Renewable energy brings modern-day gold rush

May 29 2009, By Jason Gertzen

Dreams of renewable energy riches have set off a scramble not seen since miners rushed into these surrounding hills in search of shiny nuggets.

"This is like a land rush with a whole bunch of people running side by side," said David Christensen, one of the gurus of new electricity technology at the National Renewable Energy Laboratory in the Colorado foothills.

The winners, he said, will find "huge pots of gold at the end."

Kansas and Missouri leaders are joining many other states scurrying to stake claims in the energy gold rush.

President Barack Obama is encouraging this renewed interest in renewable energy by pumping more than $60 billion in federal investment toward stimulating the economy, creating jobs and advancing the nation's ability to generate energy from wind, sun and plants.

By making substantial investments of their own in renewable energy research and commercialization, various states aim to emerge as leading hubs able to attract federal backing and increasing attention from companies considering expansion sites.

Although states such as Colorado, Minnesota and Iowa may have an early edge as renewable energy leaders, Kansas and Missouri have

projects, expertise and other assets that could make them strong contenders.

One of the area's key allies is Kansas City's Midwest Research Institute, a nationally prominent expert on renewable energy.

The nonprofit institute, known widely as MRI, is a co-manager of the Department of Energy's Colorado laboratory in the Denver suburb of Golden. Researchers in the sprawling complex are working with companies to make solar, bioenergy and other technology more efficient and cheaper to produce.

ENERGY LAB'S STRENGTH

Steven Chu, the U.S. secretary of energy, is an advocate of renewable energy.

The secretary visited the lab last month to check out robots and other systems developing a new generation of high-tech solar power materials.

One machine appears particularly promising. Using a process much like an inkjet printer, the technology could be used to crank out sheets of photovoltaic cells as efficiently as other assembly lines mass-produce screen-printed T-shirts.

Scientists are making great strides in improving the ability to transform sunlight into electricity. All of this work must proceed so that solar power also becomes a more economical source of energy, Chu said after strolling through the labs and chatting with top researchers.

The lab complex is a frenetic hive of expansion. Crews and cranes are building new offices and labs. Officials are on a hiring binge, striving to add 150 highly trained professionals to the current staff of about 1,300.

Chu told lab leaders to ratchet up these efforts yet again. He said the federal economic stimulus initiative would pump $100 million into the lab for facility and infrastructure improvements.

"This is one thing we should be investing in to prepare our economy for the future," Chu said.

MRI researchers in Kansas City are collaborating on other promising projects, including one with University of Missouri scientists who produced new technology to power vehicles with natural gas.

The institute has experience in managing vast research initiatives involving many organizations. With energy expertise at the region's universities, local companies and other agencies, MRI leaders are interested in helping to put all of the pieces together, said Stan Bull, the institute's director of energy programs.

"MRI is a significant strength in this area," Bull said.

CHASING THE GOLD

Beyond MRI's work, the two-state region also can point to other signs of renewable energy momentum.

Siemens Energy announced plans earlier this month to build a $50 million plant in Hutchinson, Kan., that will create 400 "green collar" jobs. The 300,000-square-foot facility will make equipment for wind turbines.

State officials just crafted a nearly $3 million bioenergy research partnership involving the University of Kansas and Archer Daniels Midland Co.

Kansas officials aspire for more. Much more. They are making the case for $382 million in federal support for a series of renewable energy projects that would build on existing strengths.

"Kansas has an extraordinary advantage," said Tom Thornton, president of the Kansas Bioscience Authority. "We are trying to convert that advantage into substantial federal investment."

Missouri's strategy has yet to come together as fully as it has in Kansas, but a number of noteworthy initiatives are emerging.

Last fall Missouri voters provided a strong catalyst with the passage of a renewable energy ballot measure. The state's investor-owned utilities now must generate at least 2 percent of their power from sources such as solar, wind, biomass and hydropower by 2011 and 15 percent by 2021.

Officials are setting other targets to reduce the energy usage of state buildings by a substantial amount over a decade.

These sorts of pushes should be considered investments that can pay off in several different ways, said Gary Stacey, director of the Center for Sustainable Energy at the University of Missouri in Columbia.

