RESIDENTIAL AND COMMERCIAL MARKET OPPORTUNITIES FINAL REPORT

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Prepared for
Bonneville Power Administration

Prepared by
D&R International, Ltd.
Milepost Consulting

BONNEVILLE
POWER ADMINISTRATION

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EXECUTIVE SUMMARY

Introduction

Bonneville Power Administration (BPA) contracted with D&R International (D&R) and Milepost Consulting (Milepost) to assess new program opportunities to enhance its residential and commercial sector energy efficiency offerings. The research scope included new measures, new applications of existing measures, new delivery models and market actors, and market and technical barriers. Research activities pulled information from a wide range of sources, with particular focus on the needs of public power utilities.

Methodology

Between February 28, 2013 and July 31, 2013, the research team conducted a literature review, interviews, facilitated brainstorming sessions, and an online survey to capture a wide range of potential program options from regional and national sources. The team reviewed 161 documents and interviewed 85 regional experts, national experts, utility staff members, and members of BPA staff. Two facilitated group sessions generated additional program design ideas and began discussion with key stakeholders about potential options. Finally, a web-based survey, which was open to all of BPA's utility customers, gave respondents the chance to rate opportunities identified in previous activities.

Key Activity Findings

The analysis yielded three major findings comprising 11 more specific findings.

Customers want more regional collaboration, but they also desire local control

Enhanced regional consistency in programs and requirements

Utility staff and experts suggested enhanced regional consistency in measurement, verification, and program delivery across utilities as a way to improve programs. It is interesting to note that several respondents commented on the desire for local control, which can conflict with others' goal of regional consistency.

More communication channels and improved channel efficacy

BPA customers focused in interviews on the need for improved communication with their own end-use customers. In the facilitated sessions, however, they stressed the need for facilitated regional conversations and increased opportunities to provide feedback to BPA. Survey respondents indicated that improved program efficacy and success start with better communication.

Improved access to, sharing of, and managing of energy efficiency information

Many of BPA's customers discussed the need for increased sharing of energy efficiency information, better data management, and a centralized repository for some regional data.

BPA customers often lack resources to expand programs and reach new markets

Improved reach to underserved markets

Public power utility staff identified three underserved and hard-to-reach markets—low-income housing, multifamily housing, and small commercial—as important programmatic opportunities, yet found these markets challenging to reach with current program support and strategies.

More resources to expand programs to wider audiences

Utility staff are interested in many different program approaches and measures, but a lack of resources was mentioned as an obstacle throughout the activities. In the survey, BPA customers ranked whole-building programs with wide reach, such as comprehensive commercial programs, direct install programs, and audits, as important, but expressed the need for more resources to carry out program expansion.

New marketing for trade allies and end-use customers

Utility staff discussed in the interviews the underutilization of marketing and indicated that regional marketing efforts have worked well for BPA customers, especially those with limited staff. In the facilitated sessions, customers suggested that BPA support regional marketing by developing a unified campaign or funding a media saturation campaign targeting vendors, policy makers, and end-use customers. Survey responses showed that BPA customers see marketing support as a key area of importance and would like BPA to offer it, especially in the area of marketing materials.

Training trade allies

BPA customers indicated that BPA has a key role in training efforts and cited the need for well-trained trade allies (e.g., distributors and contractors) to better ensure current and future program success. BPA customers are looking to BPA to help involve various market actors in their programs by developing low- or no-cost training; offering regional training, marketing, and oversight; or developing infrastructure by creating a centralized set of resources where contractors can learn about local utility incentive programs.

BPA customers want a wide variety of measures and delivery models and would like them to be simple, easy to understand, and tailored to meet their specific needs

A wide variety of measures

Throughout the activities, participants identified a wide variety of measures for future programs. Measures such as air sealing, ductless heat pumps, consumer electronics, LEDs, and commercial thermal envelope were mentioned by utility staff in the interviews as opportunities for future programs. In the facilitated sessions, BPA customers suggested ductless heat pumps, commercial lighting (T8s and LEDs), residential lighting (LEDs), and duct sealing. They also suggested programs that have comprehensive measure lists, like Net Zero buildings, weatherization, Energy Smart Industrial, and ENERGY STAR® homes.

Variety of delivery models

For the residential sector, utilities expressed interest in all types of delivery models, and no program model or offering was selected by a majority of utilities; a roughly equal number of utilities preferred nearly every type of residential program model, from energy audits and direct install to upstream models. In contrast, there was a clear preference in the commercial sector for a comprehensive commercial program and/or a pay-for-performance program.

Opportunities

The findings lead to five major opportunities that BPA could consider – one for the commercial sector, two for the residential sector, and two that apply to multiple sectors.

Commercial Opportunity – Tiered, comprehensive, turn-key commercial program with pay-for-performance elements

BPA customers expressed in their survey responses a strong interest in having commercial turn-key comprehensive and pay-for-performance program models. A comprehensive program would encourage consistency in commercial programs in BPA's territory. Offering varying tiers of support for utilities to choose would allow implementation of a wide variety of measures, while giving BPA's customers the flexibility to choose the level of support they receive.

Residential Opportunity – An energy efficiency toolkit providing a customizable suite of tools and measures

In their survey responses, BPA customers chose a wide variety of programs they thought would be important over the next two to five years. Because of this variation, there doesn't appear to be a "one size fits most" opportunity.

Though BPA customers favor a wide variety of program models, there was consensus about the types of support they would like to receive. BPA customers, especially those not subject to I-937[1], frequently requested education materials, marketing materials, best practices, and suggested program design models as resources that would be helpful to their programs.

Accordingly, a suite of tools that offers BPA customers flexibility about the type of support they receive is likely better than any single program offering. A toolkit gives public utilities a wide variety of measures, tools, and services from which to choose, as well as the local control they prefer.

1 — I-937 is an initiative passed in the State of Washington that requires mid-size to large utilities to acquire all cost-effective conservation.

Residential Opportunity – Mid/upstream model to capture savings in new areas

Another key residential opportunity to explore is expanding mid/upstream efforts. During the survey, public power utility customers subject to I-937 expressed the desire for a new, regional upstream program to capture future savings. These customers ranked such a program as their highest priority over the next two to five years.

In addition to garnering savings in new areas, mid/upstream models could be used with a variety of measures that meet the needs of BPA customers. Specifically, I-937 customers (who rated mid/upstream models highest) identified LEDs, future appliances, and consumer electronics as valued measures for inclusion in a mid/upstream program.

Cross-Cutting Opportunity - Support and encourage regional efforts by BPA customers to collaborate and share information

Supporting and encouraging regional efforts among BPA customers and other regional energy efficiency players to share information is a cross-cutting opportunity. This support could encompass a variety of activities, including hosting meetings with regional policy makers, providing improved access to energy efficiency information through a web portal, and continuing to expand and share pilot program findings.

During all the research activities, BPA customers provided many comments related to information sharing. Specific comments from BPA customers directed to BPA addressed access to regional market, energy efficiency, and pilot program information.

Cross-Cutting Opportunity - Simplification of program participation and reporting requirements

In the facilitated sessions, participants often requested simpler reporting methods, with several BPA customers specifically mentioning the need for a more user-friendly online reporting process.

A cross-cutting opportunity that could be explored is the simplification of program requirements, which could include simplifying commercial calculators, streamlining reporting, and offering a wide variety of measures with easy-to-understand residential savings calculations.

INTRODUCTION

Bonneville Power Administration (BPA) is a wholesale power provider in the Pacific Northwest. Since the passage of the Northwest Power Act of 1980, BPA has acquired more than 1,400 aMW of energy efficiency. As part of its current regional commitments, BPA, in partnership with public utilities, has taken responsibility for public power's share of the Northwest Power and Conservation Council's (NW Council) 6th Power Plan electric energy-savings potential, which amounts to 504 aMW (or 42% of total plan savings potential of 1200 aMW) between 2010 and 2014.

BPA's energy efficiency group serves 133 preference utility customers[2], who are critical program partners in meeting regional energy efficiency goals. These public utilities deliver energy efficiency to the end-user; BPA provides third-party programs, trade-ally networks, technical support, and measure/project reimbursement to utilities for the delivery of energy efficiency across the region. BPA's delivery approach is unique, as it does not interact with end-users, but rather with the utilities that serve end-users.

BPA's service territory crosses Washington, Oregon, Idaho, Montana, and parts of Nevada and Wyoming. Public utilities span a wide range of climate zones, building stock characteristics, regulatory environments (e.g., Washington's I-937[3]), current and forecasted load growth, and staff resources. In addition, public utilities vary in the mix of sectors (i.e., residential, commercial, industrial, agricultural) and population density they serve. Therefore, BPA's program design approach must be flexible enough to cover a wide range of utility needs and capacities.

To date, BPA's residential, commercial and industrial sector energy efficiency programs have helped the region make significant progress toward meeting the 6th Power Plan goals. According to the NW Council's 6th Power Plan Mid-Term Assessment Report (published March 13, 2013), BPA's efforts, combined with the efforts of the region's utilities, the Energy Trust of Oregon, and the Northwest Energy Efficiency Alliance, acquired 530 aMW of energy savings in 2010 and 2011, surpassing annual goals by 25%.

Presently, the NW Council is in the early stages of creating the 7th Power Plan. There is widespread recognition that savings at the level achieved under the 6th Power Plan may be harder to acquire in future years. Regional utilities find themselves "long" on power, many of BPA's customers have already implemented "low-hanging fruit" measures, and multiple national energy efficiency standards[4] will finish phasing in through 2014. Under this scenario, BPA acknowledges that it may be facing a challenging future for energy efficiency savings acquisition. To meet the growing demand for energy efficiency, BPA is looking for new opportunities to acquire energy savings, which could include new program delivery models, untapped or emerging technologies, new and underserved markets, and new market actors.

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2 — This count of customers includes only customers with an Energy Efficiency Incentive (EEI) budget. An EEI is a capital budget from which BPA funds energy efficiency incentive payments and associated qualified performance payments.

3 — I-937 is an initiative passed in the state of Washington in 2006 requiring mid-size and large utilities to acquire all cost-effective energy conservation.

4 — The Energy Independence and Security Act of 2007 (EISA) greatly increased efficacy standards for general service lighting; the Energy Policy Act of 2005 (EPACT) increased minimum efficiency standards for many residential and commercial products.

As an early step in tackling this challenge, BPA contracted with D&R International (D&R) and Milepost Consulting (Milepost) to provide research support in identifying new opportunities to enhance its residential and commercial sector energy efficiency offerings. The scope of the research included new measures, new and modified applications of existing measures, new delivery models and market actors, and market and technical barriers. Research activities were designed to gather information from a wide range of sources, with particular focus on the needs of BPA customers. Findings are intended to infuse future program design with new ideas to support continued achievement of regional energy savings targets.

This report presents the research activities conducted by D&R and Milepost in support of this project, key findings and conclusions, and opportunities for BPA's consideration as it develops new program offerings for its customers.

METHODOLOGY

Overall Approach

Between February 28, 2013 and July 31, 2013, the research team conducted a literature review, interviews, facilitated brainstorming sessions, and an on-line survey to capture a wide range of potential program options from regional and national sources.

Each research activity explored four categories of opportunities: measures, delivery models, target audiences, and market actors. These categories are described briefly in the following section; please see Appendix 1 for examples and definitions. The team also identified and reviewed notable or interesting programs from other utility energy efficiency organizations.

Measures are the products/equipment from which energy savings are obtained, typically by replacing an existing product with a more efficient product, removing an existing product from the grid, or changing the usage of an existing product to reduce its energy consumption. Measures fall in the general categories of HVAC, control systems, building envelope, water heating, appliances, lighting, and consumer electronics.

Delivery Models are how a program influences the market and delivers an energy-saving measure. Delivery models may be financial (e.g., rebate, mark down, or buy down) or non-financial (e.g., consumer education or direct installation).

Target Audiences are the people or buildings targeted by a program. This project focused on target audiences in the residential and commercial sectors.

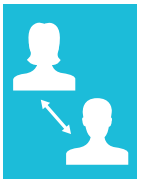
Market Actors are organizations or entities that are necessary to implement a program, or that act as a catalyst for a program, increasing participation, cost-effectiveness, or energy savings. They include architectural and engineering firms, retailers, distributors, manufacturers, non-profits, trade organizations, and community leaders.

Activity 1: Literature Review

The team conducted a literature review of 161 documents, which included program planning and evaluation documentation, conference papers and presentations, studies, and other materials related to energy efficiency. The literature review provided context for how BPA currently obtains energy savings, identified new opportunities for the region, and spotlighted programs or approaches from outside the region that might be appropriate for consideration by BPA.

Appendix 2 presents the literature review findings, including a list of all sources.

Activity 2: Interviews



The team interviewed 85 individuals from 41 organizations, including regional experts, national experts, and BPA staff. Interviews were conducted via telephone and in person and generally lasted between 30 minutes and 1 hour.

Appendix 3 presents a list of interviewees and interview dates, the interview guides, and detailed interview notes.

Table 1: Interview Summary

Interview Group	Number of Individuals Interviewed
BPA Staff	**14**
National Experts	**10**
Regional Utility Staff	**18**
Implementation Contractors and Trade Allies	**23**
Regional Utility Experts	**20**

Activity 3: Facilitated Sessions

The team held two facilitated group sessions – a facilitated brainstorming session on May 13 and an open source session on May 14 – to gather additional program design ideas. These sessions coincided with the Efficiency Exchange Northwest conference.

Activity 3a: Facilitated Brainstorming Session

The objective of the facilitated brainstorming was to create dialogue among BPA customers about possibilities for energy efficiency program design and delivery models. Participants included 40 individuals representing 28 utilities. Through exercises employing a variety of facilitation techniques, participants shared their energy efficiency program successes and identified action items related to new program ideas and designs.

Appendix 4d includes the presentation slide deck that was used to guide the group through the World Café exercise, Appendix 4e presents a blank Destination Postcard, and Appendix 4f contains verbatim text from the session flags and stars, as well as summary points from all conversations.

Appendices 4b and 4c contain the agenda and list of attendees for the facilitated brainstorming session, and Appendix 5a contains the agenda for the open source session.

Activity 3b: Open Source Session

The open source session, "What Got Us Here Won't Get Us There," was held on May 14 as a selected breakout session of the Efficiency Exchange Northwest conference. The main objectives of the session were to expand on the dialogue from the facilitated brainstorming session and prompt new discussion on participant-selected topics. All attendees of the conference were invited to participate. Participants identified the topics that would be discussed during the session and spent the majority of the session discussing those topics in small groups. Each group then posted the notes from its discussion and shared the most salient points with the rest of the participants.

Appendix 5b contains verbatim text from the open source session topic note sheets and flags.

Activity 4: Regional Survey

A web-based survey was sent to all BPA utility customers to gather utility input on opportunities identified in the literature review, interviews, and facilitated sessions.

The survey ran from late June through late July 2013. The team collected responses from 52 individuals from 45 utilities.

Appendix 7 presents the survey, including all questions, results and analysis for each question, and a list of responding organizations.

Table 2: Survey Participant Summary

Customer Designation	Number of Organizations	Respondents
Small Rural Residential (SRR)	**19**	**19**
Non-SRR	**26**	**33**
I-937	**11**	**14**
Non-I-937	**34**	**38**

KEY FINDINGS

Customers want more regional collaboration, but they also desire local control

BPA customers would like more regional consistency in programs, but also desire local control

Many participants see increased programmatic consistency as an effective way to improve programs across the region. Common concerns expressed in the facilitated sessions included inconsistency among utility territories in the quality and methods of measurement, verification, and delivery. One interviewee mentioned the Simple Steps showerhead program as an example of where programmatic consistency across the region improved program delivery.

However, a desire for increased regional consistency in program approaches needs to be balanced by many utilities' wish for local control. For example, one survey participant stated, "We don't want to relinquish in house control nor the ability to change our programs and funding at our own discretion." In the survey, BPA customers rated third-party rebate processors lowest among the residential program models, typically because of the lack of local funding control. For example, BPA's customers wrote statements such as "The utility should maintain control of their funding and their customers" and "Our co-op likes to maintain the relationship with the member. [Energy efficiency] is a member loyalty program and we like to be the one handing out the money."

BPA customers would like increased and more effective communication channels

BPA customers often suggested ways for BPA to increase opportunities for feedback from its customers or facilitate conversations across the region. One BPA customer wrote, "Listen to the needs of all utilities and take action of these needs. [*sic*]" Another BPA customer requested, "Help facilitate the discussions."

Several survey participants indicated in the free response section that better communication is necessary for future programmatic success. One eloquent example of this is the following quote: "The preceding has all been about new programs and I believe it is good to look for new ways of doing things smarter and more effectively. However, when I think of infrastructure support I would like to suggest that BPA consider adding some more EER staff to provide support. These EER folks seem to be spread way too thin to be effective. Developing better communications between utilities and BPA is a beginning place in thinking of how to work smarter and more effectively."

BPA customers would like a better way to share, access, and handle program information

BPA customers frequently expressed the request for information to be shared among peers. They emphasized the importance of leveraging information that is currently available, including sharing information on end-use customers and utility programs and finding a way to ensure data security to facilitate data sharing. Several BPA customers also mentioned the need for better information on the current building stock, and some indicated the need for a centralized gatekeeper, such as NEEA or BPA, for regional information.

BPA customers also offered a variety of ideas for accomplishing this goal. Some suggested utility infrastructure improvements, with one participant writing, "Utility data systems (paper, IT) need to be brought up to date: usable, sortable, accessible." Another participant suggested consolidating programmatic data into a central repository, similar to the Northeast Energy Efficiency Partnerships (NEEP) database[5]. Some BPA customers combined these two ideas by suggesting hardware installation, like energy monitors, in combination with a central or cloud-based repository to store program information.

BPA customers lack resources to expand programs and reach new markets

Public power utilities want to reach underserved markets but struggle to do so

Participants often mentioned reaching small commercial, multi-family, and low income end-use customers as a critical component of future programs. BPA customers showed in their survey responses a strong desire to reach underserved markets, particularly in the residential sector. This was most evident when BPA customers were asked to rank the program models most important to them over the next two to five years.

Participants also mentioned barriers to reaching underserved markets. In particular, participants were greatly concerned about split incentives—where the tenant or the landlord (but not both) benefits from an equipment upgrade— for multifamily and small commercial end-use customers. BPA customers offered several suggestions for solving the split incentive issue, including using benchmarking tools and creating incentives for the property owners. Additionally, BPA customers had many questions about best practices when working with rental properties.

BPA customers would like new programs to reach a wide audience, but are concerned about funding

BPA customers want new programs to reach their diverse end-use customer base. During all the activities, BPA customers mentioned many new program models, including targeted incentives for schools, facility management programs, and tiered incentives coupled with a whole-home incentive structure. In the survey, BPA customers ranked highly programs with a whole-building approach and a wide reach.

BPA customers identified comprehensive commercial and energy audit programs—both resource-intensive, whole-building approaches—as high priorities.

While BPA customers provided many examples of new programs and measures they would like to be able to offer, they also indicated a need for increased funding. Several BPA customers wrote statements such as "Dollars" or "More money" on the flags during the facilitated session activities. While the survey did not explicitly ask about funding, several BPA customers used the free response sections to note their concern. One BPA customer indicated that many programs are "on hold until better BPA funding [is] available."

5 — http://www.neep.org/emv-forum/reed/index

Figure 1: Program Delivery Model Rank - Residential Sector - All Respondents [Survey Question 19]

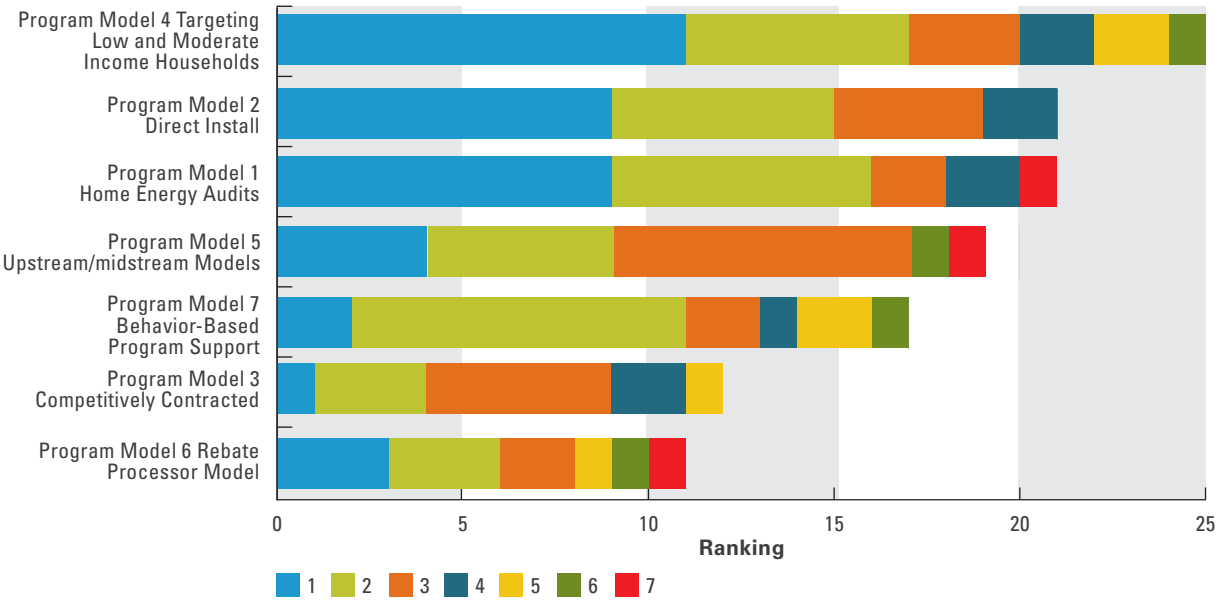
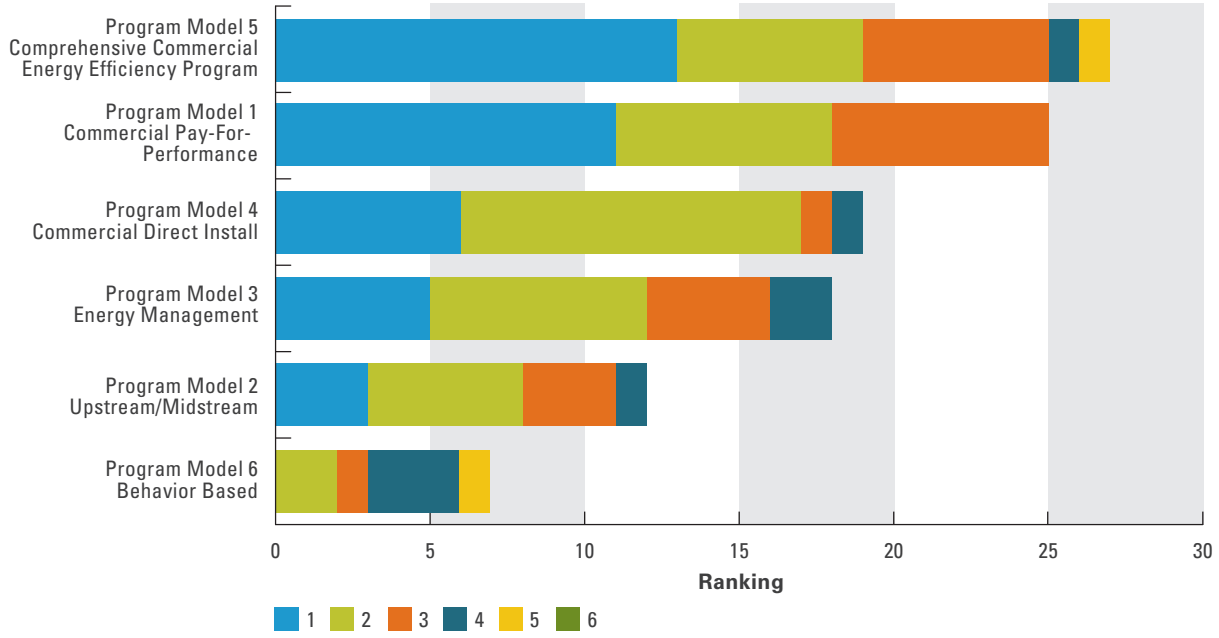


Figure 2: Program Delivery Model Rank - Commercial Sector - All Respondents [Survey Question 29]



BPA customers would like new ways of marketing to trade allies and end-use customers

Utilities see potential in marketing to help achieve new savings once the "low-hanging fruit" has been exhausted. They identified marketing to both trade allies and end-use customers as important elements to achieve future program success. Regional marketing efforts, such the one for BPA's ductless heat pump pilot program, were mentioned as examples of what has worked well for public utilities, especially those with limited staff.

Customers provided a wide variety of suggestions on specific ways BPA could support region-wide marketing. Some examples included a regional marketing campaign with a unified message and icon, like the "Smokey the Bear" campaign, and a regional media saturation campaign targeting end-use customers, vendors, and policy makers.

When given the choice in the survey, BPA customers often selected marketing support as a key area of importance or something they would like BPA to include within program offerings.

In addition to choosing marketing when it was offered as an option, BPA customers often indicated their desire for marketing support in the free response portions of the survey. In particular, when asked how BPA could help with support for market actors, BPA customers often requested marketing materials.

Table 3: Survey Question 11C, "Which of the following elements are important to your utility in an audit offering? Please select all that are important."

	Responses				
	Total n= 27	SRR n = 13	Non-SRR n = 14	I-937 n = 4	Non-I-937 n = 23
Best practices for using audits as an effective program tool	59%	62%	50%	50%	57%
Marketing materials	**56%**	**62%**	**50%**	**50%**	**57%**
Combine audits with direct installation of measures	52%	31%	71%	75%	48%
Program design with step-by-step communication and implementation strategy	48%	54%	43%	50%	48%
A BPA central contract for on-line audits that utilities could opt-in at a reduced cost	44%	38%	50%	50%	43%
Creative partnerships with community groups	15%	8%	21%	25%	13%

BPA customers are concerned about training for trade allies and quality control

BPA customers indicated a need for well-trained trade allies as an area of concern for current and future program success, and often identified BPA as having a key role in training efforts. For example, one facilitated brainstorming session participant wrote, "Training and education for distributors and contractors" as an activity BPA could pursue to help the region. Another BPA customer requested, "Provide standardized training opportunities to all utility customers that helps get new EE professionals up to speed on reporting and documentation requirements."

Survey respondents frequently mentioned training as the best way BPA could help with the various market actors involved in BPA customers' programs. Requests included "Low or no cost training," "Regional training and marketing and oversight," and "One location for contractors to learn the various local utility incentive programs."

BPA customers want a wide variety of measures and delivery models and would like them to be simple, easy to understand, and tailored to meet their specific needs

BPA customers mentioned a wide variety of measures they thought were important for future programs, including many BPA already offers

Public utilities are interested in having access to a wide variety of measures to include in future programs, including ductless heat pumps, commercial lighting (T8s and LEDs), residential lighting (LEDs), and duct sealing. BPA customers also suggested programs incorporating comprehensive sets of measures, such as Net Zero buildings, weatherization, and ENERGY STAR homes.

Participants also indicated particular measure preferences by residential program type. When BPA customers were asked what measures they would like to include in a direct install program, LEDs, showerheads, and smart thermostats were the most requested. When a similar question was asked about a competitively contracted program, respondents ranked heat pump tune-ups, refrigerator/freezer recycling, and direct install services highest.

BPA customers favor many different delivery models

For the commercial sector, BPA customers responding to the survey most often rated comprehensive commercial or pay-for-performance programs highest. On the residential side, each BPA customer type requested something different, with no one program model a clear "winner." For example, BPA's non-SRR customers ranked direct install programs highest, while BPA's I-937 customers preferred mid/upstream programs.

Public utilities shared support for program successes such as the Simple Steps showerhead program, and would like the model expanded to include other measures. Another utility expressed the need to move away from incentives and work directly with midstream sales staff to help sell efficient products. BPA customers also discussed effective or potential opportunities such as free home energy audits, BPA's ductless heat pump and commercial kitchen programs, low-income weatherization, and education-based programs in the facilitated brainstorming sessions.

OPPORTUNITIES

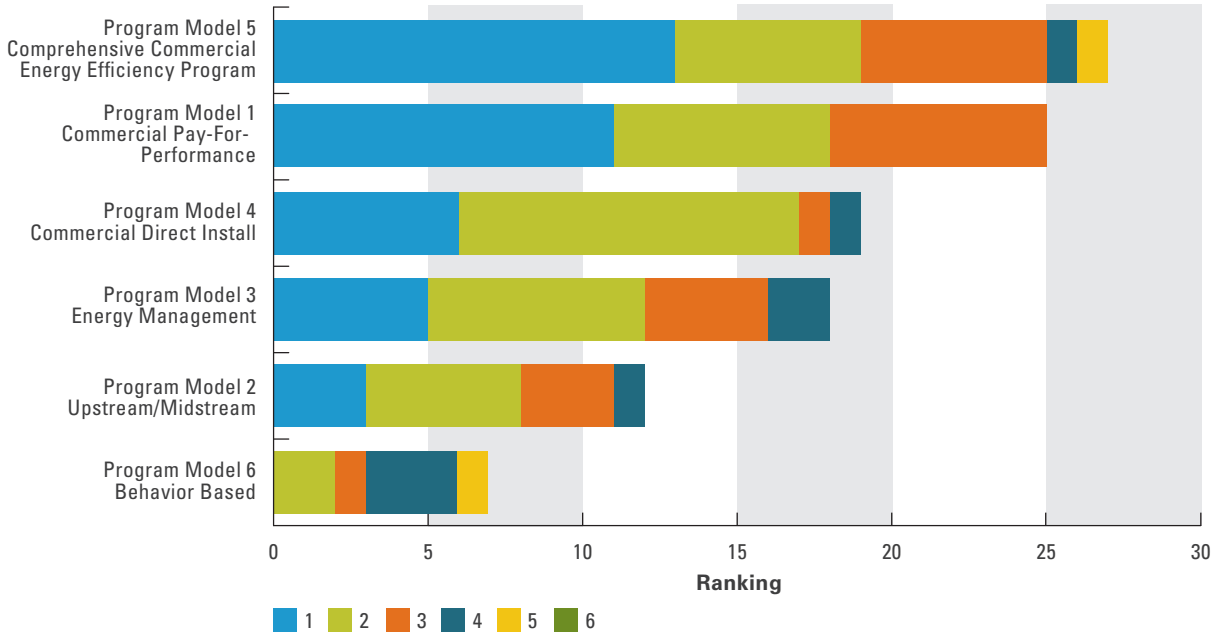
Based on the findings, the team developed five opportunities that BPA could consider for further study.

Commercial Opportunity – Comprehensive Turn-Key Commercial Program with Pay-for-Performance Elements

A key opportunity to explore is the implementation of a comprehensive commercial program with pay-for-performance elements.

In survey responses, BPA customers expressed a strong interest in having both turn-key comprehensive commercial and pay-for-performance program models. These two programs offer many synergies, such as giving BPA customers the ability to pay for achieved "at-the-meter" savings, and could be combined to create one third-party program offering. During the survey, all BPA customer subgroups ranked either a turn-key comprehensive commercial solution or a pay-for performance program model first overall.

Figure 3: Program Delivery Model Rank - Commercial Sector - All Respondents [Survey Question 29]



Having one comprehensive program would bring more consistency to many commercial programs in BPA's territory. A comprehensive commercial program would also allow a wide variety of measures to be implemented in the commercial sector, addressing another key finding.

During the survey, BPA customers made some specific requests that could help shape a third-party comprehensive program. BPA customers rated technical and custom project support as very important to a third-party comprehensive offering and measurement and verification support as very important for a pay-for-performance program. For both program models, BPA's customers value contractor training and a dedicated BPA program manager.

BPA customers also expressed several concerns related to third-party comprehensive programs. Some utility territories lack enough large customers to support this type of program. As one customer stated, "In our utility's service area, we don't have the large-size commercial buildings that would benefit." A related concern of some BPA customers was that not all commercial end-use customers need such a high level of support.

Some BPA customers mentioned the lack of interaction between the utility and the end-use customer in a third-party program. One BPA customer commented that a third-party program "takes [end-use] customer interaction and on the ground staff from the utility and puts it with a 3rd party." This idea was echoed by other participants in the facilitated sessions and the interviews with BPA customers.

Several general issues that could affect the design of a commercial comprehensive program arose. As discussed in the findings section, BPA customers mentioned a lack of funding in nearly every research activity. Typical comprehensive commercial programs require a big investment per end-use customer, which may be problematic for BPA customers with constrained resources. Also, full-service comprehensive commercial programs are typically too resource intensive to include small commercial end-use customers.

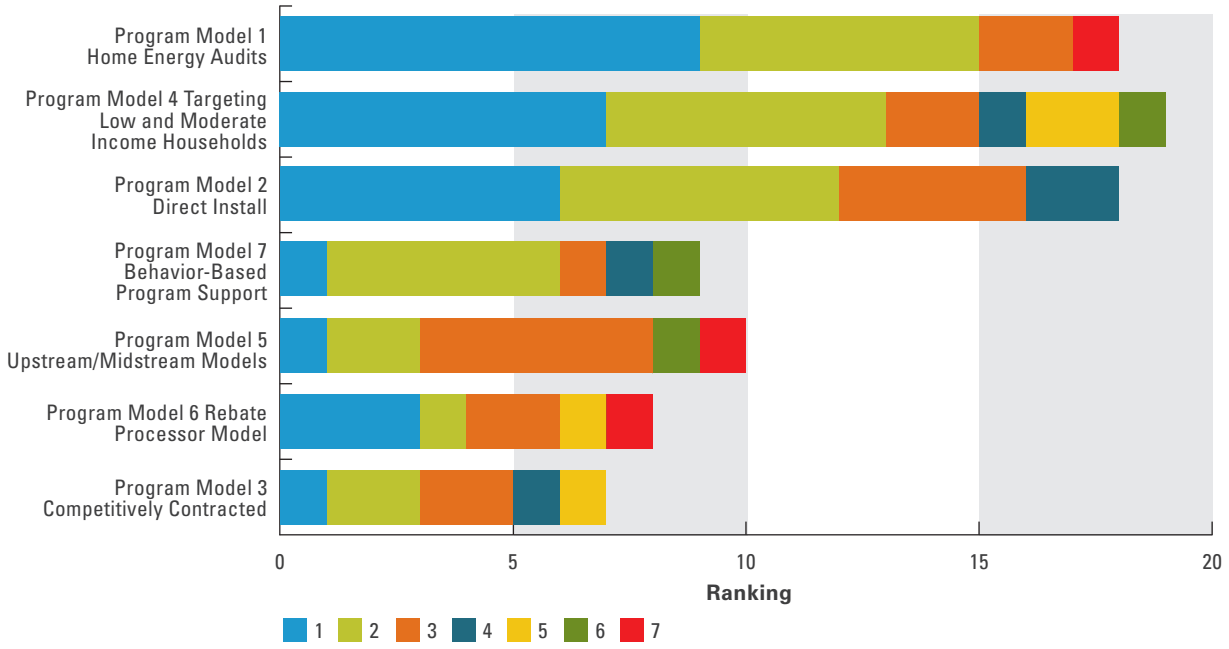
To address these important concerns, BPA could consider offering utilities two options in the level of support they receive. One track could be a full-service, comprehensive program that provides extensive program support (such as Energy Smart Grocer), and another track could have a reduced scope and perhaps be geared more to smaller commercial end-use customers. Offering this second track could answer many of the concerns raised by BPA customers, including insufficient resources and the lack of large commercial end-use customers. It could also allow BPA customers to treat the program as a scalable resource, as utilities could tailor to their specific needs the level of support they receive.

Residential Opportunity - An Energy Efficiency Toolkit Providing a Customizable Suite of Tools and Measures

The development of a suite of tools that includes marketing materials, possible program designs, best practices, audit tools, regional trainings, and communication plans for the residential sector is another key opportunity to explore.

In their survey responses, BPA customers chose a wide variety of programs they thought would be important over the next two to five years. This variation suggests that there isn't a "one size fits most" opportunity like there is in the commercial sector.

Figure 4: Program Delivery Model Rank - Residential Sector - Non-I-937 Respondents [Survey Question 19]



Though BPA customers favored a wide variety of program models, there was consistency in the types of support they would like in implementing their programs. Marketing and education materials, as well as training support, best practices, and program design were consistently ranked highly when they were listed as program support options.

Table 4: Important Program Support Elements – Residential Sector

Audit Program Model
Marketing materials – second out of six most selected
Best practices for using audits as an effective program tool – first out of six most selected
Direct Install Program Model
Marketing materials – first out of four most selected
Competitive Contracting Model
Educational/marketing material - brochures for homeowners – second (tie) out of eight most selected
Training materials for contractors – first out of eight most selected
Regional quality assurance oversight – second (tie) out of eight most selected
Low-Income Program Model
Educational materials/programs – first out of six most selected
Educational materials/programs – first out of six most selected
Behavioral Model
Evaluation support – first out of six most selected
Suggested program design models with a 24-month strategy map to follow – second out of six most selected

BPA customers also expressed the desire for training and marketing support to help them work with the market actors that participate in various programs. For the two most-frequently selected market actors of importance, HVAC contractors and weatherization contractors, BPA customers often mentioned training and marketing materials as types of support they would like to receive from BPA.

Table 5: Survey Question 8, "For the residential sector, please identify the top 3 market actors who may be key to meeting your future energy efficiency goals."

Total Responses = 142					
	Total n= 49	SRR n = 18	Non-SRR n = 31	I-937 n = 12	Non-I-937 n = 37
Residential HVAC installation contractors	88%	94%	84%	92%	86%
Weatherization contractors	65%	44%	77%	58%	65%
Big Box Stores (e.g., Home Depot, Best Buy, Costco)	22%	11%	29%	58%	11%
Mom and Pop Retail Businesses	22%	28%	19%	0%	30%
Residential builders	16%	28%	10%	8%	19%

Table 6: Survey Question 8B, "For residential HVAC installation contractors, list the activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochures targeted to this market actor. Please be as specific as possible."

Educating Residential HVAC installers on the benefits and best practices of ductless heat pump and heat pump water heater installations.
Low or no cost training
Marketing materials
BPA to perform QA/QC. The utility performs some in-progress inspections and inspects 100% of all installations upon completion. Adding QA/QC requirements to this is too costly both financially and time wise.
Training and information on quality control of installations & marketing.
Provide contractors with local and/or webinar training on PTCS (certification) and BPA requirements for HVAC and weatherization measures.
Technical and programmatic training "All Things PTCS" (HP & duct sealing); discussion of collaborative marketing efforts.
Information push to help contractors understand the programs, and goals

Table 7: Survey Question 8O, "For weatherization contractors, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific."

Low or no cost training
Training and marketing help to get contractors more proficient and productive. Teach new techniques.
Marketing material.
Some general technical training might be helpful for this sector.
Educate both installers and bidders on weatherization best practices.
Regional training & oversight
Scheduled region wide trainings on the new RTF Residential Weatherization specs.
More training for installers, especially if/when specs change.
Co-branded marketing support (utility & contractor)
Q&A Testing
Education regarding best practices and air sealing techniques

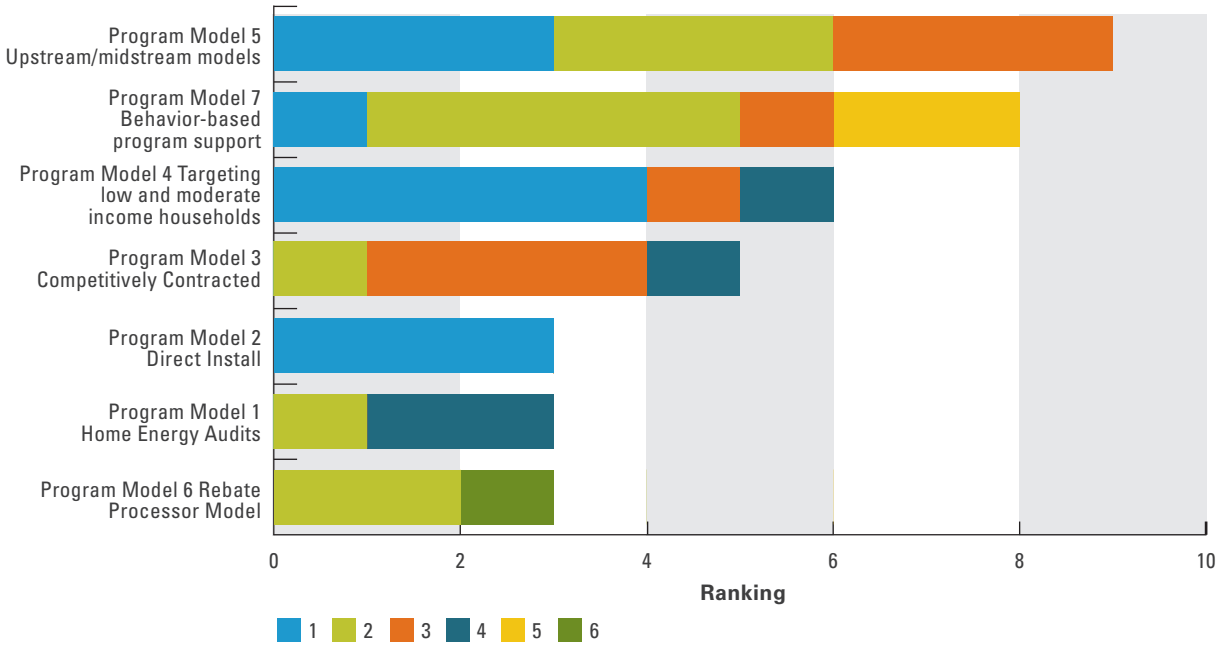
Developing a tool kit could respond in several ways to these customer requests and address many of the general findings discussed above. First, having a wide variety of similarly formatted training and marketing materials could bring more consistency to programs across the BPA region. Second, providing marketing materials and other program support items could ease the resource constraints of BPA utility customers. Third, by providing this wide range of support but not getting directly involved in the programs, BPA could give its customers the local control they desire. Finally, providing regional training and support would help increase the expertise of trade allies and provide new avenues to market to trade allies, both of which are important to many of BPA customers.

Providing a scalable support tool kit would allow BPA customers to choose the amount of support they believe they need. While some of the large BPA customers may choose to participate in only the regional trainings, others may want program support approaching a full-scale, turn-key solution. By allowing its customers to choose which elements to utilize and soliciting feedback, BPA could further tailor its support to meet the widest possible range of customer needs.

Residential Opportunity – Mid/upstream Model to Capture Savings in New Areas

In their survey responses, BPA's customers in Washington subject to I-937 ranked a new, regional upstream program to capture future savings as their highest priority over the next two to five years. This leads to another key residential opportunity to explore: the development of a mid/upstream model to capture savings.

Figure 5: Program Delivery Model Rank - Residential Sector - I-937 Respondents [Survey Question 19]



In addition to providing the potential for savings in new areas, mid/upstream models offer a variety of measures that respond to the needs of BPA customers. Specifically, I-937 customers identified LEDs, future appliances, and consumer electronics as valued measures. They also highlighted three elements of mid/upstream programs that are important to them and could help BPA shape a program. First, programs must be easy to understand, especially for the end-use customer. Second, the programs must offer visibility for the utility. One I-937 customer would like to see the utility's logo in front of the customer at the local retail outlet, essentially so the end-use customer associates the price reduction with the utility. Third, I-937 customers want minimal overlap with other programs.

One potential issue with capitalizing on the mid/upstream program model opportunity is that BPA customers are not unanimous in wanting more BPA involvement with this program model. Of the eight responses to a question about who should develop and implement the program, four selected NEEA, three indicated BPA, and one wasn't sure who should take the lead. Two of the eight respondents were I-937 BPA customers, one of whom chose NEEA, and the other wasn't sure.

There are two areas of possible conflict between BPA's I-937 and non-I-937 customers: product selection and market actor involvement. Non-I-937 customers would like to focus on more traditional products, like appliances, for upstream programs. These customers ranked appliance rebates over consumer electronics and future appliances. BPA's I-937 customers prefer working with big box retailers, while non-I-937 customers prefer working with smaller, "mom and pop" retailers.

Despite these possible roadblocks, mid/upstream residential programs are an important potential opportunity for BPA.

Cross-Cutting Opportunity - Support and Encourage BPA Customers' Regional Efforts to Collaborate and Share Information

Supporting and encouraging regional efforts to share data among BPA customers and other regional energy efficiency players is another potential opportunity to explore. This support could include a variety of activities, such as hosting meetings with regional policy makers, providing improved access to energy efficiency information through a redesigned web portal, and continuing to expand and share pilot program findings.

While this activity was not specifically addressed in the survey, it came up often in the other activities. During the facilitated brainstorming sessions, BPA customers provided a wide range of comments related to data sharing, some very specific and some very general. Several BPA customers directed specific concerns at their own utility or other BPA customers, with comments including "Free the utility data" and "Utility data systems (paper, IT) need to be brought up to date: usable, sortable, [and] accessible." Others addressed data sharing across the region and were far more expansive. For example, one BPA customer requested "Universal and secure access to utility and [end-use] customer data."

BPA customers also provided specific comments directed to BPA, particularly concerning access to regional market, energy efficiency, and pilot program information. Some examples included "Data: provide access to sales data to utilities (buy it for the region)" and "Consolidate EE data collection – collect all data in similar format for all utilities and provide regional database (similar to consolidation effort by NEEP in New England)."

BPA customers requested a wide range of BPA involvement in regional information sharing, with some customers wanting BPA to be very involved ("Consolidate EE data collection – collect all data in similar format for all utilities and provide regional database (similar to consolidation effort by NEEP in New England)") and others wanting BPA to be completely hands off ("Leave tracking and reporting to utilities, get out of the business of policing EE").

Cross-Cutting Opportunity - Simplification of Program Participation and Reporting Requirements

An additional cross-cutting opportunity is the simplification of program requirements. This could include making commercial calculators less complicated, streamlining reporting, and allowing a wide variety of measures with easy-to-understand savings calculations.

This opportunity was not specifically addressed in the survey, but participants in the other activities mentioned it frequently. During the facilitated sessions, BPA customers expressed their desire for simpler reporting methods. Several BPA customers mentioned the need for more user-friendly online reporting, including such comments from BPA customers as "User friendly online reporting" and "Process one reporting mechanism from start to finish. No more hard copies. [Use] 1 Database." BPA customers also suggested simplifying the available measure lists and the accounting guidelines. One BPA customer combined these ideas into one request: "Improve reporting site, cost effective[ness] calculator, and measure lists."

CONCLUSION

The results from the literature review, interviews, facilitated brainstorming sessions, and survey conducted in this research effort show that BPA customers are a diverse group with a wide variety of concerns and priorities. Generally, BPA customers want more consistency in programs, as well as more local control. BPA customers also want to expand program offerings and reach new and underserved end-use customers. They also expressed a need for marketing, training, and program design support to improve program design and implementation.

These findings provided a framework for developing potential avenues for BPA to consider in developing innovative programs that meet its customers' needs, continue to capture savings, and help its customers engage their end-use customers. These opportunities include creating a comprehensive commercial program, providing marketing and design support for residential programs, developing a residential upstream program, simplifying program reporting and documentation, and providing support for regional data sharing. While this research exercise has provided valuable insight into BPA customers' concerns and priorities, additional steps will likely be needed before programs or infrastructure improvements can be designed and implemented.

This report lays out potential opportunities for further exploration by BPA. BPA may want its follow-up research to include soliciting additional customer input on program design ideas not addressed in the survey. This could include gathering feedback on specific program design elements, like the two-tiered approach to a comprehensive program or the preferred market actors for an upstream program. BPA may also choose to further explore areas where its customers were not in agreement, such as measures to include in an upstream program or which market actor should run a third-party mid/upstream program. Gathering additional input from its customers would allow BPA to hone offerings further, which could increase energy savings from programs as well as customer satisfaction.

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Appendix 1: Category-Specific Examples and Definitions

Measures are the products/equipment from which energy savings are obtained, typically by replacing an existing product with a more efficient one, removing an existing product from the grid, or changing the usage of an existing product to reduce its energy consumption. Measures fall in the general categories of HVAC, control systems, building envelope, water heating, appliances, lighting, and consumer electronics. The project team treated new and emerging technologies as a separate category because they are generally untested in the market and often lack program documentation.

Heating, ventilation, and air conditioning (HVAC) represents the single greatest end-use consumption in the United States for the residential and commercial sectors, and it presents a significant savings opportunity for residential and commercial energy efficiency programs. HVAC programs are appropriate for all end-use customer, including manufactured homes, low-rise multifamily (3 or fewer stories), high-rise multifamily (4 or more stories), small commercial, and large commercial. New technologies such as ductless heat pumps are well suited to the Northwest region.

Control systems help manage usage for other product categories, many of which have significant idle energy consumption or are left on even when not in use. Control systems include programmable thermostats, timers, motion sensor switches, and sophisticated whole-building software packages.

Water heating represents the second largest load for the residential sector after HVAC. Improvements in efficiency due to new heat pump technologies have made water heaters a potential source for significant electrical savings.

Building envelope measures, including insulation, windows, and doors, directly affect the heating and cooling usage in residential and commercial buildings and have significant potential to reduce overall energy use. While building envelope measures apply to all sectors, specific measures and approaches tend to be more effective for particular target audiences.

Lighting is the second-highest energy user in the commercial sector (after HVAC) and continues to be a great source of savings for energy efficiency programs. Due to the pervasiveness of lighting in the commercial sector, lighting programs are appropriate for all classes and sizes of commercial customers. Residential lighting was historically a large source of energy savings, but standards established by the Energy Independence and Security Act of 2007 (EISA) have raised minimum efficacies to the point where incremental savings are too small to be cost-effective. New LED technologies may turn this around, depending on whether products are available before EISA Phase 2 standards take effect in 2020.

Appendix 1: Category-Specific Examples and Definitions

Consumer electronics are an ever-growing end use for residential customers, and curbing energy consumption from these products is becoming increasingly important to utilities. Historically, there have been barriers to creating electronics programs, such as rapidly shifting product lines, rapid improvements in baseline efficiencies, and a wide variety of small-consumption devices. While this is still the case for many types of electronics, certain targets, such as set-top boxes and networking equipment, could have a large impact. These are normally considered residential products, but they also have a significant presence in the commercial sector.

Appliances include such well-known and -used products as refrigerators, freezers, dishwashers, and clothes washers. While more stringent standards and high saturation of ENERGY STAR qualified models have reduced the importance of appliance programs, there are still some market segments where a high level of savings can be achieved through energy efficiency programs. Key sub-sectors that still tend to have poor performing appliances include low-income residential, due to budget constraints, and renters (both commercial and residential), due to split incentives (where one party owns the appliance and another party pays the utility bills).

New and emerging technologies offer savings because they significantly improve efficiency through new design and operation or bring efficiency to a previously untouched product category. Products such as heat pump water heaters, ductless heat pumps, light emitting diodes (LEDs), and heat pump clothes dryers offer very high per-unit savings and could substantially reduce overall energy consumption.

Delivery models are the methods by which the energy-saving action is induced. Delivery models may be financial (e.g., rebate, mark down, or buy down), or non-financial (e.g., customer education or direct installation).

Rebates are payments provided to end-use customers for engaging in an energy-efficient action.

Mark-down incentives are payments to retailers or manufacturers; they are passed on to customers in the form of a reduced price of a measure.

Performance-based incentives provide an entity, usually a third-party contractor or implementer, with a set payment for achieving a designated energy savings goal.

Consumer education programs seek to engage customers about energy-efficient products and encourage them to make changes with no financial incentive.

Direct installation programs provide free or reduced-cost installation of energy efficiency measures.

Appendix 1: Category-Specific Examples and Definitions

Target audiences are the people or buildings to which the program is targeted and that are responsible for the action that will generate energy savings. Target audiences may include sub-categories, such as low-income housing for the residential sector or small commercial buildings for the commercial sector. This project explores target audiences in the residential and commercial sectors.

> **Commercial data centers** are large warehouses of networking servers used to facilitate high speed Internet traffic. They are often referred to as server farms.
>
> **Large commercial buildings** are commercial complexes that are 50,000 square feet or more.
>
> **Low-income residential customers** are typically those who earn up to 200% of the federal poverty guidelines, though this definition can vary from program to program.
>
> **Multifamily buildings** contain at least 5 individual dwelling units and are typically divided into two subcategories: low-rise multifamily (3 stories or fewer) and high-rise multifamily (at least 4 stories).
>
> **Residential buildings** include all single-family, multifamily, mobile, and low-income homes.
>
> **Small commercial** businesses are typically those with a load of less than 50 or 100 kW. Common building types included in small commercial are low-rise office buildings, retail stores, grocery stores, and restaurants.

Market actors are organizations or entities that are necessary to implement a program or that act as a catalyst for a program, increasing participation, cost-effectiveness, or energy savings. They include architectural and engineering firms, retailers, distributors, manufacturers, non-profits, trade organizations, and community leaders.

> **Architecture and engineering firms** design buildings and building systems for medium- and large-scale construction projects. These can include small and large commercial buildings, as well as large multifamily buildings.
>
> **Big box retailers** are large retail chains with wide, often nationwide, distribution networks. They typically have a very large customer base and high sales volume for a wide variety of products.
>
> **Distributors** are the "middle man" between manufacturers and commercial customers or installers who typically make bulk purchases.
>
> **Government agencies** are governmental organizations at the federal, state, and local levels that are often responsible for enforcing laws and delivering government programs.

Appendix 1: Category-Specific Examples and Definitions

Local/regional retailers, sometimes be referred to as "mom and pop" stores, are local or regional chain stores. They tend to be smaller than big box stores and may offer less product variety.

Manufacturers are the designers and producers of goods that enter the market place. They represent the most upstream point in the process of delivering a product to the end-use customer.

Technical assistance consultants specialize in program implementation and support. They can include implementation contractors, independent efficiency experts, green building contractors, building science consultants, and policy consultants.

Trade organizations represent specific industries, such as lighting manufacturing, appliance manufacturing, and HVAC distribution. They often perform public relations, lobbying, and advertising on behalf of their respective industries.

Appendix 2: Literature Review Summary and Sources

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Measure - Appliances

Appliances include refrigerators, freezers, dishwashers, and clothes washers. Appliances have long been the target of traditional energy efficiency programs but have recently been falling out of favor because increasingly stringent federal standards and high saturation of energy-efficient appliances make it very difficult to generate additional savings.

While savings are difficult to achieve, there are still some audiences for whom an appliance program may make sense. Typically underserved markets, such as low-income and rental properties, can be good implementation targets for appliance programs. These markets are likely to have budget constraints and split incentives that make them more likely to have older appliances. Savings can be generated through multiple avenues, including retiring old units and spurring purchases of high-efficiency units.

Residential

- Pros
  - **Easy to install** – One of the key benefits of appliance programs is the ease with which appliances can be installed. This allows appliance programs to work well with traditional models of delivery, such as consumer rebates.
  - **Easy to track and monitor** – Appliance installations are easy to track and monitor using rebate models to track consumer purchases. There is little risk of poor installations, which would reduce savings.
- Cons
  - **High existing standards** – Over the past 20 years, appliances standards have become increasingly more stringent, leaving little room for savings. This is particularly true for new appliance programs that track savings compared to a market baseline.
- Example program(s)
  - ComEd Smart Ideas for Your Home – Clothes Washer Rebate (Res)
    - The ComEd clothes washer program is a midstream rebate program working with national retailers to sell high-efficiency clothes washers. The program has had very positive responses from retailers and customers. The program target is to save 64,803 MWh over the program cycle. [1]
  - Efficiency Vermont Major Appliance Retrofit Service (Res)
    - This program is conducted in partnership with the state's Weatherization Assistance Programs, which replaces old, existing appliances in low-income homes with ENERGY STAR models. [2, 3]

Measure - Behavior

Behavior measures in the commercial sector can include technical assistance, schedule adjustments, or reminders (nudges) to attempt to change energy-use behavior of commercial building occupants, maintenance staff, building owners, or energy managers. Typically, programs using behavior measures are thought of as Operations and Maintenance (O&M) programs. Behavior measures can be a critical component of a large commercial retro-commissioning program. Equipment replacements of any kind are not part of this measure.

Commercial

- Pros
  - **Low initial cost** – Because these programs do not generally require measure installation, they tend to have a low cost to the consumer. There may be some long-term costs associated with behavior measures that require staff time to ensure proper maintenance and keep the building maintenance on schedule.
  - **Easy to start** – These programs can usually be implemented quickly by the consumer because there are no physical measures. Initial adjustments to building operations can be made with the help of a utility expert or other reference material, such as a guide book.
- Cons
  - **Often requires dedicated utility staff to work with building owners** – Effective programs that integrate behavior strategies often have dedicated utility or skilled implantation staff who perform site visits over the course of the entire program. This can be a significant ongoing cost to the utilities.
  - **Savings are highly dependent on having motivated building staff** – Even with frequent utility intervention, the success of behavior measures depends heavily on having a motivated and knowledgeable building staff. Accordingly, the savings from behavior measures can vary widely from client to client.
- Example program(s)
  - Energy Trust of Oregon Strategic Energy Management Program (Comm)
    - This program targets large commercial buildings to help improve daily operations and plan for future energy upgrades. The Energy Trust of Oregon provides workshops, coaching, technical assistance, and tracking tools to building owners to help improve building operation and save energy. [4]

Measure - Cogeneration

Cogeneration, sometimes called combined heat and power (CHP), refers to a group of technologies that are used to generate electricity and useful heat close to the point of consumption. These systems can be up to 80% efficient, compared to the traditional combination of centralized electricity generation located far away and on-site heat generation, which typically is about 45% efficient 45%. [5]

Lack of consumer awareness can be a strong barrier to entry for cogeneration programs, and any program using these technologies must educate target consumers. This is particularly true for small to mid-size customers (such as small commercial and multifamily buildings) due to the relative youth of the technology that is appropriate for them.

- Pros
  - **High potential savings** – Combined heat and power can offer large savings potential by capturing waste heat that would be lost during traditional generation. Typical consumers have year-round water heating needs and seasonal heating needs that can be met with this waste heat.
  - **Creates resilience in electricity grid** – Generating power on site removes electric transmission from the grid. This can help stabilize the grid, especially during peak transmission hours.
- Cons
  - **Not traditionally considered an energy efficiency measure** – Many utilities do not consider cogeneration an energy efficiency measure. While reducing transmission losses leads to efficiency gains, the improvement can be hard to quantify and track.
  - **Technologies are still new to the market**– While cogeneration has been used for large commercial and industrial customers for a long time, products designed for small-scale use are relatively new to the market, which can present challenges in determining quality and ensuring proper installation.
- Example program(s)
  - California Self-Generation Incentive Program
    - This statewide program has incentivized distributed generation and combined heat and power technologies for more than 11 years. By 2010, systems under the Self-Generation Incentive Program generated over 221 MW of electricity. However, these projects were found to result in a net increase in greenhouse gas emissions. [6, 7]

Measure - Commercial Lighting and Lighting Controls

Commercial lighting measures include T8s, high-performance T8s, T5s, pulse-start metal halide lamps, high-pressure sodium lamps, LEDs, and other high-efficiency lamps, ballasts, and fixtures. They can also include installation of advanced lighting controls such as occupancy sensors and daylight sensors. Savings from commercial lighting programs can range from 15%-55% of energy usage, with some comprehensive lighting retrofits achieving savings of more than 75%. [8]

Commercial lighting has long been a target of energy efficiency programs. New technologies and controls are opening huge opportunities for continued savings in this area.

