

Texas' New Tea

Houston is determined not to be left behind in the race to a new-energy future

By **JOHN M. BIERS**

February 12, 2007; Page R10

Houston -- As investment in alternative energy surges, scientists and entrepreneurs throughout the U.S. are trying to brew up remedies for the world's so-called petroleum addiction.

While it's too soon to say which of these efforts will thrive and which will wither, energy-industry veterans are increasingly confident they know where at least some of tomorrow's leaders in alternative energy will be: Houston, the home of big oil.

In California, Gov. Arnold Schwarzenegger is pushing ahead with efforts to keep his state among the leaders in the development of green energy. The Midwest continues to explore new ways to exploit its competitive edge in ethanol. And Northeastern universities are pumping big money into energy research. But while Houston's economy still sits on a foundation of conventional petroleum, alternative energy is suddenly on the rise here, too.

Major oil companies have stationed key alternative-energy divisions here, newer ventures in wind energy and biofuels are emerging, and Texas universities are pushing hard to develop carbon-free energy.

Houston's emergence as an alternative-energy center is partly an outgrowth of the city's role as home to major players in the conventional-energy industry. "There's always been this sort of joke within biofuels, that when these technologies become real, the traditional oil companies will snap them up," says Nathanael Greene, a senior policy analyst with the Natural Resources Defense Council, a New York nonprofit environmental advocacy group.

As alternative energy moves "from the margins into the mainstream," the big, established energy companies will make more of a commitment to the market, and Houston "is going to play a role just because of its importance in the oil industry," Mr. Greene says.

But Houston also is playing host to newcomers in the energy business, thanks in part to a welcoming regulatory environment and efforts by the state government to encourage the production of alternative energies.

'Stuff Gets Built'

One advantage Houston offers alternative-energy companies is that the approval process for new facilities is far less onerous in Texas than in many other states.

"Texas creates a very positive environment to work in," says Jeff

Beyond Big Oil

- **The Situation:** Houston is one of several areas around the country jockeying for position in the emerging alternative-energy industry.
- **The Background:** Major oil companies and start-ups alike are building alternative-energy businesses in the Houston area.
- **What's Next:** The city's energy pedigree, a welcoming regulatory environment and state efforts to promote alternative energies suggest Houston will be a leader in this field.

The Main Players

Houston has a growing cast of alternative energy players who are working in different facets of the industry.

- **BIG COMPANIES**

Oil giants like Royal Dutch Shell, which has about 50 full-time Houston employees working in hydrogen and wind energy, house some of their U.S. alternative energy divisions in the city. GE bases its coal-gasification team in Houston, with 160 workers who specialize in new-product development and engineering. The industrial giant also houses major work in its burgeoning alternative-energy division elsewhere, such as in Schenectady, NY.

- **EMERGING PLAYERS**

From its headquarters in downtown Houston, Horizon Wind Energy is building new sites around the country and expects to have 1,350 megawatts on line by the end of 2007. The seven-year-old company, formerly known as Zilkha Renewable Energy, was bought by Goldman Sachs in 2005 and is reportedly up for sale. The Houston region is a popular venue for new biodiesel facilities. Besides the Galveston Bay Biodiesel site, which is partially owned by Chevron, and a pair of new sites in the Houston Ship Channel, Imperial Petroleum Recovery is building a site 35 miles north of the city.

- **FINANCE**

Leading law firms and energy financiers like Baker Botts have stationed alternative-energy experts in Houston. The city is also home to Standard Renewable Energy Group, an alternative-energy investment firm that is backing a variety of projects, including Trulite Inc., a company that develops electric generators that run on hydrogen. Standard Renewable is led by former Enron trader John Berger.

- **RESEARCH**

Scientists at Rice University are hard at work on a variety of innovations in power delivery, biodiesel, hydrogen and other areas. The university hopes to garner more direct financial support soon from major oil companies. With a staff of 45 researchers and administrators, the nonprofit Houston Advanced Research Center in the Woodlands houses a 3,000-squarefoot life-sciences laboratory and works with other consortia on biofuels and hydrogen technology.

- **GOVERNMENT SUPPORT**

Though some in the research community say more aggressive action is needed to keep up with other states, wind energy and biodiesel-industry players praise Texas' comparative support of new energy facilities. Houston's mayor, former Deputy Secretary of Energy Bill White, has pointed to alternative energy as a major priority and pursued a variety of initiatives to ensure that more of the city's power comes from renewable sources.

