



Thursday, August 21, 2014

ACEEE Summer Study at Asilomar, California

Let's Talk about Intelligent Efficiency

by Ethan Rogers Senior Manager, Industry Program, ACEEE



We all knew it would eventually happen. Efficiency has become intelligent. We always knew that waste was stupid and that efficiency was smart, but now, efficiency is...well, not sentient smart, but semi-HAL smart. Or perhaps NSA smart. The same technology that enables our spymasters to find bad guys now enables just about anyone to identify new opportunities to save energy. Many of us think

intelligent efficiency is going to change the world of efficiency and I'm pretty sure you're going to like it. It takes the friction out of implementing energy efficiency.

If you've not heard the term "intelligent efficiency" before, you might be wondering what it is exactly. I like to think of it as the additional energy efficiency that is possible when networked devices optimize their collective performance through adaptive and anticipatory decision making.

ACEEE has been examining intelligent efficiency for at least seven years now. Our first report, *A Defining Framework for Intelligent Efficiency*, examined the scope and purpose of intelligent efficiency. Our second report, *Intelligent Efficiency: Opportunities, Barriers, and Solutions*, examined the economic benefits in the commercial and manufacturing sectors. Earlier this year, Therese Langer published a white paper, *Smart Freight: Applications of Information and Communications Technologies to Freight Systems*, that examines intelligent efficiency in moving freight.

And I finished a ten-month deep dive into how smart manufacturing saves energy with *The Energy Savings of Smart Manufacturing* report. To give you an idea how fluid the developments are in this space, since the ink dried on the final draft of my report in mid-July, I've learned that technologies I described in the report as possible or potential, are now either in field testing or in development. It seems there's a new generation of technology every quarter. It's evolving faster than a plot line on House of Cards.

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Julia Morgan (1872-1957)

In 2014, Julia Morgan, the original architect of Asilomar, was posthumously awarded the American Institute of Architects (AIA) Gold Medal, AIA's highest honor. Ms. Morgan is the first woman to be awarded this honor.

Standing around five feet tall, Julia Morgan didn't take up a lot of space, but her spaces were giants of artistic expression, collaborations in craftsmanship, and participation with nature.

Just a few of her accomplishments:

- The Greek Theater, UC Berkeley, California
- Mills College Campanile and Library, Oakland, California
- Fairmont Hotel Restoration, San Francisco, California
- Designed more than 700 buildings (a very high percentage—more than any other architect—having been built as well as designed)
- Hearst Castle, San Simeon, California
- Thirty YWCA's across the US.

When she applied to the *l'École des Beaux Arts* in Paris, they turned down her application. She remained in Paris to reapply the

following year, was turned down again, and spent the time wisely, sharpening her talents by studying local architecture and fine art. In spite of their resistance to admit a woman to the program, her application was irresistible in her third



Merrill Hall Trusses. Photo: Leslie Jackson

attempt, making her the first female to be accepted by the school.

When she completed the Greek Theater under the employ of UC architect John Galen Howard, overseeing the pouring and finishing of every cubic yard of concrete, she earned the reputation not only of being hands-on, and thoroughly a craftswoman,

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Intelligent Efficiency, cont.

Given this pace of development, a few of us got together earlier this week for an informal session to discuss areas for additional research and barriers to greater implementation of intelligent efficiency. Don't be too concerned if you missed it because there are several papers on intelligent efficiency still to be presented this week.

You'll also have an opportunity later this year to immerse yourself in presentations on intelligent efficiency. We're hosting an entire conference on the subject in November. The first ACEEE Intelligent Efficiency Conference will be held in San Francisco November 16-18 at the Hyatt Regency – Embarcadero. It will feature experts and thought leaders from the information and communication technologies (ICT), energy efficiency, and end-user communities. We're expecting this to be a big ICT-energy efficiency matchmaking event, so if intelligent efficiency is something that you think is or will be important to you, mark your calendar and we'll see you in November!

We are so excited about this topic that we have three new research projects planned for 2015. We'll be looking at how the use of intelligent efficiency can improve energy use throughout the manufacturing supply chain, how it can be used to generate near real-time measurement and verification data for efficiency programs, and how it can be used to bring efficiency gains to

campuses of buildings. If these topics are of interest to you, please seek out one of our staff and let us know.

Getting back to Summer Study, several papers being presented this week feature intelligent efficiency. ACEEE's Sameer Kwatra is presenting a paper at 8:30 this morning in Panel 3 in which he has analyzed how a new generation of smart building management systems can produce additional energy savings over the automation of only a few years ago. A quick scan of the conference program shows that Panels 7 (Capturing Savings through Behavior) and 11 (Leveraging High Tech for Efficiency) are abundant with papers that feature intelligent efficiency. I found references to ICT in papers in all 11 panels so regardless of your interest, there is something here for you.

