ENERGY/ENVIRONMENT

Focus

How Vermont became a clean-power powerhouse

President Obama is setting the US on a course toward producing much cleaner energy. Vermont offers a glimpse of that vision – and what the state needed to do to bring it about.

By Elodie Reed, Contributor SEPTEMBER 12, 2015

BURLINGTON, VT. — More than four decades ago, David Blittersdorf built his first wind turbine to power the lights in his sugar shack in Pittsford, Vt., where he boiled maple sap as winter turned into spring. He was 14.

Today, his ambitions are noticeably grander. On a hot August afternoon, the mechanical engineer stands beneath four 430-foot-tall wind turbines powering more than 4,200 homes. But the scene remains emphatically Vermont: A gentle slope of trees used for maple sugaring rises above fields where cows low among the midsummer buzzing of flies.

> In truth, the spidery turbines themselves are a portrait of Vermont, too – like the engineer grinning beneath them: environmentally conscious, progressive, innovative.

Perhaps the Green Mountain State is not an iconic image of American energy.

But perhaps it should be.

One hundred percent of the power consumed in its largest city comes from renewable sources – making Burlington (pop. 42,000) the first city in the United States to achieve that distinction. More broadly, the state is the only one among the Lower 48 to be exempt from President Obama's new Clean Power Plan.

One big reason? It's already surpassed the plan's goals, with 45 percent of the state's power consumption from renewable sources.

Not every state can be Vermont, of course. Just like not every state can be home to Ben & Jerry's. Vermont is a tiny state where many residents share a common – and often fiercely independent – worldview. But Vermonters don't see themselves as flannel-shirted outliers. They see themselves as the future. And on the way to becoming green-power leaders, Vermonters have taken some steps that could show the way for others – from how the state sells its clean power to neighboring polluters to how it has changed the way its power grid is run.

But beneath it all are the Vermonters themselves. The state's strides toward cleaner power are a reflection of the character of the state itself, showing what a big dollop of determination, a dash of ingenuity, and some good timing can accomplish.

"It's certainly a model for the biggest thing that needs to be done: to set aggressive goals and to get people to link arms and achieve them," says Rob Sargent, Energy Program director for Environment America.

Policy is important, but “a real can-do attitude and a real clear-eyed attitude toward why you’re doing it” are also vital, he says. “Clean energy policy ... is not a one-size-fits-all approach” – different states and cities are going to address it differently.

“In that sense,” Mr. Sargent adds, Vermont “is a good example” of having both aspirational goals and firm policy.

How much does it cost?

Vermont’s efforts have come at a cost to residents’ pocketbooks. Vermont has the fifth-highest average retail price for energy at 14.35 cents per kilowatt-hour, according to the US Energy Information Administration.

But that is exactly the same as in neighboring New Hampshire and roughly in line with the price in the other eight states of the Regional Greenhouse Gas Initiative, one of the most aggressive efforts to regulate and tax carbon dioxide emissions within the US.

Moreover, Vermont is the second most-efficient state in the country for residential electricity usage, meaning average monthly bills are only 33rd highest in the nation at $96, according to the Electricity Local website.

This has stood Vermont in good stead as the Obama administration seeks to ratchet up regulation of greenhouse gases in its Clean Power Plan. Its target: 28 percent of power generation should come from renewables by 2030.

Vermont’s Comprehensive Energy Plan, by contrast, has a target of 90 percent renewable energy by 2050.

“It’s very gratifying to see elsewhere ... that folks will be asked to pay their fair share,” says Chris Recchia, commissioner of the state’s Public Service Department, noting the initial investment Vermont has already made.

“I’m glad it’s going to be an equal playing field,” he adds. “It will show that the renewables that we are all investing in are the cheapest cost when all folks factor in.”

Of course, Vermont is not Texas. If it had an abundance of oil or natural gas, it might not feel the pressure to push so far on clean power, Mr. Recchia says.

But others point to the Obama administration's new clean power regulations – which mirror regulations across much of Western Europe – and see a state ahead of the curve.

"We must do things differently. We can't keep doing things the same way they've been [done] the last 100 years," says Mr. Blittersdorf, founder of two renewable energy companies. "We can't write a law that says global warming doesn't exist. At the end of this, there's no choice."

Blittersdorf, of course, is a true believer in clean energy. He's spent 22 years building NRG Solutions, a wind technology company, and, more recently, AllEarth Renewables, which manufactures solar tracking systems that help solar panels follow the sun.

But Vermont's steps toward clean power often have come from practicality – and with a little creative thinking. As the story goes, the Burlington Electric Department's journey toward becoming 100 percent renewable first took form at a local Dairy Queen.

Manager John Irving surveys the McNeil power station in Burlington, Vt. The power plant, which burns wood, replaced a coal-fired facility. ELODIE REED

Revolution at a Dairy Queen

Back in the 1970s, the department's 30-megawatt coal power plant – old, unreliable, and dirty – failed. So two guys from the plant threw around ideas while sitting at the Dairy Queen. Instead of building a new coal plant and transporting the black stuff from Pennsylvania by train, what about using wood?

"It's basically Vermont's only indigenous power source," says John Irving, the city's current power plant manager. "Biomass is really your only reliable option in this part of the world."