Trucksess, executive vice president of Green Earth Fuels LLC, a biodiesel company started a year ago that is based in Houston and is building a production facility along the Houston Ship Channel. "There are strict rules on what you have to do, but it's a very efficient process." The company's Houston site won permits last year and is expected to begin producing biodiesel in July.

"In Texas, things happen -- stuff gets built," says Michael Skelly, chief development officer for Houston-based Horizon Wind Energy, which will produce power from seven wind farms in six states, including Texas, by the end of this year.

In addition to seven-year-old Horizon, which is a unit of **Goldman Sachs Group Inc.**, emerging players in wind power in Houston include subsidiaries of **Babcock & Brown Ltd.**, **BP PLC** and **Royal Dutch Shell PLC**, and law firms like Baker Botts LLP.

"This was the natural place for this business," says Robert Lukefahr, president of BP Alternative Energy North America Inc., who emphasizes the city's wealth of knowledge of the energy business. "These are folks that know how to bend metal and put it in the ground and do it safely," he says.

Taking the Initiative

The wind-energy business boomed in Texas after the 1999 passage of a state law that requires a certain amount of the electricity sold by utilities in the state to be generated from renewable sources.

More recently, the state has again taken the initiative by easing the construction of transmission lines for wind farms, a crucial step if entrepreneurs are to continue to build turbines in the windiest corners of the state. Mr. Skelly enthuses about the new rules, which have set Horizon and other wind companies on a land grab to claim the best spots for turbines.

Houston also is emerging as a home for both start-ups and established energy companies entering the biodiesel business. These producers like the city in part because of its access to the huge Texas consumer market and its location at the center of a nationwide fuel-distribution network, with extensive storage facilities, pipelines and rail and water connections. "Economically, it's always been our opinion that if you're in the heart of the distribution center...that's a great place to be," says Mr. Trucksess of Green Earth Fuels.

One unresolved issue with biodiesel is whether the fuel raises emissions of smog-causing nitrogen oxide, which is tightly regulated in Houston and other Texas cities. The state has granted the biodiesel industry until Dec. 31 to show proof the fuel meets Texas standards. The rules may require an additive to the fuel, but Mr. Trucksess doesn't expect the issue to impede the marketing of biodiesel in Houston or elsewhere in Texas.

Lots of Experience

The city also offers easy access to people experienced in every aspect of the energy business. For instance, Green Earth's plants initially will produce fuel mostly from soybean oils, but as different feedstocks come into use the company expects to tap into Houston's expertise in commodity trading, Mr. Trucksess says.

"It's already in the DNA of Houston to be energy-oriented," says Rick Zalesky Jr., a vice president of biofuels and hydrogen at Chevron Technology Ventures, a Houston-based unit of **Chevron** Corp. Chevron is conducting biodiesel research at a couple of laboratories in Houston that have been used for decades in the conventional energy business. And it is a partner in Galveston Bay Biodiesel LP, a start-up that is building a facility in nearby Galveston, Texas.

Houston also is home to research on hydrogen, nanotechnology and other areas that could have a dramatic impact on the energy picture in the years ahead. Research on alternative fuels is being done not only by big energy companies like BP, Shell, Chevron and **General Electric Co.**, but also by nonprofit institutions like the **Houston Advanced Research Center** and **Rice University**, which has convened a number of recent conferences on alternative energy.

Promising Venture

One of the most potentially far-reaching research ventures at Rice involves work at the Carbon Nanotechnology Laboratory, the site where the late Richard Smalley, a late Nobel-laureate professor, oversaw landmark research on microscopic materials called carbon nanotubes.

Researchers are working on steps to align millions of nanotubes into carbon fibers. The hope is that one day, the fibers can be used in power transmission instead of aluminum, which has high resistance and wastes vast amounts of power.

This vision is still years away, Rice researchers say. But the university has garnered some \$5 million in federal research funds for the project from a variety of sources, including the Pentagon and the National Aeronautics and Space Administration, says James Tour, the lab's director.

-- Mr. Biers is the Houston bureau chief for Dow Jones Newswires.

Write to John M. Biers at john.biers@dowjones.com