Town of Parachute | City of Rifle | Town of Silt
Town of New Castle | City of Glenwood Springs
Town of Carbondale | Garfield County Public Library District
Roaring Fork Transportation Authority
Garfield County | Colorado Mountain College

To: Mayor and Trustees, Town of New Castle
From: Shelley Kaup, Garfield Clean Energy/CLEER Staff
Date: June 17, 2014
Re: **Garfield Clean Energy Collaborative 2013-14 Results**
Town of New Castle Progress

Introduction: The Garfield Clean Energy Collaborative is the state's first intergovernmental authority dedicated to clean energy. Its local government partners first joined together in 2009, under the umbrella of Garfield County, to work with governments, businesses and households to save energy and strengthen the economy. The Collaborative formed as an authority in 2012.

The Town of New Castle is a founding partner in the organization. New Castle plays an important role in helping reach GCE's goals for energy savings. Across the county, these goals will strengthen the economy through energy diversification, energy cost savings and job creation.

CLEER: Clean Energy Economy for the Region is a nonprofit that manages the programs and services of Garfield Clean Energy under an annual contract. By joining forces, the 10 local government partners are providing their constituents with a variety of clean energy programs and services that they could not afford to provide on their own. Together, the partners are building the clean energy economy across Garfield County.

Vision Statement: Garfield County will be the most energy efficient county in the country.

Mission Statement: The mission of Garfield Clean Energy Collaborative is to educate and provide energy efficiency solutions and alternative and renewable energy opportunities to all individuals and organizations in order to build a stronger, more resilient economy benefiting citizens of Garfield County.

Goal No. 1: Increase per capita energy efficiency by 20% by 2020 over a 2009 baseline to have a stronger, more resilient and energy-secure economy.
Goal No. 2: Reduce petroleum consumption 25% by 2020, over a 2009 baseline, as a means to a stronger, more resilient and energy-secure economy.
Goal No. 3: Obtain 35% of our electricity from renewable sources by 2020 as a means to a stronger, more resilient and more energy-secure economy.

Garfield Clean Energy 2013-2014 Results

Strategic planning: GCE's activities are being guided by its 2014 strategic plan, and the board is now developing its strategic plan and budget for 2015, following a board strategic planning retreat held April 9.

Garfield Clean Energy's goals are based on energy use and spending in 2009, measured in an energy inventory conducted in 2010. GCE plans to update the countywide energy inventory in 2015, based on energy use and spending in 2014. The results of the update will show how much progress we are making toward achieving the energy goals.

The draft 2015 strategic plan includes a new goal: Identify and implement adequate and sustainable funding for Garfield Clean Energy by 2016 to achieve our mission.

Private sector energy coaching and rebates. A major service of GCE is free energy coaching for households, businesses and organizations. CLEER's energy coaches help busy people make smart decisions about energy upgrades to lower their energy costs and maximize their potential rebates.

In 2013, GCE paid out the last of its rebates funded by the 2011 Better Buildings grant award to Garfield County. In 2014, CLEER obtained a grant of $40,000 from the Colorado Department of Public Health and Environment to fund rebates in western Garfield County, and a second grant for $44,940 is in the works.

Residential energy efficiency results January 2013 through May 2014		
Residential retrofits: 126 Parachute: 2 Rifle: 6 Silt: 7 **New Castle: 5** Glenwood Springs: 67 Carbondale: 39 **Rebate multiplier: $5.8** spent for every $1 in rebates	**Measures: 174** Insulation and air seal: 35 Heating/Vent/Cooling: 51 Water heater: 20 Windows/doors: 31 Evaporative cooler: 3 LED lighting: 34 Est. savings: $24,670/year	**Economic development** Total invested in upgrades: $666,659 Utility rebates: $12,130 Glenwood Springs Electric rebate: $38,897 GCE rebates: $36,188 Town of Carbondale rebates: $10,109 CORE rebates: $29,711

Garfield Clean Energy Residential Revolving Loan Fund	
Total loans: 10	Current loan balance: $86,926
Total amount loaned: $90,258	Total available for loan: $231,000

Commercial energy efficiency results January 2013 through May 2014		
Commercial retrofits: 68 Parachute: 2 Rifle: 10 Silt: 0 **New Castle: 4** Glenwood Springs: 30 Carbondale: 22 **Rebate multiplier: $4** spent for every $1 in rebates	**Measures: 107** Major equipment replacement: 7 Efficiency upgrades (building envelope, motors, refrigeration): 37 Lighting upgrade: 61 Solar (PV or thermal): 2 Est. savings: $61,471/year	**Economic development** Total invested in upgrades: $670,192 Utility rebates: $83,561 Glenwood Springs Electric rebate: $34,340 GCE rebates: $77,874 Town of Carbondale rebate: $21,698 CORE rebates: $29,462
Participating 81647 businesses and commercial properties: Elmer Suds Liquor Mart Mr. T's Hardware & Building Supply K2 Spirits / Spirits of New Castle Osage Gardens		

