



Promoting Energy Efficiency in Your (Small) Community: One Community's Solutions & Success Story

Wednesday, September 7, 2011

9:00-11:30 AM

**DOE National Renewable Energy Lab Research Support Facility
San Juan Conference Rooms**

AGENDA

9:00 Welcome and Introductions

9:10 Presentation by the City of Rifle, CO

- Keith Lambert, Mayor, City of Rifle
- Mike Braaten, Government Affairs Coordinator, City of Rifle
- Michael Langhom, President, Rifle Economic Development Corporation & Community Champion, Sustainable Main Streets Initiative
- Matt Sturgeon, Assistant City Manager & Planning Director, City of Rifle

**10:45 Overview of NREL's Research Support Facility, Nancy Carlisle, AIA,
Director of NREL's Integrated Applications Office**

11:05 Tour of the Research Support Facility

11:45 Adjourn

Keith Lambert BIO:

Keith Lambert is the Mayor of Rifle, Colorado. First elected in 2001, he is in his fifth term as mayor. Previously, Keith was an elected member of the Rifle Metropolitan Park District and President of the Rifle Fire Protection District. A resident of Rifle since 1981, he is a survivor of Black Sunday, May 2, 1982, also known as the Oil Shale Bust.

Keith is a 28 year public school educator and a 23 year adjunct faculty for Colorado Mountain College. He has a B.S. from Northern Arizona University, a M.A. from Northern Arizona University and a M.A. from Lesley University.

In addition to his Mayoral duties, Keith currently serves as a Board Member of the Aspen Community Foundation and a Board Member of the Rifle Community Foundation.

Mike Braaten Bio:

Mike Braaten is the Government Affairs Coordinator for the City of Rifle. He is responsible for representing the City and advocating on behalf of the City at the local, regional, state and federal levels and is the City's primary liaison to the natural gas industry of NW Colorado.

Prior to joining the City of Rifle in late 2007, he spent seven years with the Colorado Municipal League, including five years as one of the League's lobbyists covering the issues of transportation and tax policy. Mike is in his 14th year working in local government in Colorado. He holds a B.A. in Local & Urban Affairs from St. Cloud State University in Minnesota.

Michael Langhorne Bio:

Michael Langhorne is the Owner/President of Bookcliff Survey Services, Inc. He is a licensed Professional Land Surveyor responsible for the overall operations, technical review and marketing for Bookcliff Survey. Langhorne served on the board of the Rifle Area Chamber of Commerce for two years, one as President, during which time he poured his efforts into making the annual dinner a much anticipated and successful event. This exposure and satisfaction from being able to make a difference for the City of Rifle propelled him onto the current volunteer boards, including President of Rifle Regional Economic Development Corporation, Rifle Downtown Development Authority and the Visitor Improvement Fund.

Langhorne was chosen by his peers in the Rifle business community as the Rifle Area Chamber of Commerce's Person of the Year for 2008, and was also chosen to represent Rifle as Community Champion in the Colorado Sustainable Main Street Initiative program. His desire is to help shape Rifle into a sustainable business community with the amenities people want, along with his ability to be open to new and innovative ideas, drive his motivation to bring community members together for the common cause.

Matt Sturgeon Bio:

Matt Sturgeon is the Assistant City Manager for the City of Rifle. Matt oversees the Planning and Development Department as well as special projects related to economic development and urban renewal. Hired in 2002, Matt has been involved with moving forward economic positioning efforts that include plans for an Energy Innovation Center, downtown renewal, and the development of Rifle Airpark.

Prior to coming to work for the City of Rifle, Matt worked for 8 years as a planner for Pueblo County, Colorado. While working for Pueblo County, Matt primarily engaged in current planning projects.

A graduate of the University of California at Irvine, Matt holds a B.S. in Political Science and has completed two years of Masters work in Urban and Regional Planning at California Polytechnic State University, San Luis Obispo.

Nancy Carlisle Bio:

Nancy Carlisle is Director of the Integrated Applications Office in the Deployment and Industry Programs effort at the National Renewable Energy Laboratory (NREL). She manages a staff of 60 and a \$10 million budget. Ms. Carlisle is a licensed architect in the State of Colorado and led NREL's effort to develop a 25-year sustainable master site plan for the laboratory campus. In this capacity, she has been a leader in changing the RFP process for new building design and construction – proving that ultra energy-efficient buildings can be built at costs comparable to conventional Class A commercial property in Denver. Before taking on this role, Ms. Carlisle led the renewable energy efforts for the Federal Energy Management Program (FEMP), working with other Federal agencies to incorporate renewable energy at their sites. Ms. Carlisle is LEED accredited and is recognized as a Fellow in the American Solar Energy Society. She holds a Master's degree in Architecture (University of Colorado), a Master's in Urban Planning (University of Arizona), and a Bachelor's degree in Economics with concentration in Environmental Studies (Colorado State University).

