

EFFICIENT BUILDINGS TODAY

The dollars & sense of retrofitting commercial and public property

PACE used with private capital to finance solar; National securitization program takes shape

ROHNERT PARK, CALIFORNIA – The use of property tax assessments to finance energy improvements to commercial buildings looks likely to take off in the next few years thanks to a new twist that is expanding the available sources of upfront capital.

Property Assessed Clean Energy (PACE) finance programs caught on quickly after the first pilot program in 2008, but were focused mainly on single-family homes. The basic model is that a local government provides upfront capital for energy efficiency improvements or renewable energy equipment and obtains repayment through an assessment on the tax bill for the property that was improved.

To increase use of PACE for larger structures, a number of cities and counties are moving to allow the use of their governmental tax assessments in conjunction with private capital. The first to do it was Sonoma County, Calif., which worked with the finance company



Clean Fund to use private capital for a massive solar panel array at the Sonoma Mountain Village development.

Expected to follow suit this fall are Los Angeles, Sacramento, Fresno, and Riverside, Calif., according to John Kinney, CEO at Clean Fund, who is working with several of the cities.

The Sonoma program was initial-

ly set up to provide financing using county funds. However, in 2011, the county decided to allow private institutions to fund projects through the program. The Sonoma Mountain Village installation will generate 1.158 megawatts (MW). The cost was about \$1.6 million. In addition to the PACE financing, the installation took advantage of the federal grant in lieu of tax credit, which reimbursed 30 percent of the project's cost, as well as accelerated depreciation of the system and utility rebates.

The new installation is expected to save

INSIDE THIS ISSUE

Solar PV Installations Use Creative Financing P. 3

Financing Retrofits:
New programs from FHA, B of A .P. 4

Multifamily Weatherization Hits High Gear..... P. 5

Nonresidential PV installations increase P. 10

Apartment Firms Embrace Sustainability..... P.12

Commercial Real Estate Firms Embrace Efficiency P. 14

LED Lighting Expected to Gain Market Share P. 15



PHOTOS COURTESY SONOMA MOUNTAIN VILLAGE

▲ Elected officials in Sonoma County gathered at Sonoma Mountain Village to inaugurate a new solar installation that used an innovative variation on the PACE financing model.

Codding Enterprises, the developer, over \$200,000 in annual electricity costs. It adds to an existing 1.14MW array. The development now boasts over 181,000 square feet, or almost 4 acres, of rooftop solar panels.

The new installation is composed of two roof-mounted solar electric arrays. It features 4,928 Yingli solar modules, 3 Satcon Inverters, and internet-based monitoring

to measure and display performance. The components were provided, engineered and installed by Stellar Energy, which is also based here.

Creating a new asset class

A national consortium is gearing up to create “a new asset class” to do what banks generally will not do: Finance energy efficiency retrofits and renewable energy installations at existing commercial buildings. The consortium aims to do this by combining the tax collecting power of local governments under PACE

programs with loan securitization in the private capital markets.

Organized through the Carbon War Room, the consortium is lead by Ygrene Energy Fund of Santa Rosa, Calif., and is lining up local governments to participate now in hopes of closing on its first project financings next year.

In essence, Ygrene is offering cities and counties a turnkey commercial PACE program that will cost them nothing, help defray their overhead for building inspection and tax collection departments, and generate jobs.

The model calls for aggregating transactions from a diversified group of localities with a value of at least \$100 million to appeal to institutional investors. The securities would be taxable.

The first localities to sign on are located in the Miami and Sacramento areas. Ygrene is also targeting Los Angeles as well as localities in states other than Florida and California.

Under the program, building owners

—CONTINUED ON PAGE 16



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EBT is written for and distributed to building owners and asset managers, facilities managers and public works officials responsible for the energy and water use of public facilities, income-producing properties, and operating businesses – as well as related professionals, like architects, contractors and engineers.

Each issue is carefully edited, with original articles that attract readership from the executives who are buying products and services related to energy and water efficiency, indoor air quality and renewable energy generation.

Unlike other publications, EBT is focused on existing properties and the operation of existing facilities. It also has a very practical focus on the financial considerations surrounding investments in existing properties, including where to find financing and how to put it together.

EBT digs into complex strategic, financial and

regulatory issues of interest to top executives, not just reporting today's news but analyzing it and telling readers what it means for them. EBT looks ahead, helping readers anticipate what is coming next in this fast-changing field. It's an editorial mix that guarantees you the high reader involvement you need to increase your market share.

Your customers will turn to EBT for clear explanation of complex financing methods and practical advice on finding the right efficiency strategy for their properties and operations. You should turn to EBT to reach them.

EBT is published by Alexander & Edwards Publishing Inc., the same company that launched and published *Affordable Housing Finance* and *Apartment Finance Today*. We know real estate, we know finance, and we know the financial issues owners must resolve as they react to new economic and regulatory pressure to improve energy and water efficiency.

For details on editorial coverage plans, see our editorial calendar. For information on ad rates, see our rate card. Both are available online at www.efficientbuildingstoday.com

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Solar PV installations use creative financing To slash upfront costs, generate cash flow

One of the nation's leading owners and operators of affordable housing has installed solar photovoltaic systems on existing buildings with a total of 2000 units using a combination of cutting edge financing tools that slashed upfront costs.

McCormack Baron Salazar, based in St. Louis, has been building and managing transformational housing for 35 years, with over \$2 billion in investments and 15,000 units of mixed income/affordable housing developed nationwide. To help it finance renewable energy installations, it founded Sunwheel Energy Partners.

Sunwheel is a turnkey solar provider that works on designing the project, installing the solar power systems, and managing their operation.

Through Sunwheel's power purchase agreement (PPA) program, Sunwheel installs the solar modules and other equip-



PHOTO: MCCORMACK BARON SALAZAR AND SUNWHEEL ENERGY PARTNERS. ALL RIGHTS RESERVED.

