



# National Symposium on Market Transformation

## *Efficiency in the Age of Interconnectivity*

March 30 - April 1, 2014 • Hyatt Regency Baltimore • Baltimore, MD

*Presented with Support from U.S. EPA/DOE ENERGY STAR® Programs*

### Sunday, March 30, 2014

12:00 pm to 7:00 pm      Registration      Constellation Foyer

1:00 pm to 5:00 pm      MT 101      Constellation A

Speakers:      **Joanne Morin**, Consortium for Energy Efficiency  
                  **David Cohan**, U.S. Department of Energy  
                  **Jane S. Peters**, Research Into Action

"MT101" is an introductory course for those new to the field who want to learn the fundamentals of market transformation. The session will cover a range of topics including an overview of market transformation as one strategy for driving energy-efficient products and services, administrative models for the delivery of market transformation programs, various program models used to serve different market segments, and program evaluation.

5:30 pm to 7:30 pm      Hospitality      Pisces

### Monday, March 31, 2014

7:00 am to 8:00 pm      Registration      Constellation Foyer

7:30 am to 8:30 am      Breakfast      Constellation C-F

8:30 am to 10:00 am      Welcome & Plenary Session      Constellation A/B

#### **Efficiency in the Age of Interconnectivity**

Moderators:      **Steve Nadel**, American Council for an Energy-Efficient Economy  
                  **Ed Wisniewski**, Consortium for Energy Efficiency

Speakers:      **Penelope Mclean-Conner**, Northeast Utilities  
                  **Clay Nesler**, Johnson Controls

10:00 am to 10:30 am      Break      Constellation Foyer

**10:30 am to 12:00 pm****Concurrent Sessions***Session 1A***Constellation A****Energy Efficiency and the Utility of the Future: What Have We Created and where is It Headed?**

Moderator: **Maggie Molina**, American Council for an Energy-Efficient Economy

Speakers: **Scudder Parker**, Vermont Energy Investment Corporation  
**Gene Rodrigues**, ICF International  
**Ron Lehr**, Attorney and former Colorado PUC member  
**Ed White**, National Grid

Customers are increasingly looking to make smart investments in their buildings to help meet their energy needs. Increased energy efficiency and distributed resource deployment are leading to reduced and even declining electricity demand in parts of the country. At the same time aging utility infrastructure and new planned capital investments indicate increasing costs for utilities and for customers as those costs are spread across declining sales. These changing dynamics can severely stress the traditional regulated utility business model. As the debate about future utility models proceeds, how will energy efficiency (and the broader effort to develop distributed resources) evolve? This session will address the question: "How can the remarkable capacity to help customers lower their costs and achieve system and environmental benefits that has been developed continue to advance?" This session will explore both traditional utility models for delivering efficiency and alternative approaches that are emerging.

*Session 1B***Constellation B****New Frontiers in Evaluation, Measurement and Verification (EM&V)**

Moderator: **Marty Kushler**, American Council for an Energy-Efficient Economy

Speakers: **Julie Michals**, Northeast Energy Efficiency Partnerships  
**Chris Neme**, Energy Futures Group  
**Kevin Lucas**, Energy Market Strategies, Maryland Energy Administration

This session addresses new concepts for improving current practice with efficiency program evaluation, measurement, and verification (EM&V). Two topics will be covered in depth. First, we will hear about the various regional and national efforts aimed at improving the consistency of estimating and reporting EE program impacts, including recent developments driving these efforts. Second, we will learn about how current cost-effectiveness frameworks – including the choice of tests such as the Total Resource Cost (TRC) test – impact MT goals. This includes one state's recent experience with a stakeholder process to understand, decide upon, and screen for program cost-effectiveness. In addition, this session features a bonus introduction to ACEEE's new survey findings on net-to-gross analysis!

**12:00 pm to 1:30 pm****Lunch****Constellation C-F**

Keynote Speakers: **Kelly Speakes-Backman**, Commissioner of Maryland Public Service Commission  
**Mark Case**, Vice President of Strategy and Regulatory Affairs, Baltimore Gas and Electric

1:30 pm to 3:00 pm

Working Sessions

*Residential Track*

Constellation A

**A1: Residential Zero Net Energy: Moving from Homes to Community**Moderator: **Rebecca Foster**, Vermont Energy Investment CorporationSpeakers: **Erin Carroll**, Vermont Energy Investment Corporation  
**Enoch Lenge**, Northeast Utilities

Energy efficiency program providers have taken significant steps to identify the technologies and techniques needed to achieve zero net energy use in homes. As a result of that progress, it is becoming clear that we need to widen our focus beyond stand-alone efficient homes and start to work at the community level. On the one hand, we know that the energy used in the home itself is only part of the picture. As a result, community-scale zero net energy (or near-zero) projects are increasingly factoring in electrical, thermal, and transportation energy use. On the other hand, given the varied housing stock and rate of home turnover, we know that simply incorporating super-efficient designs through upscale custom builders will not result in the savings we desire. In response, leading program administrators are beginning to work at the community scale. This session will explore two projects at the cutting-edge of zero net energy communities: Connecticut's work to transition its new homes program to a zero energy focus and grow it to the community scale (including a 4,000 unit ZNE community in the planning phase now) and a community-wide zero net energy project in Montpelier Vermont that incorporates buildings in all sectors and transportation.

