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ACEEE Summer Study at Asilomar, California

Optimizing the Promise of Energy Efficiency Financing



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A major key to reinvigorating our lagging economy and staving off current unemployment trends is increasing investment in energy efficiency. A recent ACEEE report on the long-term potential of energy efficiency suggests that cost-effective energy efficiency investments have the potential to reduce U.S. energy usage by 40-60% and support 1.3 million jobs by 2050. Yet upfront

costs pose a significant impediment to these investment opportunities across buildings sectors.

Fortunately, we are experiencing a period of rapid innovation and experimentation in energy efficiency finance. Over the past several years, numerous strategies and mechanisms for reducing upfront cost barriers to energy efficiency are emerging and experiencing increased popularity and adoption. Such mechanisms include: traditional, single-project financing; on-bill financing; property assessed financing (PACE); energy services

agreements; and performance contracting. These mechanisms span residential, commercial, MUSH (municipalities, utilities, schools, and hospitals), and industrial markets with varying degrees of success. Many, particularly on-bill financing, have tremendous potential to provide financing to traditionally underserved markets including low- and moderate-income, multifamily, and small business sectors.

Steering sufficient capital into the market to achieve scale is the clear next step to recognizing the energy savings, economic stimulus, and job creation benefits promised through this growing toolkit. With the stimulus of ARRA funding ending, many of the most innovative program pilots are at risk. Additionally, many program models are administered by institutions that have little experience with consumer lending laws and regulations, and may become more willing to participate with technical assistance and regulatory support.

Engaging the private sector is likely to require more experience and information on the financial performance of existing products. For example, in a September 2011 report ACEEE found that default rates on energy efficiency loans generally

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Replacing Asilomar's Aging Energy Infrastructure

Jane Beattie, Asilomar's Director of Interpretation and Environmental Programs, and Project Manager David Aquilina spoke with *The Grapevine* about their most recent renovations in the Hearst Social Hall and Crocker Dining Commons and other advances they have made there in energy efficiency.

The original floor of the Hearst Social Hall was replaced in Oct 2011 as part of a major hydronic heating upgrade. In the past there had only been radiant heating elements on the west side of the building, making it very difficult to maintain a comfortable interior temperature given the large entry/exit doors. The original hydronic system had been connected to a boiler in the Crocker Dining Hall by over 300 feet of leaky uninsulated water line. The new system is tied to an outside temperature monitor, which cuts off the boiler when when outside

temperatures make heating unnecessary.

In addition to adding the new boiler and hydronic heating system, Aramark recreated the historic lighting fixtures using a combination of LED and incandescent lighting. However, because of its National Historic Landmark Status, Aramark cannot change out the old wavy single-pane glass windows. State Park Historians must approve any modifications to buildings and any energy-saving improvements, such as air sealing, can only be installed if they are not noticeable and don't require modification of the building for maintenance or upgrades.

In Crocker Dining Hall, Aramark did a lot more energy upgrades, but the existing ductwork under the dining room was virtually inaccessible.

Regarding water conservation, Jane pointed out that

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ANNOUNCEMENTS

2014 Summer Study Co-Chairs



SILA KILICCOTE is the Deputy Group Leader of the PIER Demand Response Research Center and a Program Manager in the Building Technologies Department at Lawrence Berkeley National Laboratory. Her areas of interest include characterization of building loads and demand shaping, demand responsive lighting systems, building systems integration and feedback for demand-side management. She has received the “Leadership in Smart Grid Acceleration Award” at GridWeek in October, 2010.



PATRICK HUGHES has served as the Director of Oak Ridge National Laboratory’s (ORNL) Building Technologies Research & Integration Center since 2005. The focus of his 34 year career, including 20 years at ORNL, has been on research, development, and deployment of sustainable building technologies. In recent

years, he has been instrumental in the establishment of the Zero Energy Building Research Alliance (zebralliance.com) and several Cooperative Research and Development Agreements or CRADAs (General Electric, ClimateMaster, Lennox). Hughes served as an ORNL Group Leader (2001-04) and Senior Research Staff member (1989-2001), prior to his current position.