Policy

- Worked with other energy organizations in Colorado to successfully convince the Colorado PUC to hold Xcel Energy to its current energy efficiency targets for 2015-2020.
- Worked with state legislators to develop a successful bill, SB 186, giving small communities better access to performance contracting for energy efficiency upgrades.
- Worked with Dept. of Local Affairs to amend its rolling stock policy to allow grants to local governments to buy down higher costs of alternative fuel vehicles.
- Active Energy Management policy passed by GCE board May 8, 2013, also enacted by six member governments, including the Town of Parachute.
- Anti-idling policy resolution passed by GCE board Dec. 11, 2013.

Transportation

Bike and Walk to School Challenge: Eight schools across Garfield County participated in the three-day event, held April 15-17. It encourages kids to bike and walk to school for a healthy and energy-saving alternative to being driven to school. The 2014 winners were Bea Underwood Elementary in District 16 and Carbondale Community School and Carbondale Middle School in Re-1. The first place school prize was $1,000 for the school to use for playground or P.E. equipment.

CNG: Garfield Clean Energy is participating in the Refuel Colorado Fleets program, a statewide pilot project being led by CLEER. The pilot program is providing energy coaching to fleet owners in nine selected Colorado counties to accelerate the transition to alternative fuel vehicles.

GCE energy coaches are working in Garfield and Mesa counties to help build market demand for CNG, with an aim toward new public fueling facilities in Clifton and Glenwood Springs. This will complement the CNG fueling stations already in place in Rifle and Parachute, making ownership of CNG vehicles a viable, cost-saving option for fleets in our region.

Garfield Clean Energy made Parachute the centerpiece of its Mesa-Garfield Rolling Tour, held Aug. 28, 2013, to promote CNG awareness from Grand Junction to Glenwood Springs. The event coincided with the grand opening of Encana's CNG station at the Parachute Shell.

EV charging: Garfield Clean Energy has discussed options for providing a public charging station in New Castle, including a partnership with McDonald's and a possible site at the Community Center. GCE can assist the town in applying for the state's Charge Ahead Colorado grant program, which provides funding for charging stations.

Town of New Castle progress

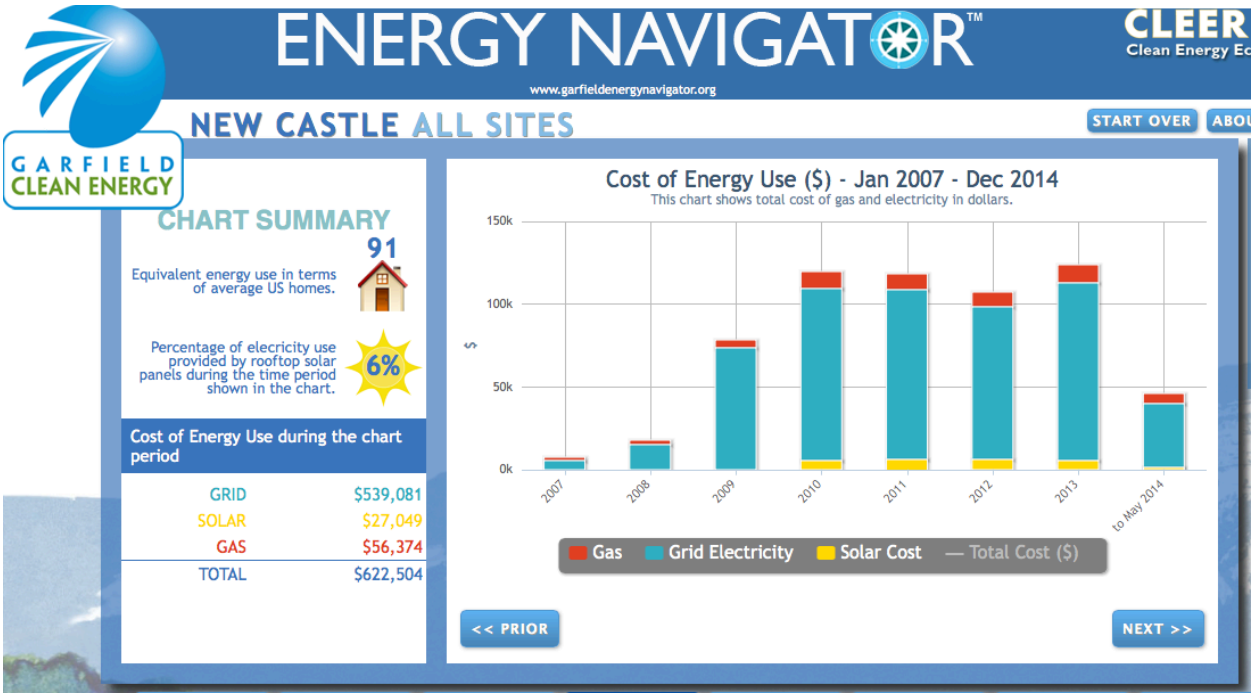
Another key role of Garfield Clean Energy is to help its member governments reduce energy use. When local governments cut energy use in their facilities, they reduce utility and operational costs, demonstrating wise use of taxpayer dollars and freeing up budget dollars for critical needs.