**Discussion Questions:**

- What challenges have programs encountered trying to broaden the scale of zero net energy work?
- What partners have efficiency programs successfully approached on community-scale zero net energy work?
- How can utility incentives be used to support deep energy efficiency and zero net energy goals at the community level?

*Commercial Track*

Constellation B

**B1: Meeting the Challenge of Higher Code Baselines**Moderator: **Jim Edelson**, New Buildings InstituteSpeakers: **Janice Berman**, Pacific Gas & Electric  
**Jessica Rose**, Energy Trust of Oregon

Energy codes serve as the baseline for determining measure cost-effectiveness in utility programs. The significant advances made in the energy codes in the past two code development cycles, as well as increasing standards, are making it more difficult for program administrators to find cost-effective measures to incent, particularly "one-for-one replacement" technologies (lighting!) which have historically made up the bulk of these programs. There are still large savings available but they are in relatively new areas for commercial program savings: design, performance metrics, operations and maintenance, and tenant behavior. This session will address the ways in which several programs are dealing with increasing code stringency and creating long-term roadmaps that chart a course for program efficiency levels that stay a step ahead of codes.

**Discussion Questions:**

- What challenges do increased efficiency stringency in energy codes present for savings opportunities in building efficiency programs?
- What are the characteristics of the building code roadmaps being developed and how do commercial programs intersect?
- How are utility portfolios changing to address the rising baselines and possible need to go past the point of occupancy to address operations and behavior?
- What regulatory approaches are being pursued the challenge of higher code baselines?
- What data needs to be collected to allow for acceptable M&V efforts? What other considerations are required?

**C1: A Shift in Perspective: From Measures to Customers**

Moderator: **Carol Mulholland**, Cadmus

Speakers: **RoseMary Romano**, Another Option  
**Greg Ward**, Consumers Energy

Energy efficiency potential studies used to focus entirely on the technical potential (e.g. what could be achieved if all inefficient equipment could be replaced with more efficient equipment). Over time, potential studies added first the economic potential (e.g. what would make sense if everyone looked at equipment replacement decisions in terms of lifecycle costs) and then, finally, market potential, which acknowledges that consumers are not rational economic actors, but rather, make decisions based on a wide variety of factors.

The evolution in what potential studies look at mirrors the ongoing evolution in energy efficiency programs and for utilities overall. This session will discuss how focusing on the customer rather than on technology can move our industry to a framework that achieves deeper, reliable energy savings. We will feature a utility that has realigned its programs with the customer focus in mind, as well as examples from other industries that begin by asking what it is the customer wants, and then tailors their offerings to meet customers' expressed wants and needs. This session will focus primarily on residential consumers.

**Discussion Questions:**

- How can utilities and program implementers strengthen residential customer relationships?
- What lessons from other industries can we apply effectively?
- How will applying these tools change existing relationships with contractors, manufacturers, and distributors?
- How can stronger customer relationships improve both program design and results?

**D1: ENERGY STAR: Remaining Big Targets within Products for Residential and Commercial Markets**

Moderator: **John Taylor**, Consortium for Energy Efficiency

Speakers: **George Spargo**, Xcel Energy  
**Abigail Daken**, U.S. Environmental Protection Agency

This session asks the question of ENERGY STAR "What's Next?" within the products sector. ENERGY STAR has done a great job on televisions, appliances, central HVAC, light bulbs and many other products. ENERGY STAR has worked with some of these products for over 20 years and some products have already reduced their energy use by up to 90%. Although opportunities to continue to raise the bar exist (EPA has begun to recognize the "ENERGY STAR Most Efficient" products), new products are also likely to be addressed. While ENERGY STAR has initiated whole buildings programs and quality installation programs, this session asks "what are the next big targets within products." In addition to new product categories not yet addressed by ENERGY STAR, (e.g., sump pumps, commercial coffee makers, wireless chargers, residential humidifiers, data center cooling) the session will also explore pathways to maximize savings from fast moving markets currently able to obtain the label (e.g. computers, monitors, set-top boxes, and displays).

Attendees will learn what EPA is currently scoping for expansion of the ENERGY STAR Program, what future products from electronics manufacturers may offer new efficiency opportunities for ENERGY STAR, strategies for expanding awareness of the ENERGY STAR Most Efficient designation, and strategies to address fast moving markets.

**Discussion Questions:**

- What are ENERGY STAR's next big product categories for expansion of the ENERGY STAR Program?
- What innovative strategies is ENERGY STAR applying to the fast moving consumer electronics market?
- What non-efficiency attributes is EPA addressing within ENERGY STAR, and why?
- How will we collectively increase market share on current ENERGY STAR products?
- How will ENERGY STAR Most Efficient grow?
- How can the manufactures help move the market?

