



Intelligent Efficiency Conference

Mainstreaming Intelligent Efficiency

Hyatt Regency San Francisco • San Francisco, CA • November 16-18, 2014

CONFERENCE PROGRAM

Sunday, November 16

12:00 pm to 7:00 pm REGISTRATION OPEN

5:00 pm to 7:00 pm OPENING RECEPTION

Monday, November 17

7:00 am to 7:30 pm REGISTRATION OPEN

7:00 am to 8:00 am CONTINENTAL BREAKFAST

8:45 am to 9:15 am WELCOME

Panelists: **Steve Nadel**, *American Council for an Energy-Efficient Economy*
Helen Burt, *Pacific Gas & Electric*
Ethan Rogers, *American Council for an Energy-Efficient Economy*

9:15 am to 10:15 am KEYNOTE

Keynote Speaker: **TBD**

10:15 am to 10:45 am AM BREAK

10:45 am to 12:00 pm**PLENARY SESSION****Intelligent Efficiency: The Big Picture**Session Moderator: **Neal Elliott**, *American Council for an Energy-Efficient Economy*Panelists: **Alex Laskey**, *Opower*
Scott Bernstein, *Center for Neighborhood Technology*
Clay Nesler, *Johnson Controls*
Gene Rodrigues, *ICF International*
Rona Newmark, *EMC Corporation*

Description: Over the past six years ACEEE has worked with representatives from the information and communications and energy efficiency communities to define the concept of Intelligent Efficiency. Intelligent efficiency has emerged as a result of technology developments that have enabled system-level efficiency opportunities that were not possible just a few years ago. We have identified three manifestations of intelligent efficiency: people-centered, technology-centered and service-oriented. We see examples of all three manifestations in all sectors of the economy. This panel will discuss the technology and market changes that have made intelligent efficiency possible and explore how far intelligent efficiency can take us.

12:00 pm to 1:30 pm**LUNCH**Keynote Speaker: **Brewster McCracken**, *Pecan Street Research Institute***1:30 pm to 3:00 pm****CONCURRENT SESSIONS***Session 1A***Big Data & Intelligent Efficiency**Session Moderator: **Kathrin Winkler**, *EMC*Panelists: **Jim Merriam**, *Efficiency Vermont*
Sam Hamilton, *Johnson Controls*
Dian Grueneich, *Stanford University*
Jamison Shaver, *GE Software*

Description: An examination of how Big Data will change energy management in the next generation grid and for energy users large and small. The panel will examine implications of the dramatic expansion of sensor deployment in the grid and in grid-connected devices, and of the use of Big Data analytics to manage increasingly dynamic interactions between them. We will ask whether Big Data is an incremental or transformative change in how energy is delivered and consumed, and consider both the new opportunities and emerging challenges that it will bring.

*Session 1B***Data Driven Approaches to Optimizing Building Energy Performance**Session Moderator: **Mohsen A. Jafari**, *Rutgers University*Panelists: **Jessica Granderson**, *Lawrence Berkeley National Laboratory*
Erin Hult, *Lawrence Berkeley National Laboratory*
A. Stryker, *DNV GL*
C. Godin, *DNV GL*

Description: This session focuses on the use of data driven and model based approaches to energy efficiency optimization. The session emphasizes the quality and resolution of data and models that derive energy efficiency decisions. A range of data driven techniques from classical time series to more recent machine learning based methodologies are presented and used for energy efficiency optimization. The contrast between these techniques and bottom-up approaches that combine behavioral models and historical data is also investigated. It is argued that while the former ones are more appropriate for compliance and energy performance monitoring, the latter ones are more effective for planning and design of new efficiency programs. The need for the integration of data driven techniques and the implementation processes is also discussed.