JOB OPPORTUNITIES

IMT seeks a full-time Program Manager, Building Energy Performance Policy. The position is in our Washington, DC HQ.

Reporting to the program director, the program manager advises state and local governments, federal agencies, and national policy organizations on the development and implementation of integrated energy efficiency programs and policies for the existing commercial and multifamily building stock. Specific

policy and program work will focus on energy benchmarking and disclosure, energy audits, retro-commissioning, submetering, green leasing, and access to capital. The program manager will work frequently and collaboratively with leaders in the real estate and utility sectors to address policy barriers and generate support for policy adoption and implementation. The program manager will also help produce cutting-edge policy research and analyses for national distribution.

This position requires strong analytical, organizational and communications skills, and a demonstrated ability to work independently; contribute effectively as a member of a team; and collaborate with other IMT programs and partners. Candidates must have at least three-to-five years of relevant experience.

For more info see www.imt.org/about/jobs or contact jobs@imt.org.

Responsibilities and regular tasks:

- Manage policy research, analysis and evaluation activities, including but not limited to the following topics: employment growth, energy savings, greenhouse gas emissions reductions, and real estate asset value
- Advise state and local government officials and federal agencies on the design and implementation of energy efficiency policies
- Establish and maintain collaborative relationships with peer organizations, real estate companies, and utilities
- Assist in developing program strategy and maintaining relationships with foundation partners
- Assist in organizing regional or national events with partners and stakeholders
- Present at local, regional and national events as a subject matter expert
- Collaborate with other IMT programs, including commercial energy efficiency finance and green leasing
- Contribute expertise to the Global Buildings Performance Network, a partner organization of IMT promoting international energy efficiency best practices



NEW SOCIETY ENVISIONED

A new society was nearly formed last night in Crocker Dining Hall at an impromptu gathering of *Home Energy* staff and scientists from Lawrence Berkeley National Laboratory and the Florida Solar Energy Center. The American Potential Energy Society (APES) will thoroughly explore the possibility of potential energy, which is poised, and has been for as long as anyone can remember, to be the next big thing in energy. Potential energy is the ultimate



renewable energy, since it will always remain as potential. No risk of radiation exposure, and carbon emissions are estimated to be zero. Join the group that will never exist.

All meetings will take place on top of hills. Nothing will actually happen. Ideas will be proposed. It is unlikely that we will have an initial meeting, but we will think about it. Potential members should also think about it. Join the group that has a wait and see attitude.

Energy Efficiency Financing continued

range from 0-3%, but data are needed on more programs and covering the full terms of loans. Perhaps more importantly, there is a need for standardization of energy savings and loan performance data collected from existing programs. There are many diverse program models on the market and no silver bullet approach. Therefore, we need to turn our attention to developing platforms and standards for data aggregation that convey meaningful information to financiers.

ACEEE has been contributing to the discussion through a series of reports: *Energy Efficiency Finance 101: Understanding the Marketplace*; *What Have We Learned from Energy Efficiency Financing Programs?*; and *On-Bill Financing for Energy Efficiency Improvements*. These

reports, along with corresponding blogs and state toolkit resources, explore the market for energy efficiency finance and profile program experiences. We are also working on a report on financing strategies for rental properties (both multifamily and commercial) that will be released early next year.

ACEEE's 6th Annual Finance Forum attracted a record 250 participants. We had excellent representation from notable financial institutions such as Citibank, Deutsche Bank, Wells Fargo, Bank of America, and US Bank. We look forward to taking the conference and conversation to Chicago in May 2013. With so many developments in the field we are excited to delve deeper into opportunities to grow the market!

Asilomar Infrastructure continued

Asilomar uses the lowest flow 1.75 gpm shower heads, lower than the county mandate of 2.5gpm. Asilomar and other Monterey resorts are under mandate to drop water use by 50% by 2015, and they have received a 28% increase in water costs due to the fact all the water in the Monterey Peninsula comes from the Carmel River.