Commercial

- Pros
  - **Very cost-effective** – Commercial lighting tends to have long usage patterns (often 12+ hours per day) and long lifetimes. This makes replacing commercial lighting extremely cost-effective with very short payback periods.
  - **Large remaining savings potential** – Due to the introduction of new products and controls, commercial lighting has significant potential for savings across all commercial customer classes.
  - **Reliable savings** – Commercial lighting performance and commercial building operation do not vary much from day to day, which produces an extremely reliable, consistent stream of savings.
- Cons
  - **New federal standards will decrease cost-effectiveness** – Standards mandated by the Energy Independence and Security Act of 2007 (EISA) will have some impact on commercial lighting, reducing the cost-effectiveness for some classes of lighting products, particularly A-line lamps.
  - **Further savings will come increasingly from more complicated measures, such as advanced lighting controls and lighting system redesign** – While advanced lighting strategies provide a high level of savings, they can be difficult for the consumer to adopt and understand. Lighting controls can also increase the level of maintenance necessary to assure the lighting performs as intended.
- Example program(s)
  - Efficiency New Brunswick Bright Ideas Commercial Lighting (Comm)
    - This midstream program incentivizes commercial lighting distributors with 100% of the incremental cost of HPT8 and RWT8 lamps. This program succeeded in increasing the market share for the incentivized products to almost 100% and cost a total of $217 per MWh saved. [9]
  - Focus on Energy Whole Building Lighting Retrofit (Comm)
    - This program targets institutional buildings for comprehensive lighting system redesign using lighting designers with tiered incentives to encourage the most energy-efficient

systems. In program years 2006 through 2008, buildings achieved an average savings of approximately 40% over the ASHRAE 1994 code through this program. [10, 11]

- Efficiency Vermont SMARTLIGHT (Comm)
  - This midstream program incentivizes LED reflectors, RWT8, RWT5, RWT5HO, and reduced wattage metal halide lamps. This program has been more effective in increasing LED sales than to the downstream program. [12, 13]
- Ontario Power Authority Small Commercial Direct Install (Comm)
  - This turnkey program provides installation of up to $1,000 in efficient lighting and water heating measures to businesses with peak demand of less than 50 kW. This program has had a very high level of customer satisfaction. [14]
- PG&E and Palo Alto RightLights Program
  - The RightLights program is a commercial lighting and refrigeration controls program conducted in concert with the Palo Alto local government. It has an average savings of 33,642 kWh per project. [15]

Measure - Commercial New Construction

Commercial new construction generates savings by improving a building plan over the code baseline. Savings are calculated by comparing an energy model of the baseline building to one of the improved building.

Commercial construction is becoming increasingly important for utilities around the country. While codes and standards have pushed buildings to become more efficient, there are several measures that can be installed in a new construction that would be cost prohibitive in a retrofit. Measures such as increased insulation and HVAC system redesign are critical to incorporate in new construction because they may require structural changes to the building.

Commercial

- Pros
  - **Long-term savings potential** – Intervening at construction allows significant changes to building systems that may have up to a 50-year lifetime. This produces a long stream of savings over the course of the program.
  - **Low evaluation risk** – Because the savings for new construction programs are typically determined by comparing two modeled buildings (a baseline and an improved building), the risk of evaluation adjustments is low.
- Cons
  - **Expensive** – New construction programs often require significant support from engineering and architectural firms, which can be very expensive to the utility. Incentive levels for this type of program also tend to be very high compared to a program based on single measures.
  - **Long lead time, long project time –** Commercial construction can take a long time from design to completion. An effective commercial construction program must be involved in the design phase, which means it can take 3 years or more before savings can be claimed from the project. This can make budgeting and program support very challenging.
- Example program(s)
  - ComEd Nonresidential New Construction (Comm)
    - This program targets commercial new construction projects over 50,000 square feet and offers both a holistic design approach and a measure driven approach. The program exceeded its goals over the first 3 years of the program cycle. [16]
  - PG&E Savings by Design - Nonresidential New Construction (Comm)
    - This program uses a whole-building approach and targets large commercial new construction projects. The program looks at both electricity and fossil fuel savings. For the 2006-2008 program cycle, 56,174 MWh of electricity and 651,374 therms of natural gas were saved. [17]

Measure - Distributed Generation - Renewable

Distributed generation can include on-site solar and micro-wind generators. The technology to capture these renewable resources has drastically reduced in price in recent years but is still not price competitive with traditional generation assets.

Renewable distributed generation can be very difficult for customers to understand, depending on the local regulatory environment. In many municipalities, distributed generation is governed by complex interconnected regulations that can require very specific grid disconnect technology, which may prevent or hamper implementation of this technology in certain areas.

- Pros
  - **Can help eliminate transmission line losses –** By moving generation onsite, transmission and distribution losses are significantly reduced, representing a total system efficiency gain and load reduction to the utility.
  - **Potential to remove large amounts of load from the grid –** While onsite renewable generation tends to be far less technologically efficient than traditional sources, it removes load from the grid and reduces generator demand. This can represent a huge cost savings to utilities by deferring the construction of utility-scale generation assets.
- Cons
  - **Expensive –** Since renewable onsite generation tends to be very costly, utilities often have to offer very large incentives for consumers to adopt this technology. Additionally, depending upon local regulations, utilities may be forced to buy back this energy at an unfavorable market rate compared to utility generation costs.
  - **Not always more efficient generation technology –** From a technological perspective, renewable generation technology tends to be very inefficient, which can further drive up the cost per kilowatt hour of generation from these resources.
- Example program(s)
  - Austin Energy - Power Saver Program - Solar Photovoltaics (Res and Comm)
    - For 2013, Austin Energy budgeted $7.35 million for solar photovoltaic rebates and incentives for both residential and commercial customers. The program had committed approximately $6.3 million of this budget across 2,245 separate projects as of April 2013. [18]

Measure - Ductless Heat Pumps

Ductless heat pumps (DHPs), also known as mini-split heat pumps, can heat and cool a house zone by zone. Because a DHP is a centralized system, it does not require the installation of ducts. [18] This makes DHPs an excellent retrofit option for homes that have baseboard electric heating or other non-ducted system.

Heating, cooling, and ventilation (HVAC) systems have not traditionally been the target of energy efficiency programs outside of whole-home retrofit programs. Non-traditional program models, like mid-stream rebates, have been implemented recently to achieve savings from this end-use. These programs have generally been very successful.

- Pros
  - **Offers a significant efficiency gain above central, forced-air HVAC systems** – DHPs offer SEERs of up to 26, which is significantly higher than a federal standard condensing unit (SEER 13).
  - **Can be used where no ducts exist** – DHPs offer extremely large savings when replacing electric resistance heating and can be used in situations where a ducted system would not be cost-effective, like replacement of baseboard heating.
- Cons
  - **Very expensive** – Mini-splits tend cost significantly more than baseboard heating or traditional condensing systems.
  - **Emerging technology that contractors are not very familiar with yet** – While DHPs have been available for several years, most contractors do not install them on a regular basis. This can cause installation quality and equipment availability issues for DHP programs.
- Example program(s)
  - Northwest Energy Efficiency Alliance Ductless Heat Pump Pilot Project (Res)
    - NEEA, BPA, and utilities worked with DHP manufacturers to train HVAC installers on this technology. They also marketed and incentivized the technology to homes with zoned electric heating and within about a year, installed 3,899 units throughout the region, saving an average of 3,049 kWh per household per year. [19]

Measure - Heat Pump Clothes Dryers

Heat pump clothes dryers use heat pump technology instead of electric resistance to produce the heat for drying clothes. These heat pumps offer extremely high savings over their electric resistance counterparts, and they are gaining penetration in Europe and Australia. [8]

- Pros
  - **Clothes dryers have so far been untouched by energy efficiency programs** – Due to technological constraints, clothes dryers have not been a target of traditional energy efficiency programs. This creates a huge opportunity to implement a clothes dryer program and achieve savings.
- Cons
  - **Technology has not yet entered the U.S. market** – Heat pump dryer technology has extremely limited availability in the U.S. market. If a program were designed around heat pump dryers, this limited availability would likely result in very low program participation.
- Example program(s)
  - New Jersey's Clean Energy Program Super Efficient Dryer Initiative (Res)
    - This initiative was created to explore the energy savings and market potential of super-efficient dryers, including heat pump clothes dryers, and help support their introduction to the U.S. market by engaging various stakeholders. [20]

Measure - Heat Pump Water Heaters

Heat pump water heaters use heat pump technology to produce hot water in a home. [8] Like other heat pump technologies, they are significantly more efficient than standard electric resistance equipment (i.e., traditional tank water heaters). While heat pump water heaters have been around since the 1980s, recent innovations have improved reliability and efficiency. This has caused many utilities to reexamine the potential for implementing heat pump water heater programs.

- Pros
  - **Offer considerable energy savings compared to electric resistance water heaters** – Heat pump water heaters offer at least a 2-to-1 jump in efficiency over electric resistance tank water heaters.
- Cons
  - **Difficult to install** – Heat pump water heaters tend to be taller than standard water heaters, which can cause installation difficulty, especially if the existing water heater is in a closet or other enclosed space.
  - **High upfront cost** – Heat pump water heaters tend to be significantly more expensive than standard water heaters (as much as 4 times the price). This can create a high barrier to entry for customers, even with significant utility rebates.
- Example program(s)
  - Energy Trust of Oregon Heat Pump Water Heater Program (Res)
    - ETO provides an incentive of $500 to homeowners for replacing electric water heaters with heat pump water heaters. [21]

Measure – Heating, Ventilation, and Air Conditioning

Heating, ventilation, and air conditioning (HVAC) measures can include new condensers, air handlers, variable air volume boxes, furnaces, boilers, motors, and controls. HVAC represents the single greatest end-use consumption in the United States for both the residential and commercial sectors, and it presents a significant savings opportunity for residential and commercial energy efficiency programs. HVAC programs are appropriate for all customer classes and clients, including manufactured homes and low-rise multifamily (3 or fewer stories), high-rise multifamily (4 or more stories), small commercial, and large commercial buildings.

Commercial and Residential

- Pros
  - **Very high energy use and potential savings** – Because of its high energy use, HVAC represents some of the most significant savings opportunities of any residential or commercial measure.
  - **Relatively untapped market** – HVAC equipment's long life and high cost have left this market relatively untapped by energy efficiency programs.
  - **High technological potential** – The federal efficiency standard for HVAC has remained relatively low compared to both current technology and future technological potential.
- Cons
  - **Expensive on a per-unit basis** – HVAC tends to be the most expensive energy efficiency retrofit measure that a homeowner or building owner can implement. This can create a significant barrier for entry into a program.
  - **Installation, operation, and maintenance strongly affect savings** – Proper installation and maintenance are critical to long-term savings for HVAC measures. Installation problems, such as mismatched coils, can significantly reduce the rated efficiency of equipment, and the equipment can quickly degrade without proper maintenance.
- Example program(s)
  - California Statewide Upstream HVAC Program (Both)
    - This program is operated across the state of California by four utilities: PG&E, SCE, SDG&E, and SoCalGas. The program provides incentives to distributors to move purchases of SEER 13 units to SEER 15 or higher. [22, 23]
  - Northeast Energy Efficiency Partnerships (NEEP) Upstream Residential HVAC Program (Res)
    - The NEEP regional HVAC program works with distributors to provide midstream incentives for the sale of high-efficiency HVAC equipment. The program is implemented across many utilities in the Northeast. [24]

Measure - Plug Load

Plug load programs typically target consumer electronics and low-consumption, high-penetration devices, such as televisions, computer monitors, set-top cable boxes, battery chargers, and external power supplies. The programs can target retirement, replacement, or curtailment through a variety of mechanisms.

Innovation in the electronics market has caused the number of plug load devices to multiply rapidly in recent years. Many of these devices are always plugged in and have a "standby" mode that constantly draws a small amount of power. In the aggregate, these small devices can have a significant impact on energy usage in the residential sector.

Residential

- Pros
  - **Growing end-use** – Plug loads represent one of the fastest-growing end-uses in the residential sector. Because of continuing innovation in electronics, federal regulations are rarely able to keep up with the variety of new products.
  - **Large future savings potential** – Because of the high rate of growth in the prevalence of electronics in homes and businesses, the future savings from curtailing energy consumption from these devices will be very large. [25]
  - **Relatively untapped efficiency segment** – Due to the rapid pace of innovation, traditional energy efficiency programs have not been able to react fast enough to capture savings from these products. That leaves significant room for future innovative energy efficiency programs to claim savings from these devices.
- Cons
  - **Product efficiency improving rapidly** – Most current program designs are not flexible enough to keep up with the pace of innovation from this category, making it hard to capture savings.
  - **Low individual energy consumption** – Consumer electronics are numerous and pervasive but tend to have very low per-unit energy usage, which can make capturing savings from these products cost-prohibitive for utilities.
- Example program(s)
  - California Business and Electronics (BCE) Program (Both)
    - BCE is a statewide program targeting electronics at the midstream level. The program contracts directly with retailers to provide incentives in exchange for sales data. [26]
  - NEEA 80 PLUS Program (Both)
    - This program rates high-efficiency internal power supplies for desktop computers. [27]

Measure - Residential Lighting

Residential lighting includes CFLs and LEDs. CFLs have been the workhorse of utility programs for many years. With the implementation of the EISA standard, it is unlikely utilities will be able to continue to achieve their previous level of savings. While LEDs will offer additional savings, they will need to continue to drop in price and improve in quality before widespread programs can be designed to take advantage of their savings.

Residential

- Pros
  - **Cost-effective** – CFL prices have continued to fall, making them highly cost-effective compared to incandescent lamps. LED prices are projected to drop further, which could open new avenues for residential lighting programs.
- Cons
  - **Federal legislation will decrease cost-effectiveness** – Federal legislation will essentially phase out 60W incandescent lamps for general service lighting. Depending on what is considered the baseline lamp, savings may not be available from widespread CFL programs within the next several years.
- Example program(s)
  - Efficiency Vermont Foodbank Promotions (Res)
    - Efficiency Vermont partnered with a CFL manufacturer to provide CFLs directly to foodbanks at a very low cost. Incentives from Efficiency Vermont covered the remaining cost so that foodbanks were able to distribute them at no charge to their low-income customers. This program achieved a very high rate of distribution. [28]

Measure - Residential New Construction

Residential new construction generates savings by improving a building plan over the code baseline. Savings can be calculated by comparing energy models of the baseline house and the improved house.

Like commercial new construction, residential new construction programs can offer very high savings on a per-participant basis. While codes and standards have pushed residential construction to become increasingly more efficient, several measures can be installed in a new construction scenario that would be more difficult in a retrofit scenario, including wall insulation and whole-home ventilation systems.

Residential

- Pros
  - **Long-term savings potential** – Intervening before construction enables significant changes to building systems that may have up to a 30-year lifetime. This produces a long stream of savings over the course of the program.
  - **Low evaluation risk** – Because the savings for new construction programs are typically determined by comparing two modeled buildings (a baseline and an improved building), the risk of evaluation adjustments is low.
- Cons
  - **Expensive** – Residential new construction programs often require significant planning and marketing, which can be very expensive to the utility. Incentive levels for this type of program also tend to be very high compared to programs based on single measures.
- Example program(s)
  - New York ENERGY STAR Homes (Res)
    - This program targets 1- to 4-family houses and offers incentives to builders for building homes to ENERGY STAR specifications. In the last 5-year program cycle, 11,024 new homes were built to ENERGY STAR specifications, meeting NYSERDA's program goal. [29]

Measure - Water Conservation

Water conservation measures implemented in the residential and commercial sector, such as low-flow toilets and high-efficiency commercial clothes washers, create energy savings by reducing the amount of electricity needed to treat and distribute the water. Nationwide, electricity used by water supply and wastewater treatment systems represents almost 1% of all electricity generation. [30]

Commercial and Residential

- Pros
  - **Innovative way to achieve energy savings** – To date, electricity savings from water-saving devices at the household or building level have been related reducing hot water usage. By determining the embedded energy in delivering water to customers (including pumping and treating), utilities could claim new, large-scale electricity savings.
  - **Untapped savings potential** – Very few programs (pilots only) have attempted to claim electric savings from water reduction. Using a combination of downstream measures (new clothes washers) and upstream measures (water pumps) could result in electric savings to the utility.
- Cons
  - **Difficult to evaluate** – Determining an accurate level of embedded energy savings from water reduction can be very difficult, especially at the household or building level. Verifying that institutional water savings are related to the installed measure has so far been extremely difficult.
  - **Typically not cost-effective** – Due to the difficulty in determining savings and the often small kWh/gallon savings, measures targeting institutional water savings have typically not been cost-effective.
- Example program(s)
  - SDG&E Large Customer Audits (Comm)
    - Commercial, industrial, and institutional sites that had already undergone a water audit received capital funding to install water-saving measures such as low-flow toilets and process improvements. This program generated high savings. [31, 32]
  - PG&E Single Family Low-Income High-Efficiency Toilet Program (Res)
    - PG&E partnered with the area's water district to install high-efficiency toilets in low-income single-family residences. This program was found to be not cost-effective. [31, 32]

Measure - Weatherization

Weatherization measures in the residential sector include whole-home energy analysis and retrofit. The emphasis of this measure is performing some form of energy audit to determine which individual measures would be most cost-effective for a specific household.

Weatherization programs typically concentrate on low-income housing through auditing and direct installation.

Residential

- Pros
  - **Good energy savings from a variety of measures** – Like other audit-based programs, weatherization programs generally get savings from installing the measures that are most effective for each individual household. This leads to a wide variety of work scopes that are uniquely tailored to each household.
  - **Targets hard-to-reach energy savings** – Weatherization tends to target the "hidden" energy usage in households, like energy losses through air leakage. These are often not visible to the homeowner and take a skilled auditor and installer to identify and correct.
- Cons
  - **Expensive on a per-participant basis** – Because extensive analysis is done on the home, weatherization programs tend to be more expensive than other installation programs. Traditional weatherization programs for low-income customers have been direct install with no cost to the end-user; this significantly drives up the cost to the utility.
  - **Not always cost-effective** – Cost-effectiveness is highly dependent on the types of measures installed, the cost of the measures, and the skill of the auditor.
- Example program(s)
  - Idaho Low-Income Weatherization Program (Res)
    - Idaho's weatherization program installs CFLs, refrigerators, insulation, air sealing, furnace replacement, windows, and doors based on a whole-home audit. With non-energy benefits excluded, the program had a total resource cost (TRC) of 0.87 and an average savings of 2,015 kWh per participant per year for the 2007-2009 program years. [33]
  - Ohio Home Weatherization Assistance Program (Res)
    - Ohio's weatherization program saved an average 2,489 kWh per participant for all electric households for the 2003 program year. [34]

Measure - Whole-Building Retrofit

Whole-building retrofit measures in the commercial sector rely on using a commercial energy audit to determine cost-effective improvements to the shell, HVAC, and plug loads. They often involve energy service companies (ESCOs) or architectural and engineering (A&E) firms to perform an audit, make recommendations, and generate a work scope.

Whole-building retrofit programs typically call for extensive coordination among the building owner, audit staff, and utility program staff. They can also require significant marketing and explanation, depending on the reimbursement structure chosen by the utility.

Commercial

- Pros
  - **Low evaluation risk** – Many whole-building retrofit programs use pre- and post-retrofit energy usage to determine incentive payout. The utility pays only for actual savings, so the evaluation risk is low.
  - **High customer engagement** – Due to the extensive building evaluation and tracking required, the utility gets the opportunity to continually engage the customer and help improve building operation. This can create a high level of customer satisfaction and improve the customer-utility relationship.
- Cons
  - **Expensive** – Like other forms of whole-building analysis, whole-building retrofit programs tend to be very expensive on a per-participant basis because of the detailed analysis and tracking required and the extensive work scopes.
- Example program(s)
  - NEEA Existing Building Renewal Initiative (Comm)
    - NEEA is developing tools for commercial building owners that will simplify and streamline the process for undergoing a deep retrofit. [35]

Delivery Model - Codes and Standards

Utilities research, propose, and promote new energy efficiency codes and standards which, if passed, lead to energy savings and market changes. A utility may play a variety of roles, including developing the code, designing an efficiency rebate program to complement it, providing training programs, and working to develop a standard for a product that is not yet covered. [36, 37]

This delivery model requires significant negotiation and coordination with regulatory staff before it can be implemented. One of the key challenges is negotiating the level of savings related to code work that regulators will allow the utility to claim.

- Pros
  - **Huge savings potential** – Unlike other program delivery models, energy codes tend to be mandatory and typically apply to the vast majority of new building stock in a particular geographic area. This creates a huge potential for savings from even small adjustments to the existing energy code.
  - **Cost-effective** – Codes and standards typically do not require direct measure installation or incentives. In combination with the wide-reaching nature of codes, this can be an extremely cost-effective way for a utility to capture savings.
- Cons
  - **Difficult to quantify utility efforts and to evaluate amount of energy savings that is due to utility efforts** – The biggest barrier to this delivery method is the difficulty in quantifying savings resulting from the utilities' intervention. Regulatory staff must buy in before the utility can claim savings.
- Example program(s)
  - California Statewide Codes and Standards Program
    - California investor-owned utilities (IOUs) conducted research, analysis, and other forms of support leading to the adoption of 12 standards changes for 2005 Title 24 updates and the upgrade or adoption of 27 appliance standards for 2006 Title 20 updates. In the 2006-2008 program cycle, IOU efforts cost about $8 million and resulted in 678 GWh of electricity savings, which represented 9% of their energy efficiency targets. [36, 37, 38]

Delivery Model - Consumer Purchase Rebate

Consumer purchase rebates provide the end-use customer with a rebate for an energy-efficient product or service. The rebate may be given instantly at the time of purchase or require a mail-in form. Consumer rebates have been the cornerstone of utility programs since the inception of efficiency programs. They are relatively simple to introduce because they are easy for customers and utility staff to understand.

- Pros
  - **Improves the relationship with end-use customers** – Because customers receive a payment directly from the utility, customers who get mail-in rebates have a high likelihood of associating the new product or rebate with the utility. (This may not be the case with a point-of-sale or midstream rebate.)
- Cons
  - **Greater administrative costs** – Accurately tracking and paying rebates can be a significant administrative burden to the utilities and their program implementers.
  - **Less incentive for distributor or retailer to promote energy-efficient products** –Retailers and manufacturers may be less likely to discount rebated products or give them prime locations in stores. This can work against normal market forces that might have driven up sales without the rebate.
- Example program(s)
  - City of San Antonio City Lights Program (Comm)
    - Small businesses are eligible to receive a free lighting audit and may then receive a direct rebate of up to $400 of the lighting upgrades, which are installed at no cost. [39]
  - BC Hydro LiveSmart BC: Efficiency Incentive Program (Res)
    - Homeowners can opt to receive an energy audit and energy efficiency improvements of their choosing. After the improvements and a follow-up energy assessment are completed, a Certified Energy Advisor contracted by the utility completes the rebate applications. [40]
  - ComEd Non-Residential New Construction (Comm)
    - This turnkey program offers incentives to owners and developers of new buildings for more efficient lighting or HVAC systems or better whole-building designs. [16]

Delivery Model - Customer Education and Engagement

Customer education and engagement includes a wide array of activities that teach end-use customers about energy-efficient products or the amount of energy the products are consuming. They can include monthly home energy reports, energy competitions, social marketing and interactive web portals.

- Pros
  - **Improves relationship with end-use customer** – Education and engagement programs have a high degree of interaction between the customer and the utility, which can improve the customer relationship.
  - **Can address a wide array of energy-related products and behaviors** – Education and engagement campaigns can target a wide range of behaviors and purchasing habits. This can dramatically increase the persistence of savings from other programs by instilling behaviors that lead to proper use and maintenance of installed energy efficient devices.
- Cons
  - **Varying results** – Savings from many education and outreach programs can be difficult to quantify, and some activities—such as energy competitions—may not produce persistent savings for the utility.
- Example program(s)
  - Cape Light Compact Home Energy Assessment Recruitment Competition (Res)
    - Seventeen towns in Massachusetts competed to determine which could recruit the most homeowners to receive home energy audits. About 90% of audited homes implemented at least one energy-saving measure. [41]
  - Vermont Community Energy Mobilization Project (Res)
    - Nine towns participated in this project in which volunteer groups went door-to-door to make energy efficiency presentations and on-the-spot installations of CFLs and low-flow showerheads. Volunteers encouraged homeowners to conduct a home energy assessment, but only 2% actually did so by the end of the program. [42]
  - ComEd CUB Energy Saver (Res)
    - This program utilized many forms of education and engagement, including direct mail, an interactive web tool, email feedback, community marketing at local outreach events, and reward points for saving energy. The program achieved 6% savings over the previous year. [43]

Delivery Model - Direct Giveaway

Direct giveaway programs provide energy efficiency measures to customers at no cost. A direct giveaway model can be used for any measure, but it has typically been used for low-cost measures like CFLs. This delivery model is effective at reaching a wide range of commercial and residential customers, and scaling is limited only by the number of available products, the implementer's capacity to mail or deliver products, and the available funding.

- Pros
  - **Results in high rate of distribution** – Direct giveaway programs tend to have high participation rates and can reach nearly every customer class.
  - **Results in high customer satisfaction** – Customers who receive direct giveaways tend to be very satisfied with the programs. Unlike rebates, the customer does not have to do any additional work to receive the item.
  - **Simple to implement** – Generally, direct giveaway programs take the least amount of action on the part of the end-use customer. Because products are often mailed, tracking and reporting can be very simple for the utility.
- Cons
  - **Greater evaluation risk due to uncertain installation rates** – Mass market giveaways, like CFL campaigns, carry the risk that customers will not install the giveaway item. This, in conjunction with the inherently higher cost of purchasing the product for the customers, can leave utilities open to reduced savings when programs are evaluated.
- Example program(s)
  - Efficiency Vermont Foodbank Promotions (Res)
    - Efficiency Vermont partnered with a CFL manufacturer to provide CFLs directly to foodbanks at a very low cost. Efficiency Vermont covered the remaining cost with incentives so that foodbanks were able to distribute them at no charge to their low-income customers. This program achieved a very high rate of distribution. [28]
  - SMUD Shade Tree (Res)
    - The program is conducted through the Sacramento Tree Foundation, which gives trees to residential customers and organizes mandatory workshops on tree planting and maintenance. [44]

Delivery Model - Direct Install

Direct install programs are typically turnkey programs in which the utility provides a free or reduced-cost energy audit and installs energy efficiency measures for free or at reduced cost or with financing assistance. While direct install programs can be used for any customer group and measure, they have traditionally been used to reach underserved markets like low-income residential and small commercial.

- Pros
  - **Cost-effective** – Because measures are installed by the utility and its implementers, there is a high likelihood that the measures will be installed correctly, providing long-term savings.
  - **Results in high customer satisfaction** – By making product installation simple for the consumer, direct installation models can create a high level of satisfaction with an efficiency program.
- Cons
  - **Cannot easily be scaled up** – Limitations in the number of trained staff can make these programs difficult to scale up. The nature of this delivery model means the staff spend more time per customer than in other models.
- Example program(s)
  - Ontario Power Authority Small Commercial Direct Install (Comm)
    - This turnkey program provides installation of up to $1,000 of efficient lighting and water heating measures to businesses with demand of less than 50 kW. In the 2009 and 2010 program years, this program had a very high level of customer satisfaction. [14]
  - Efficiency Vermont Major Appliance Retrofit Service (Res)
    - This program is conducted in partnership with the state's Weatherization Assistance Program to replace existing appliances with ENERGY STAR models in homes that are already receiving low-income weatherization services. [2]
  - Idaho Low-Income Weatherization Program (Res)
    - This program provides an energy audit and installation of energy efficiency measures at no cost to low-income Idaho residents. [33]

Delivery Model - Midstream Rebate

In a midstream rebate model, incentives are paid directly to the midstream actor, typically the retailer or distributor. Depending on the program structure, these rebates could be used for any number of activities including increasing stock, marketing, or product discounts.

Midstream rebates can be used successfully with any device-based measure. They have been particularly effective in reaching heavily centralized sales channels, like the HVAC market. By providing incentives directly to HVAC distributors, utilities can bypass the heavily fragmented contractor market.

- Pros
  - **Low administrative costs** – It tends to be easier to track midstream actors than other actors further downstream, primarily because there are fewer organizations to monitor. As the utility provides the incentive directly to the midstream actor, reporting needs are minimized; the midstream actor needs to report sales directly to the utility.
  - **Utilizes marketing power of retailers** – Retailers and other midstream actors are in the business of selling products. Incentivizing retailers to sell specific products can put the marketing power of these organizations to work for the program instead of relying on customers to seek out efficient products.
- Cons
  - **Lack of touch points with the customer** – While other delivery models require direct interaction between the customer and utility, midstream rebates do not. Consequently, midstream rebates typically do not cause consumers to associate with the utility any benefits received.
  - **Difficult to obtain information about the end-user** – Because the utilities pay rebates directly to midstream actors, they are unlikely to be able to discern which customer classes are benefiting most from the program. This can perpetuate current problems reaching underserved markets and collecting end-user data.
- Example program(s)
  - Efficiency New Brunswick Bright Ideas Commercial Lighting (Comm)
    - This midstream program incentivizes commercial lighting distributors with 100% of the incremental cost of HPT8 and RWT8 lamps. In 2007 and 2008, this program succeeded in growing the market share for incentivize products to almost 100%. [9]
  - PG&E Business and Consumer Electronics Program (Both)
    - Retailers and distributors receive per-unit incentives to increase the sales of ENERGY STAR qualified televisions, desktop computers, and monitors. In 2010, this program significantly increased the market share of efficient televisions and computers. [26]

Delivery Model - Performance-Based Incentive

Performance-based incentives compensate customers for taking a specific action or hitting an energy target. This approach often uses onsite monitoring and tiered incentive structures to achieve energy reduction goals.

Some programs use onsite monitoring or post-installation billing analysis to pay incentives on the actual kWh saved. This type of incentive has been traditionally used in the large commercial and industrial arena, though several recent programs have introduced it into residential whole-home retrofit programs.

- Pros
  - **Low or no evaluation risk** – Because incentives are paid on actual savings achieved, there is nearly no evaluation risk associated with this program model.
- Cons
  - **Complicated** – This delivery model often requires significant explanation to the end-use customer and can involve multiple verification visits to the site. This can be a significant barrier to entry for consumers.
  - **Customer doesn't know the value of the incentive until after installation** – Because the total incentive is calculated post condition, end-use customers do not know how much incentive they will receive before they enter the program. This can be particularly problematic for mid-size to large commercial customers, who need to make a significant investment to achieve savings.
- Example program(s)
  - Georgia Power Earthcents Program (Res)
    - Georgia Power awards rebates for its whole-home energy retrofit program based on actual savings. It has a sister program that delivers incentives through a traditional end-use customer rebate model, but with less incentive money available to the customer ($2,200 max for retrofits vs. $700 max for rebates). [45]
  - ComEd Monitoring Based Commissioning (Res)
    - ComEd's retro-commissioning program uses monitoring-based incentives as part of the overall program. For program years 2009-2011, the ComEd program saved 18,449 MWh at a cost of $6.9 million. [46]

Delivery Model - Platform/Ongoing Interaction

Platform programs use a single entry point for customers to access a variety of offerings. Platform/ongoing interaction programs can incorporate many measures and delivery models, but all the individual offerings are available to the end-use customer through a single portal. Such an approach can help establish long-term relationships with customers.

- Pros
  - **Easy to understand** – By creating a single entry point for all programs, the utility frees customers from having to navigate its programmatic landscape. This creates a much easier avenue for end-use customers to participate in a variety of utility programs.
  - **Improved customer relations** – The utility makes it easy for the customer to connect with programs, resulting in much higher customer satisfaction with the services they receive. Assigning a single point of contact (like an account manager) to large customers makes those customers much more likely to reach out and grow the relationship with the utility.
- Cons
  - **High initial cost** – For the utility, significant reorganization may be required to create a single access point to all its programs. This can be expensive. The utility may need to develop new marketing material, web portals, and program calculators to meet the needs of this delivery model.
- Example program(s)
  - TVA eScore Program (Res)
    - The eScore program is a whole-house audit and retrofit program designed to be easily understood by customers. After the audit, consumers receive a scorecard for their home, with specific actions to improve their score. [47]
  - BPA More than a Million (Comm)
    - The More than a Million program takes a long-term engagement approach with facilities and building fleets that can achieve more than a megawatt of savings by having a dedicated technical support team review capital improvement plans and make recommendations. [48]
  - DOE Save Energy Now (Ind)
    - This program is a national initiative to reduce energy intensity by 25% for the industrial sector. The program provides a technical account manager to each participating organization to help tailor a long-term plan to reduce energy. [49]

Delivery Model - Technical Assistance

Technical assistance can be provided to clients in the form of seminars, project reviews, walkthroughs, and other consulting services. The same services can be offered to industry actors, such as architecture and engineering firms.

Technical assistance is often used in conjunction with other delivery models, like performance incentives and platform/ongoing interaction. It is most useful for complex measures that take a high degree of technical understanding to implement, such as whole-building retrofits or commercial HVAC.

- Pros
  - **Strengthens customer and market actor relationships** – By providing assistance in understanding and implementing measures, utilities can improve their relationships with outside market actors and end-use customers.
- Cons
  - **Moderately expensive** – Technical assistance programs typically require staff with technical expertise, and utilities may need to bring on additional staff or hire outside contractors.
  - **Hard to quantify savings** – Direct savings from technical assistance programs are very hard to quantify. Savings are typically related to higher-quality installations and better understanding of products, which improve the persistence of savings more than creating additional savings.
- Example program(s)
  - ComEd Nonresidential New Construction (Comm)
    - This program targets commercial new construction projects over 50,000 square feet and offers a holistic design approach and a measure-driven approach. The program exceeded its goals for the first 3 years of the program cycle. [16]

Delivery Model - Upstream Rebate

Upstream rebates are provided to manufacturers to increase their production, marketing, and sales of energy-efficient products. Manufacturers may use these rebates however they choose.

Very few (if any) true upstream rebate programs have been implemented. Because manufacturers generally distribute nationally or globally, it can be very difficult to assure money spent on this kind of program ends up back in the utility region.

- Pros
  - **Has the biggest potential impact in terms of distribution and geographic area** – Because upstream rebates affect shipments and price at the point of origin, they can result in massive savings over a wide geographic area.
- Cons
  - **Requires regional coordination** – Manufacturers tend to view their distribution regionally or nationally, which can pose challenges for smaller utilities. Entire utility regions need to coordinate on a single program.
  - **Lack of touch point with the customer** – In upstream rebate programs, the utility deals with the manufacturer, not the customer. Without significant marketing, the end-use customer may never know the utility has provided an incentive for the product.
  - **May be difficult to evaluate due to lack of tracking information between product shipment and purchase points** – Even with regional collaboration, the lack of midstream involvement can make it very difficult to track products and purchases. While shipments from manufacturers may be tracked, the specific locations of sales and/or purchasers could significantly impact when and where savings occur.
  - **May have high spillover rates** – If a utility in a particular regional chooses not to participate, high spillover rates are very likely. Even with strong regional coordination, spillover to adjacent regions may occur.
- Example program(s)
  - None

Market Actor - Architecture and Engineering Firms

Architecture and engineering (A&E) firms design buildings and building systems for medium- and large-scale construction projects. These can include small and large commercial buildings, as well as large multifamily buildings.

- Pros
  - **Typically first point of contact for large projects** – For new construction projects, A&E firms are often the entry point for consumers to plan and design buildings. This puts A&E firms in a unique position to understand the future building stock and make significant changes to building performance.
  - **Have significant influence on customers** – A&E firms have significant influence over customer choices and decisions. Building construction and design is a complex undertaking, and consumers are likely to rely heavily on the advice of their A&E firm.
- Cons
  - **Expensive** – A&E firms are typically very expensive to hire and work with due to the high level of training necessary to perform the work.
  - **Energy efficiency is not primary business** – While A&E firms have a lot of influence over the building design, they tend to focus on costs, site design, and safety, rather than the building's energy performance.
- Example program(s)
  - ComEd Nonresidential New Construction (Comm)
    - This program targets commercial new construction projects over 50,000 square feet and offer a holistic design approach and a measure-driven approach. The program exceeded its goals for the first 3 years of the program cycle. [16]
  - PG&E Savings by Design – Nonresidential New Construction (Comm)
    - This program uses a whole-building approach and targets large commercial new construction projects. The program looks at both electricity and fossil fuel savings. For the 2006-2008 program cycle, 56,174MWh of electricity and 651,374 therms of natural gas were saved. [17]

Market Actor - Big Box Retailers

Big box retailers are large retailing chains with wide distribution networks. They typically have a very large customer base and high sales volume for a wide variety of products.

Utilities typically partner with big box retailers to generate high sales volume and high distribution of energy-efficient products, making them one of the key market actors for midstream incentive programs.

- Pros
  - **Large customer base** – Due to big box stores' large—often nationwide—reach, utilities can affect the entire service territory by working with one entity.
  - **Skilled in marketing products** – Since big box retailers are in the business of selling a wide variety of products, their marketing skills and experience can benefit programs.
- Cons
  - **High employee turnover rate** – Very high employee turnover rates, especially for floor staff, can make staff training on program requirements difficult. [41]
- Example program(s)
  - PG&E Business and Consumer Electronics (Res and Comm)
    - This midstream program provides per-unit incentives to distributors and retailers to increase sales of ENERGY STAR televisions, computers, and monitors. The Business and Consumer Electronics Alliance included retailers Best Buy, Costco, Walmart, Sears, and Target. [26]
  - WECC Market Lift (Res)
    - WECC partnered with a big box retailer to increase CFL market share. The retailer responded by developing a new schematic for store layout, using end cap and pallet displays, and providing a larger selection of LED bulbs. [50]

Market Actor - Distributors

Distributors are the "middle man" between the manufacturers and commercial customers or installers who typically make bulk purchases.

Like big box retailers, distributors are prime market actors for midstream incentive programs, but the distribution market tends to be more fragmented.

- Pros
  - **Lower administrative costs than consumer rebate programs** – By working with distributors, utilities can deliver rebates with much less administrative burden than other program types.
- Cons
  - **May not have experience in marketing** – While distributors are in the business of selling products, they may not have the experience of "on the floor" marketing that retailers do, which may make it more difficult for the distributors to upsell their customers on energy efficiency.
  - **May not have IT infrastructure to record the customer information necessary for a program** – Some smaller distributors may not have the IT infrastructure necessary to track and manage sales in a way that is useful to utilities.
- Example program(s)
  - Efficiency New Brunswick Bright Ideas Commercial Lighting (Comm)
    - This midstream program incentivizes commercial lighting distributors with 100% of the incremental cost of HPT8 and RWT8 lamps. This program succeeded in growing the market share for the incentivized products to almost 100%. [9]
  - California Statewide Upstream HVAC Program (Res)
    - This midstream program offers incentives to HVAC distributors who sell qualified high-efficiency HVAC equipment. [22]

Market Actor - Local/Regional Retailers

Local retailers, sometimes referred to as "Mom and Pop" stores, are local or regional chains or single stores. These retail stores tend to be physically smaller than big box stores and may offer less product variety.

- Pros
  - **More flexible in stock selection** – Since these stores tend to be family owned, the owners have the final say in what is stocked. This can make them a much more flexible and reactive market actor than national chains.
  - **Low turnover rate** – Local retail stores have much lower staff turnover rates than national chains, particularly in leadership positions. This makes it easier for the utility to develop and maintain relationships with store decision makers.
- Cons
  - **Smaller range of distribution** – Each local retailer typically reaches only the population near the store. Accordingly, utilities need to work with many more sales systems and more leadership staff than at distributors or big box stores.
- Example program(s)
  - None

Market Actor - Manufacturers

Manufacturers are the designers and producers of goods that enter the market place. They represent the most upstream point in the process of delivering the efficient product to the end-use customer.

Utilities have not traditionally worked directly with manufacturers. Because of the reach and scope of manufacturers, the incentive pool would need to be very large to involve them directly., It is nearly impossible to involve manufacturers in utility efficiency programs directly without regional coordination.

- Pros
  - **Potentially lower administrative costs than midstream programs** – With regional collaboration, manufacturers can offer the lowest administrative costs of any market actors due to their extraordinarily large reach. A utility might be able to successfully deliver a program to an entire region working with only one manufacturer.
  - **Very wide net of customers** – Most manufacturers ship to a wide variety of distributors, so they have a very wide reach when it comes to delivering products to all types of end-use customer.
- Cons
  - **Difficult to evaluate due to a variety of product shipping routes and tracking methods** – Because of the manufacturers' wide distribution, tracking products and savings could be very difficult for individual utilities. Without information on inventories from midstream actors, it may be difficult to know if products shipped from the manufacturer have actually entered service.
  - **Requires regional coordination** – Full regional collaboration would be necessary for a manufacturer-based program to avoid issues with spillover and double counting claimed savings. [51]
- Example program(s)
  - NEEA Televisions Initiative (Res)
    - NEEA is working with retailers and manufacturers to promote the most efficient TVs. Between 2009 and 2010, the TV initiative saved 13.7 average megawatts in the region. [52]

Market Actor - Technical Assistance Consultants

Technical assistance consultants specialize in program implementation and support. They can include implementation contractors, independent efficiency experts, green building contractors, building science consultants, and policy consultants.

Utilities have used technical assistant consultants to deliver programs to their customers for many years, because they offer utilities the ability to run and deliver programs without having to hire additional full-time staff. Technical assistance consultants can also play other roles, such as being a neutral third party to advise end-use customers or providing evaluation services to the utility.

- Pros
  - **Cut across many utility territories** – Many technical assistance consultants have offices in more than one utility service territory. This makes them ideal for delivering consistent programs across multiple utility areas.
  - **Experience with many program types** – Technical assistance consultants tend to work with a variety of utilities, giving them experience with a vast array of program offerings and types.
  - **Have energy efficiency industry-specific experience** – Technical assistance consultants' main business is energy efficiency and effective program delivery. They often bring lessons learned from other programs that can help new utility programs function more efficiently.
- Cons
  - **Expensive** – Due to the specialized experience they offer, technical assistance consultants can be expensive to work with.
  - **Often add an additional layer to programs** – Bringing a technical assistance consultant into a program often adds another layer of communication between the customer and the utility, which may make it difficult for utilities to get feedback directly from customers.
- Example program(s)
  - ComEd Nonresidential New Construction (Comm)
    - This program targets commercial new construction projects over 50,000 square feet and offers a holistic design approach and a measure-driven approach. The program has exceeded its goals for the first 3 years of the program cycle. [16]
  - TVA eScore Program (Res)
    - The eScore program is a whole-house audit and retrofit program designed to be easily understood by customers. After the audit, consumers receive a scorecard with specific actions they can take to improve their score. [47]

Market Actor - Trade Organizations

Trade organizations represent specific industries, such as lighting manufacturers, appliance manufacturers, and HVAC distributors. They often conduct public relations, lobbying, and advertising on behalf of their respective industries.

Utility programs have not typically involved trade organizations directly in the delivery of programs.

- Pros
  - **Have significant influence over a specific industry** – Industry groups tend to have great influence over their members. They are very good at coordinating and delivering messages to their membership.
- Cons
  - **Typically have strong agendas** – Industry groups are necessarily focused on their own industries. This can often lead to them being at odds with efficiency groups and organizations, especially where new regulation is concerned.
  - **Primary business is generally not energy efficiency** – The primary concern for most industry groups is the financial well being of their membership group. This rarely makes efficiency their first priority.
- Example program(s)
  - None

Audience - Commercial Data Centers

The widespread use of data centers is a relatively new phenomenon. In the past, server and computer hardware was located where it was used. With the improvement of networking and Internet technology, vast data centers (also known as server farms) have opened to handle the new network traffic. These structures tend to have very high energy demands, especially in the areas of cooling and ventilation. Data centers can consume 100-200 times the amount of electricity used by typical commercial spaces. [53]

- Pros
  - **Large untapped savings potential** – Because data centers are a relatively new audience, they represent an untapped source of potential savings. They customers tend to have huge HVAC loads, making them prime targets for HVAC programs.
- Cons
  - **Cost-effectiveness is uncertain** – While these spaces have massive cooling demands, their HVAC and cooling systems are typically more customized than those of other commercial spaces. This can drastically increase the cost of upgrading the systems, which can directly influence the cost-effectiveness of a program targeting them.
- Example program(s)
  - ComEd Data Centers Efficiency Program (Comm)
    - Data centers are eligible for ComEd's custom incentives for measures such as data center cooling optimization, power delivery and condition system improvements, and IT optimization. In the program year from 2011 to 2012, two data center projects were completed; they had very different realization rates (1.12 and 0.54) and net to gross ratios (0.73 and 0.06). [53, 54]

Audience - Large Commercial

Large commercial customers are typically commercial complexes that are 50,000 square feet or more. Buildings in this customer class can include large institutional buildings, such as schools and hospitals; large office buildings; and government buildings. This audience is much more likely to have large, complicated building systems and dedicated onsite maintenance staff.

- Pros
  - **Large potential savings per customer** – Because large commercial buildings have such high demand for energy, utility programs that target them tend to have very high per-participant energy savings. This can drastically reduce the administrative burden of a program because there are fewer projects to track.
  - **Involved energy manager on site** – Most large commercial buildings employ an onsite energy manger to ensure control systems and buildings operations are working efficiently. These experts can make it much easier for programs to implement energy savings measures.
- Cons
  - **High cost and high investment per participant** – The high cost per participant can affect the cost-effectiveness of an entire program. Depending on the available funding, a program targeting large commercial buildings may involve only a handful of buildings. If one of these buildings underperforms, it can skew the results for the entire program.
- Example program(s)
  - ComEd Nonresidential New Construction (Comm)
    - This program targets commercial new construction projects over 50,000 square feet and offers a holistic design approach and a measure-driven approach. The program has exceeded its goals for the first 3 years of the program cycle. [16]
  - Energy Trust of Oregon Strategic Energy Management (Comm)
    - Commercial customers work with energy experts, receiving coaching and technical assistance on recommended operational and behavioral changes and capital improvements. They are awarded incentives based on expected energy savings. [55]

Audience - Low-Income Residential

Low-income residential customers are typically those who earn up to 200% of the federal poverty guidelines, but this definition can vary from program to program. This audience generally has minimal disposable income and requires significant incentives to participate in programs.

- Pros
  - **Not likely to buy most efficient products** – Because they have little disposable income, low-income customers are the least likely to own or buy energy-efficient products. This mean there is a high potential for savings from this audience through programmatic intervention.
- Cons
  - **Very high cost and investment per participant** – Low-income customers typically require very large incentives or giveaways to participate in programs, which leads to very high per-participant costs.
- Example program(s)
  - Idaho Low-Income Weatherization Program (Res)
    - Idaho's weatherization program typically installs CFLs, refrigerators, insulation, air sealing, furnace replacement, windows, and doors based on a whole-home audit. With non-energy benefits excluded, the program had a TRC of 0.87 and an average savings of 2,015 kWh per participant per year for program years 2007-2009. [33]

Audience - Multifamily

Multifamily buildings contain more than four individual dwelling units. Multifamily buildings are typically divided into two categories: low-rise multifamily (3 stories or fewer) and high-rise multifamily (4+ stories). High-rise and low-rise buildings tend to have different systems and may require different kinds of expertise to retrofit.

Multifamily buildings have traditionally been an underserved market, and they have many complicating factors that make reducing energy use a challenge. Split incentives, where the product's user and owner are not the same person, are often considered the biggest hurdle to serving this audience.

- Pros
  - **Large potential savings per building** – Like other large buildings, multifamily buildings tend to use a large amount of energy in their daily operation. This means it is likely that a high level of savings can be achieved on a per-building basis.
  - **Underserved market** – Due to complications such as the split incentive, this is an underserved market segment, leaving a large pool of relatively untapped energy savings potential for an efficiency program.
- Cons
  - **High cost and large investment per participant** – As with any big building program, a large investment will likely be necessary to affect energy usage in these buildings. This can be problematic for utilities because one building that performs poorly can have a big effect on the overall cost-effectiveness of a program.
  - **Many actors (individuals) affect energy use** – A challenge unique to multifamily buildings is the level of control each occupant has on the building's performance. Residents of multifamily buildings often have direct control over temperature, lighting, fenestration, and other systems. This can make savings from any program highly variable.
- Example program(s)
  - NYSERDA Multifamily Performance Program (Res)
    - The NYSERDA program has two tracks for multifamily building owners: a new construction track and a gut rehab track. In the most recent 5-year plan (2006-2011), the program served 15,151 new units and 68,434 gut rehab units. Results in both of these tracks fell significantly short of NYSERDA's initial goals. [29]

Audience - Residential

The residential sector is responsible for 22% of the country's energy usage and includes single-family, multifamily, mobile, and low-income homes. The residential audience has been a favored target audience for utility programs for many years. The most common programs targeting this sector are device based and involve consumer rebates.

- Pros
  - **Large number of customers** – There are currently more than 115 million households, representing nearly 38% of all electricity use in the United States. Addressing this sector is critical to any long-term energy savings plan.
- Cons
  - **Typically have little excess capital to fund energy efficiency improvements** – Many homeowners do not have access to the capital needed to fund large efficiency improvements. Purchasing decisions for this customer class may be heavily influenced by the functionality of the equipment (i.e., they replace major appliances only when they break).
- Example program(s)
  - Georgia Power Residential EarthCents Home Energy Improvement (Res)
    - Rebates up to $2,200 are awarded for home improvements, based on the resulting energy performance. [45]
  - Cape Light Compact Home Energy Assessment Recruitment Competition (Res)
    - Seventeen towns in Massachusetts competed to determine which could recruit the most homeowners to receive home energy audits. About 90% of audited homes implemented at least one energy-saving measure. [41]
  - Efficiency Vermont Major Appliance Retrofit Service (Res)
    - This program is conducted in partnership with the state's Weatherization Assistance Program to replace existing appliances with ENERGY STAR models in homes that are already receiving low-income weatherization services. [2]

Audience - Small Commercial

Small commercial businesses are typically those with a load of less than 50 or 100 kW. Common building types include low-rise office buildings, retail and grocery stores, and restaurants. A key challenge in addressing this sector is the wide variety of equipment types in each subset of buildings. Utility programs that have targeted this audience have concentrated primarily on lighting retrofit programs.

- Pros
  - **Typically underserved** – Small commercial customers have been hard to reach with traditional utility programs and remain underserved. This leaves high savings potential for utilities to target for future programs.
- Cons
  - **Typically have little access capital to fund energy efficiency improvements** – Building owners may have little free capital and long planning cycles. The result is that programs may end before owners have a chance to participate. While energy costs are important to these building owners, it is not often the driving force behind capital improvement.
  - **Difficult to contact decision maker** – Small commercial buildings are often leased, and it can be very difficult to reach the actual decision maker.
- Example program(s)
  - Ontario Power Authority Small Commercial Direct Install (Comm)
    - This turnkey program provides installation of up to $1,000 in efficient lighting and water heating measures to businesses with demand of less than 50 kW. This program had a very high level of customer satisfaction for the 2009 and 2010 program years. [14]
  - City of San Antonio City Lights Program (Comm)
    - Small businesses are eligible for a free lighting audit and a rebate of up to $400 of the cost of the lighting upgrades, which are installed at no cost. [39]

Notable Programs - ComEd Monitoring-Based Retro-Commissioning (Commercial)

Measure: Behavior, Consumer Education & Engagement

Delivery Model: Performance-Based Incentive, Technical Assistance

Market Actor: Technical Assistance Consultants

Audience: Large Commercial

This program is conducted in partnership with Nicor Gas, Peoples Gas, and North Shore Gas to provide recommendations for improving building operations and maintenance. The program also has a monitoring-based commissioning element, where energy performance is continually monitored and incentives are paid for meeting certain goals. [14]

Strong points:

- Good societal and standard TRC (1.41 and 1.07 respectively)
- NTG values are close to 1
- Increased participation in the program year after year
- High customer satisfaction

Notable Programs - Ontario Power Authority Small Commercial Direct Install (Commercial)

Measure: Lighting

Delivery Model: Direct Install

Market Actor: None

Audience: Small Commercial

This turnkey program provides installation of up to $1,000 in efficient lighting and water heating measures to businesses with demand of less than 50 kW. [14]

Strong points:

- Provides needed capital for small businesses to install energy efficiency measures
- Free-ridership levels are low because the customers are hard to reach
- NTG values are close to 1
- Very high levels of customer satisfaction
- In 2009 and 2010, the program reached a high percentage of qualified accounts

Notable Programs - Efficiency Vermont Major Appliance Retrofit Service (Residential)

Measure: Appliances (refrigerators, freezers, clothes washers)

Delivery Model: Direct Install

Market Actor: Government Agency (Weatherization Assistance Program)

Audience: Low-income Residential

This program is conducted in partnership with the state's Weatherization Assistance Programs. Old, existing appliances are replaced with ENERGY STAR models in low-income homes. [2, 3]

Strong points:

- Utilizes existing weatherization network to reach low-income homes
- Achieves higher energy savings than programs aimed at new appliance purchases because this program replaces the worst-performing appliances
- Achieved 620 MWh of energy savings in 6 months and reduced electricity usage in participating households by an average of 15%

Notable Programs - PG&E Business and Consumer Electronics Program (Both)

Measure: Plug Load (televisions, computers, monitors)

Delivery Model: Midstream Rebate

Market Actor: Retailers, Distributors

Audience: Residential, Commercial

PG&E partners with other utilities and organizations to create a Business and Consumer Electronics Alliance with retailers and distributors. Retailers and distributors receive marketing support and per-unit incentives to increase the sales of qualified televisions, desktop computers, and monitors. [26]

Strong points:

- Effectively partnered with multiple organizations, retailers, and manufacturers to have broad regional influence and create strong, collaborative partnerships with retailers
- Alliance participated in making ENERGY STAR specifications more rigorous
- Market share of ENERGY STAR televisions and ENERGY STAR monitors increased from 20% to 59% and from 22% to 68%, respectively, in one year

Notable Programs - Efficiency New Brunswick Midstream Lighting Program (Commercial)

Measure: Lighting

Delivery Model: Midstream Rebate

Market Actor: Distributors

Audience: Commercial

This midstream program incentivizes commercial lighting distributors with 100% of the incremental cost of high-performance T8 and reduced-wattage T8 lamps and ballasts. [9]

Strong points:

- Increased the market share for the incentivized products to almost 100% within the first six months of the program, where they were previously unknown and unavailable
- Had much lower administrative costs than the typical consumer rebate model

Notable Programs - Focus on Energy Whole Building Lighting Retrofit (Commercial)

Measure: Lighting

Delivery Model: Performance-Based Incentive

Market Actor: None

Audience: Commercial

This program targets institutional buildings, mostly schools, for comprehensive redesign of the lighting system that goes beyond one-for-one replacements. Both the customer and a certified lighting designer get incentives for reducing the lighting power density below the ASHRAE 2004 standard. The program has used a non-linear incentive structure to encourage the most efficient designs. [10, 11]

Strong points:

- Saved more than 2 GWh across 9 buildings
- Projects had an average payback of 4.2 years
- Buildings achieved an average of approximately 40% savings beyond the ASHRAE 1994 code [11]

Notable Programs - Efficiency Vermont Foodbank Promotions (Residential)

Measure: Lighting

Delivery Model: Midstream Incentive/Direct Giveaway

Market Actor: Distributors (food banks), Manufacturers

Audience: Low-Income Residential

Efficiency Vermont partnered with a CFL manufacturer to provide CFLs to food banks at a very low cost and covered the remaining cost with incentives. Foodbanks distributed CFLs to their low-income customers at no cost. [28]

Strong points:

- Achieved high distribution rate and energy savings
- Utilized existing infrastructure and network of the Vermont foodbanks
- Reduced costs by having CFL manufacturer ship lamps directly to the foodbanks, resulting in increased cost-effectiveness ($46/MWh)

Notable Programs - Cape Light Compact Home Energy Assessment Recruitment Competition (Residential)

Measure: Whole-Building Retrofit

Delivery Model: Customer Education & Engagement

Market Actor: Government Agency

Audience: Residential

Seventeen towns in Massachusetts competed to determine which could recruit the most homeowners to receive home energy audits. Outreach was conducted at senior centers and activity centers. The winning town received a cash prize of $8,000. [41]

Strong points:

- Simple, streamlined process to sign up for energy audit
- Achieved a high conversion rate – more than 90% of all homes that received an energy audit installed a major measure

Notable Programs - ComEd Commercial New Construction (Commercial)

Measure: New Construction

Delivery Model: Performance-Based Incentive, Technical Assistance

Market Actor: Technical Assistance Consultants, Architecture and Engineering Firms

Audience: Large Commercial, Small Commercial

This program targets commercial new construction projects in the Chicago area through a three-track approach. The program has been highly successful at recruiting buildings and leveraging relationships with the architecture and engineering (A&E) community to bring new projects to the table. [16]

Strong points:

- High realization rate
- Good TRC (1.41)
- High customer satisfaction
- Strong engagement with the A&E community

Notable Programs - PG&E Non-residential New Construction (Commercial)

Measure: New Construction

Delivery Model: Consumer Rebate, Technical Assistance

Market Actor: Technical Assistance Consultants, Architecture and Engineering Firms

Audience: Large Commercial, Small Commercial

This program is part of the California statewide Savings by Design program, which attempts to reduce electricity and natural gas use in new construction projects. [50]

Strong points:

- Large savings despite an aggressive code baseline (35,633 MWh)
- Offers design team incentives to engage architecture and engineering community
- Provides end-use monitoring incentives
- Straightforward application process

Notable Programs - California Statewide Upstream HVAC Program (Residential)

Measure: HVAC

Delivery Model: Midstream Rebate

Market Actor: Distributors

Audience: Residential

This program is operated across California at four utilities: PG&E, SCE, SDG&E, and SoCalGas. The program's main objective is to move purchases of SEER 13 units to SEER 15 or higher by providing an incentive directly to distributors. [22, 23]

Strong points:

- Very large savings projections (218 GWh/year)
- Easy for customers to participate
- Leverages federal tax credit, in addition to providing large amount of funding
- Good acceptance from distributors

Notable Programs - NYSERDA Multifamily Performance Program (Residential)

Measure: Whole-Building Retrofit

Delivery Model: Consumer Rebate, Customer Education and Engagement

Market Actor:

Audience: Multifamily

The NYSERDA program has two tracks for multifamily building owners: a new construction track and a gut rehab track. In the last 5-year plan (2006-2011), the program served 15,151 new units and 68,434 gut rehab units. Results for both of these tracks fell significantly short of NYSERDA's initial goals. [29]

Strong points:

- Long-running program
- Good market penetration (558 buildings over program lifetime)
- Combined several programs to make it easier for multifamily owners to do more ("one stop shop")

Notable Programs - Energy Trust of Oregon Strategic Energy Management (Commercial)

Measure: Behavior

Delivery Model: Performance-Based Incentive, Customer Education & Engagement

Market Actor: Technical Assistance Consultants

Audience: Commercial

Commercial customers work with energy experts to receive coaching and technical assistance on operational and behavioral changes possible capital improvements. They receive incentives based on expected energy savings. [55]

Notable Programs - PG&E More than a Million (Commercial)

Measures: Behavior (Commercial), HVAC, Lighting, Appliances, Operations and Maintenance

Delivery Model: Platform/Ongoing Interaction, Technical Assistance, Consumer Rebate

Market Actors: None

Audience: Large Commercial

The More than a Million program takes a long-term engagement approach with facilities and building fleets. The goal of the program is to save energy by reviewing capital improvement plans and making recommendations to owners of facilities that can achieve more than 1 MW of electricity savings. A dedicated technical support team is assigned to each organization and serves as a single entry point to all of PG&E's programs. [48]

Strong points:

- Long-term customer support and engagement
- Single access point makes it easier for customers to understand PG&E's offerings
- Long-term reduction commitment from the customer
- Low evaluation risk

Sources Cited

1. 71 *ComEd's 2011 – 2013 Energy Efficiency / Demand Response Plan, Plan Year 4 –First Quarter Performance Update.* http://ilsag.org/yahoo_site_admin/assets/docs/PY4_QTR_One_SAG_ComEd_.12143821.pdf.
2. 97 Efficiency Vermont. *2011 Annual Highlights, 6 Efficiency Success Stories*. http://www.efficiencyvermont.com/docs/about_efficiency_vermont/annual_summaries/2011_Highlights_EfficiencyVermont.pdf.
3. 129 Tennessee Valley Authority. "The Story of eScore: TVA's Home Energy Efficiency Scorecard," presented December 2, 2011. http://www.stanford.edu/group/peec/cgi-bin/docs/events/2011/becc/presentations/1-%207D%20Efficiency%20Happens%20when%20Everyone%20Can%20be%20a%20Perfect%20-%20Frank%20Rapley.pdf.
4. 86 Energy Trust of Oregon. *Quarter Three 2012 Report to the Oregon Public Utility Commission*, November 2012. energytrust.org/library/reports/2012_Q3_Quarterly_Report.pdf.
5. 147 "Self Generation," Southern California Gas Company, http://www.socalgas.com/innovation/self-generation/index.shtml.
6. Itron, Inc. *CPUC Self-Generation Incentive Program Tenth-Year Impact Evaluation, Final Report*, prepared for PG&E and The Self-Generation Incentive Program Working Group, July 2011. http://www.pge.com/includes/docs/pdfs/shared/newgenerator/selfgeneration/sgip_impact_report_2011.pdf.
7. Badger, Chris, Rebecca Foster, Chris Granda, and Christopher Wold. "Bringing North American Clothes Dryers into the 21st Century: A Case Study in Moving Markets," 2012 ACEEE Summer Study on Efficiency in Buildings, August 2012. http://www.aceee.org/files/proceedings/2012/data/papers/0193-000286.pdf.
8. York, Dan, Maggie Molina, Max Neubauer, Seth Nowak, Steven Nadel, Anna Chittum, Neal Elliott, Kate Farley, Ben Foster, Harvey Sachs, and Patti Witte. "Frontiers of Energy Efficiency: Next Generation Programs Reach for High Energy Savings," American Council for an Energy-Efficient Economy, January 2013. http://www.aceee.org/research-report/u131.
9. Rocca, Robin, and Gabe Arnold. "A Bright Idea in Commercial Lighting: New Brunswick's Success with an Upstream Incentive Approach," 2008 ACEEE Summer Study on Energy Efficiency in Buildings, August 2008. http://www.aceee.org/files/proceedings/2008/data/papers/6_202.pdf.
10. Baldacci, Kate, Rebecca Foster, Margaret Song, Dan Mellinger, and Liesel Whitney-Schulte. "Defining a Framework for Comprehensive Commercial and Residential Lighting Programs," 2010 ACEEE Summer Study on Energy Efficiency in Buildings, August 2010. http://www.aceee.org/files/proceedings/2010/data/papers/2194.pdf.
11. *Non-Residential New Construction (NRNC) Programs Impact Evaluation: California Investor-Owned Utilities' Non-Residential New Construction Program Evaluation for Program Years 2006-2008, Volume II*, prepared by KEMA, Inc., The Cadmus Group, Inc., KEMA, Inc., and

Nexus Market Research, Inc. for the California Public Utilities Commission, Energy Division, February 2010. http://www.calmac.org/publications/NRNC_Final_Report_02082010.pdf.