▲ Hayes Valley Housing in San Francisco is one of the projects where McCormack Baron Salazar installed solar PV systems. The installation is a 223 kW system that produces 310,170 kWh of electricity per year and offsets 288,460 lbs of CO₂/year.

ment at a building at little or no cost to the owner. Sunwheel is responsible for all operations and maintenance. The owner

pays for the energy produced by the solar system at an agreed-upon rate that saves

—CONTINUED ON PAGE 17

FINDING THE KEY TO A \$12 BILLION MARKET

The use of private capital in conjunction with city and county PACE programs could be the key to up to \$12 billion per year in commercial building retrofits, according to a study by The Institute for Building Efficiency, an initiative of Johnson Controls.

In a paper titled “Unlocking the Building Retrofit Market: Commercial PACE Financing,” the institute says the biggest obstacle to improving efficiency is the upfront cost. It says this new financing model overcomes that problem. Here's how the paper explains it:

“To make PACE programs truly scalable for the commercial building sector, programs should allow building owners to arrange their own financing directly with a commercial bank and leverage the enforceability of the tax lien on the property as security for financiers. This enables building owners to negotiate rates, terms, conditions, and schedules that best suit their specific project needs, rather than waiting to lock in a rate through a bond. It also opens a wider channel of capital inflow compared to pooled bond models.”

“The security of the tax lien provides a solution to the inability of commercial building owners, who often lack investment-grade credit ratings, to secure any type of third-party financing for energy retrofits. Additionally, the lien is attached to the property, not the property owner, and therefore transfers with ownership. This allows owners to undertake deeper retrofits with greater energy and carbon savings and greater net present value, yet longer payback periods, even if the owner only plans to hold the building for a few years.”

The paper goes on to say that the PACE model helps to overcome efficiency investment barriers in triple-net-lease tenant-occupied properties, because property assessments normally qualify as eligible pass-through expenses. “Tenants ultimately benefit from the utility bill savings and bear the cost of the PACE financing payments. Because the savings are usually larger than the PACE payment costs, the tenants see net positive cash flow,” the paper states.

For more information, go to www.institutebe.com/

HUD, Fannie Mae, B of A launch new programs To improve existing structures' energy efficiency

Two new lending programs hold promise to open the doors for financing improvements to the energy efficiency of existing multifamily properties.

Commercial lenders see potential to originate loans for that purpose under a program launched by Fannie Mae and HUD's Federal Housing Administration (FHA) called Green Refinance Plus.

A smaller initiative was announced this spring by Bank of America. The bank said it was launching a \$55 million program to encourage energy efficiency improvements to older buildings. The new competitive program will provide low-cost loans and grants to Community Development Financial Institutions (CDFIs) specializing in financing energy efficiency improvements.

The Green Refinance Plus program will allow owners of existing affordable rental housing properties to refinance into new mortgages that include funding for energy- and water-saving upgrades, along with other needed property renovations.

FHA and Fannie Mae will share the risk on loans to refinance existing rent-restricted projects while permitting owners to borrow additional funds to make energy-saving improvements to their properties.

Every 10-to-15 years, owners of existing multifamily affordable properties typically refinance their mortgages. In older apartment buildings, however, owners are hard-pressed to find additional financing to maintain or improve the physical condition of their properties, including making energy-efficient upgrades.

Program specifics

Fannie Mae and HUD anticipate approximately \$100 million in initial



▲ Weatherization technician installs new furnace filter in a home in Vermont

refinance volume with an average loan amount of \$3.5 to \$5 million. FHA will insure up to an additional four-to-five percent of the loan amount, or an average of approximately \$150,000 to \$250,000 per loan, to provide additional loan funds to pay for property improvements that save energy and water costs for owners and tenants, such as energy efficient windows and Energy Star appliances.

Property owners will be able to select the energy-efficiency upgrades that make the most economic sense for their properties. However, properties must go through a "Green Physical Needs Assessment" by an authorized provider to identify property improvements that both reduce energy and operating costs.

Under its new program, Bank of America will select up to 12 CDFIs with the

most effective solutions for funding energy efficiency improvements to existing buildings.

"Residential and commercial buildings account for approximately 40 percent of all primary energy consumption in the United States. That's why, if we really want to address climate change, we have to improve the energy efficiency of existing buildings, particularly older ones that tend to be the least efficient," said Anne Finucane, Global Strategy and Marketing officer, Bank of America.

"Through this program, Bank of America will fund the community lenders that have developed creative and effective approaches to financing energy efficient retrofits, with the aim of bringing these innovative financing structures to scale for greatest impact in reducing U.S. carbon emissions," she added.

The \$55 million includes \$50 million in low-cost, long-term loans to CDFIs with innovative energy efficient retrofit programs that finance the upfront investment costs for building owners to make energy efficient improvements. The energy cost savings realized over time will create cash flow to repay the loan. An additional \$5 million in grants will also be awarded to help with staffing, training, reserves, and marketing needs associated with the implementation of the programs.

Once CDFIs have made loans to property owners, Bank of America will work with them to collect pre- and post-retrofit data in order to measure program outcomes, including impacts on energy and water usage and associated financial savings. EnergyScoreCards, a subsidiary of Bright Power, Inc., will be the third party consultant for data collection and analysis. ■

Multifamily weatherization hits high gear

DOE TARGETS APARTMENTS FOR 20% OF PRODUCTION AS SPENDING DEADLINE NEARS

Green building gets all the media attention but cutting greenhouse gas emissions from structures depends also on retrofitting existing buildings. Is the \$5 billion provided in the 2009 economic stimulus package making a dent in the problem of inefficient buildings? Find out in this in-depth look at the successes and failures of the Weatherization Assistance Program (WAP), especially in regard to multifamily housing.