**E1: Financing in the Big Picture: Addressing the Full Range of Customer Motivations**Moderator: **Chris Kramer**, Energy Futures GroupSpeakers: **Bruce Schlein**, Citi**Andy Frank**, Sealed**Casey Bell**, American Council for an Energy-Efficient Economy

Up-front costs are just one of a range of barriers to energy efficiency projects. Recent research has shown that financing products that address only this barrier may not be sufficient to transform the market. Approaches that address the full range of customer concerns in different market sectors (e.g., split incentives, customer time horizons, confidence in energy savings, etc.) are more likely to be successful. Perhaps more important than developing innovative products is finding opportunities to incorporate energy efficiency into financial decision-making processes. Drawing on recent reports such as ACEEE's review of financing for multi-tenant buildings, as well as recent residential market research, panelists will discuss opportunities to integrate financing into a big-picture approach that addresses the full range of customer motivations.

**Discussion Questions:**

- How do we bundle energy efficiency into finance other home/building improvements?
- What is the role of boutique or energy efficiency-specific financing mechanisms in the broader market? What are some best practices and how do you develop effective programs?
- How do we effectively address barriers to investment in energy efficiency? How should we develop solutions?

**3:00 pm to 3:30 pm****Break****Constellation Foyer****3:30 pm to 5:00 pm****Working Sessions****A2: Big Action in Big Buildings: Initiatives Moving the Multi-family Building Market**Moderator: **Elizabeth Chant**, Vermont Energy Investment CorporationSpeakers: **Michael Colgrove**, New York State Energy Research and Development Authority**Krista Egger**, Enterprise Community Partners

After decades as the "orphan" of efficiency programs, with so many structural barriers to efficiency investment, there are now great strides being made in multi-family building efficiency. In both market-rate and low-income multi-family housing, more resources are going to these buildings for comprehensive and cost-effective efficiency and renewable energy improvements than ever before. This session will focus on two large-scale multi-family initiatives that have made significant progress in moving markets. Enterprise Community Partners, through the HUD Energy Innovation grant program, is collaborating with several affordable housing providers to develop and test multiple new models to make housing more efficient and communities more sustainable and resilient. NYSERDA's focus on effective work with trade ally networks has broadened the reach and effectiveness of its multi-family programming. This session will introduce and explore the effectiveness of some of the country's best multi-family efficiency programming, with examples from many locales. The perspectives of both program providers and housing providers allow full exploration of the issues.

**Discussion Questions:**

- What barriers to action have each of your programs addressed?
- What role does program-provided technical assistance and capacity-building play? Which technical assistance services are most needed by multi-family building owners? Which are most valued by them? Are there differences in this between market-rate and affordable housing providers?
- How important are incentives and access to financing to making projects feasible and desirable in this market? Any differences between market-rate and affordable housing?
- What do you see as the next wave of program innovation in addressing this market? How might those address the remaining barriers?

*Commercial Track**Constellation B***B2: Achieving Higher Savings with Whole Building Approaches: From Design to Evaluation**

Moderator: **Phil Welker**, PECI  
 Speakers: **Tom Rooney**, TRC Solutions  
**Sean Denniston**, New Buildings Institute

Progressive programs around the country are developing whole building approaches to commercial new construction and existing building projects. Program incentives encouraging use of more complex and integrated design strategies and technology applications are intended to transform the market to deep energy savings and result in more broad application of this best practice approach for design teams to achieve significant energy savings. However, influencing choices on a whole-building basis requires a new structure that allows for early and ongoing involvement by program managers, innovative incentive structures and M&V systems that measure and verify whole-building energy savings. This session will investigate the opportunities and pitfalls of whole building new constructions programs and explain why eventually, all programs will need to go there.

**Discussion Questions:**

- How does a whole building approach challenge the traditional utility program structure? What are the benefits changing business practices?
- What are the different models successfully being implemented and what are the pitfalls?
- What are the savings expectations for these programs and relative costs?
- How do programs approach ongoing needs for M&V and is the ENERGY STAR Portfolio Manager benchmarking system an effective tools for verifying savings? What other options are available?

*Program Strategies Track**Frederick Room***C2: Utility Portfolio Planning: How to Make Sure the Need for Near-Term Savings Doesn't Kill the Long Game**

Moderator: **Jim Merrian**, Vermont Energy Investment Corporation  
 Speakers: **Amber Mahone**, EThree  
**David Nemptow**, Nemptow and Associates

Utilities are often faced with the challenge of creating a balanced portfolio of efficiency measures that typically involves prioritizing measures that have savings benefits in the short term. In the process, efforts that might afford larger cumulative savings in the long run such as nurturing new, emerging technologies or shifting consumer attitudes through financing mechanisms may get ignored in a short-term portfolio.

Meanwhile, pressure to create resource plans for very low-energy futures is mounting as cities and states take a growing interest in curbing carbon emissions from buildings. This panel will discuss the intersection of technical potentials, estimating methodologies, and program delivery mechanisms that include short- and long-term strategies to fill the pipeline for the future and promise the highest return on energy savings. We will also examine ways to keep “baseline creep” from killing cost-effectiveness, driving program back to short-term strategies and impeding full transformation of the marketplace.