12. Dan Mellinger, e-mail message to author, January 29, 2013.
13. "SMARTLIGHT Discounted Replacement Lamp Program," Efficiency Vermont, http://www.efficiencyvermont.com/for_my_business/ways-to-save-and-rebates/commercial_lighting/commercial_led/rebates/smartlight.aspx.
14. Nexant. *Updated Small Commercial Direct Install 2009-2010 Evaluation Report*, prepared for Ontario Power Authority, September 2011. http://www.powerauthority.on.ca/sites/default/files/new_files/2010/2010%20Small%20Commercial%20Direct%20Install%20Program%20Evaluation.pdf.
15. "Small Scale CHP and Fuel Cell Incentive Program," Database for State Incentives for Renewables & Efficiency, December 2012, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NJ51F.
16. Navigant Consulting. *Energy Efficiency/Demand Response Plan: Plan Year 3 (6/1/2010-5/31/2011) Evaluation Report: Non-Residential New Construction*, prepared for Commonwealth Edison Company, May 2012. http://www.ilsag.org/yahoo_site_admin/assets/docs/ComEd_NRNC_PY3_Evaluation_Report_2012-05-16_Final.34162047.pdf.
17. Pacific Gas and Electric Company. "Quarterly Reporting Spreadsheet," 2012.
18. U.S. Department of Energy. *Buildings Energy Data Book*, 2011. Table 1.1.1. http://buildingsdatabook.eren.doe.gov/TableView.aspx?table=1.1.1.
19. "Heat Pump Water Heaters: Cut water heating costs by up to 50 percent," Energy Trust of Oregon, http://energytrust.org/residential/promotions/heat-pump-water-heaters.aspx.
20. Lee, Allen, Hossein Haeri, Ayat Osman, Kenneth Keating, and John Stoops. "Utility Codes and Standards Programs: How Much Energy Do They Save?" 2008 ACEEE Summer Study on Efficiency in Buildings, August 2008. http://www.aceee.org/files/proceedings/2008/data/papers/8_296.pdf.
21. "Light Think University Connects the Next Generation of Consumers and College Campus Teams Nationwide with Sustainable, Smart Lighting," press release, April 17, 2013, PR Newswire. http://www.prnewswire.com/news-releases/light-think-university-connects-the-next-generation-of-consumers-and-college-campus-teams-nationwide-with-sustainable-smart-lighting-203371661.html.
22. California Public Utilities Commission. "Fact Sheet: Energy Efficiency Statewide Heating, Ventilation, and Air Conditioning (HVAC) Residential and Commercial Programs," July 2010. http://www.cpuc.ca.gov/NR/rdonlyres/2659AACC-CFE6-44C5-88B7-DC3BB679893D/0/EE13HVAC0710.pdf.
23. California Statewide Upstream HVAC Program (CSUAC), CPUC, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CEAQFjAA&url=http%3A%2F%2Fwebapp.psc.state.md.us%2FIntranet%2FCaseNum%2FNewIndex3_VOpenFile.cfm%3Ffilepath%3D%255C%255CColdfusion%255CEWorkingGroups%255CDRDG%255C%255C2012%2520EmPOWER%2520Plans%255CStakeholder%2520Questions%2520an

d%2520Materials%255C5-3-11%2520MEA%2520Case%2520Studies%255CUpstream%2520EnergyEfficiency2009-2011.pdf&ei=ruOwUdbgFebZ0wHx7IBI&usg=AFQjCNFkmFPFcFyh3LDUzVkxLk3qy4v-LA&sig2=VeOnGzM8x-_Y4lU8sCT9FQ&bvm=bv.47534661,d.dmQ.

24. Schmidt, Edward J., Jr, David Legg, Scott Markwood, and Richard Moran. "Upstream with Residential HVAC Programming in the Northeast," 2008 ACEEE Summer Study on Energy Efficiency in Buildings, August 2008. http://www.aceee.org/files/proceedings/2008/data/papers/2_259.pdf.
25. Dooley, Claire, Luther Kopf, Tim Michel, and Stephanie Fleming. "Plug Load Programs: Success, Attribution and Where We Go From Here," 2012 ACEEE Summer Study on Energy Efficiency in Buildings, August 2012. http://www.aceee.org/files/proceedings/2012/data/papers/0193-000202.pdf#page=1.
26. Peters, Jane S., Marti Frank, April Armstrong, Alexandra Dunn, Rob Bordner, A. J. Howard, Zach Baron, and Stephen Parry. *Final Report: Program & Technology Review of Two Residential Product Programs: Home Energy Efficiency Rebate (HEER)/Business & Consumer Electronics (BCE)*, prepared by Research into Action and Energy Market Innovations for Pacific Gas & Electric and Southern California Edison, August 2012. http://www.calmac.org/publications/HEER__BCE_083012_FINAL.pdf.
27. Navigant Consulting. *NEEA Market Progress Evaluation Report #3: 80 PLUS*, prepared for Northwest Energy Efficiency Alliance, August 2011. http://neea.org/docs/reports/neea-market-progress-evaluation-report-3-80-plus--e11-226.pdf?sfvrsn=6.
28. Bonn, Laura. "A Tale of Two CFL Markets: An Untapped Channel and the Revitalization of an Existing One," 2012 ACEEE Summer Study on Efficiency in Buildings, August 2012. http://www.aceee.org/files/proceedings/2012/data/papers/0193-000197.pdf.
29. New York State Energy Research and Development Authority. *New York's System Benefits Charge Programs Evaluation and Status Report, Year Ending December 31, 2011, Report to the Public Service Commission*, March 2012 (revised April 2012). http://www.nyserda.ny.gov/Energy-Data-and-Prices-Planning-and-Policy/~/media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx.
30. ICF International. *Water and Energy: Leveraging Voluntary Programs to Save Both Water and Energy*, prepared for U.S. Environmental Protection Agency, March 2008. http://water.epa.gov/scitech/wastetech/upload/Final-Report-Mar-2008.pdf.
31. ECONorthwest. *Process Evaluation of the PG&E, SCE, SDG&E, and SCG Water Pilot Programs, Final Report*, December 2010. http://www.calmac.org/publications/FINAL_Water_Pilots_Process_Rpt_12-6-10_wStudy_IDES.pdf.
32. ECONorthwest. *Embedded Energy in Water Pilot Programs Impact Evaluation*, Final Report, prepared by ECONorthwest for the California Public Utilities Commission Energy Division, March 2011, California. http://www.calmac.org/publications/Calmac_Pilots_Impact_Report.pdf.

33. Hedman, Brian, Scott Reeves, Jamie Drakos, Cynthia Kan, Kate Bushman, Doug Burns, and Matei Perussi. *Idaho Low-Income Weatherization Program Evaluation (2007–2009)*, prepared by The Cadmus Group, Inc. for PacifiCorp, April 2011. http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/ID_LowIncome_2007-2009.pdf.
34. Khawaja, M. Sami, Allen Lee, Matei Perussi, Eli Morris, and Anne West. *Ohio Home Weatherization Assistance Program Impact Evaluation*, prepared by Quantec for Ohio Office of Energy Efficiency, July 2006. http://development.ohio.gov/files/is/HWAPImpactEvaluation.pdf.
35. "SCE and NEST Learning Thermostat Make it Easier for Customers to Save Energy," press release, April 23, 2013, Business Wire. http://www.businesswire.com/news/home/20130423005428/en/SCE-Nest-Learning-Thermostat-Easier-Customers-Save.
36. Cooper, Adam, and Lisa Wood. "Integrating Codes and Standards into Electric Utility Energy Efficiency Portfolios," Institute for Electric Efficiency, Edison Foundation, August 2011. http://www.edisonfoundation.net/iee/Documents/IEE_IntegratingCSintoEEPortfolios_final.pdf.
37. *Codes & Standards (C&S) Programs Impact Evaluation: California Investor Owned Utilities' Codes and Standards Program Evaluation for Program Years 2006-2008, Volume III*, prepared by KEMA, Inc., The Cadmus Group, Inc., KEMA, Inc., Nexus Market Research, Inc., and ENRG for the California Public Utilities Commission, Energy Division, April 2010. http://www.calmac.org/publications/Codes_Standards_Vol_III_FinalEvaluationReportUpdated_04122010.pdf.
38. Prindle, William. *Customer Incentives for Energy Efficiency Through Electric and Natural Gas Rate Design: A Resource of the National Action Plan for Energy Efficiency*, prepared by ICF International for the U.S. Environmental Protection Agency, September 2009. http://www.epa.gov/cleanenergy/documents/suca/rate_design.pdf.
39. "Case Study—San Antonio City Lights," American Council for an Energy-Efficient Economy, 2011. http://aceee.org/files/pdf/case-studies/San_Antonio_City_Lights.pdf .
40. "Rebates and Savings: Save with Power Smart," BC Hydro, http://www.bchydro.com/rebates_savings/livesmartbc_efficiency_rebates.html.
41. Russom, Michael. Interview by author. March 29, 2013.
42. Lawrence Berkeley National Laboratory. "Vermont Community Energy Mobilization Project," in Fuller, Merrian C., Cathy Kunkel, Mark Zimring, Ian Hoffman, Katie Lindgren Soroye, and Charles Goldman. *Driving Demand for Home Energy Improvements*, September 2010. http://drivingdemand.lbl.gov/reports/lbnl-3960e-vcem.pdf.
43. Harding, Matthew, and Patrick McNamara. *Rewarding Energy Engagement: Evaluation of Electricity Impacts from CUB Energy Saver, a Residential Efficiency Pilot Program in the ComEd Service Territory*. http://smartgridcc.org/wp-content/uploads/2012/01/Stanford_CES-Evaluation_Draft.pdf.

44. Sacramento Municipal Utility District. *Shade Tree Program Impact Evaluation*, Sacramento, CA: SMUD, August 1995, http://actrees.org/files/Research/smud_1995.pdf.
45. "Earthcents: Home Energy Improvement," Georgia Power, http://www.georgiapower.com/earthcents/residential/home-improvement-program/home.cshtml.
46. Navigant Consulting. *Energy Efficiency/Demand Response Plan: Plan Year 2 (6/1/2009-5/31/2010) Evaluation Report: Retro-Commissioning Program*, prepared for Commonwealth Edison Company, December 2010. http://ilsag.org/yahoo_site_admin/assets/docs/ComEd_RCx_PY2_Evaluation_Report_2010-12-21_Final.12113820.pdf.
47. U.S. Department of Energy, Energy Efficiency & Renewable Energy. "*Save Energy Now* LEADER: A Voluntary Pledge for Corporations Frequently Asked Questions," February 2011. http://www1.eere.energy.gov/manufacturing/tech_deployment/pdfs/leaderpledgefaq.pdf.
48. Pande, Abhijeet, Ryan Schmidt, Douglas Mahone, Edward DeBellevue, and Peter Turnbull. "Breaking Market Barriers to Major Demand Side Management Investments in a Large Financial Institution," 2010 ACEEE Summer Study on Energy Efficiency in Buildings, August 2010. http://www.aceee.org/files/proceedings/2010/data/papers/2046.pdf.
49. Song, Margaret. Interview by author. April 4, 2013.
50. Energy Trust of Oregon. "Strategic Energy Management," Commercial Fact Sheet, January 2013. http://energytrust.org/library/GetDocument/2493.
51. Baab, Steve. Interview by author. April 8, 2013.
52. "Efficient Televisions: Tuning into the most energy-efficient televisions," Northwest Energy Efficiency Alliance, 2012, http://neea.org/initiatives/residential/televisions.
53. Navigant Consulting. Memorandum on ComEd PY4 Data Centers Efficiency Program Evaluation Results Draft, November 2012. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CFwQFjAC&url=http%3A%2F%2Filsag.org%2Fyahoo_site_admin%2Fassets%2Fdocs%2FComEd_PY4_Data_Centers_Program_Evaluation_Results_Memo_Draft_2012-11-20.330133544.docx&ei=rVhkUf_8E8PVogHa2oCgBg&usg=AFQjCNG-6zZbOI6vNZZ2Ke46GK9ORGLigw&sig2=_79nSHDfrwlSMg942U5T6A.
54. "Stay Cool While Saving Energy in Your Data Center," ComEd, https://www.comed.com/business-savings/commercial-industrial/pages/data-centers.aspx.
55. Poirier, Martin, Philippe Dunsky, Firas Chaieb, and Bruno Gobeil. "Small Goes Big: Large-Scale Savings from Small Commercial Customers," 2010 ACEEE Summer Study on Energy Efficiency in Buildings, August 2010. http://www.aceee.org/files/proceedings/2010/data/papers/2040.pdf.

Appendix 2: Literature Review Summary and Sources

Other Sources Consulted

"Advancing Energy-Efficient Computers and Electronics," PG&E, 2011, http://www.pgecorp.com/corp_responsibility/reports/2010/index.html/co_feature_01computers.jsp .

Akbari, Keramatollah, and Robert Oman. "Impacts of Heat Recovery Ventilators on Energy Savings and Indoor Radon in a Swedish Detached House," *WSEAS Transactions on Environment and Development*, 1 (9): January 2013, 24-34. http://www.wseas.org/multimedia/journals/environment/2013/55-783.pdf.

"American Recovery and Reinvestment Act (ARRA) Funded City Lights Program Exceeds Goal in San Antonio," press release, September 2011, PRWeb website. http://www.prweb.com/releases/2011/9/prweb8809112.htm.

Applied Energy Group. *Evaluation of New Jersey's Clean Energy Programs*, prepared for New Jersey Office of Clean Energy, June 2012. http://www.njcleanenergy.com/files/file/Library/NJ%20Program%20Analysis%20Final%20Report%206-11-12.pdf.

Arnold, Hannah, and Kathleen McAllister. *Massachusetts Non-Residential Small Business Direct Install Program: Multi-Tier Program Structure Assessment 2010 Process Evaluation*, prepared by Opinion Dynamics Corporation for Massachusetts Energy Efficiency Program Administrators, July 2011. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&ved=0CC0QFjAA&url=http%3A%2F%2Fwww.ma-eeac.org%2FDocs%2F8.1_EMV%2520Page%2F2011%2F2011%2520Commercial%2520%26%2520Industrial%2520Studies%2FMA%2520NR%2520SB%2520-%25202010%2520Process%2520Evaluation%2520Report%2520-%2520FINAL.pdf&ei=3OoxUqe_NYKb2QW8iYCgDA&usg=AFQjCNEP1pHuurGkr73xO2HKOaTReep2eg&sig2=xbcHH8TeIvpud77tm7gq-g&bvm=bv.52109249,d.b2I.

Baylon, David, Ben Larson, Poppy Storm, and Kevin Geraghty. Ductless Heat Pump Impact & Process Evaluation: Field Metering Report, prepared by Ecotope, Inc. for Northwest Energy Efficiency Alliance, May 2012. http://neea.org/docs/reports/ductless-heat-pump-impact-process-evaluation-field-metering-report.pdf?sfvrsn=18.

BC Hydro. "Power Smart Alliance Eligibility Criteria," http://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/power-smart/business/programs/power-smart-alliance-eligibility-criteria.pdf.

Bellett, Gerry. "Energy Challenge: Examine the barriers to being power smart," *Vancouver Sun*, March 4, 2013, http://www.vancouversun.com/business/energy-fix/Barriers%20being%20power%20smart/8044327/story.html.

Boroski, John, Bing Tso, and Heather Cooley. "Saving Upstream and Downstream Energy through End User Water Conservation," IEPEC 2011 International Energy Program Evaluation Conference, Boston, MA, 2011. http://www.iepec.org/conf-docs/papers/2011PapersTOC/papers/025.pdf.

"Bright Opportunities: Commercial & Industrial Upstream Lighting Program," Mass Save, http://www.masssave.com/professionals/incentives/upstream-lighting.

Building Performance Institute, Inc. "Prerequisites for Energy Auditor Certification," http://www.bpi.org/files/pdf/Energy_Auditor_Prerequisites_Apr.pdf.

Cadmus Group, Inc. *Connecticut Small Business Energy Advantage Impact Evaluation Report Program Year 2007*, prepared for Connecticut Energy Conservation Management Board, The Connecticut Light & Power Company, and the United Illuminating Company, August 2009. http://ctenergyinfo.com/eeb/resources/ct_sbea_2007_impact_evaluation_report_updatednov091.pdf.

Cadmus Group, Inc. *Energy Efficiency and Sustainable Technology (EEAST) Program Evaluation*, prepared for Oregon Department of Energy, June 2011. http://www.oregon.gov/energy/LOANS/EEAST/docs/EEAST_Evaluation_Report.pdf.

Carrico, Amanda R., Michael P. Vandenbergh, Paul C. Stern, Gerald T. Gardner, Thomas Dietz, and Jonathan Gilligan. "Energy and Climate Change: Key Lessons for Implementing the Behavioral Wedge," *Journal of Energy & Environmental Law*, Vol. 1, May 2010. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1612224.

Charlton, Erik. "Nest team up with Texas electricity provider," June 2012, http://www.nest.com/blog/2012/06/25/nest-teams-up-with-texas-electricity-provider/.

Clean Energy Ambassadors. "Lighting: Best Opportunities for Community Wide Lighting Upgrades," webinar, February 2013, http://vimeo.com/60024381.

Clean Energy Works Oregon homepage, http://www.cleanenergyworksoregon.org/.

ComEd. "Monitoring-Based Commissioning Program Application, Program Year 5: June 1, 2012 through May 31, 2013." https://www.comed.com/Documents/business-savings/SIFYB_PY5_MBC.pdf.

ComEd. "Smart Ideas for your Business® Retro-Commissioning & Monitoring-Based Commissioning," 2012, https://www.comed.com/Documents/business-savings/fact-sheets/RetroCommissioning_FS.pdf.

ComEd's 2008 – 2010 Energy Efficiency / Demand Response Plan, Plan Year 3 – Second Quarter Performance Update. http://ilsag.org/yahoo_site_admin/assets/docs/PY3_QTR_Two_SAG_.27143908.pdf.

Conservation Community of Practice at work, BC Hydro, http://www.bchydro.com/community/community_investment/community_of_practice.html.

Northeast Energy Efficiency Partnerships, "Business & Consumer Electronics," http://www.neep.org/efficient-products/business-consumer-electronics/index.

Curtis, Monica, and Shannon Montgomery. ""Lifting" the Energy Efficient Lighting Market," Wisconsin Energy Conservation Corporation, August 2012. http://www.weccusa.org/assets/pdfs/whitepapers/142-Lift%20Paper%20ACEEE%20Summer%20Study%202012%20Final%20formatted%20v2-66%20percent%208.15.12.pdf.

D&R International. *Residential Lighting Market Profile–2012*.

"Deep Energy Retrofits: Saving energy across the commercial market," NEEA, January 1900, http://neea.org/initiatives/commercial/existing-building-renewal.

Dietz, Thomas, Gerald T. Gardner, Jonathan Gilligan, Paul C. Stern, and Michael P. Vandenbergh. "Household Actions Can Provide a Behavioral Wedge to Rapidly Reduce U.S. Carbon Emissions," *Proceedings of the National Academy of Sciences of the United States of America*, 106 (44): September 2009, 18452-18456. http://www.pnas.org/content/early/2009/10/23/0908738106.full.pdf+html.

Donovan, Geoffrey H. and David T. Butry. "The value of shade: Estimating the effect of urban trees on summertime electricity use," *Energy and Buildings*, 41 (6): June 2009, 662-668. http://www.sciencedirect.com/science/article/pii/S037877880900005X.

Dorsheimer, Jonathan, and Josh Baribeau. *A Light Read: Canaccord Genuity LED and Lighting Monthly*, May 2013. https://research.canaccordgenuity.com/_layouts/researchnoteviewer.aspx?pubid=91411.

Duffy, Kevin. "Proven Energy Savings through Behavior Change Case Study: Way to Save, Burlington!" presentation at 2013 Midwest Energy Solutions Conference, Chicago, IL, January 2013. http://www.meeaconference.org/uploads/file/ppt2013/MES_2013_Thu-01-17/MES_2013_Thu-01-17_Duffy_2.pdf.

Ecology Action, "SMB Efficiency Delivery Approach," presented at New Buildings Institute 2011 Deep Energy Savings Summit, Boulder, CO, September 2011, http://newbuildings.org/sites/default/files/Aldridge_NBI_Summit_Ecology_Action_9.15.11v2.pdf.

Ecology Action. "Right Lights Energy Efficiency Program," http://www.ecoact.org/Programs/Energy_Efficiency/RightLights/.

EcoMotion Incorporated. *Hood River Conservation Project*, 1992. http://ecomotion.us/results/pdfs/12.pdf.

Edison Foundation. Compilation of U.S. Energy Efficiency Program Profiles, prepared for Institute for Electric Efficiency, June 2009. http://www.edisonfoundation.net/IEE/Documents/IEE_EEProgSummariesPUBLIC_0609.pdf.

Energy Center of Wisconsin. *Focus on Energy - PowerCost Monitor Study: Final Report*, April 2010, http://www.ecw.org/ecwresults/253-1.pdf.

Energy Market Innovations, Inc. *Consumer Electronics Television Initiative Market Progress Evaluation Report*, prepared for Northwest Energy Efficiency Alliance, November 2011. http://neea.org/docs/reports/consumer-electronics-television-initiative-e11-230_combinedv2.pdf?sfvrsn=9.

"Enter the Power Smart Small Business Energy Challenge," BC Hydro, February 2013, http://www.bchydro.com/news/conservation/2013/small_business_energychallenge.html.

Farmers Electric Cooperative. "Commercial Heat Recovery Ventilation Incentives Rebate Form." http://farmersrec.com/documents/2011rebates/C8CommercialHRV.pdf.

Frank, Marti, Jane Peters, Stephanie Fleming, Gregg Hardy, and Matt Krick. "Taming the Beast: 13 Savings Opportunities for Next Generation Consumer Electronics Programs," 2012 ACEEE Summer Study on Energy Efficiency in Buildings, August 2012. http://www.aceee.org/files/proceedings/2012/data/papers/0193-000285.pdf#page=1.

"From snow to shade trees – apply to get yours in Spokane County," Avista Utilities, January 2013, http://www.avistautilities.com/community/blog/archive/2013/01/15/shade-trees.aspx.

Georgia Power Company. *Certified Demand-Side Management Programs Fourth Quarter 2011 Status Report*, February 2012. http://www.psc.state.ga.us/factsv2/Docket.aspx?docketNumber=31082.

"Get the thermostat that's hotter than a Texas Summer," Reliant Energy, http://www.reliant.com/en_US/Page/Shop/Public/misc_Nest_LandingPage_May2012.jsp?customer=New&txtPromocode=WR0505&SID=ACL_2012NestPlan&stop_mobi=yes.

Hartwell, Ray, and Roger Spring. "Leveraging a Regional Trade Ally Network to Help Vendors and Customers," 2010 ACEEE Summer Study on Energy Efficiency in Buildings. http://www.aceee.org/files/proceedings/2010/data/papers/2088.pdf.

Heschong Mahone Group. *Non-Residential Process Evaluation Study: Attachment 2 - Program-Specific Evaluations*, prepared for San Diego Gas & Electric Company, March 2012.

http://www.calmac.org/publications/SDGE_NR_Process_Eval_Final_Report_-_Attachment_2_Program_Evaluations.pdf.

Houston, Laurie L., Michio Watanabe, Jeffrey D. Kline, and Ralph J. Alig. *Past and Future Water Use in Pacific Coast States*, General Technical Report PNW-GTR-588. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, 2003. http://www.fs.fed.us/pnw/pubs/gtr588.pdf.

Huang, Yu Joe. *The Impact on Energy Use and Peak Demand of Awnings and Roller Shades in Residential Buildings*, Moraga, CA: White Box Technologies, July 2012. http://www.awninginfo.com/downloads/PAMA%20Energy%20Study%20082012.pdf.

Koser, Kelly and Carl Uthe. *Advanced Power Strip Research Report*, prepared by Lockheed Martin for the New York State Energy Research and Development Authority, August 2011. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CDAQFjAA&url=http%3A%2F%2Fwww.nyserda.ny.gov%2FResidential%2FEnergy-Efficient-and-ENERGY-STAR-Products%2F~%2Fmedia%2FFiles%2FEERP%2FResidential%2FEnergy%2520Efficient%2520and%2520ENERGY%2520STAR%2520Products%2F12-03-Power-Management-Research-Report.ashx&ei=acSwUa-iC0660AGA5IHADQ&usg=AFQjCNG4Me0X4f_YQotHaIjSqWt9Q6T5dA&sig2=605P8bU-314aNnD31gI-RA&bvm=bv.47534661,d.dmQ.

Lawrence Berkeley National Laboratory. "Energy Smackdown: Driving Participation through Friendly Competition," in Fuller, Merrian C., Cathy Kunkel, Mark Zimring, Ian Hoffman, Katie Lindgren Soroye, and Charles Goldman. *Driving Demand for Home Energy Improvements*, September 2010. http://drivingdemand.lbl.gov/reports/lbnl-3960e-esmckdn.pdf.

Lawrence Berkeley National Laboratory. "Hood River Conservation Project: An Experiment in Going Deep Community-Wide," in Fuller, Merrian C., Cathy Kunkel, Mark Zimring, Ian Hoffman, Katie Lindgren Soroye, and Charles Goldman. *Driving Demand for Home Energy Improvements*, September 2010. http://drivingdemand.lbl.gov/reports/lbnl-3960e-hrcp.pdf.

Lawrence Berkeley National Laboratory. "Take Charge Challenge: Community-Led Competition to Save Energy in Kansas," in Fuller, Merrian C., Cathy Kunkel, Mark Zimring, Ian Hoffman, Katie Lindgren Soroye, and Charles Goldman. *Driving Demand for Home Energy Improvements*, September 2010. http://drivingdemand.lbl.gov/reports/lbnl-3960e-charge.pdf.

Lawrence Berkeley National Laboratory. "The Marshfield Energy Challenge: A Community-Focused Approach to Increase Demand for Retrofits," in Fuller, Merrian C., Cathy Kunkel, Mark Zimring, Ian Hoffman, Katie Lindgren Soroye, and Charles Goldman. *Driving Demand for Home Energy Improvements*, September 2010. LBNL, http://drivingdemand.lbl.gov/reports/lbnl-3960e-marshfield.pdf.

Lawrence Berkeley National Laboratory. *Technical Support Document for Residential Cooking Products, Volume 2: Potential Impact of Alternative Efficiency Levels for Residential Cooking Products*, prepared for U.S. Department of Energy, March 1994. http://www1.eere.energy.gov/buildings/appliance_standards/residential/pdfs/cookgtsd.pdf.

McKibbin, Anne. *Engaging as Partners in Energy Efficiency: A Primer for Utilities on the Energy Efficiency Needs of Multifamily Buildings and Their Owners*, prepared for CNT Energy and American Council for an Energy-Efficient Economy, March 2013. http://www.aceee.org/sites/default/files/publications/researchreports/e137.pdf.

McPherson, E. Gregory. "Energy-Saving Potential of Trees in Chicago." In *Chicago's urban forest ecosystem: results of the Chicago Urban Forest Climate Project,* edited by E. Gregory McPherson, David J. Nowak, and Rowan A. Rowntree, General Technical Report NE-186. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station, 1994. http://www.nrs.fs.fed.us/pubs/gtr/gtr_ne186.pdf.

McPherson, E. Gregory. "Evaluating the Cost Effectiveness of Shade Trees for Demand-Side Management," *The Electricity Journal*, 6 (9): November 1993, 57-65. http://www.fs.fed.us/psw/programs/uesd/uep/products/cufr_84_EM93_10.PDF.

McPherson, Gregory and James R. Simpson. "Shade-Trees as a Demand-Side Resource," March 1995, http://www.homeenergy.org/show/article/id/1115.

Mercier, Catherine, and Laura Moorefield. *Commercial Office Plug Load Savings Assessment*, prepared by Ecos for the California Energy Commission, PIER Energy-Related Environmental Research Program, December 2011. http://media.cbsm.com/comments/169545/PlugLoadSavingsAssessment.pdf.

Myers, Steve. "Driving Scale and Adoption of Energy Efficiency with Small Business Customers," presentation at ACEEE – Energy Efficiency as a Resource, Denver, CO, September 2011. http://aceee.org/files/pdf/conferences/eer/2011/BS3A_Meyers.pdf.

NEEP Data Working Group. *Advanced Power Strips Deemed Savings Methodology*, Noertheast Energy Efficiency Partnerships, January 2012. http://www.neep.org/Assets/uploads/files/market-strategies/NEEP-APS-Deemed-Savings-Report-4-30-12.pdf.

New York State Energy Research and Development Authority. *New York's System Benefits Charge Programs Evaluation and Status Report, Year Ending December 31, 2011, Report to the Public Service Commission*, March 2012 (revised April 2012). http://www.nyserda.ny.gov/Energy-Data-and-Prices-Planning-and-Policy/-/media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx.

New York State Energy Research and Development Authority. *New York's System Benefits Charge Programs Evaluation and Status Report, Year Ending December 31, 2011, Report to the Public Service Commission*, March 2012 (revised April 2012). http://www.nyserda.ny.gov/Energy-Data-and-Prices-

Planning-and-Policy/~/media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx.

"No-cost Energy-Efficiency Upgrades for Your Small Business," Puget Sound Energy, http://pse.com/savingsandenergycenter/ForBusinesses/Pages/Small_Biz_Direct_Install.aspx.

Non-Residential New Construction (NRNC) Programs Impact Evaluation: California Investor-Owned Utilities' Non-Residential New Construction Program Evaluation for Program Years 2006-2008, Volume II, prepared by KEMA, Inc., The Cadmus Group, Inc., KEMA, Inc., and Nexus Market Research, Inc. for the California Public Utilities Commission, Energy Division, February 2010. http://www.calmac.org/publications/NRNC_Final_Report_02082010.pdf.

Opinion Dynamics Corporation. *Evaluation of National Grid's Community Pilot Program, Energy Action: Aquidneck and Jamestown, Final Report*, prepared for National Grid, October 2011. http://www.rieermc.ri.gov/documents/evaluationstudies/2011/Aquidneck%20Pilot%20Evaluation_Final%20Report_10-07-2011.pdf.

Opinion Dynamics Corporation. *LIPA Efficient Long Island 2011 Annual Evaluation Report*, prepared for Long Island Power Authority, May 2012. http://www.lipower.org/pdfs/company/papers/eli-annual2011.pdf.

Opinion Dynamics with Navigant Consulting. *Massachusetts Three Year Cross-Cutting Behavioral Program Evaluation Integrated Report*, prepared for Massachusetts Energy Efficiency Advisory Council & Behavioral Research Team, July 2012. http://opower.com/uploads/library/file/19/MA_Three_Year_Cross-Cutting_Behavioral_Program_Evaluation_Integrated_Report_072512.pdf.

"Otter Tail Power Company's Report on Town Energy Challenge Pilot," no date. http://www.cleanenergyresourceteams.org/sites/default/files/OtterTail_ChallengePilot.pdf.

PA Consulting Group. *Cape Light Compact Residential Smart Energy Monitoring Pilot Final Report*, prepared for Cape Light Compact, March 2010. http://tomharrisonjr.com/wp-content/uploads/2010/08/CLCSmartEnergyMonitoringPilotFinalReport3-31-2010.pdf.

Pande, Abhijeet. "PG&E's More Than a Million Program: A fleetwide approach to energy savings," presented at ACEEE 2009 Behavior, Energy and Climate Change Conference, November 2009, Washington, DC. http://www.stanford.edu/group/peec/cgi-bin/docs/events/2009/becc/presentations/1B%20PGEs%20More%20Than%20a%20Million%20Program%20111509.pdf.

Peters, Jane S., Dulane Moran, and April Armstrong. *Final Report: Clean Energy Works Portland Pilot Process Evaluation*, prepared by Research Into Action for Energy Trust of Oregon, September 2010. http://www1.eere.energy.gov/buildings/betterbuildings/neighborhoods/pdfs/portland_pilot_evaluation_research_report_clean_energy_works.pdf.

Peters, Jane S., Marti Frank, Joe Van Clock, and April Armstrong. *Electronics and Energy Efficiency: A Plug Load Characterization Study*, prepared by Research Into Action for Southern California Edison, January 2010. http://www.calmac.org/publications/BCE_FINAL.pdf.

Pew Center on Global Climate Change. "Cogeneration/Combined Heat and Power (CHP)," March 2011. http://www.c2es.org/docUploads/CogenerationCHP.pdf.

Pigg, Scott, Rana Belshe, Ingo Bensch, and Karen Koski. "Energy Savings Opportunities with Home Electronics and Other Plug-Load Devices: Results from a Minnesota Field Study." Paper presented at the 2010 ACEEE Summer Study on Efficiency in Buildings, Pacific Grove, CA, August 2010. http://www.ecw.org/ecwresults/aceee/homeelectronics.pdf.

"Planting shade trees can save you up to $50 on your annual energy bill," Salt River Project, http://www.srpnet.com/energy/powerwise/savewithsrp/shadetrees.aspx.

"Power Saver™ Program: Solar Photovoltaics," Austin Energy, http://www.austinenergy.com/Energy%20Efficiency/Programs/Rebates/solar%20rebates/.

"Power Smart Energy Challenge," BC Hydro, http://www.bchydro.com/news/community_events/energy_challenge.html.

Procell, Adam. "Small Business Direct Install Programs: New York and New Jersey Program Success," presentation at ACEEE—Energy Efficiency as a Resource, Denver, CO, September 2011. http://aceee.org/files/pdf/conferences/eer/2011/BS3A_castro.procell.pdf.

"PSE&G Direct Install Program For Small Business," Public Service Electric & Gas, http://www.pseg.com/business/small_large_business/save_energy/efficiency.jsp.

Quantec. *Evaluation of the 2004-2005 RightLights Program*, prepared for Ecology Action, April 2006. http://www.calmac.org/publications/Rightlights_report_042106_final.pdf.

Rapley, Frank. Interview by author. April 8, 2013.

"Residential High-Efficiency Heating Equipment Rebate Program," Mass Save, http://www.masssave.com/residential/offers/gas-networks-hehewh.

RightLights (Monterey Bay Area Efficient Lighting Program), Ecology Action, August 2004, http://www.rightlights.org/people_partners/assets/02_03_Final_Report.pdf. (inactive link)

RightLights Program, PG&E, August 2010, http://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/partnersandtradepros/eeis/search/RightLights%20FS%20v19.pdf. (inactive link)

Rodriguez, Kimberly, and Melanie Goforth. "Direct Install Programs and the Impact of Community Outreach and Education," 2012 ACEEE Summer Study on Energy Efficiency in Buildings, August 2012. http://www.aceee.org/files/proceedings/2012/data/papers/0193-000326.pdf.

Rouleau, Denise. Interview by author. March 29, 2013.

SBW Consulting. Final Report 2006–08 Retro-Commissioning Impact Evaluation, prepared for California Public Utilities Commission, February 2010. http://www.calmac.org/publications/RCx_2006-08_EM%26V_Report_FINAL.pdf.

Schnick, Skip, and Summer Goodwin. *Bonneville Power Administration Residential Behavior Based Energy Efficiency Program Profiles 2011*, December 2011. http://www.bpa.gov/energy/n/pdf/BBEE_Res_Profiles_Dec_2011.pdf.

Seattle Public Utilities. *Water Conservation Potential Assessment*, May 1998. http://www.seattle.gov/util/groups/public/@spu/@water/documents/webcontent/spu01_002152.pdf.

Simpson, James R. and E. Gregory McPherson. "Potential of Tree Shade for Reducing Residential Energy Use in California," *Journal of Arboriculture*, 22 (1): January 1996, 10-18. http://www.fs.fed.us/psw/programs/uesd/uep/products/cufr_35_JS96_49.PDF.

Sipe, Brien, and Sarah Castor. "Net Impact of Home Energy Feedback Devices,"2009 Energy Program Evaluation Conference, Portland, OR, 2009. http://energytrust.org/library/reports/Home_Energy_Monitors.pdf.

Staats, Henk, Paul Harland, and Henk A.M. Wilke. "Effecting Durable Change: A Team Approach to Improve Environmental Behavior in the Household," *Environment and Behavior*, 36 (3): May 2004, 341-367. http://media.cbsm.com/uploads/1/Staats2004.pdf.

Stephens, Barry. "Heat Recovery Ventilation: Why Efficiency Matters," presented at Better Buildings by Design, Burlington, VT, February 2012. http://efficiencyvermont.org/docs/for_partners/bbd_presentations/2012/Feb9_Session3_PDFs/HeatRecoveryVentilation_Stephens.pdf.

Stratton, Susan. Interview by author. April 8, 2013.

Szydlowski, Richard. "The One-Stop Efficiency Shop Lighting Retrofit Program," presentation at ACEEE – Energy Efficiency as a Resource, Denver, CO, September 2011. http://aceee.org/files/pdf/conferences/eer/2011/BS3A_Szydlowski.pdf.

U.S. Environmental Protection Agency. "ENERGY STAR Commercial & Industrial Programs CASE STUDIES: Pacific Gas & Electric Company More Than a Million Offering," January 2009. http://www.energystar.gov/ia/partners/reps/ci_program_sponsors/downloads/PGE_MTM_Case_Study.pdf.

U.S. Environmental Protection Agency. *ENERGY STAR Summary of Consumer Electronics Programs by Energy Efficiency Program Sponsors (EEPS)*, September 2012.

http://www.energystar.gov/ia/partners/downloads/2012_ENERGY_STAR_Summary_of_Consumer_Electronics_Programs.pdf.

U.S. Environmental Protection Agency. *Utility Incentives for Combined Heat and Power*, October 2008. http://www.epa.gov/chp/documents/utility_incentives.pdf.

Urban, Bryan, Verena Tiefenbeck, and Kurt Roth. "Televisions, Computers, and Set-top Boxes: The Big Three of 2010 Home Consumer Electronics Energy Consumption," 2012 ACEEE Summer Study on Energy Efficiency in Buildings, August 2012. http://www.aceee.org/files/proceedings/2012/data/papers/0193-000295.pdf#page=1.

"Use an Advanced Power Strip to save energy and money," Efficiency Vermont. http://www.efficiencyvermont.com/for_my_home/ways-to-save-and-rebates/home-electronics/advanced-power-strips/general-info/overview.aspx.

Van Swearingen, Scott, Tracy Scott, Kimberly Pray. "Reach for "Stranded Savings": The Challenges and Opportunities of Energy Efficiency in Affordable Multifamily," 2012 ACEEE Summer Study on Energy Efficiency in Buildings, August 2012. http://www.aceee.org/files/proceedings/2012/data/papers/0193-000125.pdf.

Vandenbergh, Michael P., Paul C. Stern, Gerald T. Gardner, Thomas Dietz, and Jonathan M. Gilligan. "Implementing the Behavioral Wedge: Designing and Adopting Effective Carbon Emission Reduction Programs," Environmental Law Reporter, 40 (6): June 2010, 10547-10554. http://behavioralwedge.msu.edu/documents/Vandenberg_et_al_Implementing_the_Behavioral_Wedge_ELR_2010.pdf.

Vermont Energy Investment Corporation. Efficiency Vermont Annual Plan 2012, prepared for Vermont Public Service Board, December 2011. http://www.efficiencyvermont.com/docs/about_efficiency_vermont/annual_plans/EVT_AnnualPlan2012.pdf.

Weatherization Plus Health Factsheet, DOE, http://wxplushealth.org/sites/default/files/Media/WxPlusHealth-Fact-Sheet-spring-2013.pdf.

Western Resource Advocates. "Phoenix Green: Designing a Community Tree Planting Program in Phoenix, Arizona,"2009, http://www.westernresourceadvocates.org/media/pdf/AZShadetree.pdf.

Xcel Energy. *Demand-Side Management Annual Status Report*, prepared for Colorado Public Utilities Commission, April 2012. http://www.xcelenergy.com/staticfiles/xe/Regulatory/Regulatory%20PDFs/CO-DSM-2011-Annual-Status-Report.pdf.

Xcel Energy. *Electronics Program Options for Implementation*, presentation at ENERGY STAR Partner Meeting, Denver, CO, October 2010. http://www.energystar.gov/ia/partners/downloads/meetings/2010/Panel%202_Sherman.pdf.

Xcel Energy. *Market Transformation: ENERGY STAR Retailer Incentive Pilot - Program Changes*, http://www.xcelenergy.com/staticfiles/xe/Regulatory/Regulatory%20PDFs/ENERGY_STAR%28ES%29RetailerIncentivePilot.pdf.

Zebedee & Associates. "Final EM&V Report for San Diego Cool Communities Shade Tree Program," prepared for San Diego Regional Energy Office, November 2006, http://www.calmac.org/publications/CPUC_1306-04__Cool__Final_Report_CALMAC.pdf.

Appendix 3a: Interview Material - List of Interview Participants and Dates

Interview Group	Interview Subgroup	Organization	Individual	Interview Date
BPA	BPA - Demand Response	BPA	Frank Brown	April 19
BPA	BPA - Demand Response	BPA	Lee Hall	May 2
BPA	BPA - Program Design	BPA	Brent Barclay*	February 27
BPA	BPA - Program Design	BPA	Carrie Cobb	February 27
BPA	BPA - Program Design	BPA	Jennifer Eskil	February 27
BPA	BPA - Program Design	BPA	Allie Mace	February 27
BPA	BPA - Program Design	BPA	Sarah Moore	February 27
BPA	BPA - Energy Efficiency Representative	BPA	Paul Munz	February 28
BPA	BPA - Energy Efficiency Representative	BPA	Melissa Podeszwa	February 28
BPA	BPA - Energy Efficiency Representative	BPA	Kim Thompson	February 28
BPA	BPA - Energy Efficiency Representative	BPA	Daniel Villalobos	February 28
BPA	BPA - Leadership	BPA	Greg Delwiche	April 19
BPA	BPA - Leadership	BPA	Bill Drummond	April 19
BPA	BPA - Leadership	BPA	Richard Genece	June 11
BPA	BPA - Leadership	BPA	Brent Barclay*	April 12
Regional	Regional Energy Efficiency Experts	NW Power Council	Charlie Grist	April 9
Regional	Regional Energy Efficiency Experts	Opportunity Council	Chuck Eberdt	April 24
Regional	Regional Energy Efficiency Experts	Pacificorp	Don Jones	April 23
Regional	Regional Energy Efficiency Experts	NEEA	Emily Moore	April 30
Regional	Regional Energy Efficiency Experts	Research Into Action	Jane Peters	April 12
Regional	Regional Energy Efficiency Experts	NEEA	Jeff Harris	April 29
Regional	Regional Energy Efficiency Experts	K Energy	Ken Baker	April 4
Regional	Regional Energy Efficiency Experts	MT DEQ	Lou Moore	April 24
Regional	Regional Energy Efficiency Experts	Energy Trust of Oregon	Margie Harris	April 5
Regional	Regional Energy Efficiency Experts	Research Into Action	Marti Frank	April 12
Regional	Regional Energy Efficiency Experts	NW Energy Coalition	Nancy Hirsch	April 26
Regional	Regional Energy Efficiency Experts	NRDC	Ralph Cavanagh	April 29
Regional	Regional Energy Efficiency Experts	NEEC	Stan Price	April 23
Regional	Regional Energy Efficiency Experts	NW Power Council	Tom Eckman	March 29
Regional	Regional Utility Staff	Seattle City Light	Andrew Gibb	April 11
Regional	Regional Utility Staff	Seattle City Light	Art Conrad	April 11
Regional	Regional Utility Staff	Idaho Power	Celeste Becia	April 16
Regional	Regional Utility Staff	EWEB	Charlie Schiffendecker	April 7
Regional	Regional Utility Staff	Seattle City Light	Christine Bunch	April 11
Regional	Regional Utility Staff	EWEB	Dan Morehouse*	April 9

*Participant interviewed twice.

Interview Group	Interview Subgroup	Organization	Individual	Interview Date
Regional	Regional Utility Staff	Kootenai Electric	Don Crawford	April 16
Regional	Regional Utility Staff	Seattle City Light	Jerry Wright	April 11
Regional	Regional Utility Staff	Inland Power	John Francisco*	April 16
Regional	Regional Utility Staff	EWEB	Kathy Grey	April 9
Regional	Regional Utility Staff	Seattle City Light	Lori Moen	April 30
Regional	Regional Utility Staff	Energy Trust of Oregon	Matt Braman	April 10
Regional	Regional Utility Staff	Seattle City Light	Mike Little	April 11
Regional	Regional Utility Staff	Energy Trust of Oregon	Oliver Kesting	April 10
Regional	Regional Utility Staff	Idaho Power	Patti Best	April 16
Regional	Regional Utility Staff	Flathead Electric Coop	Ross Holter*	April 16
Regional	Regional Utility Staff	Energy Trust of Oregon	Spencer Moersfelder	April 10
Regional	Regional Utility Staff	Idaho Power	Todd Shultz	April 16
Regional	Utility Sounding Board	Utility Sounding Board	Dan Morehouse*	April 10
Regional	Utility Sounding Board	Utility Sounding Board	Ross Holter*	April 10
Regional	Utility Sounding Board	Utility Sounding Board	Eugene Rosolie	April 10
Regional	Utility Sounding Board	Utility Sounding Board	Anne Bertino	April 10
Regional	Utility Sounding Board	Utility Sounding Board	Tom Schemacher	April 10
Regional	Utility Sounding Board	Utility Sounding Board	Rob Currier	April 10
Regional	Utility Sounding Board	Utility Sounding Board	John Francisco*	April 10
Regional	Utility Sounding Board	Utility Sounding Board	Eric Miller	April 10
Regional	Utility Sounding Board	Utility Sounding Board	Mattias Jarvegren	April 10
Regional	Contractors and Trade Allies	McKinstry	Ash Awad	April 30
Regional	Contractors and Trade Allies	Light Doctor	Shane Petitt	April 30
Regional	Implementation Contractors	ESG	Alecia Dodd	April 23
Regional	Implementation Contractors	Colehour/Cohen	Bryan Cohen	April 22
Regional	Implementation Contractors	Geavista	Brian Preston Smith	April 25
Regional	Implementation Contractors	Fluid/CLEAResult	Brian Simmons	April 9
Regional	Implementation Contractors	Fluid/CLEAResult	Dana Cofer	April 9
Regional	Implementation Contractors	Franklin Energy	Dan Tarrence	April 2
Regional	Implementation Contractors	Evergreen	Dave Backen	April 1
Regional	Implementation Contractors	Franklin Energy	Fred Dreher	April 2
Regional	Implementation Contractors	PECI	Jeremy Litow	April 10
Regional	Implementation Contractors	American Efficient	Kiran Bhatraju	April 3
Regional	Implementation Contractors	PECI	Kendall Youngblood	April 10
Regional	Implementation Contractors	ESG	Mark Gosvener	April 23
Regional	Implementation Contractors	Ecova	Nate Bellino	April 19
Regional	Implementation Contractors	ESG	Paul Rich	April 23
Regional	Implementation Contractors	American Efficient	Ross Chanin	April 3
Regional	Implementation Contractors	ERS	Stephen Achilles	April 4

*Participant interviewed twice.

Appendix 1: Category-Specific Examples and Definitions

Interview Group	Interview Subgroup	Organization	Individual	Interview Date
Regional	Implementation Contractors	Energy Solutions	Terrance Pang	April 18
Regional	Implementation Contractors	Ecova	Virginia Ulrich	April 19
Regional	Implementation Contractors	Fluid/CLEAResult	Selena Bell Heise	April 9
Regional	Implementation Contractors	Fluid/CLEAResult	Sheryl Bunn	April 9
Regional	Implementation Contractors	Fluid/CLEAResult	Carol Lindstrom	April 9
National	National Energy Efficiency Experts	NCAT	Dale Horton	May 1
National	National Energy Efficiency Experts	Rouleau Consulting Group	Denise Rouleau	March 29
National	National Energy Efficiency Experts	ACEEE	Jennifer Amann	April 17
National	National Energy Efficiency Experts	Esource	Mike Weedal	April 18
National	National Energy Efficiency Experts	NEEA	Susan Stratton	April 8
National	National Energy Efficiency Experts	Energy Efficient Services	Tim Salyers	June 3
National	National Utility Staff	TVA	Frank Rapley	April 8
National	National Utility Staff	VEIC	Mike Russom	March 29
National	National Utility Staff	Cape Light Compact	Margaret Song	April 4
National	National Utility Staff	ComEd	Steve Baab	April 8

Appendix 3b:Interview Materials - Interview Guide - BPA Staff

OBJECTIVES

- For **BPA Staff** to provide a thoughtful and representative description of regional successes to be leveraged, vision for future energy efficiency accomplishments, and gaps to be addressed
- To gather ideas on how they would like to best serve and support BPA customers in their energy efficiency efforts

BPA AS AN ORGANIZATION:

- What is BPA's role in the region?
- How would you describe BPA's relationship with its customers?
- How would customers describe the relationship?
- How would customers describe BPA's role in the region?
- What do customers like about BPA as an organization?
- What do customers not like about BPA as an organization?
- What market niches/gaps does BPA cover?
- What market niches/gaps are not covered by BPA?
- What are possible new measures/offerings/regional support areas?
- What are BPA's goals?

YOUR PROGRAM/GROUP WITHIN BPA:

- What is your program's role within BPA?
- How does your program help BPA meet its goals?
- What are the stated goals of your program?
- How does your program serve BPA's customers?
- What do customers like about your program?

  What do customers not like about your program

- Within your program, what works?
- Within your program, what doesn't work?

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Appendix 3c: Interview Materials - Interview Guide - BPA Executives

OBJECTIVES:

- For **BPA Executives** to provide a thoughtful and representative description of regional successes to be leveraged, vision for future energy efficiency accomplishments, and gaps to be addressed
- To gather ideas on how they would like to best serve and support BPA customers in their energy efficiency efforts
- To help inform recommendations for BPA that are actionable and relevant, and that meet the unique needs of BPA as a wholesaler

INTERVIEW INTRODUCTION

- Thank you for taking time to talk with us today.
- Your input is important and will provide perspective and insight that will inform this project and BPA's continued efforts and success in the region.
- This interview is designed to be conversational (semi-formal).
- Our discussion is intended to focus on the future possibilities in the Residential and Commercial market sectors from both BPA and your customers' perspectives.
- Do you have any questions before we begin?

REGIONAL PERSPECTIVE – CURRENT AND FUTURE

1. From your perspective, what have been the region's biggest energy efficiency successes:
    a. Across sectors, programs, and delivery models?
    b. Are there efforts that particularly stand out that may be important to leverage in future programs/delivery?
    c. What do you feel were the underlying factors that contributed to these successes?
2. As you consider the future potential of energy efficiency – think 3-5 years out and also 5-10 years out, what are the emerging trends you are paying attention to?

   a. . What do you believe is "the next big thing" or "the next big idea?"
   b. What are the key opportunities facing BPA in terms of energy efficiency program design and delivery?
   c. What are the key opportunities facing BPA customers in terms of supporting their members' and consumers' energy efficiency goals?
3. Again, thinking 5-10 years out, or even longer, what would you hope that your customers would say about BPA's support of the region's energy efficiency goals?

CHALLENGES

1. What challenges or barriers would need to be addressed to capture these opportunities (and elicit these customer statements)?

GAPS AND CONSTRAINTS (IF TIME ALLOWS)

1. Are there any "players" (market actors/other industry partners, etc.) we should consider partnering with in the future?
2. From your perspective, what are the regional constraints that limit energy efficiency offerings?
   a. How can these best be addressed or overcome?
3. What concerns do you have about regional energy efficiency delivery in the future?

CLOSING

- Thank you VERY MUCH for your input. Before we adjourn, is there anything you would like to add or that we should be aware of as we continue our research?
- We will be completing our research in June and preparing our report in July and August. Do you have any questions?
- Thanks again.

Appendix 3d: Interview Materials - Interview Guide - Implementation Contractors

OBJECTIVES:

- For **Implementation Contractors** to help inform energy efficiency opportunities, niche market opportunities, and market barriers
- To gather ideas and discuss the pros and cons of various delivery models for the region
- To help inform recommendations for BPA that are actionable and relevant, and that meet the unique needs of BPA as a wholesaler

INTRODUCTION

INTERVIEW INTRODUCTION

- Thank you for taking time to talk with us today.
- Your input is important and will provide perspective and insight that will inform BPA's efforts to plan for continued success in the region.
- You were identified as someone considered to be a thought leader in the industry.
- This interview is designed to be conversational (semi-formal).
- You will be identified as a contributor to this research project, but we will not attach your name to specific quotations or inputs in our reporting.
- Our discussion is intended to focus on the future possibilities in the Residential and Commercial market sectors.
- Do you have any questions before we begin?
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Appendix 3d: Interview Guide Implementation Contractors

BACKGROUND

1. Please briefly describe your position, roles & responsibilities.

CURRENT PERSPECTIVE ON REGION

1. From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?
2. From your perspective, what challenges in regional programs and delivery models need to be addressed to meet the future needs of the region?
3. Where have regional programs and delivery models been missing the obvious?

0 (Probe different categories:)

   a. Technical: Measures, incentives
   b. Market: Research, segments, supply chain influence, messaging
   c. Infrastructure: Data bases, reporting/tracking, training

REGIONAL OPPORTUNITIES

1. Big picture:
   - As an EE expert looking forward over the next 3, 5, and 10 years, what emerging opportunities do you see on the horizon for the region?
   - What are the critical keys to success in being able to capitalize on these opportunities?
2. Short-term:
   - What do you see as the most immediate and valuable opportunities?
3. Biggest impact:
   - What do you see as the regional opportunities with the most impact?
     i. Probe: biggest EE impact v. biggest market impact

IMAGINING THE OPPORTUNITIES

1. What do you believe is "the next big thing" or "the next big idea?"
2. Stretching your imagination further, if you could strip away all logistical and tactical constraints and assumptions, describe the perfect residential program for you.
3. Stretching your imagination further, if you could strip away all logistical and tactical constraints and assumptions, describe the perfect commercial program for you.

4. Personal interest:
    - What opportunities most excite you?
5. How about one "so crazy it might just work" idea? (input will not be individually identified)

GAPS AND CONSTRAINTS

1. Can you identify specific gaps or unmet residential needs in the region?
2. Can you identify specific gaps or unmet commercial needs in the region?
3. Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the region?
4. From your perspective, what are the regional constraints that limit energy efficiency offerings?
    - How can these best be addressed or overcome?
5. What concerns do you have about regional EE delivery in the future?

CLOSING

- Thank you VERY MUCH for you input. Before we adjourn, is there anything you would like to add or that we should be aware of as we continue our research?
- We will be completing our research in June and preparing our report in July and August. Do you have any questions?
- Thanks again.

Appendix 3e: Interview Materials - Interview Guide - Large Contractors/Trade Allies

OBJECTIVES:

- For **Large Contractors/Trade Allies** from public utility customers of BPA to provide a thoughtful and representative description of gaps, needs, and program support that can best help them meet their energy efficiency goals
- To gather ideas and discuss the pros and cons of various delivery models for the region
- To help inform recommendations for BPA that are actionable and relevant and that meet the unique needs of BPA as a wholesaler

INTERVIEW INTRODUCTION

- Thank you for taking time to talk with us today. BPA is making a concerted effort to engage market actors early in its program design process.
- Your input is important and will provide perspective and insight that will inform BPA's efforts to plan for continued success in the region.
- This interview is designed to be conversational (semi-formal).
- You will be identified as a contributor to this research project, but we will not attach your name to specific quotations or inputs in our reporting.
- Our discussion is intended to focus on the future possibilities in the residential and commercial market sectors.
- Do you have any questions before we begin?

BACKGROUND

1. Please briefly describe your position, roles, and responsibilities, and experience working with utility energy efficiency programs in the region (not limited to BPA programs).

Appendix 3e: Interview Guide – Large Contractors/Trade Allies

CURRENT PERSPECTIVE ON REGION

1. From your perspective, what successes in regional programs or specific utility programs and delivery models can and should be leveraged looking forward?
2. From your perspective, what challenges in regional programs or specific utility programs and delivery models need to be addressed to meet the future needs of the region?
3. Where have regional programs and delivery models been "missing the obvious"?

0 (Probe different categories:)

   a. Technical: Measures, incentives
   b. Market: Research, segments, supply chain influence, messaging
   c. Infrastructure: Databases, reporting/tracking, training, processes

REGIONAL OPPORTUNITIES

1. Big picture:
   - As an EE expert looking forward over the next 3, 5 and 10 years, what emerging program or measure opportunities do you see on the horizon for the region?
   - What are the critical keys to success in being able to capitalize on these opportunities?
2. Short-term:
   - What do you see as the most immediate and valuable opportunities?
3. Biggest impact:
   - What do you see as the most impactful regional opportunities?
     i. Probe: biggest EE impact v. biggest market impact

IMAGINING THE OPPORTUNITIES

1. What do you believe is "the next big thing" or "the next big idea?"
2. Stretching your imagination further, if you could strip away all logistical and tactical constraints and assumptions, describe the perfect residential program for you.
3. Stretching your imagination further, if you could strip away all logistical and tactical constraints and assumptions, describe the perfect commercial program for you.
4. Personal Interest:
   - What opportunities most excite you?
5. Stretching your imagination ember further, what's one "so crazy it might actually work" idea you might have?

GAPS AND CONSTRAINTS

1. Can you identify specific gaps or unmet residential needs in the region?
2. Can you identify specific gaps or unmet commercial needs in the region?
3. Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the future?
4. From your perspective, what are the regional constraints that limit energy efficiency offerings?
    - How can these best be addressed or overcome?
5. What concerns do you have about regional EE delivery in the future?
6. If we left this to the marketplace (to you), how would you approach this work?

CLOSING

- Thank you VERY MUCH for your input. Before we adjourn, is there anything you would like to add or that we should be aware of as we continue our research?
- We will be completing our research in June and preparing our report in July and August. Do you have any questions?
- Thanks again.

Appendix 3f: Interview Materials - Interview Guide - Utility Sounding Board

OBJECTIVES:

- For the **Utility Sounding Board** to provide a thoughtful and representative description of gaps, needs, and program support that can best help meet energy efficiency goals
- To gather ideas and discuss the pros and cons of various delivery models for the region
- To help inform recommendations for BPA that are actionable and relevant, and that meet the unique needs of BPA as a wholesaler

INTERVIEW INTRODUCTION

- Thank you for taking time to talk with us today.
- Your input is important and will provide perspective and insight that will inform BPA's efforts to plan for continued success in the region.
- This interview is designed to be conversational (semi-formal).
- You will be identified as a contributor to this research project, but we will not attach your name to specific quotations or inputs in our reporting.
- Our discussion is intended to focus on the future possibilities in the residential and commercial market sectors.
- Do you have any questions before we begin?