With just about a year left to spend around \$2.5 billion in remaining economic stimulus funds, 1,000 state and local administrating agencies are pushing hard to meet goals for retrofitting homes and apartments to save energy. They know the stakes go way beyond just how much they can save low-income families on utility bills.

In the current politically charged atmosphere, nothing would please critics of federal spending on economic stimulus more than failure to spend all the money by the March 2012 deadline. On the other hand, government watchdogs and cautious housing and environmental groups are concerned that the money will be spent in a rush, accomplishing far too little in the effort to cut energy use from millions of aging single- and multifamily homes.

The federal Weatherization Assistance Program (WAP) received an infusion of just under \$5 billion as part of the 2009 American Recovery and Reinvestment Act (ARRA) stimulus program. The money has to be completely obligated by September 30, 2010 and spent by the end of March 2012.

Success in spending the WAP money has been carefully watched, largely because it represents a one-time cash infusion to upgrade the nation's housing stock. After



▲ Weatherization technicians repair and seal around windows

the money is gone, the most the Department of Energy (DOE) can hope for is \$320 million per year. That's what the Obama Administration is seeking from Congress. The House of Representatives has voted to appropriate nothing for the program.

The program began in 1976 for weatherizing single-family homes. Even though it has been allowable to do multifamily projects since 1985, that authority has not been widely used by local sub recipients. Until now.

With pressure on to get the money out, more states are working to start or accelerate programs aimed at apartments occupied by low-income households.

At press time, states had only spent about half the stimulus money, so they will have to hustle to avoid sending money back to the U.S. Treasury. DOE is saying it expects to spend 95 percent of the money by the deadline based on current rate of spending and production of weatherized units. It has an official goal of 591,000 units, but is hoping to hit 700,000. It expects that 20% of those will be in multifamily properties.

In addition to weatherized units, DOE

says it is also creating a new generation of "clean energy workers" and is employing more than 15,000 workers nationwide.

DOE said weatherization assistance reduces energy consumption for low-income families on average 35 percent, saving families on average more than \$400 on their heating and cooling bills in the first year alone. Nationwide, the weatherization of 300,000 homes was complete as of January, saving an estimated \$161 million in energy costs in just the first year.

One of the biggest complaints against the program is the failure to use the funds to retrofit significant numbers of federally assisted apartments. A report from National Consumer Law Center lambastes HUD and DOE for not doing a better job to coordinate their policies to facilitate more work on assisted housing. (See box for details.)

A handful of states moved quickly to take a proactive approach to using the funds for multifamily, according to the Local Initiatives Support Corp (LISC). This includes Florida which allocated 20% for apartments, Rhode Island, which allocated 33% and New York, which created a 12%



▲ Weatherization technician drilling siding for sidewall insulation

setaside. Other states that have tried to encourage use of the program for apartments include Ohio, Oregon, Pennsylvania, Texas and Washington.

Now, more states are joining the effort to get apartments into the mix, according to Doug Gurkin of Edgewater Group Energy Solutions (EGES), based in Spicewood, Texas. These states include South Carolina, Georgia, Florida and Michigan, he said.

One of the states just getting into the multifamily weatherization business is Michigan, where CLEAResult, an energy consulting firm, has a state contract to work with the state's 30 community action agencies to get 3,000 apartments weatherized within a year. Gurkin weatherized a 160-unit property in Holt, Mich., as prototype to help train the staffers implementing the effort.

In California, however, low-income housing advocates are disappointed by the programs' track record. At press time in mid-March, WAP money had been used for only 6,568 multifamily units – of which only 368 are units from projects on the official DOE list of HUD or USDA-assisted properties, according to the state Department of Community Services & Development. There are about 90,000 units of federally assisted rental housing in the state.

Making Strides for Multis

In most years, 6 to 10% of WAP production is for units in multifamily buildings. DOE started pushing to do more multifamily units in 2009, when it entered a memorandum of understanding with the Department of Housing and Urban Development. Since then, DOE says it has more than doubled multifamily as a percentage of its production, said Bob Adams, a supervisor at DOE overseeing the program.

"We feel confident we will surpass 20% of all production being for multifamily in the current program year," he said.

DOE has been criticized for not doing enough to advance the state of the art in multifamily weatherization. But Adams said it is taking important steps in that direction, directing a great deal of training and technical assistance at helping program subrecipients get up to speed on multifamily.

It is also creating a multifamily energy audit tool that will work for not just WAP-eligible units but all multifamily units. The work is being done by Lawrence Berkeley National Laboratory and Oak Ridge National Laboratory. It will have different modules for different housing types and variations for different regions.

DOE is also starting to put together guidelines on how to do weatherization for apartments, including work specifications and technical reference standards.

He added that DOE is also trying to figure out a way to overcome obstacles to use of the program on housing financed with low-income housing tax credits.

DOE sets the general direction and issues regulations, but the program distributes money by formula to 59 grantees, which in turn distribute it to community action agencies, nonprofits and units of local government.

Some states have given their housing

INNOVATIVE APPROACHES BEING TESTED

To improve the state of the art in building retrofits, DOE awarded grants for innovation in 2010. An award of a Weatherization Innovation Pilot Program grant of \$2.59 million went to Stewards of Affordable Housing for the Future (SAHF) for a demonstration that would leverage the grant three to one with other funds to retrofit 2,500 affordable apartments at a cost of \$3,000-\$4,000 each. Rick Samson, who heads SAHF's energy division, notes that "the power of the demonstration is twofold. It would bring energy performance contracting into the private affordable housing sector and it would do so largely with borrowed funds, making it widely replicable in the assisted housing portfolio."

There will be a mixture of family and senior properties in perhaps five or six states, all owned or controlled by SAHF members, who are national nonprofit developers. SAHF is in the final stages of project selection. Typically all units are assisted under section 8 or a project rental assistance contract (PRAC) and in projects that HUD has certified as being eligible or that owners will certify under a process recently released by HUD.

finance agency primary responsibility for the program but there is a great deal of variation in which state agency is in charge.