Aramark is currently testing energy management systems for monitoring energy through their new wireless networks. Lighting and heating is very energy intensive right now, with staff dependent on security guards and guests to monitor overheating or lighting. Aramark is converting its truck fleet to propane

and plans to put an Electric Vehicle Charging station on site in the next month.

Jane asked ACEEE attendees to refer new products or energy and water saving ideas and systems, feedback or ideas they'd like Aramark to consider. Aramark also runs an intern program through the Student Conservation Association, and has seasonal openings for 3-9 month paid positions.

As you walk through Asilomar at night trying to find your way in the fog, you'll notice new LED-lit maps with motion sensors and timers. They're another sign that Asilomar is trying to guide its guests into an energy-efficient future.

The Carbon Footprint of a Hidden Energy User

What is arguably one of the most overlooked industries in the last four decades in energy efficiency improvements? This industry serves over 17 million consumers and has more retail outlets in California than Starbucks or McDonald's. This industry has become so popular that it has moved from commercial farming into residential settings and has grown to 9% of residential energy use in California.

Still unsure? Here are some of the energy stats for this industry: One 4' x 4' module uses as much energy as one average



home or 30 refrigerators. This product creates 4,600 kilograms of CO₂ per kilogram of product. It uses lighting at 138,000 lux (lumens per square meter), more than a surgical operating theater, from fan cooled HID lighting; power density of 200 kW/sq ft; 1,000 CFM

fans; 1,000 watt dehumidifiers, and approximately \$6 billion/year in fuel and electricity costs.

Still need more clues? Here's the last—sales of over 730,000 prescriptions for this product generate almost twice the sales of Viagra, and the CEO of Miracle Grow has decided to develop a special product line just for this product.

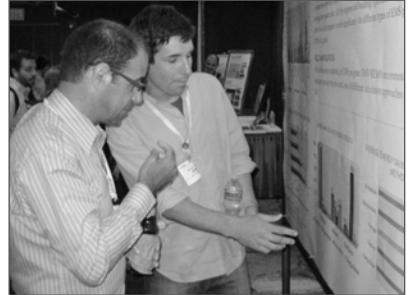
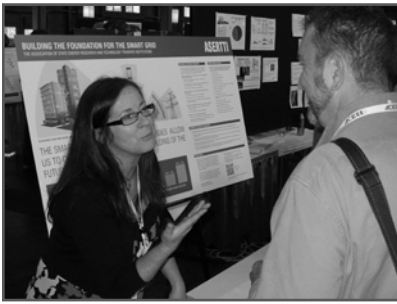
Here's the answer, according to Evan Mills: indoor Cannabis production, and no, it's not just a California problem.

Linda Latham Scholarship Winners



Front Row (left to right): Jessica Jones, Univ of Kentucky; Hui Shin Wong, Multimedia Univ, Cyberjaya, Malaysia; Katie Ackerly, UC Berkeley. **Back Row (left to right):** Efrie Friedlander, Univ of Michigan; Dasa Majcen, Delft Univ of Technology; Johnathan Hymer, Univ of Colorado-Denver; Erin Harris, East Carolina Univ, Center for Sustainable Tourism; Mustafa Sahin, Hacettepe Univ; Lara Gale, Energy Management Project, Salt Lake Community College; not present Jaxon Love, Univ of Oregon, Center for Sustainable Business Practices;

THURSDAY POSTER SESSIONS



From social media to ancient boilers and everything in between, it was another rich experience for all who attended the poster sessions. Lower left photo shows (from left to right) panel leaders LaTonya Jordan, Oak Ridge National Laboratory and Bahman Habibzadeh, U.S. Dept. of Energy alongside Diane Chojnowski from Usability.org.

Beach Play and Dance at Asilomar



The Grapevine Staff burning the midnight oil. Kate Henke, Jim Gunshinan, Tom White (l-r).

the grapevine

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Tom White, Managing Editor

Steve Greenberg and Jim Gunshinan, Reporters

Kate Henke, Production

Two traditions at Summer Study: Games on the beach and Perry and the Pumpers in Merrill Hall.