

A new energy convergence

Wyoming explores renewable energy

Nearly a century after one of the nation's worst political scandals at Teapot Dome, a new chapter is being written across central Wyoming. Here the petro-rich land is producing innovations that promise more responsible use of petroleum wells and renewable energy technologies for farms and towns across the West.

Now, just 35 miles north of Casper, Wyo., you can find the 10,000-acre Rocky Mountain Oilfield Testing Center, a Department of Energy alternative-energy incubator utilized by energy companies, inventors and academia.

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—Clarke Turner, Director, Rocky Mountain Oilfield Testing Center

Past-meets-future technologies

Clarke Turner, the director at the center, relishes the convergence of two distinct energy cultures in one place. The hybridization is producing a new generation of technologies.

“People produce fossil energy and people produce renewable energy, but the natural tendency is to guard their industries and not use hybrid technologies or talk about it, but we are trying to make collaborative efforts,” Turner said. “If these two camps don't collaborate, you're missing tons of opportunities,” he said.

The industrial mutualism in the works at the center is a past-meets-future venue where clean energy breakthroughs are merged with traditional fossil fuels, potentially transforming the energy sector of the U.S. economy.

How might such a new future come about? Consider the wider applications of technologies now in use at the center. For example, researchers have developed methods to extract geothermal electric power from low-temperature wells. Oil fields extract lots of water as they age and deplete, but the water is not hot enough for conventional geothermal power plants.



To overcome this challenge, the center, in a partnership with Ormat Technologies Inc., for the first time used the 200-degree water to generate electricity and power the oil pumps. This technology saves money, prolongs the life of marginal oil fields and reduces need for imported oil. Moreover, it proves a new form of renewable energy for use in industrial and commercial applications in remote places around the West. Said Turner: “It can be a widespread technology because across the entire United States you have some sort of water sources that have low temperature (geothermal potential).”

Another experimental endeavor tests a trailer-drawn solar-powered pump, which can be transported to remote locations to power oil-well pumps. It could help reduce some of the harmful emissions associated with oil extraction and advance broader application of solar-power technologies.

A new kind of classroom

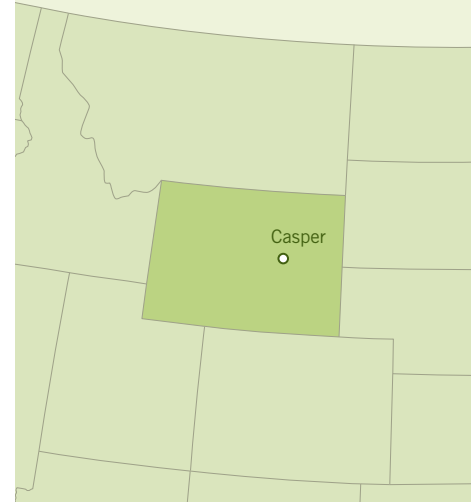
Casper College partnered with the center to host a 6 kilowatt wind turbine that students use as a classroom to practice wind turbine maintenance. It’s part of a course for a renewable energy degree

program the college offers, said Megan Graham, an instructor at the college.

“I foresee us doing more projects out there and using renewables to power light industrial applications,” Graham said. “Typically, wind and solar have been used for residential or remote applications, but for renewables to take hold they have to have proven application and one area that hasn’t been explored much is powering larger motors to power industrial or commercial operations or agricultural operations.

“If we prove this works at (the center) by powering some pumping units, that would be a way to get affordable power in Wyoming where it’s costly to run power lines to remote locations,” Graham said.

Crossing the cultural and technological divide between renewable and fossil fuel energy can be a challenge and Turner says his staff works hard to build bridges. Said Turner: “The mission is extremely rewarding. We have to work together to solve our energy and policy issues.”



Wyoming clean energy facts

- Clean energy sector jobs grew over 55 percent between 1998 and 2007.¹
- Wyoming Department of Family Services delivers energy assistance to more than 11,000 households each year, resulting in average energy savings of \$218 per household in energy efficiency improvements.¹⁹
- The McFadden and High Plains wind projects, completed in 2009 and now producing 127 MW, provided over 250 full-time jobs during peak construction.²⁰
- Wyoming realized a 19 percent growth in total renewable energy generation from 2001 to 2007.⁵



The groundbreaking of a wind turbine partnership project between the Rocky Mountain Oilfield Testing Center (RMOTC), Rocky Mountain Power and Casper College. PHOTO: RMOTC

Left: An Ormat geothermal project is housed at RMOTC. PHOTO: RMOTC