The program is undergoing its first national evaluation in two decades. DOE is also spot checking 30,000 units to make sure the work is being done well.

Helping Owners Access WAP

The increasing effort to spend WAP funds for multifamily could help states get the money out in time. It also presents a great opportunity for owners of properties occupied by tenants earning less than 200% of the federal poverty level, or about \$44,100 for



▲ Crew installing a solar panel for a solar hot water system

a family of four. That's the maximum a household can earn and still be eligible for a weatherization grant.

"With all the differences in the imple-

mentation of WAP, one thing remains constant; this is an incredible opportunity for low-income and workforce rental housing to become more energy efficient," said Doug Gurkin of EGES.

In an effort to utilize WAP funds for his own apartment properties, Gurkin realized how complicated the application process was for multifamily. Now he has completed weatherization for several of his own properties and is working as a facilitator for other property owners who need helping making

sense of the program.

As DOE acknowledges, only a few states have solid experience making the



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▲ Mick Hayes, intake specialist for Edgewater, talks with managers at CopperTree Apartments in Houston, which was weatherized with federal funds.



▲ New HVAC units for individual apartments and units yet to be replaced at CopperTree Apartments

program work for multifamily. Even in those states, it is still cumbersome, generally requiring evaluation of tenant eligibility

FACTS AT A GLANCE:

Weatherization

Program was created in 1976 and was expanded to include apartments in 1985.

An energy audit is done to determine the scope of work for each unit.

The grant covers 100% of the cost of eligible improvements.

Maximum grant: \$6,500 per unit, plus money to address health and safety risks.

Common areas are not covered.

Usually, master-metered projects can be weatherized if the owner can demonstrate that the cost savings goes to tenants through a reduction of rent.

The program can be used for building-wide improvements, like new central heating, if at least 66% of the units are occupied by eligible low-income households.

and potential improvements on a unit-by-unit basis.

Sub-recipients are responsible for allocating the WAP funds at the local level, and have substantial discretion in how they operate and what they require of applicants.

There has been some effort at the federal level to streamline use of the program for federally assisted apartments for low-income families. The U.S. Department of Housing and Urban Development (HUD) and the U.S. Department of Agriculture (USDA) have provided the Department of Energy a list of properties occupied by residents that automatically qualify by income.

Gurkin's firm has now helped owners of 4,000 units complete weatherization, and has 30,000 more units in the pipeline. He is now working with owners in Arizona, Florida, Georgia, South Carolina, North Carolina, Virginia, Maryland, Pennsylvania, New York State, Ohio, Indiana, Illinois, Missouri, Oklahoma, Tennessee, Washington, Minnesota and Nebraska.

Gurkin said it is important to note that the tenant is the applicant for this program, not the owner. Income information must be gathered for each tenant on properties not on the HUD or USDA lists. Therefore,

unless a majority percentage of tenants agree to provide the required documentation, local sub-recipients cannot perform under the program. Edgewater has perfected a system for getting tenants involved and doing the necessary income and utility spending checks.

In Texas weatherization of multifamily properties is paying off for tenants, said Connie Gray, Housing and Energy Director for Programs for Human Services, Inc. in Orange Texas, which is east of Houston and just a short drive to the Gulf Coast.

"Through WAP and the federal Low Income Home Energy Assistance Program (LIHEAP), low-income apartment residents receiving weatherization measures are no longer having to choose between keeping their loved ones cool or warm, or utilizing their money towards food, medicine or even clothing instead."

She said weatherization is reducing their cooling and heating bills and keeping their families healthier and more comfortable while conserving energy at the same time. There is a savings of 25-30% in tenant electric bills, which is a huge recurring benefit.

Gurkin's clients are seeing an average expenditure of \$5,900 per apartment. ■



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ALTERNATIVE ENERGY:

Nonresidential PV installations increase, Module price declines likely to continue

Prices for solar photovoltaic installations will probably continue to fall in the U.S. for the rest of the year and into 2012, according to recent projections. However, the feasibility of installing solar on your buildings will probably continue to depend more on the state in which you are located than on the price of the equipment.

In 2010, 887 megawatts (MW) of grid-connected photovoltaics (PV) were installed in the U.S., a 104% increase over the 435 MW installed in 2009, according to the Solar Energy Industries Association's "U.S. Solar Market Insight" for the first quarter, 2011. Grid-connected PV installations in Q1 2011 grew 66% over Q1 2010 to reach 252 MW, it said.

"We anticipate another doubling of U.S. PV installations in 2011, in part aided

by the steep drop in demand during the first quarter in Italy and Germany," the report said.

The top seven states installed 88% of all PV in Q1 2011, up from 82% in 2010. Leading the list was California, but coming in second was New Jersey. This has less to do with the Garden State's weather and more to do with the availability of rebates on utility bills for certified solar installations.

The majority of this growth came in the non-residential sector, which grew 119% over Q1 2010. In 10 of the 21 states tracked individually, the non-residential market grew by more than 100% year-over-year. Residential installations grew marginally over Q1 2010.

The first quarter of 2011 saw "substantial price declines," according to the

report. Wafer and cell prices dropped by around 15% each, while module prices fell around 7%, it said.

Nonresidential system prices fell by just over 6% from Q4 2010 to Q1 2011, dropping from \$5.71/W to \$5.35/W. California prices were down from \$6.03/W in Q4 2010 to \$5.30/W in Q1 2011. Prices have also come down in other major markets such as New Jersey and Pennsylvania, the report stated.

The price declines are due largely to an increase in domestic manufacturing capacity and a decline in demand for solar panels in Europe, where subsidies and incentives have been cut.

"The U.S. market remains driven as much by state-level market dynamics as it does by pricing and supplier competition," according to the report. "For example,



PHOTO: WIKIMEDIA

Wind power offers 5- to 10-year paybacks

Small wind turbines are likely to take a larger share of the market for renewable energy generation for buildings, according to a new report from Pike Research.

