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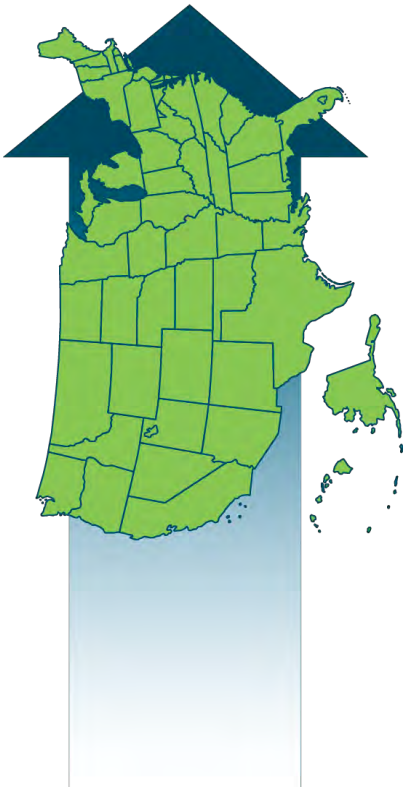

Forum on Enhancing the Delivery of Energy Efficiency to Middle Income Households: Discussion Summary

Residential Retrofit Working Group

September 2012

The State and Local Energy Efficiency Action Network is a state and local effort facilitated by the federal government that helps states, utilities, and other local stakeholders take energy efficiency to scale and achieve all cost-effective energy efficiency by 2020.

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Forum on Enhancing the Delivery of Energy Efficiency to Middle Income Households: Discussion Summary was developed as a product of the State and Local Energy Efficiency Action Network (SEE Action), facilitated by the U.S. Department of Energy/U.S. Environmental Protection Agency. Content does not imply an endorsement by the individuals or organizations that are part of SEE Action working groups, or reflect the views, policies, or otherwise of the federal government.

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1. Introduction

The State and Local Energy Efficiency Action Network (SEE Action) is a state and local effort facilitated by the federal government that helps states, utilities, and other local stakeholders take energy efficiency to scale and achieve all cost-effective energy efficiency by 2020.[1] The Residential Retrofit Working Group (Working Group) leads SEE Action's effort to help state and local decision makers significantly increase the number of comprehensive, durable, performance-based home energy upgrades through a robust, sustainable home performance industry. The working group has identified existing barriers in the residential sector to reaching this goal, which are outlined in its blueprint.[2]

To address the broad challenges facing large-scale implementation of energy efficiency home retrofits for the middle income population, the Working Group hosted a four-hour forum as part of the ACI National Home Performance Conference on March 26, 2012, in Baltimore, Maryland. The forum brought together program managers, policymakers, and contractors who aim to expand or strengthen their energy efficiency program design and delivery services for middle income households.[3] Objectives of the forum included identifying specific strategies to better serve this target market, as well as providing a medium for participants to initiate ongoing discussions and collaborations to share successful strategies to overcome barriers. Attended by nearly 100 participants, the forum was facilitated by Karen Hamilton, Director of Residential Energy Services at the New York State Energy Research and Development Authority (NYSERDA) and a member of the Working Group.

1.1 Middle Income Households

Middle income households—defined as households with an annual income of between $32,500 and $72,500[4]—have significant energy savings opportunities, but often participate in energy efficiency programs at lower rates than their peers. Energy improvements have the potential to provide significant benefits to this population by lowering energy bills, increasing integrity of homes, improving health and comfort, and reducing exposure to volatile energy prices. Middle income households are responsible for approximately one-third of U.S. residential energy use, suggesting that increasing the energy efficiency of their homes is important to delivering public benefits such as reducing power system costs, easing congestion on the grid, and avoiding emissions of greenhouse gases and other pollutants.[5]

Several challenges exist that prevent large-scale implementation of residential energy retrofits by the middle income population. The middle income population often does not have the financial resources to invest in the energy efficiency of their own home. Specifically, obtaining loans for retrofits can be difficult as many of these households are credit constrained or do not have sufficient credit histories, compounded by the recent credit crisis. Subsidized energy efficiency retrofit programs such as the federal Weatherization Assistance Program[6] often have strict income eligibility criteria and are typically not available to the middle income population.

1.2 Forum Overview

As a basis for further discussion, the forum highlighted three successful, innovative state and local program development and implementation strategies to increase the delivery of energy efficiency to middle income households. Presented programs were selected based on demonstrated creativity and innovation, the degree to which they could be replicated in other regions, and the potential for accelerating market development and

[1] For more information on SEE Action, visit www.seeaction.energy.gov.
[2] View the Working Group Blueprint at: www1.eere.energy.gov/seeaction/pdfs/residentialretrofit_blueprint.pdf.
[3] The forum agenda and attendee list are presented in Appendix A and Appendix C, respectively. Presentations can be downloaded at: www1.eere.energy.gov/seeaction/pastevents.html.
[4] These 38.5 million middle income households are broadly defined as the middle third of U.S. households by income, and constitute nearly one-third of U.S. households.
[5] Zimring, M., et al. (2011). *Delivering Energy Efficiency to Middle Income Single Family Households*. Lawrence Berkeley National Laboratory. http://eetd.lbl.gov/ea/emp/reports/lbnl-5244e.pdf.
[6] For more information about the U.S. Department of Energy's Weatherization Assistance Program, visit: www1.eere.energy.gov/wip/wap.html.

reducing dependency on public resources. Additional detail on some of these strategies and programs is available in Lawrence Berkeley National Laboratory's report, *Delivering Energy Efficiency to Middle Income Single Family Households*.[5]

