

## Clean Energy, Green Economy

Renewable energy stands poised to create opportunities across the country.

Steve Stackhouse (June/July 09)

Can the American economy afford clean energy? Not all that long ago, the prevailing sentiment was “no.” Today, the buzz there’s a growing realization that “green” means not only environmentally friendly, but also profitable and full of opportu

A confluence of trends is behind the shift in attitude. For one thing, energy prices last year became difficult to bear, and Al alternatives. More and more people are also coming around to the viewpoint that the country’s dependence on foreign oil i threat to national security. Add to that the feeling that time is running out for environmental fixes — that the planet can w climate change. What’s more, alternative energy technologies just keep getting better, making economically feasible everyt from crop waste. Finally, the economic downturn has fueled the need for new jobs...lots of them.

Clean energy would seem to provide solutions to all of these needs, but what kinds of opportunities are out there? What ki grow? The answers provide some much-needed encouragement in a down economy — there are jobs to be had, plenty of tl sprouting all over the country, including in some of the areas that are hurting the most.

“Clean energy is an enormous opportunity for U.S. companies, as big as if not larger than the tech boom of the 1990s,” say president and chief financial officer of GreatPoint Energy. “We’re talking about a trillion-dollar industry. I don’t think the it, the investors are just starting to wake up to it, but entrepreneurs and technology developers are in it.”

“I think it’s going to be a long-term business; it’s not going to be a short-term phenomenon,” Todd Filsinger, head of PA C Markets practice, says of clean energy. Filsinger co-chairs the Coalition for Green Bank, a consortium of energy industry d investors, financial advisors, and consultants working to create jobs and foster economic development by unleashing priva “The prospects are immense, and think of the technology jobs that will be created,” he says.

### Diverse Opportunities in Clean Energy

Clean energy goes by many names — sustainable, renewable, green, alternative — and includes a host of different technolo through the power of wind; fuel created through the conversion of crop waste; power from the sun; natural gas created fro otherwise would be landfilled. The common denominator is that clean energy replaces energy that was formerly generated processes, such as the combustion of coal.

Just as the technologies are diverse, so are the ways clean energy can benefit local communities. Economic development si generation of energy, but also the many activities involved in supporting that generation, including the development and r the distribution of energy, and the collection of the raw materials used by some of the processes.

Take wind power as an example. It has quickly become a high-growth business, with wind farms on the drawing boards in driving demand for wind turbines — and the hope is that an increasing share of them will be made in America. At a recent attendees spoke of the improving policy climate. Vestas Wind Systems A/S is developing manufacturing here after years o environment, and Emergya Wind Technologies dangled the prospect of at least 800 U.S. manufacturing jobs. GE, meanwl week just a few years ago but now ships 13 a day.

Then there are the towers upon which the turbines are installed. Last year, DMI Industries decided to add some 225 jobs t towers for turbine-makers such as GE. “The demand for wind energy is helping us grow,” John Erickson, CEO of parent cc announcing the expansion. “As a nation, we only use about 1 percent wind energy now, and many think it will grow to 15, 2 Goldman’s company has developed a process that converts coal, petroleum coke, and biomass into pipeline-quality natura first commercial production facility. GreatPoint Energy, he says, is building a bridge from the traditional energy business t creating new opportunities while still saving traditional jobs. “One of the big concerns as we move to clean energy has been

jobs in the old industry,” he observes. “We can actually take coal, turn it into a clean fuel, and keep coal mining jobs.”

Jack Oswald, meanwhile, is finding new markets for biomass such as crop waste and wood chips. He’s CEO of a company and a contributing member of the President’s energy and environmental policy advisory group. He also serves as a delegate to the President’s Council on Competitiveness and Innovation and is a founding member of the Clean Economy Network.

“We can now make competitive, advanced biofuels using crop waste or wood chips,” he says. SynGest’s initial product is a technology that is flexible. “We can turn biomass into a synthetic gas and convert it to lots of kinds of products. We can change gasoline, and diesel.”

In this case, there’s the potential for jobs linked not only to the actual production, but also to the provision of the feedstock. “Agricultural operations can win by changing their processes; for example, harvesting and then selling both the corn and the stalk. Under the current norm, we’ll have a lot of opportunities,” Oswald says.

And these are opportunities that can grow right in the heartland of the country, including many places hit hard by the current recession. “A lot of manufacturing facilities that can be retooled for these technologies,” Oswald says. “Some of the winners will be places that have lost manufacturing jobs, especially those that have lost jobs fairly recently. A lot of the new companies are going to the Midwest.”

Goldman expects GreatPoint Energy to create jobs in such places as Indiana, Illinois, Montana, Wyoming, and Texas. “We’ve tested it at a pilot plant in Des Plaines, Illinois, and we’ve built a demonstration facility in Massachusetts,” he says. The Midwestern facility is expected to create 1,000 jobs, plus more than 500 construction jobs when the \$40 million facility was being built.

