

San Bernardino Sun—*Greener Pastures in our Future*
April 28, 2008

We hope the first family-home community in San Bernardino County run on solar panels will mark the beginning of a trend.

Hal Woods, president of CenterStone Communities, showed off three model homes last week at Harmony at CenterStone Estates, a new-home development in Fontana. His company will install 2.3-kilowatt photovoltaic systems on all 56 new houses there.

The houses will have not only solar panels on the roofs, but also electric meters that spin backward when the house's system produces more electricity than its residents use, drought-resistant turf and irrigation systems and high-efficiency toilets, among other "green" features.

The developer draws financial incentives from the California Energy Commission's New Solar Homes Partnership, which provides tiered assistance for projects that are more energy-efficient than standard new homes.

Fontana was also the location a month ago when Gov. Schwarzenegger joined Southern California Edison officials and local politicians to announce a plan to install 65 million square feet of solar panels on commercial building rooftops in Southern California. Edison said the panels would power 162,000 homes.

That press conference took place on the roof of a 600,000-square-foot distribution center owned by ProLogis. The company will lease the rooftop to Edison, which will install and maintain panels to produce two megawatts of solar power, enough to serve about 1,400 households.

The new residential and commercial applications of solar energy production add momentum to the efforts of the Green Valley Initiative, a coalition of regional movers and shakers whose aim is to make the Inland Empire greener in its practices and land-use decisions and at the same time a center for green industries and jobs. A Green Valley Summit will be held Thursday through Sunday as part of the So Cal Builders Expo at the Ontario Convention Center.

Billed as being "about the future of the Inland Empire as a global center for green technology and environmental sciences," the summit figures to provide a lot of information for builders and developers, entrepreneurs, investors and others interested in green tech businesses.

There will be everything from big-picture discussions of the economic future of green industries, with people like state Treasurer Bill Lockyer and public policy expert Woodrow Clark II, to workshops on solar residential installations and edible landscapes. Go to www.greenvalleynow.org for more information and to register to attend the summit.

Especially now that we are all seeing firsthand the future of oil prices, working to make the Inland Empire a center for green technology makes more environmental and economic sense than ever.

New York Times—*A Green Energy Industry Takes Root Under the California Sun*
February 1, 2008

A Green Energy Industry Takes Root Under the California Sun

By **MATT RICHTEL** and **JOHN MARKOFF**

SAN FRANCISCO — The sun is starting to grow jobs.

While interest in alternative energy is climbing across the United States, solar power especially is rising in California, the product of billions of dollars in investment and mountains of enthusiasm.

In recent months, the industry has added several thousand jobs in the production of solar energy cells and installation of solar panels on roofs. A spate of investment has also aimed at making solar power more efficient and less costly than natural gas and coal.

Entrepreneurs, academics and policy makers say this era's solar industry is different from what was tried in the 1970s, when Jerry Brown, then the governor of California, invited derision for envisioning a future fueled by alternative energy.

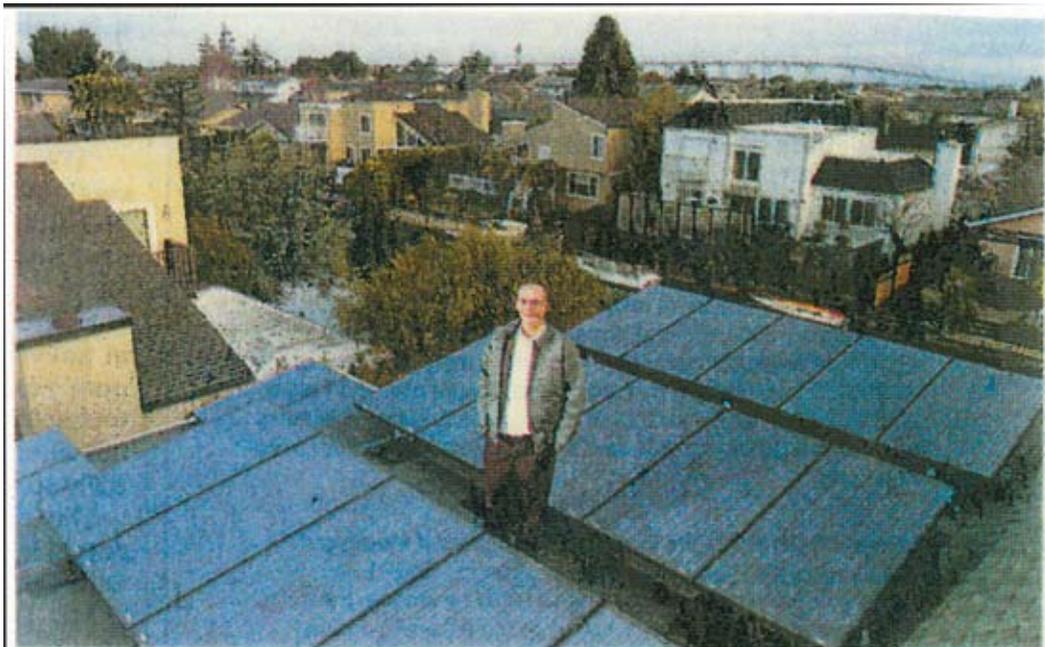
They point to companies like SolarCity,

an installer of rooftop solar cells based in Foster City. Since its founding in 2006, it has grown to 215 workers and \$29 million in annual sales. "It is hard to find installers," said Lyndon Rive, the chief executive. "We're at the stage where if we continue to grow at this pace, we won't be able to sustain the growth."