BACKGROUND

Please briefly describe your position, roles, and responsibilities

Appendix 3f: Interview Guide – Utility Sounding Board

CURRENT PERSPECTIVE ON REGION

1. From your perspective, what successes in regional programs and delivery models can and should be leveraged looking forward?
2. From your perspective, what challenges in regional programs and delivery models need to be addressed to meet the future needs of the region?

0 (Probe different categories:)

   a. Technical: Measures, incentives
   b. Market: Research, segments, supply chain influence, messaging
   c. Infrastructure: Databases, reporting/tracking, training

REGIONAL OPPORTUNITIES

1. Big picture:
   - As an expert looking forward over the next 3, 5, and 10 years, what emerging opportunities do you see on the horizon for the region?
   - What are the critical keys to success in being able to capitalize on these opportunities?
2. Short-term:
   - What do you see as the most immediate and valuable opportunities?
3. Biggest impact:
   - What do you see as the regional opportunities with the biggest impact?
     i. Probe: biggest EE impact v. biggest market impact

IMAGINING THE OPPORTUNITIES

1. What do you believe is "the next big thing" or "the next big idea?"
2. Stretching your imagination further, if you could strip away all logistical and tactical constraints and assumptions, describe the perfect residential program for you.
3. Stretching your imagination further, if you could strip away all logistical and tactical constraints and assumptions, describe the perfect commercial program for you.
4. Personal interest:
   - What opportunities most excite you?
5. Stretching your imagination even further - - what is one "so crazy it might actually work" idea you might have?

GAPS AND CONSTRAINTS

1. Can you identify specific gaps or unmet residential needs in the region?
2. Can you identify specific gaps or unmet commercial needs in the region?
3. Are there any players (market actors/other industry partners/etc.) we should consider partnering with in the future?
4. From your perspective, what are the regional constraints that limit energy efficiency offerings?
    - How can these best be addressed or overcome?
5. What concerns do you have about regional EE delivery in the future?

CLOSING

- Thank you VERY MUCH for your input. Before we adjourn, is there anything you would like to add or that we should be aware of as we continue our research?
- We will be completing our research in June and preparing our report in July and August. Do you have any questions?
- Thanks again.

Appendix 3g: Interview Materials - Interview Guide - Regional Energy Effciency Experts

OBJECTIVES:

- For **Regional Energy Efficiency Experts** to provide context on the region's current energy efficiency infrastructure, opportunities, gaps, and regional constraints
- To gather ideas and discuss the pros and cons of various delivery models for the region
- To help inform recommendations for BPA that are actionable and relevant, and that meet the unique needs of BPA as a wholesaler

PROJECT INTRODUCTION

INTERVIEW INTRODUCTION

- Thank you for taking time to talk with us today.
- Your input is important and will provide perspective and insight that will inform BPA's efforts to plan for continued success in the region.
- This interview is designed to be conversational (semi-formal).
- You will be identified as a contributor to this research project, but we will not attach your name to specific quotations or inputs in our reporting.
- Our discussion is intended to focus on the future possibilities in the residential and commercial market sectors.
- Do you have any questions before we begin?

BACKGROUND

1. Please briefly describe your position, roles, and responsibilities.

Appendix 3g: Interview Materials - Interview Guide - Regional Energy Effciency Experts

CURRENT PERSPECTIVE ON REGION

1. From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?
2. From your perspective, what challenges in program delivery models or support structures need to be addressed to meet the future needs of the region?

0 (Probe different categories:)

- Technical: Measures, incentives
- Market: Research, segments, supply chain influence, messaging
- Infrastructure: Databases, reporting/tracking, training

REGIONAL OPPORTUNITIES

1. Big picture:
    - Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?
    - What are the critical keys to success in being able to capitalize on these opportunities?
2. Short-term:
    - What do you see as the most immediate and valuable opportunities?
3. Biggest impact:
    - What do you see as the most impactful regional opportunities?
        i. Probe: biggest EE impact v. biggest market impact

IMAGINING THE OPPORTUNITIES

1. What do you believe is "the next big thing" or "the next big idea?"
2. Stretching your imagination further, if you could strip away all logistical and tactical constraints and assumptions, describe the perfect residential program for the region.
3. Stretching your imagination further, if you could strip away all logistical and tactical constraints and assumptions, describe the perfect commercial program for the region.
4. Personal interest:
    - What opportunities most excite you?

5. Stretching your imagination even further -- what is one "so crazy it might actually work" idea you might have?

GAPS AND CONSTRAINTS

1. Can you identify specific gaps or unmet residential needs in the region?
2. Can you identify specific gaps or unmet commercial needs in the region?
3. Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the future?
4. From your perspective, what are the regional constraints that limit energy efficiency offerings?
    - How can these best be addressed or overcome?
5. What concerns do you have about regional EE delivery in the future?

CLOSING

- Thank you VERY MUCH for your input. Before we adjourn, is there anything you would like to add or that we should be aware of as we continue our research?
- We will be completing our research in June and preparing our report in July and August. Do you have any questions?
- Thanks again.

Appendix 3h: Interview Materials - Interview Guide - Regional Utility Staff Experts

OBJECTIVES:

- For **Regional Utility Staff Experts** from public utility customers of BPA to provide a thoughtful and representative description of gaps, needs, and program support that can best help them meet their energy efficiency goals
- To gather ideas and discuss the pros and cons of various delivery models for the region
- To help inform recommendations for BPA that are actionable and relevant, and that meet the unique needs of BPA as a wholesaler

PROJECT INTRODUCTION

INTERVIEW INTRODUCTION

- Thank you for taking time to talk with us today.
- Your input is important and will provide perspective and insight that will inform BPA's efforts to plan for continued success in the region.
- We want to hear your ideas, from the obvious to the far-fetched.
- This interview is designed to be conversational (semi-formal).
- You will be identified as a contributor to this research project, but we will not attach your name to specific quotations or inputs in our reporting.
- Our discussion is intended to focus on future possibilities in the residential and commercial market sectors.
- Do you have any questions before we begin?

BACKGROUND

1. Please briefly describe your position, roles, and responsibilities.

   .

Appendix 3h: Interview Materials - Interview Guide - Regional Utility Staff Experts

CURRENT PERSPECTIVE ON REGION

1. From your perspective, what successes in regional programs and delivery models can and should be leveraged looking forward to better support your customers?
2. From your perspective, what challenges in regional programs and delivery models need to be addressed to meet the future needs of the region and your customers?

0 (Probe different categories:)

   a. Technical: Measures, incentives
   b. Market: Research, segments, supply chain influence, messaging, market support
   c. Infrastructure: Databases, reporting/tracking, training

REGIONAL OPPORTUNITIES

1. Big picture:
   - Looking forward over the next 3, 5, and 10 years as an EE expert or as a consumer, what emerging opportunities do you see on the horizon for the region?
   - What are the critical keys to success in capitalizing on these opportunities?
2. Short-term:
   - What do you see as the most immediate and valuable opportunities?
3. Biggest impact:
   - What do you see as the most impactful regional opportunities?
     i. Probe: biggest EE impact v. biggest market impact

IMAGINING THE OPPORTUNITIES

1. What do you believe is "the next big thing" or "the next big idea?"
2. Stretching your imagination further, if you could strip away all logistical and tactical constraints and assumptions, describe the perfect residential program for you.
3. Stretching your imagination further, if you could strip away all logistical and tactical constraints and assumptions, describe the perfect commercial program for you.
4. Personal interest:
   - What opportunities most excite you?

5. Stretching your imagination even further - - what is one "so crazy it might actually work" idea you might have?

GAPS AND CONSTRAINTS

1. Can you identify specific gaps or unmet residential needs in the region?
2. Can you identify specific gaps or unmet commercial needs in the region?
3. Are there any "players" (market actors/other industry partners, etc.) we should consider partnering with in the future?
4. From your perspective, what are the regional constraints that limit energy efficiency offerings?
    - How can these best be addressed or overcome?
5. What concerns do you have about regional EE delivery in the future?

CLOSING

- Thank you VERY MUCH for your input. Before we adjourn, is there anything you would like to add or that we should be aware of as we continue our research?
- We will be completing our research in June and preparing our report in July and August. Do you have any questions?
- Thanks again.

Appendix 3i: Interview Materials - Interview Guide - National Energy Effciency Experts

OBJECTIVES:

- For **National Energy Efficiency Experts** to provide context on the current energy efficiency infrastructure, opportunities, gaps, and constraints
- To gather ideas and discuss the pros and cons of various delivery models employed in delivering EE savings
- To help inform recommendations for BPA that are actionable and relevant, and that meet the unique needs of BPA as a wholesaler

PROJECT INTRODUCTION

INTERVIEW INTRODUCTION

- Thank you for taking time to talk with us today.
- Your input is important and will provide perspective and insight that will inform BPA's efforts to plan for continued success.
- This interview is designed to be conversational (semi-formal).
- You will be identified as a contributor to this research project, but we will not attach your name to specific quotations or inputs in our reporting if requested.
- Our discussion is intended to focus on the future possibilities in the residential and commercial market sectors.
- Do you have any questions before we begin?

BACKGROUND

1. Please briefly describe your organization and its role in the energy efficiency market
2. Please briefly describe your position, roles, and responsibilities.

Appendix 3i: Interview Materials - Interview Guide - National Energy Effciency Experts

PERSPECTIVE ON PROGRAM DELIVERY MODELS AND SUPPORT STRUCTURES

1. From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?
2. From your perspective, what challenges in program delivery models or support structures would need to be addressed to meet the future needs of the energy efficiency market?

0 (Probe different categories:)

- Technical: Measures, incentives
- Market: Research, segments, supply chain influence, messaging
- Infrastructure: Databases, reporting/tracking, training

OPPORTUNITIES

1. Big picture:
    - Looking forward over the next 3, 5, and 10 years, what delivery models and/or measures do you see driving or emerging in the energy efficiency market?
    - What are the critical keys to success in being able to capitalize on these?
2. Short-term:
    - What do you see as the most immediate and valuable delivery models and/or measures?
3. Biggest impact:
    - What do you see as the most impactful delivery models and/or measures?
        i. Probe: biggest EE impact v. biggest market impact
    - Removing all logistical and tactical constraints and assumptions, describe the perfect program.
        i. Residential
        ii. Commercial

GAPS AND CONSTRAINTS

1. Can you identify specific gaps or unmet residential needs nationally?
2. Can you identify specific gaps or unmet commercial needs nationally?
3. Are there any "players" (market actors/other industry partners/etc.) that BPA should consider partnering with in the future?

4. From your perspective, what are the biggest constraints that limit energy efficiency offerings?
    - How can these best be addressed or overcome?
5. What concerns do you have about EE delivery in the future?

CLOSING

- Thank you VERY MUCH for your input. Before we adjourn, is there anything you would like to add or that we should be aware of as we continue our research?
- We will be completing our research in June and preparing our report in July and August. Do you have any questions?
- Thanks again.

Appendix 3j: Interview Materials - Interview Guide - National Utility Staff Experts

OBJECTIVES:

- For **National Utility Staff Experts** to provide a thoughtful and representative description of the market for energy efficiency, including infrastructure, opportunities, gaps, and constraints
- To gather ideas and discuss the pros and cons of various delivery models employed in delivering EE savings
- To help inform recommendations for BPA that are actionable and relevant, and that meet the unique needs of BPA as a wholesaler

PROJECT INTRODUCTION

INTERVIEW INTRODUCTION

- Thank you for taking time to talk with us today.
- Your input is important and will provide perspective and insight that will inform BPA's efforts to plan for continued success.
- We want to hear your ideas, from the obvious to the far-fetched.
- This interview is designed to be conversational (semi-formal).
- You will be identified as a contributor to this research project, but we will not attach your name to specific quotations or inputs in our reporting if requested.
- Our discussion is intended to focus on the future possibilities in the residential and commercial market sectors.
- Do you have any questions before we begin?

BACKGROUND

1. Please briefly describe your organization and its service territory
2. Please briefly describe your position, roles, and responsibilities.

Appendix 3j: Interview Materials - Interview Guide - National Utility Staff Experts

CURRENT PERSPECTIVE ON PROGRAM DELIVERY MODELS AND SUPPORT STRUCTURES

1. From your perspective, what successes in programs and delivery models can and should be leveraged looking forward to better support your customers?
2. From your perspective, what challenges in programs and delivery models need to be addressed to meet the future needs of the region and your customers?

0 (Probe different categories:)

   a. Technical: Measures, incentives
   b. Market: Research, segments, supply chain influence, messaging, market support
   c. Infrastructure: Databases, reporting/tracking, training

OPPORTUNITIES

1. Big picture:
   - Looking forward over the next 3, 5, and 10 years as an EE provider, what delivery models and/or measures do you see driving or emerging in the energy efficiency market?
   - What are the critical keys to success in being able to capitalize on these?
2. Short-term:
   - What do you see as the most immediate and valuable delivery models and/or measures?
3. Biggest impact:
   - What do you see as the most impactful delivery models and/or measures??
     i. Probe: biggest EE impact v. biggest market impact
   - Removing all logistical and tactical constraints and assumptions, describe the perfect program.
     i. Residential
     ii. Commercial

GAPS AND CONSTRAINTS

1. Can you identify specific gaps or unmet residential needs nationally?
2. Can you identify specific gaps or unmet commercial needs nationally?

3. Are there any "players" (market actors/other industry partners, etc.) that BPA should consider partnering with in the future?
4. From your perspective, what are the constraints that limit energy efficiency offerings?
    - How can these best be addressed or overcome?
5. What concerns do you have about regional EE delivery in the future?

CLOSING

- Thank you VERY MUCH for your input. Before we adjourn, is there anything you would like to add or that we should be aware of as we continue our research?
- We will be completing our research in June and preparing our report in July and August. Do you have any questions?
- Thanks again.

Appendix 3k: Interview Materials - Interview Notes

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National Energy Efficiency Experts

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Participant	Interview Date & Time
Jennifer Amann - ACEEE	4/17 8:30 am
Ralph Cavanagh - NRDC	4/29 9:00 am
Dale Horton - NCAT	5/1 12:00 pm
Lou Moore - MT DEQ	4/24 9:30 am
Denise Rouleau - Rouleau Consulting Group	3/29 7:00 am
Tim Salyers - Energy Efficient Services	6/3 11:00 am
Susan Stratton - NEEA	4/8 11:00 am
Mike Weedall	4/18 12:00 pm

National Energy Efficiency Experts - Interview #1

DELIVERY MODELS

- Implement a program that fosters a long term relationship and offers a holistic, platform approach.
    - It's much easier to engage your large customers on an ongoing basis and get the most savings under this approach.
    - Dedicated staff maintaining the relationship makes customers feel engaged.
    - Consider partnering with local gas utilities to be able to offer more customers a truly holistic approach.

GENERAL AREAS OF OPPORTUNITIES

- Multifamily is getting more attention nationwide and can even be potentially delivered to rural utilities for low rise multifamily.
- Leverage existing market actors to help feed buildings into your programs.
    - Example: Use LEED to help get A&E firms and buildings into your programs.
- Partner with local trade allies and NEEA to help deliver programs.
- Using a single implementer across multiple utilities can help ensure program consistency.

SPECIFIC PROGRAMS OF INTEREST

- [Utility] small commercial direct install program.
    - Target buildings 200 kW or less.
    - The use of on bill financing or a cost share is important, but make sure it's a large enough share that the building owner has a hard time refusing (like 75% paid by the utility/25% by the owner).
    - Ensure that contractors take a holistic approach to the building assessment.
- [Utility] large commercial customer program.
    - Engages the customer over a long period of time with an MOU.
    - A point person is assigned specifically to this customer and only for energy efficiency program interaction.

    - The point person acts as an internal advocate for the customer and helps them find the programs that fit their organization.
    - This creates a pipeline for ongoing savings for National Grid.
- [Utility] commercial new construction program.
    - Manages a large portfolio with a small amount of staff.

FUTURE CHALLENGES AND OPPORTUNITIES

- Market segmentation has been talked about for a long time but individual segments haven't yet been targeted in earnest.
- Engaging customers more on their terms instead of from the utilities terms.
    - Use an expert to interact with specific market segments that is independent and knows that segment intimately.
- If BPA is not currently involved in the small commercial direct installation program, this is a big area of opportunity.
    - Should follow the same holistic approach and ensure customers don't have to sift through multiple program offerings.
    - A well trained contractor network can essentially do this for you.

National Energy Efficiency Experts - Interview #2

GENERAL AREAS OF OPPORTUNITIES

- Phone applications have uptake. They provide the opportunity for customers to understand how equipments are using energy.
    - The NEST thermostat gives users remote control over HVAC system and is also a smart device that learns the schedule of the occupant. Provides real-time feedback about how the HVAC system is operating.
    - There are other non-invasive load monitoring tools that use radio frequency.

FUTURE TRENDS

- Utilities will operate more as a network manager than as a provider of energy as generation becomes more distributed and localized. Their role will shift to managing the transfer of resources, locally and around the region, and better managing load control.
- Focus on energy efficiency will shift from buying an efficient appliance to managing energy in a more intelligent way
- Management of all resources – electricity, water, natural gas – will become more integrated. May be in the form of a phone app or desktop application.

National Energy Efficiency Experts - Interview #3

DELIVERY MODELS

- Best Delivery Models
    - Move rebate programs to upstream and midstream rebates
        - Specifically, for consumer electronics
    - Programs are moving away from individual measures and taking a more systems based approach
        - An HVAC program would look at condensers, air handlers, ducts, and any other system components at once instead of the having programs for each
        - Lighting programs would look at fixtures, controls, lamps, and ballasts together
        - Also bring the end-user and operations and maintenance staff into the program

SPECIFIC PROGRAMS OF INTEREST

- Regional certification programs

FUTURE CHALLENGES AND OPPORTUNITIES

- Opportunities
    - Target typically underserved communities
        - Multifamily
        - Low-income Residential
        - Manufactured Housing
        - Small Commercial
    - Use new data analysis tools to help assist and evaluate programs
        - Particularly in the small commercial market
    - Use models like Top Ten or ENERGY STAR Most Efficient to build incentive programs
    - New and emerging products
        - Heat pump clothes dryers
        - Gas condensing water heaters
        - Heat pump water heaters
        - LED lighting and integration with lighting controls

        - Variable refrigerant flow for rooftop units
- Challenges
    - Lack of good data for analysis
    - Properly leverage financing and other private funding
        - Even if financing is available, it probably isn't the total answer
    - Regulatory requirements, specifically cost effectiveness tests
    - Still need a better grasp on consumer behavior

National Energy Efficiency Experts - Interview #4

DELIVERY MODELS

- Purchased energy savings – sets a price of a certain amount of energy savings that could be bid on by implementers, utilities, or large customers
    - Could provide flexibility to BPA's variety of customers
    - Examples: Seattle City Light, Duke Energy, New Jersey Standard, TVA
- Community-based approaches – Most of BPA utilities are community based and the potential to do outreach through and by a community is untapped. Communities can be used to sell the programs.
    - Examples: Chapel-Hill, Cincinnati Energy Alliance

GENERAL AREAS OF OPPORTUNITIES

- Demand response – peak demand response will be needed in a couple years and there needs to be an integrated system available for customers
- Codes and standards are still the easiest and cheapest way to move up the baseline
- Smart grid for behavior programs – smart grid can help with counting the savings that come from behavior programs

PAST AND FUTURE CHALLENGES

- Smart Grid – an assumption exists that a smart grid will automatically produce savings but that isn't happening right now. Smaller distribution companies will need assistance in realizing the benefits of smart grid.
- Customer engagement – customer loyalty needs to be paid more attention by utilities. Satisfaction and buy-in from the customers are critical drivers.
- Comprehensive deep retrofits – good in principle but may not be cost-effective and may not be as appealing to the customer as just getting their lights changed out
- Marketing – Utilities need to improve significantly on their knowledge of customers and how to market to them. They need to work on building an ongoing relationship rather than serving them in a one-off approach.
- Underserved markets that are hard to enter – small commercial, low-income, multi-family

    - Small commercial programs have split incentives and tend to be expensive
- Keeping up with other players –
    - Distributed generation will mean that customers will not be so reliant on the utility for their electricity needs
    - Other players are moving into the market. Google is spending money on researching the utility model of the future. Comcast already enters so many homes so there's not much preventing them from getting into the electricity market.
- Decrease in utility revenue is a big constraint. Utilities are concerned that they're losing too much revenue and are not able to grow quickly enough to make up for revenue loss.

National Energy Efficiency Experts - Interview #5

DELIVERY MODELS

- Performance-based incentives – Contractor gets paid based on the energy savings projected by the engineering analysis. This model motivates industry partners to find the energy savings. This is done in the non-residential sector for commercial, industrial, and agricultural customers.

GENERAL AREAS OF OPPORTUNITIES

- BPA could work with contractors or other personnel to go after the local, rural co-ops.
- On the residential side, BPA could bring NEEA and the rural co-ops together to implement programs, especially for the residential new construction market.
- Better customer service, more relationship building – delivery models with rural utilities have to be about developing relationships with vendor allies. Small, rural customers really appreciate when someone comes to visit them and don't take too well to a distant engineer or Internet reporting. Programs have to be about the people, but BPA and NEEA don't think about people as much as they do about program design. From the co-ops' perspective, customer service is more important than energy savings.

PAST AND FUTURE CHALLENGES

- In the residential sector, more customer-specific assistance and analysis is needed. BPA's commercial programs seem cumbersome in rural areas due to having to work with BPA and the consultant.
- Cost-effective energy savings are simply hard to find in rural areas. Most of the opportunities are in the big cities. Perhaps a collaborative effort would be helpful.
- Utilities in rural areas are very limited in their capabilities because of few personnel and they are more comfortable working in the residential sector.
- A much more effective and efficient solution would be to raise the electricity rates and use rates to send a price signal to the market but this is very politically unpopular

National Energy Efficiency Experts - Interview #6

EXPERIENCE WORKING WITH HYBRID MODEL

- [Contractor] combines traditional EE lighting retrofits with photovoltaic installations for commercial properties.
- Program structure is difficult to develop.
    - The individual components are easy to understand, but how to package it is a challenge
    - Rebates for energy efficiency easy to understand and access
    - Rebates for renewable easy to understand and access
    - However the two sides have not traditionally worked together
    - In tandem, there are a lot of components to align (EE, RE, rebates, power purchase agreements, financing) which can make the process complicated in the eyes of the customer.

RENEWABLES

- Renewables are more difficult for the customer to understand.
- Financing and tax credits are more complicated than rebates or buy downs.
- Power purchase agreements require more commitment
- Net metering vs. Feed in tariffs
- Installations are more expensive than EE

EFFICIENCY

- More easy for customer to understand
- Less expensive than renewables
- Wattage reductions are easier to describe

CUSTOMERS PREFER THE PATH OF LEAST RESISTANCE

- Customers want measures to be simple and easy
- Has to be cost-effective
- Customers want to understand the individual components
- Some understand EE, some understand RE, few understand both

- No one piece is the closer, it really depends on the customer and their goals
- Sale is much easier if utility is backing the program

COMBINED IMPACT IS LARGE

- Comprehensive approach
- Desired by green companies
- Can pull funds from multiple sources
    - RE Tax Credits and Rebates
    - Feed in tariffs
    - EE Rebates
    - Electric vehicle charging station credits

APPROPRIATE FOR LOTS OF CUSTOMER GROUPS

- Early adopters, tech savvy customers, property owners
- Ideal building is one that can produce surplus power
    - Buildings with large open space (roof, parking) and low height to width/depth
    - Tends to favor suburban/rural areas
    - Large distribution centers
- Target customers could include
    - Commercial/Industrial/Agricultural (key target)
    - HOA or multifamily housing
    - Could eventually be expanded to small commercial or residential

CHALLENGES AND OPPORTUNITIES IN THE NW

- Power cost is low ($0.05 residential, $0.07 commercial) impacts return on investment
- Patchwork of customers
- Power Plan allows treatment of distributed generation as equivalent to EE, so if RE side could compete on cost with traditional programs, it could be added to the EE portfolio
- BPA is interested in developing a business case for demand response programs to add RE to address capacity issues

National Energy Efficiency Experts - Interview #7

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- Massachusetts has engaged in some successful financing
- [State buildings] program. We've never expanded this to schools or local governments. Opportunities to expand this and put financing measures in place
- "Wheels" a financing program in Pennsylvania.
- Looking at rural electric co-ops in [state], none of them have the resources to finance their own programs – if there was a mechanism to provide this to the customer, even if the utilities weren't interested.

From your perspective, what challenges in program delivery models or support structures need to be addressed in order to successfully meet the future needs of the region?

- The smallness of each individual co-op and their ability to develop their own programs. BPA has lost ground over the last 10 years as they dropped their programs. A lot of utilities stepped back and were far less aggressive with their programs. Benefit from more models that people can join together and benefit from.
- Renewables – distributed generation and net metering should be looked at.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- Market transformation efforts for the consumer. More consumer purchasing will pick back up and can be driven toward EE choices.
- Not enough being done for main street businesses. Current tie is energy and jobs/economy… as opposed to environment or fossil fuel – the jobs and costs connection really needs to be leveraged to the benefit of Main St.

- Did industrial audits and were floored by what they were able to find in terms of opportunities. Businesses didn't feel like they could make the investment, but they found that the return was so quick it was surprising. Financing to support industry.
- Found the knowledge level at the local government level to be surprisingly weak upon engaging with them and

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

Stretching your imagination even further - - what is one "so crazy it might actually work" idea you might have?

- Triple electric rates for a few months and see how that would impact people
- Draw the connection for people to understand how important EE is with what we as a nation are putting our young people through in terms of fighting in Afghanistan and Iraq. There is so little connection being made right now.

GAPS AND CONSTRAINTS

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the future?

- SEOs – surprised that BPA doesn't use the SEOs in a more active way than they do. There is a real opportunity to tie into opportunities.
- NASEO affiliate members – don't recall ever seeing someone from BPA at these meetings. Occasionally do see TVA representatives.

CLOSING

What else?

- Building codes. How does one state meet the goals of getting codes adopted in a way that is creative? Beyond code programs are important. Put some energy into studying this.

National Energy Efficiency Experts - Interview #8

CURRENT PERSPECTIVE ON REGION

- Bristle a little at the statement that "what got us here won't get us there" – we don't want to throw out the great work we've done.
- Not worried about that what we've been doing isn't working, worried about the erosion of support for what we have been doing. Facing the possibility that we're going to lose [power company]. Need to make sure we sure up what is working and that we retain a regional focus – not that key elements aren't working well, that we aren't supporting them sufficiently. We need regulatory and guiding organizations to continue to move forward with its new policies, etc.
- Imperative to educate the utility sector in the NW about what is going on.
- People are subjected to budgets and pressure – we are at risk of losing merits simply because of this kind of pressure. We need to remind people of what we are doing and why it is being done.
- NW EE Task Force has helped over the past few years. Unfortunately now meeting annually. We need to crank it up again for these reasons.
- Support the infrastructure that has been built up over the past 3 decades. It has been invested in and IT ISN'T BROKEN.
- Part of it is that there are tremendously promising initiatives already launched that simply need more support. Northwest Food Processors. In 2008 announced ambitious goal to reduce the energy use of food processing. Though NEEA still highlights Food Processing initiative, the actual weight of participation is not what it should be – it is about 15% whereas the goal and hope was that the entire NW Food Processors organization would be engaged. 15% is good that we have significant involvement, but why is it 15% and not 75%. The goal was commendable. The question is "why do we have such limited participation?" 5 years in, we should have more than 15% participation. We don't need a new initiative; we need to make the initiative that we have work.
- The things we should do better:
    - Codes and Standards:
        - Source of frustration that such a small fraction of new construction has enrolled in programs to beat code. We should be constantly pushing builders and designers to go beyond code.

    - This point was forcefully driven home on Earth Day at the dedication of the Bullet Foundation Building which blows the code out of the water.
    - Don't think there even is a regional goal for what percentage of new construction should be beyond code.
    - We should not have a system where utilities and utility managers are adverse to increasing codes. Every time codes and standards are increased, utilities can no longer take credit. We never want to set up a conflict of interest between utility achievements and increased codes and standards. We need and want all savings. If codes and standards are upgraded during a period when the utility is active in this area, then the utility should get credit for the savings achieved through increased codes and standards. Remove interest of utilities in preventing upgraded codes and standards and introduce a system where they want increased codes and standards.
- I like the current role of BPA.
- Remember the 70s when customers tried to get BPA out of EE – it was a disaster. I want BPA to be part of the EE Enterprise in the NW. EE is part of the BPA DNA and it should be. It is in the customer DNA to resist BPA's role in EE. Mark me down as a supporter of BPAs role in EE. All that BPA continues to do as a strong and positive aggregator and influencer of EE. Customers have been pushing back for the past 20 years and they will continue to do so.
- One thing to be careful about – too many BPA customers having failed despite repeated advise to pursue decoupling… there are too many that want to be able to do load building and call it EE.
- Follow the good example of LA Water and Power and introduce decoupling so that they do not have a conflict of interest with their customer. If they don't introduce revenue decoupling, they will continue to face a situation where increased retail sales are positive and decreased retail sales are the opposite. Even for nonprofits, decreased sales puts them in jeopardy – the model has been in front of them for a decade, it's time to pick it up.

National Utility Staff

Table of Interviews

Participant	Interview Date & Time
Steve Babb, ComEd	4/8 8:30am
Frank Rapley, TVA	4/8 12:00pm
Michael Russom, VEIC	3/29 6:00am
Margaret Song, Cape Light Compact	4/4 7:00am

National Utility Staff - Interview #1

DELIVERY MODELS

- Best Delivery Models
  - Upstream and Midstream: has lowest administration cost, casts the widest net, and has a very high transparency to consumers.
- Challenges
  - If the midstream entity charges for point of sale information, it doesn't do much to lower the administration cost of the program over a normal direct consumer rebate structure.
  - Delivering a true upstream program with manufacturers requires wide regional coordination due to how manufacturers ship goods on a regional level.
  - Midstream is not always possible without broad coordination between local utilities due to potential spillover into multiple service territories (one retailer may serve customers from several utilities at the same retail location).

SPECIFIC PROGRAMS OF INTEREST

- Low income CFL food bank program
  - Work with an area food bank to deliver CFLs to low income consumers using the food banks distribution network.
- [Appliance replacement] Program
  - This program targeted old/poor condition appliances in low income homes and was delivered through the [state] Weatherization network.
  - The program was used to both keep the provider network at current employment levels when Weatherization funding was reduced and specifically target the worst performing appliances for those that were unlikely to change them.
- Social Marketing Campaign for CFLs
  - The goal of the campaign was to change consumer buying behavior by working directly with community leaders and getting their buy in.
  - Before the campaign was underway, the service area was broken down into "hot" and "cold" regions for efficiency. The "hot" regions were targeted.

    - Traditional avenues, like efficiency groups, were not the main targets. Everyone from the mayor to the local mechanic could be involved.
    - The program was highly successful and targeted regions should a 200% increase in CFLs compared to non-targeted regions.

FUTURE CHALLENGES AND OPPORTUNITIES

- How to deal with end uses that have a small absolute consumption at the device level but are very pervasive.
    - Wireless charging is currently 70% efficient vs. traditional chargers that are 90%+
- New and emerging appliance technologies
    - Heat pump water heaters
    - Advanced dryer technology
        - Advanced electric resistance dryers that save 30%
        - New heat pump dryer technology that could save up to 60% percent
- How to handle a rapidly evolving consumer electronic market.
    - Has a very fast efficiency improvement timeline.
        - Example: TVs today are 75% more efficient than they were 4 years ago.

National Utility Staff - Interview #2

DELIVERY MODELS

- Upstream models offer more cost-efficiencies; however, they do not provide an opportunity to build the relationship with the end-user. Plan to pair an upstream model with a collaborative direct install program.

GENERAL AREAS OF OPPORTUNITIES

- Direct Install offers more savings than consumer rebate programs because the baselines for everything including appliances and new building construction are all going up. Hope to combine various in-home programs in order to take advantage of having the customer's attention and install multiple things at once (replacing light bulbs at the same time as removing a refrigerator)
- Behavior programs using customer engagement are being explored with lots of interest
- Working with trade allies including HERS raters, HVAC installers has been very helpful. Local retailers, in particular, are in for the long haul.

SPECIFIC PROGRAMS OF INTEREST

- Pilot program with [residential energy monitoring]
    - Got 9.3% savings in the first year and about 11% savings in the 2nd year. Had a lot of touches and was expensive to administer. Unlikely that the program can be made cost-effective and can't guarantee that the savings from behavior changes can be maintained over the long-term.
- Competition in the community – offer free energy audit and generous rebates for improvements
- Offer low- or zero-interest loans to help offset high purchase and installation costs

PAST AND FUTURE CHALLENGES

- Major renovations pilot was challenging due to constantly changing work scopes and long project timelines. Might pursue a prescriptive approach. Hope to work with re-siders, re-

roofers, and remodelers to capture savings from the remodeling and renovation market but this will be a challenge

- Deep retrofit pilot was also very expensive for the amount of savings achieved
- Working with big-box retailers on midstream programs has been difficult due to high-turnover rate
- Also exploring codes and standards efforts and will need to work with regulatory bodies but this will be a difficult uphill political battle

National Utility Staff - Interview #3

GENERAL AREAS OF OPPORTUNITIES

- Lighting still provides bulk of savings and helps balance out more expensive programs to allow the portfolio remain cost-effective
    - Moving towards LEDs, lighting controls, lighting system redesign
- Behavior/energy management – This is typically the first way the customers think of saving energy but [utility] doesn't have any program to address this piece.

SPECIFIC PROGRAMS OF INTEREST

- Midstream commercial lighting program
    - Have arrangement with electrical and lighting distributors within service territory
    - Requires coordination with downstream program to ensure no double counting
- Monitoring-based retro-commissioning –
    - Start with largest buildings, very cost-intensive to do on-site audits
    - Medium buildings –use half hourly load data instead of on-site audits as way of reducing costs; interval data will help utility identify applicable buildings and savings opportunities in those buildings
    - Requires a lot of touch
- Specialized business targets paid through custom program - Data centers, health care, commercial real estate
    - Data centers save energy by implementing containment and airflow management measures that separate out the hot and cool airflow so that the process of cooling the servers is more efficient
- Customized energy reports for medium sized businesses like OPower
    - Recommendations were provided based on shut down operation and responses to high temperature.
    - Unclear so far what savings are being achieved

PAST AND FUTURE CHALLENGES

- Dealing with the performance spec for LEDs is challenging. ENERGY STAR is slow in getting products certified so using ENERGY STAR as the performance spec means incentivizing only second-class products.
- Difficulty in getting distributors to change their ways from being order-takers to actively promoting a program's products.
- Program costs per kWh are increasing and willingness from customers to pay into EE program funding is diminishing. Since programs will no longer be able to take credit for T12 replacements and CFLs, programs will have more difficulty maintaining the cost per kWh.

National Utility Staff - Interview #4

GENERAL INFORMATION

- Load is becoming much more "peaky" with a lot lower load factor
- There are a lot of new market entrants to energy efficiency, especially internet and mobile providers who want to become involved in whole home automation.

GENERAL AREAS OF OPPORTUNITIES: ALL SECTORS

- There is an increased need for building a longer term relationship with a customer. When you go into their home, and can identify a lot of measures, and then only do one measure, you are missing out on savings.
- There are plenty of companies that already know how to interact with customers, so why not leverage that relationship?
- Financing options might help get higher implementation rates, but you have to find the capital.

GENERAL AREAS OF OPPORTUNITIES: RESIDENTIAL

- There is a lot of housing stock that is pre-1980. While the interior components (appliances, electronics) may be state of the art, the building itself (insulation and shell) are not. Retrofits will continue to present a good opportunity for energy savings.
    - Target groups for retrofits have traditionally been high income, since they own property and have the capital to invest in improvements. The challenge has been extending the retrofit model to lower income brackets. The middle and low income brackets represent the most opportunity, but are financially constrained, especially now.
- There is a lot of substandard housing.
- Use Audits to build a relationship. The important part of the audit is not the audit, but the time the auditor can spend talking with the homeowner. Present reasonable cost-effective options to the homeowner for improving their score. In this case, contractors sell the program. They love this concept since it gives them a connection to a new customer, and a connection to the utility. Right now the program is overdemanded and undersupplied, and we haven't done any marketing in years.

GENERAL AREAS OF OPPORTUNITIES: COMMERCIAL

- Most savings (70%) are coming from lighting upgrades.
- Small commercial has been very underserved by programs. A complication is that most small business owners lease their property, so we have tried to split incentives between the building owner and the lease.
- We are working with our larger commercial customers, including institutions, on a more comprehensive approach to energy savings. This type of holistic approach takes a lot longer, and requires an engaged relationship, but can really pay out since you're affecting the long term energy plans of very large customers.

GENERAL AREAS FOR CONCERN

- Many products, especially consumer electronics, are progressing too fast for utilities to address.
- Utilities are very protective of their customers, even if their customers don't even know who they are. This means even if there is a great local contractor who can provide great energy services, the utilities are very distrustful since they think the relationship should belong to them. Utilities need to talk more to outside entities.
- If internet and mobile companies take over the relationship management, what role do the utilities play?
- Customers are still very sensitive to price.
- Should the utilities role be to push technologies that are not market competitive (i.e. would the technology be viable on the market if there were no incentives)?

Regional Energy Efficiency Experts

Table of Interviews

Participant	Interview Date & Time
Ken Baker, K Energy	4/4 9:00am
Chuck Eberdt, Opportunity Council	4/24 10:00am
Tom Eckman, NW Power Council	3/29 10:30am
Charlie Grist, NW Power Council	4/9 1:30pm
Jeff Harris, NEEA	4/29 3:00pm
Margie Harris, Energy Trust	4/5 12:30pm
Nancy Hirsch, NW Energy Coalition	4/26 9:30am
Don Jones, Pacificorp	4/23 10:30am
Emily Moore, NEEA	4/30 11:00am
Jane Peters & Marti Frank, Research Into Action	4/12 3:00pm
Stan Price, NEEC	4/23 10:00am

Regional Energy Efficiency Experts - Interview #1

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- The work that Bonneville is supporting with NEEA on lighting redesign. Commercial lighting is a major component of savings in this sector – continuing to support that is important.
- Residential sector – PTCS (duct sealing & heat pump) – he's heard mixed reviews on this.
- We have a number of "cross-cutting" issues. The work that Bonneville is supporting with NEEA on lighting redesign is critical. Commercial lighting is a major component of savings in this sector – continuing to support that is important.
- The budget support we have is reasonable to reach goals. There is big opportunity to explore co-funding (leveraging our EE $ with others).
- We have enough Evaluation resources but not sure if they are leveraged as well as they could be
- Big Infrastructure need around lighting controls and lighting re-design
- Performance Testing in Residential sector – PTCS (duct sealing & heat pump) – he's heard mixed reviews on this.

From your perspective, what challenges in program delivery models or support structures need to be addressed in order to successfully meet the future needs of the region?

- There is a constant battle BPA has with its customers

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- Opportunity (would be heavy lifting & maybe coordination with NEEA) for buying up the food chain higher.

What would help NEEA/BPA collaborative opportunities the most?

- Humility on both parties

- Willingness to share the credit for making things work
- Opportunity (would be heavy lifting & maybe coordination with NEEA) for buying up the food chain higher.
- New ways of thinking about market channels (Reference to game theory. What can we learn about engagement & behavior?)
- 5% of people look at their utility bill.
- Get blinders off and move away from point of purchase sales

What do you see as the most immediate and valuable opportunities?

- Residential: Upstream influence & scale of programs
- Get people out of the mentality that everything has to go through retail
- Figure out on-bill financing
- Commercial: Self-calibrating lighting controls
- Exciting opportunity with HPWH & DHP that can solve many HPWH issues (2020 – DOE to set standard that will make it the best option on town.)

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- To get people thinking about this differently.
- Scale issues. Figure out how to intervene in market places with fewer dollars higher up the food chain. This was done well with TVs on the west coast (went to manufacturers and offered them $10 per or similar).
- Spending a lot of time designing programs that service 1% of the market when they need to get 5 & 10.

What opportunities most excite you?

- Heat pump water heaters & HPWH + DHP
- Commercial: lighting controls that are self-calibrating

Stretching your imagination even further, what is one "so crazy it might actually work" idea that you have?

- This is going to take serious work on the part of a lot of people.
- Humility, collaboration, changing utilities view, better data capture

GAPS AND CONSTRAINTS

Are there any other "players" we should consider partnering with in the future?

- Utilities often see themselves as an intervener as opposed to one of the market actors. This is the wrong attitude – they are a principle player and a very important market actor.
- Utilities need to get savvier & need to understand that customers are not overly fascinated with energy use in their house. The average energy bill is $80 a month and most people pay $90+ a month for their cell phone bill.
- Imagine a New Administrative Structure
- Getting DHPs away from 'onsies & twosies' to much broader adoption
- Bigger SCALE (reference to manufactured housing program)

Regional Energy Efficiency Experts - Interview #2

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- A lot of NEEA programs should be leveraged – code programs and reach code they are working on right now. We should look at what's in the power plan
- NEEA's EBR program (existing building renewals) – BPA could take something like that & scale it back a little, use the packages and get them out there to not only get 35% or greater, but to use them for existing core retrofit

From your perspective, what challenges in program delivery models or support structures need to be addressed in order to successfully meet the future needs of the region?

- Bureaucracy. Too many managers. Too much change in course and change of direction. Cycles of on and off and changes in approaches. Find the good approaches out there and just implement well. Challenges are our inability to get on with it.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- Equipment efficiencies. We can learn from the European market. Technologies in hotel rooms that they've had in Europe for a long time. Low volt LED – new and efficient lighting examples from around the world. Building managers – there are great buildings designed that don't always get the EE out of them that they are built for.

What do you see as the most immediate and valuable opportunities?

- Existing buildings operations. We're not operating them properly and there is a good 15% across the board that could be captured

What do you see as the most impactful regional opportunities?

- Existing buildings & lost opportunities on new buildings (we are starting to build again, so don't forget about them)
- Education for building operators – there are some good programs out there but they haven't gone far enough.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- Utilization of integrated measure packages.

Personal Interest: What opportunities most excite you?

- The opportunities of actually doing something. Not being afraid to try things and even fail. If we don't try, we just won't know. Buildings aren't cookie cutter and it is a dynamic energy.

GAPS AND CONSTRAINTS

Can you identify specific gaps or unmet needs in the region?

- Residential: a few more gaps than commercial since the process is so different than commercial. We haven't really worked with the residential builders enough to identify things such as integrated measure packages. There is some education that could be brought to bear to help builders understand the benefit and bottom line for their customers.
- Big gap between what we are trying to do with codes and what the builders are able to do and what the building officials are able to enforce - there is a huge disconnect and we need to reconfigure how we communicate with the built environment and how we use codes and standards (voluntary and not) to pull us forward.
- Big disconnect in residential. Look over time at what the technologies are (such as whole house ventilation) that we really need to educate on to train builders on how to use them.

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the future?

- Integrated design lab network (keeping in mind that they are academic, not implementers), also partner with educators and implementers. New Buildings Institute. NEEA. Consider state agencies partners.

What concerns do you have about regional EE delivery in the future?

- Strike while the iron is hot… the iron is hot here now – we need to be hitting this right now. Not with more stringent standards, but with more information and training on how to make what we have work better.

Regional Energy Efficiency Experts - Interview #3

BACKGROUND

Opening comments:

- What's worked really well is the delivery model that we have – only third party entity as a non-profit, independent delivering programs on behalf of utilities. We've been operating electric and gas utility programs – can work across utilities, in both EE and RE. Being mission focused and single purposed is a major advantage. Another reason for success is that we evaluate all of our programs with a 3rd party entity, customers are sampled within 3 months of participating, savings validation so that efficiency can be treated as a true resource. Sure up results after evaluation to be sure that evaluation supports the results and will true up the claims based upon the results.
- Model itself and the emphasis on evaluation & validation. 3rd piece is transparency – operating in a multi-stakeholder scrutinized environment
- BPA and PSE and SCL and SnoPUD are among [interviewee's] favorite utilities. EWEB until recently would have been in this bucket too. Thoughtful and deliberate approaches about where the next kWh will come from; willingness to take risks, to design pilots and to move the needle on how EE is delivered in the market place.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region? What are the critical keys to success in being able to capitalize on these opportunities?

- With cheap gas prices, there are threats to cost effectiveness. Hitting first on gas side and it will hit on the electric side. What do we preserve? How do we define cost effectiveness? What additional benefits are we giving to water savings and carbon reduction?
- If we want a different future in 5 – 10 years, we have to invest now.
- Economic benefits associated with the strategy – deferred money that would otherwise be invested in fuel, storage, distribution, etc. Money remaining in local economy… what is the benefit here to be accounted for?

- We need to have our pipeline full of emerging tech in the 5 – 10 year time frame. Look at all natural resources – air quality, water quality, land use, transportation
- Think outside the box about other natural resource partners who have other natural resource concerns. Who we partner with, who we include in our trade ally group, in our program ally group
- Non-English speaking households
- Neighborhood production of EE and Renewables
- Any time you can take the consumer out of the equation and remove the need for behavior change, you've got a more direct opportunity for savings
- Players/Partners to leverage: Water is enormous. Healthcare is enormous. Anything that links to quality of life. If we can link our ledger to "theirs" then we automatically get wins.
- As an industry we are often very secluded and very narrow in our thinking – that's not how marketing works. We are woefully inadequate in thinking about who to sell our products and services through. Need to main stream ourselves and make participation easy and make the access smarter.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- Broadening relationships.
- Different tools – smart grid and smart meters are vastly over-rated; financing is the second that is vastly over-rated. A lot of people gather behind these and push, but [interviewee] doesn't agree
- Operations & Maintenance and Strategic Energy Management – have people learn how to manage their buildings. They need to become heroes in their environment in how they learn about and care for their equipment. Makes a big difference and frees up a lot of money that they can take to other aspects of their operations – overlooked, underrated and simple.

GAPS AND CONSTRAINTS

What concerns do you have about regional EE delivery in the future?

- How we define our values through cost effectiveness and defining that in an environment impacted by low gas pricing.

CLOSING

- We have a lot of customer data – we have access to what our utilities have access to… it took many years to get this approval. Now we are analyzing the data and giving it back to the utilities in a way that they never have. We plan to use this data to reach customer segments targeting small commercial, small industrial and multi-family markets. ID customers and reach those customers in new and effective ways & unlock savings potentials.
- Relationship between big customers & peak is a huge opportunity in the future.
- Another missed opportunity: Path to net-zero construction. Utilities make their money by investing in capital – if we are meeting all future needs with EE and RE, we are on a road to collision.

Regional Energy Efficiency Experts - Interview #4

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- Some of the most successful things we have done over the past 5 years has been getting a much more informed picture of what the infrastructure is like and what the market channels look like. Bunches of different decision makers and figuring out which decision makers fit where in the supply chain, and services. Each type of building has different industries around them and working with each one is different.
- Taking apart the market channels and the delivery channels and figuring out where and how to interact with each has been very helpful.
- BPA needs to think about their relationships in this way. Small rural utilities don't have the means to do this and BPA can be very helpful in this way.
- BPA has been getting better at thinking about their commercial lighting program.

From your perspective, what challenges in program delivery models or support structures need to be addressed in order to successfully meet the future needs of the region?

- We have tended to build EE from engineers and we need to talk to all these Americans that sell
- ETO has been very successful at partnering with trade allies and building up the relationships – they look at technical potential and look at opportunities and they run a lot of pilot tests and/or may even approach one target with more than one method – they take a lot of risk in figuring it out and then move forward. BPA tends to want to be right from the get go even before doing a pilot. This limits their creativity.
- The phenomenon of using trade allies and then when getting to the point of having to change or we've finished with the market… it takes the trade allies' stream of income away… we're harming the goose that lays the golden egg… the challenge is how to deal with changing programs while taking care of trade allies.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- Will be able to answer the question better after the 7th Plan Conservation Potential assessment.
- In the long term there is still potential in lighting and solid state fixtures.
- Long term (and now to some extent) – we will have a better handle on controls and controls-related measures
- Tied in are behavioral approaches.
- Terry Oliver's group has done a lot of good work in technologies has BPA on a cool system of looking at how technology influences EE broadly. They are finding leads for potential disruptive technologies.
- Keeping an eye on all the high tech advances.
- One of the challenges we're going to face now is that federal standards have taken a lot of the fat off pursuit of EE. We're looking at more incremental savings now.
- Sometimes it's better to wait for a better technology when there is something emerging in the next couple of years and may become a federal standard. BPA to think carefully about early replacement programs and whether they really make sense in this sense where federal standards are bringing up the rear so quickly.

IMAGINING THE OPPORTUNITIES

Stretching your imagination even further – what is one "so crazy it might actually work" idea you might have?

- Having utility efficiency machine work more directly with non-utility sector aligned interests. Ex: in Wal-Mart where they impose requirements on their suppliers. There could be opportunities where they are leading the private sector to drive EE further.

Regional Energy Efficiency Experts - Interview #5

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- What worked in the past won't work in the future.
- Project that worked on horizontal axis clothes washers – looked interesting and most were skeptical… end of the story is that it was very successful. Don't be surprised by what ideas could come around the corner that just might work.
- LEDs may be similar, but they keep going forward. There are a lot of problems with smart grid but it keeps going forward.
- Strategic level: things that will not work – taking a product that we think produces a saving over a baseline unit and putting a consumer incentive out there… this approach doesn't get us a lot of additionality – gets a lot of free ridership.
- Also failing: taking an end use category "plug load" "appliances" – and putting a basket of measures together & treating them all the same way.
- Good: NEEA's approach of market transformation – NEEA focuses in on a specific product or component and then digs in deep to meet the needs of a market or supply chain etc. Each product has a very different story behind it and we need to stop pretending like they are all the same because they are all sold at the same store or they get grouped together in a pie chart

From your perspective, what challenges in program delivery models or support structures need to be addressed in order to successfully meet the future needs of the region?

- Behavior change – there is a huge effort that can and probably will be extended to try different interventions in behavior change, messaging, the use of things other than rebates, etc. The net to gross issue is huge.
- What is the goal? Is it as much savings a possible? Is it cost effectiveness?
- The lack of minimum performance standards – if we could put pressure on the government to put standards on products – like refrigerators, default settings (thermostat settings 72 & 76, clothes washers to warm etc.)… If minimum standards were EE, it would be better.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- One of the barriers we are facing is the lack of a structured systematic process for identifying opportunities. Most programs are built around savings opportunities that an engineer came up with and someone built a program around it. We don't have a way of thoroughly vetting all opportunities and making systematic approaches.
- As an industry we need a better approach to evaluating opportunities.
- The situation is that, even if NEEA took it on, then they could make it available. If PG&E took it on, they wouldn't necessarily make it available. No one has the research capacity.
- Heard about an EE funder who was looking for opportunities in the electronics space and asked a retailer what they thought it was and then used the retailer's list as a starting place.

How to fix it:

- Funding available for manufacturers to go after EE stuff. More funding for them to develop EE technologies. Is there an EPRI for EE?
- We would be doing things totally and completely differently than we are doing things right now. Regional/local approach doesn't work
- Most of the big ticket items we are trying to affect have national or international supply chains – better if we can get together as a West Coast organization. EPRI for EE. E Source supposedly does this, but it is subscription and not sure how cutting edge it really is.
- PG&E has a resource development center, but may be the only utility in the country that does.

GAPS AND CONSTRAINTS

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the future?

- At the moment there are green people who deal with EE/Energy STAR… they're not big decision makers. When you call an architect's office to ask about EE and you get "the green person"
- We have the luxury of evaluating programs and projects without having to actually implement them. We are struggling with, how can we take what we know and help with program design

without biasing ourselves toward any potential evaluation of how we might impact that program at the beginning. This is an issue that the industry needs to address and it is coming up in industries that are not EE. This is about to become a hot topic.

- There is a role for people like us, evaluators, to be making a contribution at the beginning of a program. We are not skilled at staffing or running programs, but we have important input.
- The role of market research in program design and development has always been very limited at the outset and then the evaluation provides most of the market research. Currently marketing, market research etc. is outside the regulatory scope of what can be paid for so they cannot invest in understanding the market except at evaluation. There is an inherent conflict of interest and it is not cost effective.

CLOSING

- For the rest of the country, the question is whether net to gross will kill EE. For the NW, as we increase our commitment to EE, is it justifiable to require utilities to lead EE and if not, who will. If utilities actually got to a place of shutting down plants, they would be up in arms… This is the problem with water and transportation, because they can't figure out how to pay for it.
- The reality is that there is a lot of value in what we are doing and we are held to unrealistic CE requirements. Stern report out of England (4 or 5 years ago) demonstrated that it is much cheaper to avoid the types of problems that we will have from a changing climate than it will be to deal with them once we have them.
- Not convinced that CE is that big of an issue… if they change the net to gross, this would be bigger. If we can find the disruptive technologies coming around the corner, they will be cost effective.

Regional Energy Efficiency Experts - Interview #6

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- There are a couple of areas where there are some interesting things to think about:
    - Policy – we're very concerned with both short term and long term… if we don't solve it in the next 3-5 years, there may not be a 5-20 years to contemplate. It is very different for IOUs and public utilities – there are manifestations of the problem in both of these models. IOUs face both lost revenue and lost margin effects from successful EE programs – these problems have been masked historically by load grown year over year. Due to load growth, the losses from EE were masked somewhat. Over the last 3 years, the load growth numbers have significantly flattened – either flat load growth or under 1%. Utilities are now spending significant money on programs that don't earn return for their shareholders. There are some places in the country where utility regulations have changed and there is an allowance of a rate of return for utilities acquiring EE. This is a regional and national problem that needs to be addressed. The lost revenue problem does hit a public utility that has a fixed cost and has to recover revenue to recover fixed costs – this is a political dynamic that is difficult. Seeing early signs that flat or declining load growth are causing public utilities to reconsider their relationship to EE or their goals etc.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- Framed in 3 areas:
    - Technical – what could we deploy…? LEDs, lighting controls, diagnostics all are pretty cool. Single out though a significant opportunity to think about data in Commercial and Institutions – building energy management to collect data. We haven't done a good job yet of unlocking and using that data. Over the next 5 years, significant opportunities will emerge into the market place here to allow for better results

  - Program Approaches: a lot of the program approaches need to start embracing way to get away from layer cake phenomenon to move toward marble cake. We spend a lot of time thinking in a layered fashion… measures, behavioral, operations… we spend a lot of time thinking about whether it's layer 1,2 or 3. End use customers operate much more whole building, much more organically etc. Durable and persistent energy savings at scale will happen when we integrate systems and behaviors together instead of separating them in silos.
  - Policy: we'll need some different frameworks. If we think about policy as an expression of societies end game desires. Least cost, least risk path from utility perspective. In contrast with policy perspective as EE being a contributor toward GHG reduction, jobs, etc. We don't have a way of integrating these policy perspectives together. We need a more coherent policy framework to bring these closer together.
- Figure out the utility business model thing. Threat comes when decoupling and some rate of return comes to take some of the sting out for successful EE programs
- Utilities develop an alternative approach to the orthodox upfront incentives based upon deemed or engineered savings of a particular project. To measured and verified savings at the meter. SCL is piloting a program like this right now. It could do a couple of things – 1. Change the investment psychology by buildings owners in commercial and institutional market. Savings are measured in revenue over time. Also provides a different risk profile for the utility and a different requirement for the utility vetting of project – less risk for the savings it invests in, higher degree of confidence in the savings because they'd be measured at the meter. Would move the utilities fiduciary interest in the project to the point of the meter, as opposed to what happened inside the building to make the meter spin slower – would leap frog the problem with behavior-based savings. Doesn't work at the residential scale – so not throw out all utility programs, but rather develop another approach for specific customers.

CLOSING

- The region continues to struggle with what BPA's role is. That needs a better resolution. There is a role and responsibility issue. Who is obligated and how does the money flow. There is a perpetual regional argument that drains time and human capacity away from actually doing the work. There does need to be some resolution for both BPA and their customers on the roles and responsibilities.

Regional Energy Efficiency Experts - Interview #7

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- The ones that work well are the ones that meet the customer where they do business. Sit up and teach your customers to do tricks for incentives… it can be done and begging will become much more intense if the incentive is bigger. We've had good success in terms of getting HVAC contractors sell and install more efficient equipment. Have a robust relationship with contractors etc… the people that customers have relationships with in order to get the work done. We don't do the work, people forget this – at the end of the day, customers have providers to get things done. We need to understand the providers and help them understand how to get things done in a better way. Free ridership and market impacts – we need a close relationship with the market to really understand how we are or aren't impacting it.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- EE is mature, it is a real business. Core business about going out and causing installation and adoption rates of technology – this has all become fairly mature. Good news is we've done a good job. Bad news is that it moves into codes and it has a defined sunset date on it.
- The lighting technology, LEDs is huge. …there is something out there and you hear about things beyond LEDs. We need to figure out what that looks like.
- What I don't see that is interesting – for an emerging, next big bang thing that looks like CFLs… Is there an easily deployable widget that is out there as the next emerging thing? It is hard from where I sit to see the next big thing out there.
- What I do see is design and construction practices. Operations for Energy management. These aren't particularly new, but how to make them work well and how to go get them and make them persist over time is exciting. The size may make it new and emerging. Energy Management, best practices etc. Uncertainty about performance and persistence.

IMAGINING THE OPPORTUNITIES

Stretching your imagination even further - - what is one "so crazy it might actually work" idea you have?

- Would probably try to encourage the designers and the delivery folks to view EE on a common basis. Plan for it as a least cost resource, this is important but can we get everybody to line up in saying "we would try to run commercial lighting programs where technologies are done on a consistent basis" could we line a framework across territories but still give individual operators the ability to lie on one side or the other depending upon individual needs and constraints. Trying to reach a certain part of the market in the same way, but allowing people the room to customize for themselves. Local operators, program administrators etc. have a robust relationship with their customers. Can I line up with those to the left and to the right a little bit more without throwing myself under the bus at all?

CLOSING

What else?

- Increased activity is good. Brings with it increased structure and accounting. Be cognizant of how it impacts the aforementioned flexibility. Structures are good, but a mandate to count in a certain way each and every time can be counter-productive.
- Challenge in terms of how people come together to get the work done. Would love to have BPA and the Alliance do all the research work, but what is most efficiently… how do we divide up the R&D work to get to the next steps. BPA can't do it all, the RTF can't do it all, the Alliance can't do it all.
- Being able to trade what works and what doesn't on an operational basis, in as risk-free environment as possible. The forums that we have now are not as risk-free as one might like given involvement of regulators. These are great conversations to have and forums to have them could foster great peer to peer relationships.

Regional Energy Efficiency Experts - Interview #8

INTERVIEW INTRODUCTION

- One of the real challenges for BPA is that anything they want to accomplish is highly dependent upon how willing their customer utilities are to carry through and that is a high bar!
- We pretend that we're putting EE on par with other resources and we aren't – you can't buy a gas plant for 25% of the cost of the gas plant, but that's what we are doing when we expect to split the cost with customers – you pay 75%, we'll pay 25%. Ironic that utilities are always trying to prevent free-ridership, yet they are delivering programs that are accessible only to free riders.
- Residential: 1. Equipment/appliance measures and 2. Shell measures – I am highly critical of appliance rebate programs where there is a minor rebate for a $1,000 washing machine… I don't think that's tipping for the $1,000 washing machine.
- "I'm not going to apologize for them anymore."

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- A few years back, looked at CA and came away thinking that even though in CA everything was allowable as a conservation measure, all of the money was going into lights and refrigerators. Felt somewhat skeptical of the praise that CA programs get.
- Study by Mitchel (Pam Mitchel?) – did an analysis of CA energy savings over a 20 year period an what the impacts were and looked at a circulated graph that indicated that utility funds were responsible… discovered that standards and codes were really responsible as opposed to utilities.
- When I look at residential conservation and shell work, BPA has had a very important role in sponsoring energy codes in the Northwest. At the same time, when I look at utility programs where incentives are provided for building shell measures, the work is not being held to a high enough standard – utilities are not holding the contractors who do the work to a high enough standard. For example – people can get a rebate for attic insulation when there hasn't been any air sealing performed… which can lead to structural issues and quality issues for the insulation

and its performance. There should be an inspection of air sealing work before insulation is born. Establishing a level of standards and expectations… can start out being very rigorous and then develop systems so that we don't have to be there 100% of the time.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- Not so up to date on technological side: Heat Pump Water Heaters? Many things that people think are emerging really aren't new at all. Same thing with mini-splits (DHPs)… DHPs in mobile homes could be great. We thought there was room for DHPs in multifamily, though have heard recently that cost of installation isn't justifying it. Do think that mobile homes may be a good application – don't know if anyone has done the analytics to see if it pencils out.
- Community efforts for non-low income approach… have been highly effective in our community. Properly constructed, some community efforts are good. Not real big on neighborhood sweeps – costs can be high for what is accomplished.