- **Strategy 1: Start with Basic Retrofits Before Expanding to Whole-Home.** This strategy focuses on beginning program services with small, simple, and low-cost projects, such as insulation and air sealing. This approach can help secure initial homeowner interest and participation, which can be grown over time to include system-wide replacement and whole-home upgrades. *Presenters: Gavin Hastings, Arizona Public Service Company; Carl Nelson, Center for Energy and Environment in Minnesota.*
- **Strategy 2: Expand Beyond Energy Efficiency Work.** This strategy emphasizes incorporating non-energy components and benefits into energy programs to attract additional homeowner participation. Non-energy considerations can include home rehabilitation or health and safety improvements. Additionally, consumers interested in investing in renewable energy for their homes (e.g., installation of solar photovoltaic panels, solar thermal, geothermal) are often receptive to energy efficiency investment but may not have been aware of such opportunities. *Presenters: Ken Strong, City of Baltimore; Ryan Clemmer, Clean Energy Works Oregon.*
- **Strategy 3: Expand Access to Credit.** This strategy promotes energy efficiency through providing greater access of middle income households to traditional financing (e.g., through credit enhancement or the development of financing mechanisms that specifically target middle income households). *Presenters: Jeff Pitkin, NYSERDA; Joe Huntzinger, Indianapolis Neighborhood Housing Partners.*

Each program presented has sufficient history to demonstrate longevity and continuity; most have leveraged public funding in combination with homeowner investment. The programs incorporated tactics for motivating consumers, identified issues that mattered most to their participants, adapted their programs to appeal to consumer interest, provided enabling financial products to break down economic barriers, and converted nominal consumer interest to must-have demand.[7]

[7] See presenter slides for program details, available at: www1.eere.energy.gov/seeaction/pastevents.html.

2. Forum Discussion and Key Recommendations

Forum participants were asked to frame their discussion in the context of program opportunities (i.e., optimal circumstances for reaching the middle income population), challenges (i.e., obstacles to implementing the strategies discussed), and needs (i.e., tools, policies, or information needed to reach the middle income market). The results of the discussion, including considerations and recommendations for program design and implementation, are presented below and organized by theme:[8]

- Improve program marketing and messaging
- Evaluate and improve program implementation through data collection and analysis
- Improve energy modeling and information for program participants
- Evaluate and address regulatory hurdles
- Improve consumer education and awareness
- Develop and improve access to financing mechanisms available to middle income households
- Address financing obstacles that inhibit large-scale lending and the attraction of capital markets.

2.1 Improve Program Marketing and Messaging

A key barrier to middle income participation in residential energy efficiency programs is a basic lack of understanding of opportunities and benefits of energy efficiency program offerings, including energy savings, cost savings, and other ancillary benefits. By further identifying and analyzing existing programs that successfully communicate these benefits to middle income customers, best practices can be replicated. Forum participants recommended the following strategies for consideration by program administrators.

- Identify common contradictory or false messages about energy efficiency savings (e.g., inaccurate payback periods for energy efficiency improvements) and develop marketing strategies to combat these misconceptions.
- Increase coordination and message consistency between the program administrators and the contractors delivering services to avoid sending mixed messages to the customer that result in confusion or reluctance to participate. For example, if a contractor recommends multiple energy saving measures as the result of an audit, yet the efficiency program only incentivizes one measure, this discrepancy could lead the client to believe that non-incentivized measures are a poor investment.
- Identify key intervention points, and associated messaging strategies, when action by middle income households to participate in an energy efficiency program is most likely to occur (e.g., early winter bill shock, early homeownership, failure of HVAC equipment).
- Experiment with and collect data on time of sale/lease/renovation requirements for home energy audits, labeling that discloses information about energy costs and/or the home's efficiency performance, and retrofits to determine when consumers are most likely to make energy efficiency investments and at what magnitude.
- Develop effective and affordable tools for program administrators to conduct market assessments, identify target participants, and track their responses to program offers and campaigns. For example, sources of public data that identify characteristics of homeowners in a particular region such as

[8] Detailed forum proceedings can be found in Appendix B.

preferences for "green" activities, income range, vintage of homes, and building permits provided for remodeling are useful for contractors in identifying potential customers. Digitally mapping geographic areas with geographic information systems (GIS) would be a helpful tool for contractors.

- Catalogue statistics on health concerns that can be mitigated through energy efficiency retrofits (e.g., alleviation of asthma and allergies through better ventilation) and effective media through which to market these ancillary health benefits.
- Collect data on participant acquisition costs and determine whether they differ for middle income households versus other market segments to develop accurate program cost projections and inform program business models.

2.2 Evaluate and Improve Program Implementation through Data Collection and Analysis

Detailed and accurate data tracking—including participant characteristics, energy savings, and program costs—allows program administrators to evaluate program success and improve effectiveness over time. Specific comments and ideas from forum participants included the following.

- Track interactions and organize business practices using a customer relationship management model—including how the participants were contacted, what incentives were offered, how and whether the customers responded, what action they took, and what investments they made.
- Identify which off-the-shelf software has been beneficial to program administrators and what level of customization and costs were required. Additionally, identify programs that had success in developing "home-grown" systems, including what factors enabled their success.
- Develop security and privacy policies and protocols for any personally identifiable information collected.
- Track remaining service life of household major appliance and energy systems including where and when replacement presents an opportunity for investment in energy efficiency upgrades (e.g., HVAC system).
- Document successful financing program practices by creating a single, easy-to-access database of loan underwriting criteria for programs with high lending rates for energy efficiency upgrades. Include the following criteria: terms, approval criteria (e.g., FICO scores, debt-to-income ratios), program features, loan performance (e.g., default rates), and energy savings.
- Quantify and monetize non-energy benefits of programs, such as health and safety benefits, reduced illness and hospitalization, and building rehab leading to increased property value.
- Use information from utility bills pre- and post-retrofit to determine actual energy savings and bill reductions. Promote ways for households to gain access to and interpret energy use data such that energy and cost savings are highlighted. Use this data to improve accuracy of energy savings projections and to inform program service offerings based on actual energy savings data.

