

Creating 'green' jobs

*by Nicole Anderson Ellis
Virginia Business*

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At 6:30 p.m. on a winter weekday, the parking lot of Richmond's Adult Career Development Center is filling up fast. An icy wind sweeps the sidewalk, but in the crowded cafeteria, people are sweating. Some came straight from work, others from a job hunt. While they wait, two young women pass out stickers that read "Green Jobs Now."

They've gathered at this town hall-style meeting to hear U.S. Rep. Bobby Scott (D-3rd District) and a panel of experts discuss opportunities for clean energy and green jobs in President Barack Obama's \$789 billion stimulus package. One by one the panel members explain why the creation of green jobs is vitally important to the economy's recovery.

It's a message that Americans are hearing across the country. Just a few years ago, the idea of using environmentally friendly practices to stoke the economy might have seemed absurd. In 1990, efforts to protect the habitat of the spotted owl sparked a national debate pitting the preservation of jobs vs. the preservation of the environment. But fears about global warming and the worldwide recession now have forged a common cause among many of the warring factions.

During last year's national elections, Republicans and Democrats both offered green jobs as the cure for various national ills. Likewise, as Virginia's gubernatorial campaign heats up, nearly every candidate plugs green jobs as a panacea.

The appeal is obvious. Across the commonwealth, companies are shutting their doors and construction sites are quiet. Thousands of people need jobs. An estimated 750,000 Americans already have green jobs, according to a 2008 study prepared by Global Insight for the U.S. Conference of Mayors. And there's potential for 4.2 million more in the next 30 years.

The hope sparked by those figures has some Virginia leaders ready to invest despite budget constraints. Gov. Timothy M. Kaine's Renew Virginia Initiative, unveiled at the end of last year, included legislative proposals aimed at reducing dependence on foreign oil, improving the environment and creating thousands of jobs — green jobs — by 2025. But only a handful of the bills survived the legislative session. "The General Assembly utterly failed on green jobs," says Gordon Hickey, Kaine's press secretary.

Given the current recession, few people seem to question whether we want green jobs, but many wonder how big a role green jobs can realistically play in the economy. Will yesterday's home builders be constructing tomorrow's wind turbines? Can a coal state absorb the growing number of unemployed workers by reinventing itself as a center for alternative-energy projects? And what exactly is a green job?

"Oh, boy," laughs Jonathan Miles. "You ask a dozen people and you'll get a dozen answers." A former energy specialist at the Department of Energy (DOE), Miles has attended multi-agency meetings tackling that question. Today Miles teaches in James Madison University's Department of Integrated Science and Technology (ISAT), whose curriculum includes wind

power, biodiesel and energy efficiency.

Some people limit green jobs to the so-called clean-energy projects on which ISAT focuses. Others, including Kaine, link the term to reduced carbon emissions, a standard that qualifies nuclear power as a green job producer, despite continuing concerns about radioactive waste. Even coal-fired power qualifies as long as it emits less carbon than traditional methods; hence “clean coal.” Still others, including Miles, take a broader view of green jobs. “It’s applying a trade — more than likely one that already exists — toward creating a more sustainable environment.”

Though green-job advocates share a vision of a prosperous and verdant Virginia — where turbine blades spin in the wind, solar panels gleam atop well-insulated homes and fields grow thick with biofuel crops — they differ on how to reach that goal, and how many people will be employed along the way.

An answer in the wind

Wind power is clean, emitting none of the pollutants released by Virginia’s coal-fired power plants. That is one reason 38 states now have wind farms. West Virginia, for example, has wind turbines generating 189 megawatts of electricity, enough to power nearly 20,000 homes for a year.

Virginia, by contrast, has no wind farms, at least not yet.

For years the low cost of local coal made alternative power seem relatively expensive. But no longer, says Miles. The cost of building a wind turbine ranges widely based on technology and site (off-shore vs. mountain top), but Miles puts a rough estimate at \$2 million to \$3 million per megawatt. “The costs [of wind power] have come down so dramatically in the past 25 years” that constructing wind turbines is “nearly the same cost as coal, and less expensive than a new nuclear plant.” And despite public perceptions, wind is highly reliable, Miles says. “We can’t control the wind, but with new technology we can predict where it will blow.”

But would a switch to wind create jobs? The DOE says yes. Nonetheless, in the face of rising unemployment rates, the numbers seem low. A 1,000-megawatt wind-energy project in Virginia would generate roughly 3,000 short-term construction jobs and 400 long-term jobs.

“We’ve got GE building the electronics [in Salem]. We’ve got blades being built in Rhode Island. We have all the necessary facilities on the East Coast,” notes Miles. The only thing missing are wind farms.

JMU’s Virginia Wind Energy Collaborative says the primary obstacles are concerns about the effect of wind turbines on birds and bats and the region’s scenic landscape. Ridgelines are great places to catch a breeze, but they take on a different look when topped by 400-foot turbines.

Public opposition delayed construction of the long-planned Highland New Wind Development project, though the 39-megawatt facility is expected to break ground in Highland County this year. In addition, Dominion Virginia Power has announced a partnership with BP Wind Energy North America Inc. to build two wind farms in Wise and Tazewell counties. (They have not disclosed a timetable or the size of the project.)