Session 1C

Intelligent Building Technology & Energy Efficiency for Affordable HousingSession Moderator: **Chris Lloyd**, *Verizon Foundation*Panelists: **Suzanne Russo**, *Pecan Street Research Institute*
Thomas Lee, *Enterprise Community Partners*
James Lewis, *Heartland Alliance Housing*

Description: This session will feature discussants from the community development, real estate, foundation, utility, and research communities involved in energy efficiency for affordable housing. Topics include cost-effective solutions to integrate emerging technologies with traditional approaches to energy efficiency services in underserved communities; examples of intelligent building technologies that did and did not work when deployed at scale; how the digital divide in low-income and senior communities impacts the ability of these residents to participate in utility demand management programs and to take advantage of free or low-cost tools to reduce their energy bills; smart home technologies that help seniors save money on their energy bills, provide health monitoring services, and improve quality of life; how to select the best suite of technologies and energy efficiency services for different projects; the role of utilities in providing energy management services.

Session 1D

Leveraging Intelligent Efficiency through Local Policy DriversSession Leader: **Francesca Wahl**, *Silicon Valley Leadership Group*Session Moderator: **Audrey Lee**, *California Public Utilities Commission*Panelists: **Joe Phillips**, *IBM*
Joy Bonaguro, *City of San Francisco (invited)*
Bryan Sastokas, *City of Oakland (invited)*

Description: This session will address policies local governments need to enable the implementation of intelligent efficiency solutions in cities. Topics include understanding city motivations, procurement practices, leveraging local entrepreneurship to put city data to public use, and peer learning networks and commitments among cities.

Session 1E

Automakers, Utilities and the Grid: How a New Communication Platform Can Maximize EfficiencySession Moderator: **Jessica Harrison**, *DNV GL*Panelists: **Karen Glitman**, *Vermont Energy Investment Corporation*
Dan Bowermaster, *Electric Power Research Institute*

Description: Electric utilities continue to improve the carbon footprint of their industry, but they are also well positioned to support efficiency in another industry vertical, namely transportation. With adequate regulatory support, utilities could prove to be important to supporting EV adoption and transforming the automobile market. This session will explore how communication among EVs, people, and the grid can maximize energy savings associated with EVs, and the role of utilities in supporting this outcome.

3:00 pm to 3:30 pm**PM BREAK**

3:30 pm to 5:00 pm**CONCURRENT SESSIONS**Session 2A

Intelligent Efficiency 101Session Moderator: **Matthew Stepp**, *Center for Clean Energy Innovation*Panelists: **Jud Virden**, *Pacific Northwest National Laboratory*
Paul Hamilton, *Schneider Electric*
Ammi Amarnath, *Electric Power Research Institute*
David Isaacs, *Semiconductor Industry Association*

Description: This session will feature presentations and a panel discussion on the major components of intelligent efficiency (Big Data, data analytics, Internet of Things, and “smart” things, ubiquitous internet). It is intended to be an introductory session for those not familiar with Intelligent Efficiency and also an opportunity to discuss definitions and overarching opportunities and challenges.

Session 2B

Promise and Potential of Integrated BuildingsSession Moderator: **Clay Nesler**, *Johnson Controls*Panelists: **Andrea Curry**, *Shift Energy*
Tushar Dave, *Enlighted*
Tim McCormich, *Cisco (invited)*
Joe Steger, *Stanford University (invited)*

Description: With a host of new technologies including sensors, controls, smart apps and smart equipment there is the potential to transform buildings into connected, responsive and adaptive intelligent systems. Based on real world examples, this session should explore what is the opportunity (and cost) of energy savings from such buildings and how can we get there sooner.

Session 2C

City Scale Energy ManagementSession Moderator: **Paul Hamilton**, *Schneider Electric*Panelists: **Rose Shaver**, *Schneider Electric*
Cliff Thomas, *Cisco Systems (invited)*
Bill Mitchell, *Microsoft (invited)*
Fredrick Fletcher, *City of Burbank (invited)*

Description: Rapid advances in technology, connectivity, and data availability are changing the landscape and opportunities for city scale energy management. What tools and systems will be most impactful in the future? What benefits can these systems provide to utilities, customers and local governments? What should we expect from the next generation of this technology?