"Small wind turbines are currently more efficient than solar photovoltaic systems and, therefore, more economical from a levelized cost of energy perspective. In a region with adequate wind resources, the payback for a small wind system can be 5-10 years

and does not require creative financing, like solar often does," Pike said.

It said business models that are gaining traction in the small wind sector include leasing programs and utility or third-party ownership, and as the technology develops further, Pike Research anticipates that the price of turbines will continue to fall.

This Pike Research report examines the global market for small wind power

including the equipment, components, and installation and service models to enable distributed energy generation from small wind turbines. The report provides a comprehensive examination of industry growth drivers, technology issues, regulatory frameworks, financing structures, and the competitive landscape. Global market forecasts, segmented by world region, extend through 2015. ■

even the expected module price declines are unlikely to save the Pennsylvania market from its stagnation. Similarly, Arizona will remain constrained by rebate funding availability.”

The feasibility of solar installations got a big boost when Congress agreed to extend the Department of the Treasury’s Section 1603 program to provide commercial solar installations with a cash grant in lieu of the 30 percent solar investment tax credit (ITC). The ITC has been in place since 2008, but the economic conditions created by the global recession reduced the ability to use the tax credit or to market it to investors with tax liability. The 1603 Treasury Grant Program (“TGP”) eliminates the need to secure scarce equity capital to finance a commercial solar project.

State incentives usually include some combination of tax breaks and rebates on utility bills. To find out about incentives in your state, visit “DSIRE,” a comprehensive

source of information on state, local, utility and federal incentives and policies that promote renewable energy and energy efficiency. Established in 1995 and funded by the U.S. Department of Energy, DSIRE is an ongoing project of the N.C. Solar Center and the Interstate Renewable Energy Council. It can be found online at www.dsireusa.org/

The federal government as well as many state and local governments are installing solar PV equipment in their facilities. For example, The Department of Veterans Affairs (VA) will install solar photovoltaic systems by summer 2012 at five VA medical centers in Oklahoma City; Temple, Texas; Amarillo, Texas; Loma Linda, Calif. and West Los Angeles. Prior to this announcement the VA has also awarded nearly \$78 million in contracts to build solar panels at its facilities with a goal to derive 15 percent of its annual electricity usage from renewable sources by 2013. ■

RESOURCES

What it takes to get to zero

Two new reports from the Zero Energy Commercial Buildings Consortium (CBC) lay out ideas for helping retrofit existing commercial buildings so that they consume no more energy than they can produce on site.

The reports identify barriers and make recommendations to industry stakeholders for achieving net-zero-energy commercial buildings over the next two to three decades.

The *Next Generation Technologies: Barriers and Industry Recommendations for Commercial Buildings and the Analysis of Cost & Non-Cost Barriers and Policy Solutions for Commercial Buildings* focus on innovative technologies and practices and market-oriented strategies, respectively. They can be downloaded free from the CBC website (<http://zeroenergycbc.org/>)

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Apartment firms embrace sustainability, Green building, renewable energy



▲ Pool and spa area at The Crossing Apartments in Anaheim, Calif., developed by SARES•REGIS Group. The new apartment community boasts in its marketing of using recycled materials, offering a healthful indoor environment and its location on a sustainable site. Quoting from its promotional material for leasing: “Being eco-friendly is a no-brainer at The Crossing. We built in some incredible and innovative green perks for you to enjoy without even lifting a finger (how cool is that!)”

Energy and water-efficient buildings and sustainable development practices are rapidly becoming standard procedure among leading providers of apartments.

“We are very focused on sustainability,” said Alan George, chief investment officer and executive vice president of Equity Residential. “Sustainability is the right thing to do, and it’s also a way of increasing the profitability of our company,” said George.

The Chicago-based, publicly traded company owns 470 apartment properties with 130,000 units. Equity is making sustainability a factor in all of its major decisions, and that’s been very well received by employees and customers alike, George said.

In southern California, SARES•REGIS Group is pursuing sustainability and green building, both for its apartment properties as well as its commercial real estate ventures. “Before there was even a notion of passing S.B. 375 (California’s anti-sprawl legislation) we always

targeted transportation corridors and infill locations,” said Mike Winter, senior vice president in the company’s Multifamily Development Division. It calls itself “the largest privately held developer of green apartments in Southern California.”

Replacing Light Bulbs

Equity’s vast portfolio requires lots of lighting, so it has realized substantial reductions in energy use simply by replacing incandescent bulbs with LED or fluorescent lights.

For the lighting in common areas and health clubs at its properties, it is installing occupancy sensors and daylight sensors to reduce energy use when there’s natural light or no one in the space.

“LED technology is fabulous,” George said. “The fixtures last for 20 to 30 years, eliminating the need to stock replacements and the cost of labor to change bulbs. Plus, they produce better light quality and use less power.”

Equity is planning its first round of

solar energy installations this year, including photovoltaic and thermal hot water systems. Two are in New Jersey and one is in northern California. George said New Jersey and northern California are two areas where solar makes the most sense because of rebate programs and the high cost of electricity. Other installations are slated for properties in southern California and the Phoenix area.

The primary application for solar is for common area utilities, as well as at properties where there is master project-wide metering as opposed to individual meters in each unit.

Like other apartment owners, Equity is debating what to do about energy saving measures for individually metered units, where savings accrue to the tenants, not the owner.

Still, he said the firm is making in-unit upgrades that benefit tenants. As part of its routine upgrades, it is now installing dual flush toilets, and programmable thermostats. “Residents will give you credit for that in some way,” he said. “You can’t quantify it, but it’s the right thing to do.”

The firm helps tenants be mobile without owning cars by operating Zipcar car sharing programs at some of its properties.