2.3 Improve Energy Modeling and Information for Program Participants

The middle income market segment is financially vulnerable; energy and cost savings estimates of energy efficiency measures need to be accurate and transparent to allow potential customers to not only understand their anticipated energy savings from implemented retrofits, but also provide a level of assurance in the predicted performance of the measures. Specific comments and recommendations from forum participants included the following.

- Develop more accurate, trustworthy software and modeling tools that estimate energy savings that will result from residential retrofits that include regional and climatic considerations.
- Continue to encourage efforts and facilitate an environment through which meaningful, reliable home energy scores and ratings are developed and provided. Work toward a goal of consistent measurement so that in instances where a variety of options are offered (e.g., Home Energy Rating Score Index from the

Residential Energy Services Network, DOE's Home Energy Score, Earth Advantage Institute's Energy Performance Score), homeowners receive comparable evaluations and energy savings projections.

- Determine where inconsistencies in energy savings forecasts between different modeling software suites exist and work with software developers to improve accuracy of models and results.

2.4 Evaluate and Address Regulatory Hurdles

Much of the funding for middle income energy efficiency programs is anticipated to come in the form of ratepayer funds, such as systems benefit charges. Accordingly, working within regulatory structures and overcoming associated barriers is essential to successful and timely program execution. Specific comments and recommendations from forum participants included the following.

- Examine the requirements of cost-effectiveness tests and how they are applied to identify lost opportunities for capturing energy efficiency, specifically the outcomes of capturing improved health and safety, and other non-energy benefits such as market transformation.
- Support the ability of utilities to receive savings credit for building energy code compliance activities, as the savings from codes and standards will be important for the middle income market.
- Work with utilities, state regulators, and policymakers to improve customer access to utility bill and energy consumption data to better understand savings opportunities and outcomes in the middle income market.

2.5 Improve Consumer Education and Awareness

A lack of information on and understanding of the benefits and opportunities for energy bill savings and non-energy benefits achievable through retrofits inhibits consumer motivation to invest in energy efficiency. Specific comments and recommendations from forum participants included the following.

- Enhance and invest in education for children through school-based programs that could lead to motivation of parents to make retrofit investments.
- Improve customer understanding of how upgrades and related incentives may impact a customer's financial situation (e.g., positive cash flow when savings exceed loan payment amounts, reduced tax liability from favorable tax impacts of retrofits).
- Encourage or require lenders to acquaint homebuyers with rebates and financing options for energy efficiency (e.g., credit unions' home ownership counselors who consult with loan applicants prior to purchase on financial management).
- Develop clear and detailed checklists that walk customers through the process of completing a comprehensive whole-home energy upgrade, so they can visualize the process for their own home.
- Educate consumers and contractors on the most effective order of measure installations for a comprehensive retrofit job (e.g., many homeowners and contractors start with HVAC while often neglecting the building envelope which can compromise overall savings).
- Educate consumers interested in renewable energy such as solar installations on the most effective "loading order." This would afford them the opportunity to reduce overall load needs through energy efficiency measures before investments are made in new, distributed renewable energy generation.

2.6 Develop and Improve Access to Financing Mechanisms Available to Middle Income Households

Access to financing is generally recognized as a major barrier to middle income household implementation of energy efficiency retrofits. Many middle income households have limited access to capital; providing new and

innovative financing mechanisms developed specifically for this market sector is critical to expanding access for this market segment. Specific comments and recommendations from forum participants included the following.

- Increase the offering of on-bill financing, on-bill collection, or on-bill repayment. Administrators will need to work with regulators and utilities to upgrade legacy utility billing systems to accommodate associated data and information requirements.
- Expand access to pre-tax income to cover the costs of energy efficiency retrofits that provide health-related non-energy benefits. For example, encourage the eligibility of home energy upgrades under tax-free Health Savings Accounts (HSAs) or other pre-tax savings plans.
- Encourage or require that lenders provide information on energy efficiency incentives and financing opportunities when clients refinance their homes; mission-oriented institutions such as community development financing institutions may be a reasonable starting point.
- Develop and offer standardized, web-based financing pre-approval tools (e.g., for on-bill financing or loan products) accessible for contractors, so they can more effectively serve customers by taking advantage of financing opportunities on site.
- Expand access to Property Assessed Clean Energy (PACE) and other secured loan products; where PACE is not feasible, examine alternative lending options with terms palatable to middle income households.

2.7 Address Obstacles that Inhibit Large Scale Lending and the Attraction of Capital Markets

Obstacles preventing the institutionalization of a capital market for large-scale lending for residential energy efficiency are well documented.[9] Additional funds and programmatic considerations are needed to attract and sustain this capital. Specific comments and recommendations from forum participants included the following.

- Encourage greater use of Qualified Energy Conservation Bonds (QECBs) for financing middle income residential upgrades, as their low risk ratings are attractive to large-scale investors looking to balance the risk profile of their portfolios.
- Develop a mechanism for aggregating individual loans for residential energy efficiency, such that a secondary market is established by a larger investor willing to purchase aggregated loans. This would enable the offering of a secured loan product.
- Provide energy savings guarantees to improve the likelihood of loan repayment, which would increase lenders' willingness to make loans for home energy upgrades.

[9] For more information, see the SEE Action Financing Solutions Working Group blueprint at www1.eere.energy.gov/seeaction/pdfs/financing_blueprint.pdf.

Appendix A: Forum Agenda

Monday, March 26, 2012
8:00 a.m.–1:00 p.m.
Baltimore, Maryland

Presented by the State and Local Energy Efficiency Action Network's (SEE Action) Residential Retrofit Working Group

This forum is for program managers, policymakers, and contractors who work in residential energy efficiency program design and delivery, and who aim to expand or strengthen their services for middle income households. The objectives of this forum are to:

- Discuss promising strategies to better serve middle income households
- Connect program managers, policy makers, and contractors to each other, with the potential for ongoing conversations and collaboration
- Gather stakeholder input on additional research, forums, or other activities that the Residential Retrofit Working Group could undertake to support progress.