"There are certain spots on land where Virginia has a viable wind energy presence," says Jerry Giles, who heads the Science and Research team at the Virginia Economic Development Partnership. But he thinks the big energy prize lies offshore. "Fourteen to 15 miles off the coast of Virginia Beach is one of the best wind-power generating locations on the East Coast," says Giles, who serves on the Governor's Interagency Task Force for Energy Project Recruitment. The continental shelf along the coast is relatively shallow, minimizing construction costs for wind turbines. The proximity to shore eases grid access, and the area is near a powerful substation. There are class four winds offshore, plus, there are no bats and no neighbors to complain. Twelve miles demarcates the coast's line of sight, so turbines should not be visible from the coast.

An offshore wind farm the size of Virginia Beach (248 square miles) could generate an estimated 21,000 gigawatts, according to estimates by the Virginia Coastal Energy Research Consortium (VCERC). That's 12 percent of the commonwealth's residential energy consumption. Currently half the state's electricity is generated by burning coal, so a wind farm of this size could represent a 63 billion ton reduction in carbon dioxide emissions each year.

It could, but Miles doesn't think it will. "In the near term, no matter how much wind we use, we won't be producing less coal," he says. The reason? Virginians aren't using less electricity. They're using more. "Already we're faced with importing electricity," he says. Adding wind power in Virginia would just slow the increase in greenhouse gases emissions. So if building wind farms won't lower Virginia's carbon footprint, what will? According to VCERC, "energy conservation and efficiency are the least expensive measures available to reduce [carbon dioxide] emissions." But do conservation and efficiency create jobs?

Using less, earning more

Kent Baake thinks so. He remembers the day he decided his business was doomed. Baake was on a roof, doing the same sort of exterior maintenance and restoration work he'd done for nearly two decades. "Aluminum, vinyl siding and roof shingles all take oil," he explains. "And they say we're going to run out of oil." Perched on that roof, installing a solar roof vent, Baake suddenly knew where his business had to go.

Three years later, Baake owns Alexandria-based Continuum Energy Solutions. Its services include photovoltaic solar systems and extensive energy audits. Not the kind where someone holds a match near a window to indicate a leak, says Baake. "A thorough energy audit is a four-hour effort using over \$10,000 of equipment" that culminates in a plan to maximize energy conservation and energy efficiency.

Baake equates conservation with "Jimmy-Carter-put-on-a-sweater habits": take shorter showers, turn off the light when you leave a room, etc. Energy efficiency relies on advanced technology: compact fluorescent light bulbs, low-flow toilets and the like. Both approaches are critical to lowering energy consumption and fighting global warming, says Baake. "It's the ideal time to talk about energy audits and the benefits."

Those benefits include jobs. "We know how to do energy audits," says Karl Bren, "but we need people to do it." Bren, the founder of the Virginia Sustainable Building Network, is passionate about high-performance buildings. "We waste so much energy. We have got to increase energy efficiency in our homes," he says. "We don't have time to waste." Nor, notes Bren, do we have any more excuses. Virginia already has sales tax exemptions for high-efficiency appliances (refrigerators, ceiling fans, etc.). Add to that the federal stimulus bill that

provides \$94 million for weatherization programs and \$70 million for efficiency and conservation grants in Virginia, and "the opportunity for jobs is huge," he says.

For every \$1 million invested, weatherization creates 52 direct jobs and 23 indirect jobs, according to the DOE's Weatherization Assistance Program which provides weatherization services for low-income housing. If that's so, federal stimulus money could generate 7,050 weatherization jobs in the commonwealth.

The out-of-pocket cost for an audit in Virginia can top \$600, before improvements. But basic energy efficiency measures can provide a 16 percent return on the investment and pay for themselves in as few as three years, according to DOE figures.

It just makes sense, says Baake. As more Virginians come to understand the environmental and economic impacts of energy waste, more will need his services. Already his staff of six is keeping busy. And when he's not on a Northern Virginia rooftop, he's providing job training in energy audits and solar installation through Alexandria Jobs Link. It's an investment, says Baake. "I can then hire these people."

Not surprisingly, most energy-efficiency jobs are found in heavily populated areas. According to the Global Insight's study, 85 percent of the nation's existing green jobs are found in metropolitan centers. But one in seven Virginians still live in rural areas. Will green jobs grow there?

Deep green roots

Virginia's oldest industry — agriculture — is also its largest. Some 357,000 people work in agriculture in the commonwealth, contributing \$55 billion in output in 2006 alone (the most recent year that figures are available).

But Virginia is losing agricultural jobs. Advances in technology allow large farms to maintain production levels with less labor, says Terance Rephann, a regional economist at the University of Virginia and author of "The Economic Impact of Agriculture and Forestry on the Commonwealth of Virginia." The growing market for organic and local produce has caused a jump in the number of small farms.

Yet those remain family businesses offering limited opportunities for outside employment.

