

the utility capitalizes all program costs in its rate base and shareholders earn both the allowed rate of return and bonus rate of return on the equity portion of its efficiency regulatory asset.

The virtual power plant or save a watt model includes an energy-efficiency rider that essentially folds cost recovery, recovery of lost margins and performance incentives into a single mechanism rather than treating them separately. Under this approach, the utility is compensated for investing in energy efficiency based on the avoided cost of new capacity. Although this approach has not yet been implemented, allowing the utility to recover some portion – perhaps as much as 85 percent – of the costs avoided by “saving watts” rather than building a new supply source is currently under discussion. This structure creates an incentive to both minimize costs and to invest in energy efficiency.

As utilities begin to make major investments in energy efficiency and to rely more on it as the fifth fuel in their portfolio of energy sources, the issues involving cost recovery, lost revenue recovery and performance incentives loom large because the impacts become much more significant. As with any major investment, providing a reasonable degree of certainty about the rules of the game may, in itself, be the largest single motivator for utilities to invest in efficiency programs. In addition, if efficiency is indeed to be treated truly as the fifth fuel, then the utility must have some degree of control over the investment.

As we confront the dual challenge of mitigating climate change and reacting to an ever-costlier operating environment, we can candidly say in 2008 that energy efficiency is here to stay and no longer is a

passing fad as it may have been in the 1980s and early 1990s. The joint commitment by utilities, regulators and customers to making efficiency a permanent and prominent part of our thinking must be real and long term. This is why we need new regulatory policies that align customer, utility and investor interests. Efficiency needs to be a fundamental component of utility business strategy going forward.

Lisa V. Wood is executive director of the Institute for Electric Efficiency, part of the Edison Foundation.

NewsFlash

MIDWEST REGIONAL EMISSIONS

Midwest states should attempt to limit regional emissions of greenhouse gases starting in 2012, according to Wisconsin Gov. Jim Doyle.

“Given that the federal government simply has not been moving strongly in this direction, it is important that the various regions of the country get to work,” Doyle said. His comments were reported in the *Milwaukee Journal Sentinel*.

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New Jersey Catches Rays

STATE EMERGES AS CALIFORNIA EAST

BY GARY M. STERN

NEW JERSEY, PREVIOUSLY KNOWN for Atlantic City and Bruce Springsteen, is fast building a reputation as something completely different: a leader in solar energy. While California has been number one in subsidizing and encouraging solar power generation, New Jersey now ranks second in solar installations and solar capacity in the country. What specific policies has New Jersey introduced to spur solar growth, and what can other states learn from its practices?

“While most people think of the sun states like Florida and the Southwest, New Jersey has been a leader in promoting solar use,” stated Monique Hanis, a spokesperson for the Solar Energy Industries Association, which is based in Washington. The rise in solar use results from state policies; it won’t happen by itself, she added.

New Jersey’s renewable energy programs are proving that solar will be built if prices are subsidized and reduced.

The impetus for New Jersey’s encouraging solar was based on 1999 legislation that established what came to be called the New Jersey Clean Energy Program, noted Jeanne Fox, president of New Jersey’s Board of Public Utilities. The program’s goals were for energy efficiency and reducing carbon emissions through clean generation and renewable energy. It offered two renewable energy programs revolving around rebates and energy-trading certificates.

In fact, New Jersey’s Customer On-Site Renewable Energy rebate program, which launched in 2001, distributed more than \$213 million for solar use as of June. The money covered 2,355 residential systems, 330 commercial systems, nearly 70 schools and 70 other facilities, amounting to 2,825 projects. By the end of this year, more than 3,000 solar systems will be installed in New Jersey compared to six installations as of 2001.

Ratepayers were charged \$5 a year on their electric bill, and those funds were funneled into a special utility fund to spur solar use, noted Rick Brooke, the president of the Mid-Atlantic Solar Energy Industries Association. Residential and commercial customers who installed solar systems and applied for rebates

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received amounts equivalent to 30 to 60 percent of their costs, which averaged from \$20,000 to \$30,000 for homeowners and \$1 million for commercial installations. Solar installations, 90 percent of which were placed on roofs, averaged 7 kilowatts for residential and about 500 kilowatts for schools and commercial businesses. The 7 kilowatts is enough to generate the average usage for a residence in New Jersey.

The program's success stemmed from the fact that rebates were large and customers were reimbursed promptly. If the cost of solar is driven down, people will use it, noted Justin Barnes, a policy analyst at the North Carolina Solar Center at North Carolina State University in Raleigh, N.C. The state also made it easy for homeowners to connect solar energy panels to the grid, Barnes noted. Other states have made it difficult to connect to the grid, which discouraged solar use.

Despite its success, some experts saw limitations in its rebate program. New Jersey "paid incentives that were unnecessarily high to get the responses it wanted. The amount of money budgeted for a year was gone in the first couple of months," noted Steve

Chadima, chairman of the Solar Alliance, a state-based advocacy group of 30 large solar installers based in Pasadena, Calif. and the executive vice-president for external affairs at Energy Innovations, a solar manufacturer.