In order to generate deeper discussion and insights, the forum will focus on three possible strategies for reaching the middle income market. For each strategy there will be short presentations from practitioners and group dialog about the challenges and opportunities.

8:00 a.m. **Registration, Coffee, and Tea**

8:30 a.m. **Welcome and Introductions**

8:40 a.m. **Setting the Context**

8:55 a.m. **Strategy 1: Start with the Basics**

9:45 a.m. **Strategy 2: Expand Beyond Energy Efficiency Work**

10:35 a.m. **Break**

10:45 a.m. **Strategy #: Expand Access to Credit**

11:45 a.m. **Discussion:** What do we need to support our work in this area? How can the SEE Action Residential Retrofit Working Group support progress in this area going forward? How can the working group partner with other organizations to further work in this area?

12:10 p.m. **Lunch with "Stories from the Field"**

This event will take place immediately before ACI's Home Energy Leadership Summit in the same location.

For more information on this forum or the Residential Retrofit Working Group, contact Julie Hughes (Julie.Hughes@ee.doe.gov) at the U.S. Department of Energy.

Appendix B: Detailed Forum Proceedings

Introduction

Julie Hughes, U.S. Department of Energy, welcomed participants and described the forum's general background, purpose, and format. She emphasized that meeting attendees had the on-the-ground experience that was critical in shaping next steps to help middle income populations.

Ms. Hughes then introduced the meeting facilitator, Karen Hamilton of the New York State Energy Research and Development Authority (NYSERDA), who provided context for the day's meeting. Ms. Hamilton noted that middle income households are often credit- or equity-challenged and impacted by significant energy costs, yet these households have too high an income to qualify for low-income program support. Such households do spend money on home improvement; one goal is to capture their initiative and ensure that energy efficiency is part of the improvement package. The upfront cost of such improvements is a significant barrier to investment, so finding alternatives for financing for these households is important.

Ms. Hamilton went on to explain that SEE Action's Residential Retrofit Working Group is leveraging both the expertise of working group members and the technical research under way at Lawrence Berkeley National Laboratory (LBNL), including the December 2011 report, *Delivering Energy Efficiency to Middle Income Single Family Households.*[10] The working group looks to share information and continue dialogue among program administrators, regulatory bodies, and other stakeholders.

Strategy 1: Start with the Basics

This strategy focuses on beginning program implementation with small, simple, and low-cost projects, such as insulation and air sealing. This approach can help secure initial homeowner interest and participation, when can be grown over time to include system-wide replacement and whole-home upgrades.

Gavin Hastings, Arizona Public Service Company

Presentation[11]

Mr. Hastings emphasized driving middle income demand by introducing home energy improvements in smaller steps spread out over time. To reach this target market, Mr. Hastings argued that home performance must be more consumable—a process that is a function of time, not a function of scope—and transactions must be more manageable. The customer is taken through a multi-year comprehensive plan, beginning with the basic foundation (e.g., HVAC maintenance, which helps to engage the customer) and proceeding through advanced measures, which should be planned for and designed in advance. Spreading out household upgrades also allows residential consumers to pay back loans over time through cost savings resulting from the energy efficiency improvements paid for by the loans.

Mr. Hastings noted that it is best to engage the customer within the first two years of home ownership, and that customers need to be able to "click a button" and get started on home improvements, not wade through multiple information sources. He emphasized the importance of building trust and creating a more intimate customer relationship. Mr. Hastings described a program that is contractor-centric, as it is important to empower the sales force, including allowing the sales force to offer prescriptive rebates and low-interest financing. He also identified the need for a highly-trained contractor base, as well as the need for system integration and data management (e.g., the utility, contractors, and lenders all have data, but the systems do not communicate with each other).

[10] Zimring, M., et al. (2011). *Delivering Energy Efficiency to Middle Income Single Family Households*. Lawrence Berkeley National Laboratory. http://eetd.lbl.gov/ea/emp/reports/lbnl-5244e.pdf.

[11] See presenter slides for program details, available at: www1.eere.energy.gov/seeaction/pastevents.html.

Question and Answer

Question: *There is a lot of existing modeling data. How are your contractors able to provide whatever data you need, including the whole-house solution, and organizing it based on what the homeowner wants to do?*

Hastings: We do not have all the answers yet, but from a program perspective, there are two things to consider: 1) What are the reporting requirements? How much data do we need to be effective? 2) The integration concept. Many contractors have internal systems. We have to make sure our design effort goes along with that. The middle income household is a smaller house, and we do have contractors that can effectively get this design done. With smaller projects, we make that upfront investment and hope for ongoing engagement in maintenance. To remain cost-effective, I can engage a subset of the retrofits that would comprise a whole-home energy upgrade, and still experience savings over time.

Question: *As a follow-on, do you think this particular strategy is for a home retrofit contractor as opposed to an insulation contractor, comfortable working in that space? There are different contractor approaches.*

Hastings: There are a large number of models that are effective, and you do need a soup-to-nuts approach. You have to have Federal Housing Administration (FHA) contractors as well. The primary engagement is maintenance and replacement. Several business models work. This program was stood up by looking at our successful contractors.

Question: *How do you approach clients in energy conservation education, i.e., changing living habits to conserve energy?*

Hastings: Moving forward, simplified engagement tools are needed. Right now there are 12 brochures and 16 websites related to Arizona Public Services' energy efficiency programs. You want the starting point to be easy—an ongoing engagement tool that makes it simpler—and you can use that to go further with the customer.