Garfield Clean Energy uses a method called Active Energy Management (AEM), which engages and motivates people to use energy data, make operational changes and learn energy conservation behaviors to achieve greater levels of energy savings in buildings. AEM training for facility managers and building energy champions helps them engage many more building occupants in energy-saving efforts.

The Garfield Energy Navigator website provides feedback on energy savings, either on a daily or monthly basis. AEM teaches facility managers and building energy champions how to use the Navigator data to achieve their energy savings goals.

Energy use and spending: Five facilities are on the Energy Navigator online energy data system, the Town Hall, Community Center, Public Works, Water Treatment Plant and Wastewater Treatment Plant, enabling Garfield Clean Energy to track energy usage. A new feature on the Navigator site allows each GCE partner to look at annual totals for all tracked buildings and facilities.

Annual energy spending at Town Hall, Community Center, Public Works, Water Treatment Plant and Wastewater Treatment Plant, 2007-2014



Annual energy spending totals are low for 2007-09 because of incomplete bill data. The 2014 figure is through April 30. The yellow "solar cost" bars show solar PV production at the Public Works facility.

2010	2011	2012	2013
$119,971	$118,716	$107,501	$118,047

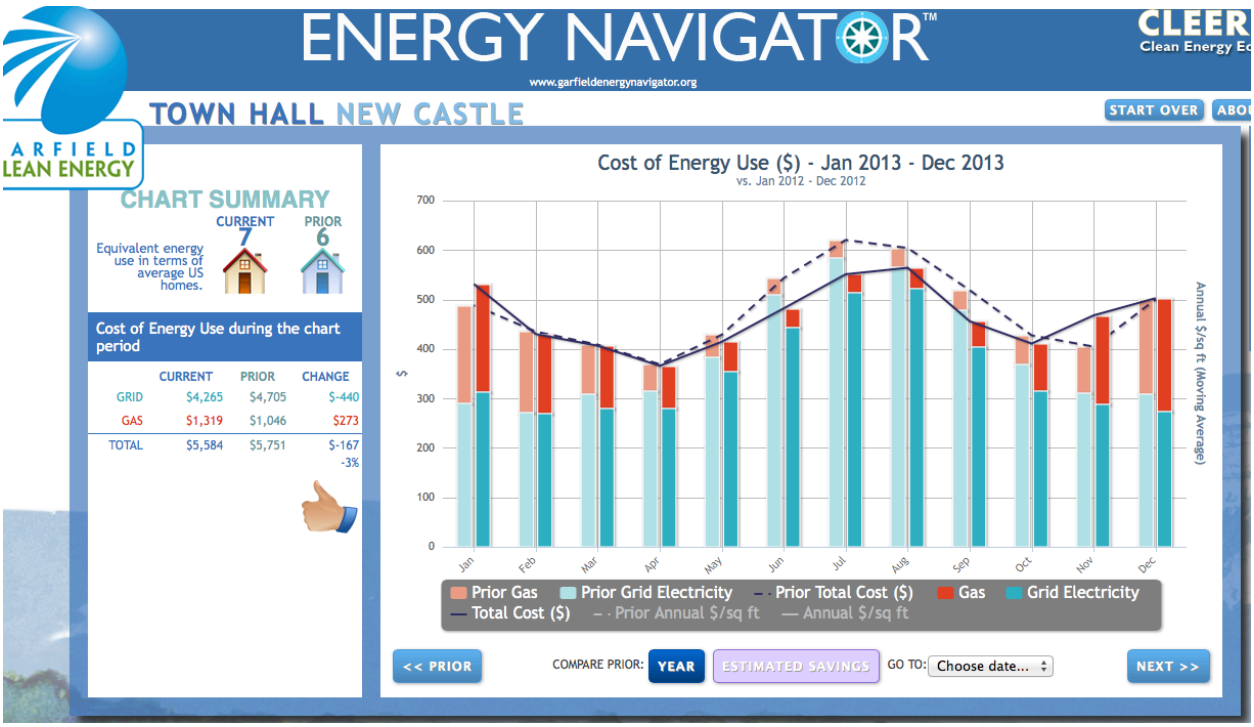
Overall energy spending was up by nearly 10% in 2013 compared to 2012, increasing about $10,500. Comparing 2013 to the 2010 base year, New Castle's spending for these five facilities dropped by less than 1%. Actual energy use actually increased by a net of 3 percent from 2010 to 2013.

