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Red State, Green City: How Austin Has Become America's Clean-Tech Hub

By Bryan Walsh

The solar panels sparkle on the rooftop of HelioVolt's 12,000 sq m manufacturing facility. Inside, an elaborate line of printing machines, lasers, chemical baths and ovens — with help from the occasional white-coated human being — transforms a sheet of glass less than a centimeter thick into a solar module in just over two and a half hours. The sheets are a far cry from the thick, polysilicon-based photovoltaic panels that still dominate the solar market. HelioVolt manufactures thin-film solar panels, so called because the modules are made by depositing an ultra-thin — a few micrometers at most — layer of the photovoltaic chemicals copper, indium, gallium and selenide directly onto a glass backing. Compared with conventional modules, the engineering and manufacturing processes are more complex, and thin-film panels are less efficient at converting sunlight to electricity. But their lower cost has many in the solar world — like HelioVolt CEO Jim Flanary — convinced that thin-film panels are the way to go as the industry matures. "If you can do this really cheaply and really quickly, you've got a winner," says Flanary as he leads a walkthrough of HelioVolt's pilot plant. "We want to scale up as soon as we can."

It's not just the how of HelioVolt that makes it unusual in the solar space; it's also the where. The company isn't based in southern San Francisco or Boulder, Colo., or the Boston area — the bright green regions that tend to lead the national conversation on clean tech. HelioVolt calls the Texas state capital of Austin home. B.J. Stanbery, the solar veteran who founded HelioVolt in 2001, is a native Texan who got his bachelor's degree at the University of Texas just down the road from the company's factory, but he kept his business in Austin for more practical reasons. "The manufacturing skills that workers have here are directly transferable to a thin-film solar company like us," he says. "And the business culture is attractive here because people are used to taking risks in the energy space." ([See the top 20 green tech ideas.](#))

Of course, when people think about the energy space in Texas — home to wildcatters and J.R. Ewing of television's *Dallas* fame — they probably picture oil rigs and natural gas wells. The current governor of Texas, after all, is the far-right-leaning Rick Perry, who made it known early in his campaign for the Republican presidential nomination that he was a climate-change skeptic. "I do believe that the issue of global warming has been politicized," Perry told voters in New Hampshire in August. "I think there are a substantial number of scientists who have manipulated data so that they will have dollars rolling into their projects."

But as politically conservative as Texas tends to be, it's kept an open mind on renewable energy, which is one reason more wind power has been installed in the state than anywhere else. And within Texas, Austin has always been an outlier: a fairly liberal college town that has managed to marry high tech with hipster culture. Now that's paying off in the renewable-energy sector, as Austin contends with Silicon Valley as a top clean-tech hub. The city is home to dozens of green start-ups like HelioVolt, many funded by homegrown venture capitalists. Some 15,000 Austin residents are employed in the broader green economy, and the municipal utility, Austin Energy, has pledged to get 35% of its electricity from renewable sources by 2020. Over the past eight years, the number of clean-tech jobs has grown more than twice as fast in the Austin metro area as it has in San Francisco. With its background in information technology, Austin is set to take the lead in one of the most exciting areas in clean tech: the marriage of new energy technology with the Internet. "Austin is already a high-tech city," says Jose Beceiro, the director of clean energy at the Greater Austin Chamber of Commerce. "Now it's becoming a clean-tech city." ([See how GE launched a major foray into the solar-power market.](#))

Keeping It Weird

For Austin, high tech had to come before clean tech. The city has long been a science-and-technology hub, thanks to the presence of the sprawling main campus of the University of Texas, with a student body of 50,000. In the mid-1980s one of those students was Michael Dell, who founded his eponymous computer company in a University of Texas dorm room before moving Dell to a sprawling campus north of Austin. Around the same time, the federal government and U.S. semi-conductor manufacturers launched a research consortium — based in Austin — called Sematech, pooling public and private investment to compete with Japan, which was threatening to dominate the semiconductor industry.

Sematech and Dell helped create a high-tech boom in Austin through the 1990s, luring tens of thousands of talented engineers who came for the jobs and stayed for the Austin lifestyle — best exemplified by the metastasizing South by Southwest festival, an annual pilgrimage of the hip that brings together music, film and interactive media. "It's a great place to live, and that matters in this industry," says Brewster McCracken, the executive director of Pecan Street, a smart-grid research project in Austin. ([Watch a TIME video on the truth about solar power.](#))

So as clean tech began to heat up in the early part of the past decade, Austin was a logical place for start-ups and entrepreneurs to set up shop. An experienced technical workforce was already available, ready to shift from manufacturing computer chips to building solar panels. SolarBridge Technologies, which makes microinverters that improve the efficiency of solar modules, spun off from the University of Illinois, but when it came time to scale up, the company picked Austin over other clean-tech hubs like the Bay Area and Boston. "We like the entrepreneurial ecosystem, and there's just a ton of talent here that you can't get in Illinois," says Joe Scarci, SolarBridge's vice president of marketing. "It's a great place to recruit."