So there it is—intelligent efficiency—the most promising development in energy efficiency since life cycle cost analysis was developed. We hope you will attend the sessions this week featuring intelligent efficiency and consider attending our new conference in November. Until then, I'm here all week so please seek me out and let me know of your interest in this subject. I'm always looking for new examples of intelligent efficiency and data that document its benefits.

Morgan, cont.

but of being inexpensive for Howard, because she was a woman. So she decided to take her confidence and skill and get her own license to practice architecture, another first.

Asilomar was the first retreat center built and operated by women for women. Morgan didn't just pave the way for women in architecture, she raised the bar for the male architects as well. It's my guess, getting to know her enthusiasm for buildings that endure, that a high percentage of her buildings are still standing, as compared to those of her contemporaries. People who own them know what they have, and celebrate them, as we are here at Asilomar.

In his elegant letter of nomination, Michael Graves, AIA, winner of the Gold Medal in 2001, describes her long-term influence and lists features of her artistry that today's energy-efficient home would benefit from: "...reciprocity between architecture and landscape, her embrace of local history and context, her use of local and long-lasting materials, her creation of spaces that dignify the soul..."** A well-sited, durable building made from locally available materials, that cooperates with its environment taking into consideration climate and the sun's path over it doesn't need high-end measuring devices, switches and automation. All such a building needs is a loving occupant who knows how to operate a window, curtains, and make a fire.



The Stuck-Up Inn. Photo: Leslie Jackson

Julia Morgan didn't love winning prizes and resisted competitions. She said "Let my buildings speak for themselves," and they do. Congratulations, Ms. Morgan. It is about time, though awards or not, you'd still have given us your all.

**AIA Letter of Recommendation to the Gold Medal Selection Committee by Docous, Malinowski, and Donoho, AIA Member, June 29, 2013*

***Letter to the Selection Committee, July 2, 2013*

INFORMAL SESSIONS 2-4 pm

Let's Play: Using Games to Motivate Action (Here at Asilomar and Back Home Too)

Kathy Kuntz, Cool Choices

ROOM: Chapel

Commercial Utility Program Approaches in Two Emerging Areas – 1) Greening Data Centers and 2) New Construction Program Pathways to ZNE

Cindy Strecker, PEI and Cathy Higgins, NBI

ROOM: Fred Farr Forum

Cost-Effectiveness Testing for the Twenty-first Century: The Resource Value Framework

Robin LeBaron, National Home Performance Council

ROOM: Heather

It Takes 20 to Tango; Reducing Barriers to ZNE Production Homes

Matthew Christie, TRC

ROOM: Kiln

Residential End-Use Metering Projects – 2014 Update

Dennis Nelson, BC Hydro

ROOM: Nautilus

Access to EE Program Data Online: A Tour of the California Energy Efficiency Statistics Website

Amy Reardon, CPUC

ROOM: Scripps

Energy Design Assistance Project Tracker (EDAPT): A Web-Based Tool for Utility Design Assistance Program Management

Jennifer Elling, Xcel Energy

ROOM: Evergreen

Designing, Implementing, and Evaluating the Pioneering US-China Research and Technology Development Partnership for Very Low Energy Buildings

Kevin Mo, Energy Foundation China

ROOM: Oak Shelter

Energy Research and Social Science in Organizations

Susan Mazur-Stommen, ACEEE

ROOM: Toyon

Common Metrics for Commercial Building Metered MEL and Lighting Performance And Savings? From Lab To Field To Energy Model

Dan Harris, New Buildings Institute

ROOM: Marlin

Tackling Commercial Lighting in the Pacific Northwest with a New Program Model

Andre Javier-Barry, D&R International

ROOM: Dolphin

Building Energy Code Synergy and Networking

Bing Liu, PNNL

ROOM: Sanderling

How to Predict the Future (and the Past): Jobs and Economic Impacts of Energy Efficiency

Jim Barrett, ACEEE

ROOM: Afterglow Living Room

Next-Generation, Retail-Focused Residential Energy Efficiency Programs- What to do about EM&V?

Michael Lukasiewicz, Navitas Partners, Inc.

ROOM: Embers Living Room

Efficiency Opportunities Stemming From A Connected Unitary HVAC System

John Taylor, CEE

ROOM: Hearth Living Room

Next Steps For More Coordinated Green Codes: An Open Forum On Calgreen And Igcc/189.1

Jeremy Sigmon, USGBC

ROOM: Long View North

"I like it 72 degrees F at all times" vs. "I can put up with 28 degrees C": Energy Use and Behavior in Japan and the U.S.

Kristin Heinemeier, UC Davis

ROOM: Manzanita 2

EM&V for Behavior-Based Programs - Any Hope for Small and Commercial Programs?

Annika Todd, LBNL

ROOM: Willow Inn 1

OHIO: What happened!?