Carl Nelson, Center for Energy and Environment in Minnesota

Presentation

Mr. Nelson discussed successful program strategies used in Minneapolis:

- Promote the program through community-based social marketing, priming participants for specific first steps that they need to take to participate in the program. This stage includes a mandatory workshop to discuss good habits, good products, and good investments.
- At the workshop, participants sign up for the next step—a home energy visit. Over 90 percent of attendees go on to this next step. During the visit, two energy experts run tests, print out the report onsite, and hand it to the homeowners, providing immediate results and recommendations.
- Follow-up includes both phone calls and a help line; financing and assistance with rebates are provided.
- The final step is the contractor stage, which includes quality assurance. Qualified contractors must meet certain standards and have training and certification. Quality control checks are conducted on ten percent of homes.

Of the homes that received an upgrade recommendation, 28 percent completed the upgrade. Mr. Nelson identified three strategies for success:

- Create a simple pathway; too much or complex information can confuse the customer. He cited a new energy index that gives homeowners a clear visualization of their efficiency status on a scale from 1 to 100.
- Start with easy actions and build to larger ones. Simple actions get a foot in the door and help build commitment.

- Create a sense of urgency for upgrades. Financing can help by setting time limits. One Minnesota program calls for a time-limited (90 day) zero percent financing program.

Question and Answer

Question: *What are you using to provide the score?*

Nelson: The score is for a certain house type, not at the individual home level. Given the limitations of models and the purpose of this score—it's just for the homeowner—this is relatively accurate.

Question: *Is there a model that could work to incorporate the information? In California, people are sitting on home equity, so it seems as though we are missing an opportunity by focusing on smaller actions rather than on HVAC replacement.*

Nelson: We focus on both. The goal is to do major improvements. We only recommend HVAC replacement on 20 percent of homes, and we do not recommend it if it will not be cost-effective within 10 years.

Question: *Regarding those that do the recommended upgrades, what is the average size of those jobs? And what does it really cost to do those audits? In other words, how much do you put in versus how much you get out?*

Nelson: Doing the audits costs about $500 per house, and it is a little more for rebates—we do not have large rebates. We have a set of contractors who have agreed to the terms, and we make it large enough that there is competition, so people get things done affordably through this model. It works with enough volume.

Question: *There are several successful programs in the Northeast, where the average job is $800. Multi-year engagement is interesting and we ought to do it. But in places where the boilers never wear out, you have to talk to people about the fact that they are running—and may run forever—at 55 percent.*

Nelson: That is true. In Minnesota, energy costs are expensive, so you can spend more money and have higher rebates. We have natural gas, not fuel oil, so there is not a lot of money for rebates.

Strategy 2: Expand Beyond Energy Efficiency Work

This strategy emphasizes incorporating non-energy components and benefits into energy programs to attract additional homeowner participation. Non-energy considerations can include home rehabilitation and energy efficiency, health and safety improvements, and installation of renewable energy. For programs that include financing elements, the allowance of including these non-energy measures within the financing structure could also be considered.

Ken Strong, City of Baltimore, Division of Green, Healthy and Sustainable Homes

Presentation

Mr. Strong described the state of the Baltimore home energy retrofit industry. Baltimore had many home energy efficiency services, but they were not well coordinated. For example, each service had different income requirements and different applications, which did not adequately account for specific and complex customer needs. To address these multifaceted issues, efforts have been made to develop more streamlined, cooperative, and comprehensive services. Mr. Strong noted the importance of looking at the whole picture of a customer's life and circumstances, including the role energy plays in it, in order to best serve him or her.

Mr. Strong highlighted a case study of a customer who had a range of problems, including high energy bills, lead paint, and other unsafe conditions for a senior citizen. If she applied for weatherization assistance under the former program, she would have been denied because of the home's condition. However, the new, coordinated

path to assistance provides one path to a variety of services from different sources (e.g., Office of Rehabilitation Services, Maryland New Directions, and Project Lightbulb) that addressed all her needs.

Question and Answer

Question: *I agree with the importance of linking components like health services to energy services. For example, after home improvements, one customer was able to cut medication for respiratory issues by 80 percent. Can we put this type of leverage in the private marketplace and get to the same end result?*

Strong: Sure. The work we are doing is saving all of us on collective health care costs. Many of these people are supported by Medicare, Medicaid—things services taxpayers support. It is hard to get numbers, but there are many more examples. Since we have started work on one man's home, he has not once had to go for asthma treatment. Another woman can stay in her home, which is now safe; otherwise, taxpayers would have paid for nursing home placement.

Question: *Who is paying the auditors that come to the house, scan the documents, etc.?*

Strong: Initially that effort was funded by the Baltimore Community Foundation, but that is coming to a close. We are asking that customer investment funds from the Exelon/Constellation merger go to case coordination.

Ryan Clemmer, Clean Energy Works Oregon

Presentation

Mr. Clemmer described the Oregon program as different from some described in the previous presentations. With 49 contractors in 10 counties, Clean Energy Works Oregon goes after deep energy retrofits. The key to the Oregon program is finding good partners for financing; working with two or three lenders has proven successful. Mr. Clemmer stated that 80 percent of the work financed goes to energy improvements and 20 percent to non-energy improvements (e.g., roofing, venting).

Question and Answer

Question: *What is the average cost of incentives?*

Clemmer: Our high offering—if we are going after deep energy retrofits—is $3,700 in incentives.

Question: *How would you define a deep energy retrofit?*

Clemmer: We are doing multiple measures in building shell components and thinking long-term about renewables; Oregon has crawl spaces in most homes, so we are working below the house; and then improving the mechanical systems—hot water, heating systems.

Question: *What are the rates for the loan products?*

Clemmer: The rate is 5.99 percent for both products. One is a 20-year term, so we have relatively long terms.