Even the growth of biofuels hasn't boosted Virginia's agricultural job market. "Virginia isn't competitive with states like Iowa that are able to grow corn in large tracts," notes Rephann. In fact, the fervor over ethanol made from corn actually hurt Virginia farmers, he explains, by pushing up the price of corn, the feed used by Virginia's numerous chicken and turkey farms.

But corn's not the only biofuel option; there are others that grow well here and can be readily converted to fuel. Construction is under way on a new plant in Hopewell where, by spring 2010, Osage Bio Energy plans to convert barley into ethanol, creating 45 to 55 jobs.

In addition to providing those jobs, the project should prove a boon to Virginia farmers. A winter crop, barley thrives when fields would otherwise lie fallow. Glen Allen-based Osage Bio Energy is spreading the word among farmers across the commonwealth that seeds need to be in the ground this October to meet the plant's appetite for 30 million bushels when it comes online next spring.

At a trial "farm" at Spring Grove 20 miles east of Hopewell, Pat Hatcher is exploring slimier biofuel options. "We have a lot of sunshine, a lot of water, and algae grows profusely in the Chesapeake Bay," says Hatcher, a professor of chemistry and biochemistry at Old Dominion University and VCERC's executive director. "Virginia is really well primed for an algae-to-biofuel initiative."

Hatcher started exploring biofuel three decades ago. His work was interrupted in the early 1990s when the DOE stopped funding research in alternative fuel. In today's green-friendly climate, Hatcher thinks the time for this technology has finally come. The Spring Grove pilot project is capable of generating 3,000 gallons of biodiesel a year on one acre of land. "To do this on a large scale," says Hatcher, "requires a lot of acres and that's where the jobs are." A 1,000-acre algal biofuel project would mean roughly 30 to 40 high-tech jobs, each with an annual salary of \$50,000 or more, says Hatcher. "It's not grunt labor. To monitor the algae requires someone who knows something about algae."

In Blacksburg, JAS Energy is planning to build an algae conversion plant that will be fully automatic, but that doesn't mean it won't create jobs, says company President John Verbeck. In one of the more inspired pairings of Virginia's alternative energy movement, JAS is partnering with ATK (Alliant Techsystems), a defense contractor that operates a TNT manufacturing facility in the New River Valley.

"Our plant will be treating discharged water which is high in nitrates. That's pretty much the cause of algae blooms that are a problem in the New River Valley, the Chesapeake Bay and the James River." The JAS plant will use that erstwhile-pollutant to grow algae to convert to fuel, the first step in its vision of a Virginia where every major source of nitrates filters its waste water through an algae "farm."

This pilot project breaks ground in the New River Valley this fall with hopes of a December startup date. It will take engineers and construction crews to get the plant online. Once running, says Verbeck, "The main jobs that will come from this are plant operators and managers." Plus hundreds of what he calls "domino jobs": everything from truckers to cleaning crews.

If the wheels were set in motion today, says Hatcher, 1,000 Virginians could be working in the algal biofuel field in as little as five years. That timetable would require major investors. "Look what happened with ethanol," says Hatcher. "That developed at blinding speed."

Sea change in global economy

Over at the Virginia Economic Development Partnership, Jerry Giles' team is hard at work wooing a new biomass conversion plant to Virginia. Unlike biofuel, which converts plants to liquid fuel, biomass burns plant matter to generate electricity. He's also talking with a photovoltaic-cell manufacturer who's considering setting up shop here. "It doesn't make any difference if it's wind, solar, biomass or nuclear," says Giles. "Our emphasis is on bringing new jobs and new investments to Virginia."

Manufacturing is a keystone of most green-job plans for Virginia. Currently, the commonwealth has little to show in terms of production of alternative-energy equipment, but that may change soon. Carraro Group, a power transmission systems company based in Italy, announced in March that it will locate its North American headquarters in Virginia Beach where

it already has a subsidiary. Carro plans to make components for the wind-, solar- and hybrid-energy industries.

With the Obama stimulus package money flowing its way, Virginia's green economy is getting its first real shot at growth. Yet there are still people who view green jobs as a fad. People who, in Giles' words, "are not committed to the green-jobs idea and say it won't last. But that's not what the governor thinks, and it's not what I think. This transcends this administration," he continues. "This is not something any state can accomplish in 12 months," stresses Giles

Rather than a national trend, Rephann characterizes green jobs as a sea change in the global economy; one in which the U.S. is behind the curve. "One of the problems here in the U.S. is that fossil fuels are still dirt cheap," says Rephann, "In Europe they have significant taxes on carbons and that's stimulated research and manufacturing of alternatives. We're playing catch up."

Then we need to get a move on; that's the message at the Richmond town-hall meeting where a restless crowd realizes there are no actual jobs being announced.

A tall man with a tan sports coat is one of the last people from the audience to speak. He works at Qimonda's computer chip factory in Henrico County. The plant is scheduled to close, eliminating 1,500 jobs. He asks the panel about the chances of converting the plant's production from computer chips to solar cells. Let's put this stimulus money to work, he urges. "We have a talent pool out there that's ready." Just point the way to those green jobs.

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