**Discussion Questions:**

- What role can regulators play in ensuring that near term energy efficiency savings are also supportive of long-term strategies that will drive market transformation?
- How can regulators ensure that the concern for precise “attribution” of savings to efficiency efforts does not undercut the ability of EE programs to provide sustained engagement in markets? Should new codes and standards, for instance, automatically become the new baselines for claimed savings?
- How can the industry better recognize the value of carbon-reducing strategies, including delivered fuel efficiency, heat pumps and vehicle electrification that may increase electric usage in some instances, but provide customer and societal benefits?
- Is it time to rethink the end result we want out of our planning process and do our current planning processes fit our future needs?

*Product Strategies Track***Annapolis Room****D2: Supporting Successful Assessment of Emerging Technologies through Effective Collaboration**

Moderator: **Jennifer Anziano**, Consortium for Energy Efficiency

Speakers: **Ryan Fedie**, Bonneville Power Administration  
**Cindy Regnier**, Lawrence Berkeley National Laboratory

Despite the significant investment in the assessment of emerging technologies, many challenges remain to successful transition of opportunities into new measures. To address this challenge, many stakeholders are seeking effective collaboration to support the identification of promising opportunities, reduce unnecessary duplication of assessment, and streamline the transfer of promising emerging technologies into programs. This session will present concepts and considerations important to the assessment and adoption of emerging opportunities as identified by test bed facilities demonstrating savings and program administrators assessing the program readiness of opportunities. This session will aim to highlight broad concepts and examples relevant across gas and electric emerging technologies, market services, or program approaches. Participants will have the opportunity to engage in a discussion focused on how to further enhance existing assessment and collaboration to accelerate the assessment and adoption of emerging technologies.

**Discussion Questions:**

- The panelists represent two pieces of the ET pipeline. What other aspects of the pipeline might benefit from more effective collaboration to streamline the assessment and adoption of emerging technologies?
- How might program administrators (and other stakeholders delivering efficiency) better leverage the work of those like the LBL FLEX Lab and others?
- How might the needs of program administrators (and others delivering efficiency) be leveraged to inform the work of test beds?
- In addition to the opportunities presented, what are other ways to support successful adoption of promising emerging technologies?

*Financing Track***Baltimore Room****E2: Topics in Risk and Risk Management for Efficiency Finance**

Moderator: **Casey Bell**, American Council for an Energy-Efficient Economy

Speakers: **Patrick H. Grogan**, Energi, Inc.  
**Elizabeth Stein**, Environmental Defense Fund  
**Philip Henderson**, Natural Resources Defense Council

Perceived uncertainty surrounding the value of investments in energy efficiency finance exist from the both the customer, lender and investor perspectives. From a performance perspective, building owners may have concerns over whether energy savings will be realized as predicted. Limited tools are available that predict how those energy savings translate into financial value. From a lender perspective, it is challenging to determine how

financial products with new and unique characteristics, such as attachment to a home's meter will perform. From an investor perspective, the financial performance of loans for energy efficiency are unproven. This panel will discuss tools and approaches that help to mitigate performance and financial risk.

**Discussion Questions:**

- How do different types of risk affect the demand for energy efficiency investments?
- Is there a role for policy to play in creating a more efficient market for energy efficiency products and services?

**5:30 pm – 7:30 pm** Reception Pisces

**Tuesday, April 1, 2014**

**7:00 am to 3:00 pm** Registration Constellation Foyer

**7:30 am to 8:30 am** Breakfast Constellation C-F

**7:30 am to 8:30 am** ACEEE Ally Breakfast Pisces

*(For ACEEE current Ally members by invitation only)*

**8:30 am to 10:00 am** Concurrent Sessions

*Session 2A*

Constellation A

**Regional Roundup**

Moderator: **Ed Wisniewski**, Consortium for Energy Efficiency

Panelists:

<b>Midwest:</b>	<b>Doug Newman</b> , Midwest Energy Efficiency Alliance
<b>Texas:</b>	<b>Mike Stockard</b> , Oncor
<b>New England:</b>	<b>Jim O'Reilly</b> , Northeast Energy Efficiency Partnerships
<b>New York &amp; New Jersey:</b>	<b>Rebecca Craft</b> , ConEd
<b>Southeast:</b>	<b>Jenah Zweig</b> , Southeast Energy Efficiency Alliance
<b>Southwest:</b>	<b>Howard Geller</b> , Southwest Energy Efficiency Project
<b>Northwest:</b>	<b>Susan Stratton</b> , Northwest Energy Efficiency Alliance
<b>California:</b>	<b>Jan Berman</b> , Pacific Gas & Electric

This perennial session will explore notable changes to program funding, impacts, approaches and policy across various geographies of significance throughout the U.S. Summary results of CEE's eighth consecutive annual budgets and impacts report for the US and Canada will be presented. Assembled panelists will include a range of perspectives including those having the full spectrum of obligation and responsibility for program administration to those advocating for favorable state and regional efficiency policies. Panelists will be asked to comment on emerging trends, recent successes and developing challenges facing their respective organizations.