IMAGINING THE OPPORTUNITIES

Stretching your imagination even further - - what is one "so crazy it might actually work" idea you have?

- I would make sure every house was brought up to snuff. BPA did that 30 years ago in Hood River OR.
- I would say – here are the 5 things that every house should have, and do them. Just ID them and do them.
- BPA will always be looking at the benefit to cost and the economists are always crunching the numbers.
- There has been, in our world, a huge effort to assure that we are investing money correctly. An attempt to try to be more precise about what is cost effective… we spend a lot of money on documentation of every house. If we just said, we're going to do these 5 things in every house where it is possible… we would save a LOT of money on administrative costs and spend money and human power on making sure that jobs were done effectively.
- Could streamline on the audit side of things… why do we need to run a computer audit on so many houses when in general we know what the 5 things are that will make the big difference.

CLOSING

- Partnerships and making sure that all your people are on the same page. There is so much focus on rates and so little real acknowledgement of the other benefits – we are so focused on the energy benefits that our cost test analysis seems very biased.
- I do work with some private utilities that are multi-state utilities, like [utility] … I'm concerned that the more conservative mindset in some of the states really drags down what we accomplish in our state. Not sure how we get past the regional impediment in some way.
- Funding for low income programs is difficult to maintain.

Regional Energy Efficiency Experts - Interview #9

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- Multifamily that are both owner occupied & tenant landlord – turn to the East Coast – NYC has some innovative programs targeted at the landlord/tenant relationship where they have gotten over split incentive barriers.
- Not sure whether we have done as much as we could with lighting – it's the low hanging fruit and utilities are panicked that CFLs are going away – our ability to achieve easy low-cost savings in lighting is gone, now we're facing higher costs. Now that LEDs are really dropping in price, there is a potential for people to feel relief that we can stay in that game… I don't want to lose the opportunity to focus on lighting design, controls, systems or other ways to achieve savings that come with more innovation.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- Behavioral opportunities. O&M. We do that work on C&I, but not on the residential side or the multifamily sector. A greater emphasis on both the commercial and within residential on the occupant
- Multifamily sector – subset of behavioral and also its own area of challenge. This is one area where the region needs to be a lot more creative, particularly as we move toward more density in communities, more multifamily, urban infill etc. With this come new opportunities.
- Rural communities – not only with low income rural, but through the whole range of communities. Economics question – it costs a lot to provide services when the community is spread out… how do we solve this problem and work with the utilities that work with the customers and have relationships but don't have the resources to serve them
- Water – both urban and rural. There should be a stronger and broader focus on the link between energy and water savings at a much larger scale than just handing out low-flow shower heads. There was a lot of work done by NEEA many years ago – Irrigation Control

Program: Scientific Scheduling. This has impacts on energy and pumping etc. A renewed focus on water efficiency is important. Focus on both residential and ag/food processing.

IMAGINING THE OPPORTUNITIES

Stretching your imagination even further - - what is one "so crazy it might actually work" idea you have?

- Rural delivery idea: Circuit Riders… there are people who go and work with a community. Maybe a team of contractors and their trucks and all their equipment go and stay for 3 months and saturate the community.
- Partnerships… BPA is targeted to work with utilities. We saw with ARRA money going to community-based groups interested in weatherization. Utilities work a ton with trade allies, but utilities are more hesitant to engage with other partners. Wonder whether BPA could do a better job of helping their utilities see the value of working with community-based groups.
- Communities have the potential to really tap into their own channels of communication etc. that a utility cannot achieve with just a bill stuffer or an occasional radio ad.
- Utility programs are often "wait for them to come to us" How do we turn the utilities and get them to leverage community-based groups?
- Direct load control on every water heater in the region. This would have benefits in a lot of areas for in general for efficiency and for expanding and improving the use of our existing electrical system.
- The utility side of the meter needs more focus on the smart grid. Not smart meters for the customer, but rather making sure that electric utility systems are as smart as they need to be and have the communication and digital relay technologies, more efficient transformers, line control and line information technologies etc… so they have a better sense of how the system is operating and how to get more out of it to make it more efficient. Line loss seems like it could be an easy area for its role to work with utilities for their distribution system.

Regional Energy Efficiency Experts - Interview #10

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- From EE products standpoint (not in order of priority)
    - Highest priority we're working on – taking electric resistance water heating in the region and converting to heat pump water heating.
    - Still a significant amount of electric heat in the region that could be addressed with DHP, or a combo of DHP and HPWH. Down the road, there is an opportunity to do combination systems that provide space heat and water heating – this provides interesting opportunities for the region.
    - IF the economy rebounds, as it appears to be, new construction is picking up again in res and commercial… serious opportunities to walk down the path toward net-zero energy buildings in this region.
    - Lighting controls in the commercial sector. Luminaire level lighting controls – fancy word for, if every lighting fixture had its own control sensor to tell if there was someone around or if there was enough daylight to not need it or to turn itself off at 6:00 PM. This technology is available today – the first of a wave of smart integration into energy consuming devices. We've tested this technology that will become ubiquitous fairly quickly. 35 – 50% out of the box for commercial settings without a lot of messing around, they'll work out of the box & have all the intelligence built in. Each device communicates to each other wirelessly to change schedule, programming, etc. just by connecting one of them to the network. Also measure their own power consumption so possible to measure the savings and charge for the savings as it's being delivered.
    - Trend around ability of technologies to measure their own savings – easy to include this in semi-conductor chips that are part of controls… this can completely change how EE industry interacts with installers. We could buy savings at 2cents per kWh for as long as they can produce them, for example. The idea is not new, but the technology to support the model was not around – now it is available to make it ubiquitous and low cost.

- Technologies that have this embedded capabilities… if you want to do DR, just call because the chips can be made to do whatever we want them to do… "make it worth my time and I'll make it happen" – DR is not even a challenge in this paradigm, it's just a matter of providing a person with the right price signal and they'll make the decision on their own. The conversation around EITHER EE OR DR is a false dilemma. If you have the technologies, the customer is reaping EE benefits AND if the networked systems are built into a smart grid, then it is built in and easy. New technologies need to be built to support EE and DR
- In the next 5 years, EE programs at the retail level will be really challenged by the fact that we won't see a lot of load growth. We may be in an extended period where loads are flattening or maybe even declining for 5 – 10 years possibly. The question for utility EE programs: "What do you do in that situation?" In the long run, ~20 years or so, you still want EE in place. New construction is the most obvious example – if you don't build it in upfront, you won't get anywhere near the capability down the road. In the short run, utilities are going to feel significant pressure to reduce their EE spend. What do programs look like that can survive in a period where utilities don't have a lot of $$ to put toward rebates, but customers may still want it… we should use utility dollars to leverage as much as possible with other people's money – retailers and manufacturers etc., get them to sell more efficient stuff.
- Up Stream: In an era where money is tight, you want to make your money as effective as possible. $1 to a manufacturer is worth $3 at the end customer level.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

Stretching your imagination even further - - what is one "so crazy it might actually work" idea you might have?

- A lot of the EE opportunities and the customers who need this the most are the economically disadvantaged, low to moderate income in apartment buildings with electric heating and incandescent light bulbs. As a region, let us re-think where we are putting our money and targeting those opportunities to reap the maximum benefit for those customers that can least afford it. Local community action agencies are great, but they are all working one-off. If the

region really thought about this in a consolidated aggregated way, couldn't we do better? If we put in an order for 50,000 DHPs, I'll bet we could get a pretty good buy. But it would take some really good regional coordination.

- Manufactured housing acquisition program – we cut a deal with the manufacturers that we would buy the EE improvements and we did it for about 2.5 years, negotiated at very low cost due to negotiating a good deal with the entire industry.

Regional Energy Efficiency Experts - Interview #11

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- BPA Grocery Program has brought demonstrated success.
- Neighborhood programs that do bulk-buy for PV – a model that could be replicated in other ways by other sectors.

From your perspective, what challenges in program delivery models or support structures need to be addressed in order to successfully meet the future needs of the region?

- A lot of commercial retrofit is driven by a trade ally approach. Small commercial is a sector of the market that contractors are not going to serve on their own – they are going to serve where the real dollars are. There is more of a role for the utilities to play in small commercial in order to help contractors meet the needs of the market.
- Direct Install and bulk buys. Some program models go upstream to negotiate rates, engaged contractors and packaged up the jobs for them so that they don't have to do anything except pack up their vans and drive job to job to job and install the measures. Their overhead would be so reduced that they could do it.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- One of the most important opportunities in the commercial sector that we'll need to be looking more at is how to approach customers and projects from a comprehensive perspective. Getting away from single-measure, to engaging in a long-term way. Engage customers and plant seeds for future deeper savings. Looking at projects comprehensively from a whole building perspective
- Small commercial – how to crack that nut more effectively than programs have to date. The bulk of the market is made up of small commercial.

What are the critical keys to success in being able to capitalize on these opportunities?

- There is a role for utilities and programs to play in helping to bridge the pieces of a project. Market is still fairly fragmented in how the market is approached – utilities are like the glue for the customers and the contractors.
- Incentives are very much looked at on an end user measure by measure basis. Projects are evaluated for CE on a piecemeal basis and this is driving the piecemeal approach. There is an opportunity to structure incentives in a more creative way in order to push projects to go more deeply, though there are some policy barriers.
- Small Commercial
  - There needs to be a broader approach, but it's difficult. Some of the more successful approaches from the past have been targeted. I.e. A program focused on restaurants. Having a targeted approach to really speak to that sector.
  - Is there more opportunity for upstream programs? Coordinating bulk-buy for measures.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

Stretching your imagination even further - - what is one "so crazy it might actually work" idea you might have?

- Have to get away from the measure by measure method of Cost Effectiveness. Buildings are integrated systems – as soon as we start pulling them apart and evaluating the parts singularly, we are creating and feeding the problem.
- This would allow more innovative approaches and technologies to be implemented. Some are not cost effective on their own, but when coupled with other measures they pass the tests.
- Also opens up the opportunity for envelope measures. They have a tough time passing CE tests, but if coupled with HVAC then they make more CE sense. A lot more would pass the test and a lot more would be eligible for incentives.
- Opens up more for structuring incentives in a way to encourage people to look at multiple systems at a time. Depending on opportunities identified, your incentive can be a certain rate if you do x, increases to another incentive rate if you do x and y, increase again if you do x, y and z…

GAPS AND CONSTRAINTS

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the future?

- There are some really good one off examples of when manufacturers are engaged with programs. Suspect there is more opportunity to create those partnerships with them.
- Looking at Industry Associations – the big ones are well tapped into (i.e. BOMA), there is another tier of Industry Association that could be worthwhile

CLOSING

- One other area that we need to explore is how to break down barriers around consistency across the region in terms of tools, programs and approaches. From the customer and contractor point of view, how can we make it easy to participate across the lines? There have been some good examples, and there continues to be feedback that this is needed – lighting calculators etc. There is more that we can do to support this effort.

Regional Utility Staff

Table of Interviews

Participant	Interview Date & Time
Eastside: Ross Holter, Flathead Electric; Don Crawford, Kootenai Electric; John Francesco; Inland Power	4/16 10:00am
Energy Trust of Oregon (ETO): Matt Braman, Kate Scott, Oliver Kesting, Spencer Moersfelder	4/10 1:00pm
Eugene Water & Electric Board (EWEB): Dan Morehouse, Kathy Grey, Charlie Schiffendecker	4/9 12:00pm
Idaho Power	4/16 9:00am
Seattle City Light: Christine Bunch, Andrew Gibb, Mike Little, Art Conrad, Jerry Wright	4/11 9:00am
Seattle City Light: Lori Moen	4/30 10:30am
Utility Sounding Board Benton REA: Eric Mille Benton PUD: Tom Schmacher Clallam County PUD: Mattias Jarvegren Cowlitz PUD: Eugene Rosolie Eugene Water & Electric Board (EWEB): Dan Morehouse Emerald PUD: Rob Currier Flathead Cooperative: Ross Holter Inland Power & Light: John Francisco Orcas Power & Light Cooperative: Anne Bertino	4/10 9:30am

Regional Utility Staff - Interview #1

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs and delivery models can and should be leveraged looking forward to better support your customers?

- Simple steps program which worked really well for lighting – expand it for consumer electronics, appliance rebates
- DHP pilot program and market transformation – dynamic way of working the partnerships together. NEEA provides a regional perspective to do the market transformation & partnering with BPA allowed it to happen in a way that helped it go faster. Especially helpful to utilities that may not have a marketing program or outreach programs. Could be applied to other technologies in the future. [Utility] has utilized the "marketing in a box" as much as they could. At the end of 2012, they did a direct mail to master installers. Direct mail to customers that listed a specific installer.
- Fluid negotiated special pricing
- Deemed program offerings, energy smart grocer have been very helpful. Ability to allow us to calculate jobs for programs – the freedom to submit new programs and run pilots has been valuable.

From your perspective, what challenges in regional programs and delivery models need to be addressed in order to successfully meet the future needs of the region and your customers?

- Paperwork that may or may not be useful on our end or BPA's end
- Heating side of residential – PTCS standards, branding of the standard and instability of 3rd party providers – communication issue between the receivers of the information
- Even though BPA houses both the PTCS and the final reporting database that the utility uses, they can't connect the two databases – the utility has to be the lynch pin that connects the two databases
- Going to go through a process to deem our programs which will not be easy – making a custom program/project will be very time consuming to be able to submit the program to BPA.
- BPA represents ~135 utilities & we are such a diverse group

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years as an EE expert or as a consumer, what emerging opportunities do you see on the horizon for the region?

- Program shift to encompass for peak energy. Launching for residential and commercial to include a component re how to shift from peak times to non-peak times. How to get people to put in technology that not only contributes to EE but also affects peak load
- Focus on lost opportunities – smart home or building systems that can go into place. If we get it right now, then we won't have to go back to these buildings in a few years. Programmable equipment. Controls.
- Would be nice to see a programmatic offering for renovations and upgrades – remodels (not retrofits), i.e. adding a second story or a new bedroom in the back.

What components would you like to see included?

- Anything that would exceed current building code.
- Air sealing, house tightening (looking at that as a lost opportunity)
- Heating systems… could they zone radiant/ductless heat as opposed to adding baseboard heat to an addition

What are the critical keys to success in being able to capitalize on these opportunities?

- Partnership with local stakeholders, customers, utilities, etc. To be successful, you've got to have the players there to support you. Without them, they can derail the entire process. Same with customers.
- A lot of upfront education especially when we are going into new territory with new technologies, etc. Making the value proposition for a new technologies, etc.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- Demand response – we are working on it. There are 10 – 15 people at BPA that are also working on it.

Who do you look to as the leader(s) in EE/DR across the country?

- NW is winter peaking, a lot of other utilities that have DR are summer peaking. NYSERDA, other Northeast Utilities, NH.

What opportunities most excite you?

- Regardless of what we are implementing, what excites me the most is variable capacity heat pump. So pleased that BPA made provisional deemed measures so that we could get the cart behind the horse. Controls technologies are opening a whole new world on the heating
- We don't want to wait until the RTF does something to start a program. We want to see something for our customers and start offering something. Great if utilities had the ability to recognize and go for it – self-diagnose whether the savings were worth it or not. LEDs are going to be driving a lot of commercial programs in the next couple of years – everyone talks about LEDs and they are here and making change.
- New construction & Affordable housing – Passive housing. Currently comparing an Energy Star house to a passive house side by side. Passive housing combined with smart technologies. Managing when students open up a window in their apartment there are technologies emerging to shut off the heat so that this can't happen.

GAPS AND CONSTRAINTS

Are there any "players" (market actors/other industry partners, etc.) we should consider partnering with in the future?

- How do you engage the manufacturers? How to engage them at a utility level remains a challenge that we'd like to fix.
- DOE and EPA
    - There is a phenomenon happening locally and nationally with dry charged R22 equipment that is being sold despite the ban on R22 refrigerant. Trying to convince the customer that they should install a system that is significantly more expensive because someone found a loophole to sell R22 equipment that is a fraction of the cost.
    - Challenge with DOE & EPA is that they are national and the Northwest tends to be out in front of the nation a bit so it has been a challenge working with national level.
    - Energy Performance Scoring

- State Energy Office

Regional Utility Staff - Interview #2

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs and delivery models can and should be leveraged looking forward to better support your customers?

- Strategic energy management – just last year launched a new effort on the commercial side. A lot of the strategic energy management came out of NEEA
- Smaller customer and lighting approach is a contractor or trade ally driven approach.
    - When you first roll out a program, we go after the biggest most logical clients.
- New Construction: relationship-based approach with design and engineering teams, working with architects, engineers & other design community members to help them consider EE/RE options. A lot of "sales" to help projects understand the benefits from installing EERE measures
- Selling EE… We have been really pursuing making the business case for EE. Providing them with the economic analysis and providing them with the tools, leave behinds etc. that that customer can use to make decisions.
- There has been talk about financing as the silver bullet for EE projects. Many of us here don't really see that as a silver bullet, only a potential helpful solution.
- Simple steps – regional showerhead program… this model has worked really well and provided for a lot of consistency.
- Retail programs in the NW – consumer electronics

From your perspective, what challenges in regional programs and delivery models need to be addressed in order to successfully meet the future needs of the region and your customers?

- Codes continuing to ratchet up, especially in NC… savings on the table for programs become harder to get and more costly. With new codes, we need code compliance.
- Residential… valuation of efficiency there is a long way to go. Starts with getting information out there and getting more information about recovering costs in residential investments will be important. Education and information that needs to get out there to integrate efficiency measures into financial markets.
- Same with commercial – not good evidence to show that EE upgrades increase building value.

- Parts of our Cost Effectiveness framework will create barriers in the future. Declining avoided cost of gas. How do we better incorporate the non-energy benefits?
- Our data management systems are not up to par with other industries.
- Most industries look at dollars and cents… our industry looks at savings in order to measure success – complicates things.
- We need to get the bills in front of the customers and it's not as easy to do that as it could be.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years as an EE expert or as a consumer, what emerging opportunities do you see on the horizon for the region?

- A lot going on with lighting. Federal standards hitting soon that will demand new approaches in lighting. Move from 1 to 1 change outs and move toward integrated design approach for lighting. LEDs have been dropping in price. Outdoor LED lighting will bring a lot of opportunity for controls.
- Operational savings. Standardized base lining & quantifying savings.
- Plug load – how to reduce plug load. Encouraging customer behavior.
- Small commercial – a lot of these building owners don't have time to pay attention so we need mechanisms to catch their attention, to motivate them or to take action on their behalf
- Residential: behavior – we haven't done a lot with this but we need to. We're always giving low-cost no-cost tips, but we need to move to a place of being able to measure it.
- ETO is unique in being able to claim O&M savings

What are the critical keys to success in being able to capitalize on these opportunities?

- Figuring out how to set the baseline and how to normalize it and adjust for weather and other factors. Being able to filter the noise in the background from where there has been an O&M change in order to measure it… as we develop our SEM offering for commercial, we'll be able to figure it out more.
- It takes some early adopters to step up and start and test some systems. Time and how long to behavior changes stick for
- Getting sales data to help us speak to the market better – this is better done at a regional level rather than utility by utility

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- First "the last big idea"… a lot of money went in from ARRA funding. Now that it's transitioning out, we have a clash of cultures. Its main goals were to stimulate the economy and create jobs. Now we have a lot of programs that are struggling for their identity and there is not enough funding. We need to value based upon regulations. Disconnect is with carbon… a lot of organizations that operate from the assumption that offset carbon is valuable. Where is the money going to be available for the carbon offsets?
- Residential… moving away from incentives… evaluation tells us that the sales person is the most influential piece of a decision, but we spend very little money on working with sales people. There is a lot more that we can do with outreach and education

Stretching your imagination even further – what is one "so crazy it might actually work" idea you have?

- There are a ton of technological evolution ideas that can fill gaps in the existing technologies – thermal envelope in commercial market, windows on the residential side. Any R&D that helps efficiency of building envelopes
- Bioluminescent light sources to require no electricity
- Reduction in cost associated with renewable energy generating technologies – may be that at some point solar gets so more cost effective than increasing efficiency
- Embedded energy – this has been hard to handle from a utility perspective – in materials, water and transportation… where do you draw the circle around what is net zero.
- Community planning and waste heat
- Communities… what is a community, not necessarily a geographic area but is it a church group, etc… how can we tap into grass roots organizations to leverage them for EE opportunities (shouldn't be a crazy idea, but it is)

GAPS AND CONSTRAINTS

Can you identify specific gaps or unmet needs in the region?

- Work with NEEA to try to reinforce the lighting market to help meet the lighting goals. Trying to train contractors & work with lighting manufacturers to help bring lighting into the region to help meet the goals.
- Capability of the average contractor to understand our business model in a comprehensive way – sales gap and a technological gap
- Residential… confusion around what point contractors have to put in HRV or mechanical ventilation systems in etc. Many contractors and trade allies don't participate in programs because they don't want to take the risks of making homes that tight.

CLOSING

- With some of these efforts, it gets tricky to tease out what role BPA can and should play

Regional Utility Staff - Interview #3

EMERGING OPPORTUNITIES

- New technology. Short-term ductless heat pumps on MF side especially for [utility]. There is a huge opportunity (85% of MF units and buildings have electric resistance heating). There are a good number of buildings and units that can be served by this measure. We need more research on that side so we can move forward and claim savings. The heat pump dryer is a technology popular in Europe that could be something that could be a new technology. Maybe Dave Kresta is working on this but we don't know timing of the research. 85% of [our customers in multifamily] are electric resistant heated. This is a huge opportunity for us.
- New models – we look at NEEA and how they calculate savings. They calculate market lift from the 6th PP as a baseline where we count savings like deemed measures and we think we are leaving a lot of savings on the table. If we had original method to acquire data and using NEEA's model we could potentially have more savings at a lower cost. We should at least be able to subtract the potential out of our potential. Better data – maybe NEEA or BPA could be the gatekeeper of that data so we aren't all spending a lot of money.
- Financing options/opportunities being discussions within [utility] and [municipality] (on-bill financing, tax related, etc.)
- Pay for performance pilot engaged with is a different form of providing incentives that may address the O&M funding more than capital.
- Customers are leading the edge on new technology adoption.
- Customers are starting to become more aware and savvier regarding their energy usage, but technology is likely moving the market more quickly than customers are driving the market changes. Still dealing with the early adopters. There is more and growing interest in automation (e.g., NEST) and replacing technologies that could last for 40 years.
- LED prices are quickly dropping – changed our incentives within a three month period. There is a flurry of activity between manufacturers and retailers. They are very competitive.
- Those operating the machinery are coming up with the creative opportunities to reduce their energy consumption. There is collaboration among the operators and they together generate more creative ideas. We should see more of this going on through their industrial meetings, etc.

- Will see a lot more focus on compressors. A lot of them are junk and old and need to be replaced with more EE machines. There is not a real push with the exception of a couple of companies that are out there pushing it to make it happen.
- HVAC systems are going to become much more looked at than they ever have been just because of the benchmarking and other things required now. A lot more focus on how to make HVAC systems more efficient. Control systems are huge regarding HVAC and lighting – we haven't seen the tip of the iceberg regarding really good control systems.

CRITICAL FACTORS OF SUCCESS TO CAPITALIZE ON THE OPPORTUNITIES

- The economics have to be there. Almost in every single case in working with customers it is not unheard of for an LED project to come in with a 2-3 year pay back with our incentives. This is a slam dunk for our customers.
- How do we capture and incentivize the savings that come from O&M enhancements? Building in reduced maintenance costs associated with things like installing LEDs in 80 foot ceilings (no longer have to have a lift to replace the lighting as often as needed with fluorescents).
- The rebate is not the biggest driver. Having the utility stamp of approval may be more important. The rebate may be a signal but we need to work with other [regional] utilities to get messaging out. We can't all run our own programs. We need to be more flexible – starting with a windows pilot as a way to see what the possibilities may be – we are already hearing that it may not work with the existing program) but isn't that the point of the regional collaborative?
- We will need BPA to take the lead (and with NEEA together – but there is an ongoing discussion there about their roles). Taking the lead would mean…taking action (e.g., regional retail collaborative) – e.g., Simple Steps. Sometimes the utilities just need that – having a program developed for them (with input from the utilities) that utilities can opt into or out of. It is very difficult for the utilities to understand who would take the lead (BPA or NEEA). BPA to serve as a catalyst and clarity between BPA and NEEA (e.g., program design, research and evaluation projects).
- The Distributor channel can be better leveraged to bring down prices with trade allies and manufacturers. Starting to work with NEEA on a pilot to get everyone to offer fixed pricing – want to open this up to all the utilities so we can get volume discounts and drive the price down even more.

- Cost-effectiveness and incremental costs are details we don't capture very well on the industrial side. Maybe regional standards for how to do that would be very helpful. BPA is in an ideal situation/position to provide that leadership. We are all reporting energy savings to them and uploading data that asks for that data and when they do their project evaluations that is a piece that they definitely look at.
- We have been doing the same thing for the last 20 years in terms of how we get our programs to our customers and the types of customer we work with. Business intelligence is the way that I expect to do things differently in the future. A utility such as [utility] should be able to answer basic questions about our customers (who have we done projects with, what kind of customers do we have, etc.). With BI it gives us the opportunity to look at the gaps programmatically (e.g., we've done 80% here but we have an opportunity to fill the last 20% in with [enter thing]). We are very widget oriented and commercial wise we are to the point where people have some systems and we need to look at the building and the interactions between systems and people. With interval data we can tell customers what is going on in their buildings and figure out who would be the best targets for that type of intervention.
- If we are going to have an Ordinance they should implemented the penalties for not reporting. Benchmarking is a tool that could get us into the right direction. The state is lagging behind.

Regional Utility Staff - Interview #4

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs and delivery models can and should be leveraged looking forward to better support your customers?

- Simple Steps – very successful project. We tried it on our own but it was a much higher administrative cost. By partnering with many utilities we were able to do the project much more successfully and effectively than we would alone

From your perspective, what challenges in regional programs and delivery models need to be addressed in order to successfully meet the future needs of the region and your customers?

- There is a lot of turn-over in staff at some of our commercial/industrial clients. Persistence of savings from their behavioral efforts may be hard to achieve. From the utility's perspective, they each have a major account representative assigned to the customer. Utilities won't have the resources.
- Our programs go through so much scrutiny – no other supply side resource goes through such scrutiny. There has to be support from a regulatory status. You have to do impact and process evaluations. We go through an annual prudence review and it's a large of work and makes us not be as innovate as we would like to be.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years as an EE expert or as a consumer, what emerging opportunities do you see on the horizon for the region?

- On NC side we are seeing residential home building pick up however most of it is not directly affecting our programs – it is where the gas utility has the majority of the heating source for NC. We are seeing a trend in our energy star homes program (with ductless heat pumps being installed). Seeing lots of interest in ductless heat pump program. The HVAC industry is looking at behavioral and training programs.
- More and more efficient energy star appliances so the CE of their offering is becoming more difficult. Moving away from the widget based approach and more towards behavioral. Have

been working on upstream incentives with BPA and NEEA. Seeing potential for market lift (rather than offering incentive for an individual incentive we are working with the retail).

- Growth has slowed down over the last couple of years. There are a number of NC projects taking place and some retrofits taking place. What is happening from his perspective even with the downturn in the economy there are a number of large NC projects. It certainly did not die over the last year. The design and built environment community continued work on integrated design and modeling. That isn't practiced across all market actors. [Program] has been well received. There are a couple of larger commercial property owners with multiple buildings. Ideally would have liked to see a few more of those organizations enroll their property. I would have liked to see a few more of the smaller properties participate. They are involved in helping do the scoping studies so there is a level of education that is really positive. Want to get the common information about the scoping studies into the hands of our account managers to share with our customers.

What are the critical keys to success in being able to capitalize on these opportunities?

- Our avoided costs. This will determine whether or not a certain initiative goes forward or not.
- Many of our programs are becoming electric only so this limits how many of our customers are participating. Our programs need to be fluid and flexible in order for our customers to be able to participate. Upstream and midstream incentives – then you can pull products and introduce new products for the customer. They get the incentive but they aren't as impacted by the changes as much. One of the most difficult things is the impact on the customer – when we change the rules on them. However we need to be able to get credit for the upstream and midstream incentives.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- With our industrial customers – measures that they could install that would help integrate the renewables coming out of our system. This could be a large chilled water plant or boilers that can match our company's load shapes. I could go out and finance a chilled water plant – we could chill it on our off peak times when our renewable resources are coming on line.

- A go to energy authority (on the res and c/I side) to get the best information they need. We can give them information related to our programs but we don't stray too far. We don't have a one stop shop so for customers who want to know more about energy efficiency and energy can get that information – more coordinated energy education in our state. There is so much information and organizations out there and it is confusing for customers. Managing the trade allies is a bit of a challenge.

What opportunities most excite you?

- A few smaller widget based things – behavioral thermostat (NEST). The new standard for HE dryers that EPA and DOE are working on. Ductless heat pumps – still waiting for the final numbers – it has been a pilot for 3 ½ years and we are hopeful that the final numbers will come out on that.
- The realization that every kWh saved isn't worth the save amount. Programs, designs and technologies can help better match to our resource load shape. Take advantage of off-peak power and operation and reward those companies that reduce their usage during the peak. Would this be time-based program or pricing related?

GAPS AND CONSTRAINTS

Are there any "players" (market actors/other industry partners, etc.) we should consider partnering with in the future?

- At what point are the regulators brought in to ask their vision of EE. We as a utility try to put forth our best effort in programs and EE, yet we do it a little blindly in terms of what our regulator will be receptive to. Mantra has been to pursue all cost effective EE – pretty broad.
- State Energy Offices – different than the regulators but they still help communicate with regulators.
- Manufacturing Extension Partnership. They are looking at the whole system approach of manufacturing.
- Those with the purse strings… CFOs and CEOs, the ones that can really make the decisions. Leadership within organizations.

Regional Utility Staff - Interview #5

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs and delivery models can and should be leveraged looking forward to better support your customers?

- Long measure life that builds equity in the home. Lighting is great too but at $30 bucks a bulb LEDs aren't going anywhere for a long time. Looking at technology to affect behavior but it's short lived and expensive.
- Lots of success with ductless heat pump. Have a good trade ally network built up. It's a straightforward and simple program. Have a low interest loan.
- Ductless heat pump program. Once you lose the low hanging fruit in a program like that and you have to go harder with the marketing efforts it slows down. How do you motivate people to promote these programs without completely giving it away?

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years as an EE expert or as a consumer, what emerging opportunities do you see on the horizon for the region?

- Talk a lot about the future of efficiency at [utility] – don't know what is going to be happening 5-10 years from now. We have a plan of attack (keep doing what we are doing) for 2-5 years, but we are a little baffled about what is going to happen after the five year mark. Don't see HPWH as a big player in our area because of our climate and construction techniques (not in garages because of the cold climate). The big thing is somehow morphing into LEDs when the price point gets low enough and the reliability is good enough then there will be potential for LEDs. The way that BPA has changed its rate structure that we need to somehow land the demand response and efficiency into some type of program that will satisfy both of those but we don't quite know what looks like right now?
- We have quite a few mobile homes and trailers and recently with BPA opening up the Ductless HP with forced air systems are a big thing for us and we'll look to promote those systems in the short term. As the LED gains more traction we'll be out changing a lot more lights again. We are still developing our program quite a bit. The measures that are more available are what we are looking at and how we deliver those better. There is an opportunity to engage with our

members and sell the behavior and how it impacts the savings. We are looking at how the other coops are doing things. Instead of being reactive we are trying to be proactive and trying to make the member a lot more engaged in the whole process – whatever that takes. Marketing – you can fire something out there and what to see what happens but we are looking for the best opportunities in what we are seeing out there.

- We are doing proactive approaches – subsidized direct install. Doing an audit/assessment and some direct install while we are there and we are giving them a little taste of efficiency at a much reduced cost to them and then leaving them behind a report that says – here's a list of what you can do and some costs and general paybacks. Call us for facilitation of this. We are trying to put ourselves in the middle. We are giving a forum to get them started and then they can call us to do something more. We have a state mandate for conservation – looking heavily at measures and rebates outside of the BPA umbrella and to get to an absolute resource or resource cost test – we are looking beyond what BPA is willing to pay.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- How to make people care. We offer so many things. We do the free audits and then they get the free audit that spells out what they could and should do and then we follow up with a personal phone call from an energy rep here who tries to persuade them to go further. Then we offered a simple loan program. The savings help pay for the payments. We make it so simple and don't have very high levels of participation. In a perfect world we would make them care and the only way to do that is through rates. When people use over 3500 kWh / month their rates almost double. We've had a lot of calls when we introduced that.
- Homes should have some type of energy rating – HERS or standardized energy rating. So when you go into the MLS you can see how old the house is – all the amenities – and a number that showed the efficiency rating. That could help shift perspectives on long-term investments.
- Our goal is to provide low cost power to our members. Price and cost are going to go up. We are going to break through

What opportunities most excite you?

- I enjoy helping people in this area and being involved in something that is a national priority. It's great to be in this area and working with people who are interested in changing their energy usage. Sometimes it has to go beyond the financial benefits. Look at your home as a 200 year old building and it will help make a different financial decision.
- With ductless HPs have a number of family and friends who are more comfortable and are saving money? When you find a technology like that and a program that is really simple it's great.
- [The utility] always gets high bill complaints. We say – check your meter and it's the same discussion. By staffing up and providing customers with support we are giving customers a tool. Instead of saying that you're in the PNW with the lowest rates and be good with it – we are still delivering that they have low rates and here's what you can do to offset your high bills and keep your low rates.

GAPS AND CONSTRAINTS

Are there any "players" (market actors/other industry partners, etc.) we should consider partnering with in the future?

- There is good support through BPA. There are a lot of resources there for us to develop these things out. It boils down to getting people to care and take action.
- In a perfect world we'd have a panel of unconcerned homeowners to see what would motivate them to care and to get their attention. You have to be talking with people who don't care very much to determine what is going to work for them. Another thought: people don't even know what they paid for electricity but we can tell you what we just paid for gas.
- From a rural coop perspective the low income groups work closely with the IOUs

What motivates people?

- Comfort, dollars, missing out on something – (would miss out on the rebate if they didn't take action right away). In Washington – it starts to get to be doing the right thing. We try to veer our marketing towards avoiding waste rather than saving money.

CLOSING

What do you want us to know about that we haven't asked you about?

- The utility needs to stay in the loop as far as offering rebates to our members. Our Directors and Management want us to send a check out to our members as a credit rather than as a rebate. The trend towards 3rd party programs is concerning – we want to make sure that utilities have funds that they can distribute to trade allies and customers.
- Change is really difficult. When we set programs up and we get things going and we launch rebate forms and marketing and advertising to push something and then the RTF or BPA says – well, that isn't what we really expected and then we have to change. It makes it difficult to implement and run successful programs. We need good thought to go into how programs are developed and set up so that we can let it roll and not have it continue to change.

Regional Utility Staff - Interview #6

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs and delivery models can and should be leveraged looking forward to better support your customers?

- We're going to have to do things differently. Will be difficult until the tools are richer. Have to approach on a whole building basis. Customers and trade allies won't be driving it as much because it will be so main stream.
- Our role as a utility may be with the customer who is not driven by sustainability initiatives.
- Now compared to 10 years ago, customers are making decisions differently. The role that we play is one of support.

From your perspective, what challenges in regional programs and delivery models need to be addressed in order to successfully meet the future needs of the region and your customers?

- Overlap in programs. Having consistent approaches, incentive points and strategies are helpful. Programs with neutral service territory lines are generally well-received by customers.
- How to deal with diminishing returns are energy codes get more stringent. It is a good thing to have stringent codes, but many people don't build to them. Code compliance – have never understood why we have the codes, but no compliance

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years as an EE expert or as a consumer, what emerging opportunities do you see on the horizon for the region?

- NEEA just spent a lot of time with people asking similar questions about NEEA's role – maybe there is some good information to glean from those conversations.

What are the critical keys to regional success?

- Don't know – haven't thought region-wide. Have my own thoughts – the whole-building approach is the way we need to take things and to support customers about their energy consumption. NEEA existing buildings retrofit program – there is a lot of information going into

that. If we had mechanisms for delivering information easier – there are national associations moving toward standards. Owners want to know what their score is, what their benchmark is. There is an exploding field of benchmarking and dashboard technologies – interval data, billing data etc., whatever level of information is being crafted for different markets

IMAGINING THE OPPORTUNITIES

Stretching your imagination even further - - what is one "so crazy it might actually work" idea you might have?

- No, nothing that hasn't been tried.
- M&V is negatively affecting the business and that is being driven by the state. Look at best practices in M&V because inconsistency and multiple standards of accountability and quality control negatively affect customers.

GAPS AND CONSTRAINTS

What gaps or unmet needs exist in the region?

- NEEA needs improvement in terms of what the region gets for its money.

Are there any "players" (market actors/other industry partners, etc.) we should consider partnering with in the future?

- No. Currently we try to be so inclusive that nothing can get done.
- Maybe we need to consolidate the players.

CLOSING

Anything else?

- BPA has a unique challenge due to dealing with rural utilities in addition to larger utilities
- When I worked for [utility], I was a field rep at [location] and the customers saved 10 cents on the dollar for every measure installed there. The approach was so Costco-like and we went in and blindly did things – this was representative of the federal government and we do things because the steam roller is moving forward. You have to be able to be nimble and to back away

from the cookie cutters. When I moved to another utility, [location] was one of my customers again, and in most instances the measures were removed.

Regional Utility Staff - Interview #7

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs and delivery models can and should be leveraged looking forward to better support your customers?

- Ductless HP program! Good collaboration with NEEA and TA coordination
- Energy smart grocer
- Industrial program (I don't have to worry about this program – it is done for me!)

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years as an EE expert or as a consumer, what emerging opportunities do you see on the horizon for the region?

- LEDs – the price point for residential LEDs is coming down
- HPWH – mixed results on the call. Maybe but they would need to be incentivized in order to be more successful
- Programmable thermostats (e.g., NEST)
- Behavior based community programs
- Electricity waste
- Energy management

IMAGINING THE OPPORTUNITIES

Stretching your imagination even further - - what is one "so crazy it might actually work" idea you might have?

- Bigger I-937 utilities can be more forward looking whereas the smaller utilities are still looking for leadership from BPA
- It's hard to stay on top of national and international trends
- How does everything integrate together under the smart grid umbrella?
- On the industrial side – what is the future technology?
- Using your smart phone to control your thermostat (e.g., NEST)
- Utilities want to be in the loop – they want rebates to flow through them so that they can preserve their customer touch point
- Financing and monetizing EE through the bill – make it easier and more seamless to participate
- Loan program
- Regional effort on peak demand analytics

GAPS AND CONSTRAINTS

What gaps or unmet needs exist in the region?

- How to utilize interval meter data to make smart decisions
- Energy management through acquisition of utility data

Contractors and Trade Allies

Table of Interviews

Participant	Interview Date & Time
Stephen Achilles - ERS	4/4 2:00 pm
Ash Awad - McKinstry	4/30 9:30 am
Dave Backen - Evergreen	4/1 10:30 am
Nate Bellino, Virginia Ulrich - Ecova	4/19 2:30 pm
Ross Chanin - American Efficient	4/3 7:30 am
Bryan Cohen - Colehour/Cohen	4/22 11:00 am
Mark Gosvener, Paul Rich, Alecia Dodd - ESG	4/23 9:00 am
Jeremy Litow, Kendall Youngblood - PECI	4/10 9:00 am
Terrance Pang - Energy Solutions	4/18 10:00 am
Shane Petitt - Light Doctor	4/30 1:30 pm
Brian Simmons, Dana Cofer, Selena Bell Heise, Sheryl Bunn, Carol Lindstrom - Fluid/CLEAResult	4/9 9:00 am
Brian Preston Smith - Geavista	4/25 1:00 pm
Dan Tarrence - Franklin Energy	4/2 1:30 pm

Contractors and Trade Allies - Interview #1

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging program or measure opportunities do you see on the horizon for the region?

- In particular in the Northwest, work to emphasize…
    - Energy labeling of our physical improvements in buildings.
      On non-residential: there are 82 billion square feet of non-residential, consuming ~75% of the electricity and producing 40% of carbon, yet we build and operate them with no mind to what they SHOULD consume. Cap and/or publish standards as they do with cars.
    - Our energy codes need to go from being prescriptive to being performance based. We no longer can believe that code or design leads to the kind of efficacy in built environment overall.
- The utilities are either the opportunity or the problem. We should be very proud of the Pacific Northwest and our utilities have been quite committed to efficiency – we have had to push our utilities though, including BPA, to do more than they wanted to. Or pass initiatives such as I-937. Now, we end up doing so many studies around the prescriptive potential… we're so darn prescriptive around efficiency that we're not actually looking at buildings/campus/home as a system or a generator. We deem the savings and then hope the savings will show up. 1. It discounts the savings 2. It forces users to make a Cap Ex decision as opposed to Op Ex decision which is really where they get their savings from. Today, the way that we could actually do pay for performance programs has vastly evolved from the way that DSM programs were previously created. Incent on the MW hours that are saved over time, not up front. Independent of what technology, practices etc. are actually deployed in the building. If we want to move toward this future we need to look through this lens.

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs and delivery models can and should be leveraged looking forward to better support your customers?

- Avista program similar to this pay for performance. SCL just launched a small pilot around this type of model.
- We have seen really good and interesting programs occur in the Northwest or nationally, but it is all incremental steps off of their own existing programs.

What barriers do you see to pay for performance?

- Market barrier in the Pacific Northwest comes with low cost energy. Utilities are currently incented to buy renewables over efficiency.
- The utilities are a key part of the ecosystem and they need to show up as a positive power generating utility and leave the nega-watts to others
- This is about a complete shift in where and how power is consumed collectively. The incremental stuff that utilities do is all good and well, but the significant shift in thinking is what is needed. There is no financing option or motivator to get the end consumer to consume half of the energy that they are currently consuming.

IMAGINING THE OPPORTUNITIES

Stretching your imagination ember further, what's one "so crazy it might actually work" idea you have?

- Have EE be fully a part of the power production strategy of the utility. A substantive element of exactly how the utility buys power. Not a customer service. When I ask utilities how they think of EE, they see it as part of their integrated resource plan but not reliable. It needs to be a durable part of the utility.
- I would try to find a few small prescriptive things and keep them going, but aligning with the power side of the house – not create deemed savings programs, but move to a measure and verify approach over time fir buildings and campuses
- Pay and create a risk reward solution for the end users… I would pay them for the kWh they would save and I would penalize them for the kWh that they didn't save.
- Critical for success: can't have legacy utility folks create the new innovation. Christian Clayton, *The Innovator's Dilemma* – this concept is essential – no organization that needs to innovate can do so within their own structure. It's just human nature and it is difficult to imagine that we cannot incrementally move from where we are to where we need to be. Need to create a team that is completely separated from current deployers to completely change the way that

efficiency is brought by utilities. If you don't, then ideas become incrementalized. Utilities have an Innovator's Dilemma.

CLOSING

Closing Comments:

- Presume we are talking to a lot of folks that are proposing incremental change and some others that are coming at it from this direction. He chose to come at it from the perspective or radical change. They do have some ideas for incremental shift at [contractor] that they can provide if desired.

Contractors and Trade Allies - Interview #2

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs or specific utility programs and delivery models can and should be leveraged looking forward?

- Some utilities have higher incentives for dialing in on savings and controls. Higher incentives for load controls. Integrating more controls into the system and integrating lower wattage options.
- Getting away from – 12 year cycle is what is being used for fluorescents and LEDs will last a lot longer.

From your perspective, what challenges in regional programs or specific utility programs and delivery models need to be addressed in order to successfully meet the future needs of the region?

- More outreach. Outreach from utilities is better than that from contractors. Especially in the smaller utilities in rural regions. Having a conference for the greatest users, the top 10% of their customers etc. Focus on technologies – what you're using, where it's going etc.

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging program or measure opportunities do you see on the horizon for the region?

- A lot more controls integrated into systems. Either in the fixtures themselves or in the systems
- Needs to be more education to generate acceptance for letting go of controls at the switches and letting them be integrated into the fixtures.
- Building automation.
- LED products.
- Induction thing is about over with

IMAGINING THE OPPORTUNITIES

Stretching your imagination even further, what's one "so crazy it might actually work" idea you might have?

- Maybe working this out – you have a list of contractors and how you compete for work. The utility puts out an RFP for xx kW and they bid on how to achieve the savings at a certain price. Utilities are spending way too much money on retrofitting small locations – locations that don't have enough hours – churches, small nonprofits, etc. yet they are all receiving the same rebates. Too much money being spent on labor. There are some companies out there.

GAPS AND CONSTRAINTS

- Dealing with some of the small utilities – rebates allow you to put in a measure and once the final solution is ready to go, the utilities may not like the solution and decide not to fund it. Need a greater education with utilities and contractors.

Contractors and Trade Allies - Interview #3

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?

- One of the things that should happen – a regional commercial industrial lighting program that is developed & implemented across NEEA/BPA boundaries… one program so that allies don't have to worry about multiple programs, which calculator to use, etc. Would enhance EE around commercial/industrial lighting though it may be an impossibility due to political barriers
- Within the umbrella, what could happen:
    - Participate in comprehensive pilot with NEEA with 4 different utilities trying to get more significant savings from lighting
    - A way to get more savings out of each project & make the projects more cost effective
- Get a single calculator – current situation is not fair or reasonable for trade allies and it should be changed, CAN it happen? Hard saying. There are a lot of political barriers. Who gets to own it would be a big question – maybe NEEA? It would be difficult, but it should be talked about.

From your perspective, what challenges in regional programs and delivery models need to be addressed in order to successfully meet the future needs of the region?

- Duplication of efforts across regions. Too much money is spent on admin as a result when it could be spent on implementation & actually delivering savings.

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging opportunities do you see on the horizon for the region?

- We'll definitely have to take advantage of communications & data technologies. Chips in appliances, etc. Figure out how the systems can talk to each other so that we can figure out where we need EE. Not necessarily DR, but to ID where we need DR & how to use it.

- Making sure implementation doesn't fight with the evaluators. There is a tug of war battle that goes on, but what we want in the end is the savings.

What are the critical keys to success in being able to capitalize on these opportunities?

- Collaboration. Figuring out how to work smarter & work less to bring in more savings for less money.
- We've got to get better at it. Savings are getting harder to get so cost per kWh or therm is going up. No reason for everyone to be doing the same thing/duplicating efforts.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- Like to think it's going to be around technology. Controls, building controls. Immediate feedback around EE. Not just large systems, but technologies that can help the small guys better control their energy use. Intuitively ask questions like "why are exterior lights on during daytime hours?"
- It's around collaboration.
- One form. One calculator. Available online (not just an excel form). One contact and place to go for information.

What opportunities most excite you?

- The continual quest for savings always excites him – dig deeper, think smarter, work harder.
- Figuring out a way to bring best practices together across the nation. People are doing some good things, but they don't always want to share them.

How about one "so crazy it might just work" idea?

- Not off the top of his head – hasn't thought about this.

GAPS AND CONSTRAINTS

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the region?

- The implementers that BPA uses have done a good job of bringing players to the team and making sure voices are heard.

Contractors and Trade Allies - Interview #4

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?

- Hospitals, healthcare, hospitality and lodging – high intensity areas that would work well in the northwest. These are good because the energy advisor becomes a part of the structures in these sectors which helps to drive further savings.

From your perspective, what challenges in regional programs and delivery models need to be addressed in order to successfully meet the future needs of the region?

- Northwest is a mature market in some ways. Not necessarily on the commercial side.
- One of the things we've had to do is to move more away from lighting measures. We focus more in HVAC, refrigeration measures. Industrial specific measures such as compressed air, plastics.
- Lighting was 70 – 80% of market. In 2007/2008 we made a concerted effort to get more out of other areas and got it down to just under 50%. Started niche markets & specific industries – ex. grocer program… we hired people within the markets who could speak the language of the managers and knew how to relate to the industry. This worked well to sell programs up the line to executives or whoever needed to be involved.

Where have regional programs and delivery models been "missing the obvious"?

- Create more education with the customers to help get more savings from increase knowledge from the customer – energy teams, education. Benchmarking tools to help educate the customer. Knowledge is power. We need to build on this & we don't always do a good enough job in the industry.
- Hard to get at multi-family markets, but there is a lot of opportunity. Natural gas and electricity utilities have great opportunity to coordinate around multifamily. If two utilities can cover residential and commercial gas and electric between them, then they've got all the buckets covered for multifamily. – They run a program in Michigan that does just this. Getting the

customer to think more comprehensively about the whole building. Roughly seven different programs that are going down this path.

- Sometimes the rules and policies of our own programs and budgets get in the way of being able to deal comprehensively with our customers and meet their EE needs.

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging opportunities do you see on the horizon for the region?

- 3 years: LEDs. Recessed cans in restaurants and hotels. The technology is just about there to run with the technology.
- 10 years: Behavioral measures. From commercial perspective, tap the behavioral space. In 10 years, codes will be different. Codes programs will be instrumental on this time frame. Both influencing codes and codes trainings/incentive/enforcement.
- If asking utilities to be increasing savings every year while also increasing codes, then utilities need to be a part of the codes.

What are the critical keys to success in being able to capitalize on these opportunities?

- Smaller hard to reach customers.
- Air sealing in multifamily.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- Streamlined paperwork. Electronic applications that are customized to the customer need for the particular project.

How about one "so crazy it might just work" idea?

- Trying to think of these every day – what will be the next silver bullet. Drive toward trying to reduce cost per kWh
- Including the process, leveraging trade allies, looking upstream. Finding ways to improve cost effectiveness.

- Analytics & big data. 30% of the buildings hold 70% of the opportunity – how can we identify this 30%.
- Thinking smarter. Once the low hanging fruit is chipped away at & we're not getting as many kWh for every CFL that goes in, we'll have to be smart or the kWh will start getting expensive.
- Not one big idea, but a series of smaller ideas to keep the industry moving forward.

GAPS AND CONSTRAINTS

What concerns do you have about regional EE delivery in the future?

- This is specific to individual utility portfolios but within the whole market, people are doing nearly everything somewhere.
- Too much focus on free ridership.
- Rising codes and standards
- Threats: ensuring that utilities meet their revenue goals. Many utilities are having a tough time.
- Evaluation – there is an EE market & evaluation, instead of building the market up, has a tendency to tear it down. We have not yet figured this issue out.

Contractors and Trade Allies - Interview #5

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?

- We saw incentive programs as an incredible tool to help build awareness and also to help customers convert. Didn't see any innovation around making that easier for the customer or getting them the information
- Agree that longer-term, multi-year outlook is effective, but stay aware that many start-ups that are looking to enter the space are actually not doing so because things take so long.
- They need to make decisions. Taking the model and expanding on it – when it comes to product

From your perspective, what challenges in regional programs and delivery models need to be addressed in order to successfully meet the future needs of the region?

- Two main things:
    1. Actual mechanics of how a lot of things operate is painful… commercial prescriptive incentives need to be as easy as possible. (look at cell phones re how to make incentives work) – make the purchase & report that back to the utility. They have an online app where customers can do everything from their mobile phone.
    2. Incentive dollars… the opportunity now is to put a rebate program out, but do it on much less dollars than what has been done. [Contractor] thinks that with technology and information, rebates can be brought down significantly and reach the customers on an equal level – make it easy, make it enjoyable for the customer.
- Best practices from industries that have "breakage" – where it is difficult for customers to get an incentive. Most programs are offline. Those that are online are not truly online. They need to be. 2. Product called Dream Street. "An amazon.com for sustainable and efficient products."
- 8 in 10 appliances are researched online then purchased

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging opportunities do you see on the horizon for the region?

- Structures by which programs are run. Demand side resources are seen are resources that are on par with coal / natural gas / wind. BPA could put out for auction, the creation of a certain amount of MW of energy of efficiency. After the auction occurs, additional diligence on those winners. This allows the market to drive the cost of EE. RFP process is a way of doing things, though often doesn't optimize. BPA could be a central orchestrator for a program/auction like this.
- TVA is considering doing this in 2014.)
- It is important that efficiency programs focus on the kW or MW impact. You don't clean a generation portfolio unless you're having an effect on the peak load or generation mix.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

How about one "so crazy it might just work" idea?

- Providing price for efficiency.
- RPSs are really important because they take a technology that is currently expensive.

GAPS AND CONSTRAINTS

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the region?

- A lot more can be done with contractors, commercial distributors etc. to help report back to BPA or the utility to relay what work is being done.
- Within the industry we've seen a big jump toward energy management tools and apps around how much energy are you using – customers want more than a kWh, they want energy advice.
- Energy usage decisions are high and savings are low (high effort, little savings)… how about helping a customer make a thousand dollar purchase

Contractors and Trade Allies - Interview #6

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?

- Programs that work across utilities. ES Industrial, ES Grocer. One program, one point of contact not 140.
- Publics are not tied down (like an IOU) and able to do more in Small and Medium Business market.
- Everyone will say 'the utilities don't work together'. But is that a reasonable expectation?? Yes there are too many parties, inadequate transparency and decision-making but how reasonable is it to expect PSE to sacrifice to meet another utility need? Other industries would laugh at us for many of our business practices. Inadequate understanding of customers, customer needs and customer decision making (shared).

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging opportunities do you see on the horizon for the region?

- There is an opportunity to more comprehensively address customer EE needs (energy management) and to develop a longer term, integrated plan that is based on customer connectivity "one-off" widget transactions.
- Take ES grocer program model and expand it to other segments.
- Changing behavior will best be sustained through sustained engagements with customers
- 5 yrs. +. Collection, analysis and leverage of data. (Why don't utilities do this? HOW can they be expected to? This is a brave new world)
- Example of looking at the market differently: the Korean Grocers Association would like nothing more than to have a Korean Efficiency Program that includes residential and grocers = WOW.
- Middle market retro commissioning. Lighting controls/sensors

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

How about one "so crazy it might just work" idea?

- Need a more comprehensive look at facility optimization = an approach to the market that has an open channel to sustained relationships that can introduce new technologies over time.
- It's not about technology. Technology will happen. We need to focus on delivery mechanisms. Automating transactions and limiting paper work
- Crazy idea?
    - Kill all residential programs. Make customers pay as they go. That promotes efficiency.
    - Put all money upstream. Make EE routine, let the pros do it.

GAPS AND CONSTRAINTS

- Need data experts to use the existing and emerging data
- Trade ally coordination! Beyond names on a list!!!
- EE account reps that are industry specific.
- Waste heat/cogeneration.
- How about no more RTF. Old glasses, the way they are set up is not aligned w/needs of the future.

Contractors and Trade Allies - Interview #7

Opening Comments:

- There are some fundamental flaws in the way that BPA approaches utilities in the market today. They essentially create umbrella programs that are like a private property owner who issues licenses to hunt on their land.
- No consistency in the region in terms of delivery.
- BPA, IOUs and NEEA are forced to collaborate, but they don't really collaborate well. If the system was set up in a collaborative fashion, we could have an opportunity that exists nowhere else in the country.
- Needs to be a humble regional approach

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?

- From the perspective of the constraints (she has worked at BPA). Successful programs from a marketing perspective are those where egos have been put to the side & there is broad based cooperation under an umbrella. Customers do not have to walk through a maze to figure out how to participate. Program in Connecticut where utilities, government agencies, programs all participated to create a single website where people go to for information in one umbrella website – Energize Connecticut (energizect.com)
- When there are multiple sources of information – HPWH for example, NEEA is more than willing to provide information pertaining to BPA's program, but some videos etc. have to be watched at the BPA site. Success with regional umbrella programs are successful when they provide administrative support – increases level of participation
- Trade ally network is a great idea but only covers commercial lighting.
- Caution with the trade ally network because it relies on Implementers in the field to do quality work as opposed to providing training to do quality work to create a true market transformation.

From your perspective, what challenges in regional programs and delivery models need to be addressed in order to successfully meet the future needs of the region?

- What needs to happen is a collaborative planning process that has clear goals. Being honest about those goals – contractor participation, consumer acquisition, etc.... A goal stating process would be imperative to a collaborative process and to establishing a regional program. Managing to incongruent goals can be challenging – often there are a different set of goals from BPA and a different set from NEEA.
- Utility sounding board only meets once a month. Should include NEEA, Energy Trust, utilities, and program implementers in setting goals and establishing steps to meet those goals.
- Could service multiple products within a channel that could service multiple geographic areas to a single setting

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging opportunities do you see on the horizon for the region?

- Next 3-5 years is the turning down of the traditional EE models, R&D pilots... super transitional space complicated by cost constraints of fuel prices and residual effects of the down economy. The following 5-10 years will be behavior change, energy retrofits. Moving away from purely utility funding EE programs
- 3-5 years – a lot of bridge building that needs to happen. There are a lot of reasons that utilities don't play nice together and a lot of opportunity to come together.
- Transitional space to imagine where we need to be and then back-cast how we will get there looking strongly at the need for collaborative planning including the implementers. We're still operating programs as we have for the past 20 years – there haven't been a lot of changes. Certainly changes to how customers are behaving and we're not looking at things as holistically as we could.
- Market intervention strategies could focus more on a collaborative approach not just with utilities.

Solutions?

- Collaborative planning session that is just about the articulation of goals. Not a big 2 year planning session, but a single session
- There was an attempt to do that with the NEET (Northwest EE Taskforce) – unfortunately there were a lot of people excluded from the process that should have been at the table so it was not able
- There have been conversations with Brent about having a Market-based sounding board as well as the utility sounding board. These are progressing. The challenge will lie in how to bring the two together.
- Include manufacturers, retailers, trade allies. There are opportunities for collaboration and that is the most underutilized resource out there
- Elephant in the Room… Leadership. There has been shifting leadership and the market is very complicated. This is not an easy region to navigate through. Nobody is appointed to the region to take us forward and to be able to facilitate the collaboration.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

How about one "so crazy it might just work" idea?

- Challenge is that BPA is not on the ground in every market – struggle to come up with the silver bullet because it probably is utility specific rather than a regional umbrella program.
- Less based on technology and more based on channel on the residential side.
- Maybe they should look at a multifamily program.
- The future could look very different. We get very caught up in TRC so we're in a customer's home and may not provide what is ideal for them because it doesn't "pass the test" & it isn't "on the list" …let's do what's right for the customer and get out of the way of the market.
- We live in a digital age that is becoming much more digital… the fact that we're not focusing on digital reporting and digital applications. We need to make life easier for this digital generation.
- If we head down the road, be careful of what happened with lighting tools in the commercial sector – can't train the market place to effectively work with a low-tech excel based tool.
    - What tools do we need to provide the market place in order for it to be successful
    - By providing the marketplace with those tools, we may increase load (i.e. we give a whole bunch of iPads to people, we've increased load)

Appendix 3k: Interview Materials – Interview Notes

Contractors and Trade Allies - Interview #8

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?

- We are seeing that a lot of the low hanging fruit has been gotten. With customers who have already engaged in EE, rather than not touching them again or to not go back for a long time – this means that the investment in engaging the customer and getting them to take action – rather than letting that investment lapse, it makes sense to continue engaging with the customer. Everything we'd like to do is infused with the idea of building upon the initial investment –
    - Once the low hanging fruit is gone, then you have to get the next more challenging and sometimes more expensive item… but you're not spending money on getting the customer, you can put the money straight into project delivery
    - Using tiered incentives for getting more comprehensive savings – a certain set of opportunities is represented to the customer, associated with one or more incentives… also present a bundled opportunity for additional incentives with a kicker on top of it. The deeper the customer goes, the better the incentive. Down the road depending upon actual savings perceived there could be an additional kicker on top of that.
    - This is a bit counter to how programs are often run which is more transactional – you do x, I'll give you y… thank you have a nice day.
    - Can be applied to a number of program types – direct install programs are typically very limited and can even give a customer the impression that they are done and that their facility is now energy efficient… Tiered incentives raise awareness that there is always more to do
- For BPA's diverse customers: program in a box or turn-key programs that can be rolled out. Refrigerator recycling, self-install insulation program, upstream/mid-stream
    - Factors for success: simplicity… so that a low-funded or .5 FTE EE utility can implement
    - Similar to NEEA's marketing packages that they have put together for utilities, very comparable to the "marketing in a box" – the same utilities would likely be interested

From your perspective, what challenges in regional programs and delivery models need to be addressed in order to successfully meet the future needs of the region?