SunPower, which makes the silicon-based cells that turn sunlight into electricity, reported 2007 revenue of more than \$775 million, more than triple its 2006 revenue. The company expects sales to top \$1 billion this year. SunPower, based in San Jose, said its stock price grew 251 percent in 2007, faster than any other Silicon Valley company, including Apple and Google.

Not coincidentally, three-quarters of the nation's demand for solar comes from residents and companies in California. "There is a real economy — multiple companies, all of

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NOAH BERGER FOR THE NEW YORK TIMES

Peter Rive of SolarCity, an installer of rooftop solar cells in California.

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New York Times—*A Green Energy Industry Takes Root Under the California Sun*
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Solar Energy Taking Root in California

From First Business Page

which have the chance to be billion-dollar operators," said Daniel M. Kammen, a professor in the energy and resources group at the University of California, Berkeley, California, he says, is poised to be both the world's next big solar market and its entrepreneurial center.

The question, Professor Kammen says, is: "How can we make sure it's not just green elite or green chic, and make it the basis for the economy?"

There also are huge challenges ahead, not the least of which is the continued dominance of fossil fuels. Solar represents less than one-tenth of 1 percent of the \$3 trillion global energy market, leading some critics to suggest that the state is getting ahead of itself, as it did during the 1970s.

The optimists say a crucial difference this time is the participation of private-sector investors and innovators and emerging technologies. Eight of more than a dozen of the nation's companies developing photovoltaic cells are based in California, and seven of those are in Silicon Valley.

Among the companies that academics and entrepreneurs believe could take the industry to a new level is Nanosolar, which recently started making photovoltaic cells in a 200,000-square-foot factory in San Jose. The company said the first 18 months of its capacity has already been booked for sales in Germany.

"They could absolutely transform the market if they make good on even a fraction of their goal for next year," Professor Kammen said. "They're not just a new entrant, but one of the biggest producers in the world."

Many of the California companies are start-ups exploring exotic materials like copper indium gallium selenide, or CIGS, an alternative to the conventional crystalline silicon that is now the dominant technology.

The newcomers hope that CIGS, while less efficient than silicon, can be made far more cheaply than silicon-based cells. Indeed, the Nanosolar factory

looks more like a newspaper plant than a chip-making factory. The CIGS material is sprayed onto giant rolls of aluminum foil and then cut into pieces the size of solar panels.

Another example is Integrated Solar, based in Los Angeles, which has developed a low-cost approach to integrating photovoltaic panels directly into the roofs of commercial buildings.

In 2007, 100 megawatts of solar generating capacity was installed in California, about a 50 percent increase over 2006, according to the Solar Energy Industries Association, a trade group.

That growth rate is likely to increase, in part because of ambitious new projects like the 177-megawatt solar thermal plant that Pacific Gas and Electric said last November it would build in San Luis Obispo.

The plant, which will generate power for more than 120,000 homes beginning in 2010, will be built by Ausra, a Palo Alto start-up backed by the investor Vinod Khosla and his former venture capital firm, Kleiner Perkins Caufield & Byers.

The industry in California is also helped by state and local governments' substantial subsidies to stimulate demand. The state has earmarked \$3.2 billion to subsidize solar installation, with the goal of putting solar cells on one million rooftops. The state Assembly passed a law to reduce greenhouse gas emissions by 25 percent by 2020, which could spur alternatives like solar.

Additional incentives have come from a small but growing number of municipalities. The city of Berkeley will pay the upfront costs for a resident's solar installation and recoup the money over 20 years through additional property taxes on a resident's home. San Francisco is preparing to adopt its own subsidy that would range from \$3,000 for a home installation to as much as \$10,000 for a business.

The subsidies have prompted a surge in private investment, led by venture capitalists. In 2007, these seed investors put \$654 million in 33 solar-related deals in

California, up from \$253 million in 16 deals in 2006, according to the Cleantech Group, which tracks investments in alternative energy. California received roughly half of all solar power venture investments made in 2007 in the United States.

"We're just starting to see successful companies come out through the other end of that process," said Nancy C. Floyd, managing director at Nth Power, a venture capital firm that focuses on alternative energy. "And through innovation and volume, prices are coming down."

Whether any of this investment pays off depends, as it did in previous eras, on reaching the point at which solar cells produce electricity as inexpensively as fossil fuels. The cost of solar energy is projected to fall steeply as cheaper new technology reaches economies of scale. Optimists believe that some regions in California could reach that point in half a decade.

At present, solar power is three to five times as expensive as coal, depending on the technology used, said Dan Reicher, director for climate change and energy initiatives at Google.org, the philanthropic division of the Internet company. Among its investments, Google says, is \$10 million in financing for eSolar, a company in Pasadena that builds systems that concentrate sunlight from reflecting mirrors.

"We're at the dawn of a revolution that could be as powerful as the Internet revolution," Mr. Reicher said. The problem is, he said, "renewable energy simply costs too much."

At a conference of alternative energy companies in San Francisco last month, to discuss how to encourage the industry's growth, Mr. Brown, the former governor, joked that if the participants wanted to make real headway selling alternative energy, they should try not to come off as flaky. "Don't get too far ahead of yourselves," said Mr. Brown, now the state's attorney general. "You will be stigmatized. Don't use too many big words and make it all sound like yesterday."

The Sacramento Bee: Home Front—*Capital-area home builders see bright spot in solar power*
July 13, 2007

Capital-area home builders see bright spot in solar power

With California aiming to be a global superpower in sun-powered housing, its capital region is embracing that solar goal in a big way.

Only a year ago about 1,600 houses statewide had preinstalled solar systems. The Sacramento area alone now has more than 3,000 such homes under construction or planned.