“As far as components, one of the target areas will be Detroit,” Filsinger suggests, referring to the manufacture of clean-energy turbines. “You have a lot of need for job creation there, a lot of people who have manufacturing experience, and also a lot of manufacturing capacity that can be converted.”

Filsinger points to potential jobs driven by the push for a Green Bank or Clean Energy Bank, which would funnel government money into promising projects. “When the Clean Energy Bank is passed through Congress, it’ll make available close to \$50 billion a year for investment in clean energy, not just solar or wind but distribution and manufacturing. And when you look at investment, every \$50 billion you invest in clean energy creates about a million jobs.”

### **Projects and Prospects All Over**

Renewable energy is not that different from any other business when it comes to site selection. Generation is most likely to be located in areas where raw materials are the most abundant.

Therefore, the prime places to generate wind power, according to the National Renewable Energy Laboratory, are the places with the most predictable, steady wind: Alaska, Texas, Kansas, Nebraska, and Montana. Solar power is most feasible in places with lots of sunshine, particularly Arizona, New Mexico, California, Nevada, and Texas.

As for geothermal power, the National Renewable Energy Laboratory finds positive prospects in states led by Nevada, Utah, and California. While top biomass states include Iowa, North Dakota, Georgia, Mississippi, and North Carolina.

Still, there are pockets of opportunity all over the place. For example, Indiana is far from the windiest state, yet it has a number of wind farms that are dependable enough to attract multiple wind farms. And Oklahoma is promoting itself as a prime spot for solar power generation, particularly in the south. It’s more competitive with California, Texas, and Florida, while its cost of doing business is lower.

Here’s just a sampling of other clean energy activities and opportunities:

There’s nothing new about generating energy through the power of water, but the boom in clean energy is fueling a resurgence in hydro power. It doesn’t mean development of new dams, but refurbishing of existing hydro facilities as well as the addition of hydroelectric power to existing dams and locks.

Already there are more than 75 such retrofits in the works across the country, including refurbishment of three projects in the Pacific Northwest. The River by the Chelan County (Washington) Public Utilities District. The district recently became the first hydroelectric power provider of carbon offsets for the Chicago Climate Exchange, which is a voluntary program for trading greenhouse gas credits. There’s also room for more such developments — the country has tens of thousands of dams, and only a small percentage have been retrofitted.

Georgia is positioning itself as a center of bio-energy. The state produces all kinds of biomass materials, including corn, soybeans, and canola, as well as less traditional products such as sweet sorghum and switchgrass. Add in it state generates more than 18 million tons of byproduct biomass every year. Oglethorpe Power Co. plans to take a company has announced plans to build up to two dozen 100-megawatt power plants using woody biomass as fuel.

California is a hotbed for solar power activity, with everything from residential rooftop installation to huge commercial. Post Ranch Inn recently flipped the switch on a 990-panel solar installation, the state's biggest hotel solar project in the country. Making it happen was a deal with Recurrent Energy, a distributed power company and a leading provider.

Michigan's Great Lakes Bay region is well positioned as a player in solar — not because of the sun but because of capabilities in the area. Hemlock Semiconductor, the world's largest maker of super-pure polycrystalline silicon, operates there, and the area is home to the world headquarters of Dow Corning and Dow Chemical, big players in silicon. Hemlock Semiconductor is also establishing a facility in Clarksville, Tennessee.

Oklahoma already has more than 700 megawatts of wind generation online, and is gearing up to be one of the top states in the decades. That'll happen through the development of major wind farms, but also through smaller projects. One example is the Research Foundation's new research tower, which claims to be the first medical research facility to generate solar power. The tower's generation doubles as art — the 24 turbines on the roof are appropriately designed in the shape of DNA molecules.

Dominion Development Partners is developing the Alternative Energy Industrial Park at Destiny, Florida. The park is expected to create 1,000 "green collar" jobs through the creation of an R&D campus, technology incubator, as well as such activities as biodiesel processing, pyrolysis, gasification, and other waste-to-energy operations.

ElectraTherm Inc. last year launched the ElectraTherm Green Machine, a generator that makes electricity from industrial waste heat that usually goes to waste. It's essentially a fuel-free, emissions-free generation system. The company is looking for manufacturing facilities, and has gotten economic development offers from about half of the American states thus far.

### **Riding the Wave**

The important thing to remember is that this is just the beginning of a wave of clean energy development and investment. "We're looking at 100 gigawatts of renewable energy per year for the next 10-plus years," Filsinger predicts. "If we are able to move quickly with manufacturing, and make that manufacturing exportable, we build the green economy."

"We're not alone," says Oswald of SynGest. "There are a bunch of companies with really interesting technologies. The world is moving in the right direction. We can't afford not to do this."

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