- The 2-year program cycle that BPA runs under drives the transactional approach. Drives a lot of costs that quickly change and don't necessarily bring value to the market.
- 3-year is very common in some other areas. In some areas 4-year or even 5-year are being tested. They are running a 4-year program in another utility area.
- Funding model where each utility has its own set of EEI funds. Previous model where BPA had one pot of money that was dispersed based upon where the best opportunities were. Challenge under the current model is when the economics and the EE don't match up. Current model makes it very challenging to do more at scale, can lead to a more fragmented region where one small utility may be doing something but nobody around them is – makes it difficult for contractor/implementer participation. Swiss cheese map of participating utilities makes it very difficult to get things done sometimes.
- Market actors are very uncertain about whether programs will continue. Between the last two cycles, there was a gap where everyone was in the dark… this creates a loss of market momentum. When we start and stop abruptly, it is very damaging to the credibility of what we are doing and it makes people skeptical or upset and they may not want to re-engage or they will sit out and lick their wounds for a few years before coming back.
- Short-term planning is damaging in both the short term and the long term. Damaging to relationships, especially when programs are designed to be based on trust and relationships

Where have regional programs and delivery models been "missing the obvious"?

- Funding cycle.
- No general commercial program that BPA offers. Something very prescriptive and relatively easy to deploy from a supply chain standpoint and from a utility standpoint.
- Tech support in a box for utilities that don't have the means. Ex: PECI has a contract with the RTF to be on call for small BPA utilities for weatherization programs to help them out – PECI is on call to help answer questions for them etc. When there are dozens of utilities that need this type of support, it makes good sense and it provides great benefit. Could be coupled with upfront training to help roll out a package – create a framework that serves many, provide upfront training, provide ongoing on-call support.

- Trade ally program, lighting program… there could be ties with these programs to help make cross-referrals – these could be good ways to leverage existing customers. It's about filling gaps. Let's not create a bunch of overlap with existing programs, but let's fill the gaps. "Gee wouldn't it be nice if we could do this thing."

MAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- Haven't talked about smart grid… BPA sunk ARRA money into smart grid pilots. Some of the BPA utilities have interval meters. How the interval meters are leveraged to get EE at a whole building level through retro-commissioning could be huge opportunity. Thought he read that building commissioning could provide ~30% of the savings available in the market place over the next 20 years… this could be huge opportunity. PSE experimented very creatively with retrocommissioning. Most buildings in PNW have never been commissioned; even those that have not been should be re-commissioned. There are huge benefits to commissioning and huge savings potential. If this were packaged up with the opportunity presented by interval meters and the opportunity to do things at a whole building level – removing barriers limiting each and every measure to cost-effectiveness tests – customers don't care about CE, they care about how does a thing related to their bottom line and the running of their business. Need to strip away policy and technical barriers – we have the beginning of a smart grid and the beginning of a way to assess EE using smart meters.

How about one "so crazy it might just work" idea?"

- BPA can generate power very cheaply. If BPA generates more power than needed. BPA could invest more in EE, to allow them to sell more power, to allow them to increase revenue, to allow them to invest more in EE. There are some federal agency rules of the road that limit this currently, but there is big potential. Connecting up the "making and marketing power" piece of BPA with the EE piece of BPA would be huge. If you could fund EE, not by taxing rate payers but by funding through power sales then that is beneficial to the region and to whoever is buying the "renewable" power

- Recent technical constraints related to new measure development – more rigor being brought at RTF… this may have swung too far in the direction of rigor to where it is actually limiting innovation and consuming funds that would be better spent on improving EE delivery.

GAPS AND CONSTRAINTS

Can you identify specific gaps or unmet needs in the region?

- LEDs need to be aggressively driven into the market
- Data centers are a huge opportunity – there has been a lot of attention paid to large data centers, but most servers that are out there are in smaller facilities… hospital (less than 1,000 s.f), server room like [our] data closet that's less than 110 s.f. – this stuff is not being touched, it's where 70% of future load growth from servers will be in the sub-1,000 s.f market (closets, server rooms, etc.)… The people serving these are the least informed about EE. There are a lot of gaps in measures that can serve this market – A/C is one thing, server virtualization is another… in the Northwest some of the big I-5 corridor utilities are aggressively interested in going after this market. Google doesn't need help with its servers.
- Manufactured homes, electrically heated homes in rural areas – shell measures and individual retrofit measures… this could be very attractive as a program in a box program.
- Cross-referral between programs – a centralized database for cross referring between programs. Also has opportunity for mining databases for the next program that is coming out. Every time we touch the customer and gather information about a customer, collect the information and feed it into one database to draw from. Some providers are using CRM systems that can allow insight into program performance – big data is talked about all the time, but it's not big when it's not being collected, standardized, organized etc. into one big effort for something to benefit the whole

CLOSING

- Larger questions about how BPA is looking at EE and how policy decisions will impact. Is BPA willing to look from a longer term perspective?

Contractors and Trade Allies - Interview #9

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?

- VRF equipment – BPA is looking at it and it is very effective in other parts of the world.
- Prioritizing either technologies or approaches is a very complex question – the objectives that a utility or an organization seeks to achieve will dictate the approach that they choose. If the primary objective is the highest market penetration of the highest efficiency HVAC equipment, then the distributors and manufacturers – distributors make decisions based upon what they believe the market place will buy; they are not going to stock equipment that they won't sell. ~15 years of impacting HVAC equipment. Had comparable success with motor technologies. Believe it is the most successful model in the country for impacting HVAC equipment.
- This is the right time for utilities to provide additional support – incentives, marketing support, contractor training – it is the right time for utilities to engage if HVAC is a targeted technology.
- A lot of EE impact has been in the area of lighting – perceived to be less complex. In some respects

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging opportunities do you see on the horizon for the region?

- In 2009 and 2010 their network brought a few technologies to their attention – with the emergence of wireless controls for technologies emerging, it presented opportunities that did not exist previously. Was starting to see more products where manufacturers were integrating wireless control capability. At same time utilities were looking at smart meters and smart grid to evolve at a pace where tech could provide greater EE and enabling for efforts the utilities would be interested in for DR purposes and smart grid of the future.
- The opportunity is very real… in his experience in implementing programs, it is evident that the magnitude of the benefit will benefit from customer to customer or customer class to customer class. Too often our industry does not delineate that the overall market is not homogeneous. Having EE champions is what has brought about the greatest impacts. Internalizing the

technology adoption curve, the level of effort for any technology involves the curve – it is very representative of what happens in the market. Part of the success of any program

- EE Champions – it is the combination that it takes… he was one within utilities, was most effective when could connect with customer champions

IMAGINING THE OPPORTUNITIES

How about one "so crazy it might just work" idea?

- If [interviewee] were in charge and primary objective were to add the greatest amount of market place impact… [interviewee] would (for the NW), take another look at – highest opportunities relayed at one point was the existing base of incandescent still in the market place… clearly there should be continued activity around reducing the use of incandescent and utilizing more efficient sources.
- For more targeted regions where HVAC is more of a concern… integrating distributor to customer to contractor focus for more efficient HVAC
- The above two areas seem to be the greatest opportunities.
- There are ton of ESCOs around for commercial facility lighting upgrades – getting them to use LED as opposed to fluorescent seems to be a logical place for effort.
- Prevalence of technologies for smart meter and smart grid – the smart grid of the future is right at our door step and we need to give more thought, preparation and signals to the market place that we are interested in them continuing to develop new and better products.
- A lot of program implementation has increasing incentives for increasingly high quality products.
- Both ACEEE submittals were awarded exemplary category – tiered incentives for higher incentives for higher performing products… so this aspect of program implementation should be expanded.
- Even the codes aspects of efficiency programs needs to be reassessed because we are seeing categories of equipment that remain in the market for so much longer than its intended life. To have these remain in place while implementers can only claim the difference between code and the new equipment does not provide enough support.

CLOSING

Closing Comments and Follow up via email:

- If BPA can come up with a way… some of our program design calls for the validation of the installation address. Some programs that are implemented region-wide that don't require the location of the installed equipment… depending upon the equipment that is being targeted, having a region-wide effort that either doesn't require the capturing of installation address or if BPA can be the umbrella system that allows all participating member utilities to consolidate their customer base into a single database then it would allow for the implementation of a larger region-wide program that does capture the installation address (if the installation address is critical to gather)
- Another area that we are broaching which is equipment in the marketplace that is "placed" and not sold to the entity (host customer) that is responsible for the energy use.
- For example Coke and Pepsi control 85% of glass door beverage display refrigeration units that are placed in supermarkets, convenience stores, fast food restaurants and elsewhere. A program incents Coke or Pepsi or their agent to place more efficient units (from a qualified product list). Coke or Pepsi can use this aspect of equipment efficiency as part of their marketing and connect to their corporate sustainability efforts. The end use customer and utility benefit from having a more efficient glass door beverage display unit at the customers' site vs. a less efficient unit.
- This program concept can apply to a number of other categories including office equipment i.e. copy machines that are placed etc.

Challenges/Barriers

- Reluctance of distributors to add to their load of paperwork. Our participation process is completely electronic. Allow a participant to know the status of their application at all times. Quick processing creates cash flow that is not overly burdensome to distributors. Cash flow management is a pressing

Contractors and Trade Allies - Interview #10

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging opportunities do you see on the horizon for the region?

- Res – probably has already happened on commercial – residential programs are piece mealy and taking the customer home in a piece meal fashion. Even whole home programs look at appliances and weatherization within the whole home. Home owners can save energy one of three ways: Behavioral, purchasing newer equipment to make upgrades by themselves, can purchase equipment and make upgrades to the building itself through a contractor. Currently they are siloed within a portfolio; there is value in looking at them together.
- We still don't know how to sell EE to a business. SEM is the flagship for trying to do this, but C&I programs really rely on somebody else to sell the actual upgrade which doesn't allow for continual dialogue to happen. Takes customers on a one off basis and the customer comes in and leaves without much follow-up. That customer is actually more prone to adopting EE on an ongoing basis so there is a lot of value in following up with them on both the C&I and Residential side.
- We are seeing a lot of technology come in to help with customer engagement. Guidance, tracking, management etc. Integrating into existing programs is important.
- As smart grid and smart meters come into being, we have the ability to track usage and gage actual savings as opposed to relying on TRMs or RTFs to calculate a reasonable expectation of savings. We are still relying on somewhat theoretical savings that we are claiming. There are a lot of inefficiencies and risk associated with that for the budgets of the programs and for establishing deemed savings pre and post program and still not getting to the actual energy use pre and post savings. At some point this will come up as smart meters come into play – we need to see it as an opportunity to get more accurate with savings. Rather than fighting about savings, we should just be focusing getting savings from customers.
- Making EE easier from the customer perspective and allowing them to engage in a way that makes it easier for them. Not expecting something magical to happen because there is data, but how to make it easier as a result of the data. The NW has an opportunity to flip everything on its head.

- Deemed savings are hypothetical so it is ironic that one of the barriers can be evaluators' comfort with hypothetical savings.
- Right now BPA does not have a smart meter roll out plan, here's why… "we have a lot of hydro, so we don't really need DR." When you have a smart reader firing, you need a benefit to justify it – those are usually DR benefits that throw it over the edge.
- The EE benefits of smart meters are often overlooked and not quantified – there are many benefits that should be weighed in
- The value of the smart grid would be positioned very differently in the NW than they are in CA for example
- We have so much research on how to market to homeowners, what we have for commercial and industrial is so minimal that it's almost laughable.
- NEEA kicked off SEM in 2005 and rolled out programs.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

How about one "so crazy it might just work" idea?

- Utility bills are not an invoice, but are structured as a meaningful enabler of good data mining and a good data source.
- Take the EE concept and make it another way the utility procures resources. Let the market procure resources by effectively and efficiently procure the resources.
- Yes, it should be treated like any other resource in the market, but I think there should be a transition period for market actors to get used to treating EE as a resource. EE would be treated as any other resource.

GAPS AND CONSTRAINTS

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the region?

- What BPA really needs to think about – if they look back from the end use customer perspective and think about it from that entity's perspective and think about it from that perspective. In the Northwest, organizations pop up all the time because there are funds available etc.

- There are so many different places that a customer has to go – it is extremely confusing for an end use customer to figure out who they should go to to figure out how to be energy efficient savvy.
- We have submitted a couple of abstracts… if you think about the primary objective of EE being to have owners choose EE products and services, but if you look at the industry overall, you don't see a lot of marketers. I would actually talk to people from other industries who do know how to market… there is a fundamental gap between the goals of EE and the competencies that we have developed.
- Look at high tech. Apple or other startups.
- Mobile marketing – they have really mastered

What concerns do you have about regional EE delivery in the future?

- We need to be conscious about not convoluting the market. Someone needs to be conscious about if things are duplicative or confusing.
- The mindset of the NW – both challenge and opportunity. Greater awareness. Challenge: more mature market. The macro economic challenges that have happened over the past 3 – 4 years for customers… the residual attention to budgets will probably linger even as the economy comes back up.
- From a regulatory standpoint, BPA is a bit of a victim of the stringent regulations. Currently, if BPA goes out and says we need to procure X kWh… anyplace other than EE, they put out a bid that says "provide X kWh for X price." EE should behave this way – this allows starting to overcome some of the politics that get involved.

Contractors and Trade Allies - Interview #11

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?

- PSE – Reenergize by Design – Elimination HG TV show.
- Energy STAR about 6 or 7 years ago started doing advertising that switched from data to people
- PG&E – similar to

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging opportunities do you see on the horizon for the region?

- Regionally, there is a real hunger for technology…. When he talks to reporters and to people about the technology of EE (DHP, HPWH, etc.) – people get really excited. For whatever reason, the industry hasn't really leveraged people's hunger for technology. No one is out there pounding the pavement and telling people about the technologies. The EE community doesn't do a good job of communicating the role of technology in the EE play. If you look at Google, Apple, Microsoft, Facebook, etc… they all introduced technology that was pioneering, but they also had people who pushed it and made people excited about it.
- The industry is so data driven and so engineer driven that it gets in the way of clear communications. Steve Jobs – not an engineer

What are the critical keys to success in being able to capitalize on these opportunities?

- As an industry or as a region we need to find ways to "humanize" the work. Rarely is there anyone focusing on connecting the work to people. Rarely does the industry answer the question of how does this make your life better, how does this make your life different.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

How about one "so crazy it might just work" idea?

- Reenergize by Design something that happened on a regional basis. Anything that makes EE seem like it's not like eating your vegetables is great.
- People love to recycle in Seattle. If they can get excited about recycling, there's no reason it can't happen around EE. It happened some with bulbs, but it could go deeper.

GAPS AND CONSTRAINTS

Can you identify specific gaps or unmet needs in the region?

- The more collaboration & the more communication at the regional level the better. NEEA projects are great in that way. We are endlessly doing projects that have multiple partners and more and more of that is a good thing.
- Montana projects, etc…
- Have become a big believer over time in the power of collaboration.

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the region?

- We live in a marketing world, rapid communication, messages, competition for the consumers' brain. Figuring out what is going to get the consumer focused on EE – there is some of this, there could be a lot more of this.
- More input from the nationals – Energy STAR, DOE – there are a lot of really bright people within these orgs. DOE project – they are going after portfolios, not individual buildings "reduce your portfolio by 20% by 2020 and then tell everyone else how you did it." It's not enough just to do it, but do it at a portfolio level AND share. Messaging is around leadership, targets are CEOs.
- Technology – jobs. The army of contractors and upgraders… that is a huge payoff there.

Contractors and Trade Allies - Interview #12

INTERVIEW INTRODUCTION

Do you have any questions before we begin?

- Sounds like a very good project.

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?

- Cash cows and most successful programs:
    - C & I tend to deliver bulk of the savings. In residential sector, the high impact programs are those that are delivered at no cost to the customer. Light bulbs, shower heads, duct sealing. Long standing utility bias against doing anything for free. Lots of people that say the customer has to have some skin in the game, but the reality is that if you want a high volume high participation program then the best method to do so is at no cost to the customer. When it can be done, there should be openness and a creative approach to get it done. BPA will leave money on the table out of willingness to pay – even if something can be done at $100 cost effectively, they will sometimes only put $50 on the table for example. Utilities need as much ammunition as they can give to help them get the job done.
    - The big issue now and down the road is how we change behavior. Having information about housing stock etc. – we have some programs where what has been getting us in the door is the direct install program… once we're inside there we are able to collect all the information about the housing stock and get the information back to the utilities to inform how they might design a program or target a particular sector of their customers. That data is extremely valuable… if there were some way to incentivize the gathering of data about the utilities. This would be very beneficial for behavior change and DR – mention to people when in the house… would you be willing to run your clothes washer or dish washer at night etc.
    - Looking forward at EE, there has been a lot of reluctance in the region to look at behavior activities and to provide some incentive for them to be able to do that. We

can't sustain only incentivizing CE measures or we can't grow the industry. It is becoming more and more important that all regional partners are in this together.

- Very important that the communications strategies that utilities have with their utility customers/members – with the data that Paul was talking about… if we had that on every home, there would be no need for newspaper advertising. This is shotgun, but when we leave a home if we know what they need then we can communicate directly with that customer about their needs. Behavior,
- You can only affect the behavior of a customer with sustained messaging – putting an energy tip in a bill insert really won't do much. When we're in the home, we haven't done a good job as an industry of trying to affect behavior. The term energy audit needs to be redefined about what we are aiming to do in a home and how we go about accomplishing that. BPA should find a way to help utilities get into the homes, get in front of their customers and affect behavior… auditing costs are a big anchor right now – currently we go in, gather information, create a report, push some rebates, put the audit in a filing cabinet and wait for them to call.

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging opportunities do you see on the horizon for the region?

Opportunities and Threats:

- The announcement from EWEB that they shut down their EE department. Mark has been around about 30 years and EWEB has always been a leader. 2010, the reward for EE was going to be a larger allocation of power – when the pie was allocated, a lot of utilities found themselves very long on power… from that point forward, there was a big disincentive for utilities to do EE. It would be a good discussion for BPA to have – what is the carrot that can be held to utilities to keep them into EE when they are in tier 1 power. The regional goals are not going away, but they will get harder to achieve with partner utilities backing off.
- EWEB should not have shut down. Why did they do it and what do we do about it?

What might those carrots be?

- When I was at [utility], they de-coupled (for about 3 or 4 years as a pilot) all EE funding from rates – not completely but how it was treated within the rates. They were allowed to earn a return on the amount of power they spent within EE. This made the reward at [utility] for the shareholders; with public utilities, shareholders can't be the winners, but it is a model to look at.
- As they shift more and more costs of running programs onto utilities it presents an issue – becoming more of a disincentive. I-937 forces some within WA.
- The small and mid-sized utilities still fall through the net even with I-937
- EWEB… utilities might get results that they don't intend. Lesson from history with PGE – there are people out there with a political ear that think that utilities are not the ones who should be doing EE. Now that EWEB shut down EE, their customers don't have EE, their customers won't have access to EE and they should. So separate org(s) should be set up. This is where Energy Trust came from. If utilities are not willing to do EE, they may find people setting up in their back yard.
- With small utilities, funding is an issue. Overspend and then cutting everyone's budgets really impacted the utilities.
- Trust is at an all-time low with the smaller utilities due to how they handled the overspend.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

How about one "so crazy it might just work" idea?

- Unlimited funding that is truly unlimited – used to expand current programs – more volume, etc.
    - When you go into a home where the person has limited income/funding, they have no wherewithal to invest in EE. It is heart-breaking when I can't come in and air seal, insulate etc… any of the things that might really help that person. All of this costs money and not everybody can afford to do that.
    - We want to treat the whole home and this is a challenge for homeowners. Most people do a piece of the picture, but not the whole piece. We would strive to finish every home we start. Utilities can't currently incentivize it enough to make it affordable

- Same for commercial. Often there are great opportunities within the building, but they are often leasing the space – it is short-term or they can't get permission from the landlord.
- On new construction – strive toward net zero energy… could be more of a challenge when dealing with builders who have no incentive when they are trying to build as quickly as possible and move on to the next project.
- Farther and farther up-stream… where are the real problems in the industry? A lot of it is at the general manager level of utilities with the elected boards of PUDs. Anybody can run to be a PUD board member – you end up with business people who may or may not understand the utility industry very well. They are making decisions that dictate things all the way down to their customers. Find a way to force GMs… do a brain transplant to help them understand the societal benefits of EE even if there are some short-term consequences. Utilities are extremely short term thinkers… they are buying power contracts week to week. This is how you end up with decision like what was made by EWEB. If I could change anything, I would decree that all utilities have to have a robust EE program and EE needs to be viewed as part of the overall rate structure – not a hobby on the side and not just when the business opportunity is good for it. Hasn't been a problem for the past 7 years, now we are on the down side of the bell curve and EE is at risk for falling out of favor and we start struggling – so short sighted. Don't know how to fix it, but we should all in the industry be scratching our heads about it.
- Rental properties are another big problem. When you walk into some of these places, you know there is nothing you'll be able to do to help them. The landlords aren't going to spend the money to save on energy bills, etc.

CLOSING

What else?

- It would be great if BPA could find some shred of humility and be willing to admit when they make mistakes and take some ownership of the quality of life that they impact when they make decisions and decrees. They make decisions, put them out and change things… bury communications in the middle of an extremely long email and when we miss them, it's our

fault. They are not flexible and they stick to their rules even when their rules are in flux. I've seen it driving people out of their minds and people working really hard to cater to BPA with no sympathy.

- Individuals at BPA do have sympathy. Has never spoken to anyone at BPA who hasn't had sympathy, though at some point their hands are tied. The way decisions are made, the way things are in flux, etc… it is very frustrating.
- The people this is going to – Sarah, Brent, Carrie etc… they are great. They are sympathetic. This is relevant to the published corporate line, not to the individuals. The staff at the front line with the utilities are the messengers and we have long good relationships and friendships with these people – we have nothing but good things to say about them.
- Real disconnect from decisions made up high and how they are pushed down and out at BPA.
- Lack of reporting system for 18 months has caused extreme struggles.
- Sometimes BPA will make decisions that put a lot of their eggs in one basket as far as 3rd party providers. We often find ourselves on the outside looking in because there are very large contracts awarded to providers. Important to leave flexibility – when there is a measure out there or an opportunity to do a program, leave some flexibility for utilities to accomplish that without having to go with the one contractor that BPA selects and awards the contract to.

Contractors and Trade Allies - Interview #13

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in regional programs/approaches and delivery models can and should be leveraged looking forward?

- In MA, manage at the state level through consortiums. Have been attempts to integrate across the utility to break silos down and integrate even more fully than just with a single sector or a single product.

From your perspective, what challenges in regional programs and delivery models need to be addressed in order to successfully meet the future needs of the region?

- Come at it more from the customer's perspective.
- It depends upon how mature utilities are along the pathway of EE. Some create silos of programs that can lead to high confusion for the customer.
- Approach EE using traditional marketing strategies. EE grew up by engineers as a resource management technique to solve a specific need, but wasn't seen as a service for customers. Due to its history it didn't evolve for the customer – this needs to shift.

REGIONAL OPPORTUNITIES

As an EE expert looking forward over the next 3, 5 and 10 years, what emerging opportunities do you see on the horizon for the region?

- A lot of the low hanging fruit is gone or going away. Technologies are held to such standards and requirements for persistence. We need program design and delivery to maximize the benefits we get – we need a longer term relationship with the customer to help navigate them toward deeper savings (not one and done).
- In the NW there is a lot of fragmentation but in other areas such as the Northeast, utilities are really able to come together and collaborate.

IMAGINING THE OPPORTUNITIES

What opportunities most excite you?

- Excited to see what comes out of the ARRA fund investments. Cool new technologies that we may see in the next 5 years, etc.

How about one "so crazy it might just work" idea?

- Deploy all advanced meters, deploy cost effective technology in homes and educate people about their behavior

GAPS AND CONSTRAINTS

Can you identify specific gaps or unmet residential needs in the region?

- 3 Challenges:
    1. Technologies
    2. Maximizing benefit for customer participants
    3. There has been a lot of hype around smart meter & smart grid, but we aren't asking the right questions. It's not at scale yet enough to make an impact. The more data that we have coming from homes, all coming into a central repository where it is aggregated – this can really provide important information to help target program offerings.

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the region?

- Technology: engage DOE – a lot of the new technology investments through University Labs. EPA – Energy STAR
- Customers: A lot of principles and strategies… marketing and strategy people really understand this, statistical analysts, sociologists or people who really understand motivational behaviors.
- Smart meter – those who own the widgets & the EE companies who figure out what it can tells us and how it can be used to benefit BPA.

BPA Interviews

Table of Interviews

Participant	Interview Date & Time
Brent Barclay, Carrie Cobb, Jennifer Eskill, Allie Mace, Sarah Moore	2/27 9:00am
Paul Munz, Melissa Podeszwa, Kim Thompson, Daniel Villalobos	2/28 8:30am
Brent Barclay	4/12 2:00pm
Frank Brown	4/19 12:30am
Greg Delwiche	4/19 10:30am
Bill Drummond	4/19 11:30am
Richard Génecé	6/11 4:00pm
Lee Hall	5/2 3:00pm

BPA Staff – Interview #1

KEY TAKEAWAYS

- BPA needs program delivery model(s) that are comprehensive, in terms of addressing rate equity issues, small rural vs. larger utilities who are already motivated via I-937 requirements—able to flex with spending levels, market changes, alignment with Power Plan targets and opportunities.
- Equity issues affect program offerings: 75% of target savings will come from largest 14 utilities (or something like that). BPA won't meet targets with small rurals, so how to manage engagement level that makes them feel like their effort matters?
- Utility relationships need to get to place where there is a shared understanding and awareness of benefits/risks that allows for more of a business partner relationship. Early and greater commitment buy-in will reduce dry hole investment risk of building it before they have to say they are "in."
- Great example of successful program delivery model is ESI—everyone internally and externally loves it. Addresses a LOT of pain points, improves customer relationship and produces good savings. Design of model was collaborative with a program design consultant in lock step with BPA program staff.
- Great current examples of different delivery models—good understanding of what works well, what are challenges.
- Turnkey for small rurals needs to be simple to run, easy to explain at customer level, few touch points. Important to make sure it can work for small rural.

WHAT IS BPA'S ROLE IN THE REGION?

- BPA's role in energy efficiency is to meet the energy savings obligations of the NW Power Plan on behalf of its customers. BPA offers tools and options, but actual implementation is up to each customer.
- BPA's program offerings must be attractive to customers, so BPA must have a good understanding of the whole region, and understand the areas where its customers need help.

HOW WOULD YOU DESCRIBE THE RELATIONSHIP OF BPA WITH ITS CUSTOMERS?

- In program funding, BPA has new power sales contracts that began in FY 2011. Under this new plan, BPA must split all program funding equitably between all customers, based on load share. Funding for savings is cost-shared between BPA (75%) and the customer (25%). This has created challenges due to the fact that sector share for load varies by customers. In some cases, EE programs have had to be cancelled because of a lack of budget.
- For energy savings, the recent passage of I937 means that WA utilities now have state obligations to achieve energy savings. The achieved savings will still count toward regional savings. As such, WA state utilities are more willing to self fund programs.
- BPA's customers have a wide demographic span (large/small, more/less traditional, munis/co-ops/IOUs, sector mix, rural/urban, EE maturity) and so BPA must be elaborate and creative in designing programs, but is also restrained by having to meet the needs of all its customers, develop budgets and issue contracts.
- In its customer base, BPA faces a challenge in dealing with SRRs (Small Rural Residential), but also with rural utilities as a whole. These customers are harder and more expensive to reach, but are also politically important, and very vocal.

WHAT DO CUSTOMERS WANT IN PROGRAM OFFERINGS?

- Smaller customers want turn-key programs that are simple to understand. They also want their share of program funding. Most do not like BPA.
- Larger customers want added-value from BPA. They feel like they know how to run programs, so they see BPA as an entity that takes funding.

WHAT ARE SOME EXAMPLES OF PROGRAMS THAT HELP DESCRIBE CURRENT PROGRAM OFFERINGS?

- Residential Simple Steps
- Commercial Grocery – Refrigeration
    - Initially customers had an active role. Over time this role diminished, but is now moving back to a hybrid model, with PECI as an implementer.
    - Filled an identified gap for savings.
- Industrial – Energy Savers
    - Program design was developed with consultants.

  - Comprehensive offering that allows a lot of flexibility to each customer. Can pick and choose components that work best.
  - 105 utilities enrolled, and has really improved relationships with BPA.
  - Strong communication protocols and very detailed tracking.
  - However, it is very expensive.

IDEALLY, WHAT KEY ELEMENTS SHOULD PROGRAM DESIGNS CONTAIN?

- Accessibility (available to all utilities)
- Energy savings that are easy to understand and document
- Simple to understand
- Easy to implement (quick-turnaround)
- Tracking and documentation should be easy
- Should build relationships with customers and outside third parties (Trade Ally, EE Advocates)
- Flexible with regard to participation level
- Minimal customer touches

BPA Staff – Interview #2

KEY TAKEAWAYS

- There is continued emphasis on simple programs (easy to implement/understand/explain)
- New tiered rate structures and equity funding have fundamentally changed the discussion and drivers
- Customers value the relationships with their end-use customers
- Big picture program design needed to change status quo
- I-937 changes the dynamic of self-funding for WA utilities
- Questions around the quality assurance/back-end of programs and difficulty in execution (e.g., most likely area where they fall apart)

WHAT ARE THE CHALLENGES AND POSITIVES THAT BPA FACES IN PROVIDING INFRASTRUCTURE SUPPORT TO ITS CUSTOMER?

- Utilities hold their relationships to their end-use customers very dear, and worry about BPA inserting itself into that relationship.
- Within the region, EE targets differ between states, and between BPA and its customers
- New tiered rates have really affected the conversations with customers. For customers with load growth (e.g. Flathead), EE can act as a risk mitigation tool since it can help manage load, and help customers who face potential higher marginal costs. For customers who have flat load, tiers are less of a driver.
- New equity funding levels have led to significant changes:
    - Utilities that have lost funding are now reconsidering larger industrial programs, and fall back onto deemed measures.
    - Utilities that have gained funding are now having to consider new offerings.
    - There are currently enough offerings, but in the future there may not be enough.
    - BPA is concerned about the possibility of stranded budgets
- I-937 has shifted the discussion for affected customers
    - Affected customers have become much more individually and locally focused, and less regionally focused (e.g., "my target" vs. "the target" or "BPA target")
- Utilities like EE program since they help build relationships with end-use customers

- Utilities always want the option to control the program offering. Some will hand over control to BPA or a trusted implementer, but they always want that choice.
- Utilities like simple programs, as do the account execs and EE reps at BPA.
- Program success can depend heavily on the level of communication and support
- Quality assurance can be a challenge for smaller customers. They don't have the resources to provide it, and in isolated areas, it can be difficult and expensive to find providers.
- There can be a lack of services for self-motivated customers.
- Demand response
    - There is more local focus on load shape due to new demand charges
    - In some cases, there is the potential that too much off peak EE could lead a utility into a situation where it would then be subject to demand charges.

BPA Staff – Interview #3

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- There are successful elements to everything that BPA's got going, but there are also challenges to each and every one of them.
- BPA's wholesale nature and post 2011 structure that we're in really limits what we can do in contrast to a retail utility or an Energy Trust
- One overarching consideration in the BPA program design – i.e. simple steps or grocery, industrial… one theme that runs across them all is that the utility gets to decide how they want to participate & it isn't a one size fits all. The flexibility is done a bit differently in each one of them.
- We have the ability to customize what the utility wants the resource to actually deliver in their service territory.
- In the tension of the expectation that things are available to everybody so that everyone can participate, but then it is always very different who can and wants to do what with different offerings.

From your perspective, what challenges in program delivery models or support structures need to be addressed in order to successfully meet the future needs of the region?

- With the current pendulum swing in the federal system, BPA EE is not as free to act unilaterally or freely. In the past we could secure a .org and now we can only secure .gov, which needs a big elaborate process through the federal government… we're not as nimble to do some things that we have done in the past. Important to figure out where we have flexibility and where we would be paddling upstream to accomplish things. (Strapped with cyber-security right now.)
- Other than rendering a power bill and taking payments – any type of payment that BPA takes in is not easy for us to do. Bulk purchasing is very difficult oddly enough due to restrictions.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- Doing a fine job of developing a pipeline of new technologies – Utilities are ascribing a lot of value and seeing the good work that BPA is doing there in catalyzing opportunities
- Some things worth looking at that were done years ago – in the late 90's EE came to a halt and there were some projects that were put on hold that were good but were never re-started …resource efficiency managers were a good thing then that didn't get restarted in commercial and institutional
- Embedded resources in a facility (as at Boeing) or shared across multiple facilities. Challenge: there is an upfront investment and the fruits don't come till later, year 3 or so
- Commissioning of equipment, systems and buildings – gets a lot of talk but not a ton of action. This should be on the list to exploit.

What are the critical keys to success in being able to capitalize on these opportunities?

- We (BPA, Commission, etc.) – risk averse to a fault. If we can't have a level of precision in measuring things then it doesn't go forward. We're not very good at thinking at the portfolio level rather than the transactional level… e.g. commissioning – you can commission something and not get much or commission something and get a lot

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

- Behavior change – when re-commissioning something and improving the state at which it exists to be more efficient, you also need behavior change so that you don't backslide to where we started. We need to get more comfortable with the fact that we are investing in improving the level at which systems are maintained and people are making the right choices.
- New construction where we have code, codes aren't being met, but we can't invest in closing that gap because in principle we'd be paying someone for something they're already supposed to be doing.
- If you could get those who hold the purse and make decisions about how EE is funded – hold their attention long enough to get them to realize some of the realities on the ground. Code enforcement, etc.

What opportunities most excite you?

- My utopia: the people that are making the decisions about where to allocate limited resources – they would have an awareness of the value and would be doing these things without a lot of intervention from others to do them. Collectively we are all participants in doing our own thing at the individual level that makes us a more EE Northwest. As an industry, we don't spend much money on educating the populous around us

BPA Staff – Interview #4

KEY THOUGHTS:

- There is an opportunity to explore a "hybrid" model in which some of our customers are self-funding for energy efficiency and the rest are still utilizing the Agency money. We may not be able to have both but exploring options may be necessary to help us progress towards greater energy efficiency.
- Lack of load growth is an issue and affects how we think about EE
- NEEA's role is to fill the pipeline. To take technologies from the conceptual to the viable.
- Future EE programs should leverage what has worked well. For example, Energy Smart Grocer. How we can have an Energy Smart [fill in the blank] that is just as successful?
- Cowlitz, Tacoma, SCL and SnoPUD have been doing a lot and have indicated that a lot of the low hanging fruit is going with the exception of the low income sector. How can we address this sector? We need to think about strategy in this sector, not just money: how can we leverage other people's money?
- At the PNGC BOD meeting, the Cash for Clunkers program was identified as a successful program. Can we utilize this for residential and commercial measures (specifically mobile homes)?
- Why aren't we doing fuel switching? But, then how can we make those homes that do fuel switching as efficient as possible before they switch? Is there an incentive for that? If so who would pay for the incentive? Overall, how do we better coordinate with gas companies to make sure we are supporting efficiency on a holistic level?
- 20 years out we will have more distributed generation – more "behind the meter".
- Energy management systems are going to be increasingly important.
- We should be considering energy efficiency through a new lens, the peak reduction lens. Our load shape related to energy efficiency needs to be discussed and explored.
- We are capacity poor and energy rich. How can we focus more on energy storage and communicate that value?
- The RTF CE model and the BPA funding model – do these work? Can we establish different CE rules for the rural utilities (e.g., TRC vs. UCT) and move away from one-size-fits-all?
- Big Idea? Using trade allies

BPA Staff – Interview #5

KEY THOUGHTS:

- My vision for the Agency is to become the world leader in providing low-cost carbon-free power towards greater environmental health. We can't rest on our laurels because that would require building new generation! The most important question for the Agency to focus on is "how can we delivery value?"
- Appreciates the customer's struggle with having to pay the Agency and then be reimbursed once they acquire energy efficiency. Since joining BPA [interviewee] has come to understand the political capital that BPA's focus on energy efficiency brings to the region and that the money the retail utilities provide doesn't just go towards energy efficiency, it helps fund a lot of other things (e.g., capital expenses).
- Recognizes that BPA's involvement in EE brings other benefits to the region: supporting NEEA and the RTF; and ensuring regional equity. However, there is a perception that BPA EE has overly-burdensome requirements.
- Interested in developing a stronger partnership with the IOUs (e.g., transmission lines) but wants to be sure to convey what BPA is doing around energy efficiency rather than "asking" for what can be done.
- The region has trapped itself with regional cost effectiveness. The TRC makes sense from the perspective of setting the target, but we should be using the UCT for local targets. Would like to blow up the model in the 7th Power Plan.
- Big idea is to put one guy in a truck that would go door to door and conduct an audit and install the hot water heater, insulation, etc. This would meet the needs of rural and remote utilities that have a high concentration of residential and low-income customers who are not well staffed to be able to perform energy efficiency.
- The need for consolidation of EE and DR is essential for capacity and flexibility.
- In order to make the huge progress [interviewee] thinks is necessary [interviewee] identified continuing to have BPA involved in energy efficiency (political capital with congress) and refocusing towards the UCT. Could the 7th Power Plan address the ability to "bank" energy efficiency that could then be sold to utilities who haven't quite met their goal? We should also be focusing on disruptive technologies for the whole utility industry such as storage.

BPA Staff – Interview #6

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

Successful things we did in the past

- Used to be much more customized with utilities
- We have the resources that we could be really differentiated with our customers. By making programs more centralized, we have disadvantaged ourselves over the past 8 years.
- Things worked better in the '70s and '80s. We used to be able to make decisions. Now there is so much process.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- EE used to be resource acquisition, ramping up and down as necessary – this is the famous roller-coaster that everybody lived through from '81 – 2004. That's no way to manage the part of our power supply portfolio effectively or economically. In order to be successful we really do need to make a commitment and stick to it. Downside is that there are periods, such as the past few years where we don't need EE – we have a surplus and we need sales and market, not to spend money on something that reduces our load. Steve Wright in the regional dialogue discussion, put BPA's EE program in the Tier 1 rate pool – declared it as something that is a fundamental part of BPA, just like operating the damns. As long as there is a power plan that describes EE as the least cost resource, BPA is committed legally, financially etc. to carry out our part of the plan. While we may not need it, it is the right thing to do. We find ourselves in an awkward spot and so do many of our customers. [Interviewee] is concerned that we are positioned that way – look at EWEB dropping out. For some, bribing them with money isn't enough to keep them operating when it's not rational. They have an abundance of resources that state law requires them to buy even when they don't need them; here is BPA requiring them to reduce their load. [Interviewee] sees a trend where the old times weren't good with the up and down up and down… nobody had a reliable market since we turned things on and off

about every 3 years for 20 years. Not so sure that we are positioned correctly for these times either. Concern is that we may be out here by ourselves more than we know. So then what do we do… what if there is a plan requiring a certain amount of EE, but we don't have partner utilities. We do not have and are not allowed to have end consumer relationships without working through customer utilities. I see a lot of impatient and frustrated utilities that wish they didn't have to do this and feel like they are forced to do so.

- Old times, we were well integrated into Bonneville. Now EE is not well-integrated, DR is, EE is not.
- Steve Wright set it apart – BPA does this because it is required, not because it provides a benefit or is a good business decision. In the old days, it was a business decision even though it was stop and start. Steve W put us in a position where we are disengaged from Bonneville but we are performing a public service. Power Council is the customer and the client.
- DR is very different – nothing in the power plan says that we have to do DR.
- There was some advantage to the old days, even though the roller coaster was terrible. When power needed power, they turned on EE. When power didn't need anything, they shut us down. We always had an internal client. None of that value has existed for the last 5 years.
- If customers did get us kicked out of Tier 1 and we are not connected into BPA – EE could easily become a Tier 2 resource.
- This won't happen in 2014/2015, 2016/2017 is wide open and I see some customers coming for us.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

Stretching your imagination even further - - what is one "so crazy it might actually work" idea you might have?

- Has been through 3 rounds of DR fading away. When the first shut down of EE happened, people looked around to see what else they could do… for transmission, for capacity related issues, etc.
- We might find a place in the market where the products they can deliver are worth more to BPA
- There are a lot of people in EE looking at the DR bandwagon as a bit of a life raft – but the jury is still out for DR.

GAPS AND CONSTRAINTS

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the future?

- Hope that someone is doing this tough thinking because somebody needs to really be problem solving for how we get from here to there.
- It's all about power supply, market, what things are worth and running a business. We either save them money and reduce their cost, or we don't.
- The days of depending on the Power Plan are few – we have a few more years of it and then the game may well change. We've got to be integrated into the business of Bonneville or we just aren't going to be around. Business of Bonneville has gotten so much more complicated too. Probably not a person in EE that could tell you how transmission makes money and what their motives are, etc.
- The EE culture today does not think about who pays for my job… always looking at who has the money. Transmission has the money so [interviewee] is always trying to design services for transmission to be hooked into who has the money at BPA. EE culture today is a grant environment. Today, even though EE is in power, it is separately budgeted for and has its own purposes like it's running under a grant.

BPA Staff – Interview #7

INTERVIEW INTRODUCTION

- Comment: Visit the Deloitte study that was done on new delivery methods for EE.

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- Huge influx of investment in smart meters and smart technology – not sure that we really have tapped the full EE potential of smart meters. Most effort has been around time of use or load control for devices. How do we use them in the link of two-way communications to better monitor energy use? Tremendous devices to be used via smart phone or the web for people to know how they're doing.
- EE savings are going to get harder to get.
- We've had questions from utilities about why we aren't using smart meters to monitor energy use.
- Paradigm shift from end use devices to how do we affect better behavior.
- Don't have an answer to how we make it durable. Smart technology to help people better monitor and keep track of their use.

What are the critical keys to success in being able to capitalize on these opportunities?

- Smart Meter/Technology Success: Make it "set and forget"
- Getting consumers more choices.
- Awareness about how much energy you're using.
- Yes, sell the more EE refrigerator, lighting etc. but pair it with load management

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- Smart Grid Customer Collaborative is a good source of information.

- There have been pilots across the country to compare the uptake and use of internet-based solutions vs. smart phone vs. in-home display. General findings are that the simpler the better.
- "The Nest" thermostat.
- There are studies comparing different delivery methods & time of use pricing programs – 10-15% overall reduction in energy use as a result of these programs.
- A lot of these areas have fallen under load management or DR. With EE there has been so much focus on measures and persistence that there has been reluctance to looking at short-term, minutes and hours of use… there is a lot there that we are missing.
- We have been talking a lot about residential. There is even more potential in commercial applications. Building managers need awareness of when they are using and what their use is like. There are huge opportunities to tap into.

From your perspective, what challenges in program delivery models or support structures need to be addressed in order to successfully meet the future needs of the region?

- Tremendous opportunities. There are challenges that we need to get over in terms of trying to fit it into standard rebate and incentive structure when we should think outside that box.
- Smart grid technology was put in so fast that people didn't really realize its full potential
- Standards – communications and inter-operability between systems. One might install large systems for energy use, but about half the cost is in integration and making the systems talk to each other – they can get overwhelming. Standards will drive down per unit and installed costs.
- A lot of opportunity at OEM to install common interfaces, but we need to get standards in place about how to do that.
- A lot of discussion with how to marry EE appliances with load timing.

IMAGINING THE OPPORTUNITIES

- There is a gulf between transmission grid operators and EE delivered at the load – at the industrial site, the commercial site, the home or the farm. There is a gulf that we really need to reduce. If we implement certain opportunities really well, it opens up the opportunity for other options.
- Conservation Voltage Optimization/Reduction – Reduce the line voltage at the end point from 120 down to 115 volts. This reduces energy use, but it also reduces revenue for the utility. This is

a great EE method, so why isn't it happening? If the utility is spending all this money, then why can't the utility recover those costs in rates from customers? The value chain from the utility to the end use customer needs to be thoroughly examined.

- We need the ability to recover costs from rate payers – smart meters etc.
- We think about things like – if someone installs solar and they have the ability to pay back into the grid and get paid for that… it also puts more strain on the grid… how do we account for that.
- Paradigm is to shift from overall EE, to better managing the peaks – we build our systems to account for the peaks.
- The major paradigm shift is instead of catering to demand driving supply, having the supply inform the demand

CLOSING

- In the end, we'll have impact on not just overall usage, but on shaping load.

BPA Staff – Interview #8

CURRENT PERSPECTIVE ON REGION

From your perspective, what successes in program delivery models or support structures can and should be leveraged looking forward?

- At [utility] we had a lot of success when there was engagement with the industry and in the education sector and cross-program integration (MF, LI, etc.). We created connections with the institutions we wanted to serve and with third parties. The connections were up and down the institutions and not just focused on one group or department.
- Program integration across EE&DR – not as separate entities but as integrated and collaborative with the municipality, residential customers, industries, institutions, mayors, etc. (SCE ELP program = great example of this)

REGIONAL OPPORTUNITIES

Looking forward over the next 3, 5 and 10 years, what emerging opportunities (measure and market opportunities) do you see in the region?

- What should our engagement be with higher education?
- How can we support our customers in getting more engaged (e.g., kids at home sharing information with their parents)?
- Can the human eye differentiate 10% drop in lighting – if not, could we design a DR lighting program? This is technically possible but we need to test the premise first.
- CFLs were so easy – LEDs will be easy but not easier.
- Industrial sector holds a lot of promise.
- There is a lot of opportunity to clarify the value that BPA provides to its customers. We are not well aligned in EE Market Transformation in terms of how we work with customers. We have done a lot across engineering, programs, marketing, etc. that we can't really articulate. This would be very impactful.
- Creating a stronger relationship with NEEA – get our teams to work more closely together on how to leverage each other more.
- Greater collaboration requires clear communication, trust, building value and being honest with customers about the value we are driving. We need to clarify our value proposition and then

share that with customers. We also need to understand what the market demands to ensure our value proposition is in alignment with those demands.

IMAGINING THE OPPORTUNITIES

What do you believe is "the next big thing" or "the next big idea?"

Stretching your imagination even further - - what is one "so crazy it might actually work" idea you might have?

- Residential DR lighting program!
- Joint programming with NEEA and clear delineation of roles and responsibilities.
- Commercial: financing opportunity may be a possibility. How do we just make the money available? Behavior based programming similar to residential?
- Multi-Family: how to crack the code? For example – how can we leverage GE's market share?
- Upstream programming (e.g., GE)
- Residential: we are not getting the results that we used to get. In lighting we have to think differently and need to take credit for the reduction in HVAC through lighting changes. What is the water/energy nexus and how can we take credit where possible?

GAPS AND CONSTRAINTS

Are there any other "players" (market actors/other industry partners/etc.) we should consider partnering with in the future?

- The Federal system (labs), institutions, multi-nationals, state regulators, manufacturers.
- IOUs – we need to explore building stronger relationships with our peers at each utility.

CLOSING

What is top of mind for you as we consider the future of energy efficiency in the region?

- We have very achievable goals but if we aren't on top of them we may miss them. This is a matter of planning and being aware of what is coming down to us. We can accommodate any barrier. I don't want any surprises and I do want accountability.
- What we have is a gem that needs to be nurtured and protected.

- There is tension between what the Council thinks is possible and what utilities see as possible. Unfortunately we don't have limited funds.
- We gave up control with our customers – now they have to self-fund 25% of their efficiency efforts. This is an experiment and we don't have a lot of insight into their self-fund goals. They aren't required to give us the information that we need in order to create a contingency plan if needed. We can start to shift our perspective that our utilities are our partners, not our customers.

Facilitated Brainstorming for New, Innovative and Collaborative Energy Efficiency Program Opportunities

Save the Date: Monday, May 13, 2013

BPA's partnership with our customers is one of our highest priorities; to ensure our efficiency programs continue to meet our customers' needs BPA is exploring opportunities to strengthen its program offerings. In collaboration with our utility customers, BPA will research program models and ideas to advance program offerings in the residential and commercial sectors.

You are invited to participate!

What and Why: BPA invites you to join us a in a collaborative, facilitated brainstorming session to explore program models and ideas to advance offerings in the residential and commercial sectors**.** This session is part of a research project that BPA is conducting to identify high-value program offerings. BPA will use the recommendations from this research to strategize and plan for the future of Energy Efficiency acquisition in the region.

We will use this session to assess opportunities, delivery models, and market and technical barriers. In this session, you and your utility colleagues will work hand-in-hand to explore future possibilities and directions for energy efficiency programs. The sessions will be interactive to encourage cross-pollination and lively discussions. Not only will the day be productive, it will also be fun and inspiring!

Your participation will make an important contribution!

Who: Utility Customers of BPA, maximum of two representatives per utility. We encourage you to bring your creativity and new ideas for both residential and commercial approaches

Where: DoubleTree Hilton 1000 NE Multnomah St, Portland, OR 97232 (Efficiency Exchange venue)

When: Monday, May 13 1:00-5:00 (the day before Efficiency Exchange)

How: RSVP to Carrie Cobb at clcobb@bpa.gov

For more information, please contact research manager Carrie Cobb (503-230-4985 clcobb@bpa.gov), Allie Mace (503-230-5871, arrobbins@bpa.gov) or management sponsor Brent Barclay (503-230-4712 blbarclay@bpa.gov).

Appendix 4b: Facilitated Brainstorming Session - Participant List

Organization	Participant Name
Ashland, City of	Adam Hanks
Ashland, City of	Larry Giardina
Ashland, City of	Dan Cunningham
Benton County PUD #1	Tom Schumacher
Benton County PUD #1	Kevin White
Benton REA	Eric Miller
Benton REA	Ron Mitchell
Central Electric Cooperative	Jeff Beaman
Central Electric Cooperative	Vern Rice
Central Lincoln PUD	Wade Carey
Clark County PUD #1	DuWayne Dunham
Columbia REA	Doug Case
Douglas Electric Cooperative	Todd Munsey
Ellensburg, City of	Gary Nystedt
Emerald PUD	Rob Currier
Eugene Water and Electric Board	Greg Kelleher
Eugene Water and Electric Board	Jeb Wolfe
Flathead Electric Cooperative	Ross Holter
Franklin County PUD #1	Todd Blackman
Franklin County PUD #1	Helen Case
Inland Power and Light	John Francisco
Kootenai Electric Cooperative	Don Crawford
Lane County Electric Cooperative	John Murray
Mason County PUD # 3	Justin Holzgrove
McMinnville Water & Light	Matt Deppe
Orcas Power & Light Cooperative	Anne Bertino
Peninsula Light Company	Jim Bellamy
Port Angeles, City of	Joey Currie
Port Angeles, City of	Bob Kajfasz
Ravalli County Electric Cooperative	Jim Maunder
Richland, City of	Dawn Senger
Seattle City Light	Christine Bunch
Seattle City Light	Mike Little
Snohomish County PUD #1	Rich Hazzard
Snohomish County PUD #1	Jessica Mitchell
Tacoma Power	Breanna Chance
Tacoma Power	Nancy Oakley
Tillamook PUD #1	Ryan Perry
Tillamook PUD #1	Dave Wimpy
Umatilla Electric Cooperative	Kathy Moore

Appendix 4c: Facilitated Brainstorming Session - Agenda

DATE: 05/13/2013 | **TIME:** 1:00 PM - 4:45 PM
LOCATION: DoubleTree Hotel ● 1000 Northeast Multnomah Street; Portland, OR 97232

Event will be held in Morrison/Hawthorne room - All times Pacific Daylight

MEETING OBJECTIVE

To create a dialogue among BPA utilities about the future possibilities of energy efficiency program design and delivery models

DESIRED OUTCOMES

- Participants are fully engaged in the discussion and the dialogue continues throughout the conference
- Session generates possibilities for future design and delivery models that can then be included in the survey to be administered summer of 2013
- Everyone has fun and is pleased with the process and happy with the outcome

MEETING AGENDA

1:00	**Session Begins**
	Welcome and Introductions
	Our past and our future: Framing the discussion
	Brainstorming Part I: Exploring the possibilities!
	~ 15 MINUTE BREAK ~
	Brainstorming Part II: Creating a shared vision!
	Taking the journey: What are the vehicles that will get us there? What will we need to get us there?
	Wrap up & Next Steps
4:45	**Session Concludes**

Mapping New Routes

Utility brainstorming session

May 13, 2013

LET’S START THE FUN!

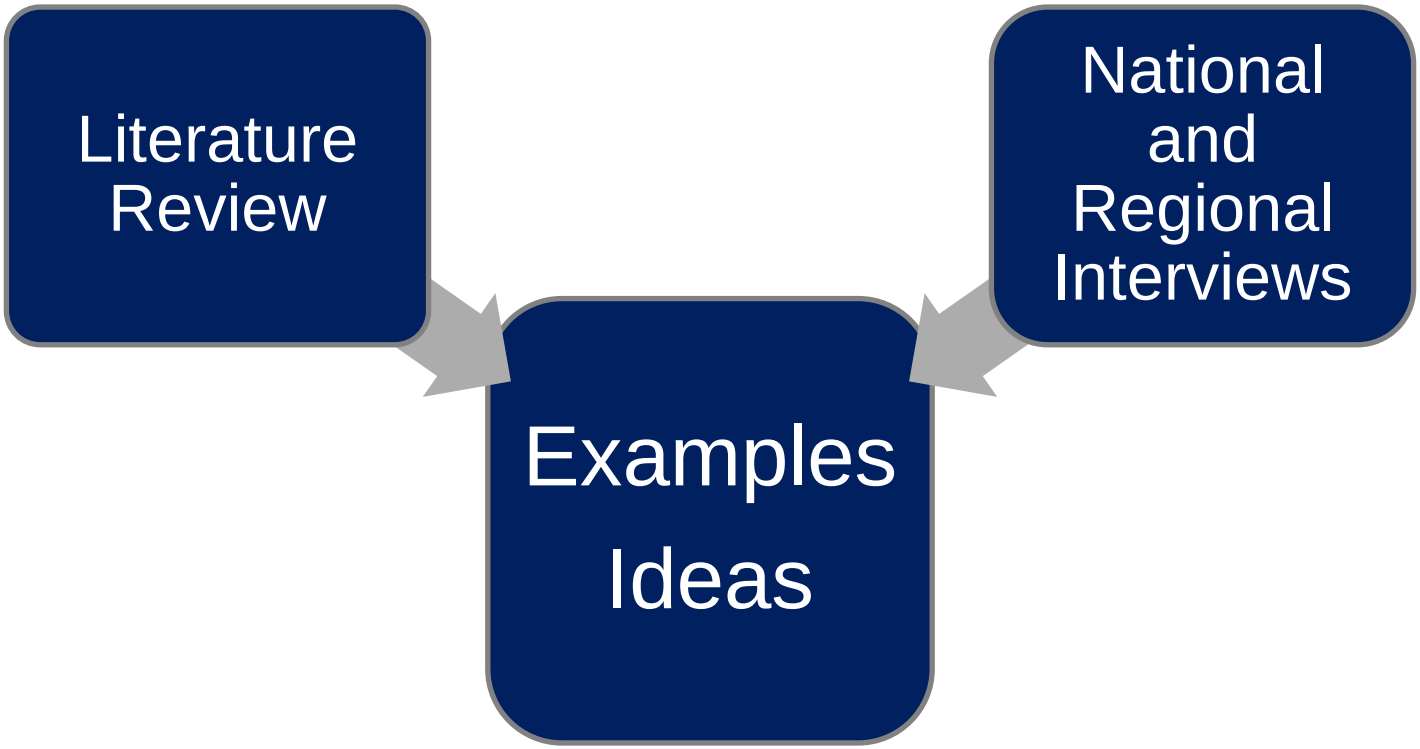
Agenda

- Welcome and Introductions
- Our Past and Our Future: Framing the Discussion
- Brainstorming Part I
- 15 Minute Break
- Brainstorming Part II
- Taking the Journey
- Wrap Up & Next Steps

WELCOME AND INTRODUCTIONS

OUR PAST AND OUR FUTURE: FRAMING THE DISCUSSION

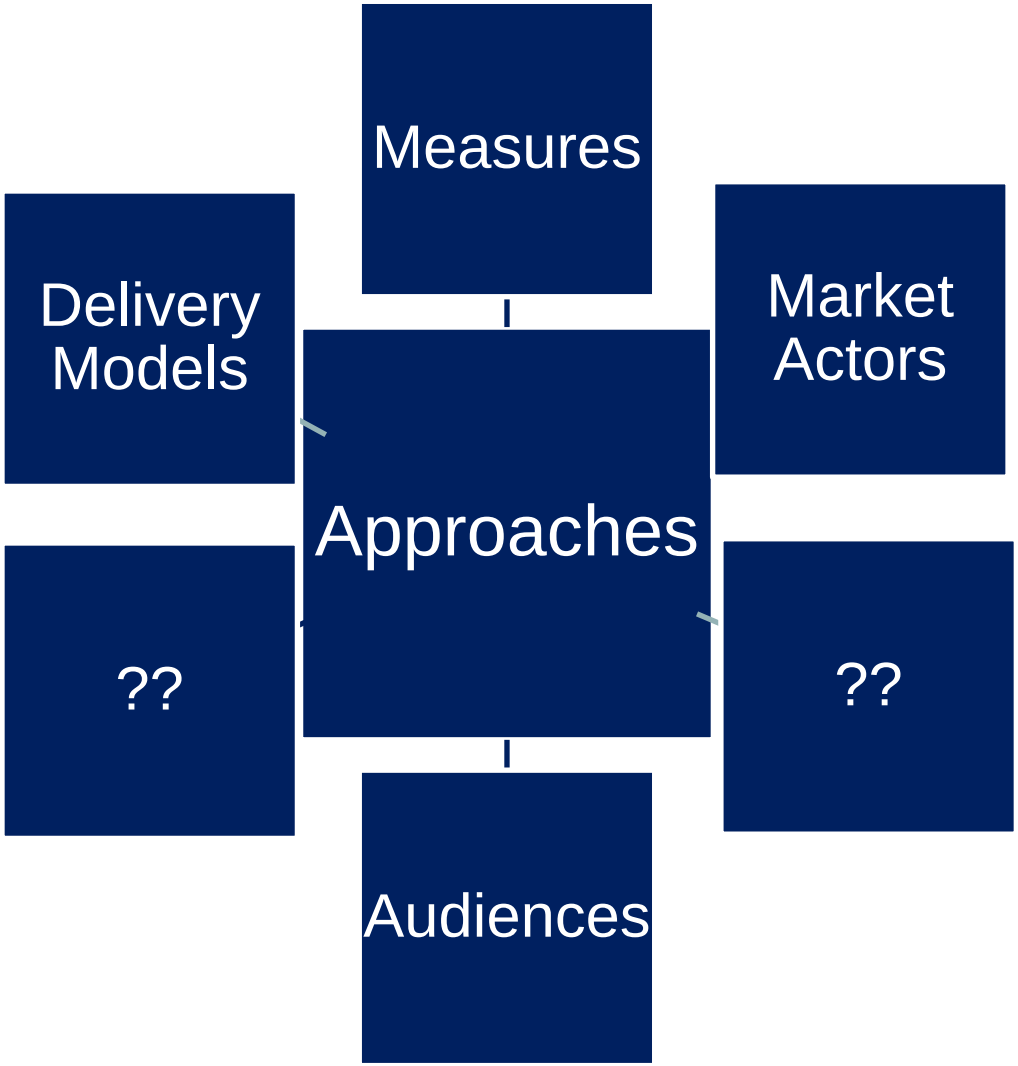
First: The Boring Homework: Literature Review and Interviews



New Program Brainstorming

- What do <u>you</u> think of when you think "new programs"?
  - New technologies?
  - New measures?
  - Market actors?
  - Program models?

Program Building Blocks



Regional Collaboration

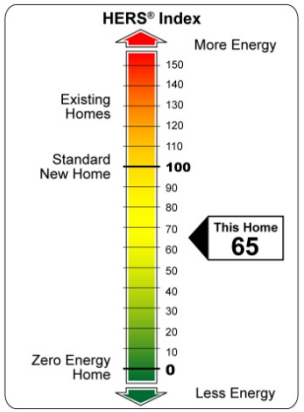
Better Data & Evaluation

Integrated Whole Building Approach

Long-Term Relationships

A Few Highlights…

Include HERS score in MLS



Data Centers

Build EE into rate structure

Save embedded energy through water conservation

EE + DR = Success

Small Commercial

REAL OR NOT?

. . . . . ROUND ONE

Which program is <u>not</u> an actual program?

A. Just-do-it model

B. Performance-based incentives

C. Multifamily "Free-TV" program

REAL OR NOT?

