).
- **Biomass** - The largest wastewater plant in Crowley County serves the town of Crowley and the Arkansas Valley Correctional Facility. This facility uses approximately 3 acres of cattails for constructed wetland water treatment. The cattails, which are burned off every year, can potentially be harvested to produce energy for the correctional facility. (Woody Biomass Feasibility Analysis)

Financing

There are various options for financing Energy Efficiency and Renewable Energy projects. These should be discussed with local developers/installers. They can also be financed through loans from local and national bank branches that offer special rates. U.S. Bank for example has “green home equity loan” rate, which offers customers a 3/8 % rate reduction for qualified “green” home improvement projects. For other incentives and grants see RechargeColorado.

References

- iCAST. 2009. Cow Power: A guide to harnessing the energy in livestock waste. www.icastusa.org/publications/cowpower.pfd.
- Intermountain CHP Application Center. 2004. Colorado Pork Case Study. www.intermountainCHP.org/casestudies
- Mosenthal, P. and Loiter, J. 2005. National Action Plan for Energy Efficiency. Guide for Conducting Energy Efficiency Potential Studies. Prepared by Optimal Energy, Inc. <http://www.epa.gov/eeactionplan>

RechargeColorado

Recharge Colorado is the new Governor's Energy Office (GEO) website, RechargeColorado.com will be “the one” resource for Coloradans to find information regarding energy efficiency and renewable energy.

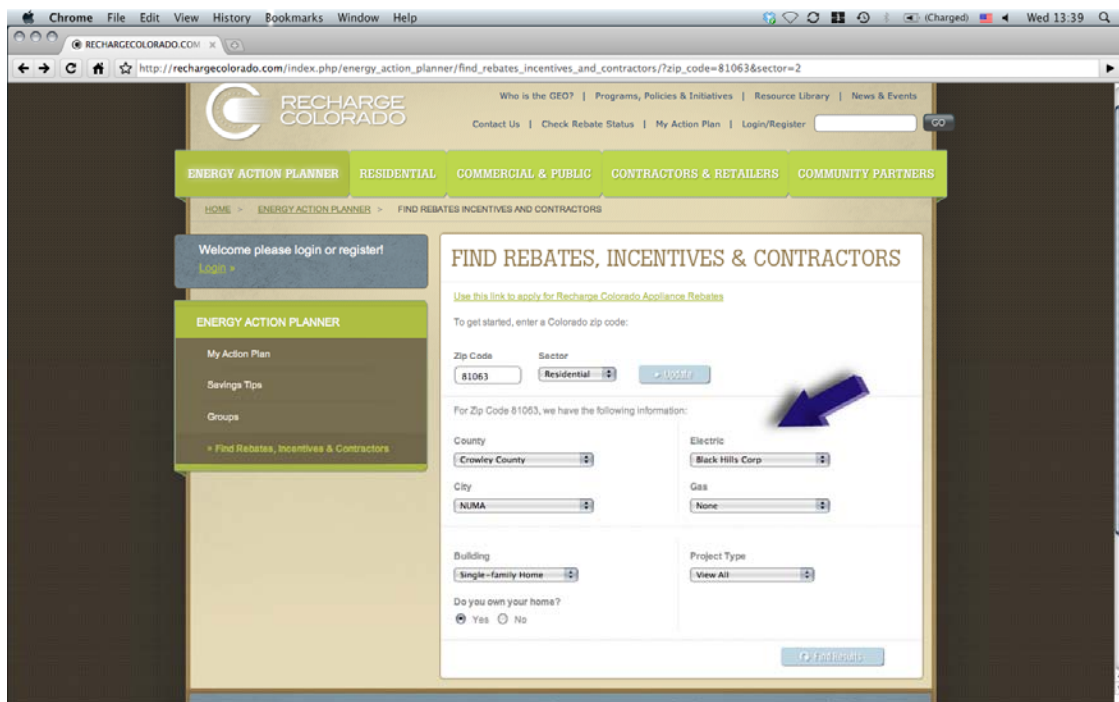


- For those who are unable to access the web or need additional assistance, a call center is available at 1.800.462.0184
- Rebates are available while funds last.
 - Appliance rebates such as washers, refrigerators, dishwashers
 - Home upgrade rebates such as insulation, furnaces and water heaters
 - Solar rebates and wind rebates are also available
- Develop an energy action plan to make your home more energy efficient
- Find a contractor in your area to help with your energy efficient upgrades, while supporting the local economy.
- Recharge Colorado puts federal Recovery Act dollars in action to provide you with financial incentives and rebates to save you money
- Recharge Colorado is how you can participate and make a difference in Colorado’s New Energy Economy.
 - Become more energy efficient
 - Save money on utility bills, create jobs for Coloradans and boost local economies
 - Preserve Colorado for future generations

