

Clean technology cultivates new perspectives on energy

By **RICHARD J. MCROSKEY**, Special to the Daily Transcript

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It's clean, green and holds the seeds to better efficiency in the ways businesses utilize energy. Clean-technology -- the methods of producing environmentally friendly and economically feasible sources of power -- has driven the rapid growth of an entire industry focused on the abundance of potential energy sources that have yet to be tapped. Companies developing everything from biofuels to solar cells to wind-power solutions have comprised a market that brought in \$55 billion in 2006, according to a recent report released by the clean-technology research firm **CleanEdge**. With greater numbers of venture capital firms funding startups in upcoming years, that number could rise to \$226 billion by 2016. Despite its fledgling status as an industry, the consensus among local investors, executives and officials is that the industry's growth to date is only the tip of the iceberg.

"With geopolitical factors and the growth of the global economy, fuels have become increasingly expensive," said Michael Kagnoff, Clean-tech Steering Committee Chair for **Heller Ehrman**, the law firm and lead sponsor for San Diego's upcoming Clean-technology Venture Roundtable hosted by CONNECT. The volatility of oil prices, he reasoned, has enabled once-wary investors to "cross the threshold" of developing a solution to our dependence on foreign oil. Higher prices have thus emphasized the need to develop the alternatives that clean-technology offers.

Furthermore, widespread concern over global warming has created a social consciousness that has been the impetus for the industry's progress. Jerry Foster, co-founder of Biorenewable Projects, a San Diego-based company that has developed renewable projects to harness energy from materials ranging from cow manure to wood, said: "There will be more demand and more desire on the part of people, as they begin to take global warming very seriously."

Citing a renewed sense of popular environmental responsibility that has come from greater education, Foster said consumers' lifestyle changes will be the new industry's foundation.

"People will start becoming more conscious of industry uses and the vehicles they purchase," he said. "You're going to see a lot of changes in people's behavior as it relates to energy."

Yet despite these factors pushing clean-technology forward, obstacles remain. The relatively recent emergence of the industry has meant that it has no "tried and true" path to success. Kagnoff said that it lacks an established economic infrastructure within cities, a set of experienced executives or a large set of financiers -- all factors that suggest risk. The issue of future regulation poses another large question mark, as well as the question of how much the government will subsidize research when competition increases. While these challenges linger, venture-capital firms have seen in startup clean-tech companies more promise than doubt: From 2005 to 2006, venture-capital investments in clean energy tripled to \$2.4 billion, according to the CleanEdge analysis.

"We are in the very early stages of what should be a large industry going forward," said Carl Eibl, managing director for **Enterprise Partners**, a venture capital firm in San Diego. Enterprise Partners, which specializes in investment in the life sciences industry, exhibited its confidence in clean technology when it recently invested in **Relion**, a Washington-based company that has developed a fuel-cell driven backup power source for telecommunications towers. The new energy source will serve as an alternative to the relatively inefficient batteries now used to provide only two to six hours of power for towers in emergency situations. Greater investment in clean technology is forthcoming, as Kagnoff described venture capital's interest in clean-tech as "dramatic." He predicted the amount of investment by venture capital firms would increase "four or fivefold" in the next several years.

Where, then, does San Diego fit in the picture?

Industry leaders point to San Diego's major research universities and experience in biotechnology as qualities that would facilitate the growth of the clean-tech industry. Mike Sund, vice president of communications and investor relations for San Diego's **Maxwell Technologies**, whose ultracapacitor-based energy storage solutions have improved the efficiency of electrical devices and systems by 20 percent to 30 percent, added: "San Diego's highly educated work force and California's leadership in initiatives to protect the environment are both pluses (for clean-tech companies operating here)."

While San Diego still needs greater venture-capital funds to compete with areas such as Silicon Valley or Boston, it has taken steps to enter into the clean-tech arena. Jim Waring, chief deputy for Land Use and Economic Development for the city of San Diego, pointed to the upcoming roundtable discussion hosted by CONNECT as a sign of the city's progress in promoting clean technology. The forum, set for April 26, will facilitate the interaction of venture capital firms and several startup clean-tech companies looking for investors. "You have to execute on this vision by communicating that you are open for business, that you want to be receptive," Waring said. "Historically, the city stood on the sidelines, wasn't a member of CONNECT, didn't participate in roundtables and didn't have a seat in startup business presentations for venture-capital companies." But, he added: "Now the city does. It is an exciting industry, and we want to be part of it, and we want our community to be a leader in it."

Highlighting the ingredients for any industry's success -- intellectual capital, innovative culture and access to leadership -- Waring made the point that San Diego is, at the very least, on its way toward having a greater stake in the clean-technology industry. "We're behind a number of cities, but not materially," he said. "It's like being behind during the first half-mile of a marathon. This is a long race, and a race that has just begun."

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