About the Research Support Facility (RSF)

The LEED® Platinum registered RSF is a national showcase for energy efficient large-scale construction, using 50% less energy than if it were built to current commercial code. Designed to be a net-zero energy building, the RSF is a living laboratory where NREL researchers are studying the building's energy use – targeted for 35,000 BTU per square foot per year. Completion of the RSF demonstrates that large-scale ultra energy efficient buildings are achievable for government and commercial applications in today's market. The design-build team of Haselden and RNL delivered the high-performance office building through intense energy modeling, maximization of daylighting, and a host of passive energy strategies and renewable energy technologies. The building's orientation and long, narrow footplate take full advantage of the abundant Colorado sun, providing day lit office space while minimizing unwanted heat losses and gains. Passive strategies such as transpired solar collectors – a technology developed at NREL – absorb solar radiation and deliver the heat where the building needs it.

Other energy efficient features include under floor ventilation, operable windows, radiant and evaporative heating and cooling, a concrete labyrinth for thermal storage, and precast concrete insulated panels. Power-producing photovoltaic panels will be installed on the building's roof. Laptop computing and highly efficient network equipment will also contribute to the low energy target.

More information on the RSF can be found at <http://www.nrel.gov/news/rsfnews/>



Larry Harte
Mayor, City of Glendale
Chair

Rick Pilgrim
Mayor, Town of Bow Mar
Co-Vice Chair

Jim Gunning
Mayor, City of Lone Tree
Co-Vice Chair

August 9, 2011

Representative Mike Coffman
U.S. House of Representatives
Washington, D.C. 20515

Dear Representative Coffman:

The Metro Mayors Caucus (MMC) is a regional organization of 40 mayors from the Denver metropolitan area. We come from cities large and small, urban and semi-rural and diverse political backgrounds. We often have different views on the role of government and how services should be funded; but we are united in our support of HR 2599 the PACE Assessment Protection Act of 2011 and we write to urge your support as well.

HR 2599 will boost our business growth and job creation efforts by guaranteeing our right to establish Property Assessed Clean Energy programs. PACE programs, like Boulder County's innovative program, provide the private sector and local governments with the opportunity to work together to generate tremendous benefits to our nation, without federal tax subsidies, mandates, or expansion of any federal programs.

In 2010 the Federal Housing Finance Agency (FHFA) effectively put and end to Boulder County's program and the many others nationwide that were on the verge of launching. In attempting to eliminate PACE, FHFA not only ignored the beneficial state and local economic impacts of PACE programs, but also the long history of local assessment financing. FHFA's decision is a startling regulatory overreach that should be overturned in order to protect local governments' right to establish and maintain the special assessment districts.

PACE highlights include:

- *Local Business Growth, Job Creation & Economic Development:* retrofitting 1% of U.S. homes with PACE would create 226,000 jobs, generate \$42B in economic output and \$4.2B in Federal, state and local taxes.
- *No Taxes/Federal subsidies:* PACE programs use private sector financing and require no Federal subsidy.
- *Private Capital:* funding comes from the broad capital markets, not taxpayers.
- *Voluntary:* PACE program participation is voluntary at both the local government and individual participant levels.
- *Lender Protections:* Underwriting standards limit PACE financing to financially sound homeowners, and by reducing their energy use, make it easier for them to pay their mortgages and protect themselves from rising energy costs.
- *Lower Default Rates & Reduced Fannie/Freddie Losses:* Homeowners participating in PACE programs have significantly lower mortgage default rates than other property owners in the same communities, which also reduces GSE losses.

Congress should pass legislation affirming state and local governments' right to offer PACE programs. Please join your colleagues from both sides of the aisle in co-sponsoring the PACE Assessment Protection Act of 2011 today.

Sincerely,
THE METRO MAYORS CAUCUS

Larry Harte
Mayor of Glendale
Chairman, Metro Mayors Caucus

Notes on MMC Support for PACE & HR 2599 the PACE Assessment Protection Act of 2011

Adapted in part from materials available on PACENow.org

The Metro Mayors Caucus (MMC) has a strong commitment to energy efficiency, as first evidenced by the unanimous support of our 2006 Energy Efficiency MOU. MMC has subsequently supported legislative efforts to enable voluntary, community-based programs to reduce the cost of energy efficiency and renewable energy (EE/RE) improvements.