Area home builders are seeing better sales with solar-power systems as standard features. Many say it's a way to distinguish their product in a tough market with more supply than demand for new houses.

Most recently, Granite Bay-based SolarProInternational announced a \$4.2 million purchase of solar tiles for 378 new homes rising in Placer County. The firm says it has agreements with three builders there - Dallas-based Centex Homes and JTS Communities and Reynen and

Bardis Communities of Sacramento.

SolarPro President Kevin Boedecker says the tiles are manufactured in Grass Valley by Open Energy Corp., based in Solana Beach in San Diego County.

Boedecker's announcement comes as Rocklin also gains a piece of solar history. The city's Whitney Ranch is home to the first project approved by California's New Solar Homes Partnership Program. That's a 10-year, \$400 million program run by the California Energy Commission to subsidize solar in new-home construction.

The state is spending nearly \$3 billion more to push solar systems onto existing houses.

The 60-home Rocklin project is called Wisteria. Home sizes range from 3,800 to 4,400

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► FROM PAGE D1

square feet, and prices are in the \$600,000 and \$700,000 range. The builder is Santa Rosa-based Christopherson Homes.

Local home designers say financial incentives are finally pushing a notion associated with the counterculture into mainstream suburban life. SMUD and Roseville Electric, too, are providing millions of dollars in financial incentives to home builders to make solar power a standard feature.

Sacramento Business Journal—*Builders jump on solar bandwagon*
June 15, 2007



DENNIS McCOY / SACRAMENTO BUSINESS JOURNAL

PowerLight's Damon Brommerich installs solar panels at Ironcrest at Fiddymant Farm in Roseville.

Builders jump on solar bandwagon

Rebates make an expensive option look good during a market slowdown

CELIA LAMB | STAFF WRITER

Spurred by financial incentives offered by electric utilities, builders in the Sacramento region are eclipsing the rest of the nation with plans to include solar power generation as a standard feature on new homes.

- A subsidiary of Miami-based Lennar Corp. has pledged to put solar electric equipment on 1,254 homes to be built in 11 Sacramento County communities. The deal with the Sacramento Municipal Utility District dwarfs other builders' solar-home commitments.

- A Roseville Electric program that aims to make solar power a standard feature on 10 percent to 20 percent of new homes built in the city over the next 10 years has become so popular the city-owned utility is considering cutting future rebates.

In addition, a new state-run subsidy program is expected to stimulate more solar-powered subdivisions. Senate Bill 1, signed by Gov. Arnold Schwarzenegger in August, mandated \$2.8 billion in funding for solar incentives, including rebates for new homes.

Sacramento-area builders started taking solar seriously about three years ago. Roseville-based Premier Homes Properties Inc. led the local pack by putting solar power on all 95 homes in the Premier Gardens subdivision in Rancho Cordova in 2004.

Since then, Treasure Homes has built the 32-home solar Fallen Leaf at Riverbend project in South Natomas, and builders have pledged more than 2,500 additional solar homes in the region, including some already built or under construction.

Only about 2 percent of new homes built each year in California have solar electricity, said Bernadette Del Chiaro, a lobbyist with solar power advocate Environment California. SB 1 aims to push that number to 50 percent by 2016. Del Chiaro predicts builders will jump on the subsidies, in part to offset the effects of a housing market slowdown.

"This could be the edge that keeps them competitive over the rest of the market," she said.

Builders say buyers want solar-powered homes, but only because rebates make the costs palatable. A typical 2.3-kilowatt rooftop system retails for up to \$23,000. Rebate programs can cut the cost by 25 percent to 50 percent. Generally the programs also require energy-efficiency measures that exceed state standards, such as appliances that run on less power, radiant barriers in attics and better insulation. Combined, the measures can cut power bills by 50 percent to 60 percent — less if the owners are heavy power users.

STATE GETS STARTED

The California Energy Commission

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Sacramento Business Journal—*Builders jump on solar bandwagon*
(continued)

expects to receive the first rebate applications for its New Solar Homes Partnership program in about a month, said commission spokeswoman Claudia Chandler. The state has offered incentives for energy efficiency, but this will be the first time it also offers rebates for solar power on new homes.

The state program will pay about \$2.60 per watt, or about 27 percent of the cost of a standard system. The rebate would rise or fall depending on the orientation of the solar panels to the sky, whether shade covers some of the panels and other factors affecting each system's energy production, Chandler said. Builders must also construct the homes to be at least 15 percent more energy efficient than required by state building standards.

In addition to the builders' rebates, homebuyers may qualify for up to \$4,000 in federal tax credits for solar power and energy-efficiency costs, Chandler said.

The commission's program covers homes that receive electric service from Pacific Gas and Electric Co., Southern California Edison Co., San Diego Gas & Electric Co. and Bear Valley Electric Service. Municipal utilities such as the Sacramento Municipal Utility District and Roseville Electric have separate programs for their customers.

The state program will reimburse builders who offer solar power as an option. SMUD and Roseville only provide rebates for homes that include solar power as a standard feature.

HOT PURSUIT

Jeff Panasiti, president of Lennar Corp.'s Sacramento division, said he favors SMUD's and Roseville's approach. It's not fair to offer rebates to builders who offer optional solar power while others commit to putting it on every house, he said.

But there are other economic advantages of making solar power an automatic feature instead of an option. Builders can negotiate volume discounts for equipment, and it helps if contractors such as roofers and electricians know solar power will go into every home instead of having to work with the builder on the details of each house.

"It saves a lot of administrative time, thereby lowering the price," Panasiti said. "As managers, we spend less time making sure we have the right things going in the home, and we spend more time managing the quality of the home."