Question: *Sammy Chu created a green home refinancing program that opened up financing, and that is key to what we do. But even for that program, one out of five homes that sign up for an audit cannot move forward because of significant problems with mold or asbestos. What are the criteria in terms of FICO scores? And how do we help these people? They have unhealthy environments and they are wasting energy.*

Clemmer: The FICO score should not drive credit. The primary criterion is whether they pay their utility bill on time, not whether they are upside down on the mortgage. That is the benefit of an on-bill relationship.

Comment: *There is tension because with mission-driven capital, they do not want to finance things that are not energy-related, possibly jeopardizing people paying for energy. We have found a segment that does not pay the utility bill but has good credit otherwise, and the decline rates are 15 percent. Half of those would qualify for a standard banking product; they have high FICOs but poor utility payments.*

Clemmer: Again, data is essential. Look at the distribution network. I agree with Gavin's approach—investing in contractors—but how will a contractor analyze the equation? If the homeowner needs the roof repaired but 80 percent of the funding must go into energy savings, will the contractor want to push some of those funds? We need to realize the challenges to valid data.

Question: *Referring to the energy savings component and the premise that we are not going to raise the debt load: do you have data that says we are hitting those numbers? In this segment, what happens if we give consumers products predicated on cost savings and they do not see those savings? If there is an average, what happens to people on the lower end of that average?*

Clemmer: It is a moving target. It is not completely solid. We always need to keep looking at it. Our contractors are required to model homes, but the software has its faults. As we continue to move forward, things will shift to multiple products.

Strategy 3: Expanding Access to Credit

This strategy promotes energy efficiency by providing greater access of middle income households to traditional financing (e.g., through credit enhancement or the development of financing mechanisms that specifically target middle income households).

Jeff Pitkin, NYSERDA

Presentation

Mr. Pitkin discussed expanding access to capital and credit. In New York, the program was bolstered in 2009 by legislation incorporating financing, workforce training, and outreach into program implementation. NYSERDA was required to establish innovative financing mechanisms to residential dwellings, small businesses, and non-profit entities. Extensive planning efforts resulted in three forms of financing that regulatory obstacles reduced to one program—a direct customer loan product. Legislation also established a program for on-bill recovery of loan charges—not an on-bill financing program—which has promise for broadening access to credit and capital. It provides the ability to reach consumers through an aggregating mechanism.

Mr. Pitkin explained that while the program implementation was expedited, the launch experienced several hurdles. Under New York banking law, only mortgage loan originators can engage in relevant discussions with consumers. NYSERDA is working on a legislative "fix" that would require filing a declaration (similar to an easement). While the declaration would not represent a lien on a property, it would be disclosed to a subsequent purchaser through the lien search process.

Moreover, NYSERDA utilizes the Regional Greenhouse Gas Initiative (RGGI) and DOE funds to expand access to capital, leveraging the funds through capital markets bonds issued by NYSERDA.

Regarding expanded access to credit, Mr. Pitkin stated that there are two tiers of loan criteria. Tier 1 is a traditional loan. Tier 2 uses alternate criteria that can broaden access to capital for consumers who would not normally meet those standards. Even under certain circumstances (e.g., a high debt-to-income ratio, recent bankruptcy), a consumer may qualify if he/she has paid the utility bill on time for the past two years. The program approach is to continually adjust and tweak standards and continue to gradually lower the bar. Although the primary reason for denial remains debt-to-income ratio, New York is seeing slow upticks in loan approval rates. Thus far, the vast majority of the loans are performing well.

Question and Answer

Question: *Do the tiers have different interest rates and caps?*

Pitkin: No, we decided it was important not to charge a higher rate for consumers who did not qualify for traditional loans because we did not want it to be seen as a penalty. We do charge a different interest rate for on-bill recovery loans (2.90 percent) than for direct unsecured loans, which are offered at 3.99 percent, or 3.49 percent if the consumer signs up for automated monthly payments.

Question: *Regarding the mortgage declaration, is this going to remove some of the handcuffs on the ability to discuss and collect paperwork?*

Pitkin: Absolutely, because it is no longer a mortgage loan. Not only that, it will help with transferability, as this declaration is not a lien and should not be objectionable to future mortgagees.

Question: *Being behind on your mortgage is one reason not to be considered. Do you know of any programs that tie together energy home improvements/utility bill savings with loan modifications that would help forestall foreclosure?*

Pitkin: We have not considered that.

Question: *My question is about sequencing. We find that the customer gets an audit, and then starts thinking about financing, etc.—and then the customers loses momentum.*

Pitkin: Yes, we need to work on the process. It takes 46 days from loan application to approval—too long. It ought to take a week or two. We are also looking for more opportunities to engage consumers on the front end as part of an energy audit; we have plans to open up our system to participating contractors to allow them to follow up with consumers to make sure the financing process is as timely as it can be.

Question: *With on-bill financing in areas with little natural gas, are improvements financed with electric utility bills?*

Pitkin: They can be. Our statute provides that the charge goes on the electric utility bill unless there are more savings through natural gas, in which case it goes on the natural gas bill. If a consumer is heating with heating oil, he can do efficiency improvements for heating oil, and the payment can go back on the electric utility bill.

Question: *Regarding criteria for Tier 1 and 2, are those just for an unsecured loan?*

Pitkin: Standards are the same for both because those are the standards that the capital markets are going to focus on. But in terms of offering access to credit, an on-bill structure offers greater promise for access to capital. We need to create new instruments.

Joe Huntzinger, Indianapolis Neighborhood Housing Partnership

Presentation

Mr. Huntzinger described his organization as a not-for-profit mortgage banker that serves low- to moderate-income families. The City of Indianapolis approached the organization about offering energy efficiency loans. However, there were concerns about soft overall demand for the product and the ability to raise capital. Research indicated that the target area would not provide enough demand for the amount of money the city had received, so the area and program had to be expanded to be successful.