With technical advances and the rising cost of fossil fuels, renewable energy eventually could be cheaper than traditional sources of power. Plus, wind and other renewable sources can be better for the environment and leave the United States less dependent on foreign oil.

In other ways, the payoff for these investments will be even more immediate.

All of the new wind farms will need technicians able to repair the equipment. Workers are needed to install a growing number of solar,

geothermal and similarly modern energy systems.

One Missouri initiative intends to make sure that the well-trained work force is available. The project is reaching out to homebuilder associations, veterans groups, other organizations and area schools to create training programs to prepare green energy workers, Stacey said.

"The energy area in general is going to see tremendous job growth," he said.

The commercial possibilities of renewable energy also have caught the attention of major corporations and established companies throughout the region, including engineering powerhouses such as Black & Veatch and Burns & McDonnell.

COLORADO'S MODEL

Colorado offers a strong example of a state that has mustered renewable energy assets to help the environment and the economy.

The federal energy lab provides a substantial foundation, but the state also conducts cutting-edge research in its universities. This expertise is helping to attract a growing number of companies.

"In Colorado we have made this one of the most important things we are doing," said Gov. Bill Ritter.

Ritter's "New Energy Economy" is intended to make Colorado an international leader in the production and manufacturing of clean modern energy technologies.

A big influence will be innovations that make it out of the laboratory. Colorado State has a program intended to push biofuel, solar and wind

discoveries toward the commercial marketplace.

Abound Solar, a spinoff company from Colorado State, is a success story showing the benefits of working with the laboratory. The company makes thin-film solar panels and recently opened a commercial production facility that promises to create 300 jobs.

Abound's prototype made substantial advances after the company began working with the National Renewable Energy Laboratory, said Martha Symko-Davies, a top researcher at the lab.

"We have so many years of experience here," she said. "We try to help them overcome research and development hurdles."

In the Greater Kansas City region, the movement of innovations from the lab to the marketplace is starting to happen more frequently with medical advances.

At least in part this success can be attributed to a broader civic initiative that came together earlier this decade to capitalize on key life sciences assets. The creation of the Stowers Institute for Medical Research, several top university research programs in certain niches and the presence of drug development expertise all presented significant opportunities.

MRI played a role in identifying these specific opportunities and crafting a strategy, which included the creation of the Kansas City Area Life Sciences Institute, said James Spigarelli, the institute's president and CEO.

Now the institute is helping to lead a new regional initiative. This time it is focusing on how the area can pick the renewable energy niches in which it is strong enough to stand out from rival regions, Spigarelli said.

"It's all about competitive advantage," Spigarelli said. "What can we do in this region that builds on our strengths?"

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NATIONAL RENEWABLE ENERGY LABORATORY

The Golden, Colo., facility calls itself the "nation's primary laboratory for renewable energy and energy efficiency research and development."

Some key facts:

• Scientists at the laboratory are working to improve the efficiency and cost of key renewable energy technologies such as solar and wind power and cellulosic ethanol.

• The laboratory employs more than 1,300 and is in the process of hiring at least 100 more workers.

• Its annual budget averaged about $213 million from the 2002 to 2006 budget years, but jumped to nearly $380 million in 2007 as renewable energy emerged as a heightened national priority.

• Kansas City's Midwest Research Institute has run the Colorado laboratory since it was founded in 1997. Last year when the Department of Energy renewed the management contract, the deal was awarded to the Alliance for Sustainable Energy, which is equally owned and governed by MRI and Battelle.

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NEW ENERGY GOLD RUSH

Researchers have been pursuing the promise of renewable energy for decades, but many of the technologies are not as cheap as conventional sources of power. Experts say we are closer than ever to key advances that can bring these technologies to the marketplace. Beyond the new surge in government funding, private investors also are rushing after renewable energy riches.

Seven of the 10 largest venture capital deals of 2008 were in the "clean technology" sector.

Venture capitalists invested a total of $4.1 billion in 277 clean technology deals, a 52 percent increase.

During 2007 and 2008, 441 merger-and-acquisition deals valued at $70.3 billion were announced in the wind and solar power industry.

Source: National Renewable Energy Laboratory

Sources: MoneyTree report from PricewaterhouseCoopers and the National Venture Capita

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