Local government authority to finance improvements including roads, sidewalks, and water and sewer facilities through special assessment districts is well established. A critical municipal finance tool for more than 100 years, some 37,000 land-secured financing districts now exist nationwide. In 2008, mirroring the recognition of public benefit of EE/RE improvements in the Internal Revenue Code, Colorado's legislature expanded this authority with HB-1350 authorizing the use of special assessment districts to finance EE/RE improvements. MMC support was in part contingent on participation in the districts being elective at both the county and individual participant levels. Passage of HB-1350 cleared the way for one of the nation's first Property Assessed Clean Energy Program - Boulder County's Climate Smart Loan Program (CSLP). PACE removes two of the largest barriers to residential EE/RE improvements, high upfront costs and long payback periods – particularly for renewables - by paying for the improvements through a 15-20 year property tax assessment that is attached to the property. Today, 27 states have enacted PACE authority, including Texas, Florida, Nevada, Wyoming, California and New York.

Based in part on the success of CSLP, in 2010 MMC supported SB 10-100 which allowed the districts to cross county boundaries in order to reduce costs and achieve economies of scale. MMC also supported HB 10-1328, which authorized creation of a CSLP-modeled statewide opt-in district. The new district would theoretically achieve even great economies of scale while extending the opportunity for energy related cost savings and renewable energy installations to creditworthy homeowners in participating counties statewide.

Like all municipal assessments, in the event of a default, PACE assessments in arrears have a senior lien to mortgage payments. Recognizing this, PACE advocates, the Department of Energy and Fannie/Freddie regulator the Federal Housing Finance Administration (FHFA) worked together for two years to develop national guidelines and safeguards for PACE that would minimize risk to mortgagors. However, on July 6, 2010, FAHA issued a statement calling in to question the public benefit of assessments to support EE/RE improvements and directing Fannie & Freddie not to underwrite loans with PACE assessments.

FAHA's statement brought residential PACE programs nationwide to a virtual standstill, including Boulder County's CSLP. Setting aside the question of the public benefits of reduced energy consumption and local economic impacts of PACE programs, FAHA's concerns have since been demonstrated to be unfounded. Analysis of actual PACE assessments in four programs, has shown PACE in fact dramatically lowers the risk to GSEs by reducing homeowners' monthly energy costs and insulating them from energy price volatility. According to data available on PACENow.org, of the 2,565 total PACE participating homes in the Boulder County, Babylon (NY), and Palm Desert and Sonoma County (CA) PACE programs, countywide default rates would suggest that more than 85 homes (3.2%) should have defaulted on their mortgages, yet only 2 homes did (0.1%).

With regard to the local economic impact of PACE programs, a U.S. Department of Energy funded quantitative and qualitative analysis of the CSLP program looked at invoice data for 598 residential

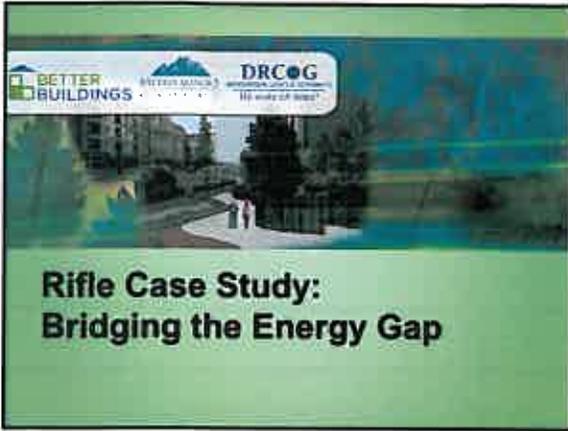
EE/RE improvements made through the program and found that CSLP spending for 598 loans totaled more than \$9M which in turn contributed to more than 85 short term jobs, \$5M in earnings and almost \$14M in economic activity in Boulder County. The analysis also found that CSLP supported another 41 short-term jobs outside Boulder County, \$2M in earnings and nearly \$6M in additional economic activity. However, the benefits of the program are likely understated as analysis was unable to account for ancillary improvements made at the same time as (but not financed through) CSLP – such as drywall repairs, carpeting, etc. Further, a number of CSLP applicants who were able to qualify for and obtain home equity loans at a more competitive rate chose to pursue their EE/RE through private financing.