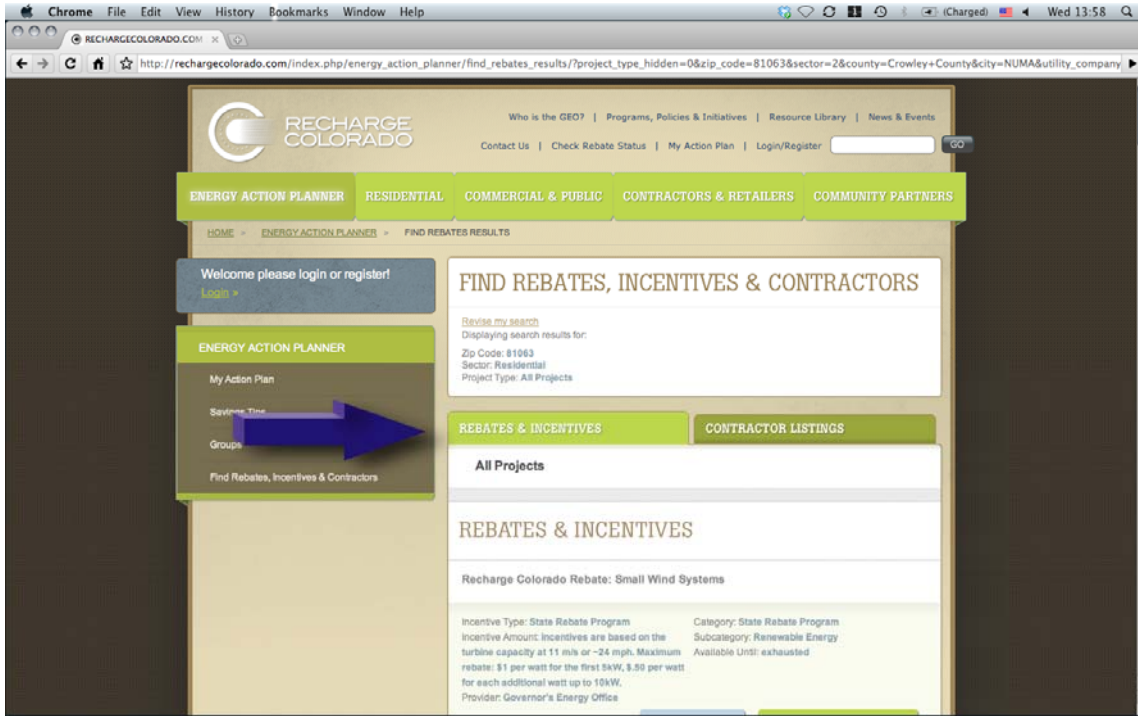
1. Go to: www.rechargecolorado.com
2. Enter your zip code and choose either 'residential' or 'commercial'



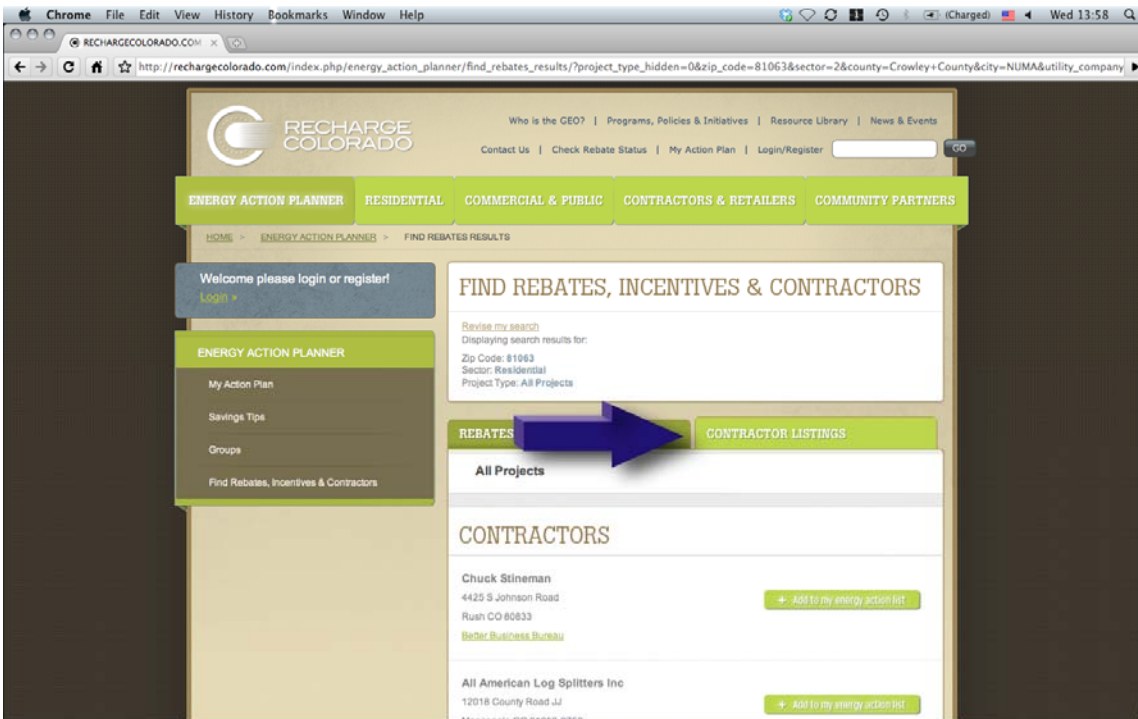
3. Choose the correct county, city, electric provider, gas providers, building and the project type you are looking for.