The organization also had to raise capital at attractive costs—necessary in a debt-averse market. The Partnership is now borrowing at a rate of one percent above treasury notes. The Partnership met some resistance to the low

rates, but one partner saw the risk as reasonable. Mr. Huntzinger noted the benefit of raising your own capital and choosing your own banking partners, stating that serving the middle income housing segment has different credit criteria, so capital can be offered at more attractive rates than are found in the market. The Partnership also negotiated an RFP with contractors to secure fixed pricing. The loan-to-value ratios are expected to lower over time as housing prices increase.

Mr. Huntzinger noted several challenges, including the city's needed review process waiting period, and customer confusion over multiple energy programs offered in the community.

Mr. Huntzinger stated that his organization is testing and proving the market. Although DOE support allowed them to raise capital, they seek a self-sustaining program.

The Partnership learned key lessons regarding program marketing: improvements were originally promoted as "doing the right thing," but were found to be ineffective in a needs-based market. A major goal for the consumer is for energy improvements to pay back close to dollar-for-dollar for amortization. Mr. Huntzinger believes energy incentives are getting us closer—perhaps to 80 cents on the dollar.

Question and Answer

Question: *Have you considered buying HVAC systems or ENERGY STAR® appliances to bring costs down to the contractors rather than buying from the market individually and having the markup that comes with that?*

Huntzinger: We have had discussions but have been told to delay until we get more scalability in volume.

General Discussion

While these remarks were not recurring themes, they have been included to provide examples of observations that were made throughout the dialogue.

- **Participant:** To put things in perspective, unsecured loans for home improvements started when the housing market collapsed. Currently, customers are nervous about taking on additional debt, but that may change over the next two to three years.
- **Participant:** I have been able to grow my business in this recession by keeping the focus on the customers. We have something that pays for itself and improves quality of life, and we have to make that accessible to more homeowners. When we throw it all together—rebates, finances, etc.—we want to ensure that it is positioned in such a way that customers experience savings on their energy bills. If you do that, you can sell retrofit all the way to renewables, all included in one price. As industry grows, homeowners must have confidence in what they will get for that price.
- **Participant:** There may be customer confusion, but we should recognize that we have maybe one pilot study that shows guaranteed savings. People need some certainty of a positive result when they pull their wallets out. There is not a single program for small buildings that provides a sure result.
- **Participant:** We can overcome loan aversion through lower-hanging fruit intervention (e.g., programmable thermostats) and deploy education around that. If that is the first interaction and consumers save with that low-cost measure, then engaging them on whole-house retrofits will be easier.
- **Participant:** SEE Action has other working groups; in our working group, we discuss whether there is a need for a national data repository as to how loans are performing in the residential energy space so financial institutions can be assured that the energy savings will pay off.
- **Participant:** We also need the data to be useful, so data must be collected based on similar standards—comparing apples to apples in the repository—which requires answering other questions first.

- **Participant:** We are collectively pulling on the wrong end of the rope. If the federal government had not mandated it, the auto industry would still be building cars that get six miles to the gallon. People who buy cars with great mileage are those who can afford it. If everyone believes it is the right thing to do, we should not give people a choice. All the focus is on making it easier for those who "get it" instead of trying to get the rest of the American public to "get it."
- **Participant:** In Europe, MPG (miles per gallon) stickers are put on houses before they sell them. Regarding the home energy score from 0 to 100—that is confusing when the Home Energy Rating (HERS) index score is being marketed: one score is 100 meaning "good," one score is 0, meaning "zero energy."
- **Participant:** It is important to distinguish the difference between a car and a home. With a car, you make the decision at the time of purchase; you cannot retrofit a car. People will not act until there is an integrated marketplace—until the market is simple. As a community, we need to think about it as building a value chain and making it as simple as buying a car.
- **Participant:** From a regulatory standpoint, we should advance the building code so we are all building the most efficient homes possible. The ENERGY STAR market has deep penetration, but the regulatory rule only allows for 30 percent of any kind of building code. So I have a better incentive to promote the ENERGY STAR program, not the code. If utilities can count the movement in that baseline and get full credit for it, then we are on same playing field.
- **Participant:** When tobacco was a big problem, people thought smoking bans in bars violated their rights. There is something to be said for looking at the regulatory effect and making it wrong for homes to operate poorly. There should be disclosure for operating costs when selling houses, and efficiency would be part of that measure.
- **Participant:** People are still unwilling to take the importance of home retrofit efforts seriously. We need to go a step further on disclosing costs; there needs to be a nationwide requirement to include energy efficiency information whenever a home changes hands or gets financing for improvement.
- **Participant:** As a contractor, it is important to educate consumers on benefits beyond efficiency. In addition to energy savings, comfort, air quality, and medical issues are improvements that sell.
- **Participant:** We need education. We do not know where the breaker box is. We should be taught from kindergarten—as children are now taught with the importance of recycling. We need a comprehensive multi-pronged approach that is pushed through the school system.
- **Participant:** I am an educator; the educators are out there. A lot of information I get is from regions and zones that do not help me in North Carolina; too much varies from state to state, county to county. We need everyone on the same page. So give me information I can give my students.