With mounting evidence supporting the benefits of PACE, a nationwide, bipartisan coalition of advocates has emerged to support states' rights and restore PACE programs across the U.S. Partners supporting PACE restoration include municipalities, members of Congress, state legislators, governors, private citizens, corporations and organizations including National League of Cities, the National Association of Counties, and the US Conference of Mayors.

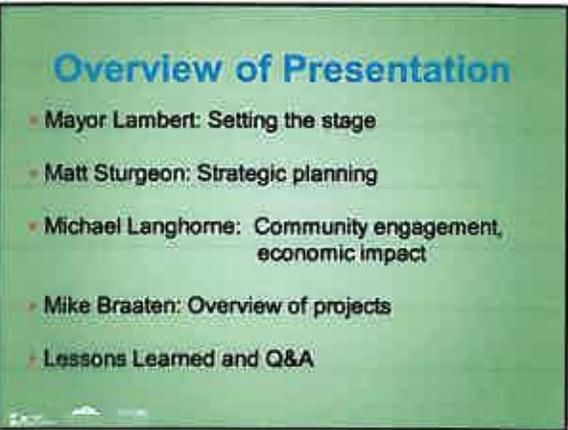
Part of the coalition's efforts is support for the bipartisan [HR 2599 PACE Assessment Protection Act of 2011](#). Sponsored by Congresswoman Nan Hayworth (R-NY) and Congressmen Dan Lungren (R-CA) and Mike Thompson (D-CA) the bill seeks to guarantee the right of right of local governments to offer PACE programs while ensuring that PACE programs include underwriting standards designed to protect Fannie Mae & Freddie Mac by minimizing their exposure. Incorporated directly into the legislation are the U.S. DOE best practices and guidelines developed to ensure safety for homeowners, private capital providers and existing mortgage lenders.

How are lenders protected?

- By insuring participants are well-qualified – homeowners must have at least 15% positive equity.
- By limiting total exposure – projects are capped at no more than 10% of a home's value.
- By demonstrating positive payment history – homeowners must have solid property tax payment record.
- By stipulating in the event of a default, only the amount in arrears is payable (non-acceleration) - the remainder of the assessment is assumed by the next property owner, and payable through the property tax payments.
- By limiting the total loan amount to 10% of estimated value (method of valuation to be determined by locality).
- By requiring that an energy audit be conducted by a qualified inspector to determine that the energy improvements will pay for themselves over the life of the improvement (typically 20 years).





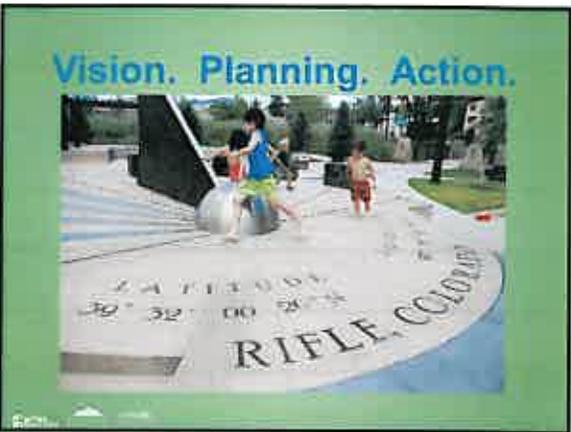














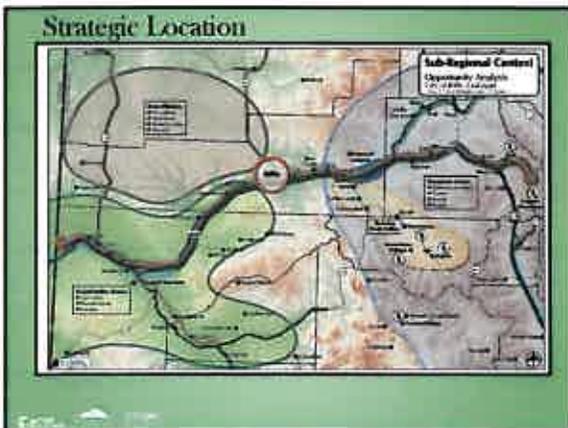
CITY OF RIFLE'S FIRST STRATEGIC PLAN
MAY 10 - 12, 2002

Our vision for Rifle in 2012 is a community that:

"... capitalizes on its strategic location and adapts to a changing environment."