Session 2D

Finance - How Intelligent Efficiency Will Facilitate More Financing of Energy EfficiencySession Leader: **Casey Bell**, *American Council for an Energy-Efficient Economy*Panelists: **Maria Fields**, *Joule Assets*
Scott Harmon, *Noesis Energy*

Description: This session will explore how the superior data gathering and reporting features of Intelligent Efficiency will facilitate easier and cheaper assessment of financial risk and thereby increase the volume of financing of energy efficiency.

*Session 2E***Personal Mobility Options**

Session Moderator: **Shruti Vaidyanathan**, *American Council for an Energy-Efficient Economy*

Panelists: **Anthony Shaw**, *ITS America*
Therese Langer, *American Council for an Energy-Efficient Economy*
Sharon Feigon, *Shared-Use Mobility Center*

Description: Use of information and communications technology in a passenger transportation system that improves access to destinations and activities while reducing energy consumption. Topics might include the use of mobile computing to improve public transit and car- and bike sharing services, and the integration of autonomous cars and electric cars into the urban environment.

5:30 pm to 7:30 pm **RECEPTION**

5:30 pm to 7:30 pm **ALLY RECEPTION**

(This reception is for current ACEEE Ally members by invitation only.)

Tuesday, November 18

7:00 am to 5:00 pm **REGISTRATION OPEN**

7:30 am to 8:30 am **CONTINENTAL BREAKFAST**

8:30 am to 10:00 am **PLENARY SESSION**

National Policies to Developing Broader Adoption of Intelligent Efficiency

Session Moderator: **Chris Hankin**, *Digital Energy and Sustainability Solutions Campaign*

Panelists: **Stephen Harper**, *Intel*
Andrew McAllister, *California Energy Commission*
Abigail Daken, *Energy Star Office EPA*
R. Neal Elliott, *American Council for an Energy-Efficient Economy*

Description: Various market failures and barriers exist that have impeded the proliferation of these technologies to the degree warranted by the benefits they can deliver. This panel will explore what tools major governments have at their disposal to help deliver on the promise of intelligent efficiency, for instance, by leading by example, improving infrastructure, removing regulatory barriers, creating new or updated incentives (to include those impacting utilities), or causing relevant data to be unleashed.

10:00 am to 10:30 am **AM BREAK**

10:30 am to 12:00 pm **CONCURRENT SESSIONS**

*Session 3A***Interoperability: Barriers and Opportunities to Create Common Communication Protocols and Standards**

Session Moderator: **Bruce Nordman**, *Lawrence Berkeley National Laboratory*

Panelists: **Stephen Palm**, *Broadcom*
Noah Horowitz, *Natural Resource Defense Council (invited)*

Description: Successful realization of the power that information technology can bring to building energy efficiency will require devices and systems to be able to communicate with each other and share information in common formats. This session will feature presenters the public and private sectors engaged in the establishment of open standards and common

protocols so as to enable a true plug-n-play architectures. Presenters from public and private organizations involved associated initiatives.

Session 3B

Residential Energy Management Systems

Session Moderator: **Kara Saul-Rinaldi**, *National Home Performance Council*

Panelists: **Stephen Palm**, *Broadcom*
Matthew Plante, *Bigely (invited)*
Scott McGaraghan, *Nest Labs*

Description: Can home energy management move beyond “smart” thermostats to become simple, intuitive, and real energy saving devices. This panel will engage technology companies and experts in a dialogue about the benefits of HEMs technology in increasing home energy performance, enhancing EM&V, uncover valuable energy data, and opening up a key gateway to new funding for residential energy efficiency improvements. Learn about the findings from a recently-released report from the National Home Performance Council and find out how the current state of the smart grid and the smart home can help achieve the true potential of home energy management.

Session 3C

City Scale Analytics

Session Leader: **Harvey Michaels**, *MIT*

Panelists: **Martha Amram**, *Wattzon*
Cliff Majersik, *Institute for Market Transformation (invited)*
Kat Donnelly, *Empower Efficiency (invited)*
Nikhil Nadkarni, *City of Boston (invited)*

Description: Recent innovations posit that community scale energy analytics, collective intelligence and goal-setting, and social networks are not only helpful but necessary to achieving all of the efficiency we need to preserve our climate. This session will explore why and how cities/communities have, or may, use big-data driven tools.