Attend this session to learn more about the emergence of the Program Administrator Industry and policy and program developments.

*Session 2B***Constellation B****Revisiting the Market Transformation Cycle for Emerging Technologies**Moderator: **Allen Lee**, CadmusSpeakers: **Neal Grigsby**, Northwest Energy Efficiency Alliance  
**Puja Vohra**, National Grid

The traditional market transformation model entails Emerging Technology (ET) programs identifying a technology, Voluntary Programs (VP) deploying and disseminating the technology through incentives and education, and then the Codes & Standards (C&S) programs mandating an ever-increasing minimum efficiency level to address the “laggards” and permanently transform the market. This paradigm has served many technologies well, but it is increasingly breaking down or becoming more complex as a result of accelerated and more progressive state and federal standards. Furthermore, the “pass-the-baton” relay approach of going from ET to VP to C&S can often result in inefficiencies and less than optimal overall energy savings (especially if stakeholders or agencies operate in only one or two of the areas). Also, how can competition for savings/dollars between VP and C&S programs be reduced or eliminated. This panel will discuss innovative ways that ET, EE, and C&S programs can become better integrated and push for faster and smarter market transformations including the need for a longer-term (5-10 year) view of the market transformation goals that allows development of an integrated roadmap of milestones along the market transformation curve.

**10:00 am to 10:30 am****Break****Constellation Foyer****10:30 am to 12:00 pm****Concurrent Sessions***Session 3A***Constellation A****Evaluating the Impact of Smart Grid on Efficiency Programs**Moderator: **John Taylor**, Consortium for Energy EfficiencySpeakers: **Andy Vota**, Efficiency Vermont  
**Robert Wilkins**, Danfoss and Chair of the AHRI Smart Equipment Committee  
**Ben Bixby**, NEST

The emergence of smart grid infrastructure in some states and provinces could significantly impact voluntary efficiency programs with both new opportunities and new challenges. To the extent new efficiency measures (traditional or behavior based) are promised, it raises expectations among clients, regulators, and the public to deliver on smart grid investments. It also may elevate hopes of environmental benefits from the consumer’s perspective. However, DSM program operators, who are on the hook to deliver on these expectations, must also assess and communicate to customers whether the realities match up with their expectations given their local situation. In terms of opportunity, a smart grid of connected devices may also present opportunities for developing customer insights and more accurately verifying program results but may raise privacy concerns among some customers. Integrated efficiency and demand response programs may require new communication strategies to customers but will also increase the potential value proposition of a connected environment. Manufacturers in multiple sectors are now developing product capabilities that are intended to enable energy-related services that go above and beyond traditional energy efficiency. However, most manufacturers have been hesitant to deploy these “smart” products on a broad scale until they see clear customer demand. This session will highlight examples of industry taking proactive steps to develop connected products that will support the objectives of DSM administrators and appeal to consumers at an acceptable price point. AHRI – trade association of HVAC, refrigeration, and water heater manufacturers – is working closely with DSM program administrators to standardize the performance requirements of a connected, DR-ready, air conditioner. NEST is actively marketing energy services that are enabled by a communicating thermostat. These industry speakers, and a representative of the energy efficiency program industry, will explore how efficiency programs can respond to the challenges and opportunities presented by smart grid from the perspective of the customer, the DSM program administrator, the regulator, and the manufacturer. Ample time will be reserved for attendees to ask questions and share their experiences.

**Discussion Questions:**

- What role will connected devices play in EM&V of DSM programs?
- How can stakeholders work together to establish realistic consumer expectations of smart products and the smart grid?
- Do regulators value the benefits that smart grid can afford efficiency programs?
- How should administrators, manufacturers and regulators manage customer concerns about data privacy within the smart grid?

*Session 3B***Constellation B****Greening the Workforce: Opportunities for Commercial Facilities Savings through Innovative Training**

Moderator: **Julianne Meurice**, Navigant Consulting

Speakers: **Laure-Jeanne Davignon**, Interstate Renewable Energy Council  
**Jennifer Allen**, Midwest Energy Efficiency Alliance  
**Patrick Dail**, City University of New York, CUNY

This panel will focus on innovative Commercial Facilities Personnel training programs from both a national and regional perspective. An overview of some of the latest program models across the nation will be presented, including the Building Re-Tuning program, Workforce Pilot and Building Operator Certification Veterans Program. The panel will discuss how national standards translate to regional programs and how this model is affected by the push for accreditation and what that means for increasing competitiveness in the green jobs sector. The panel will also seek to address strategies for post-graduation support and engagement for participants, including career development and continuing education opportunities.