Vision Statement 2012



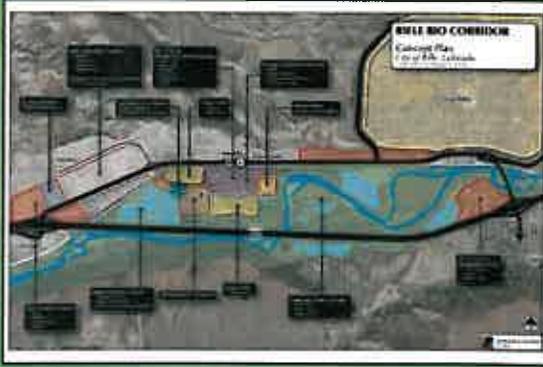


Commitment to Long-Range Economic Development



Rifle's Economic Vision

- **Energy Village** – Create an innovative economy that bridges the region's traditional energy resources with emerging renewable technologies.
- **River Town** – Focus on the Colorado River as a defining feature.
- **Regional Economic Center** – Become an economic hub for the Western Slope.

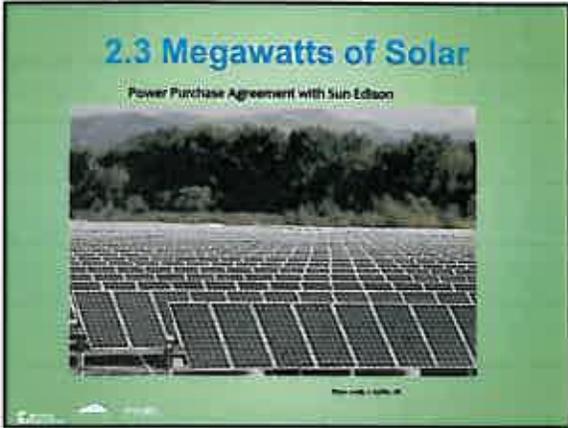


RIFLE ENERGY CORRIDOR
Concept Plan
City of Rifle, Colorado

THE RIFLE ENERGY INNOVATION CENTER

To take the vision of the Rifle Energy Innovation Center to a fully conceived and implementable project, shared efforts between the City, community partners, and the private development sector are required. For this project to be a long-term success and to meet the goals outlined in this document, the City of Rifle is prepared to actively engage in public/private partnerships at a variety of levels. The following boxes list a sampling of the variety of uses and functions envisioned for the Energy Innovation Center.

<p>Potential public uses may include:</p> <ol style="list-style-type: none"> i. Regional (2009) Wastewater Treatment Facility ii. Energy Innovation Education Center iii. Rifle Energy Expo Grounds 	<p>Private components may include:</p> <ol style="list-style-type: none"> i. Waste to Energy Conversion ii. Green Prefab Home Manufacture iii. Solar Technologies iv. Regional Biomass Staging Center v. Photovoltaic Array (2009) 	<p>Other components may include:</p> <ol style="list-style-type: none"> i. District Energy Loop ii. Geothermal Heating and Cooling iii. LOVA Trail Extensions iv. Remediated Wetlands
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Energy Village Partners & Goals

- **City Government:** lead by example through energy-efficient and sustainable practices in operations, facilities, and planning.
- **Community Partners:** create partnerships to engage the wider Rifle community in energy efficiency and sustainability efforts—the schools, businesses, hospital, non-profits, and others.
- **Building and Development:** increase the energy efficiency and sustainability of homes, businesses, and neighborhoods.
- **Business and Industry:** pursue business development and job creation in renewable energy and sustainable industries.



Brain Trust Participants

A rotating cast of characters, based on topic...

- City of Rifle – Staff and Elected Officials
- Colorado Mountain College
- CSU Extension – Garfield County
- Interested Citizens
- Garfield RE2 School District
- Garfield County Staff
- Interested Businesses
- Local Developers/Builders
- Farming/Ranching Community
- Garfield County Public Library District

Why?

- Discuss topics of interest
 - Energy efficiency/Renewable Energy
 - Building Codes
 - Peak oil
 - Transportation
 - Local foods/agriculture, processing capabilities
 - Composting
 - Education and Sustainability
- Brainstorming/Daydreaming with a purpose
- Goal of economic development/diversification and keeping money local – Environmental benefits follow on their own.