The firm expects to acquire properties with a total value of around \$1 billion in 2011. It looks for large projects in urban areas that are near services and transportation. Years ago, Equity focused on garden apartments that were more isolated in suburban areas but has since sold most of those assets, George said.

California Greening

SARES•REGIS Group sees the incorporation of green building standards into state and local building codes as a positive development, according to Winter. The changes mean that private,

third-party certifications may no longer be needed for new projects, which can reduce the company's cost for consultants and certification fees.

Given the difficulty in getting debt financing these days, he said it's prudent to reduce the "soft cost of being green." The costs associated with getting a green certification from a private agency have been as high as \$100,000, he said.

The company owns or manages 16,180 rental apartments and 15 million square feet of office and industrial space. It has more than 4 million square feet of commercial and industrial space in the entitlement process and 1,962 residential units in pre-construction and development.

Winter said the firm does not see much potential in installing solar panels, partly because it doesn't project an adequate savings in utility costs to justify the cost, but also because low-rise structures often don't have enough roof space to accommodate solar.

The company spends a great deal of staff time developing designs and going through checklists to see what features



▲ Alan George, chief investment officer and executive vice president of Equity Residential

and new technology makes the most sense. For example, new water-saving toilets, faucets and shower heads get tested by staff members or in construction trailers to see if they are good enough to be put in a new project.

Lenders are not particularly impressed by green features, focusing instead on a project's financial feasibility. But the

firm's institutional investors like the green qualities of its buildings, Winter said.

In addition to energy and water-efficient construction, the firm is making a major push to develop infill projects near jobs and transit.

In 2010, it opened Westgate Apartments in Pasadena, a "green" transit-oriented community of 480 apartment homes.

Located in Pasadena's historic district and two blocks from the Del Mar Station of the Metro Gold Line, Westgate offers a clubhouse, resort-style pool and spa, five themed courtyards and a fitness center. SARES•REGIS developed it in a joint venture with Equity Residential.

From a planning, design and sustainability perspective, this development is transformational," said Winter.

Winter said new residents at Westgate are attracted by the combination of the property's greenness as well as its easy access to transportation corridors, key job centers, shopping, dining and entertainment. "It adds up to create a textbook example for the new-era of modern urban planning and design," he said. ■

Green audit protocol helps evaluate apartments

COLUMBIA, Md.—Enterprise Community Partners, Inc. and CAS Financial Advisory Services announced the joint development of a green audit protocol for existing affordable multifamily buildings. The Enterprise Retrofit Audit Protocol establishes a baseline for metrics and disclosures in the analysis of green improvements, enabling better decisions to be made with regard to selecting which energy- and water-saving measures to deploy in a retrofit and when to deploy them.

Currently, most retrofit analyses fall short of underwriting requirements because they rely on audits conducted using inconsistent metrics and incomplete energy-conservation and cost-saving models. This new protocol gives the user an evaluation of the physical and capital needs of a building that is complete and can be underwritten. It incorporates the energy audit as a component of a broader capital needs assessment (CNA) and allows for cost projection benefits. The result is an analysis that meets both ecological and financial imperatives and will enable underwriting mechanisms for retrofitting existing properties.

"With this protocol, we will help building owners, lenders and providers of public subsidies establish clear guidelines for how to approach evaluating the potential retrofit of a build-

ing," said Dana Bourland, vice president of Enterprise Green Initiatives, Enterprise Community Partners, Inc. "As we seek to improve the energy and water efficiency in a multifamily property, we must use financial resources efficiently as well. That requires a complete understanding of how the building is currently operating and what its total needs will be over the next 20 years in order to provide decent housing to its tenants."

The Enterprise Retrofit Audit Protocol is part of Enterprise's larger effort to make green the standard in affordable housing. Enterprise recently launched its next generation of Enterprise Green Communities, a \$4 billion commitment to accelerate green affordable housing nationwide and a national call to action to public, private and nonprofit sectors to make all affordable housing green by 2020. Enterprise research shows that green affordable homes offer significant health, economic and environmental benefits to residents. "Greening an existing property is a process, not a single event," said David Smith, CEO of CAS FAS. "If we want to make progress toward greener, healthier multifamily housing, we have to retrofit properties, incrementally, over time. But owners and lenders are reluctant to make retrofit decisions without consistent, well-grounded financial underwriting. Now, they have it."

Hines leads commercial developers in building, Retrofitting to highest standards of efficiency

Some of the nation's most successful commercial real estate developers are seeing long-term benefits from making their buildings green and sustainable.

After more than a decade of experience with LEED® and ENERGY STAR®, Hines is one of the world's leading developers and managers of, and investors in, sustainable real estate.

Hines is a privately owned real estate firm with a presence in more than 100 cities. The Hines portfolio of projects underway, completed, acquired and managed for third parties consists of more than 1,100 properties including skyscrapers, corporate headquarters, mixed-use centers, industrial parks, medical facilities, and master-planned resort and residential communities.

In an exclusive Q & A, Hines' Global Sustainability Officer, Gary Holtzer, tells us why Hines embraces green building, what it costs to go green and what its plans are for continuing to be a leader in green building into the future.

Q: How does Hines measure return on investment (ROI) on the added capital cost of being green?

A: This question assumes that there is added capital cost for being green, which is not always the case. There are a great many steps that owners, managers and tenants can take that collectively make a huge impact. Simple behavioral changes cost little to nothing to implement. Through our Hines Green Office (HinesGO) program, we have introduced tenants to actions they can take in their own spaces to behave more sustainably. We are thrilled with the number of tenants who wanted to participate in HinesGO and who wanted to implement sustainable practices in their leased space – they just needed the tools. Over 850 of our tenants have already joined the program and have been certified as *HinesGO*.