SMUD has agreed to provide Lennar with \$6,874 to \$7,846 per home built with solar power and energy-efficiency measures in 11 planned communities through 2010. Lennar has started building the first of the series at Kvala Ranch in the Anatolia area of Rancho Cordova. It plans to break ground on the second set, at Laguna Ridge in Elk Grove, this month. Other

homebuilders receiving solar rebates from SMUD include Citrus Heights-based Tim Lewis Communities, which has pledged to build 183 solar homes in Orangevale and Elk Grove.

Lennar has also signed up for Roseville's Blueprint for Efficiency and Solar Technology (BEST) Homes program, which provides up to \$8,530 in rebates to builders for new homes with rooftop solar generation, energy-efficiency measures and shade trees. It plans 575 BEST Homes in three west Roseville subdivisions. Centex Homes, based in Dallas, has pledged to build 445 BEST Homes in Roseville, and Santa Rosa-based Christopherson Homes Inc. has promised 125.

Altogether, the BEST Homes program has enrolled 1,145 homes, far more than expected by this time, said Roseville Electric assistant utility director Michelle Bertolino. The city set a goal of 1,600 to 3,500 solar homes, equal to 10 percent to 20 percent of expected development in the next decade. Because demand for the program is so high in the program's first year, the city is evaluating whether it should lower the incentives, Bertolino said.

Diana Sanger, director of sales and marketing in the Sacramento region for Christopherson Homes, said demand has been so hot for solar power that her company decided halfway through construction to add solar tile roofs to its Whitney Ranch development in Rocklin. The company had not started building on 30 lots, so it quickly added solar to the remaining homes in the development.

"People are loving it," she said. "People who had looked at Whitney Ranch came back months later when they found out we had solar." PG&E bills for some of those homes, generally at least 3,800 square feet, could top \$700 in some months, she said, but solar power systems will cut the costs about 60 percent over the course of the year.

Sanger called solar power "the wave of the future" for new-home construction in California. As more homebuilders adopt the technology, they'll see how each is deploying the technology and choose the best or most efficient, she said. For example, Christopherson decided to use a single contractor for roofs and solar power rather than separate contractors for each because they could offer better warranties, she said.

Panasiti said he'd like the industry and consumers to stop thinking about solar power as an additional cost.

"Drywall has a cost," he said. "Cabinets have a cost. Framing has a cost." So does solar, he added. But unlike other costs, this one gives back.

"The minute they move into the home, it is producing power, and it is making positive cash flow," he said.

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Sacramento Business Journal—Builders jump on solar bandwagon (continued)



Old Country Roofing of Vacaville is using solar tiles like these, installed three years ago on the Davis home seen here, for Christopherson Homes in Roseville.

PHOTO COURTESY OF BP SOLAR AND OLD COUNTRY ROOFING

"If money is no object, the big whiz-bang thing is interfacing alarm security with lighting control and digital video recording," he added. "If there's an intrusion into the home, one of the things it can do is notify the (video camera) to start recording what's happening at the site of the intrusion." Not only does that document what's happening, it can allow you to see what the camera is seeing, he said. "The cool thing is, if you have Internet access to your security system, when you're on vacation or in your office, you can access it and see what's going on in your home."

Trimble said one of the more commonly requested applications is used to control lighting systems remotely, on a schedule, or activated by motion detectors or smoke detectors in the home.

"Once we're controlling the lighting, we can do just about anything we want," he said. "Some (features) have to do with security, some have to do with energy savings," he said.

"Let's say at 2 a.m., your smoke detector goes off. Instead of having the smoke detector blare off into the darkness, as soon as it goes off, we can raise the lights to 50 percent so you're not stumbling about in the dark," he said. "Or, if you're on vacation and nobody is supposed to be in your home and your front door opens, (one of the systems) can turn on lights or set off flashing lights at the point of intrusion."

LIGHTS ARE ON, BUT NOBODY'S HOME

Trimble said they also can make the home look lived in when you're away.

"It's not 'Home Alone' where you're on a schedule. It's actually a random, lived-in look," he said; a bathroom light could go on at 3 a.m.

The cost of a lighting system varies, depending on how many light switches are



Toby Heath of Signature Properties shows up via the tiny camera, mounted above a door, right.

DENNIS MCCOY | SACRAMENTO BUSINESS JOURNAL

to be linked, Trimble said. The 'controller' costs \$699; each light switch is \$99; labor is \$100 an hour, and in one hour, they can do about four light switches, he said.

"Some people want to control just (switches in) the common areas; one 14,800-square-foot home in (El Dorado Hills) Serrano we did has 200 switches. We've done them in 1,200-square-foot condos," he added.

Bob Rispoli, purchasing manager for Christopherson Homes Inc., said the company will install alarm systems on the 127 homes in The Arbors at Flddyment Ranch, a development in west Roseville set to open in October, but added that the costs for other features, such as surveillance cameras, are still prohibitive.

"I wouldn't think people are doing any type of cameras in the production-home area," he said.

Chris Crosby, president of Crosby Homes Inc., spent 11 years in the computer industry before returning to the custom homebuilding business about 10 years ago. He is building a \$2.1 million home for a client right now, as well as



his own \$3 million home. He has no plans to install an integrated system just yet though he's been researching the topic.

"I learned you never buy the latest and greatest until there is a fall-out," he said. "Right now, you can integrate (systems for lighting, alarms, heating and other features) into a centrally controlled system, and you can even access it via your cell phone. A number of companies are offering that. The problem I see is there's a lot of jostling going on as to what the standard is going to be."