**12:00 pm to 1:15 pm****Lunch****Constellation C-F****1:15 pm to 2:45 pm****Working Sessions***Residential Track***Constellation A****A3: Transforming the Residential Energy Efficiency Market through Energy Labeling and Disclosure**

Moderator: **Emily Levin**, Vermont Energy Investment Corporation

Speakers: **Diane Ferington**, Energy Trust of Oregon  
**Patrick MacRoy**, Elevate Energy

Disclosure of the energy performance of residential homes is occurring in a number of different ways in the US. Currently, more than fourteen jurisdictions in the US require some type of residential energy disclosure, and a number of voluntary programs have incorporated energy labeling into program strategies. This session will explore different applications of energy labeling, with a focus on how this strategy is being used to encourage retrofit activity in existing homes and make energy efficiency visible in the real estate market. It will focus on results from existing efforts to incorporate energy performance information into energy efficiency programs. It will also explore how existing real estate mechanisms can be leveraged at the time of sale of a home to include energy performance of a home, and how multiple stakeholders, including energy efficiency program administrators, city officials, and realtors have collaborated to make this possible. The session will also include a discussion of national efforts to increase the consistency and scalability of residential labeling through data and certificate standards, as well as increased coordination between leading states.

**Discussion Questions:**

- What elements of residential energy scores and labels are most successful in motivating homeowners to make efficiency improvements?
- How can retrofit programs ensure that information about energy-efficient homes is factored into real estate transactions and appraisals?
- How can state and local efforts to promote residential labeling be coordinated nationally to increase consistency and scale up the impact?
- Can voluntary efforts succeed at making energy efficiency visible in the market, or are mandatory approaches needed?

**B3: Commercial Lighting Program Design for a Dynamic Market**

Moderator: **Helen Aki**, Consortium for Energy Efficiency

Speakers: **John Wilson**, Bonneville Power Administration  
**Tom Coughlin**, National Grid

Faced with rapid product development cycles, new lighting services, rising federal efficiency standards and tightening building code baselines, energy efficiency programs are exploring new ways to capture savings in commercial lighting applications and drive the market towards more efficient solutions. This session will consider a range of program design approaches that seek to adapt to changing conditions while effecting market transformation mindful of product energy performance and quality as well as how those products work in a system context to deliver greater DSM benefits. Participants will learn about and deliberate on ways programs are adapting to this dynamic market context: Can upstream/midstream program approaches achieve savings from LEDs using the same strategies as used with fluorescent T8s? What are the key considerations and successful approaches to measure and claim savings from advanced lighting controls? How is the market shifting from product-level efficacy to characterize and promote efficient system-level performance, and what can programs do to facilitate or expedite this transition?

**Discussion Questions:**

- What proportion of savings claimed by energy efficiency programs today result from prescriptive upstream or midstream programs targeting 1-for-1 product replacements, versus downstream and/or custom programs to encourage other strategies (fixture or light level reduction, advanced controls)? What is the prognosis of how that will change in the next three to five years, in light of rising federal standards and building energy codes?
- Can upstream or midstream, prescriptive incentive programs be repurposed to drive down costs and accelerate market penetration with 1-for-1 replacements with LED products as they've done with fluorescent T8s? If so, how? If not, why?
- What are some approaches that have been used with success to provide incentives for a "deep lighting retrofit" that might involve: per fixture wattage reduction, overall load reduction through reducing fixture quantity, and/or kWh savings through advanced controls? \$/watts reduced? \$/watts controlled? \$/kWh reduced? \$/sf based on the technology that's been installed?
- If programs currently treat most projects with the characteristics described above as custom projects, is there a pathway—in at least some applications—towards defining prescriptive measures? Are there any examples of successful, approved approaches?

**C3: The Promise of Connected Devices and the Preparation Required to Realize the Savings Potential**

Moderator: **John Taylor**, Consortium for Energy Efficiency

Speakers: **Ruth Kiselewich**, Baltimore Gas & Electric  
**Ethan Goldman**, Efficiency Vermont

Connected devices and data analysis software can provide energy savings and load shifting for the utility while increasing comfort and convenience for the customer. But while the increased affordability and operational benefits are encouraging both commercial and residential customers to adopt these technologies, quantifying the energy and demand benefits still presents a challenge. Various technical and methodological solutions are being pursued, including low-cost building monitoring and control systems, software to aggregate and analyze building performance, standards for documenting and communicating building data, equipment capable of responding to utility DR signals through open standards, application of behavioral insights to program design, and standardized measurement procedures. In this panel we will discuss some of the recent work by efficiency program administrators toward achieving the efficiency and load shifting potential of connected devices, as well as the key program design considerations that still must be explored and addressed.

**Discussion Questions:**

- What are the key consumer engagement drivers of a connected device (efficiency, remote control, interoperability, or other)?
- How do behavior change programs leverage connected devices to shift load and save energy?
- What are the biggest hurdles to realizing quantifiable savings once the technologies are installed? Do the savings justify any incremental costs associated with achieving connectivity?
- What new systems or standards have you seen that are showing promise or demonstrating success at driving energy savings?
- Beyond convincing customers that a technology can deliver energy savings, can the savings be measured and documented to the satisfaction of efficiency program implementers and evaluators? Where are the remaining challenges and possible solutions in this regard?
- What are some success stories with intelligent efficiency and behavior change where the customer achieved quantifiable savings due to a connected device?