We attribute the 2013 increases largely to the operational difficulties at the wastewater treatment plant during 2013, resulting in energy costs that were $18,600 higher in 2013 than in 2012. In 2014, energy costs remained at 2013 levels through April. We advise continued focus on this facility in an effort to pull energy costs back down to levels consistently attained in the 2010-2012 period.

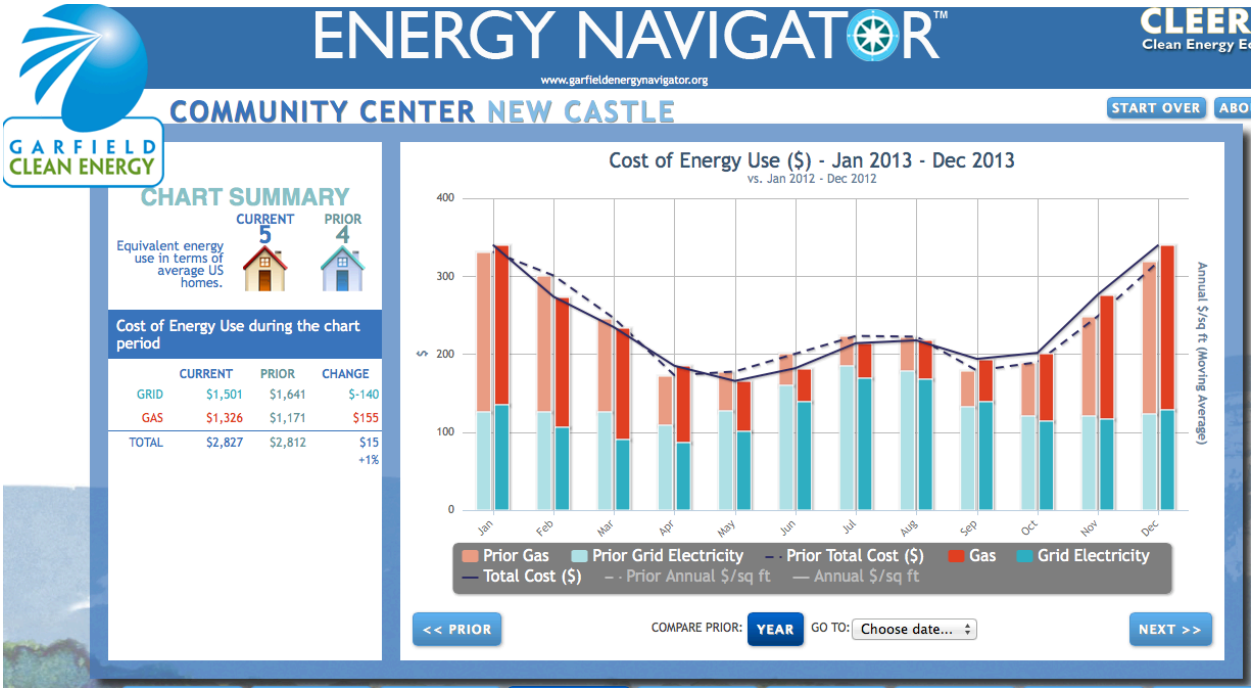
New Castle can build on these savings by pursuing additional measures on the Town of New Castle Energy Efficiency Projects list *(see page 10),* which could save even more taxpayer dollars in 2014 and beyond.

The following pages are screen shots of Garfield Energy Navigator web pages for New Castle's five facilities, comparing 2013 energy use to 2012.