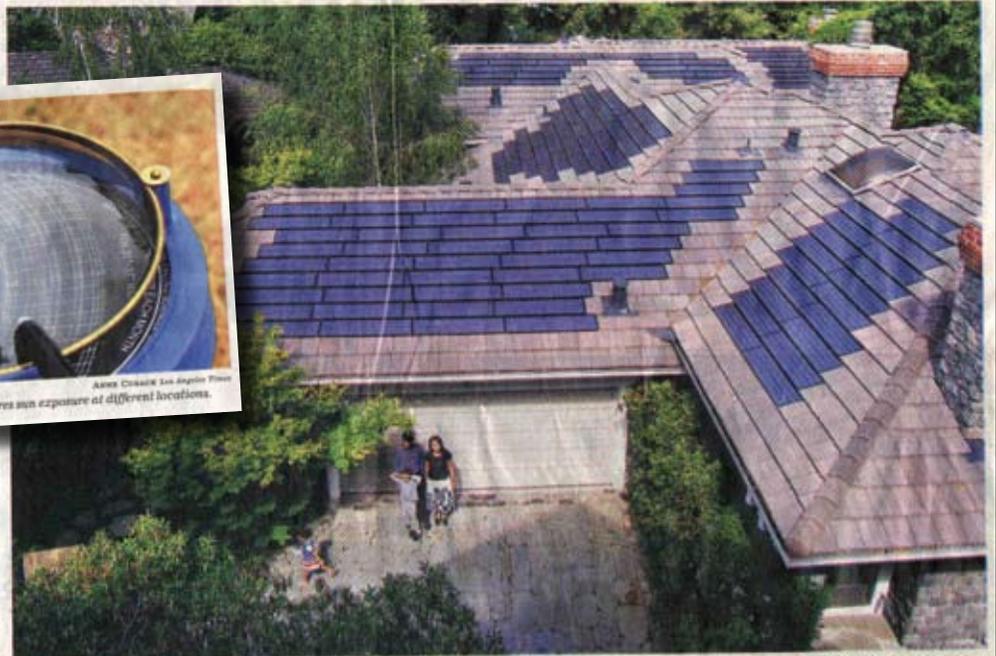
"Right now it's just way, way overpriced, but the market is going to settle out in the next two or three years."

LA Times—*Surprise, it's solar*
June 3, 2007

Surprise, it's solar



HEAT SEEKING: The Solar Pathfinder measures sun exposure of different locations.



TWO-TONED TOP: Nickhil Jankolar and wife Sudhya Shreeff, with son Akhil, 6, and daughter Divya, 4, opted for solar tiles on their home in Los Altos, Calif.

Sleeker than panels, sun-soaking roof tiles lie flat. Although costly initially, they pay back for years.

By **MICHELLE HOFMANN**
Special to The Times

AT first glance, Paul Rupert's Livermore, Calif., home looks like any other residence. But the 2,900-square-foot house has a powerful secret. Last year, Rupert installed a solar energy system that cut his monthly electricity and heating bill from \$400 to \$25.

Rather than use traditional photovoltaic panels that mount to a rack and are sometimes considered unsightly, Rupert chose integrated solar roof tiles that interlock with his new concrete roof tiles and lie flat. "Most people don't even notice that it's a solar roof," said Rupert, 67, an aerospace systems engineer.

As the state pushes for more solar-produced power and more builders and sellers realize that solar can help move homes and increase their value, a new generation of solar energy systems is taking hold. For homeowners in need of a new roof who want to go solar, this latest design option would cost about 20% to 25% more than traditional solar panels, not including additional roof tile installation, said Aaron Hall, president of El Cajon-based Borrego Solar Systems. Rebates and tax credits, however, return 30% to 40% of the initial solar-system costs to the consumer, according to the California Energy Commission and solar experts such as Mark Conroy, general manager for GE Energy's Solar Technology.

Costs are also recouped in energy savings. Sold by the amount of energy, or [See Solar, Page K12]

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watts, they produce, solar power systems send surplus energy to the utility company's power grid and, based on an agreement with the company, provide the homeowner with an energy credit. When the home's energy needs can't keep up with demand, the utility returns that credit to the homeowner.

A 3,000-square-foot home, for example, would need a 3.5- to 4.5-kilowatt system and take up about 100 square feet of roof space per kilowatt.

Rupert hired Borrego Solar to install General Electric's 5-kilowatt integrated tiles. Though designed to work with concrete roof tiles, the lightweight integrated solar electric tiles — which have a blue to black antireflective coating — also will work with composition shingles, Hall said. The solar tiles just need an extra layer of flashing around the edges.

Rupert's rooftop project ultimately cost \$65,000. He spent \$57,000 for his 5-kilowatt system and \$24,000 for the concrete tile roof, but got a state rebate of \$14,000 and a federal tax credit of \$2,000. By comparison, the average cost to re-roof a 2,500-square-foot roof with asphalt shingle, cement tile, wood or metal runs from \$8,000 to more than \$20,000.

Since the product is still new compared to panels, Hall said he estimates only 5% of Borrego's residential installations this year will use the solar tiles. He expects that number to double next year.

Real estate agents Tammy Schwolsky, 40, and her husband, Ron, 45, also looked at integrated tiles to complement a total "green" makeover of their 2,450-square-foot Studio City home. But they decided on a \$37,000, 4-kilowatt, 36-panel traditional solar electric system capable of producing about 80% of the home's power.

Homes and their energy demands differ, said Bill Glauz, manager of solar energy development for the Los Angeles Department of Water and Power. Therefore, he said, it's important to evaluate solar options in terms of use, potential obstructions—such as shade, chimneys, neighboring trees or that newly acquired satellite dish—and aesthetics.