Appendix C: Meeting Attendees

Meeting facilitators:

- Julie Hughes, U.S. Department of Energy
- Karen Hamilton, New York State Energy Research and Development Authority (NYSERDA)
- Merrian Borgeson, Lawrence Berkeley National Laboratory
- Ian Hoffman, Lawrence Berkeley National Laboratory

Meeting Registrants:

First Name	Last Name	Organization
Glenda	Abney	Missouri Botanical Garden
Cynthia	Adams	Local Energy Alliance Program (LEAP-VA)
Robert	Adams	U.S. Department of Energy
Jensen	Adams	Metropolitan Energy Center
John	Ahearn	New York State Energy Research and Development Authority (NYSERDA)
Eli	Allen	Civic Works
Jennifer	Amann	American Council for an Energy-Efficient Economy (ACEEE)
Walt	Auburn	Maryland Energy Administration
Courtney	Baker	U.S. Green Building Council (USGBC)
Lori	Bamberger	Saving Neighborhood Energy to Generate Neighborhood Wealth
Brad	Bartholomew	Energy Saving Services
Dave	Beaulieu	Conservation Services Group (CSG)
Amy	Beley	ICF International
Angelina	Benson-Glanz	City of Chicago, Illinois
Aaron	Berg	Clean Energy Works Oregon
Greg	Bergtold	The Dow Chemical Company
Jason	Bogovich	SRA International, Inc.
Elijah	Brown	GreenT
Jane	Bugbee	The United Illuminating Company
Kiahnna	Burney	Maryland Department of Housing and Community Development
Philip	Cecchini	Energy Smart
Sammy	Chu	Long Island Green Homes
Ryan	Clemmer	Clean Energy Works Oregon
Jonathan	Cohen	U.S. Department of Energy
Shawn	Collins	Opportunity Council
Christina	Countryman	Knoth Heating and Mechanical
Katherine	Daniel	Green For All
James	Demarest	Pepco Holdings, Inc.
Cisco	DeVries	Renewable Funding
Armando	Domingos	AccuGreen Home Performance
Charles	Driggs	Pepco Holdings, Inc.
Mark	Dyen	Conservation Services Group (CSG)
William	Ellis	Pepco Holdings, Inc.
Denee	Evans	HomeFree Nevada
John	Fallon	Clean Green Cities
Diane	Ferington	Energy Trust of Oregon
Mendoza	Fernando	Entornos

Ian	Fischer	Clean Energy Solutions, Inc.
Andrew	Fisk	Conservation Services Group, Inc.
Rebecca	Foster	Vermont Energy Investment Corporation (VEIC)
Terry	Freeman	Columbia Water and Light
Gloria	Fultz	G. S. Fultz and Associates
Jennifer	Gallicchio	Maryland Energy Administration
Bryan	Garcia	Connecticut Clean Energy Finance and Investment Authority (CEFIA)
Rick	Gerardi	Efficiency.org / New Dawn, LLC
Dale	Gernhart	Community Action Agency of Siouxland
Matt	Golden	Efficiency.org
Aaron	Goldfeder	EnergySavvy
John	Greeno	New England Conservation Services
Herman	Grimes	Grimes & Associates
Kyle	Haddock	Energy Information Center, Inc. (EIC)
Anthony	Harrison	Ecology Action
Gavin	Hastings	Arizona Public Service
Caroline	Hazard	SRA International, Inc.
Kevin	Hill	Nevada State Office of Energy
Joseph	Huntzinger	Indianapolis Neighborhood Housing Partnership (INHP)
Doris	Ikle	CMC Energy Services
Ely	Jacobsohn	Home Performance with ENERGY STAR
Katherine	Johnson	Johnson Consulting Group
Stan	Johnson	Air Conditioning Contractors of America
Bret	Kadison	U.S. Department of Energy
Dan	Kartzman	Powersmith Home Energy Solutions
Matt	Keeler	Advanced Energy
Terry	Kessinger	City of North Little Rock, Arkansas
Rebekah	King	Energy Programs Consortium
Justin	Kirkpatrick	Duke University–Nicholas School of the Environment
Cathy	Kunkel	Coal River Mountain Watch (CRMW)
Elise Reuschenberg	Lambert	Maryland Department of Housing and Community Development
Jack	Laverty	Columbia Gas of Ohio
Theresa	Lavoie	The Resource Link
Diane	Lesko	Sonoma County Energy Independence Program
Emily	Levin	Efficiency Vermont
Diana	Lin	National Association of State Energy Officials (NASEO)
Kelley	Lubovich	Energy Programs Consortium
Peter	Ludwig	CNT Energy
Chris	Lynch	University of Nevada, Reno
Pam	Mendelson	U.S. Department of Energy
Joe	Miller	Community Action Agency of Siouxland
Peter	Mills	Consortium for Energy Efficiency (CEE)
Rob	Minnick	Minnick's
John	Mohelsky	BTHC / Omnific
Casey	Murphy	ICF International
Carl	Nelson	Minnesota Center for Energy and Environment
Elizabeth	Noll	American Gas Association
Nichole	Ovens	User Insight, Inc.
Bill	Parlapiano	PECI, Inc.
Suzanne	Parmet	Town of University Park, Maryland

Stephen	Pelton	R. Pelton Builders, Inc.
Andrea	Petzel	City of Seattle, Washington
Jeffrey	Pitkin	New York State Energy Research and Development Authority (NYSERDA)
John	Porterfield	eZing, Inc.
Nicole	Reed	U.S. Department of Energy
Brian	Rotert	Metropolitan Energy Center
Steve	Saenz	Austin Energy
Robert	Sahadi	Institute for Market Transformation (IMT)
Ayla	Schlosser	Groundswell
John	Shenot	Regulatory Assistance Project (RAP)
Derek	Smith	Clean Energy Works Oregon
Jennifer	Somers	U.S. Department of Energy
Gil	Sperling	U.S. Department of Energy
Theresa	Spurling-Wood	The Sustainable Design Group
Dennis	Stroer	Calcs-Plus
Ken	Strong	City of Baltimore, Maryland
David	Terry	National Association of State Energy Officials (NASEO)
Jovita	Tolbert	National Alliance for Sustainable Communities
Brian	Toll	Efficiency First Maryland
Bahareh	van Boekhold	Delaware Division of Energy and Climate
Shanika	White	D.C. Sustainable Energy Utility
Brett	Wiley	Groundswell
Sue	Willison	Absolute Energy Solutions
Chuck	Wilson	Town of University Park, Maryland
Mark	Wolfe	Energy Programs Consortium
Paul	Zabriskie	Central Vermont Community Action Council
Johanna	Zetterberg	U.S. Department of Energy

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