Further, it is critical to understand exactly how our buildings operate, to retro-commission where necessary and to use the energy management tools already avail-



▲ Gary Holtzer, Hines' Global Sustainability Officer

able. With some training and encouragement, the building operating engineers and managers become passionate about sustainability, and figure out very cost-efficient ways to pull energy-waste out of the system. If the organization values it, and recognizes and rewards sustainable practices, generally the staff delivers in this area.

Once the so-called low hanging fruit is harvested, there are further steps that can be taken to make buildings more environmentally friendly. These can require an investment, but often many of them have very short pay-backs that can either be passed through as operating expenses because they ultimately reduce tenants' operating expenses, and save significant rental costs or can be financed through building ownership. Other retrofits can take advantage of

incentives from utilities and state and federal programs.

Q: What are the ways that green building benefits your firm and clients who own buildings financially, i.e. higher rents? Or is it more about the demands of tenants for green office space?

A: There is little question that tenants and tenant-brokers understand that a sustainably managed building is generally more cost efficient as well. Additionally, as tenants incorporate sustainable practices into their own business plans they want their leased premises to support that business plan.

Appraisers, lenders and bankers increasingly see sustainable management as a marker or indicator of a well-managed asset, and will underwrite quicker lease-up time and higher rents. Sustainable practices are increasingly necessary to be considered Class A.

Q: What does it typically add in cost to go LEED gold or platinum? As a percentage of construction costs?

A: Minimizing costs to achieve LEED certification for new construction is all about integration and early design and construction decisions. We constantly analyze the market as well as what is important to our tenants in relation to sustainable practices. We have found that if the LEED requirements are designed into the earliest design decisions, and embraced by everyone in the process – architects, engineers, construction managers, achieving LEED Certification up to the LEED Silver or Gold level costs less than 1-2% of the construction budget of a typical high-rise office tower.

Q: What R&D does Hines do on new technology and materials? What's new and exciting on the horizon?

—CONTINUED ON PAGE 16

LED lighting expected to gain market share As deadline nears to phase out fluorescents

By Lucia Olson

The mandated phasing out of T12 fluorescent lighting by July 2012 has LED lighting manufacturers stepping up their game to compete in the energy efficient commercial lighting market.

LEDs or light emitting diodes are tiny light bulbs that fit easily into an electrical circuit. Unlike ordinary incandescent bulbs they don't have a filament that will burn out. Instead, they are illuminated solely by the movement of electrons in a semiconductor material.

Although LEDs have been used for decades in, among other things, electronics and automobiles, the technology necessary for LEDs to be used in room lighting is relatively new. In 2006, the company CREE Inc. of North Carolina introduced the first lighting-class white power LED.

Since then, LEDs have slowly been making their way into the residential and commercial lighting sector. Until now, high upfront costs hindered widespread application, but new technologies have reduced the cost to at or below comparable fluorescent lighting.



PHOTOS COURTESY CREE INC.

▲ The Hyatt Grand Regency in Orlando, Fla. switched to LED lighting, saving \$131, 659 in the first year.

In addition to their small size, the primary benefits of LED lighting, as opposed to incandescent or fluorescent, is longevity and energy efficiency. According to LED

lighting manufacturer CREE, its LED lights are designed to last 50,000 hours of use, that is 23 years at 6 hours of use a day. In contrast, fluorescents average 8,000 hours and incandescent bulbs only 2,000.

In a commercial setting CREE calculates that replacement of fluorescent lighting with its LED lights will deliver an immediate to two-year payback. In addition, its commercial LEDs will outlast comparable fluorescents by 8 years and save 10-15% in energy costs. To calculate the payback period and energy savings for your property visit www.creeledlighting.com.

LEDs also do not pose the environmental hazards that mercury containing fluorescent bulbs do. In



The Furniture Row, Oak Express store in Yuma Ariz. saves \$4,200 a month in energy costs with its new LED lights.

many states, fluorescents must be recycled through specialized recycling facilities to prevent mercury contamination.

Research and consulting firm Frost & Sullivan reports bright prospects for the LED lighting market, predicting double-digit growth in the next ten years. The firm predicts LED lighting will have a majority share in the lighting market by 2020.

Properties that have made the switch are reporting short payback times and high energy savings:

The Hyatt Regency Grand Cypress, in Orlando, Florida switched to LED lighting as part of a large-scale remodel. CREE LED recessed downlights were installed in the hallways with a projected cumulative savings of approximately \$131,659 in the first year and a return on investment of about nine months. Replacing existing halogen lighting in the lobby reduced energy consumption by 80 percent.

The Furniture Row Companies, a home furnishings and bedding retailer

recently installed 13,000 CREE LED spotlights of the 80,000 planned for all of its stores across the country. The first Furniture Row Shopping Center to install CREE LED lights saved \$4,200 on monthly energy costs compared to the original lighting. In addition to reduced energy consumption for lighting, the LED lights generate much lower heat output

thereby saving on air conditioning costs. Furniture Row also anticipates significant maintenance savings given the much longer service life of the LED lights, which are designed for a 50,000-hour lifetime in open applications. Prior to the LED lighting upgrade, store employees spent an estimated 15 hours per week replacing burned out halogen bulbs. ■

Department of Energy Phases Out T12 Fluorescent Lamps

In 2010, the Department of Energy passed regulations requiring T12 fluorescent lamps to be phased out by July 2012 in the name of energy efficiency.

T12 fluorescents, used in commercial lighting, are an outdated technology. Originally designed in the 70s, they use 30 to 40 percent more energy than T8 or T5 fluorescents. Despite this, commercial buildings continue to use and replace them, unnecessarily wasting energy and money.

By restricting production of T12s, the Department of Energy hopes to phase out this outdated lighting system.

—FROM PAGE 14, HINES LEADS COMMERCIAL DEVELOPERS

A: We work very closely with major manufacturers and developers of new construction materials. We are currently testing some new products and expect to see some exciting changes in lighting and glass in the near future.