"Panels on the front of the house might produce optimum performance, but not look as good," Glauz said.

Still, not everyone is shy about harnessing the power of the sun. "A lot of people wear their panels loud and proud," Tammy Schwolsky said.

Pardee Homes and Tim Lewis Communities are among a handful of California home builders offering solar integrated roof tiles in some developments.

Joyce Mason, vice president of marketing for Pardee, said eight San Diego County and two Orange County developments feature GE Energy's roof-integrated solar systems.

"Pardee has been offering solar since 2001, but we are just now starting to see this whole notion of an energy-efficient home and lower energy bills become more of a factor in the buying decision," Mason said.

Builder Tim Lewis agrees. "We think the homes sell faster, but we also think it's the right thing to do," he said. "It's good for the environment, saves the buyer money on energy bills and provides them with a tax credit."

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LA Times—*Surprise, it's solar* (continued)

There are other benefits to home buyers and sellers too.

“The person who purchases a home with a solar roof knows their electric bill will be lower and so does the bank,” Tammy Schwolsky said. “So when a homeowner puts solar panels on their home, they are putting instant equity into their home and making the house more valuable.”

How much more valuable?

Green Builder Media and Imre Communications recently reported that home buyers say they are willing to pay a premium of 11% to 25% for green-built homes.

A recent study in the real estate trade publication *Appraisal Journal* reported that for every utility-bill dollar saved annually because of an improvement, a homeowner gains about \$20 in property value. So if solar cuts the annual electric bill by \$1,000, the owner could gain \$20,000 in home value.

“This is one of the few products that will pay for itself within five or six years and then provide you with a positive cash flow for the remaining life of the system,” said Greg Johanson, president of Westlake Village-based Solar Electrical Systems. Manufacturer’s warranties on solar systems range from 20 to 25 years.

Johanson’s estimated payback time is shorter than the estimate Livermore homeowner Rupert was given.

“Borrego Solar said it would take 10 to 12 years to pay back the roof,” Rupert said, “but it looks to me that it will be more like seven years.”

Homeowners have been slow to jump on the solar bandwagon, however. L.A.’s DWP has issued fewer than 1,000 solar-roof rebates to residents since 2000. Glauz said the goal is to bring that number to 100,000 solar energy systems in the city by 2010 through incentive funding programs.

Still, no matter how much power a home generates through solar power, the owner shouldn’t expect a check from the utility company for any extra production that remains unused at the end of the year.

“Utilities don’t financially compensate homeowners for production beyond use,” said Claudia Chandler, assistant executive director for the California Energy Commission. “So if you generate more power than you use during the year, that’s just a gift to the utility.”

“That’s why we encourage people to size their systems accordingly,” she said. “We don’t want people to be so zealous that they oversize and generate more electricity than they need.”

With manufacturers and utilities working to make solar options as commonplace as central air-conditioning, Borrego Solar’s Hall said he anticipates costs for residential solar tiles will come down slowly.

Homeowners shouldn’t worry that the next advancement is just around the corner, however, Hall noted. “I don’t anticipate any big technological breakthroughs that will make a consumer feel silly about having gone solar too soon.”

San Francisco Chronicle—*Solar Power Comes of Age*
April 15, 2007

EASY ON THE EARTH, EASY ON THE EYES

Today's solar installations are a far cry from the clumsy water-filled tanks of the '70s. More builders are weaving the photovoltaic panels into the roofs in their projects. Below, Lennar's Milano subdivision in Danville. Inset, a Grupe home in Rocklin, Placer County.



Grupe Homes



COVER STORY

SOLAR POWER COMES OF AGE

Light-sensitive panels today are a boon to the wallet as well as the environment

By Dana Perrigan
SPECIAL TO THE CHRONICLE

During the disco days of the 1970s, a few brave pioneers began installing solar panels on the roofs of their homes. With the enthusiasm of the newly converted, they explained to their incredulous neighbors that the flat, black objects would harness the power of the sun to provide the family with hot water.

The neighbors, no doubt, reacted much as if their acquaintance had insisted on demonstrating his newly acquired magic skills by sawing his wife in half: They nodded their heads in wary approval — and made a silent vow to immediately install a more secure lock on the side gate.

Now, 30-odd years later, California is the third-largest market for solar power systems — behind Germany

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San Francisco Chronicle—*Solar Power Comes of Age*
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and Japan. Eighty-five percent of all systems installed in the nation are here. Due to a growing concern for the environment and rising energy costs—as well as the economic incentives provided by state legislation and federal tax credits—droves of homeowners and business owners are following in the footsteps of those early pioneers. A further sign of this booming trend is that some developers have even started incorporating solar power as a standard feature in their new subdivisions.

“Some of them have had to be dragged kicking and screaming into it,” says Gary Gerber, president of Sun Light & Power in Berkeley, “while others have seen the advantages and recognized that this is actually a sales tool for them. Once that gets going, they’ll all jump on board.”

Aaron Nitzkin, vice president of Old Country Roofing’s solar division in Vacaville, agrees.

“What’s really driving the growth now is competition,” Nitzkin says. “It’s the next granite countertop. In five to seven years, all roofing companies will be doing solar — or they won’t be in business.”

The largest roofing contractor in Northern California, Old Country Roofing built its first solar roof in 2001 in Sacramento. Since then, the company has installed several hundred. Two months ago, it opened a solar division.

“Basically,” Nitzkin says, “we put our toes in the water and learned the market. I believe that in five to seven years, solar will be standard on all new homes.”