Session 3D

Economic Development - How Intelligent Efficiency Will Drive Job Creation

Session Moderator: **Jim Barrett**, *American Council for an Energy-Efficient Economy*

Panelists: **Mike Zimmerman**, *BuildingIQ (invited)*
Casey Bell, *American Council for an Energy-Efficient Economy*

Description: This session will explore the potential of new technologies to create new jobs, new business opportunities, increase domestic manufacturing, and overall become a positive economic force.

Session 3E

Smart Manufacturing: Business Models and Marketplaces

Session Moderator: **Jim Davis**, *Smart Manufacturing Leadership Coalition*

Panelists: **Al Wavering**, *NIST (invited)*
Domini O’Sullivan, *University of Cork (invited)*

Description: Presenters from SMLC, government and industry will discuss today’s gaps and challenges and the need for an open architecture Smart Manufacturing (SM) Platform and Marketplace. The session discusses the critical need to move forward collaboratively in the topical areas below to establish such an open source architecture platform that incentivizes a variety of stakeholders to participate and contribute innovation, thereby increasing intelligent efficiency in manufacturing.

12:00 pm to 1:30 pm**LUNCH AND KEYNOTE****The Energy Gang**Session Moderator: **Stephen Lacey**, *Greentech Media*Panelists: **Jigar Shah**, *Jigar Shah Consulting*
Katherine Hamilton, *38 North Solutions***1:30 pm to 3:00 pm****CONCURRENT SESSIONS**Session 4A**IT Security and Privacy and Intelligent Efficiency**Session Leader: **Alan Rose**, *Intel Americas*Panelists: **Jane Peters**, *McAfee*
TBD, *CISCO (invited)*
TBD, *University of Texas System (invited)*

Description: There is much concern over security and privacy of data and addressing these concerns is a requirement if intelligent efficiency is to gain broad acceptance. This session will feature presenters will discuss the challenges and likely solutions to create security at all levels within networks.

Session 4B**Strengthening Whole Building Programs**Session Moderator: **Dan Ohlendorf**, *Pacific Gas & Electric*Panelists: **Tracy Narel**, *EPA Energy Star (invited)*
Leo Carrillo, *Pacific Gas & Electric (invited)*
Badri Raghavan, *FirstFuel Software (invited)*
Dian Grueneich, *formerly California Public Utility Commission (invited)*

Description: New advances in data analytics are rapidly changing the scope and viability of Whole Building approaches to energy efficiency programs. In the era of Big Data, the energy efficiency industry may no longer need to be exclusively reliant on traditional, engineering-based methods to value energy savings. The increasing availability of different types of high quality, high resolution building data, including weather and utility interval meter data, means that statistical approaches to savings valuation can deliver results that meet or exceed those of established approaches at a fraction of the cost. This will enable a new line of performance-based program offerings that unlocks “hard to reach” energy savings in existing commercial buildings while still meeting stringent quality requirements.

Session 4C**Community-based Program Design**Session Moderator: **Jennifer Edwards**, *Center for Energy and Environment*Panelists: **Logan Soya**, *Acquicore*
Marc Brown, *QuadROI*
Anne Evens, *Elevate Energy/My HomeEQ (invited)*

Description: How can cities use emerging energy data to develop, deploy and track energy efficiency programs for greater impact? This session will discuss use cases on the cutting edge of community-based intelligent efficiency—including remote analytics, streamlined district-scale program delivery, engagement of facilities staff, public-engagement platforms, and competitions.

Session 4D

Energy-Water Nexus

Session Moderator: **Barry Liner**, *Water Environment Federation*

Panelists: **Rowena Patawaran**, *Johnson Controls*
Justin Rundle, *Honeywell*
McGee Young, *Meter Hero*
Pete Cavagnaro, *Johnson Controls (invited)*

Description: Water and energy are critical, mutually dependent resources. Integrated data-driven strategies for intelligent operations can allow cities and utilities to optimize their combined water-energy efficiency.