[See pictures of a solar-powered airplane.](#)

[See the surprisingly long history of green energy.](#)

This is how industry clusters build: companies come for the employees, and they in turn attract more capital, more workers and more start-ups. That critical mass of innovation is one reason SustainLane Government, a network for green business, has ranked Austin the top city in the U.S. for clean-tech incubation. Austin-based green start-ups can also count on help from the University of Texas and the city government. The Clean Energy Incubator at U.T.

supports young green start-ups, providing some initial seed money and holding networking events that can connect entrepreneurs and venture capitalists. The Texas Clean Energy Park — a public-private program in Austin — provides facilities and training for the smallest clean-tech start-ups.

Clean tech, however — much more than information technology — is still dependent on direct government policy, subsidies for renewable power and regulations that mandate energy efficiency and greener buildings. And that's where Austin's progressive-leaning politics — Barack Obama received 64% of the vote here in 2008, even as Republican John McCain handily won Texas — pay off. The presence of the university, the slacker subculture of the 1990s and the influential live-music scene has helped make the city, whose unofficial motto is "Keep Austin weird," far more liberal than most in Texas. Austin has more 100%-green-powered businesses than any other city in the country, and all the municipal government's electricity comes from renewable sources. Consumers and businesses can receive handsome rebates for installing more energy-efficient appliances and photovoltaic systems — all of which means that clean-tech companies can come to the city knowing there's a built-in market for their products. "The city here does an excellent job of supporting green tech," says Bill Sims, CEO of the biofuel company Joule Unlimited, which recently opened a pilot plant in Austin.

But perhaps the single biggest factor behind the greening of Austin is an institution that in most cities stands in the way of clean tech: the utility. Because the city of Austin owns its utility — and because politically progressive Austin residents have shown support for renewable power — Austin Energy has more latitude for experimentation than most of its counterparts around the U.S.

Nowhere is that clearer than in the Pecan Street project, a pioneering smart-grid research and demonstration program based in Austin's historic Mueller neighborhood. Pecan Street is a collaboration between Austin Energy, the Environmental Defense Fund, the city of Austin and the university, with much of its financing provided by the 2009 federal stimulus bill. The study is detailing energy and water use at the residential level, gathering data that most utilities barely have a handle on. The Pecan Street project, which is also experimenting with residential solar energy and electric vehicles, aims to use that information to create a smarter and more efficient grid, one that is far less wasteful than the rickety power systems throughout the U.S. And it's something that could have only happened in Texas, where deregulation has forced utilities to compete for profits by investing in technologies that help their customers use less energy. The transition hasn't been perfect. Some consumers complain about higher costs, and there have been unexpected blackouts. But deregulation does free up utilities to experiment. "Getting this data is the first step to figuring out how to be really efficient," says Pecan Street's McCracken. "And Austin is the place where we can get that done."

With its mix of high tech and clean tech, Austin is well positioned to take advantage of the next major phase in green development: the energy Internet. Ubiquitous digital connection has helped transform the way we communicate and the way we work, but most of us are barely aware of how we use energy. The energy Internet can change that. Green software start-ups like Austin-based Incenergy have developed online energy-management systems that allow building owners to remotely manage smart thermostats, reducing wasted heat and air-conditioning. Companies like Tendril are bringing that capacity to the residential level, creating home energy networks that will enable us to control our energy use as intelligently as we now control our digital video recorders. And the Pecan Street project is the perfect place to test some of these new technologies on a connected and greener-than-average populace. "A lot of my prospective customers are here," says Jim Balthazar, explaining why he moved his clean-tech start-up Nuventix from Atlanta to Austin. "And he who has the money makes the rules." ([See more on the surprisingly long history of green energy.](#))

So what could go wrong? Austin faces the same challenges the larger clean-tech sector is confronting: a drying pool of venture capital, the forbidding cost of scaling up and the uncertainties around national climate policy. But the city's biggest obstacle might be the man who lives in the governor's mansion in the heart of Austin: Rick Perry. If Perry — or just about any of the other climate-change-doubting Republican candidates on the campaign trail — were to win the White House, it's hard to see much support for clean tech surviving the budget ax. But even if that happens, Austin may well endure. This is a city that takes pride in going against the grain — and doing things itself. "I'm a native Texan, and I know about the entrepreneurial spirit here," says HelioVolt's Stanbery. "People believe that if you want to do well, you need to work hard." That's an ethic clean tech will need in the difficult days ahead.

Courtesy of JB Goodwin