Q: What is your firm's view on solar energy for electricity and heating water in your large commercial buildings? Do you put them in new buildings? Where does it work, where not?

A: Much of the product that Hines

builds and manages is in higher density urban or first ring suburban environments where surface area for solar panels is problematic. We continue to examine solar as a potential alternative energy source – and the technology is improving all the time.

Q: What is the overall extent of the sustainability program? As the global sustainability officer, what are your primary responsibilities?

A: Hines has a long history of re-

sponsible investment from its founding in 1957. Gerald Hines, who was trained as an engineer, imprinted efficiency and sustainability on the firm from its earliest days. It is my responsibility to ensure that legacy be continued and that we as a company think about and embrace practices that allows us to conduct business in the cities and towns in which we operate that is respectful of the environment, and delivers the returns to our clients and partners that they expect. We believe and have proven that we can do both. ■

—FROM PAGE 2, PACE USED WITH PRIVATE CAPITAL

would have no upfront cost, paying for upgrades over 20 years through surcharges on their property tax bills.

The money they save on energy costs will be greater than the increase in their property taxes, said Dan Schaefer, Ygrene's president.

Schaefer is confident that the savings most buildings can realize will make it worth

undertaking the construction work involved. Technology for energy conservation and renewable energy generation is improving constantly, meaning ever-increasing returns on investment.

One of the main concerns of many building owners is the difficulty of accurately projecting the savings they will realize from retrofitting. The savings depend on how

energy improvements perform as well as the future cost of energy.

To create more certainty, Ygrene said its clients will have the option of purchasing insurance that would pay off if projected savings are not realized. The insurance product is the Energy Savings Warranty Program, developed by Hannover Re with Energi Holdings. ■

money over current utility rates.

Sunwheel offers an option to purchase the system both in the middle and at the end of the PPA term, typically 15 years. It can structure projects through solar equipment leases as well.

U.S. Bank, one of the nation's largest commercial banks, joined with McCormack Baron Salazar (MBS) to finance the installation of solar-energy systems on 11 existing affordable multifamily housing communities in various locations throughout California. The financing structure used a combination of state rebates and federal tax credits under the new markets tax credit (NMTC) and investment tax credit (ITC) programs.

The solar power generated by the solar panels lowers utility costs in the affordable housing community and, in some cases, the benefits are shared with the tenants through reduced utility bills.

An affiliate of Sunwheel entered into solar agreements with the host sites by which the affiliate would operate and manage the solar installation. "Due to differences in the local utilities' solar programs around the state, the Sunwheel affiliate needed to be flexible and had to tailor the solar agreements for the sites based on their location," said Michael Steinbaum, Sunwheel's Chief Operating Officer.

In some areas, the host entered into a power purchase agreement. In other locations, they used a solar equipment lease. In all cases, the utilities provided a credit to the host site's account based on the amount of power generated by the solar installation.

For the affordable housing communities in Northern and Southern California served by Pacific Gas and Electric and Southern California Edison, a power purchase agreement was used, in which the host site purchases the power generated at an agreed-upon price from the Sunwheel affiliate.

Because the agreement price is set at a lower price than the host's grid rate, the host's electric bill is reduced by the difference.

Virtual net metering is an innovative feature offered under the California Solar Initiative's Multifamily Affordable Solar Housing (MASH) program that was used in several of the affordable communities. With virtual net metering, the host can elect to allocate some of the solar energy production to tenant units, regardless of whether the units are physically connected to the solar installation, thus, the "virtual" part of virtual net metering.



PHOTO: WIKIMEDIA

Four of the low-income housing tax credit communities, located in Southern California in the Los Angeles Department of Water and Power service area, used solar equipment leases. In these cases, the host site leased the solar installation from the Sunwheel affiliate at a predetermined price. The sites get credit on their energy bills from the utility, and the predetermined lease rates, being less than the estimated credit, allow the sites to save on overall energy bills. Using this approach, the communities in Los Angeles have been able to cover about 90 percent of the electricity used by their common areas.

Tax Credit Financing Structure

U.S. Bank joined with MBS's affiliated community development entity, which used a portion of its NMTC allocation, and Sunwheel and its affiliated special purposes entities, which own and manage the solar systems. U.S. Bank used a "twinned" tax credit financing structure, in which the NMTC and ITC benefits ultimately flowed to the bank.

By blending the federal tax credits and the utility rebates, the twin structure

provided an acceptable rate of return and created enough net equity in the project to reduce the debt service requirement to one percent, making the solar installation financially viable.

U.S. Bank provided equity to an investment fund that, in turn, invested in the community development entity (CDE) with an NMTC allocation. Simultaneously, an entity was set up as a master tenant to receive and pass-through the Section 1603

benefits (cash in lieu of energy investment tax credits) to U.S. Bank. With this twinned structure, virtually all of the benefits from both the NMTC and ITC transactions flowed through to U.S. Bank as the top-end investor.

U.S. Bank contributed bridge financing to the investment fund in an amount equal to the anticipated MASH solar rebates from the local utilities.

Sunwheel had previously applied with the local utilities and been approved for MASH rebates for each solar project. (MASH rebates are not paid out until projects are complete, and the utilities approve and commission the installations.) Once the rebates were received, the bridge financing was reimbursed.

To further magnify the tax benefits, the modified accelerated cost recovery system allows five-year, straight-line depreciation for eligible energy investments, including solar installations. The depreciation benefits and any losses are allocated through the ITC entity, with 51 percent going to the managing partner and 49 percent going to U.S. Bank.

Borrego Solar Systems, Inc., a leading designer and installer of grid-tied commercial and public-sector solar electric power systems, was the solar integrator on the McCormack Baron Salazar projects.

"Since 2002, Borrego Solar has worked to establish a strong reputation within the affordable housing industry, and in the last two years alone, we installed more than three MW of solar energy at 30 different sites," said Mike Hall, CEO of Borrego. ■