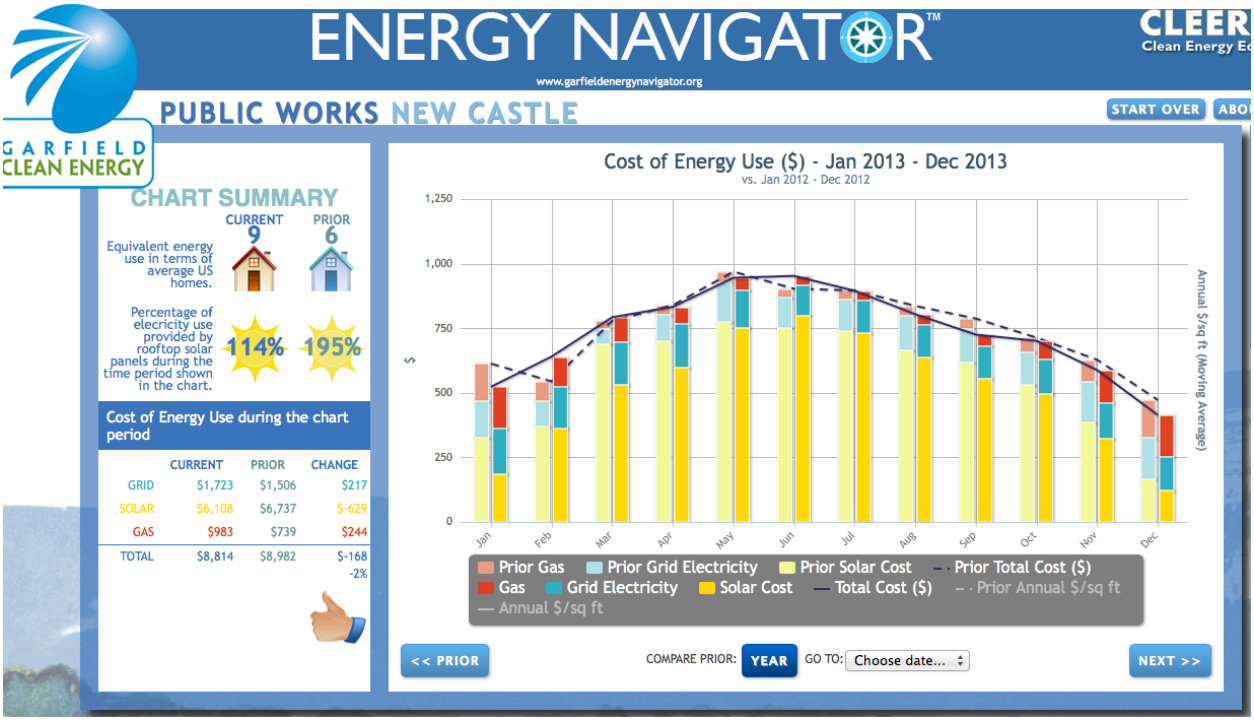
Town Hall, 2013 compared to 2012



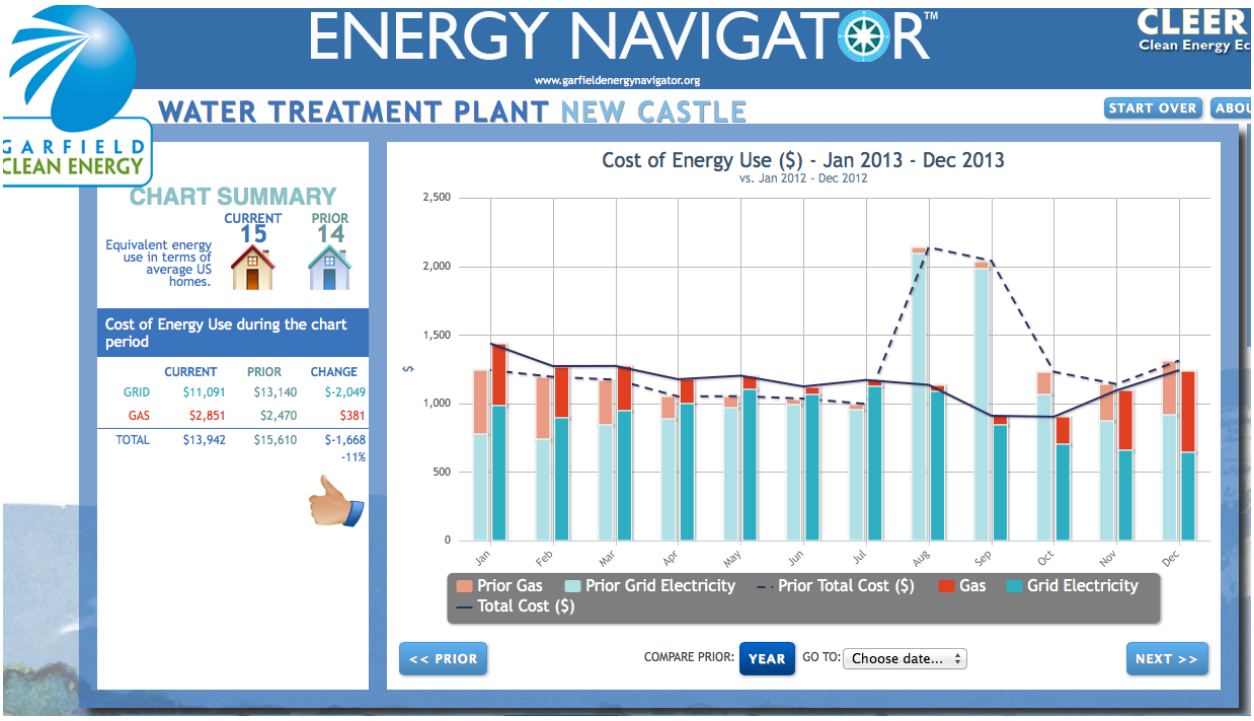
Community Center, 2013 compared to 2012



Public Works, 2013 compared to 2012

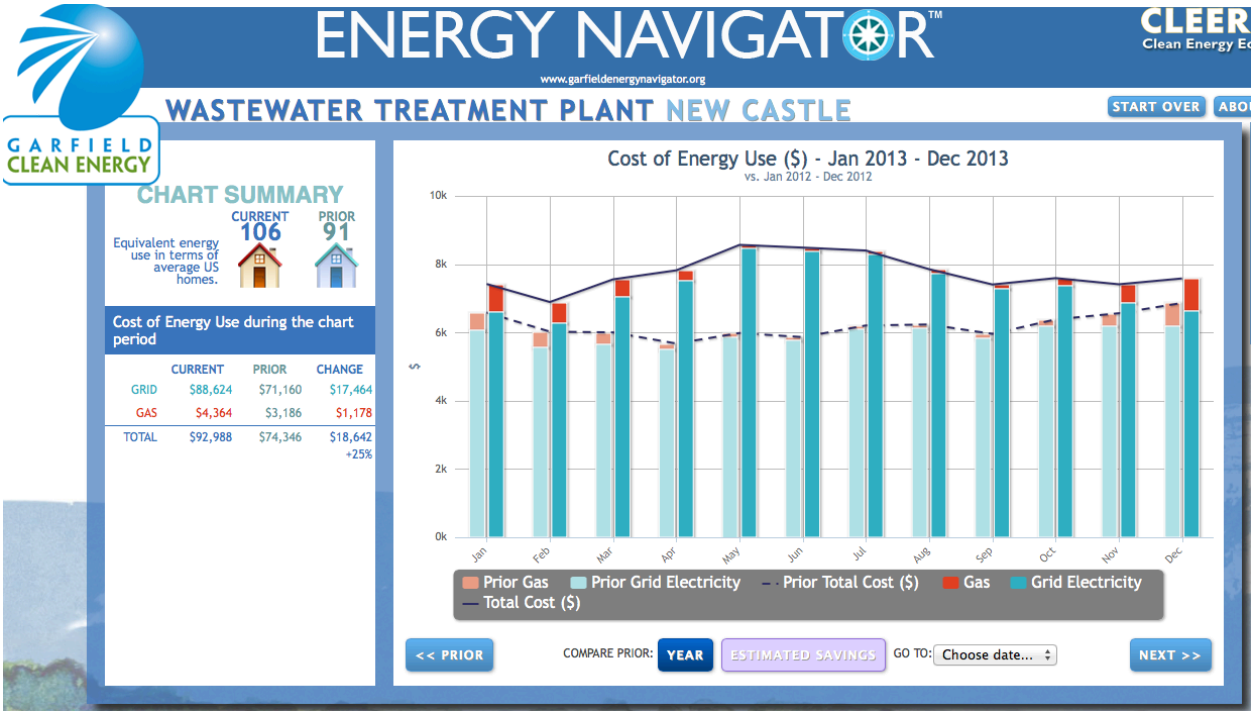


Water Treatment Plant, 2013 compared to 2012



The spike seen in August and September 2012 is the result of an Xcel demand charge applied from, we assume, the operation of lift pumps. The actual total energy use in those months was only slightly higher than usual.

Wastewater Treatment Plant, 2013 compared to 2012



Goals discussion

In 2010, the New Castle Board of Trustees adopted the Garfield Clean Energy goals, noted on page 1 of this report.

- 20% gain in energy efficiency by 2020
- 25% reduction in petroleum use by 2020
- 35% gain in renewable energy by 2020

The town's five buildings on the Energy Navigator have made a 9% gain in energy efficiency in 2013 compared to a base year of 2010.

These goals are meant to cover the public and private sectors throughout Garfield County. When local governments such as the Town of New Castle meet or exceed these goals with their own facilities and fleets, they set a strong example and demonstrate wise use of taxpayer dollars.