The largest developer of residential properties in the East Bay, Lennar Bay Area Homebuilding, recently completed the first community of new homes in the Bay Area built with a roof-integrated solar electric system. Located in Danville, the 77 homes range in size from 3,673 to 4,243 square feet and are priced at about \$1.3 million.

The company is building an additional 250 homes equipped with solar power systems, priced at \$900,000, in San Ramon.

“I think consumer demand is increasing as people become more aware of the technology,” says Bill Kelly, general manager of the new-home division of San Jose’s SunPower, which designed and built the solar power systems for the Lennar homes. “I don’t know of any other feature in the home that provides monthly savings to homeowners.”

It’s also a boon for the environment. While the early solar power systems were primarily thermal and provided hot water, most of those now being installed are photovoltaic, which generate electricity. A government study concludes that, when compared with electricity produced by fossil fuels, each kilowatt of solar-produced electricity offsets up to 830 pounds of nitrogen oxides, 1,500 pounds of sulfur dioxide and 217,000 pounds of carbon dioxide each year.

Even for those who aren’t especially concerned with the environmental benefits of solar power, the economic benefits are impossible to ignore. The cost of a system for an average home, says Sun Light & Power’s Gerber, is about \$29,000. Subtract about \$7,000 for the state rebate, which is currently based on how much electricity the system is capable of producing. Subtract an additional \$2,000 for the federal tax credit, and the cost is reduced to \$20,000. Over the 25- to 30-year life span of the system, the homeowner will save — based on current electrical rates and a conservative estimate of a 6 percent annual inflation rate for future costs — about \$60,000 in electricity. After subtracting the system’s cost, the bottom line is \$40,000 in savings.

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The bottom line is also influenced by the tier rate system used by utility companies. Excess electricity produced by a homeowner's solar power system is funneled into the utility's grid. The homeowner receives a credit based on when the electricity was produced. If it was produced during the peak hours of summer, the homeowner is credited at the higher rate of about 45 cents per kilowatt-hour. That credit offsets power used by the homeowner during winter months, for which he or she pays only about 14 cents per kilowatt-hour. "You save about three times what you spend," says Gerber. "That's what a lot of people don't get."

Sherry Boschert, the owner of a 1,200-square-foot home in San Francisco's Inner Sunset neighborhood, has been getting it for quite awhile now. Boschert, who is also president of the S.F. Electrical Vehicles Association, upgraded her old system with a 4.8-kilowatt unit in 2002. Now, less than five years later, Boschert has nearly recouped the \$27,000 she spent on the new system.

The system even provides all the electricity for her electric car.

"Once you start making electricity from the sun," Boschert says, "you say, 'What else can I plug in?'"

While the bulk of new solar power systems are retrofits on existing homes, Gerber says, an increasing number of businesses are seeing the advantages as well.

Give Something Back, an office supply company that -- modeled after Newman's Own -- donates its profits to nonprofits, installed a 50-kilowatt solar power system at its 20,000-square-foot headquarters in Oakland. The \$450,000 cost of the system was ameliorated by a \$167,000 rebate and \$80,000 in federal tax credits. "Economically, it's very, very viable, says the company's president, Mike Hannigan. "It cuts our energy costs in half. It's probably saving us \$1,500 a month."

Initially, Hannigan says, the company expected to recoup the entire cost of the system in 10 or 11 years. Now, with rising energy costs, he expects it will take half that time.

"What was originally a decision based on environmental reasons turns out not be inconsistent with the corporate mission," Hannigan says.

Urban Pacific Properties, which manages Mission Plaza apartments in San Francisco, expects similar benefits on its recently installed 47-kilowatt system. Owned by Mission Plaza Limited Partnership, the 132 units are home to 180 elderly and disabled residents and their families. Urban Pacific had installed a solar thermal system to provide hot water back in 1982. When it became time to replace the roof, management -- hoping to reduce its monthly \$5,000 electrical bill -- decided to also add a photovoltaic system.

"Once we get into the summer months we'll be able to see how much more efficient it is," says Kereen Stoll of Urban Pacific Properties. "Electricity is the biggest cost for Mission Plaza."

In a couple of years, Gerber expects that half of the 150,000 single-family residences built in the state each year will be equipped with solar technology.

"I think a huge percentage of future development will be solar powered," he says. "It's in its infancy now." One of the founders of Sun Light & Power in 1976, Gerber -- a former mechanical engineering student who

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left his master's studies program at UC Berkeley to work with an architect who was designing solar homes -- remembers its conception.

"It was so unbelievable. Our main business was educating people about what was possible," he says. "Most of our customers back then were pioneers -- just as we were pioneers."

A mini-boom sparked by the oil embargo of 1979 came to a screeching halt with the election of Ronald Reagan. The new president eliminated the tax credit for alternative energy that President Carter had enacted. To add insult to injury, Reagan had the solar power system removed from the White House roof.

State legislation passed in 1998 -- which was mostly about allowing utility companies to recoup their losses related to the abandonment of nuclear energy -- earmarked 10 percent of \$500 million allocated for all renewal types of energy for solar.

"So that was really the beginning of what's turned into a stampede," Gerber says. "It was all started with \$50 million, which is a pittance when you think about it."

Gerber, who struggled through the lean years, says his company did about \$12 million in business last year. "Solar has become more popular," he says. "People aren't as afraid of it. They don't question it. It's not the iffy proposal it once was."

The Sacramento Bee—Lennar plans 1,254 more solar homes
March 17, 2007

Lennar plans 1,254 more solar homes

By Jim Wasserman
BEE STAFF WRITER

Weeks after unveiling plans to build 650 solar-powered homes in Roseville, Miami-based Lennar Corp. said Friday it will build 1,254 more in the Sacramento region.