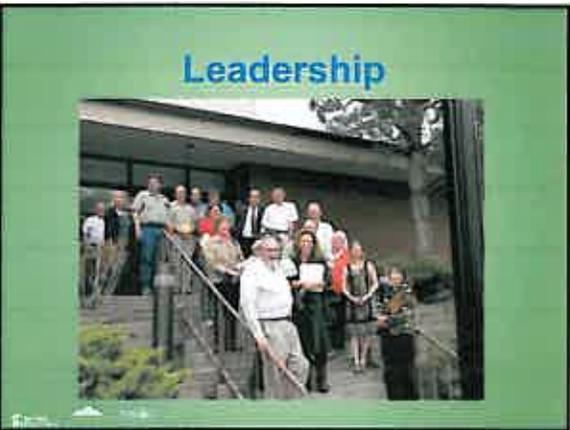


Clean Energy Collective



The largest community owned solar array in the nation is located at the Pima Airport, built by the Clean Energy Collective and available to Holy Cross energy customers. Array size – approx. 700 kW on 3 acres
More information:







Business Creation & Expansion

Photo: Tully Co., (left) Paul Suberman

Business Opportunities

Community Awareness

Grand River Hospital District's facility constructed to the requirements of the Green Guide for Healthcare - a best practices guide for healthy and sustainable building design, construction, and operations for the healthcare industry (www.gghc.org)

First LEED certified Hampton Inn hotel in the entire chain is in life.

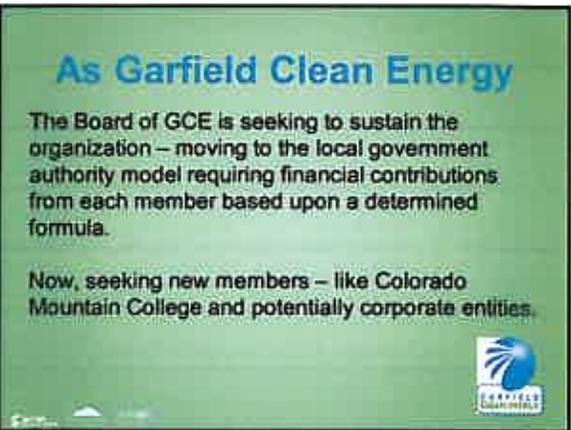












GNECI/GCE Programs

- Government
 - Energy Navigator
 - Fleets
 - Facilities (education & P.C.)
 - Education
 - Street Lights
- Commercial & Residential
 - Better Buildings/Energy Audits and Rebates, CFL giveaways, Builder training (E.S. Homes, green codes/above the code)
- Transportation
 - Fleets, CNG, Bike/Ped
- Energy Inventory
- One-stop website for county-wide energy info



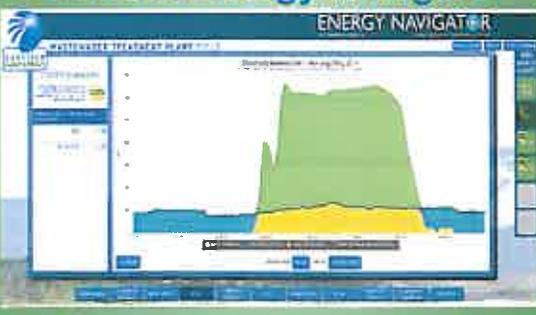
Garfieldenergynavigator.org

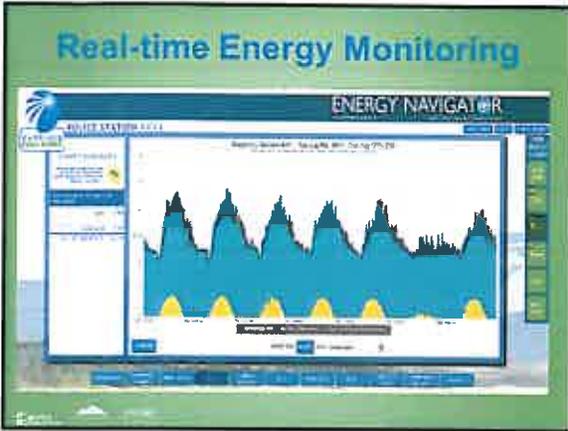
GARFIELD ENERGY NAVIGATOR

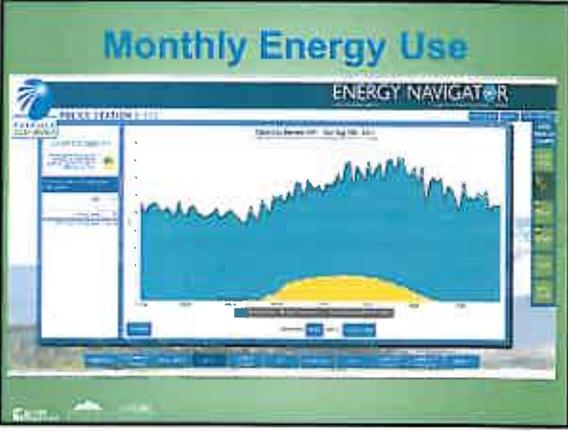
MONITORING ENERGY USE AND SOLAR PRODUCTION IN OUR REGION



