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HD **Environment (A Special Report) --- Lightening the Load: Solar-energy advocates look for innovative ways to reduce the upfront installation costs**

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LP One of the biggest hurdles solar power faces is the price tag. The fuel is free -- but the residential systems that capture the fuel often cost $30,000 to $50,000. And that's just too steep for most people, especially in tough economic times.

Now a host of efforts are under way to chip away at the cost of solar, including a provision in the financial bailout enacted Friday allowing home solar projects to qualify for a 30% federal tax credit, replacing a $2,000 maximum benefit. In some cases, states and cities are offering people better additional incentives to install the systems. They're beefing up rebates and tax breaks and offering loans that allow homeowners to spread the cost of installation over many years.

TD In other cases, solar-power companies are finding creative ways to help people get systems on their homes without big upfront costs. These companies install and maintain panels on homes and pocket the rebates and tax breaks, since the companies technically own the systems. Homeowners then pay the companies a fixed monthly fee to use the power the panels generate -- essentially, renting the equipment.

"The real leap forward in the solar industry is what's happening in financial innovation, perhaps more than in the technology itself," says Adam Browning, executive director of the Vote Solar Initiative, a nonprofit organization in San Francisco dedicated to moving solar energy into the mainstream.

When it comes to improved municipal incentives, Palm Desert, Calif., is at the forefront with its efforts. The city is taking advantage of a change in state law that allows cities to issue bonds and create special districts for funding renewable-power and energy-efficiency measures by homeowners. The city can offer homeowners low-interest loans to install solar panels and other measures, and allow them to spread out the costs for as long as 20 years.

"Our city's goal is to reduce [fossil fuel] energy use 30% by 2011," says Patrick Conlon, director of Palm Desert's Office of Energy Management, which administers the loan program. "There's no way we can do that without lots of solar power and energy efficiency."

Jerry Goldstein is grateful for the city's efforts. He and his wife bought their 2,400-square-foot home about a year ago in Palm Desert, where scorching temperatures mean people often "throw money down the drain" to stay cool, he says. When he got his power bills last summer -- one for $870 and another for $955 -- he knew something had to give.

The Goldsteins now are planning to make about $85,000 of improvements to their home, including solar panels, funded by a loan from the city. (After rebates and tax breaks, the total cost will fall to $65,000.) They will repay their loan through their property-tax assessment. They hope the measure will cut their **utility** bill in half.

Palm Desert isn't alone in its efforts. Berkeley, Calif., and the state of Colorado have passed similar measures. And 10 other states -- mostly in the West and Northeast, where there are ambitious goals for reducing greenhouse-**gas** emissions from fossil-fuel power plants -- are looking at enacting similar measures.

For the most part, municipal incentives like these are designed to get homeowners to take action and

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install solar panels on their own homes. But some solar-power companies are using the government-sponsored breaks to give their customers solar panels without a big initial investment.

In these "third party" financing arrangements, companies install solar panels on a customer's property but maintain ownership of the equipment so they get the rebates and tax breaks -- including the lucrative federal investment tax credit, equal to 30% of a project's cost.

The property owners pay the solar companies a fixed monthly fee -- lower than their usual **electric** bill -- to use the power that the panels generate.

The third-party arrangement was developed a few years ago for commercial properties, especially big-box retailers that like the idea of getting cleaner power at a fixed price and leaving it to someone else to maintain the systems. Companies offering the commercial plans include SunEdison LLC, Beltsville, Md., and SunPower Corp., San Jose, Calif.

Cities and nonprofit organizations also like using third-party financing to install solar panels on their buildings, because it allows them to partner with companies that own and maintain the systems. Cities and nonprofits also lack one of the biggest incentives to install panels on their own: They don't pay the taxes that make them eligible for the federal investment tax credit.

Recently, SolarCity Inc. and SunRun Inc. have adapted the third-party approach to the residential market, spurred by recently expanded state programs. New York, for example, offers a rebate of more than $4 for every watt of installed capacity, or $16,000 on a four-kilowatt system, a fairly typical system for families using about 1,000 kilowatt-hours of electricity a month.

Lyndon Rive, chief executive officer of SolarCity in San Francisco, says New York, Connecticut, Oregon, New Jersey, Delaware, Hawaii and Colorado are the most attractive states for residential solar-panel installers, taking into account public subsidies, the sun intensity and local **utility** prices. In California, state subsidies gradually are winding down and are about half of what they were a couple years ago.

SolarCity, which operates in California and Arizona and expects to expand to the East Coast in 2009, leases its panels to homeowners.

A family spending $200 a month on electricity could expect to cut its monthly cost to $170 under a 15-year lease. Of that, $95 would go to SolarCity; the remaining $75 would go to the local **utility** to supply conventional power, since the panels often can't cover all of a family's electricity needs.

SolarCity, meanwhile, gets the federal tax credit and state rebates for the system, as well as Renewable Energy Credits, or RECs, reflecting the carbon reduction represented by solar energy. The company owns the system, maintains it and guarantees the output; at the end of the lease, homeowners could extend the lease, buy the system or have it removed.

"The solar industry has been waiting 30 years to be able to offer parity with grid prices," says Mr. Rive. "Now we're able to offer it."

SunRun offers homeowners a twist on that arrangement: Customers pay an upfront fee in exchange for lower power costs down the road. Under a typical arrangement, a customer pays $10,000 to SunRun to have a system installed that's capable of satisfying most of a household's electricity needs.

Then, instead of paying a **utility** bill of $220 a month, for example, a customer pays about $80 to SunRun for roughly 600 kilowatt-hours of juice a month and about $40 to the local **utility** for the remainder of the electricity consumed. That cuts the out-of-pocket cost to $120 a month, saving $100. At that rate, it takes about eight years to break even on the $10,000 initial investment.

Thereafter, the savings accelerate, particularly because the cost is locked in and **utility** prices are expected to rise significantly in coming years. Consumers can buy their SunRun systems at any time at a prenegotiated price.

Whether these deals offer enough **value** to attract many takers remains to be seen. Both companies are in the early stages of growth and, together, have installed fewer than 2,000 systems.

But industry observers think that the residential market will grow briskly in coming years with many people eager to have solar power -- so long as it doesn't cost them more than conventional power.

"If you want mass adoption, not just adoption by the wealthy and environmentalists, you have to make

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the cost lower than your existing **utility** bill," says SolarCity's Mr. Rive.

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