The houses will start construction this year and continue through 2010 in the communities of Anatolia in Rancho Cordova, Village Greens in Natomas and Laguna Ridge in Elk Grove, said Jim Kauffman, vice president for purchasing at the home builder's Sacramento division.

Friday's announcement propels Sacramento to the forefront of solar home construction nationally, said Kauffman, officials from a San Jose solar panel manufacturer and the Sacramento Municipal Utility District.

"It's a national breakthrough," said Alice Perez, SMUD manager of residential service.

The size of the building plan also will make the metro area a top solar player in a state where the technology has become a major government priority. California lawmakers and Gov. Arnold Schwarzenegger have declared a voluntary goal of 1 million new solar rooftops within a decade and set aside more than \$2 billion to lower solar installation costs.

California has about 2,000 new homes built with solar panels. The nation's largest existing solar community is 466 homes in Orange County's La-

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dera Ranch area.

SMUD's board of directors finalized the deal Thursday, approving \$10.8 million in rebates to Lennar for installing 1,254 systems costing about \$20,000 each. SMUD has 230 solar systems installed on new homes and 680 in place on existing homes, Perez said.

Lennar is getting \$5.2 million from another public utility, Roseville Electric, to install the homes with solar panels in Roseville.

Solar systems are said to cut energy bills by up to 50 percent. The Sacramento region boasts about 320 days of sunshine yearly.

Lennar's Kauffman said the newly announced plan "definitely is the biggest in

the nation. We are getting national attention for it, even from our own company.

"Hopefully, we'll see the marketing advantage of doing it in every home," he said.

Lennar is one of the nation's largest home builders and last year ranked second in the Sacramento region with more than 1,100 sales. The firm plans to start the first 174 homes this year.

Despite a global shortage of polysilicon, a key ingredient of solar panels, Lennar will have no problem getting its supply, said Bill Kelly, who manages the new home division of San Jose-based SunPower Corp. The company will provide the panels.

At least three other regional builders have

started or built more than 300 solar homes in Sacramento, Roseville and Rocklin, including Premier Homes and Treasure Homes, both in Roseville, and Stockton-based Grupe Development.

Los Altos-based Edenbridge Homes also is building a 47-home solar community in Vacaville, and Seastar Communities of Escondido is building an 84-home solar neighborhood in Redding.

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East Bay Business Times—Lennar makes solar standard
March 16, 2007

Lennar makes solar standard

New homes would qualify for rebate

BY JESSICA SAUNDERS
EAST BAY BUSINESS TIMES

Lennar's Bay Area division is the first home builder in the East Bay to pledge solar power will be a standard feature in all its new homes. That commitment qualifies it to receive the top rebate available under the California New Solar Homes Partnership.

With plans to build 1,000 homes in the Bay Area and Sacramento by the end of 2008, Lennar Bay Area Homes could qualify for more than \$5 million in rebates, depending on wattage of systems installed. The cash-back plan is part of the Million Solar Roofs initiative signed into law last year that aims to install 3,000 megawatts of solar power in California by 2017.

Les Lifter, vice president of marketing for Lennar Bay Area Homes, said the division's decision to offer solar as a

standard house feature in the Bay Area resulted from a "perfect storm" of the solar initiative pushed by Gov. Schwarzenegger, the expansion of solar technology companies, the lower cost of solar technology and the burgeoning consumer demand and interest in sustainable energy.

But he admits the ability to earn \$2.60 per watt for each installed solar system "certainly made the decision easier."

Lennar recently opened the Milano at Monterosso development in Danville, where each home includes a 2.3-kilowatt array of roof-integrated thin silicon panels made by San Jose-based SunPower Corp. That size system would generate about 2,990 kilowatt-hours of electricity annually, with the average California home consuming 6,000-7,000 kilowatt hours a year. Solar systems' production varies widely with orientation, roof tilt and location.

The technology allowing the solar panels to be unobtrusively integrated into the roof, rather than add-on panels protruding above the roofline, was another key factor, Lifter said.

If the planned 77 units at Milano meet all requirements of the New Solar Homes Partnership, each solar system will qualify for a \$5,980 rebate to the builder; Lennar, a potential total rebate of \$460,460. In addition to Milano, its test case, the company has planned or under construction about 320 homes in three new developments in San Ramon as well as 650 homes in Sacramento. The plan is to have all 1,050 units built by mid-2008, Lifter said.

The New Solar Homes Partnership began offering rebates Jan. 1 of \$2.50 per watt for builders who offer solar as a buyer option, while builders who include solar power as a standard feature get \$2.60 per watt. Home buyers tend not to choose solar as often if they are selecting it from a list of optional upgrades, so the program offers a higher rebate for builders who incorporate it upfront, said Amy Morgan, spokesperson for the California Energy Commission.

Lifter said it's more efficient for Lennar to incorporate solar in all new homes than



Stephanie Secrest | East Bay Business Times

Milano at Monterosso incorporates solar panels into the roofs of homes.

to offer it as a buyer option. It would cost about \$25,000 to retrofit a home with a solar package similar to ones used at Milano, but installing it standard saves "several thousand dollars" per unit in labor and equipment due to economies of scale, he said.

Lifter declined to say how much the standard solar plan will cost Lennar.

The program also requires homes to exceed current state building code standards for energy efficiency by at least 15 percent, which is verified by a third-party contractor. Builders are paid upon approval of an application that includes a development layout, a buildout schedule, energy efficiency documentation, a final subdivision map and other documents.

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