. . . . . ROUND TWO

Which program is <u>not</u> an actual program?

A. Beauty Salon w/ heat recovery ventilator
B. Smart appliance DR program
C. Tree planting program

Residential

Smart Thermostats

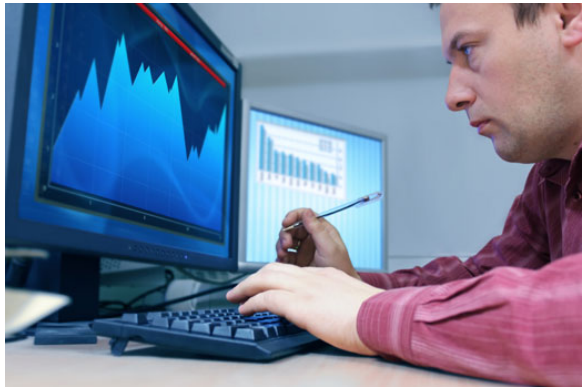
Heat Pump Clothes Dryers

Advanced Power Strips

Commercial

HVAC

Advanced Controls



Deep Retrofits

Getting it done

Market Actors

Distributors

A&E Firms

Big Box Retailers

Weatherization Assistance Program

SACRAMENTO TREE FOUNDATION

Government Agencies / Non-Profits

Choose your vehicle…we're going off-road!

QUESTIONS?

BRAINSTORMING PART I

WORLD CAFÉ

Brainstorming: World Café Style

- **What?**
  - o Small working group discussions
  - o Conversations link and build on each other
  - o People move between groups to cross-pollinate ideas and discover new insights
- **Why?**
  - o To enrich conversations, thoughts and ideas
  - o Leverages the group's collective intelligence

Ground Rules

- Write, doodle and draw key ideas on the flip chart paper
- Contribute your thinking
- Listen to understand
- Link and connect ideas
- Listen together for insights and deeper questions
- Have fun!

Logistics & Timing

Step 1: Look at the people at your table – this is your first working group!

Step 2: Identify a “scribe” for your table

Step 3: Discuss Question #1: 10-15 minutes

Step 4: Switch tables and review the first tables responses and contribute new ideas

Step 5: Select a new scribe for Question #2

- Wash, rinse, repeat!

Question #1

If you could be Queen or King of Energy Efficiency for a day, how would you use your powers to increase the energy efficiency of your Kingdom?

Question #2

How might you expand these ideas to yield even greater energy efficiency in your kingdom?

How you would you build upon each idea?

Question #3

For each of the ideas, identify the top two barriers that need to be addressed. What **creative strategies** could be employed to overcome those barriers?

Report Out

1. Identify the most salient points to share with the group
2. 5 minute report out

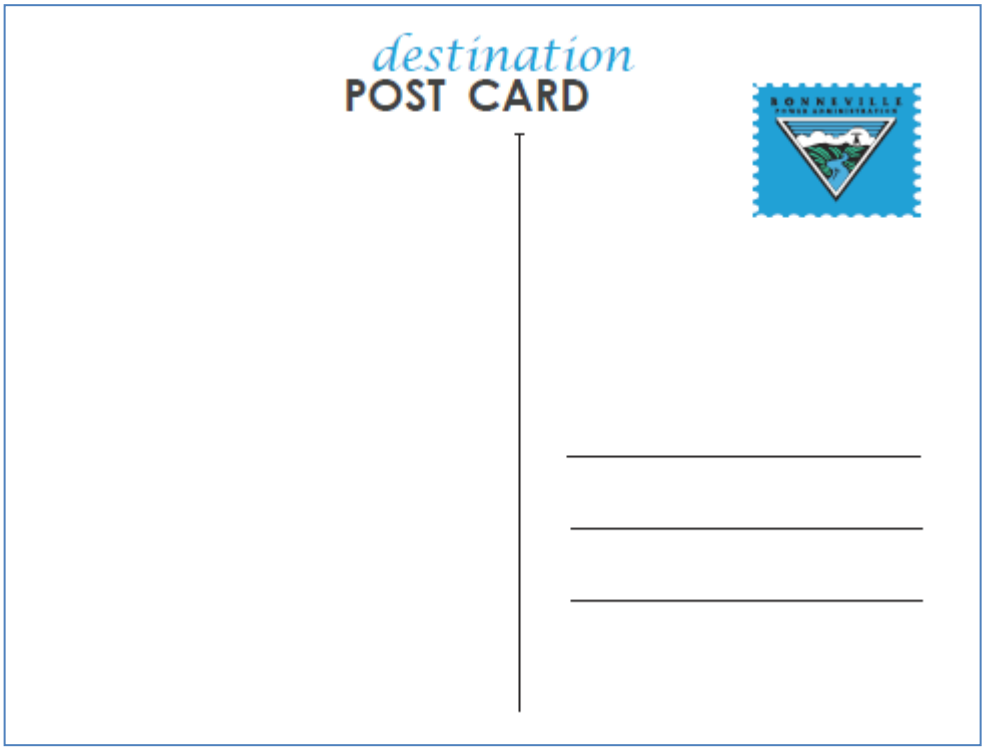
15 MINUTE BREAK

BRAINSTORMING PART II

TAKING THE JOURNEY

WRAP UP & NEXT STEPS

Appendix 4e: Facilitated Brainstorming Session - Destination Post Card - Blank



Appendix 4f: Facilitated Brainstorming Session - Participant Flags and Stars

This appendix contains content generated by participants from the Facilitated Brainstorming Session on May 13 and documented on stars (highlighting program successes) and flags (highlighting areas for improvement and who should implement the improvement). *Note: The text below is transcribed directly from participant notes without editorial corrections.*

Stars

- Ag. Savings
- C&I Customer segmentation
- Energy smart industrial
- Duct sealing
  Hundreds of manufacturers
  Homes for low income customers
- Coordination on low income programs
- Low income multifamily program
- Schools upgrades - all district buildings retrofitted
- RCM (schools)
- Community power direct installs
- OPALCO Direct Install program includes snap shot assessment
- DR
- E* Homes Program
- ESI
- SIS Program, ESI
- Track 'n Tune
- Utilizing Partners
- Worked with a non-profit to expand our program offerings
- Contractor Outreach
- i.e. NWTAN/FLUID E.S. Indust.
- Relationships with contractors
- Duct sealing
- Door-to-door duct sealing
- DHP
- DHP install cost control
- DHP Program
- DHP Program & Process
- DHP's
- Ductless heat pumps
- NW Ductless
- HPWHs
- City induction street lighting

- Commercial lighting
- Lighting efficiency program
- Longstanding C/I lighting that evolves with technology
- Successful commercial lighting, T12-->T8-->good start on LED!
- PTCS manufactured home ducts
- Residential showerhead program
- Low income weatherization
- Low income weatherization
- RC&D effort
- Finding common ground
- Local collaboration
- Post-2011 collaboration
- Regional collaboration for commercial kitchen program
- The ability to spend all our EEI budget with limited staff
- Free home energy audits
- Free home energy audits - 100% inspection
- Detailed building information
- #1 mid-size utility ranked in customer service by JD Power and Associates.
- Customer satisfaction
- Growing with customer, less employee
- Helping customers save $$
- Retail customer awareness
- Clean out the attic
- Our customers' adoption rate and uptake of our conservation programming
- On-bill financing
- EE is a resource
- 30 year history
- Longevity and stability
- Program consistency

Flags

Flag Text	Who Should Take Action
Targeted initiatives - school program (saving kWh)	
Facilitate ongoing energy management	
Fund the development of a energy management app that can be branded/modified/adopted by utility customers	BPA
Quickly coordinate EE programs with DR programs	
Sliding scale whole-house incentive structure for deep retrofits	
Research and development coordination with suppliers	BPA
Facilitate building rating trainings. Provide support for a standard measurement	BPA
Training and education for distributors and contractors	BPA
Focus on the implementers	BPA evaluators

Appendix 4f: Facilitated Brainstorming Session - Participant Flags and Stars

Flag Text	Who Should Take Action
Develop local resources (contractors and vendors) to market, promote, and implement common measures	Utility
Utility and trade ally relationships	
Regional trade-ally development	
Regional appliance rebate clearing house	BPA
Higher rebates on appliances	BPA
Develop behavior based solutions/assistance	BPA
Incentive rebate for smart thermostats	BPA
Affordable whole home energy control systems	Manufactures, new technology, BPA
Ductless HP low income program	BPA
Research DHP in commercial and multifamily	
Keep providing regional support for technology partnership to promote new lighting, shell, and HVAC measures	BPA
EEI funding for EE and DR enabling technology and programs, i.e. smart meter interfaces. Predictive/smart databases	BPA
Real time meter data	BPA
Strong MDM systems to feed portals necessary usage data to change customers behaviors	Utility
Be open minded explore all possibilities	BPA, Utilities
Pilot programs	
BPA can work with NEEA to capture and allocate non-programmatic savings - which are beyond the reach of individual utilities	
A champion	
Don't over-rely on BPA for solutions	Utility
Engage more market actors. . . Landlords, developers, distributors	BPA, Utilities, NEEA
Region-wide education for EE including "bad ideas" - money wasters and what works in CA doesn't always work in PNW	
Regional funding program to create access to capital for business, MF, industry, and municipal customers	
Give us money and get out of the way!	BPA
Provides more money by reducing cost	BPA
Dollars	BPA, Utilities
More money	BPA, Utilities
Incentives (money)	
$	
Increased funding is needed to provide for salary cost share to increase EE staff without penalizing the utilities overall conservation budget	
Lots of money	
Utilities offer loans backed by BPA in part	
Motivation	

Appendix 4f: Facilitated Brainstorming Session - Participant Flags and Stars

Flag Text	Who Should Take Action
Provide the script to identify effective EE	BPA
Process and planning - road map	
Release and distribute 2 weeks or 1 month before release	
Maintain programs for all customer classes not just max kWh savings	Utility
Regional Collaboration	BPA, Utilities
Solutions together	Entire team BPA, Utilities, Rate payers
A spirit of co-operation	Tech solutions
Provide feedback - engage with others	Utility
Utilities must work together. Policy & incentives	
Consistency	
Regional partnership and collaboration	
Specifications	
Measure list that automatically references old measure list	BPA
Design programs to work easily and save kWh	BPA
Simplified PTCS	BPA
Simplify processes	
The success of the DHP program is largely due to how simple it is. BPA needs to figure out how to extend this simplicity to other programs. Perhaps a "simplification task force" or something along those lines	
Focus	
More custom calculators, less custom projects	BPA
Provide flexibility in program design and delivery	BPA
Participation in program design and follow up with some enthusiasm	Flexibility in pursuit of process
Local control - streamlined - programs	Local control
Buy in self funding	Local Utility board
Allow utilities to develop local programs with local contractors to pin point measures and implement them	
More local control	
Provide standardized training opportunities to all utility customers that helps get new EE professionals up to speed on reporting and documentation requirements (many utilities are too overworked and understaffed to provide good quality training)	BPA
Grant writing support	
Training for replacing the collectible knowledge embedded in this room	BPA, Utilities
Provide funding of site audits	
Be an enabler with customer information, not a disabler	Utility
M&V measurement and verification	
Give an "incentive" price to DSO-216 for end-users. We need to qualify and value of DR before we move forward with program	

Appendix 4f: Facilitated Brainstorming Session - Participant Flags and Stars

Flag Text	Who Should Take Action
Do a better job of opt in evaluation and other research projects (impact, process, character - in actions)	BPA
Data: provide access to sales data to utilities (buy it for the region)	
Need data accuracy and accessibility	
Process one reporting mechanism from start to finish. No more hard copies. (1) Database	Automate
Less reporting requirements	BPA
Simple process accounting and guidelines	BPA
User friendly online reporting	BPA
Leave tracking and reporting to utilities, get out of the business of policing EE	BPA
Improve reporting site, cost effective calculator, and measure lists	BPA
Hire the creator of Turbo Tax	I520 redo
Reporting agency	
Educate the next generation of consumers on EE	Utility
Money for educating building owners and occupants about the future value of EE including "new media" elements to pull the market along to the new reality	BPA
BPA can spearhead a regional marketing campaign with unified message/icon like "Smokey the bear", "seat-belts", and "anti-smoking"	BPA
Funding for regional media saturation: to consumers, vendors, policy makers...	BPA
More marketing	Regional collaboration
Marketing	
Educate consumers on realistic EE opportunities and expectations	
Listen to the needs of all utilities and take action of these needs	BPA
Help facilitate the discussions	BPA
Ensure funding is allowed to highest and best uses (regardless of utility size, influences, etc.)	BPA
Recognize and acknowledge that your "public" target is not aligned with the utilities targets. Using a power council awarded cost of greater than $100/month is not aligned with the utilities perspective and target setting methodology	BPA
Lower expectations	Utility
Maintain ongoing conversations with customers/members to keep in tune	Utility
Be flexible and creative and innovative to overcome barriers and implement effective EE	Utility
understanding of why a kWh saved from heating is more important than kWh saved for cooling	

Appendix 4f: Facilitated Brainstorming Session - Participant Flags and Stars

Flag Text	Who Should Take Action
Go to annual implementation manual and get it delivered before the date it is supposed to be out. This year no one got the April 1 manual until the 3rd or 4th of April	
Share info from evaluations, analyses, planning, BPA financing, costs, and overhead	
Provide a demand response signal leading up to and before event, not 3-4 weeks later	
Care more about your bill. See the pretty graph?	Customers
Should be willing to play the "bad cop" with aggressive code compliance so we don't have to	BPA
Disband RTF	
Do what's right for end customer even if this requires flexibility on policy	BPA
Separate IAQ measures from EE measures to improve cost effectiveness	
Do annual changes instead of twice a year (implementation manual)	BPA
Maintain long term support of programs to implement EE	BPA
Convince NWPCC to be more "realistic" with target setting - said the little guys. . .	
Communicate the rate incentives for conservation	BPA
Rate structures designed to incentivize conservation	Utility
Include all costs in generation rates, think carbon tax	

Appendix 5a: Open Source Session - Agenda

DATE: 05/14/2013

LOCATION: DoubleTree Hotel ● 1000 Northeast Multnomah Street; Portland, OR 97232

DURATION: 75 minutes

MEETING OBJECTIVE

- To expand the dialogue among utilities about what's possible in the future of energy efficiency program design and delivery models
- To share the outcomes of the Facilitated BPA Utility Brainstorming session

AGENDA

Topic	Time
Welcome and Introductions	5 minutes
Framing the Discussion	10 minutes
Identification of Topics	10 minutes
Exploring the Possibilities!	20 minutes
Sharing the Outcomes	20 minutes
Wrap up & Next Steps	10 minutes

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Appendix 5b: Open Source Session - Participant Notes

This appendix presents content generated by participants at the Open Source Session on May 14, 2013. (*Note: The text below is transcribed directly from participant notes without editorial corrections.)*

Topic Discussion Notes:

Topic	Conversation Quote
Home Energy Monitoring	Low cost equipment with data logging leads to behavior change opportunity
	Allow customer to control equipment remotely
	Opportunity for utility to build a stronger relationship with the customer? Does customer want the utility in this role?
	HEM – attention paid to monitor wanes, how do we keep them engaged
	Translate to make it meaningful and actionable for the customer
	NEED: trained workforce capable of installing hardware, interpret data, answer questions
	Data to cloud or other central point: Security issues? Opportunity to centralize and analyze
	Trends: look at OPower, etc.
	More utility DR

Topic	Conversation Quote
Low Income	Effective education of low-income residents regarding ways to save energy
	Disincentive related to energy support
	Manufactured homes represent an unfulfilled opportunity • What is cost-effective? • Reality check on programs to assure they make a difference • Intention versus investment. Assure that programs provide real savings, not simply being run to meet a social need.
	Risk in that equipment and investments will not be cared for or maintained properly
	Ductless heat pumps can be an effective measure
	Base load programs
	Scarcity of capital
	Cost-effectiveness of low-income needs to be altered
	Renters frequently lack the interest or ability to learn how to operate and maintain new equipment

Low Income	Multi-family low income: • Owner contribution reduces risk • Need to persuade owner to engage - can be a hard sell because property is a passive investment. • Incentives to low income property owner to reduce cost of improvements • Long-term investments can increase property value and lower operating costs, but can be a hard sell due to lack of immediate ROI. • Public support and programs can help owners make the decision to make long-term investment in their property.
	Portfolio management tool to track all utility costs – energy, trash, water. Being tested in CA and helps property owners finds savings from all utility bills, not just energy. Can help find easy wins for owners which can encourage longer-term investment.

Topic	Conversation Quote
Net Zero	Net zero = net annual energy consumption (Btu) is zero • Should also consider water • Might consider transportation (requires fuel switch) What does net-zero mean for gas heat homes? • Must offset consumption What would it take to get a home to net zero? • PV • Energy storage on-site or grid connected • Technology-enhanced behavior changes (e.g., Nest)
	Probably more difficult for existing stock: Adjusted scale for older homes
	Could try to achieve via community blocks/neighborhoods
	Need better modeling of building stock; Until utilities are willing to share data it will not be possible to model building energy use and advance
	How to keep customers engaged?
	Who should advance codes and how?

Topic	Conversation Quote
Policy	Cost-effectiveness – are we using the right tests? • Are we appropriately factoring in and accounting for non-energy benefits? • Should we be using UCT? Customer cost test? • Include other non-energy benefits – water (embedded energy)
	Should we be approaching Cost-effectiveness evaluation to run programs right up to the point where they are cost-effective?
	Ability to cover 100% of incremental cost – we don't ask the power producer to pay part of the cost, should we asking the customer to cost share our acquisition of the EE resource?
	Financial incentives for utilities to provide a stronger business case for EE • Allow utilities to capitalize DSM • Examine decoupling for utilities
	Consolidate EE data collection – collect all data in similar format for all utilities and provide regional database (similar to consolidation effort by NEEP in New England)
	Data security rules – what can you share? How?

Appendix 5b: Open Source Session - Participant Notes

Topic	Conversation Quote
Policy	Short rate periods (2 years for BPA) are a barrier to developing and implementing programs in the market. Look at opportunity for longer rate periods and budget cycles.
	Better relationship and communication between utilities and regulators.
	I-937 type legislation across NW states

Topic	Conversation Quote
Real Estate	Context: • Long-term investors buying up single-family foreclosures as rentals • No plan to return to home sale market • What is their incentive to do EE? Issues: • Split incentive issue • how to bring the investors in? • similar issue for residential/commercial multi-family, as property owners typically do not pay utility costs • Who to talk to? Utilities used to talking to owner customers – many rental property owners live outside of utility service territory/state • Business case is not with kWh savings – have to talk ROI
	For Real Estate – EE motivator has to be built into the initial sales
	• Make the business case: • Work with/through BOMA, property management firms • Encourage select measures that hedge against risk of investment – ventilation system, better windows • Demonstrate value of lower turnover of tenants
	Owner or property manager could provide EE upgrades as service to offer tenant
	Policy: utility side – true up kWh savings – stack effect of heat profile versus single family
	• Drive demand via tenants: • Create a "green renter" referral service to creates tenant demand • Utility could offer benchmarking tool/report card for rental homes/units
	Target owners/property managers AND tenants

Appendix 5b: Open Source Session - Participant Notes

Flags

Flag Text	Who should take action
Partnerships - Telco's, Retailers, Manufacturers	utility as trusted energy advisor
Fund various utilities to implement and report findings: BPA $$$	
Painless	
Pilot program	BPA
Pilot program a variety of devices (RTF) and use a standard audit method	
Continuing evolution of technology	Industry
Integration of current systems	NEEA
RTF and BPA to sign off on it being a cost-effective measure	RTF, BPA
Algorithms to inform customers of common - an uncommon problem - based on their energy use	utilities, all other vendor channels, TV, Telecom, Security, Info System, Creators
Automated - no programming	
Deliver value ($)	
No user action needed	
Promote the best resulting methods with Rebates	
Develop technology to integrate and analyze data on all systems in the home	third party/vendor
MF owner cost/benefit: barriers to participation, value proposition (portfolio management)	utilities (provide as web service)
Provide energy education to elementary schools (esp. for low-income)	BPA/utility
Education regional efforts need to take place to change consumer practices	
Get rid of junk manufactured homes	utility partnership with BPA
FREE the utility data	Utilities
Utility data systems (paper, IT) need to be brought up to date: usable, sortable, accessible	utilities
Universal and secure access to utility and customer data	utilities, consumers and policy makers
Convert legacy utility CIS (customer information systems) and rate design	utilities, regulators, legislators
Give customers their utility data	utilities, regulators, legislators
Utility rate design to encourage net zero	Commissioners, regulators, legislators, utilities
Recognize the need to move towards net zero	individuals working alone or in partnership with other concerned individuals
Influence buildings	NEEA and code requirements
Code maps for the next three cycles leading to net zero homes	NEEA and state code officials
Getting the public to embrace and support the need (for net-zero homes/buildings)	Regional collaboration - utilities, trade allies, regional entities, state

Appendix 5b: Open Source Session - Participant Notes

Flag Text	Who should take action
	and local government
Case studies (data and costs) from early adopters	
come to terms with non-energy benefits	Customers
Mandatory state collaboration to align program offerings?	Government
run all programs up to a TRC of 1 (not less)	program and portfolio planners and regulators
re-evaluate CE: are we using the right tests? Is there another approach?	
less war, more energy policy, energy, efficiency, renewables	Congress, US DOE
universal political belief system	Everyone
pragmatic policy	political will
Non-reactive policy	regulators and votes
Increased access to high resolution end-use energy data	utilities and third party technology companies
Include EE as a visible and measurable metric available to renters	BPA, NEEA, local/state/national governments
Remove split incentive	RTF, BPA, Utilities: treat same as low income revise kWh savings
Clear structured offer to drive both owner and tenant to demand/want high EE in home/building. Free rating and preferred financing for needed improvements	Utilities: assessments; BPA: financing for eligible improvements
Holistic view of energy efficiency investments - quantification of non-energy benefits (tools)	NEEA, utilities, consultants
Regional cooperation	BPA, NEEA, ETO utility

BPA Market Opportunities: Efficiency Connections 2013

Utility Facilitated Brainstorming (May 13, 2013)

+

Open Source Session (May 14, 2013)

May 13, 2013

FACILITATED BRAINSTORMING SESSION

WORLD CAFÉ

World Café Discussion Questions

1. If you could be Queen or King of Energy Efficiency for a day, how would you use your powers to increase the energy efficiency of your Kingdom?
2. How might you expand these ideas to yield even greater energy efficiency in your kingdom? How you would you build upon each idea?
3. For each of the ideas, identify the top two barriers that need to be addressed. What creative strategies could be employed to overcome those barriers?

World Café Themes

Single Family Home Sales and Multifamily Ownership

- Add home performance into home sales
- Landlord/tenant relationship

Financial Levers

- EE funding for public agencies
- Redesign rates

World Café Themes (continued)

Customer Engagement

- How to get people to care?
- Making a smarter consumer
- Customer awareness

Policy and Government

- Cost Effectiveness as a barrier
- Mandating/Enforcing Codes
- More government involvement

DESTINATION POSTCARD

Destination Postcard Themes

Data and Connectivity

- Distributed generation, wires carry only data
- Meaningful EE: get information *from* systems
- Connectivity from residence to smart phone
- Database refinement for customer dashboard, energy score, etc.

Customer Relationships

- Happy customers through EE = customers saving money
- Meter based financing and real time data for customers

Policy and Processes

- More incentive, local control, trusting utilities
- Minimized paperwork and reporting – Trust!

Destination Postcard Themes (continued)

Technical Measures

- Every home has Heat Pump & Heat Pump Water Heater
- Complete transition to LEDs – “Brighter ideas, new world”
- Renewable energy storage
- Smart buildings: controls, thermostat to monitor and control peak loads
- Electric vehicles
- Water conservation in agriculture

Approaches

- Tie energy to environmental impact
- Bringing the best EE practices from around the world
- Simplify and act!

May 14, 2013

OPEN SOURCE SESSION

Open Source Discussion Topics

1. Reaching real estate investors and tenants
2. Policy Changes
3. Home energy monitoring systems – behavior and education
4. Path to net zero
5. Low income

Open Source Discussion Themes

Reaching Real Estate Investors and Tenants

- Investor motivation: ROI, property value and tenant retention
- Effective timing of intervention
- Drive EE through tenant demand
- Market-based EE metrics for property valuation

Policy Changes

- Examine cost effectiveness
- Cover 100% of incremental cost
- Financial incentives for utilities (capitalize on DSM, decoupling)
- Code barriers, tax benefits, expedited building permits
- Consolidation and alignment
- Longer rate periods & budget cycles

Open Source Discussion Themes (continued)

Home Energy Monitoring

- Low cost data-logging equipment
- Behavior change through information (remote equipment control + customer relationship building)
- Centralized data collection/analysis

Path to Net Zero

- Consider water and transportation as well as energy
- Timeframe: 2020 for CA
- Adjust scale for existing buildings
- Utilities sharing data in order to model building energy use

Low Income

- Address or improve: education, disincentives, manufactured homes, base load programs, financing
- Focus on both adults and kids
- Adjust cost-effectiveness for low income programs
- Effective work with multi-family

Appendix 7: Survey

The survey was used as the final activity to allow utilities to reflect and provide some prioritization of the suggestions and recommendations from the other activities. The team designed the survey to determine which BPA support or offerings participants found most useful and to solicit input on new program ideas. Survey questions were broken into three categories: Overview of BPA Support, Market Actors, and Delivery Models and Target Audiences.

In reviewing the results of the survey, the project team conducted additional sub-analyses for designated BPA customer sub-groups to discern if there were any major differences what was important to them. These sub-groups were:

-BPA customers designated as small rural-residential (SRR). (Utilities not designated SRRs are referred to as Non-SRR.)

-BPA customers in Washington subject to Initiative-937 utilities (I-937 Utility). (Utilities not subject to I-937 are referred to as Non-I-937.)

-BPA customers East or West of the Cascades.

It should be noted that these sub-groups are mutually exclusive only in the comparisons listed within the same bullet and not across all possible delineations. For example, while an individual utility could not be both and SRR and Non-SRR, it could be both a Non-SRR and an I-937 utility.

Weighting

Three different kinds of weighting were used, depending on the format of responses. For questions that allowed participants to select as many answers as they liked, all staff from a single organization were limited to one of each response. For example, if two staff members from a utility picked the same answer to this type of question, the net weight of that response was 1.

For questions where respondents were asked to select their top three answers in a category, utilities were limited to a total net weight of 3, with the points divided among all of the respective organization's responses. For instance, if a utility staff member selected four choices for this question type, each was given a weight of 0.75. This type of weighting was used in part because the survey instrument did not limit the number of selected answers to the maximum specified by the question. Additionally, if respondents from one utility gave differing answers, this approach enabled the team to include them all without giving that utility's responses more influence on the results.

Appendix 7: Survey

The final type of weighting was applied to questions where participants were asked to pick only one answer, primarily questions with responses on the "strongly agree" to "strongly disagree" scale. For questions of this nature, each response was weighted by 1 divided by the total number of staff that answered the question from a particular utility. For example, if three staff members from one utility answered one of these questions, each response from that utility got a weight of 0.333.

Note: For open response questions, responses are listed as they were entered on the survey without editing.

Overview of BPA Support

The first questions posed to BPA's customers were related to the types of support BPA offers. Customers were asked to rate the responses to these three types of support from Very Important to Unimportant. Customers were also given the choice of Don't Know.

Please rate the importance of BPA sponsoring trade-ally networks (e.g., NW TAN) to meeting your future energy efficiency goals.

	All n = 52	SRR n = 19	Non-SRR n = 33	I-937 n = 14	Non-I-937 n = 38
Very Important	48%	47%	48%	43%	50%
Somewhat Important	40%	32%	45%	43%	39%
Of Little Importance	8%	11%	6%	14%	5%
Unimportant	2%	5%	0%	0%	3%
Don't Know	2%	5%	0%	0%	3%

Please rate the importance of BPA sponsoring trade-ally networks (e.g., NW TAN) to meeting your future energy efficiency goals.

	All n = 52	SRR n = 19	Non-SRR n = 33	I-937 n = 14	Non-I-937 n = 38
Very Important	48%	47%	48%	43%	50%
Somewhat Important	40%	32%	45%	43%	39%
Of Little Importance	8%	11%	6%	14%	5%
Unimportant	2%	5%	0%	0%	3%
Don't Know	2%	5%	0%	0%	3%

Appendix 7: Survey

Please rate the importance of BPA technical engineering support for commercial custom projects to your utility.

	All n = 52	SRR n = 19	Non-SRR n = 33	I-937 n = 14	Non-I-937 n = 38
Very Important	69%	79%	64%	43%	79%
Somewhat Important	19%	16%	21%	29%	16%
Of Little Importance	4%	0%	6%	14%	0%
Unimportant	2%	5%	0%	0%	3%
Don't Know	6%	0%	9%	14%	3%

Of the three types of support that survey participants were asked to rate, BPA's technical and engineering support for commercial and custom projects was rated highest. This result was consistent across all sub-groups. Survey participants were not asked to expand on what drove their individual ratings.

Appendix 7: Survey

Market Actors

The next group of questions posed to survey participants was related to which market actors survey participants saw as most important to meeting their future energy efficiency goals. Survey respondents were asked to pick the top three market actors; first for residential and then for commercial.

Analysis of the results from this section was complicated by several factors. First, while the question specifically asked for three market actors, the survey instrument did not prevent participants from picking more or less than three. Additionally, there were multiple respondents from the same utility in several cases.

For residential market actors, two respondents choose only 1 market actor, two respondents choose 2 market actors, and one respondent choose 4 market actors. Additionally, three utilities had 2 participants provide answers for this question while one utility had 3.

For commercial market actors, five respondents choose only 1 market actor, two respondents choose 2 market actors, and one respondent choose 4 market actors. Additionally, three utilities had 2 participants provide answers for this question while one utility had 3.

Due to these complications, responses shown in the following tables are by total responses, not total respondents. Each market actor could receive a theoretical maximum of the total number of respondents.

For the RESIDENTIAL sector, please identify the top 3 market actors who may be key to meeting your future energy efficiency goals.
Top five responses by total presented

	Total n = 29	SRR n = 18	Non-SRR n = 31	I-937 n = 12	Non-I-937 n = 37
Residential HVAC installation contractors	88%	94%	84%	92%	86%
Weatherization contractors	65%	44%	77%	58%	65%
Big Box Stores (e.g., Home Depot, Best Buy, Costco)	22%	11%	29%	58%	11%
Mom and Pop Retail Businesses	22%	28%	19%	0%	30%
Residential Builders	16%	28%	10%	8%	19%

For residential market actors, the vast majority of respondents choose working with residential HVAC contractors, with 88% of respondents who answered the question selecting them as one of their top three market actors for future programs. When asked what BPA could do to assist with this market actor, the majority of participants provided comments related to training and educations, especially related to ductless heat pumps and the current Performance Tested Comfort System (PTCS) program. It should be noted, however, that respondents offered a very wide range of suggestions including

providing more training support, helping create more effective marketing materials (like brochures), and not being involved at the market actor level at all (i.e. stay farther upstream). For verbatim comments from participants, please see Appendix 7.

The next-highest ranked market actor was weatherization contractors, with 65% of respondents choosing them as a top market actor to meet their future goals. When asked what BPA could do to assist with this market actor, the vast majority of participants wanted BPA to provide or sponsor some form of regional training initiative. Some specific examples of the type of training the respondents wanted to see was regional training on the new RTF, weatherization specifications, and general technical training.

There were also some key differences when the sub-group analysis was performed. Most notably, 58% of I-937 utilities saw big box retail stores as very important to their future energy efficiency goals which placed it second (tied with weatherization contractors) for I-937 utilities. This was very different from Non I-937 utilities, of which 30% choose mom and pop retail stores as an important market actor for future programs (ranking third). To add to this difference, 0% of respondents from I-937 utilities choose mom and pop retail stores as an important market actor.

While the survey instrument did not provide a direct way to explain these differences, the questions asking participants what kind of support they would like BPA to provide for these market actors do allow for some additional insights.

One insight was that while there was a difference what retailer I-937 and Non I-937 utilities thought were important, the type of support these two sub-groups would like BPA to provide for each was very similar. Most of the requested assistance for these two market actors dealt with marketing and informational materials for both the market actor and end-use customer. Additionally, specific programs weren't mentioned by either sub-group save one respondent; an I-937 utility member that stated "Coordinate with Big Box stores to provide in-store rebates for applicable BPA incentives".

For the COMMERCIAL sector, Please identify the top 3 market actors who may be key to meeting your future energy efficiency goals.
Top five responses by total presented

	Total n = 49	SRR n = 18	Non-SRR n = 31	I-937 n = 13	Non-I-937 n = 36
Lighting Contractors	92%	89%	94%	92%	92%
Mechanical Contractors	33%	44%	26%	38%	31%
Energy Service Companies (ESCOs)	24%	39%	16%	23%	25%
Commercial HVAC Distributors	22%	17%	26%	15%	25%
Commercial Electricians	22%	17%	26%	31%	19%

Appendix 7: Survey

For commercial market actors, survey respondents most highly valued working with commercial lighting contractors, with 92% of respondents identifying them as a key market actor. This was the case across all sub-groups by at least 2:1 over the next closest market actor. When asked what BPA could do to assist with this market actor, about half of the responses fell into three main categories: continued support of training efforts through the NWTAN, simplification and training for the lighting calculator, and marketing/research for new lighting technologies.

The second-highest ranked market actor was mechanical contractors, who 33% of respondents chose as a top market actor to meet their future goals. Again as with other market actors, respondents identified BPA assisted training and marketing as the most likely avenue for BPA involvement.

There were also some differences among the sub-groups; however those tended to be much less pronounced than on the residential side. Both the Non-SRR/SRR and Non-I-937/I-937 comparisons showed a slight difference in the third-most important market actor. The aggregate results from the SRR utilities rated ESCOs as the third most important market actor, whereas Non-SSRs ranked commercial HVAC distributors in that slot. I-937 utilities identified commercial electricians as the third most selected important actor, while Non-I-937 utilities rated ESCOs third.

Again as with residential market actors, the survey instrument did not provide a direct avenue to determine the reason for these differences. Unlike residential, responses were too varied to draw any conclusive additional insights. For verbatim responses, please see Appendix 7.

Delivery Models

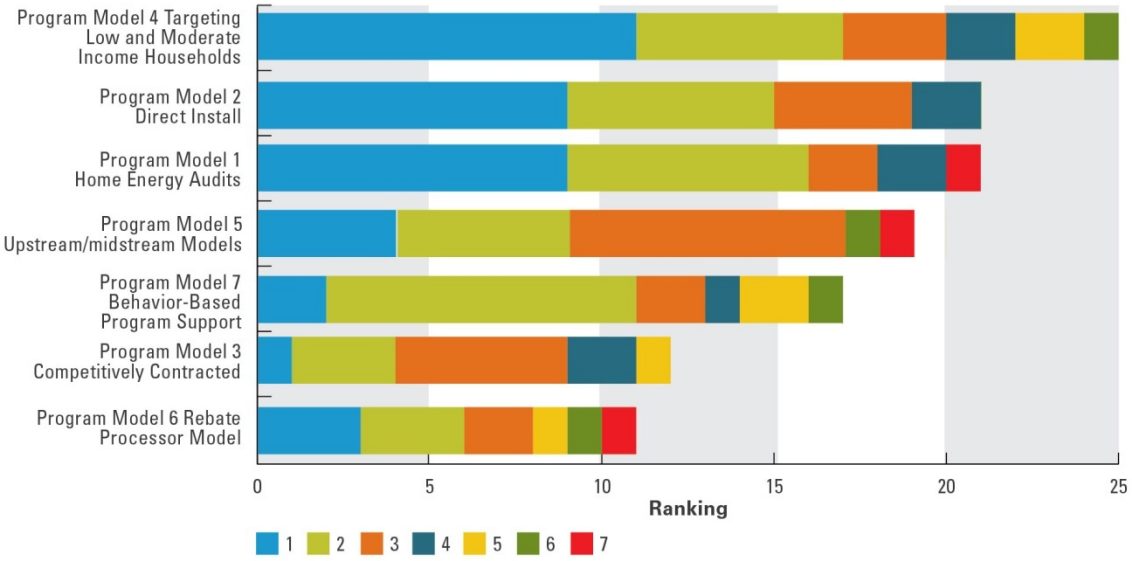
At the end of the residential and commercial sections of the survey, respondents were asked to rank the delivery models that had been covered with a rank of 1 being the most important. Respondents could rank as many or as few delivery models as they choose. A total of 7 delivery models were discussed in the residential section and 6 in the commercial section.

Due to the large variation in number of programs ranked (some respondents ranked all 7 while some only listed their highest ranked program), the team weighted the responses by assigning the highest ranked program a point value equal to the total number of programs. For example, if a respondent ranked a particular program with a 1, this would receive a point value of 7 for residential and 6 for commercial. Each subsequent ranking was then assigned a point value of (# of programs – ranking +1). These point values were then summed and the totals ranked in descending order to determine the final program rank.

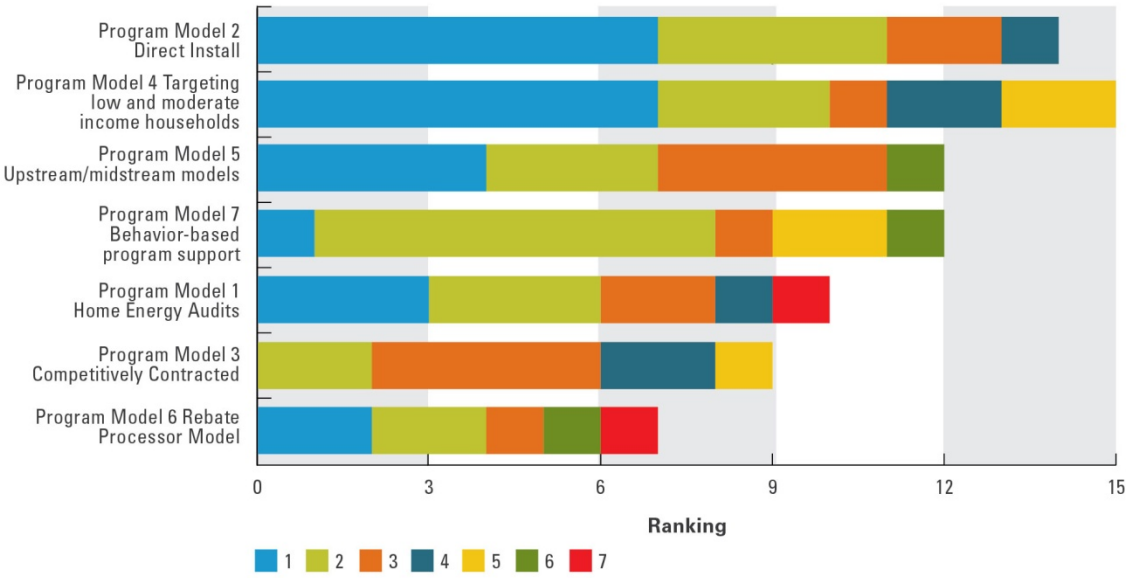
For the residential sector, 7 delivery models were offered to participants for ranking. These included: Program Model 1 Home Energy Audits, Program Model 2 Direct Install, Program Model 3 Competitively Contracted, Program Model 4 Targeting low and moderate income households, Program Model 5 Upstream/midstream models, Program Model 6 Rebate Processor Model, and Program Model 7 Behavior-based program support.

Appendix 7: Survey

Program Delivery Model Rank – Residential Sector – All Respondents [Survey Question 19]

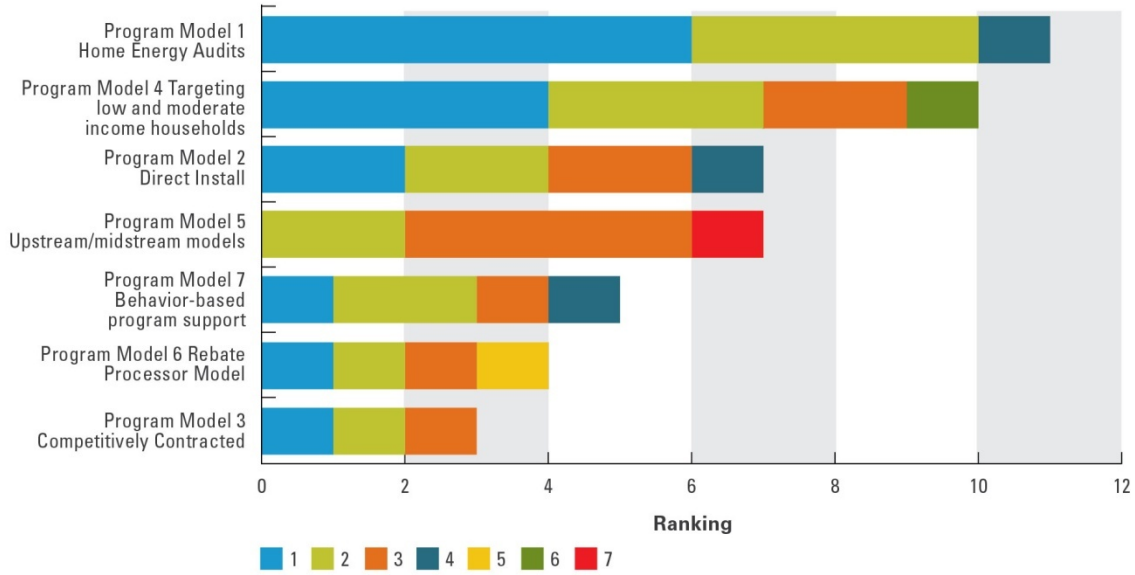


Program Delivery Model Rank – Residential Sector – Non-SRR Respondents [Survey Question 19]

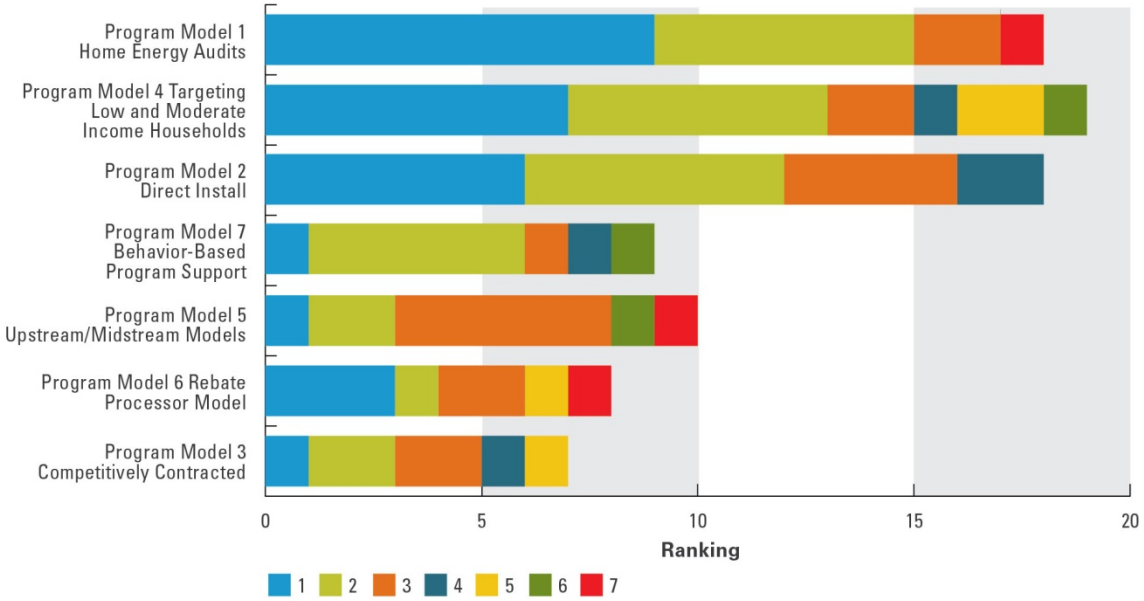


Appendix 7: Survey

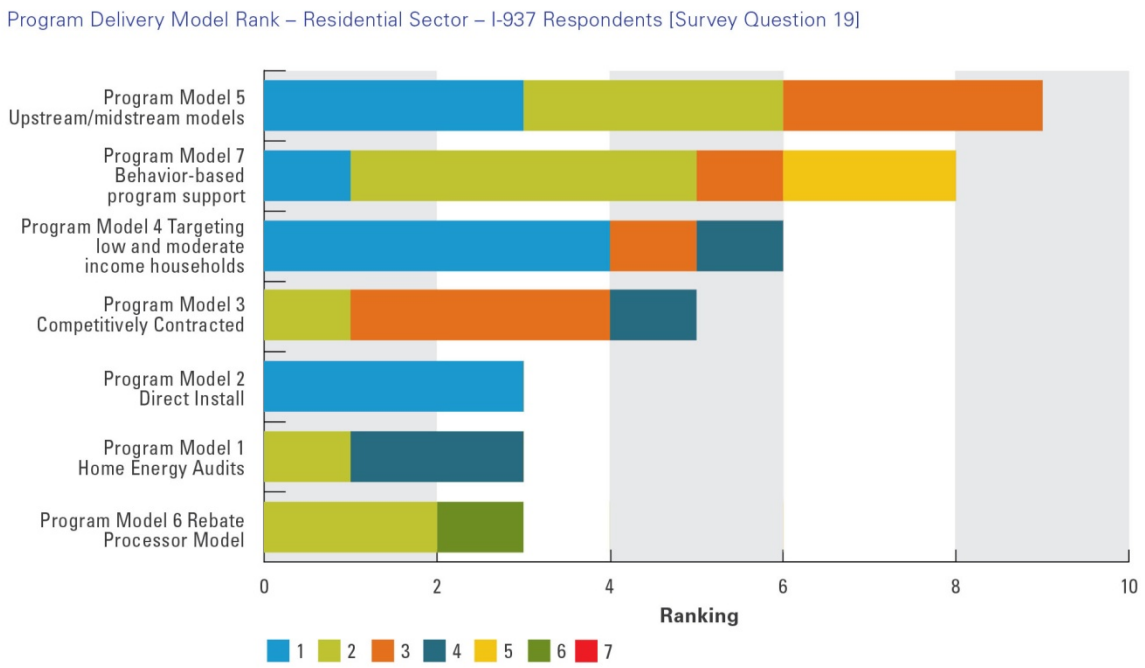
Program Delivery Model Rank – Residential Sector – SRR Respondents [Survey Question 19]



Program Delivery Model Rank – Residential Sector – Non-I-937 All Respondents [Survey Question 19]



Appendix 7: Survey



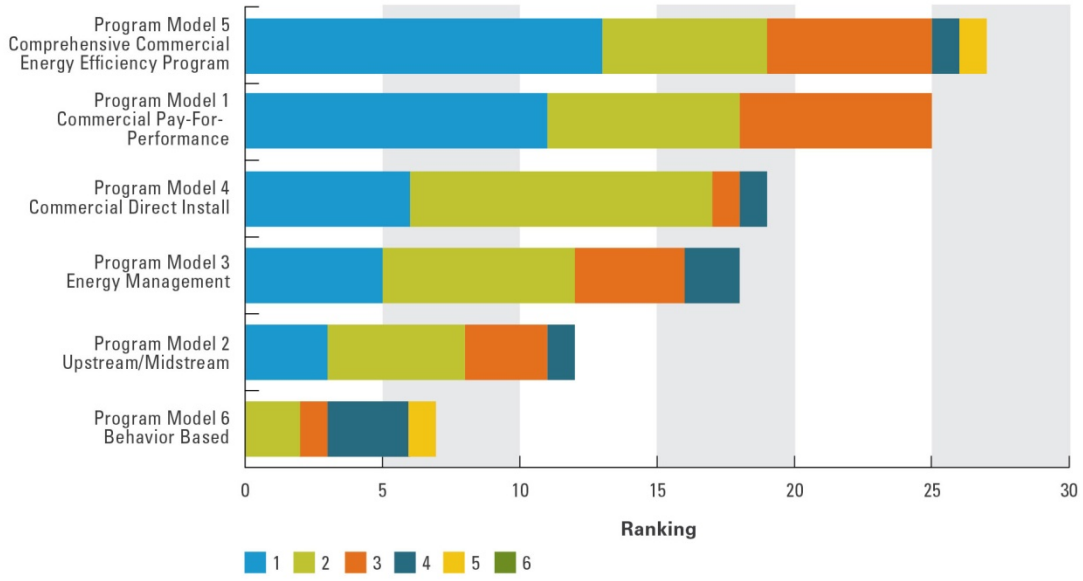
Overall, programs that target low and moderate income clients scored the highest of any of the 7 program models. On the sub-analysis, however, it is interesting to note that programs targeting low and moderate income clients were never the top ranked program model but was always highly ranked (either 2 or 3). Another consistency across all sub-group analysis was the relative low rating of a rebate processor model and a competitively contracted model. While the exact ranking of these two program models varied somewhat among sub-groups, neither was rated higher than fourth overall by any sub-group.

The sub-group analysis also revealed a high level of variability in the top ranked program. I-937 utilities ranked up/midstream programs as the highest priority over the next 2 to 5 years while Non-I-937 utilities ranked energy audit programs the highest. Non-SRR utilities ranked direct install programs as the highest priority compared to SRR utilities which ranked energy audit programs the highest.

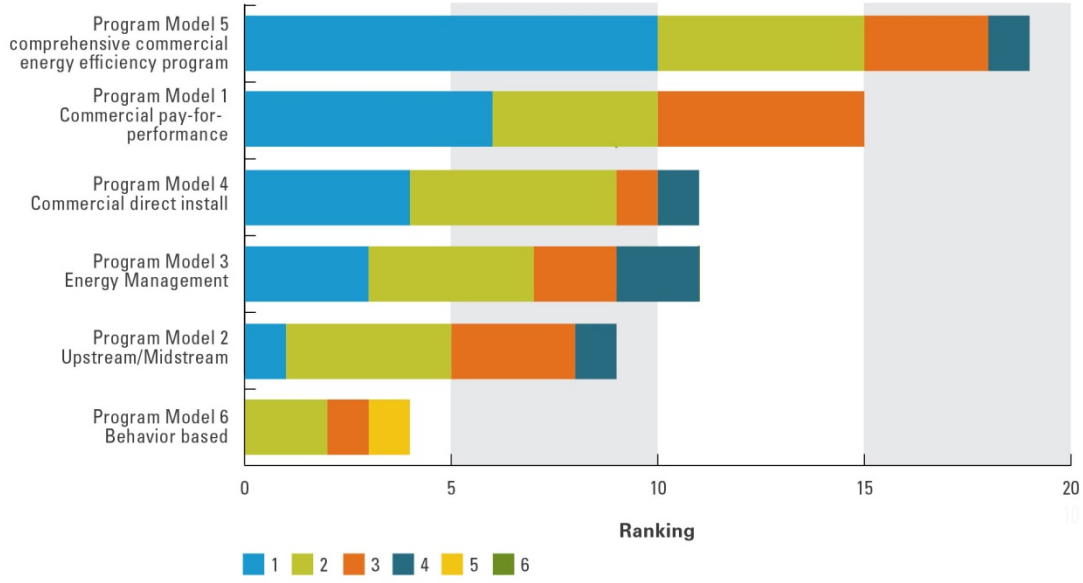
For the commercial sector, 6 delivery models were offered to participants for ranking. These included: Program Model 1 Commercial Pay-for-Performance, Program Model 2 Upstream/Midstream, Program Model 3 Energy Management, Program Model 4 Commercial Direct Install, Program Model 5 Comprehensive Commercial Energy Efficiency Program, and Program Model 6 Behavior Based.

Appendix 7: Survey

Program Delivery Model Rank – Commercial Sector – All Respondents [Survey Question 29]

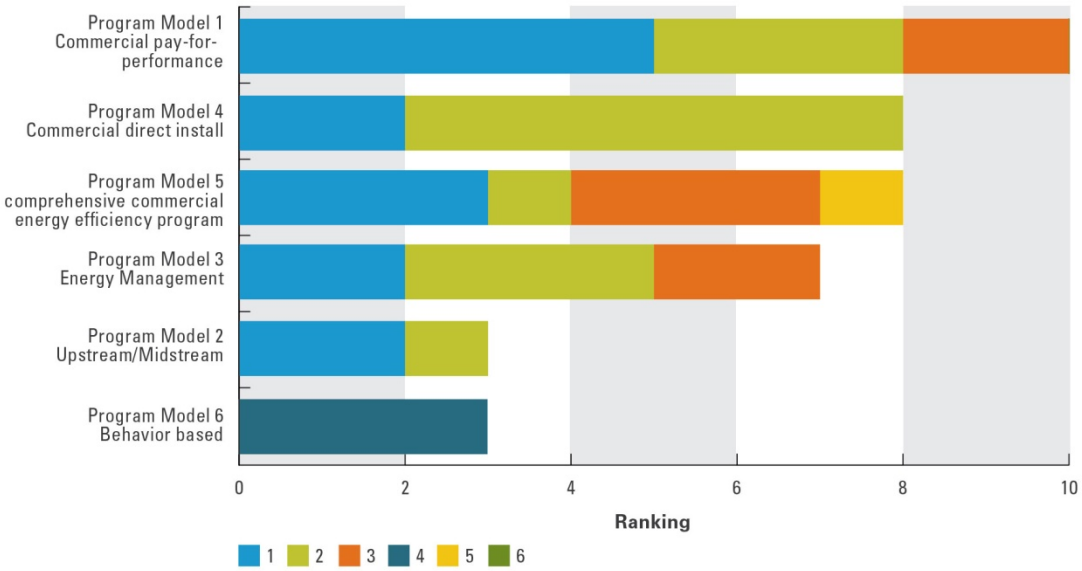


Program Delivery Model Rank – Commercial Sector – Non-SRR Respondents [Survey Question 29]

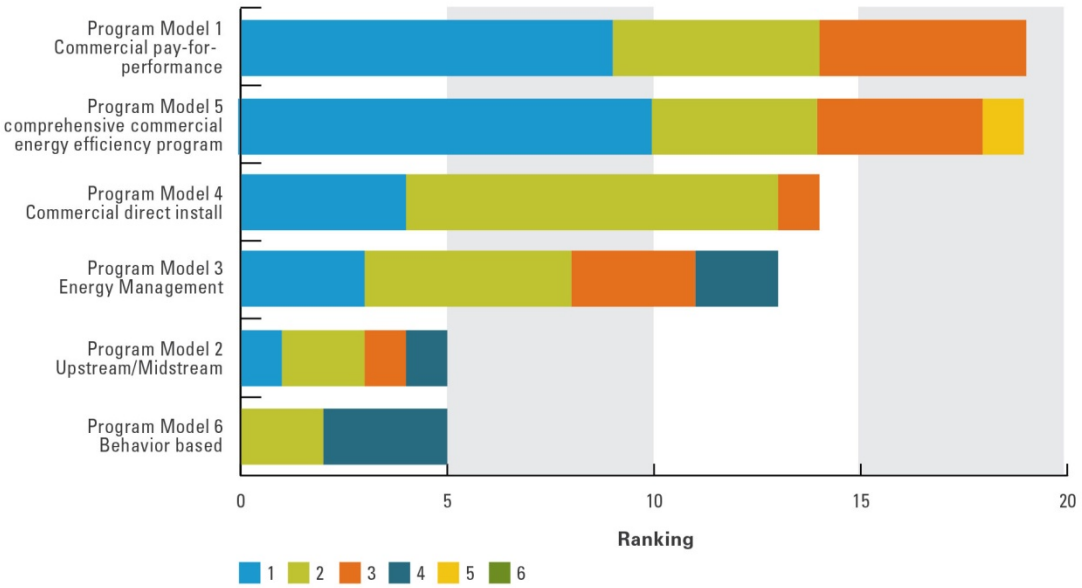


Appendix 7: Survey

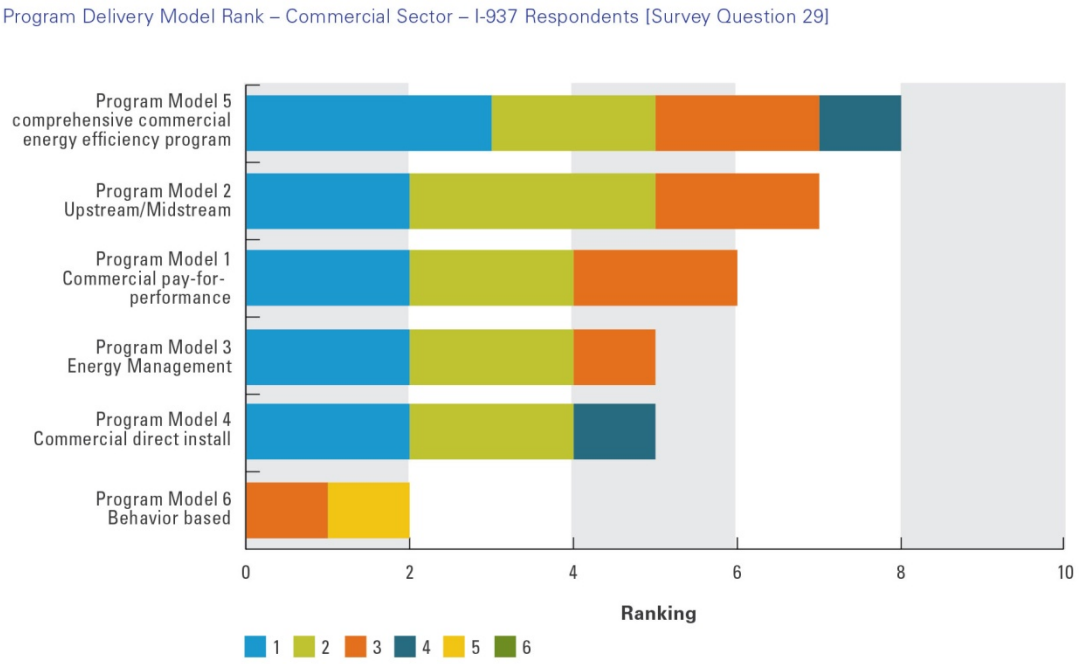
Program Delivery Model Rank – Commercial Sector – SRR Respondents [Survey Question 29]



Program Delivery Model Rank – Commercial Sector – Non-I-937 All Respondents [Survey Question 29]



Appendix 7: Survey



Overall, comprehensive commercial programs scored the highest of any of the 6 program models. The sub-group analysis also showed some variability in rankings, but these tended to be far less dramatic than their commercial counterparts. For instance, comprehensive commercial or pay-for-performance were the top ranked program in all sub-groups and these were also ranked 1 and 2 respectively in the overall analysis. Likewise, behavior based programs were consistently rated last in all sub-groups and the overall ranking.

Some key differences still did arise in the sub-group analysis; mainly, in the I-937/Non-I-937 comparison. I-937 utilities ranked up/midstream as the second most important priority in the next 2 to 5 years. This is vastly different from the Non-I-937 utilities which rated up/midstream programs as the fifth most important program model. Additionally, direct install programs rated very low with I-937, coming in as the firth most important. This is very different than both the overall and Non-I-937 utilities, where direct install ranked third overall.

Appendix 7: Survey

Participants

Participant	Utility
David Christie	McMinnville Water & Light
Thomas Elzinga	Consumers Power
Letticia Neal	City of Milton
Beth Robinweiler	Snohomish PUD
carita lively	blachly-lane
Eric Miller	Benton REA
Renee Porter	Mason County PUD No. 3
Jacob Henry	Grays Harbor PUD
Rod Fadden	City of Sumas
Van Ashton	Idaho Falls Power
Tyler Thayn	Salmon River Electric
Jim Dolan	Pacific County PUD
Kerry Cameron	Tacoma Public Utilities
Doug Purcell	Idaho Falls Power
Shoshanah Wright	Clallam County PUD
Colin Mercer	City of McCleary
Ashley Stahl	Centralia City Light
Justin Holzgrove	Mason County PUD 3
Larry Blaufus	Clark Public Utilities
John Walkowiak	Tacoma Power
Lyle Neiss	Mission Valley Power
Norm Goodbla	Lewis County PUD No. 1
Nate marvin	City of Weiser,idaho
Dan Liska	Snohomish County PUD
Derise Warner	Lakeview Light & Power
Renae Ooley	Forest Grove
DAWN SENGER	CITY OF RICHLAND
Jeremy Stewart	Tacoma Power
Joey Currie	City of Port Angeles
Doug Case	Columbia REA
Dan Rogers	Missoula Electric Cooperative
Don Newton	Flathead Electric Cooperative
Jim Maunder	Ravalli Electric Co-op
Jim Bellamy	Peninsula Light Co.
Mark Percy	Tacoma Power
Steve Schauer	Oregon Trail Electric Co-op
Steve Holmes	Northern Wasco Co PUD
Cheri Testa	City of Blaine
Rita Holman	Idaho County Light & Power Coop

Appendix 7: Survey

Terri Richey	Modern Electric Water Company
Barbara Andersen	South Side Electric, Inc.
Wade Carey	Central Lincoln PUD
Brian Fawcett	Clatskanie PUD
Ross Holter	Flathead Electric Cooperative
DEE ANNE STOCKTON	CANBY UTILITY
Don Crawford	Kootenai Electric Cooperative
Jeff Lewis	Salem Electric
Debra Peters	PUD #1 of Okanogan County
tom schumacher	benton pud
Tim Engleson	Lincoln Electric Co-op
Tim Lammers	Columbia River PUD
Linda Esparza	Franklin PUD

Note: Participant names and organizations are listed as they were entered on the survey.