Garfield Energy Navigator







Garfield Clean Energy Challenge for Business

- Offers free "energy coach" services for all participating businesses in Garfield County.
- Get the most out of your commercial energy audit by joining the Clean Energy Challenge for Business.
 - Free online energy tracking
 - Free energy action plan
 - Assistance to help you connect with contractors and make the most of utility rebates
 - Up to \$5,000 in local rebates/business

Rifle Projects

- **Solar installations**
 - 10kW arrays at Justice Center, PW Bldg, Parks Maint. Bldg.
- **Performance Contracting**
 - Ennovate: City Hall, Parks Maintenance, Justice Center and Public Works Operations Building.
- **LED Lighting**
 - 3rd Street, Centennial Park Trail and Parking Lots
- **Fleets**
 - Focus on use, efficiency and training
- **Fuel Diversity (CNG & Electric)**

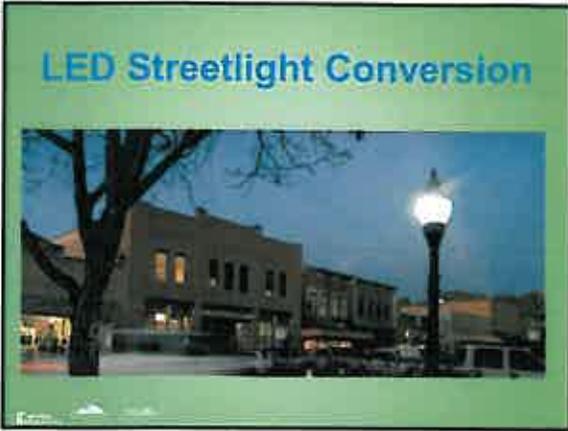
30 kW of new solar

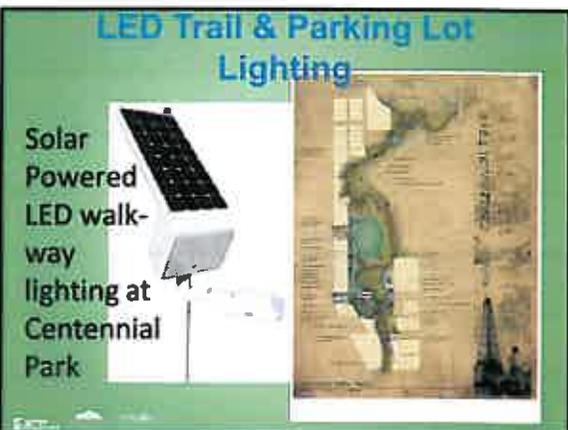


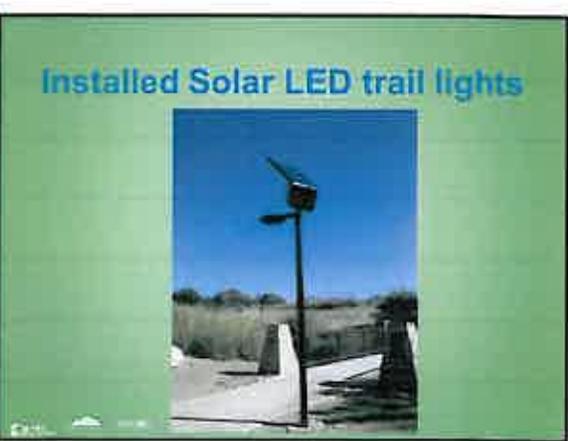
Performance Contracting

Currently under contract with Ennovate for various energy efficiency upgrades at 5 city facilities.

Energy Conservation Measure	City Hall	Justice Center	Justice Center	Parks and Public Maintenance	Parks Maintenance (PW-M)
Lighting Upgrades	▲	▲	▲	▲	▲
Lighting Occupancy Sensors	▲	▲	▲	▲	▲
Consolidating Hot Water Boilers	▲	▲	▲	▲	▲
Deaerification Fans	▲	▲	▲	▲	▲
Window Solar Film Tinting	▲	▲	▲	▲	▲
Programmable Thermostats	▲	▲	▲	▲	▲
Vandalism Alarm	▲	▲	▲	▲	▲
Energy Commissioning and Controls Upgrades	▲	▲	▲	▲	▲







Fuel Diversity



Photo: John Gardner, Senator OWR Post-implementation

"In my view, an incredibly strong economic case can be made for the use of natural gas in vehicles, especially in fleets."
Sen. Michael Bennet, D-Colo

Compressed Natural Gas



Compressed Natural Gas Fueling Station located in Rifle.