So one of the three 10-megawatt units was converted, and a sign was put outside: "We buy wood chips." Not long after, a new, biomass-only 50-megawatt plant replaced the coal station entirely. Thirty years later, it is Vermont's largest power plant, located down a wooded road just past a garden supply store and the grounds for a weekly summer local food festival. It provides 45 percent of the city's electricity, and it's a net-zero carbon emitter, since trees decomposing in the woods emit carbon, too.

It's an admittedly unusual solution that might not work in most states, but it speaks to Vermont's decades-long commitment to clean power. The biomass plant was followed by long-term contracts with Hydro-Québec in the 1980s, and the state has continued exploring and increasing its renewable power – hydro, solar, wind, biomass, and even cow manure. Then, in December 2014, it shuttered the state's largest power-generation facility, the Vermont Yankee nuclear plant.

Vermont's helping hands

In some respects, the state's timing has been good. Improvements to wind turbine technology have made Blittersdorf's turbines more efficient; they supply power to the Burlington Electric Department.

"We wouldn't have built this wind farm 10 years ago and made it economical," says Blittersdorf. "The turbine technology in the last few years has gotten so much better."

It also helps that a federal tax credit incentive, which ended on Jan. 1, 2013, paid 30 percent of the project's $30 million cost. Blittersdorf estimated that it would take six years for the project loans to be paid back.

"It's profitable, but it takes a little while to get your money," he says.

The larger region's desire to be a leader in combating greenhouse gases has also helped set the stage for Vermont's success.

The nine states of the Regional Greenhouse Gas Initiative have set a cap for emissions, with polluters that exceed that cap then trading for credits from cleaner producers – like Burlington. Projects such as the biomass plant and

Blittersdorf's wind farm gain the Burlington Electric Department credits, and the credits bring money.

In its 2015 fiscal year, the department is expected to raise $9.3 million in credits. This helps offset the fact that its power-generation sources are relatively more expensive. "Overall, our rates are lower than the statewide average," said Burlington Electric Department General Manager Neale Lunderville.

That may become more challenging in the future, however, as more states – with the pressure of the Clean Power Plan and the better technology of renewable infrastructure – need fewer credits.

"One of the challenges for us is to watch that market very closely and adapt to protect our customers ... from rate shocks," says Mr. Lunderville.

Making power local

One of the ways to do that: increase local capacity. In other words, encourage people to generate their own power.

People like Elayne Vickers. A retired nurse who grew up in Berkeley, Calif., during the 1960s and the oil shortage in the '70s, Ms. Vickers had been waiting for years to get her own solar panels. She moved to her home at the end of a dirt road in the rural town of Bradford 12 years ago, and last fall, she took the plunge.

"I've always been very energy conscious," says Vickers one recent evening as she instructs her granddaughter how to properly compost the remains of her pizza.

Instead of paying her electric bill every month, Vickers pays $120 toward her 25-year panel payment plan with SunCommon. Spokeswoman Emily McManamy says the number of solar systems run by her company in the state has increased by 1,500 during the past three years. Previously, there were only 1,400 from any provider.

While SunCommon has made solar affordable with long-term financing plans, the state has changed how it runs its electrical grids to encourage personal power generation. Now, households that generate their own power do not need to store it on site, which is expensive, but rather can deliver it to the grid, proportionately lowering their energy bill – a practice called net metering.

The amount of power they are allowed to deliver to the grid was also increased in 2014, from 4 percent of a utility's peak demand to 15 percent.

In addition, people who produce 15 kilowatts or less don't have to go through a permitting process; they just need a certificate that they can get by going through a simple approval process.

"That has made it very attractive for people to do net metering solar," says Recchia of the state's Public Service Department.

For Vickers, "it was a no-brainer," she says. "I think [the solar panels are] beautiful."

Citizen support, citizen anger

Not everyone agrees that the trappings of renewable power enhance the rural landscape.

When Blittersdorf was developing Georgia Mountain Community Wind in Vermont in 2012, he was met with the wrath of the 20 or so homeowners angry at the disruption to the natural sound and scenery. He estimated that he paid $500,000 in legal fees and other related expenses throughout the process. When opposition groups once brought children to camp on the mountain during a blasting period, Blittersdorf had to get a restraining order.

In Burlington, however, local residents were the ones who made the goal of 100 percent clean power possible, says Lunderville. The Burlington Electric Commission, formed by citizens, decided to create a strategic plan for totally renewable power more than a decade ago.

The goal was fully accomplished in September 2014, when a 20-year, $12 million bond approved by 80 percent of city voters to purchase a hydropower plant was finalized.

"We are here because of our customers," says Lunderville.

Because so much of the grid is local and it's spread out among many smaller systems as opposed to being confined to one, power outages are infrequent and short in Burlington.

"The fact that we have a diversity of energy sources and a lot of them are local – that's the future of reliability," he says.

And prices are steady. “We have not raised rates since 2009,” he adds.

Other municipalities – such as Aspen, Colo., potentially the second city in the country to achieve 100 percent clean power – have been in touch.

Says Lunderville: “We’re really proud to be a national leader on this.”

[**Editor's note:** *Three corrections have been made to the story:*

The price of energy per kilowatt hour was incorrect in the original version.
The number of SunCommon solar systems in the state has been clarified.
The description of what AllEarth Renewables makes has also been clarified.]