Session 4E

Smart Freight

Session Moderator: **Therese Langer**, *American Council for an Energy-Efficient Economy*

Panelists: **Phil Kaminsky**, *UC Berkeley (invited)*
TBD, *GT Nexus (invited)*

Description: Information and communications technologies (ICT) can reduce the amount of fuel consumed in goods movement by helping shippers and carriers to operate vehicles more efficiently, make better use of the freight transport network, and reduce miles traveled. Topics for this session may include e.g.: applications of vehicle-to-vehicle communication to reduce commercial fuel consumption; use of ICT to expand intermodal freight options; and growth of collaborative distribution.

3:00 pm to 3:30 pm

PM BREAK

3:00 pm to 4:30 pm

CONCURRENT SESSIONS

Session 5A

Measurement & Evaluation 2.0

Session Moderator: **Ethan Goldman**, *Vermont Energy Investment Corporation*

Panelists: **Dan Zasloff**, *Energy Savvy (invited)*
Eric Masanet, *Northwestern University (invited)*
Rafael Friedmann, *Pacific Gas & Electric (invited)*

Description: Measuring efficiency with connected intelligent devices will facilitate M&V tools for next-generation measures and programs. The site-specific variations in savings estimates for Intelligent Efficiency measures require new mass-customized calculation approaches which take advantage of the continuous stream of data from connected devices. M&V 2.0 will provide utilities and efficiency programs the ability to “measure-as-you-go” by using the real-time data from smart meters, building and production management systems, and external sources to determine net savings under any conditions at any time. This session will bring together thought leaders in M&V 2.0 to discuss the latest tools and the results of demonstration projects.

Session 5B

Strategies and Technologies for Systematically Managing Plug-Loads

Session Moderator: **Sameer Kwatra**, *American Council for an Energy-Efficient Economy*

Panelists: **Chris Calwell**, *ECOVA (invited)*
Pierre Delforge, *Natural Resources Defense Council*

Description: Plug-loads such as computers and peripherals, televisions and audio-visual accessories, office equipment, task lights and many others together consume more energy than any other major energy end-use in buildings. While significant device-level savings have been achieved in the past with energy conservation standards and rate payer funded

programs, the next level of savings require a systemic approach to managing plug-loads. This session will explore innovative technologies and strategies for reducing the energy consumption from plug-loads.

Session 5C

Community Resilience & Smart Infrastructure

Session Moderator: **Vicki Arroyo**, *Georgetown Climate Center*

Panelists: **Jeff Williams**, *Entergy Corporation (invited)*
Abigail Ross Hopper, *Maryland Energy Administration (invited)*
David McIntosh, *Siemens (invited)*

Description: State and local governments are increasingly interested in prioritizing resilient investments: those that can withstand increased impacts from climate change and other risks. How can intelligent efficiency enable smarter investments and help to proactively create more resilient infrastructure and communities without significantly increasing utility bills or taxes?

Session 5D

Marketing - Selling Intelligent Efficiency

Session Moderator: **Logan Soya**, *Acquicore*

Panelists: **Sam Brooks**
Brian Snow, *Pristine (invited)*
Shaw Chen, *The Westley Group (invited)*
Nate Niles, *Obvius (invited)*

Description: Market acceptance and adoption of IE technologies and practices will require consumers in all sectors to understand its features and benefits. This session will feature presentations and a panel discussion on how to convey to end users in different sectors (commercial, industrial, public, etc.) the value to them of IE. This session will highlight how efficiency intelligence can benefit the market and energy efficiency in general. Speakers will also talk about the barriers to adoption and explore ways to overcome them.

Session 5E

Travel Behavior and Location Efficiency

Session Moderator: **Sonia Hamel**, *Hamel Environmental Consulting*

Panelists: **TBD**

Description: How intelligent efficiency can shift personal and institutional investment choices in ways that affect travel behaviors, make car-free living convenient for more people, and influence people's choices of destination and activity.

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