

Catching Rays

FROM BERKELEY TO NORTH CAROLINA

BY PAUL WENSKE

UNTIL NOW, TO EQUIP YOUR HOME or business with solar power you had to come up with a lot of scratch up front. Unfortunately, that often left access to the technology to the financially well off, to the curious or to highly motivated tree huggers.

That appears to be changing.

While the government casts about for a national energy policy, communities and utilities are experimenting with novel and more affordable ways to bring consumers and businesses into the sunlight.

The cities of Berkeley, Calif., and Boulder, Colo., are creating a national buzz with initiatives to allow property owners to install rooftop solar panels using city-backed loans. The loans are repaid over 20 years through special property-tax assessments.

Utilities are also taking to the rooftops, though using a slightly different approach from the Berkeley fathers.

For example, Duke Energy in North Carolina and Southern California Edison plan to lease rooftop space from homeowners and businesses to install solar panels. They would retain ownership of the panels and run the generated electricity back through their grid systems.

Rooftop models may not replace mega-solar farms. But the efforts, aimed at reducing steep infrastructure costs, show the public's rapid acceptance of solar technology – alongside wind power – as an alternative to dirtier, dwindling and increasingly costlier fossil fuels.

"This is sparking a solar energy revolution across the United States," says Neal Lurie, a spokesman for the American Solar Energy Society, a nonprofit that works with consumers and professionals.

"The up-front cost is the single biggest barrier for consumers who want to invest in solar technology," he says.

Consumers, businesses and public utilities are also getting a solar break worth millions from the financial bailout bill signed into law in October. Among other things, it extends the 30 percent solar energy tax credit for eight years, authorizes \$800 million in new, clean renewable energy bonds and removes the \$2,000 cap on residential solar installations.

"There's more green to go green," Lurie says. "For homeowners that means the economics of solar are getting better every day."



BERKELEY SETS THE BAR

The Berkeley plan, closely watched by cities throughout the United States and Europe, is leading the charge.

The plan works like this: A homeowner would hire a city-approved solar contractor to install the proper type of panels, depending on the size and shape of the home, at a cost of \$15,000 to \$20,000.

The city would pay the up-front installation cost, less any state and federal rebates, and tack it to the homeowner's property-tax bill. The homeowner would have 20 years to pay it back. The city would keep costs manageable by financing the loans with low-interest bonds.

The assessment, as well as the panels, would remain with the property and would be assumed by a subsequent buyer. The initiative resulted from Measure G, a resolution passed by Berkeley voters to reduce the city's greenhouse gas emissions by 80 percent by 2050.

"It's the most important thing the city can do in the fight to reduce greenhouse emissions," says Mayor Tom Bates.

The city hopes to raise \$1.5 million to finance the pilot program, which would equip about 50 homes. If successful, the program would be expanded to encompass hundreds of homes.

The financing scheme is modeled on traditional special assessment districts that minimize costs for underground utility wires by allowing neighborhoods to pay for them over time.

"We just applied the idea to renewable energy," says Daniel Kammen, founding director of the Renewable and Appropriate Energy Laboratory at the



University of California at Berkeley, who helped develop the plan. "Instead of paying the cost all up front, you can pay for it over the time you use the energy. That's a big deal," he says.

One allure for homeowners is the chance to balance out the cost with savings on their monthly Pacific Gas & Electric bills.

But Severin Borenstein, director of the University of California Energy Institute, believes any savings is overblown.

"As a financing mechanism I don't have a problem," he says. "But I'm worried they are going to tell people they are going to save money doing this, and for the vast majority of citizens that is not true."

Borenstein notes the monthly cost to repay the city-backed loans is about \$182, a bit more than the average monthly electric bill. Besides, he says, citizens may be adding cost to their mortgage for a device that depreciates.

Kammen disagrees. He says that, in fact, citizens are increasing the value of their properties. "You can build in clean energy and pass it on to the next person who buys your property," he says.

While the amount of initial savings may be debated, experts say the potential for future savings is less in dispute.

That's part of the attraction for Boulder officials who recently approved a solar-panel initiative modeled on the Berkeley plan.

"It's fair to assume that fossil fuel costs are going to continue to go up," says Lurie of the Boulder-based American Solar Energy Society. Lurie cited statistics that solar capacity has increased 41 percent per year since 2001, spawning millions of dollars in new investment.

"Technology will continue to drive down renewable fuel costs; so the economics make sense," Lurie says.

UTILITIES FOLLOW SUIT

The rooftop revolution is not lost on utilities facing billions in costs to build gigantic solar farms and upgrade transmission lines. They also face state pressure to reduce emissions.

Duke Energy plans to buy 16 megawatts of power from a solar farm to be built by SunEdison in North Carolina. Even so, it is investing in rooftop technology to test the savings potential.

"We are seeing without a doubt that renewable

energy is just taking off," says Dave Scanzoni, a Duke Energy spokesman.

Duke expects that solar costs over time will come down while the cost of steel, concrete and other materials to build solar farms may keep going up.

So Duke wants to study the merits of distributing power generated from panels installed on existing homes, office buildings, malls and warehouses located in urban and rural areas.

Unlike the Berkeley plan, Duke would lease space from property owners. Instead of generating energy for the structures on which the panels are set, the electricity would run back into the grid and serve Duke's entire territory. "Think of each of these structures as a mini-power plant," Scanzoni says.

The pilot plan will cost \$100 million, include 850 sites and produce 16 megawatts, or enough to annually power 2,600 homes. The plan, under state review, already has 400 volunteers.

Scanzoni says Duke CEO Jim Rogers is committed to reducing the company's carbon footprint. It supported a 2007 requirement that utilities satisfy 12.5 percent of their customers' power needs with renewable fuels by 2021.

In California, Southern California Edison is equipping 100 large rooftops with panels capable of generating electricity for 160,000 homes. Edison also faces a state requirement to provide 20 percent of its power from renewable sources by 2010.

So, how will rooftop technology fare against massive solar plants being built in the Southwestern deserts?

Experts say each has its pros and cons. Solar farms offer economies of scale but are expensive. Rooftop generation can cancel out long transmission lines to remote areas. But it offers a smaller scale of efficiency.

Still, experts say the two models can complement one another.

"It's unlikely that there will be one model," says George Douglas, a spokesman for the national Renewable Energy Laboratory, in Golden, Colo.

Jim Owen, of the Edison Electric Institute, agrees. "Just as resources in different states and jurisdictions are different, approaches to utilizing them also are different and the important thing is getting the electricity generated safely and affordably," he says.

In the end, experts say, the rooftop revolution signals growing consumer demand that government leaders address the need for a vital energy policy.

"The customer is saying, 'I've had it with the high cost of fossil fuels and sending money to countries run by dictators,'" says Lurie. "They are voting with their dollars and sending the message to key decision makers that they want to see an increase in renewable energy."