After the funding for the rebate program was exhausted, New Jersey, in September 2007, introduced Solar Renewable Energy Certification, a market-based system, which provides incentives for solar use by requiring utility companies to trade energy credits to help offset carbon emissions from their coal-fired power plants. Each time a utility generates 1,000 kilowatts of electricity, a Solar Renewable Energy Credit is issued, which can be sold or traded separately. Load-serving entities purchase these SRECs in the open market to meet alternative compliance regulations. Originally, credits were traded at \$711 each, but prices fluctuate based on supply and demand. In 2008, most SRECs have been trading at \$400 to \$450 per credit. As of June 30, 2008, 14 SREC solar systems have been installed, amounting to 2.4 megawatts of solar capacity.

Trading renewable energy credits has yielded several benefits. "It ensures that ratepayers are going to get the megawatt-hour of renewable energy for the least amount of money. A study by consultants said that market-based trading based on auctions or negotiated rates would be more expensive because of the potential of market manipulation," Chadima said.



Solar energy in New Jersey in 2008 still produces just 0.07 percent of its energy power, and its long-term goal is to generate 2.12 percent solar use by 2020, which is part of the 20 percent target goal to be supplied by renewable energy by 2020. The Board of Public Utilities estimated that it would cost New Jersey \$11 billion to reach that 2020 goal if rebate rates remained unchanged. "Why burden ratepayers?" asked Michael Winka, clean energy director at New Jersey's Board of Public Utilities.

Branko Terzic, the global and U.S. regulatory policy leader at Deloitte Services based in Washington, D.C., noted that if solar use reaches 2 percent, it would "reduce CO₂ emissions by million of tons and allow



more time to develop alternative approaches. It's an aspirational goal and may exceed 2 percent if new technologies are stimulated."

Solar use could rise if it was operating on a level-playing field with coal-fired electricity, natural gas and nuclear, Brooke noted. Studies indicated that federal subsidies for fossil and nuclear industries reached

 You push solar because you believe the continuation of fossil generation without carbon capture will lead to catastrophic climate change results. 

\$64 billion in 2003. If the market were level, the price of solar would be likely to fall and the price of the other power sources would rise. "If grid parity could be reached, we wouldn't need solar incentives by 2012," Brooke noted.

Not only has New Jersey's solar growth improved the environment but also it has spurred the growth of many solar businesses. Brooke stated, "Without state programs, there wouldn't be any solar installers because the prices would be too high." Solar companies would stay in business by installing inexpensive thermal systems, but there would be minimal demand for installing expensive solar panels. Brooke said that the 60 solar companies that operate in New Jersey fuel job growth in manufacturing, installation and service.

To meet New Jersey's renewable standards and be a good corporate citizen, PSE&G, which provides electricity to 2.1 million households in New Jersey, covering about 75 percent of all state residents, established a \$105 million solar loan program for installing photovoltaic systems through 2009. The program has been successful because loans are paid with solar renewable energy certificates. "We view it as a market

transition into a competitive world," noted Al Matos, PSE&G's vice president for renewable and energy solutions, based in Newark, N.J.

PSE&G's commercial solar loan program was launched in April and covers 24 megawatts of power. Already 12 megawatts have been applied for, and the residential segment, which offers 6 megawatts, started in August.

Expanding the use of solar energy statewide will drive prices down in the long run. "Many years ago calculators cost \$1,000 and now you can buy one for \$2.50," Matos noted for comparison. Matos expects that grid parity will take 10 to 15 years to happen, but new technology, heightened demand and more efficient solar use will combine to reduce prices. Barnes of the North Carolina Solar Center suggested that companies are gaining more expertise in mass-producing solar material and that new, efficient technologies such as thin-film solar contribute to lowering prices.

But Deloitte Service's Terzic noted that New Jersey and other states are not encouraging the use of solar for price-competitive reasons. "You push solar because you believe the continuation of fossil generation without carbon capture will lead to catastrophic climate change results," he said. During the transition period, solar prices will remain high, necessitating subsidies.

Brooke would like to see New Jersey do more to encourage solar use. He suggested that New Jersey double its 2020 goal of solar use from 2 percent to 4 or 5 percent. "It would result in more funding and only have to adjust rate increases to slightly more than \$5," he said.

New Jersey is not the only state employing innovative practices to encourage solar use. Maryland has introduced a combination tax credit and rebate system. In September 2007, Maryland initiated a net metering system and a property tax exemption for solar use and the state passed an amendment that mandates 2 percent solar use by 2022.

Several experts said that the major impediment to solar's growth is long-term uncertainty. Rebate programs are established and then halted when the money dries up. SRECs are introduced for temporary periods, which won't allow banks to offer loans to solar companies. Solar businesses can't invest in their inventory and manufacturing plants unless they realize a steady revenue growth over a sustained period. "The temptation is to introduce a quick fix. But the single fundamental flaw is the lack of long-term contracting. We need a 10-year schedule to ensure stability," Chadima said.