*Data and Evaluation Track**Annapolis Room***D3: Market Transformation with Data Driven Analytics: Emerging Tools and Standards**Moderator: **Jayson Antonoff**, Institute for Market TransformationSpeakers: **Elena Alschuler**, U.S. Department of Energy  
**Leo Carrillo**, Pacific Gas & Electric

Although different actors – including local and national governments, utilities, and building owners – have been pouring millions of dollars annually into measures to make buildings more efficient, there has historically been very little data available on how well buildings are actually performing, or on the effectiveness of these interventions. This situation is now changing rapidly. Through a number of new technologies and initiatives now underway society is on the verge of a transformational change, with data about building characteristics and performance becoming ubiquitous.

Leading companies are bringing together deep data analytics, building science and software development to create the new platforms that utilities, building owners and property managers need to drive mass-scale energy efficiency. In addition, the DOE is leading initiatives to create the common standards and infrastructure needed to facilitate sharing of data across different systems. The panel will provide an update on the state of the tools and standards that are being developed – allowing access to data both at the whole building and at the system level – and how they relate to ENERGY STAR Portfolio Manager to create an infrastructure that will facilitate an open exchange of building performance data. The panel will share examples of how utilities, city governments and others can begin to use this data to shape public policies and the design of demand side management programs.

**Discussion Questions:**

- What barriers are preventing more rapid adoption of these data driven approaches?
- What is the value proposition for utilities – does visibility into what’s happening “behind the meter” make a difference for DSM programs?
- What types of data are most critical for transforming the market for energy efficiency, and where will this data come from?
- What are the opportunities, and the key challenges of embracing analytics as the next frontier in driving commercial building energy efficiency savings?
- Remote audits are a natural application for advanced data analytics, but there is potential for M&V as well. What are we seeing in terms of potential impact of analytics on EM&V?
- What roles have utilities, city/state/federal government, and the private sector played so far in creating, sharing, collecting and analyzing building performance data? How could/should those roles change in the future?

**E3: Benefits and Burdens of Attributing Non-Utility Energy-Efficiency Savings to Utility-Sponsored Programs**

Moderator: **Douglas Mahone**, TRC Solutions  
 Speakers: **Michael Messenger**, Itron  
**Robert Wirtshafter**, Wirtshafter Associates, Inc.

There is an expanding energy efficiency landscape offered by utilities and non-utility entities and properly attributing benefits across all organizations is an increasingly important topic. This session will address the advantages and disadvantages of implementing attribution of non-utility EE savings to utility EE programs, assess various approaches to attributing benefits, provide analysis on which non-utility programs could be included in utility EE programs, and address joint management of non-utility programs alongside utility energy efficiency programs.

**2:45 pm to 3:00 pm****Break****Constellation Foyer****3:00 pm to 4:30 pm****Working Sessions***Residential Track***Constellation A****A4: Opportunities in Residential HVAC**

Moderator: **Lauren Liecau**, Consortium for Energy Efficiency  
 Speakers: **Glenn Hourahan**, Air Conditioning Contractors of America  
**Scott Yee**, Midwest Energy Efficiency Alliance

Improper installation can negatively impact the performance of even the most efficient HVAC equipment, with energy losses resulting from improper refrigerant charge, incorrect air flow, oversized equipment, or leaky ducts. Given that an estimated half of residential energy use is attributable to HVAC, ensuring that equipment is performing as efficiently in the field as expected is an increasingly important goal for utility programs. This session will explore how efficiency programs can effectively incorporate the quality installation of residential HVAC equipment. In addition, participants will discuss the role that diagnostics and fault detection could eventually play in realizing savings from improved installation and maintenance practices.

**Discussion Questions:**

- What are the challenges in quantifying the value of quality installation?
- What energy savings can be attributed to quality installation and what information would utility programs need to claim those savings?
- What types of utility incentives and program structures are in place, or being planned, to encourage quality installation and proper maintenance of HVAC equipment?
- What do the different stakeholders need to understand in order to ensure a robust QI program?
- What opportunities and challenges do fault detection and diagnostics present?

*Commercial Track***Constellation B****B4: Energy Ratings and Disclosure Policies: Experience from the Field**

Moderator: **Andrea Krukowski**, Institute for Market Transformation  
 Speakers: **Rebecca Baker**, City of Seattle, Washington  
**Marshall Duer-Balkind**, District Department of the Environment

Existing U.S. state and city building energy benchmarking policies currently impact more than 50,000 properties and 4.9 billion square feet of real estate annually. Major cities such as New York City and Seattle have now had programs in place for several years, and have been able to gather and distribute detailed performance data about their local building stock.

This session will look back on these programs to draw lessons from both successful and unsuccessful rating and disclosure efforts, highlighting strategic and technical issues that have the potential to make the difference between adoption and rejection of these policies. For example, how have thorny issues such as data privacy during disclosure, access to the necessary information, and misconceptions on the part of realtors and some property owners been addressed? By understanding these lessons—the value of political leadership, the effect of bundling commercial and residential requirements together, the benefits of effective stakeholder engagement, legitimate concerns regarding rating systems, and the impacts on market transactions and consumer costs—proponents are more likely to realize the promise of rating and disclosure policies.