4. The search will return the applicable rebates and incentives that are available to you.







5. If you have decided on the rebate or incentive and wish to contact a contractor, you can click on the 'contractor listings' tab for contractors in your area.



Local Wind & Solar Projects

Project Developer: AllSolar LLC.

	1	2	3	4	5
Type	Bergey 10kw Grid-Connected Wind Turbine	Skystream 3.7kw Grid-Connected Wind Turbine	Skystream 3.7kw Grid-Connected Wind Turbine	Grid-Connected Photovoltaic System (28-Sharp 208w modules)	Grid-Connected Photovoltaic System (20-ES-190w modules)
Photo					No photo available
Location	Haswell, CO; Kiowa County	Las Animas, CO; Bent County	Wiley, CO; Bent County	Rocky Ford, CO; Otero County	Rocky Ford, CO; Otero County
Utility	Southeast Colorado Power Association	Southeast Colorado Power Association	Southeast Colorado Power Association	Black Hills Energy	Southeast Colorado Power Association
Install Date	June 2007	June 2009	June 2009	March 2007	October 2008
Timetable	3-5 months (start to finish); 2-3 months obtain and ship equipment.			1-2 months (start to finish); 2-4 weeks to obtain and ship equipment, installation = 3-5 days.	
Project Cost	\$40,000 (June 2007)	\$16,000; grant money was available	\$18,000; grant money was available	\$44,000; customer received \$26,208 rebate from utility	\$29,000; customer received rebate from utility
Operational Cost	As of Sept 2009; no maintenance performed since installation, only telephone calls to correct settings & set up computer application, yearly check is recommended.			As of Sept 2009; no maintenance on this system has been performed.	
Testimonial	Contact All Solar, (719) 276-4954/-4955, www.asolarelectric.com				
Pitfalls / Hurdles	Building/Permitting departments for counties throughout Colorado vary in what documents they need before a permit is issued. This process can take 3 days to one month. Utility companies for grid-tie applications require their own documentation. These documents may include one-line diagrams, equipment specifications, plot map of structural buildings and renewable energy components placement, engineering documents, net-metering agreements, etc., also fees for all the above are required and are based on job amounts. There may also be height restrictions in some counties and none in others for wind turbines. Wind turbine tower applications (ex: tower height, tower base, monopole, guy wires, structural elements around where turbine is desired, etc.) all need to be taken into consideration when planning and installing the different types/heights of wind turbines. Not every location is ideal for wind turbines.			Building/Permitting departments for counties throughout Colorado vary in what documents need before a permit is issued. This process can take anywhere from 3 days to one month. Utility companies for grid-tie applications will want to obtain certain documents as well. These documents may include one-line diagrams, equipment specifications, plot map of structural buildings and renewable energy components placement, engineering documents, net-metering agreement, etc., also fees for all the above are required and are based on job amounts. Photovoltaic systems can be installed on ground mounts, roof mounts, or pole mounted. Panel location always faces south and thus determines what type of mounting system a certain location will require. Roof systems are less expensive, but not all locations can use a roof-mounted system.	