John Seryak, Go Sustainable Energy

ROOM: Willow Inn 2

Using Mobile Devices And Apps To Improve The Delivery Efficiency Of Energy Programs

Rich Szydlowski, CEE

ROOM: Long View South

How Does Your Home Measure Up?

The Thousand Home Challenge is an initiative designed to demonstrate the feasibility of deep reductions of energy use in existing homes in US and Canada. Find out how the Challenge defines Deep Reductions. With 24 projects completed to date, the average net site energy use index (EUI) for the completed homes is 6.75 KBtu/Ft² compared to the US average of 42. Register for the next Intro to the Thousand Home Challenge webinar, Weds. Aug. 27, 1-2:30 PM ET; 10-11:30 am PT. For more information about the webinars & to register go to <http://thousandhomechallenge.com/join-us>

PANEL 12: DISPLAYS & POSTERS – MERRILL HALL

4:00 pm – 6:00 pm Thursday, August 21

Panel 7 Paper—Energy Saving Behavior for the 21st Century
Zachery Ambrose, Performance System Development

Choices, Choices: Results from 2012-2013 California Customer Intercept Surveys on **Consumer Lamp Purchasing Decisions**
Geoff Barker, DNV GL

Panel 7 Paper—Myths of Low Income Energy Efficiency Programs: Implications for Outreach
Serj Berelson, OPOWER

Panel 2 Paper—Evaluation of a Low-Income Energy Efficiency Program
Jacqueline Berger, APPRISE

Mapping Efficiency Potential for U.S. Residential Buildings
Craig Christensen, National Renewable Energy Laboratory

Software as a Solution to All Your Technical Reference Manual (TRM) Problems
Michael Dunphy, Energy Software LLC

Panel 8 Paper—Building Energy Code Compliance in Developing Countries: The Potential Role of Outcome-Based Codes in India
Meredydd Evans, Pacific Northwest National Laboratory

Who's Messing with the Lights?
Tom Mayer, Itron

All In The Summer Study Family

Lynn Price, long-time ACEEE Summer Study participant, is joined this year by both her son, Kevin, and daughter, Sarah. Lynn, group leader of the China Energy Group at Lawrence Berkeley National Laboratory, presented a paper on China's low carbon urban development on Monday. Sarah, senior research associate with LBNL's Energy Efficiency Standards Group, is co-author of a paper on the cost of enforcing building energy codes that was presented on Tuesday and Kevin, consultant at Evergreen Economics, is presenting a paper on the commercial lighting market on Friday. All three overlapped on Wednesday and enjoyed an evening together at the Monterey Aquarium.
photo credit: John Price



Panel 2 Paper—Timely Industry Research to Make Your Program Better, Faster
Laura Giannini, TRC Energy Services

Panel 7 Paper—Energy Efficiency Upgrade Behavior of California Social Initiative Participants
Ria Langheim, California Center for Sustainable Energy

SEAD Technical Assistance on S&L Policies around the World
Virginie Letschert, Lawrence Berkeley National Laboratory

Panel 4 Paper—Discrepancy, What Discrepancy? The Real Reasons for the Gap between Claimed and Verified Savings
Al Lutz, Itron

Panel 7 Paper—The Role of Awards Programs in Stimulating Energy Efficient Behavior: A Study of Award Winners
Christa McDermott, University of Michigan (Elizabeth Malone presenting)

Panel 2 Paper—Customer Engagement Experiment: Which Follow-Up Strategies Turn Home Energy Audits into Energy Savings?
Kate Scott, Energy Trust of Oregon

Panel 8 Paper—Superefficient Refrigerators: Opportunities and Challenges for Efficiency Improvement Globally
Nihar Shah, Lawrence Berkeley National Laboratory

Panel 8 Paper—Calculating Avoided Emissions Should be a Standard Part of EM&V and Potential Studies
John Shenot, The Regulatory Assistance Project

Someone Turned Off the Light: Consumer Choice after CFL Subsidies
Andrew Stryker, DNV GL

General Economic Forecasting of Demand Response, Energy Efficiency, and Distributed Generation
Alexander Smith, Georgia Tech

Smart Thermostats and Set Point Messaging: Savings Results from a Large Experiment
Michael Sullivan, Freeman, Sullivan, & Co.

A Success Story
Lauren Westmoreland, Southeast Energy Efficiency Alliance

Evaluating Energy Efficiency and Demand Response in the PNN Lab Homes
Sarah Widder, Pacific Northwest National Laboratory

Panel 2 Paper—Tool Time: How PG&E Organized Financing Program Development
Alfred Gaspari, Pacific Gas & Electric

Emerging Technologies Summit

Like all the things you're hearing at Summer Study? Come hear many of the same speakers continue the conversation toward accelerating innovation in energy efficiency at the ET Summit from October 20-22 in San Francisco!
Visit <http://www.etsummit.com> to register today!

the grapevine

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