We will also explore how individual cities are beginning to use the aggregate building performance data they are compiling, and their next steps in data analysis. We will discuss how cities are applying the data to develop more effective energy efficiency policies and programs, and present on what the first data analyses have shown about the impact of the benchmarking requirements.

**Discussion Questions:**

- What are some of the key success factors to consider in order to successfully adopt, design, and implement a rating and disclosure program?
- How are government policy makers and utility program administrators using the data that is coming out of these programs, and what have they learned so far?
- How are thorny issues, such as misconceptions on the part of realtors and some property owners, being addressed?
- How are the first years of data analysis being used to better engage stakeholders and respond to concerns?
- How are these programs impacting market transactions and consumer costs?
- How can the results of the analyses of the first datasets improve benchmarking policies and compliance?

*Program Strategies Track***Frederick Room****C4: CHP Program Findings and Lessons**

Moderator: **Ted Jones**, Consortium for Energy Efficiency

Speakers: **Gearoid Foley**, Mid-Atlantic CHP Technical Assistance Partnership  
**Bill Wolf**, Baltimore Gas and Electric

Combined heat and power (CHP) remains a significant, underutilized opportunity to advance energy efficiency and reliability at industrial, commercial and institutional facilities. Moderate natural gas prices, environmental requirements, a revival of manufacturing and increased attention to energy reliability have renewed interest in CHP and new initiatives by government and states and utilities. The speakers, joined by discussants, will provide the multiple perspectives of utilities, CHP project proponents, technical assistance providers, and analysts to illuminate policies and programs that can advance CHP implementation and derive lessons that can be shared.

**Discussion Questions:**

- What elements do project owners and developers need for successful CHP deployment and what are the impediments?
- Given the current states of technology, economics and policies, what are the most attractive applications for CHP? Which sectors and applications offer the most potential? Which are most repeatable?
- From a utility program perspective, what are some of the biggest attractions and barriers to supporting CHP applications? What features can be make CHP attractive for utilities and their efficiency programs?
- How can CHP support energy resilience and reliability?
- What policies can facilitate CHP? What useful roles can government (federal, state and local) play?

**D4: Driving Efficiency with Non-Energy Benefits**

Moderator: **Niko Dietsch**, U.S. Environmental Protection Agency

Speakers: **Ken Colburn**, Regulatory Assistance Project  
**Erin Malone**, Synapse Energy Economics

State regulators have historically focused on the set of efficiency benefits that accrue to the energy system and can be readily monetized. Other benefits are typically regarded as externalities and are not considered. A key reason is that they are difficult to analyze and quantify. However, there is a growing effort to identify these non-energy benefits (NEBs) and develop ways to measure them. There is also more real-world experience incorporating NEBs into cost-benefit accounting. For example, jurisdictions have found that measures such as solid state lighting with advanced controls have the potential to deliver improved occupant productivity, which dwarfs the value of energy savings. This session will describe similar efforts to value NEBs and use them to accelerate market transformation.

**Discussion Questions:**

- What are the key NEBs that have been regarded as “externalities” and typically not evaluated, despite clear evidence of the magnitude of these benefits to society?
- How can efficiency programs promote non-energy benefits within regulatory, programmatic, and budgetary constraints in order to meet MT goals?
- Where have NEBs been integrated as part of cost-benefit tests and what are implications of this change to program design?
- What work products have been developed in the past 12 months that discuss or recommend methods of computing NEBs? What guides have been developed recently that focus on justifications for the inclusion of more NEBS in benefit cost tests
- What types of evaluations can support increased efficiency investments by accounting for and fully valuing the range of efficiency benefits?
- What are some case studies of how energy regulators have prioritized NEBs and have coordinated with other state entities responsible improvements in air, water, health, low-income assistance, and economic development?

**E4: New Approaches to Behavior Programs: Social Media and Gamification**

Moderator: **Susan Mazur-Stommen**, American Council for an Energy-Efficient Economy

Speakers: **Kathy Kuntz**, Cool Choices  
**Natalie Zandt**, ICF International

We would like this session to help participants grow in awareness of the potential value behavior-based programs using such approaches as games and social media can have for their energy efficiency portfolio. Attendees will learn that these types of programs produce tangible and sustainable savings. This session will frame what level of savings practitioners have seen through implementation of innovative game and social media programs.

Motivating people to save energy through competition has always been a promising idea, at least in theory. In the past common barriers to implementing successful energy saving competitions included: lack of a platform to carry out the competition, difficulty maintaining customer engagement, and ease of quantifying results. Leveraging insights from the social sciences, behavior programs seek to transform social norms while saving energy, water and reducing waste. Utilities now have the ability to easily implement energy savings challenges, engage customers to participate, and quantify savings results.

**Discussion Questions:**

- What are challenges unique to game-based programs?
- How does the use of social media overcome classic barriers to participation?
- What levels of energy savings are possible through gamification?
- What evaluation approaches are effective at quantifying savings from social media programs?
- How cost effective do these types of programs appear to be?

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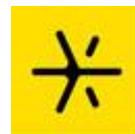
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