Local company offering CNG Vehicle Conversions.

Electric Vehicles





How and Why?

- **Increase affordability**
 - Woman and kids move from trailer with a \$1,000 winter month heating bill to a house where mortgage, insurance, taxes and utilities will total \$600/mo.
- **Demonstration for community and builders**
 - Extra costs to increase efficiency were negligible, estimated at \$6,000/home and mostly solar-related.
- **Committed community and partners**
 - Encana provided a \$46,000 grant for the 3rd house to go net-zero
 - Sunsense Solar provided free installation of solar

Key energy efficiency elements of the Habitat Homes at Rimrock – Rifle

Some of the key energy efficiency elements of the net zero home include:

- 2-in rigid foam installed on outside of concrete foundation stem walls
- Half-inch rigid foam layer added to house exterior underneath the siding
- EC premium efficient gas furnace
- Tankless hot water heater
- Down-in insulation to bring attic insulation levels to R-49 and wall insulation values to R 25
- Headers for doors and windows insulated with rigid foam between wood
- Air barrier installed on exterior walls behind the sheetrock and the sheetrock to accommodate blown-in insulation
- Caulking added between sheetrock in exterior walls
- Trough urea sealing to exclude outside air
- All insulation includes vapor and exterior air barriers
- ENERGY STAR rated appliances and fixtures installed such as ventilation fans, ceiling fans, light fixtures, kitchen appliances, windows and heating equipment

"Critical every seam of plywood"
"as much insulation in the walls that they needed to upgrade to 6 1/2" drywall to compress it"

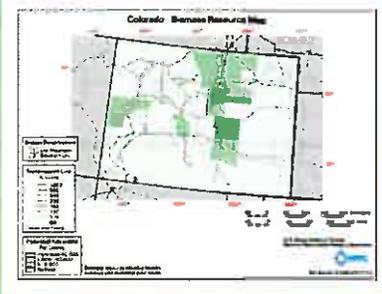
Biofuels Demo Project



The Western Colorado Carbon Round Biorefinery Consortium
WCCNBC
Colorado State
Field

Integrating the future of bioenergy and carbon sequestration to western Colorado

An Overlooked Resource



Colorado - Biomass Resource Map

Includes only forestry and municipal solid waste - no consideration for intentionally grown bio mass crops.

Regional Background

- Agriculture is a fundamental way of life in the region, with significant marginal, unused acreage available.
- Alterations to regional economic base with influx of boom-cycle oil and gas development.
- **Question:** How to promote the long term economic, social, and environmental prosperity of the region?
- **Vision:** Invigorate the region's traditional agrarian sector to adopt innovative and emerging technologies

Roll of WCCNBC

- Fill in the gaps with basic and applied research
- Provide a working model for the region
- Interdisciplinary approach: technical, social, economic, environmental, practical

Educational Opportunity

- CMC Rifle will turn crops into ethanol and butanol as proof of concept and educational tool.
- Hands-on training in process technology, analytical chemistry, biochemistry, thermodynamics, and instrumentation.
- Skills to enter the bioenergy industry.

Grass Demo Plots



Success to date

- Recipient of \$50,000 Colorado Dept. of Agriculture ACRE grant.
- Hosted a Biomass Symposium that drew over 100 participants – ranging from farmers to professors, government officials to multimillionaire investors.
- CSU, on behalf of the Consortium, was recently invited to submit a proposal for the DOE/USDA 2011 Biomass Research and Development Initiative.

"Developing a Viable Bioenergy Economy in the Western United States: Feedstock Development for Advanced Cellulosic Biofuels and High-Value Chemical Co-Production from Waste Streams"

Bio-fuel production unit



Recognition



The community of Rifle is a national model for energy planning and energy diversity.
- Sen. Mark Udall

Photo credit: Felley Co., CMS Post Independent

Lessons Learned

- It takes time...
- Political will & leadership
- Develop a vision, framework, "story"
- Know your audience and speak their language
- Develop a tracking system early-on in the process
- Cooperation essential for success
- Take risks
- Take advantage of place-based assets
- Be ready for funding opportunities
- Borrow ideas - add your own community's twist
- Celebrate and promote victories