Project Developer: Rocky Mountain Solar & Wind

Type of Renewable	Wind	Solar Electric	Solar Thermal
Size	5.73kW	5.7kW	214 KBTU on sunny day
Model	Proven 11	30 Evergreen ES-190 modules and 1 SMA SB 5000US inverter	CS 200/400
Location	3725 Calhan Rd. Calhan CO	184 E. Encanto Dr. Pueblo West, CO	184 E. Encanto Dr., Pueblo West, CO
Utility	Mountain View Electric	Black Hills Energy	Black Hills Energy
Install Date	Dec-09	7/1/08	8-Nov
Project Cost	\$46,300	\$38,635	\$21,500
Incentives and Rebates	\$36,300	\$29,545	\$6,450
Cost to Customer	\$10,000	\$9,090	\$15,050
Operational cost	\$400/year	None	\$100/year
Payback period	15 years	6 years	10-15 years
Testimonial contact	(719) 683-9791	Ron Stevenart (719) 547-7783	Dale Stevenart (719) 251-8680

Project Developer: Yes! Solar Solutions

Customer Projects

	1	2	3	4	5
Type	Residential Grid-Connected PV 6.0kW (30-ES200W-RW)	Commercial Grid-Connected PV 10.0kW (50-ES200W-RW)	Residential Grid-Connected PV 4.8kW (24-ES200W-RW)	Residential Grid-Connected PV 6.0kW (30-ES200W-RW)	Commercial Grid-Connected PV (24-ES200W-RW)
Photo					
Location	Pueblo West; Pueblo County	Pueblo West; Pueblo County	Pueblo West; Pueblo County	Pueblo; Pueblo County	Canon City; Fremont County
Utility	Black Hills Energy	Black Hills Energy	Black Hills Energy	Black Hills Energy	Black Hills Energy
Install Date	October 2009	May 2010	May 2010	February 2010	March 2010
ROI	<10 Years	<4 Years	<10 Years	<10 Years	<4 Years
Project Cost	\$35,400 \$27,000 (rebate paid by BHE)	\$54,000 \$35,000 (rebate paid by BHE) \$16,200 (paid by grant)	\$26,880 \$12,000 (rebate paid by BHE)	\$33,000 \$21,000 (rebate paid by BHE)	\$25,200 \$16,800 (rebate paid by BHE) \$7,560 (paid by grant)
Operational Cost	No maintenance has been performed on any of these systems since installation.				
Testimonial	Contact Yes! Solar Solutions, (719) 547.2929, www.yessolarpueblo.com				
Pitfalls / Hurdles	<p>There have been new code books recently adopted by the area building departments. The building departments are still interpreting the code books, which makes for some confusion with the different inspectors. The interconnection agreements vary from utility to utility. Also, there are homeowner's associations and metro boards to apply with.</p> 				

Find-Solar.org Calculations

Solar												
Data from http://estimator.find-solar.org/												
for zip code 81063												
A Home setting with Black Hills as the Utility												
with a solar energy rating of 5.59kWh/sq-m/day												
Electric rate at \$0.1262/kWh												
Average price per solar panel of 7.25 per Watt-DC												
Utility Inflation of 3.78%												
Utility using net metering												
Federal Income tax at 28%												
Federal ITC based on Gross Cost												
State income tax at 4.6%												
Residential	Energy User Type	Percent of electricity consumed on site	Roof Area Needed (sq-ft)	Estimated System Cost	Cost after Incentives	Average Monthly Utility Savings	GHG saved over 25 years (tons)	Percent of investment borrowed at 6.5 apr over 10 years	Monthly Loan Payment	IRR	ROI	Breakeven Point (year)
	Low (489 kWh/month)	50%	198	\$14,355	\$5,098	\$52	60	0%	\$0	13.2%	317%	8
50%								\$29	16.7%	610%	8	
100%								\$58	>50%	Cash positive at	5	
		100%	395	\$28,638	\$10,172	\$97	120	0%	\$0	12.3%	288%	9
50%								\$58	15.3%	259%	9	
100%								\$116	36.9%	Cash positive at	11	
	Average (612 kWh/month)	50%	247	\$17,908	\$6,316	\$65	75	0%	\$0	13.3%	319%	8
50%								\$36	16.8%	613%	8	
100%								\$72	>50%	Cash positive at	4	
		100%	495	\$35,888	\$12,747	\$123	151	0%	\$0	12.5%	293%	9
50%								\$72	15.6%	563%	9	
100%								\$145	40.6%	Cash positive at	10	
	High (734 kWh/month)	50%	297	\$21,533	\$7,648	\$78	90	0%	\$0	13.2%	318%	8
50%								\$43	16.8%	612%	8	
100%								\$87	>50%	Cash positive at	5	
		100%	593	\$42,993	\$15,270	\$149	181	0%	\$0	12.6%	298%	9
50%								\$87	15.8%	571%	9	
100%								\$173	45.6%	Cash positive at	8	

Links and Resources

Governor's Energy Office:

<http://rechargecolorado.com>

Database of State Incentives for Renewables and Efficiency:

<http://www.dsireusa.org/>

Photovoltaic/Wind Economic Calculators:

<http://www.daughtersoftiresias.org/progs/insolation/insolation.html>

<http://find-solar.org/>

<http://www.nrel.gov/eis/imby/>

<http://bpsolar.cleanpowerestimator.com/default.aspx>