In 2013, the council was the first board to adopt GCE's Active Energy Management resolution, aimed at encouraging town staff and trustees to suggest energy-saving changes in buildings, facilities and fleets.

Garfield Clean Energy stands ready to help its partners reach their adopted energy goals through AEM consultations with staff.

With this annual energy presentation, we are asking the GCE partner boards to revisit the community-wide goals adopted in 2010, and consider directly setting goals for town-owned buildings and fleets, evaluate the financial benefits, and consider the following active steps:

- Set an energy efficiency goal for town buildings and facilities.
- Set a priority for staff to expedite energy efficiency upgrades and fleet efficiency measures that will result in energy cost savings.
- Include funding for recommended upgrades in the town's 2015 budget.
- Participate in GCE grant applications and performance contracting efforts aimed at raising funding for building and fleet energy efficiency upgrades for multiple GCE partners.

Town of New Castle Energy Efficiency Projects, completed and proposed

	Project Type	Status	Project Detail	Results Detail	Completed Date	Annual Energy Savings
Town Hall	Upgrade	Done	SGM commissioning	5% conservative savings estimate	11/1/11	$281
Town Hall	Upgrade	Done	Lighting upgrades	5% conservative savings estimate	11/1/11	$281
Town Hall	AEM	High Priority	Heat tape timer, HVAC maintenance, build light shelves	Reminder sent March 25: turn off heat tape		
Town Hall	Upgrade	High Priority	Test and fix HVAC			
Town Hall	Navigator	High Priority	Install kiosk, install live data monitoring			
Public Works	Solar PV	Done	Solar PV, Power Purchase Agreement	70.5 kW Solar PV	5/1/10	$10,575
Public Works	AEM	Done	Thermostat adjustments and use of excess solar electricity for electric heat	Estimated savings of $500 in natural gas during winter 11/12.	9/2/11	$500
Public Works		Done	Install Navigator kiosk		11/1/11	$0
Public Works	Upgrade	Done	SGM commissioning	5% conservative savings estimate + comfort and air quality improvements	11/1/11	$500
Wastewater Treatment Plant	AEM	Done	Energy Monitoring + Energy Management Training	Live data provides new tools to staff. CLEER/EPA/SGM training helped staff cut energy use 16% vs prior year	9/6/11	$12,960
Wastewater Treatment Plant	AEM	Done	Energy monitoring solves plumbing hardware problem.	Alerted staff to high energy use, staff used fire truck to clear blockage in air diffusers.	9/15/13	
Wastewater Treatment Plant	AEM	High Priority	Opportunity for staff to improve plant operation	Energy use in May 2014 and May 2013 are 20% higher than in May 2012. If possible, return plant to 2012 operational methods.	5/1/14	
Water Treatment Plant	AEM	Done	Trained Public Works team on electricity demand management	May reduce demand charges 50% ($1,000-$3,000) on pumps used in drought years	3/15/12	TBD
Community Center		Done	Lighting upgrades	5% conservative savings estimate	11/1/11	$150
Community Center	Upgrade	High Priority	Boiler adjustments as outlined in March 2013 AEM report: Boiler reset from 160F to 185F, install outdoor temp sensor, add zone to provide heat to office and remove from closet, maintain setbacks, add hot water pipe insulation.			
Community Center	Upgrade	High Priority	Insulation and air sealing measures: overall air sealing, door replacement, cover wall A/C units, check ceiling insulation levels.			
Fleet	Fleet efficiency	Priority	Policy adoption considered, vehicle choice and alt fuels considered.			
Total Annual Savings						**$24,685**

GARFIELD CLEAN ENERGY Challenge!

Case Study: New Castle Wastewater Treatment

New Castle, Colorado

By Cam Burns, CLEER

Fire department helps New Castle wastewater get electricity use back under control

The operators at the New Castle wastewater treatment plant recently came up with a creative solution for fixing a problem caused by plugged air pipes at the facility—they used fire trucks to blast them clean. With the material cleared from the lines and air bubbling smoothly again, operators have found the plant is running better is energy use is back under control.

In April, after a power outage at the New Castle wastewater treatment plant last summer, Utilities Supervisor Greg Colter and his colleagues noticed that two big blowers that push air into oxidation basins—where bacteria eat biological and chemical waste in the water—had shut down and were allowing dirty water to flow backwards through tiny holes in air pipes that would normally create fine air bubbles.

