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$100M data center rises

Green computing complex at McClellan to sip power

Sacramento Business Journal - by Melanie Turner Staff writer

Data centers already use more than 2 percent of all the electricity in the United States, and the figure could reach 4 percent by 2010.

That's the market **Advanced Data Centers** is targeting as it builds the first phase of a highly efficient $100 million computing complex at McClellan Business Park that ultimately could house 237,000 square feet of servers. ADC's goal is to reduce power consumption and save banks, insurance companies and other large clients big money, company officials said.
"Our over-arching goal is to have the most efficient data center," company president Michael Cohen said. "We recognize that ... saves money on the bottom line but (also) is the right thing to do in terms of its carbon footprint and impact on the utility grid."

The center is designed to use 25 percent to 30 percent less power than typical, tapping features such as advanced airflow systems that use outside air for cooling and enclosed hot-air aisles that use chimneys and fans to pump hot air out. The initial 66,000-square-foot data center received pre-certification last month from the **U.S. Green Building Council** under its Platinum standard, the highest level of the group's Leadership in Energy and Environmental Design program for environmental friendliness.

The power savings would be passed along to customers, Cohen said. "In some cases, we're 75 percent less than a comparable solution." Customers would pay to rent space and for the power they use to operate and cool their servers.

"There's tremendous interest," said Bob Seese, chief data center architect for ADC.

ADC executives declined to disclose potential customers but said the local site could be the first of many and that ADC is in discussions over a handful of other sites in Western states where the company could buy and build.

ADC bought 9 acres at McClellan last year for its initial data center and a power substation, and a second center of about 80,000 square feet. It hopes to buy 9 acres adjacent to the site for the third and fourth phases, "but we haven't got to a contract," McClellan Park president Larry Kelley said. Kelley said the project brings some jobs and a lot of capital investment, and could attract additional data center tenants to McClellan.

Starting up

A handful of data center and telecommunications industry veterans founded ADC a year and a half ago. Cohen said ADC has seven full-time employees.

The company is financed by California business magnate Bernard Osher, who sits on the ADC board, and a private equity fund, Cohen said. He wouldn't provide specifics about financing. The company is renovating a former **U.S. Air Force** radar repair facility for its initial data center. The first phase could be available within six months, Cohen said.

The initial site has 45 megawatts of capacity and would be able to support customer power loads of up to 300 watts per square foot -- about six times as much as legacy data centers provide, Cohen said.

As computers have become more powerful, they use more energy, generate more heat and require even more power for cooling, driving a push for energy efficiency. **Microsoft Corp.**, **Google Inc.** and **IBM Corp.** are among the heavy computer users chasing better efficiency.

Data centers represented 1 percent of all electrical energy consumption in the United States in 2000, 2 percent in 2005, and that energy consumption is predicted to hit between 3 percent and 4 percent in 2010, said Ken Brill, executive director of the Uptime Institute in Santa Fe, N.M. It's the fastest-growing sector of the economy as measured in energy consumption, he said. However, energy efficiency is only a small piece of the certification for the LEED green building program, which also awards points for recycling materials, water savings and other sustainable site development practices. ADC is recycling 95 percent of materials from the old radar repair center, from concrete to ceiling tiles, and intends to reuse "gray water" -- wastewater from sinks and other relatively clean sources -- from the Air Force for its toilets and cooling towers, Seese said.

The Green Buildings Council has no separate category for data centers, so ADC applied for the LEED certification under the commercial office space category.

KC Mares, president and chief energy officer for Reno, Nev.-based **Megawatt Consulting**, which specializes in the development of data centers, said a Platinum rating for any building is rare. "I certainly would commend ADC for doing that," he said.

But Brill said relatively few of the total points for any kind of LEED certification for a commercial building relate to energy efficiency.
"It's sort of irrelevant for a data center," he said. "They're doing the best with what's available, but unfortunately the steak is less filling than the sizzle."

Other measures, other centers

The **California Energy Commission** is developing a certification for data centers that could be ready by the end of the year, Brill said, with 70 percent of the points based on energy efficiency. "My hope is that it would be emulated nationally," he said.

"Power Usage Effectiveness," or PUE, is another measure used to assess data center efficiency, and ADC is aiming low on a scale where lower is better.

ADC claims a PUE of 1.2 or better -- which is "extremely low," Mares said. The PUE is the total power that serves a data center divided by the energy required to power just its computer servers. A score of 1.2 indicates that for every watt of energy used by servers it takes 0.2 watts of additional energy to cool the servers and otherwise operate the data center.

A "good modern data center" typically has a PUE between 1.5 and 2.0, Mares said; a 1.2 "will probably be the best in the industry."
But Brill questioned whether ADC can pull it off. He said a 1.2 is "almost physically impossible."

The Uptime Institute has been an energy-efficiency advocate for years, he said, although the institute fears companies might go too far and "forget that data centers exist for reliability."

The **University of California Berkeley** has not broken ground on a data center it's planning that also would tap outside air and intends to achieve a PUE of 1.2, said John Shalf, group lead for the system architecture group at the National Energy Research Supercomputer Center at Lawrence Berkeley National Laboratory.

The **Sacramento Municipal Utility District** will provide electrical service to ADC. ADC would be eligible for as much as $200,000 in SMUD incentives if the company successfully implements its current design, said Mike Moreno, a key account manager for SMUD.

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