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Top US Cities for Cleantech Incubation Clusters

By Warren Karlenzig

Cleantech ("clean technology") incubation is fast becoming a hot topic with national significance as opportunities for regional sustainable growth boom in response to recent climate change news and energy price instability.

SustainLane Government analyzed US cities to see which led in combining Cleantech investments, infrastructure and supportive policies into a physical "cluster." The ideal existing model for a Cleantech incubation cluster combines:

- Start-up or advanced stage venture capital (VC) and investor network access, including mentoring.
- Academic or federal research lab collaboration.
- Active state or local government participation (field testing, prototyping, and pilot programs) and incentives.

SustainLane Government is the nation's largest open-source best practices knowledge base for state and local government officials for sustainable development, including Cleantech best practices and supporting ordinances.

What is Cleantech? Gaining rapid acceptance as a defined investment category amongst venture capital firms, Cleantech companies received a record $2.9 billion in the United States out of $25.5 billion investments in 2006, according to Cleantech Venture Network. Torrid growth is expected into the next decade and beyond.

How people define the category differs, but we looked primarily at the following:

- Energy generation, management and storage, and energy efficiency, including solar, wind, geothermal, fuels cell and hydrogen
- Transportation: advanced transportation technologies, biofuels
- Materials and Green Building: includes advanced materials and engineering approaches, materials recovery
- Water and air related technologies

So which cities are leading the Cleantech economic revolution?

1. Austin, Texas: Cluster Maven

Austin's Clean Energy Incubator (CEI) was formed within the Austin Technology Incubator in 2001, which is managed by University of Texas at Austin. With seven companies involved in incubating everything from internet-controlled irrigation to wind and geothermal energy technologies, the group works closely with city-owned utility Austin Energy, according to Assistant Director Kurt Faulhaver.

"Austin Energy has been able to open up the grid as a test bed for CEI, which provides an unparalleled connection to opportunities for small-sized Cleantech start-ups," said Faulhaver. Austin Energy's Mark Kapner confirmed the utility has been working with numerous start-ups in alpha and beta field testing ranging from solar to biogas, to small-scale wind energy applications

The CEI is also supported by the Texas Energy Conservation Office and The National Renewable Energy Laboratories' (NREL) National Alliance of Clean Energy Incubators. "Austin has a robust incubator model--it's a Cleantech incubator within a (more general technology) incubator," said Marty Murphy, director of NREL enterprise development programs. One CEI biodiesel start-up, Austin Biofuels, recently "graduated" after being sold to Safe Renewables Corp. in Houston in December.

2. San Jose, CA: Cleantech 1.0

San Jose's ability to attract Cleantech venture funding alongside new Web 2.0 start-ups, has recently provided the Silicon Valley post-Dot Com mojo. The Valley's long-time leadership in engineering know-how, combined with semi-conductor, nanotechnology and optics R&D gives it a leg up in renewable energy development, particularly in solar energy applications.

Proven San Jose Cleantech successes like Sun Power rely on traditional semiconductor-based PV solar; others in the Valley such as neighboring Palo Alto's Nanosolar are trying to by-pass the bottleneck created by these two growth industries competing for the same physical resource. Nanosolar's solar cells are based on proprietary thin-film technology, not semi-conductor wafer cells.

The city has one incubator, the Environmental Business Cluster, that lends support to local Cleantech start-ups in San Jose, such as NuEdison, which develops solar concentrators for PV solar. An Environmental Business Cluster collaboration with the City of San Jose, the Electronic Transportation Collaboration Center, is focused on early-stage development of alternative fuels and hybrid commercial vehicles. Other partners include San Jose State University, the National Renewable Energy Laboratory and the utility Pacific Gas & Electric.

3. Berkeley, CA: Biofuels and Beyond

A new $500 million center for biofuels and energy research was announced in late January to be co-located at the University of California at Berkeley and at the University of Illinois at Urbana-Champaign. Funded mostly by British Petroleum and in part of by the state of California, the Energy Biosciences Institute will also be managed by the federal Lawrence Berkeley Laboratory, also located in Berkeley.

"We hope to make the Bay Area the center of the universe for biofuels," said Chris Somerville, visiting scientist from Stanford University at Lawrence Berkeley Labs. The Bay Area is a hotbed for biofuels research, including synthetic biofuels, which don't have the restraints of requiring agricultural land for production. But the Energy Sciences Institute also has agricultural biofuels research covered in the form of participation from University of Illinois, a world leader in plant genomic research.

According to BP, the center will host open-source global research as well as "proprietary applied projects for commercial bioscience applications," such as a new BP unit that will study the blending biofuels with fossil fuels.

As Somerville explained BPs role, &BP technical scouting members will be making relationships with start-ups and small companies in the field," while the center will sponsor forums and networking events, providing "a coherent view of technology needs."

The city of Berkeley's participation in the institute is in the planning stages, but it makes for a likely field-testing and prototyping candidate profile. Berkeley's city truck fleet uses 20-percent biodiesel fuel after a short experiment with 99 percent biodiesel trucks proved unsuccessful, according to Mayor Tom Bates.

4. Pasadena, CA: Coming up Roses

Pasadena's California Technical Institute of Technology, or Caltech, is flush with venture capital that the city of Pasadena hopes to leverage to create a significant Cleantech incubation cluster. For Cleantech start-ups out of Caltech, non-profit Entretec, located right on the Caltech campus, maintains day-to-day office resources for start ups as while arranging for pitches with a deep network of angel investors. Said Stephanie Yanchinski,Executive Director of Entretec, "Energy may become the focal point of the current president of Caltech—it's a welcoming city. We have Caltech, (NASA's) Jet Propulsion Labs and active local VC's."

Pasadena-based start-ups include PV solar provider Energy Innovations Solutions, which is the lead company implementing Google's 1.6 megawatt solar system at its headquarters, and Methanotech, which is producing methanol through biological processes.

According to the *Cal-Tech News*, many companies that were birthed in Caltech labs end up locating in Pasadena, partly because the founders may already be living there and partly because they often hire Caltech students or graduates. Meanwhile, the city of Pasadena is incenting Cleantech start-up clusters through permit expediting, lower fees, and other incentives.

5. Greater Boston: State of Incubation

Massachusetts, like New York and California, has some of the most supportive state policies in the nation for renewable energy and energy efficiency. It also leads in Cleantech VC investments after California. With this fertile investment environment, Boston is competing for start-ups and second-stage companies that are beginning to flock to the towns along State Route 95 in central Massachusetts. Boston also draws on nearby Cambridge, home of biomass start-up Agrivida and MIT's Ignite Clean Energy Competition. The competition is "like American Idol with the winners announced right there on stage," according Karl Jessen, Economic Development Director for the Massachusetts Renewable Energy Trust.

MIT's development of a clean-tech incubator as part of the National Alliance of Clean Energy Incubators promises to give Boston greater access to Cleantech deal flow, as will Boston's nation-leading requirement mandating that all new buildings constructed meet the US Green Building Council's LEED (Leadership in Energy and the Environment) standards.

For now, most state investment in Cleantech start-ups comes from venture capital firms and the Massachusetts Renewable Energy Trust's Industry Investment Development fund, which includes $15 million that is generated from state utility programs. In March, though, the City of Cambridge is expected to announce a foundation-backed non-profit effort that will attempt to significantly reduce the city's grid load through the use of renewable energy, providing significant participation opportunities for MIT-based start-ups.

Runners up: San Francisco, New York, Seattle, San Diego and Houston.

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