When the power came back on, the dirt in the 4-millimeter holes meant bubbles weren't forming properly in the many diffuser pipes that feed air into the oxidation basins. That could've been a serious problem as the plants bacteria need oxygen to break down waste material. As a result, the plant's staff had to crank up the pressure generated by the air blowers to achieve the correct level of oxidation. The plant used considerably more energy for several months. The plant had recently been highlighted in a national publication for achieving energy savings, but those savings weren't occurring during the time the staff was working to solve this problem. CLEER's Mike Ogburn, roughly forecasted it could increase energy costs by as much as $30,000 per year if allowed to continue that long.

The two $14,000 air blowers were also running hot, which concerned Colter. He made various changes to the ventilation in the pumphouse housing the blowers, but overheating and increased wear and tear on the blowers remained a concern.

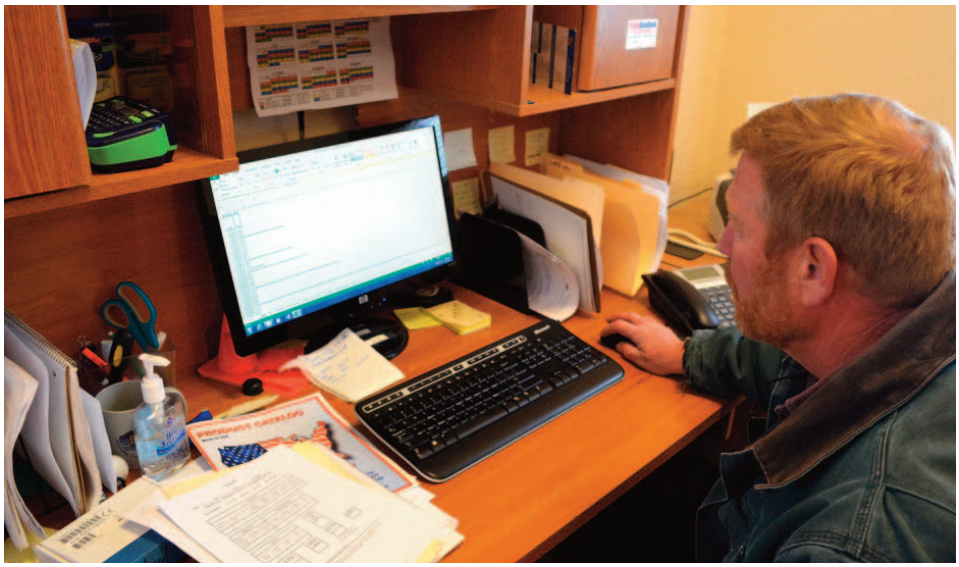
In late summer 2013, New Castle wastewater treatment plant staff

Utilities Supervisor Greg Colter holds a special attachment his staff added to the plant. It allowed the fire dept. to clean the fine bubble diffuser pipes. Photos by Cam Burns

Lessons Learned

- Small adjustments in how machines operate can have impressive results
- Sometimes running a facility means making do and being creative

Above right: Greg Colter shows off one of the two air blowers at the New Castle wastewater treatment plant. Below right: Colter monitors energy use on a daily basis.



came up with a novel idea: blast the waste stuck in the pipes out with water. The fresh water line at the plant didn't have enough pressure so plant staff found the next best supply of high pressure water they could think of—they called Colorado River Fire Rescue. But before the fire department visited, wastewater treatment plant staff added special fittings that would allow the fire department's hoses to connect to the wastewater treatment plant's pipes.

On September 25, the fire department arrived at the plant, hooked up its hose, and blasted hundreds of gallons of water at high pressure through the air pipes of the wastewater treatment plant, clearing the gunk that was plugging the tiny holes.

"With the fire department's pump truck we were able to pump 250 gallons per minute of water at 85 pounds per square inch and this cleared the holes," Colter said. "With the blockage cleared, the blower did not have to work as hard to deliver the required amount of air. In return the electricity cost went down, along with the blowers running cooler and more efficiently.

Colter doesn't know if he'll need to get the fire department out to re-blast the pipes in another several months, but for now, the plant is running well and using less energy.

The relationship between the two agencies is symbiotic, as both need and use huge amounts of water.

"We keep in close contact with the fire department," Colter said. "When we lower the volume of water we store in the water tanks in the winter, we notify them so they know we have a lower reserve of water in case of a fire. And they call us if a fire should occur so we can transfer water to the zone that the fire is in and start the water plant up so that we can provide water if it is needed."

And, during the initial attempts to blast water using the hydrant at the wastewater plant, plant operators learned that the pressure in that line was less than adequate for fire protection. A properly pressurized hydrant is important if there's ever a fire at the plant, Colter noted.

"That's one of the best energy-saving MacGyver stories I've heard in a long time," joked Ogburn. "The wastewater team at the Town of New Castle deserves a pat on the back for thinking out of the box and getting their plant running right and keeping costs down."

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