Appendix 7: Survey

Results

Question 4: Sector

Total Respondents:	51
Total Skipped:	1

Unweighted	Total n = 51	SRR n = 19	Non-SRR n = 32
Residential	14.00	4.00	10.00
All	35.00	14.00	21.00
Commercial	13.00	4.00	9.00
Industrial	4.00	0.00	4.00
Other: Irrigation	1.00	1.00	0.00
Other: Small Ag	1.00	1.00	0.00
Other: City/Town	0.00	0.00	0.00

Unweighted	East of Cascades n = 21	West of Cascades n = 30	I-937 Utility n = 14	Non I-937 Utility n = 37
Residential	6.00	8.00	4.00	10.00
All	14.00	21.00	8.00	27.00
Commercial	7.00	6.00	4.00	9.00
Industrial	1.00	3.00	2.00	2.00
Other: Irrigation	1.00	0.00	0.00	1.00
Other: Small Ag	1.00	0.00	0.00	1.00
Other: City/Town	0.00	0.00	0.00	0.00

Question 5: Please rate the importance of BPA-sponsored third party programs to meeting your utility's future residential and commercial energy efficiency goals (current examples include Energy Smart Grocer, Simple Steps, Energy Smart Industrial).

Total Respondents:	52
Total Skipped:	0

Unweighted	Total n = 52	SRR n = 19	Non-SRR n = 33
Very Important	25.00	9.00	16.00
Somewhat Important	21.00	6.00	15.00
Of Little Importance	4.00	2.00	2.00
Don't Know	1.00	1.00	0.00
Unimportant	1.00	1.00	0.00

Appendix 7: Survey

Weighted	All n = 46	SRR n = 19	Non-SRR n = 27
Very Important	23.50	9.00	14.50
Somewhat Important	17.00	6.00	11.00
Of Little Importance	3.50	2.00	1.50
Don't Know	1.00	1.00	0.00
Unimportant	1.00	1.00	0.00

Weighted	West of Cascades n = 26	East of Cascades n = 20	I-937 Utility n = 10	Non I-937 Utility n = 36
Very Important	14.50	9.00	5.50	18.00
Somewhat Important	10.00	7.00	3.00	14.00
Of Little Importance	1.50	2.00	1.50	2.00
Don't Know	0.00	1.00	0.00	1.00
Unimportant	0.00	1.00	0.00	1.00

Question 6: Please rate the importance of BPA sponsoring trade-ally networks (e.g., NW TAN) to meeting your future energy efficiency goals.

Total Respondents:	52
Total Skipped:	0

Unweighted	Total n = 52	SRR n =19	Non-SRR n = 33
Very Important	8.00	4.00	4.00
Somewhat Important	32.00	9.00	23.00
Of Little Importance	5.00	3.00	2.00
Don't Know	5.00	2.00	3.00
Unimportant	2.00	1.00	1.00

Weighted	Total n = 46	SRR n = 19	Non-SRR n = 27
Very Important	8.00	4.00	4.00
Somewhat Important	27.00	9.00	18.00
Of Little Importance	4.00	3.00	1.00
Don't Know	5.00	2.00	3.00
Unimportant	2.00	1.00	1.00

Appendix 7: Survey

Weighted	West of Cascades n = 26	East of Cascades n = 20	I-937 Utility n = 10	Non I-937 Utility n = 36
Very Important	3.00	5.00	2.00	6.00
Somewhat Important	15.50	11.50	6.50	20.50
Of Little Importance	2.50	1.50	0.50	3.50
Don't Know	5.00	0.00	1.00	4.00
Unimportant	0.00	2.00	0.00	2.00

Question 7: Please rate the importance of BPA technical engineering support for commercial custom projects to your utility.

Total Respondents:	52
Total Skipped:	0

Unweighted	Total n = 52	SRR n =19	Non-SRR n = 33
Very Important	36.00	15.00	21.00
Somewhat Important	10.00	3.00	7.00
Of Little Importance	2.00	0.00	2.00
Don't Know	3.00	0.00	3.00
Unimportant	1.00	1.00	0.00

Weighted	Total n = 46	SRR n = 19	Non-SRR n = 27
Very Important	34.00	15.00	19.00
Somewhat Important	8.75	3.00	5.75
Of Little Importance	0.75	0.00	0.75
Don't Know	1.50	0.00	1.50
Unimportant	1.00	1.00	0.00

Weighted	West of Cascades n = 26	East of Cascades n = 20	I-937 Utility n = 10	Non I-937 Utility n = 36
Very Important	18.00	16.00	6.00	28.00
Somewhat Important	5.75	3.00	2.75	6.00
Of Little Importance	0.75	0.00	0.75	0.00
Don't Know	1.50	0.00	0.50	1.00
Unimportant	0.00	1.00	0.00	1.00

Appendix 7: Survey

Question 8: For the RESIDENTIAL sector, please identify the top 3 market actors who may be key to meeting your future energy efficiency goals.

Total Respondents:	49
Total Skipped:	3

Unweighted	Total n = 49	SRR n = 18	Non-SRR n = 31
Residential HVAC installation contractors	43.00	17.00	26.00
Weatherization contractors	32.00	8.00	24.00
Big Box Stores (e.g., Home Depot, Best Buy, Costco)	11.00	2.00	9.00
Mom and Pop Retail Businesses	11.00	5.00	6.00
Residential Builders	8.00	5.00	3.00
Residential Electricians	6.00	4.00	2.00
Low income weatherization agencies	5.00	2.00	3.00
State Energy Offices	4.00	2.00	2.00
Rental Property owners/managers	4.00	4.00	0.00
Residential HVAC distributors	4.00	1.00	3.00
Manufacturers	4.00	0.00	4.00
Community organizations	2.00	0.00	2.00
Low income landlords (including Housing Authorities)	2.00	1.00	1.00
Residential Plumbers	2.00	1.00	1.00
Other: Trade Allies (HVAC, weatherization and builders)	1.00	0.00	1.00
Other: Customers - word of mouth marketing	1.00	1.00	0.00
Real Estate industry	1.00	0.00	1.00
Other: window and duct sealing contractors, increase in federal and state codes, NEEA	1.00	0.00	1.00

Appendix 7: Survey

Weighted	Total n = 44	SRR n = 18	Non-SRR n = 26
Residential HVAC installation contractors	40.00	17.00	23.00
Weatherization contractors	30.00	8.00	22.00
Mom and Pop Retail Businesses	11.00	5.00	6.00
Big Box Stores (e.g., Home Depot, Best Buy, Costco)	10.00	2.00	8.00
Residential Builders	8.00	5.00	3.00
Residential Electricians	6.00	4.00	2.00
Low income weatherization agencies	5.00	2.00	3.00
State Energy Offices	4.00	2.00	2.00
Rental Property owners/managers	4.00	4.00	0.00
Manufacturers	4.00	0.00	4.00
Residential HVAC distributors	4.00	1.00	3.00
Community organizations	2.00	0.00	2.00
Low income landlords (including Housing Authorities)	2.00	1.00	1.00
Residential Plumbers	2.00	1.00	1.00
Other: Trade Allies (HVAC, weatherization and builders)	1.00	0.00	1.00
Other: Customers - word of mouth marketing	1.00	1.00	0.00
Real Estate industry	1.00	0.00	1.00
Other: window and duct sealing contractors, increase in federal and state codes, NEEA	1.00	0.00	1.00

Appendix 7: Survey

Weighted	West of Cascades n = 25	East of Cascades n = 19	I-937 Utility n = 9	Non I-937 Utility n = 35
Residential HVAC installation contractors	22.00	18.00	8.00	32.00
Weatherization contractors	20.00	10.00	7.00	23.00
Mom and Pop Retail Businesses	2.00	9.00	0.00	11.00
Big Box Stores (e.g., Home Depot, Best Buy, Costco)	7.00	3.00	6.00	4.00
Residential Builders	2.00	6.00	1.00	7.00
Residential Electricians	3.00	3.00	0.00	6.00
Low income weatherization agencies	3.00	2.00	0.00	5.00
State Energy Offices	3.00	1.00	0.00	4.00
Rental Property owners/managers	2.00	2.00	0.00	4.00
Manufacturers	2.00	2.00	2.00	2.00
Residential HVAC distributors	2.00	2.00	2.00	2.00
Community organizations	1.00	1.00	1.00	1.00
Low income landlords (including Housing Authorities)	1.00	1.00	1.00	1.00
Residential Plumbers	0.00	2.00	0.00	2.00
Other: Trade Allies (HVAC, weatherization and builders)	1.00	0.00	1.00	0.00
Other: Customers - word of mouth marketing	1.00	0.00	1.00	0.00
Real Estate industry	1.00	0.00	0.00	1.00
Other: window and duct sealing contractors, increase in federal and state codes, NEEA	0.00	1.00	1.00	0.00

Appendix 7: Survey

Question 8A: For the State Energy Office, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochures targeted to this market actor. Please be specific.

Total Respondents:	2
Total Skipped:	2

Non-SRR:

- Montana code is self enforced. Many homes are not built to code and then later come to the utility for help on high energy bills.
- it would be nice to have the tax credits in a simple to understand format. It would also be helpful it any tax credits would be stable and not change very quickly.

SRR

- None

Question 8B: For Residential HVAC installation contractors, list the activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochures targeted to this market actor. Please be as specific as possible.

Total Respondents:	29
Total Skipped:	14

Non-SRR

- Improve ductless heat pump program information for both contractors and homeowners.
- Notify utilities when PTCS QA inspections are scheduled in their territories and which customers are contacted.
- Regional training and marketing and oversight
- Provide contractors with local and/or webinar training on a) PTCS (certification) and b) BPA requirements for HVAC and weatherization measures.
- Educating Residential HVAC installers on the benefits and best practices of ductless heat pump and heat pump water heater installations.
- Providing the latest information and specifications in one location to keep contractors up to speed on latest technology, how to sell and install as well as advise on maintenance.
- One location for contractors to learn the various local utility incentive programs
- Basics of record keeping and documentation
- None. Stay farther upstream from the customer than the Trade Ally. Work with manufacturers/governments to further our EE goals.
- Low or no cost training

Appendix 7: Survey

- Marketing materials
- Form template that works with all utilities
- BPA to perform QA/QC. We the utility perform some in progress inspectins and inspect 100% of all installations upon completion. Adding QA/QC requirements to this is too costly both finacially and time wise.
- Continue research into developing heating system options. With DHP technology, what combinations work for different types of homes that can cost effectively heat the whole home (rather than just displacing heaters in the main area of the home).
- Case studies are a great way to sell the program benefits.
- Mini-split Ductless. Many folks in eastern Ore. are using portable electric heat instead of Oil or Propane. Rebates should be available through BPA to encourage them to switch. We would get them the most efficient electric offsetting portable electric and we'd get a market shift in Mini-splits as the dealers would be putting in many units. This should be available in commercial also. The norm here is big old oil boilers that don't heat the building properly so the employees plug in portable electric to supplement. Mini-splits are being considered to replace both the oil boilers and the portable electric.
- Training and information on quality control of instalations & Marketing. Fix PTCS requirements.
- Simplified Vendor Qualifications and installation standards
- Engaging more with contractors.
- it was nice having a third party both do trainings for the HVAC industry and to be a go between with for the utility and BPA.
- Training provided to HVAC installation contractors to meet program specifications.
- Marketing materials.
- Simplify HVAC programs as much as possible.
- We are loosing customer participation because the spec requirements are high including PTCS which has made the measures very expensive for customers, contractors are encourging customers not to participate in the program and will offer the customers a less efficient heat pump in order to save the customer money.
- Technical and programmatic training "All Things PTCS" (HP & duct sealing); discussion of collaborative marketing efforts.
- Our relationship our contractors seems to be meeting our needs at this time. We don't see a need for BPA marketing or other involvement at this time.

SRR

- Same type of thing as the duct sealing program would be ideal.
- Maybe the best thing would be regular occasional educational/training meetings (done on a regional basis) in conjunction with the appropriate utilities. The target should be the owner or manager and the effort would be to inform and iron out known or potential issues.

- Marketing materials that the contractors can use to educate consumers on different efficiency options (geothermal heat pumps, air based heat pumps, electric furnace, additional insulation). This should include approximate savings per measure charts or formulas as most people are weight their options to get the most energy savings per dollar spent.
- Target Brochures for the specific measure (such as DHP, HPWH etc…)
- Required training or certifications for specific measures to be implemented before start of new program.
- Ccontinue trainings for contractors.
- Make required websites accessable and user friendly to contractors.
- Keep conservation programs user friendly, simplify requirements.
- BPA should continue to provide all Q & A that they require for their residential HVAC programs at no cost to utilies.
- Marketing brochures on ductless heat pumps.
- Training for contractors
- Marketing material to engage contractors
- Information push to help contractors understand the programs, and goals
- BPA could help sponsor HVAC/PTCS trainings in our area. Provide a brochure listing benefits to installing their HVAC systems to BPA program specifications.
- Focus groups to explore the barriers and opportunities for successful program implementation; regional and local technical training; targeted marketing material development; co-op advertising materials and support;
- Contractors need to be kept updated on changes and specs for HVAC to meet BPA requirements
- Q&A Testing.
-

Question 8C: For residential HVAC distributors, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochures targeted to this market actor. Please be specific.

Total Respondents:	3
Total Skipped:	1

Non-SRR

- Training.
- Remove the distributor from the equation. Perform bulk purchase of manufacturers' units and wholesale them at cost to member utilities. Specifically for expensive items with implementation challenges and low local volumes (e.g. heat pumps).

SRR

- Training for contractors
- Marketing material to engage contractors
- Information push to help contractors understand the programs, and goals

Question 8D: For Big Box stores, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	7
Total Skipped:	4

Non-SRR

- Coordinate with Big Box stores to provide in-store rebates for applicable BPA incentives.
- Hold discussion with Big Box stores to understand the benefits of participating in utility/BPA incentive programs.
- Promote LEDs and HPWHs by lowering consumer cost and track/share measurable savings for the region to be distributed via NEEA/etc.
- Collaborate with organizations like NEEA, ETO and IOUs to continue offering programs through big box stores in the existing model.
- Providing and encouraging energy conservation and efficiency sales displays and program participation - especially for stores that cross utility borders.
- One location for employees to refer costumers to learn about programs in their areas.
- Provide Energy Star information to sales staff.
- Increased training for sales reps on effiency related products like appliances, water heaters, etc.

SRR

- Marketing materials such as point-of-purchase displays and brochures
- co-op advertising support
- Continued support of upstream distribution efforts, such as Simple Steps.

Question 8E: For Mom and Pop Retail Businesses, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	8
Total Skipped:	3

Appendix 7: Survey

Non-SRR

- Lighting retrofits. including LED's of all types. Lighting controls also. Refigeration and again mini-splits for heating and cooling...replacing lots of portable electric utilized instead of Oil and propane systems that cost lots to run.
- Help with marketing of high efficient appliances. Information on new models like heat pump water heaters.
- Provude ES info.
- What support could be offered to help them with upfront costs?

SRR

- A brochure that the utility could customize for their location that would explain a particular program and how it could/would benefit the retailers business.
- Target Brochures for the specific measure (such as CFL, Water Heaters etc...)
- Have user friendly websites for business owners to get information about products and programs.
- The local person works harder for the business most of the time.
- We could us a brochure to encourage these small businesses to carry .94 waterheaters, ENERGY STAR appliances and home electronics. Most carry cheaper waterheaters and standard appliance models.

Question 8F: For the real estate industry, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	1
Total Skipped:	0

Non-SRR

- Marketing information notifying realtors, sellers, and purchasers about the benefits of weatherization as well as it's importance in retaining the homes value.

SRR

- None

Question 8G: For water utilities, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	0
Total Skipped:	0

Non-SRR

- None

SRR

- None

Question 8H: For manufacturers, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	3
Total Skipped:	1

Non-SRR

- Partner with NEEA to facilitate discussion with the manufacturers and other regions throughout the nation or even globally. We aren't sure that the Northwest has enough pull alone to influence the manufacturer's decisions.
- Manufacturers marketing the programs/encouraging the customer to contact local utilities for program information
- Energy savings the customer will achieve if they do the qualified program measure
- Benefits of choosing the more efficient item will yeild long term savings.

SRR

- None

Question 8I: For community organizations, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	2
Total Skipped:	0

Non-SRR

- Importance and benefits of local energy efficiency projects. How they can stimulate economy. These org's can recieve and give grants for projects so giving them knowledge and assistance on how they programs can help everyone in community from homeowners, to businesses, to workers, and utility.

- We have a good relationship with our local community organizations. BPA assistance is not required at this time.

SRR

- None

Question 8Ia: Please specify the community organizations you would like to see your utility collaborate with more.

Total Respondents:	2
Total Skipped:	0

Non-SRR

- Economic Development Council and Chamber of Commerce.
- Sustainable Living Center
- Benton-Franklin Community Action Council
- Tri-Cities Homebuilders Association

SRR

- None

Question 8J: For low-income weatherization agencies, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	4
Total Skipped:	1

Non-SRR

- engagement & marketing. Also target landlords with rental properties.
- In Oregon, the CAP agencies have been given new specification requirements to live by. These don't always line up with BPA's specification requirements. Some conversation should take place between the two agencies, especially in the realm of MH ventilation requirements.

SRR

- Marketing this service in our service territory.
- Q&A Testing

Question 8K: For rental property owners/managers, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	0
Total Skipped:	0

Non-SRR

- None

SRR

- None

Question 8L: For low-income landlords (including Housing Authorities), list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	2
Total Skipped:	0

Non-SRR

- Case Studies.

SRR

- Make it easy for landlords or owners to get the information on energy conservation. Contractors meet with the landlords.

Question 8M: For residential plumbers, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	2
Total Skipped:	0

Non-SRR

- None (response)

SRR

- The residential plumbers put in the cheapest water heaters. They don't look for high efficient models. Most have a supplier they go to and they get the standard EF tank!

Question 8N: For residential electricians, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	2
Total Skipped:	4

Non-SRR

- Commercial lighting and controls. LED's should be utilized in all types of fixtures.

SRR

- Make required websites very accessable and extremely user friendly to contractors. We have older contractors in our service area that are not computer users and your lighting calculator is not user friendly or does not make a lot of sense to them.
- Keep conservation programs user friendly, simplify requirements.

Question 8O: For weatherization contractors, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	21
Total Skipped:	11

Non-SRR

- Scheduled region wide trainings on the new RTF Res Wz specs.
- Instruction and education, i.e. 5-10min videos to help contractors with BPA spec on each measure specs.
- Regional training & oversight
- Educate both installers and bidders on weatherization best practices.
- Providing the latest information and specifications in one location to keep contractors up to speed on latest technology, how to sell and install as well as advise on maintenance.
- One location for contractors to learn the various local utility incentive programs
- Basics of record keeping and documentation
- Develop regional training materials. Easy reference cards with up-to-date requirements.
- Low or no cost training
- Marketing materials
- Form template that works with all utilities

- More training available to both contractors and utilties on proper procedure and measure requirements.
- Affordable training for work crews would be a great plus.
- Training and marketing help to get contractors more proficient and productive. Teach new techniques.
- Perhaps develop a roaming team of weatherization experts to canvas rural utilities where there are no vendors, no blower doors, no air sealers, etc.
- engagement & marketing
- PTCS training at a low cost would help the contractors.
- Training for weatherization contractors to meet program specifications.
- Marketing material.
- Some general technical training might be helpful for this sector.
- Our programs are built around our existing relationships with weatherization contractors. No additional BPA assistance is required.

SRR

- Same type of thing as the duct sealing program would be ideal.
- Develop a spread sheet for weatherization contractors and residential contractors that can be used for weighting cost versus energy saving of different measures. It would need to be simplified and approximate but would help make educated decisions. It would include site characteristics and building characteristics along with cost for each type of upgrade and all of these would entered by the user. The spread sheet would then give approximate information on which measures were most economical. Home owners could then make educated decisions. There are a lot of misconceptions in this area and many people that are trying to make the right decions are not do to lack of knowledge.
- More training for installers, especially if/when specs change.
- Focus groups to explore the barriers and opportunities for successful program implementation; regional and local technical training; targeted marketing material development; co-op advertising materials and support;
- Q&A Testing
- Eduction regarding best practices and airsealing techniques
- Co-branded marketing support (utility & contractor)

Question 8P: For residential builders, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	4
Total Skipped:	4

Non-SRR

- Provide builders with training in: a) building Energy Star homes; b) BPA requirements for new construction measures.
- Benefits of choosing the more efficient building will yeild long term savings. As opposed to the marble counter top which can be added later. They should also explain that great view out the big windows will be paid for with high bills for ever.

SRR

- Develop a spread sheet for weatherization contractors and residential contractors that can be used for weighting cost versus energy saving of different measures. It would need to be simplified and approximate but would help make educated decisions. It would include site characteristics and building characteristics along with cost for each type of upgrade and all of these would entered by the user. The spread sheet would then give approximate information on which measures were most economical. Home owners could then make educated decisions. There are a lot of misconceptions in this area and many people that are trying to make the right decions are not do to lack of knowledge.
- Website with brouchures for site built and manufactured homes and specifications. Home builder trainings (maybe by State DEQ offices).
- Keep conservation programs user friendly, simplify requirements.

Question 8Q: For other, please describe what activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	3
Total Skipped:	0

Non-SRR

- Provide support and align with the ETO and other regional IOUs in policy, procedure, marketing collateral etc. to facilitate consistency for trade allies throughout the region.
- BPA should encourage the market transformation effort.

SRR

- Marketing assistance is beneficial.

Appendix 7: Survey

Question 9: For the COMMERCIAL sector, Please identify the top 3 market actors who may be key to meeting your future energy efficiency goals.

Total Respondents:	49
Total Skipped:	3

Unweighted	Total n = 49	Non-SRR n = 31	SRR n = 18
Lighting contractors	45.00	29.00	16.00
Mechanical contractors	16.00	8.00	8.00
Energy Service Companies (ESCOs)	12.00	5.00	7.00
Commercial HVAC distributors	11.00	8.00	3.00
Commercial Electricians	11.00	8.00	3.00
Weatherization contractors	7.00	4.00	3.00
Rental property owners/managers	6.00	6.00	0.00
Engineers	6.00	4.00	2.00
Architects and Designers	6.00	4.00	2.00
State Energy Offices	4.00	2.00	2.00
Manufacturers	3.00	2.00	1.00
Market Actors are not important for meeting my energy efficiency goals	1.00	0.00	1.00
Other: electrical distributors and manufacturer representatives	1.00	1.00	0.00
Other: HVAC and mechanical contractors and distributors	1.00	1.00	0.00
Low income landlords (including Housing Authorities)	1.00	0.00	1.00
Other: product suppliers - mainly lighting and compressed air	1.00	0.00	1.00
Other: Building owners, building management staff/companies	1.00	1.00	0.00
Other: Commercial HVAC Installers	1.00	1.00	0.00
Other: Trade Ally	1.00	1.00	0.00
Commercial Plumbers	1.00	1.00	0.00

Appendix 7: Survey

Weighted	Total n = 43	Non-SRR n = 25	SRR n = 18
Lighting contractors	41.00	25.00	16.00
Mechanical contractors	15.00	7.00	8.00
Energy Service Companies (ESCOs)	11.00	4.00	7.00
Commercial HVAC distributors	11.00	8.00	3.00
Commercial Electricians	11.00	8.00	3.00
Weatherization contractors	7.00	4.00	3.00
Engineers	6.00	4.00	2.00
Rental property owners/managers	5.00	5.00	0.00
State Energy Offices	4.00	2.00	2.00
Architects and Designers	4.00	2.00	2.00
Manufacturers	3.00	2.00	1.00
Market Actors are not important for meeting my energy efficiency goals	1.00	0.00	1.00
Other: electrical distributors and manufacturer representatives	1.00	1.00	0.00
Other: HVAC and mechanical contractors and distributors	1.00	1.00	0.00
Low income landlords (including Housing Authorities)	1.00	0.00	1.00
Other: product suppliers - mainly lighting and compressed air	1.00	0.00	1.00
Other: Building owners, building management staff/companies	1.00	1.00	0.00
Other: Commercial HVAC Installers	1.00	1.00	0.00
Other: Trade Ally	1.00	1.00	0.00
Commercial Plumbers	1.00	1.00	0.00

Appendix 7: Survey

Weighted	West of Cascades n = 24	East of Cascades n = 19	I-937 Utility n = 9	Non I-937 Utility n = 34
Lighting contractors	23.00	18.00	9.00	32.00
Mechanical contractors	10.00	5.00	4.00	11.00
Energy Service Companies (ESCOs)	7.00	4.00	2.00	9.00
Commercial HVAC distributors	5.00	6.00	2.00	9.00
Commercial Electricians	6.00	5.00	4.00	7.00
Weatherization contractors	3.00	4.00	1.00	6.00
Engineers	3.00	3.00	1.00	5.00
Rental property owners/managers	5.00	0.00	3.00	2.00
State Energy Offices	2.00	2.00	0.00	4.00
Architects and Designers	0.00	4.00	0.00	4.00
Manufacturers	1.00	2.00	2.00	1.00
Market Actors are not important for meeting my energy efficiency goals	1.00	0.00	0.00	1.00
Other: electrical distributors and manufacturer representatives	1.00	0.00	1.00	0.00
Other: HVAC and mechanical contractors and distributors	1.00	0.00	1.00	0.00
Low income landlords (including Housing Authorities)	0.00	1.00	0.00	1.00
Other: product suppliers - mainly lighting and compressed air	1.00	0.00	1.00	0.00
Other: Building owners, building management staff/companies	1.00	0.00	1.00	0.00
Other: Commercial HVAC Installers	0.00	1.00	0.00	1.00
Other: Trade Ally	0.00	1.00	0.00	1.00
Commercial Plumbers	1.00	0.00	0.00	1.00

Appendix 7: Survey

Question 9A: For lighting contractors, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	26
Total Skipped:	19

Non-SRR

- NWTAN is currently supporting the lighting contractors. I already see the contractors that are going the extra mile and trying to be more comprehensive. More training for all contractors will not make all of them be comprehensive in their approach. For the contractors who have set themselves apart, perhaps giving advanced controls training.
- offering support for TAN, regional technical support, marketing support and working with suppliers.
- facilitate discussions on how they plan to target projects that include incentive contributions after the T12 base lines change.
- More training and support with Custom Projects
- Facilitate discussions to understand program requirements and longterm benefits of measures.
- Communicate the benefits of selling new lighting technologies and best practices to capture maximum savings at each site.
- Continue to support the TAN who should facilitates contractor training opportunities, case studies and new technology information and opportunities (ie LEDs and controls).
- Providing the latest information and specifications in one location to keep contractors up to speed on latest technology, how to sell and install as well as advise on maintenance.
- One location for contractors to learn the various local utility incentive programs
- Basics of record keeping and documentation
- Marketing and understanding the programs, lighting contractors can approach customers perform audits, more often than not I get repeated calls from TAN contractors not understanding the programs.
- Possible incentives to the sale staff could initiate more enthusiasm and knowledge??
- Allow LED screw-ins as many folks didn't like CFL's and went back to incandescent lamps. I believe a coupon and return your incandescent to the utility office and get your new LED replacement coupon.
- Training via Trade Ally.
- Continue Commercial Lighting program.
- Little interest in BPA support if locally controlled.
- Lighting workshops/NW Trade Ally
- Training classes specific to BPA program requirements.
- Marketing materials.

- The NWTAN does a great job of educating the contractors and getting them together for networking. I would like them to be able to reach more lighting contractors and get more contractors involved and selling the right products.
- The NW TAN's training was been superb and I would suggest keep that going. I'm always surprised that I don't see other utility folks at trainings offered by the Oregon section of IESNA or Oregon Assoc. of Energy Managers where lighting is often a topic.
- Training to help lighting contractors make a business case for selling less product. Currently, efforts through the NW Trade Ally Network are starting to address this need.

SRR

- Get a group of contractors to act as an advisory board to help TAN re direction and next steps.
- Almost all of our commercial sector efficiency comes from lighting. The main issues in this area is that most people have a hard time understanding the lighting calculator unless they use it a lot. This might be addressed with the new calculator.
- Keep doing the lighting contractor trainings.
- Support of NW TAN, training on lighting calculator use, up to date approved products lists,
- NWTAN training
- Calculator training
- Website we can direct contractors to that explains commercial lighting programs and summarizes rebates, link to resources and the calculator.
- Most of the lighting contractors are aware of lighting rebates and fixtures and ballasts that meet program specifications. They need help now as LEDs hit the market. A brochure on what BPA wants for LEDs would be helpful ie. CEE product list or ENERGY STAR list.
- Assist in the development of tools such as lighting calculator apps; lighting design case studies; success story case studies; regional and local training through NWTAN, etc.; Support for regional trade show utility participation. Project approval and measure approval
- Enegy savings calculation
- Product testing and evaluation
- Co-branded marketing support

Question 9B: For State Energy Offices, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	2
Total Skipped:	2

Appendix 7: Survey

Non-SRR

- Commercial building efficiency standards have to better. Retrofits of existing buildings have to be included.
- fis tax credits :)...it would be nice to have people fron ODOE at some of our meetings to know what we have going on, and be part of the conversation.

SRR

- None

Question 9C: For mechanical contractors, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	9
Total Skipped:	7

Non-SRR

- Program awareness brochures for handing out on what programs are available.
- Same as above
- More training and support with Custom Projects
- Encourage them to include the local utility on energy incentives before equipment is ordered by end-user.
- Providing the latest information and specifications in one location to keep contractors up to speed on latest technology, how to sell and install as well as advise on maintenance.
- One location for contractors to learn the various local utility incentive programs
- Basics of record keeping and documentation
- Training classes specific to BPA program requirements.

SRR

- Sector makretin programs perhaps.
- Advanced technologies showcase materials for utilities to share with local contractors; Case studies and testimonials of successful projects and firms;
- Best practices
- HVAC controlls measures (seasonal "tune up's" of HVAC systems
- Co-branded marketing support
- Q&A Testing

Appendix 7: Survey

Question 9D: For commercial HVAC distributors, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	7
Total Skipped:	4

Non-SRR

- HVAC contractors, mostly are the same guys doing residential in most of GH service territory. More training for commercial systems, with emphasis on controls and commissioning.
- Perhaps a commissioning training so we can offer a commissioning rebate on commercial RTU that were never commissioned properly.
- Same as above
- Facilitate discussions to understand program requirements and longterm benefits of measures.
- Develop more deemed measures for the commercial sector.

SRR

- Help the HVAC contractors realize the business model for ventilation tuning and commissioning of rooftop units.
- Educate contractors on BPA programs and rebates.
- Commercial HVAC distributors need to know what HSPF heat pump equipment qualifies for programs as well as the AHRI numbers for that equipment. A training for their installers on best practices and PTCS would be good too.

Questions 9E: For Architects and Designers, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	5
Total Skipped:	1

Non-SRR

- They need to be made aware of the available programs so they can design them into the buildings from the start.
- Architects and Designers use old building specifications and go for more bling than function. Building energy usage has to be a top priority not just LEED (not always efficient).
- The main barrier is that owners send out an RFP/RFQ on a project and do not specify the efficiency level. The A&D firms then do not focus on efficiency so they can get in the low bid.

Specify the energy utilization as part of the bid and let the A&D firms get creative and focus on energy efficiency.

- A&D firms need to communicate the long term benefits of a highly efficient building and not the looks. Too many new buildings look pretty but just make code on efficiency.
- New cars have to show the MPG, why shouldn't buildings also be held to a standard measure value of energy usage?
- Perhaps some type of outreach so they think about EE prior to a project.

SRR

- Information push to let designers and engineers know there may be rebates for energy saving projects
- Most architects and designers in our area look at natural gas or propane to heat new school buildings. We talk with them about energy efficiency but it goes in one ear and out the other. Since we're a small utility surrounded by NorthWestern Energy they do what NWE wants and very rarely do they specify what we recommend.

Question 9F: For Commercial Electricians, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	8
Total Skipped:	3

Non-SRR

- Same as above
- facilitate discussions on discovering why they use programs so infrequently, even though they are doing work that qualifies and would be a financial benefit.
- What barriers or lack of information exposure are keeping them away from working with programs?
- What's missing in their part of the upstream/downstream connection between manufacturers and end users that keeps their participation in / understanding of program offerings so low?
- Just continue to evolve the Commercial Lighting Program to include LED's as they become a quality product. You folks have done a great job with this program already. Just keep it going.
- Training via Trade Ally.
- Continue the Commercial Lighting rebate program.
- continue with workshops...
- We need to educate commercial electricians in the same way as lighting contractors. Getting them on board really helps.

Appendix 7: Survey

SRR

- Advanced technologies showcase materials for utilities to share with local contractors; Case studies and testimonials of successful projects and firms; ESG and ESI support for specific projects;

Question 9G: For Engineers, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	3
Total Skipped:	3

Non-SRR

- Energy modeling needs to be better understood and used in the design process. Project costs need to be calculated and displayed as net present value, internal rate of return, and life time costs and not just as simple payback. The owners requesting the work need to understand what product they are recieving and what future energy bills.
- Same comments in the A&D section apply to Engineers.

SRR

- Education of the engineer staff, training workshops.
- Information push to let designers and engineers know there may be rebates for energy saving projects

Question 9H: For rental property owners/managers, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	4
Total Skipped:	2

Non-SRR

- Develop a delivery mechanism that addresses multiple combinations of decision makers - i.e. is there an incentive for the property manager when the tenant pays the bills and vise versa.
- Facilitate discussions to understand program requirements and longterm benefits of measures.
- Work with organizations like BOMA to promote EE in the region. Facilitate discussions with owners to understand their wants/needs/barriers and how they want the contractors in the region to address these.

- Solve the split incentive problem. Uncouple "building owner" capital and approval needs from "building tenant"-driven upgrades and measures.

SRR

- None

Question 9I: For low-income landlords (including Housing Authorities), list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	1
Total Skipped:	0

Non-SRR

- None

SRR

- Weatherization of homes in this sector. Some of the homes in this sector are getting very old at this time.

Question 9J: For water utilities , list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	0
Total Skipped:	0

Non-SRR

- None

SRR

- None

Question 9K: For manufacturers, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Appendix 7: Survey

Total Respondents:	1
Total Skipped:	2

Non-SRR

- We need manufactures to make acceptable products and register them on sites like Energy Star, DLC list, CEE1 and the Lighting Design Lab list. Make the process easier and make finding qualified products easier.

SRR

- None

Question 9L: For commercial plumbers, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	0
Total Skipped:	1

Non-SRR

- None

SRR

- None

Question 9M: For weatherization contractors , list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	3
Total Skipped:	4

Non-SRR

- Providing the latest information and specifications in one location to keep contractors up to speed on latest technology, how to sell and install as well as advise on maintenance.
- One location for contractors to learn the various local utility incentive programs
- Basics of record keeping and documentation
- Training classes specific to BPA program requirements.
- Marketing materials.

Appendix 7: Survey

SRR

- Airsealing techniques and best practices
- Co-branded marketing support

Question 9N: For the commercial real estate industry, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	0
Total Skipped:	1

Non-SRR

- None

SRR

- None

Question 9O: For other market actors, list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	6
Total Skipped:	0

Non-SRR

- Same answer as for commercial electricians, but for electrical distributors and lighting and control manufacturer representative agencies. What's missing in their part of the upstream/downstream connection between manufacturers and end users that keeps their participation in / understanding of program offerings so low?
- Work to develop deemed savings for some HVAC measures - including new technologies like BMS. Continue to support M&V of commercial custom programs like ECAM.
- Solve the split incentive problem. Uncouple "building owner" capital and approval needs from "building tenant"-driven upgrades and measures.
- Again, push hard the Mini-splits to replace portable electric. There's lots of folks that use portable electric. One city hall building had over 30 portables because the oil boiler didn't work right and oil fuel costs are very high. We can get them to do better than this with mini-splits.
- Support Trade Ally Group.

SRR

- No comment.

Question 9P: For Energy Service Companies (ESCOs), list any activities you want BPA to support. For example, BPA could facilitate discussions with this market actor to understand benefits/barriers or create program marketing brochure targeted to this market actor. Please be specific.

Total Respondents:	7
Total Skipped:	5

Non-SRR

- Educate the regional ESCOs on BPA's program requirements so that they know what to expect/prepare when working with the local utility.
- Providing the latest information and specifications in one location to keep contractors up to speed on latest technology, how to sell and install as well as advise on maintenance.
- One location for contractors to learn the various local utility incentive programs
- Basics of record keeping and documentation
- I think most small-mid size utility folks could use some training on how to successfully work with ESCOs, especially in the realm of custom project M&V.
- ESCOs are actively pursuing the commercial market. No marketing materials would be required.

SRR

- I had to look up ESCOs to know what they do. I am not sure they are very big players in our territory.
- Create a program like ESG for ESCO's to complete measures in Schools, Hospitals and other commercial applications in small rural areas such as western MT.
- Continue as we have in the past. No new activities at this point suggested.

Question 10: Would you like to answer questions about the residential sector?

Total Respondents:	52
Total Skipped:	0

Response	Total n = 52	Non-SRR Nn = 33	SRR n = 19
Yes	47.00	29.00	18.00
No, please skip me to the commercial questions	5.00	4.00	1.00

Question 11: BPA should offer or create infrastructure to support home energy audits.

Total Respondents:	47
Total Skipped:	0

Unweighted	Total n = 47	Non-SRR n = 29	SRR n = 18
Strongly Agree	6.00	4.00	2.00
Agree	21.00	10.00	11.00
Neutral	10.00	5.00	5.00
Disagree	5.00	5.00	0.00
Strongly Disagree	4.00	4.00	0.00
Don't Know	1.00	1.00	0.00

Weighted	Total n = 45	Non-SRR n = 27	SRR n = 18
Strongly Agree	5.50	4.00	2.00
Agree	20.33	9.33	11.00
Neutral	10.00	5.00	5.00
Disagree	4.33	4.33	0.00
Strongly Disagree	2.83	3.33	0.00
Don't Know	1.00	1.00	0.00

Weighted	West of Cascades n = 25	East of Cascades n = 20	I-937 Utility n = 10	Non I-937 Utility n = 35
Strongly Agree	3.00	2.50	1.00	4.50
Agree	8.33	12.00	2.33	18.00
Neutral	7.00	3.00	2.00	8.00
Disagree	2.33	2.00	2.33	2.00
Strongly Disagree	2.83	0.00	1.83	1.00
Don't Know	1.00	0.00	0.00	1.00

Appendix 7: Survey

Question 11A: Please select the following types of audits that you would like BPA to provide. Select all that apply.

Total Respondents:	27
Total Skipped:	0

Unweighted	Total n = 27	Non-SRR n = 14	SRR n = 13
A hybrid approach with a web-based audit that might lead to an in-home audit	19.00	11.00	8.00
A web-based customer self-audit	17.00	11.00	6.00
An in-home audit at no cost to the customer	10.00	4.00	6.00
A cost-shared audit with the customer	6.00	1.00	5.00
Other: Facilitate buy-down on software that local utilities could use; i.e., REMrate	1.00	1.00	0.00

Weighted	Total n = 27	Non-SRR n = 14	SRR n = 13
A hybrid approach with a web-based audit that might lead to an in-home audit	19.00	11.00	8.00
A web-based customer self-audit	17.00	11.00	6.00
An in-home audit at no cost to the customer	10.00	4.00	6.00
A cost-shared audit with the customer	6.00	1.00	5.00
Other: Facilitate buy-down on software that local utilities could use; i.e., REMrate	1.00	1.00	0.00

Weighted	West of Cascades n = 12	East of Cascades n = 15	I-937 Utility n = 4	Non I-937 Utility n = 23
A hybrid approach with a web-based audit that might lead to an in-home audit	9.00	10.00	4.00	15.00
A web-based customer self-audit	9.00	8.00	3.00	14.00
An in-home audit at no cost to the customer	5.00	5.00	1.00	9.00
A cost-shared audit with the customer	2.00	4.00	1.00	5.00
Other: Facilitate buy-down on software that local utilities could use; i.e., REMrate	0.00	1.00	0.00	1.00

Question 11B: What percent of the cost should the customer pay?

Total Respondents:	0
Total Skipped:	0

Non-SRR

- None.

SRR

- None.

Appendix 7: Survey

Question 11C: Which of the following elements are important to your utility in an audit offering? Please select all that are important.

Total Respondents:	27
Total Skipped:	0

Unweighted	Total n = 27	Non-SRR n = 14	SRR n = 13
Best practices for using audits as an effective program tool	16.00	8.00	8.00
Marketing materials	15.00	7.00	8.00
Combine audits with direct installation of measures	14.00	10.00	4.00
Program design with step-by-step communication and implementation strategy	13.00	6.00	7.00
A BPA central contract for on-line audits that utilities could opt-in at a reduced cost	12.00	7.00	5.00
Creative partnerships with community groups	4.00	3.00	1.00
Other: we have a lot of propane and wood heat	1.00	0.00	1.00
Other: If a self-audit scores poorly, direct customer to utility staff.	1.00	1.00	0.00

Appendix 7: Survey

Weighted	Total n = 27	Non-SRR n = 14	SRR n = 13
Best practices for using audits as an effective program tool	16.00	8.00	8.00
Marketing materials	15.00	7.00	8.00
Combine audits with direct installation of measures	14.00	10.00	4.00
Program design with step-by-step communication and implementation strategy	13.00	6.00	7.00
A BPA central contract for on-line audits that utilities could opt-in at a reduced cost	12.00	7.00	5.00
Creative partnerships with community groups	4.00	3.00	1.00
Other: we have a lot of propane and wood heat	1.00	0.00	1.00
Other: If a self-audit scores poorly, direct customer to utility staff.	1.00	1.00	0.00

Weighted	West of Cascades n = 12	East of Cascades n = 15	I-937 Utility n = 4	Non I-937 Utility n = 23
Best practices for using audits as an effective program tool	6.00	10.00	2.00	14.00
Marketing materials	6.00	9.00	2.00	13.00
Combine audits with direct installation of measures	7.00	7.00	3.00	11.00
Program design with step-by-step communication and implementation strategy	6.00	7.00	2.00	11.00
A BPA central contract for on-line audits that utilities could opt-in at a reduced cost	5.00	7.00	2.00	10.00
Creative partnerships with community groups	4.00	0.00	1.00	3.00
Other: we have a lot of propane and wood heat	0.00	1.00	0.00	1.00
Other: If a self-audit scores poorly, direct customer to utility staff.	0.00	1.00	0.00	1.00

Question 11D: Why do you disagree?

Total Respondents:	9
Total Skipped:	0

Non-SRR

- One reason would be that the majority of utilities have already created the infrastructure to promote and/or conduct home energy audits. New energy codes will make the future weatherization retrofits opportunities to continue to decrease. So if new infrastructure is created, how long will that created measure last before becoming not cost effective.
- The Home Energy Audit is just as much a customer service function as it is an EE service. CPU believes internal staff should remain performing the front line customer service such as home

energy audits. But BPA could provide best practices and information on emerging technologies that are relevant to a home energy audit.

- BPA should work upstream of my customers/Trade Allies. Support member utilities if/when they want to offer Audits but don't build that infrastructure for the region.
- Quantitative energy audits without the means to generate energy efficiency are a poor use of time and resources. Customers enrolling in energy audits are typically already interested in energy conservation - thus do their own research. The audit simply reinforces their already held beliefs.
- There are two possible ways to approach this market.
- First, the auditor not only tells the customer what they need to do, but also installs measures with claimable results. Example spending time doing a blower door test – do some air sealing and direct installation work while onsite (direct installation work needs to comply with Washington State L&I rules).
- Second, the utility provides a robust qualitative audit tool that enables customers to do their own energy assessment and refers them to participating contractors to install measures with claimable results.
- I don't believe that they are cost effective. Many people will not pay for the audit and those that do may be disappointed in finding out the results. Even if the audit is virtually free, many people do not follow through with the recommendations because of the cost for the improvements. We lean on our contractors to look over the homes and give recommendations for no cost to the customer.
- I don't believe many folks would utilize the audit process on-line and if they did, and purchased product, would they install it properly? No. and then they would do harm to their structure.
- I believe that is the role of the serving utility.
- We want the support, however we would like the flexibility of managing our own programs.
- No involvement from BPA of customer audits.
- It is the job for utilities not BPA. Audit were done many years ago much time with much expense. Little value was achieved when compared to the expense that went into the audit.

SRR

- None

Appendix 7: Survey

Question 12: BPA should develop RESIDENTIAL direct installation measure offerings.

Total Respondents:	47
Total Skipped:	0

Unweighted	Total n = 47	Non-SRR n = 29	SRR n = 18
Strongly Agree	7.00	3.00	4.00
Agree	14.00	12.00	2.00
Neutral	12.00	7.00	5.00
Disagree	6.00	3.00	3.00
Strongly Disagree	5.00	4.00	1.00
Don't Know	3.00	0.00	3.00

Weighted	Total n = 45	Non-SRR n = 27	SRR n = 18
Strongly Agree	6.33	2.33	4.00
Agree	14.00	12.00	2.00
Neutral	10.67	5.67	5.00
Disagree	6.00	3.00	3.00
Strongly Disagree	5.00	4.00	1.00
Don't Know	3.00	0.00	3.00

Weighted	West of Cascades n = 25	East of Cascades n = 20	I-937 Utility n = 10	Non I-937 Utility n = 35
Strongly Agree	3.33	3.00	0.33	6.00
Agree	7.00	7.00	3.00	11.00
Neutral	6.67	4.00	3.67	7.00
Disagree	4.00	2.00	1.00	5.00
Strongly Disagree	3.00	2.00	2.00	3.00
Don't Know	1.00	2.00	0.00	3.00

Appendix 7: Survey

Question 12A: What measures would your utility want to provide through a RESIDENTIAL direct install offering?

Total Respondents:	21
Total Skipped:	0

Unweighted	Total n = 21	Non-SRR n = 15	SRR n =6
CFLs /LEDs	19.00	13.00	6.00
Showerheads	18.00	12.00	6.00
Smart Thermostats	16.00	12.00	4.00
Advanced Power Strips	14.00	11.00	3.00
Pipe wrap	13.00	7.00	6.00
Refrigerator/freezer recycling	11.00	7.00	4.00
Window AC or TV recycling	11.00	7.00	4.00
Other: For lighting, want LEDs only, not CFLs. For thermostate, specifically Nest-type	1.00	1.00	0.00
Other: All of these currently on hold until better BPA funding available.	1.00	1.00	0.00

Weighted	Total n = 21	Non-SRR n = 15	SRR n =6
CFLs /LEDs	19.00	13.00	6.00
Showerheads	18.00	12.00	6.00
Smart Thermostats	16.00	12.00	4.00
Advanced Power Strips	14.00	11.00	3.00
Pipe wrap	13.00	7.00	6.00
Refrigerator/freezer recycling	11.00	7.00	4.00
Window AC or TV recycling	11.00	7.00	4.00
Other: For lighting, want LEDs only, not CFLs. For thermostate, specifically Nest-type	1.00	1.00	0.00
Other: All of these currently on hold until better BPA funding available.	1.00	1.00	0.00

Weighted	West of Cascades n = 11	East of Cascades n = 10	I-937 Utility n = 4	Non I-937 Utility n = 17
CFLs /LEDs	11.00	8.00	4.00	15.00
Showerheads	10.00	8.00	4.00	14.00
Smart Thermostats	8.00	8.00	2.00	14.00
Advanced Power Strips	7.00	7.00	3.00	11.00
Pipe wrap	7.00	6.00	2.00	11.00
Refrigerator/freezer recycling	8.00	3.00	2.00	9.00
Window AC or TV recycling	6.00	5.00	1.00	10.00
Other: For lighting, want LEDs only, not CFLs. For thermostate, specifically Nest-type	0.00	1.00	0.00	1.00
Other: All of these currently on hold until better BPA funding available.	1.00	0.00	0.00	1.00

Question 12B: Which of the following elements are important to your utility in a direct install offering? Please select all that are important.

Total Respondents:	20
Total Skipped:	1

Unweighted	Total n = 20	Non-SRR n = 15	SRR n = 5
Marketing materials	15.00	10.00	5.00
3rd party implementation contractor	13.00	11.00	2.00
Combined with an audit	9.00	6.00	3.00
Partnerships with community groups to market	7.00	6.00	1.00
Other: homeowner installation	1.00	0.00	1.00
Other: Audit dependent on contractor quality.	1.00	1.00	0.00

Weighted	Total n = 20	Non-SRR n = 15	SRR n = 5
Marketing materials	15.00	10.00	5.00
3rd party implementation contractor	13.00	11.00	2.00
Combined with an audit	9.00	6.00	3.00
Partnerships with community groups to market	7.00	6.00	1.00
Other: homeowner installation	1.00	0.00	1.00
Other: Audit dependent on contractor quality.	1.00	1.00	0.00

Weighted	West of Cascades n = 11	East of Cascades n = 9	I-937 Utility n = 4	Non I-937 Utility n = 17
Marketing materials	7.00	8.00	2.00	13.00
3rd party implementation contractor	8.00	5.00	2.00	11.00
Combined with an audit	3.00	6.00	2.00	7.00
Partnerships with community groups to market	4.00	3.00	2.00	5.00
Other: homeowner installation	0.00	1.00	0.00	1.00
Other: Audit dependent on contractor quality.	0.00	1.00	0.00	1.00

Question 12C: Why do you disagree?

Total Respondents:	10
Total Skipped:	1

Non-SRR

- WA State Code requires licensed plumber to install residential showerheads, utility rep would not be able to direct install this measure.
- Not enough kWh savings to claim for direct install measures to make a program cost effective for a utility.
- Leave it up to contractors, the utilty, or the homeowner. Big BPA doesn't need to get involved with direct-install.

- We'd like the measures, but if you intend to start programs that will actually be Direct Installing regionally, that is too much touch for BPA to have.
- We do not want people entering our customers' homes.
- Local customers should work directly with local installers.
- BPA should support the program and let us manage the programs.
- My utility has chosen to not participate in direct install projects because of potential liability issues. We also like to maintain as many personal touches with our customers as possible so we are probably not interested in farming a DI project out to a centralized body.

SRR

- Getting a contractor to install the measures or to have the small saving measures verified by an energy analyst is cost prohibitive.
- The measures described here would affect energy use at the margins rather than tapping those that of the major use catories (ie home heating).
- utililties have the ability to do this on their own

Question 13: BPA should develop a competitive contracting model as a program option for utilities.

Total Respondents:	47
Total Skipped:	0

Unweighted	Total n = 47	Non-SRR n = 29	SRR n = 18
Strongly Agree	5.00	3.00	2.00
Agree	15.00	12.00	3.00
Neutral	16.00	8.00	8.00
Disagree	6.00	3.00	3.00
Strongly Disagree	3.00	3.00	0.00
Don't Know	2.00	0.00	2.00

Weighted	Total n = 45	Non-SRR n = 27	SRR n = 18
Strongly Agree	5.00	3.00	2.00
Agree	14.33	11.33	3.00
Neutral	15.33	7.33	8.00
Disagree	6.00	3.00	3.00
Strongly Disagree	2.33	2.33	0.00
Don't Know	2.00	0.00	2.00

Weighted	West of Cascades n = 25	East of Cascades n = 20	I-937 Utility n = 10	Non I-937 Utility n = 35
Strongly Agree	3.00	2.00	2.00	3.00
Agree	5.33	9.00	2.33	12.00
Neutral	10.33	5.00	2.33	13.00
Disagree	5.00	1.00	2.00	4.00
Strongly Disagree	1.33	1.00	1.33	1.00
Don't Know	0.00	2.00	0.00	2.00

Question 13A: What measures would your utility want to offer through a competitive contracting model? Select all that apply.

Total Respondents:	20
Total Skipped:	0

Unweighted	Total n = 20	Non-SRR n = 15	SRR n = 5
Heat pump tune-up with smart thermostat installation including programming	14.00	11.00	3.00
Refrigerator/Freezer Recycling	14.00	11.00	3.00
Direct Install services (e.g., CFL's, showerheads, smart strips, pipe wrap)	13.00	11.00	2.00
Prescriptive Duct Sealing	12.00	8.00	4.00
Weatherization Services (insulation and windows)	12.00	7.00	5.00
PTCS Duct Sealing	11.00	8.00	3.00

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Weighted	Total n = 20	Non-SRR n = 15	SRR n = 5
Heat pump tune-up with smart thermostat installation including programming	14.00	11.00	3.00
Refrigerator/Freezer Recycling	14.00	11.00	3.00
Direct Install services (e.g., CFL's, showerheads, smart strips, pipe wrap)	13.00	11.00	2.00
Prescriptive Duct Sealing	12.00	8.00	4.00
Weatherization Services (insulation and windows)	12.00	7.00	5.00
PTCS Duct Sealing	11.00	8.00	3.00

Weighted	West of Cascades n = 9	East of Cascades n = 11	I-937 Utility n = 5	Non I-937 Utility n = 15
Heat pump tune-up with smart thermostat installation including programming	7.00	7.00	4.00	10.00
Refrigerator/Freezer Recycling	7.00	7.00	3.00	11.00
Direct Install services (e.g., CFL's, showerheads, smart strips, pipe wrap)	6.00	7.00	3.00	10.00
Prescriptive Duct Sealing	7.00	5.00	4.00	8.00
Weatherization Services (insulation and windows)	6.00	6.00	4.00	8.00
PTCS Duct Sealing	6.00	5.00	4.00	7.00

Appendix 7: Survey

Question 13B: Which of the following elements are important to your utility in a competitive contracting offering? Please select all that are important.

Total Respondents:	19
Total Skipped:	1

Unweighted	Total n = 19	Non-SRR n = 14	SRR n = 5
Training materials for contractors	16.00	13.00	3.00
Regional Quality Assurance oversight	15.00	12.00	3.00
Educational/marketing material - brochures for homeowners	15.00	10.00	5.00
A dedicated BPA program manager to answer questions and develop offerings	12.00	9.00	3.00
Educational/marketing material - web content	11.00	7.00	4.00
For BPA to compete a regional or subregional contract for utility opt-in	7.00	6.00	1.00
Facilitation with other utilities offering the program to share successes/challenges and economies of scale	7.00	5.00	2.00
Statements of work to assist with contracting process	4.00	4.00	0.00

Weighted	Total n = 19	Non-SRR n = 14	SRR n = 5
Training materials for contractors	15.00	12.00	3.00
Regional Quality Assurance oversight	15.00	12.00	3.00
Educational/marketing material - brochures for homeowners	14.00	9.00	5.00
A dedicated BPA program manager to answer questions and develop offerings	11.00	8.00	3.00
Educational/marketing material - web content	10.00	6.00	4.00
For BPA to compete a regional or subregional contract for utility opt-in	6.00	5.00	1.00
Facilitation with other utilities offering the program to share successes/challenges and economies of scale	7.00	5.00	2.00
Statements of work to assist with contracting process	3.00	3.00	0.00

Weighted	West of Cascades n = 8	East of Cascades n = 11	I-937 Utility n = 5	Non I-937 Utility n = 14
Training materials for contractors	6.00	9.00	3.00	12.00
Regional Quality Assurance oversight	7.00	8.00	4.00	11.00
Educational/marketing material - brochures for homeowners	5.00	9.00	3.00	11.00
A dedicated BPA program manager to answer questions and develop offerings	5.00	6.00	2.00	9.00
Educational/marketing material - web content	2.00	8.00	2.00	8.00
For BPA to compete a regional or subregional contract for utility opt-in	4.00	2.00	3.00	3.00
Facilitation with other utilities offering the program to share successes/challenges and economies of scale	4.00	3.00	2.00	5.00
Statements of work to assist with contracting process	2.00	1.00	2.00	1.00

Question 13C: Why do you disagree?

Total Respondents:	9
Total Skipped:	0

Non-SRR

- Somewhat disagree. It should be considered a small utilities legal restraints. Also, this eliminates the competitive market for our local contractors. This could potential put a negative light on the utility for driving certain contractors out of business.
- If you are intending to force the region to participate with one vendor and on one program, I think that is too much of a role for BPA to have. It would be best for BPA to focus efforts upstream/regionally where utilities CANNOT work rather than competing locally with (some) utilities on programs which utilities CAN do. Similarly, since all member utilities fund BPA efforts, BPA should ensure that each BPA-sponsored program DOES benefit (rather than COULD benefit) each utility.

- Many utilities already use competitive bidding to reduce costs. Adding another player creates market confusion.
- Contractors won't service rural utility territories very well. In fact quite poorly.
- BPA should not be in the business of contracting ee measures.
- Actually, I want to mark this as "Don't Know" but don't have the ability to comment on the question under that option. So here is my concern:
- as a small-mid sized utility we want to maintain great relationships with our participating contractors. A competitive bid program would likely create some big challenges in this regard. Ultimately, we are going to protect that relationship with our contractors (who are customers and voters too). So, I would lean towards the side of disagree but am open to hearing more and attempting to resolve concerns.

SRR

- being a smaller utility, i don't see where we would target specific homes for EE, especially with no cost to the homeowner.
- Customers in this service territory prefer to select who'll work on their homes.
- Because we have 4 heating types (natural gas, propane, wood, and electricity) that our members use. This type of program would be hard to administer. I think we'd tick more members off than help!!

Question 14: Please rate the importance of BPA sponsoring support for utilities to reach low and moderate income households.

Total Respondents:	47
Total Skipped:	0

Unweighted	Total n =47	Non-SRR n = 29	SRR n = 18
Very Important	11.00	8.00	3.00
Important	17.00	8.00	9.00
Moderately Important	13.00	8.00	5.00
Of Little Importance	5.00	5.00	0.00
Don't Know	1.00	0.00	1.00

Weighted	Total n = 45	Non-SRR n = 27	SRR n = 18
Very Important	11.00	8.00	3.00
Important	16.33	7.33	9.00
Moderately Important	12.33	7.33	5.00
Of Little Importance	4.33	4.33	0.00
Don't Know	1.00	0.00	1.00

Weighted	West of Cascades n = 25	East of Cascades n = 20	I-937 Utility n = 10	Non I-937 Utility n = 35
Very Important	8.00	3.00	4.00	7.00
Important	8.33	8.00	4.33	12.00
Moderately Important	4.33	8.00	1.33	11.00
Of Little Importance	3.33	1.00	0.33	4.00
Don't Know	1.00	0.00	0.00	1.00

Question 14A: Please select any program support for low-income your utility would like BPA to offer.

Total Respondents:	39
Total Skipped:	2

Unweighted	Total n = 39	Non-SRR n = 24	SRR n = 15
Educational materials/programs	22.00	11.00	11.00
Direct install measures	19.00	10.00	9.00
Free home energy audits	18.00	9.00	9.00
Manufactured home decommissioning	13.00	8.00	5.00
Marketing tools	12.00	7.00	5.00
No additional program support	3.00	3.00	0.00
Other: web based self audit	1.00	0.00	1.00
Other: Clearly defined eligibility standards.	1.00	0.00	1.00
Other: funding	1.00	1.00	0.00

Weighted	Total n = 37	Non-SRR n = 22	SRR n = 15
Educational materials/programs	22.00	11.00	11.00
Direct install measures	19.00	10.00	9.00
Free home energy audits	18.00	9.00	9.00
Manufactured home decommissioning	12.00	7.00	5.00
Marketing tools	12.00	7.00	5.00
No additional program support	3.00	3.00	0.00
Other: web based self audit	1.00	0.00	1.00
Other: Clearly defined eligibility standards.	1.00	0.00	1.00
Other: funding	1.00	1.00	0.00

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Weighted	West of Cascades n = 19	East of Cascades n = 18	I-937 Utility n = 9	Non I-937 Utility n = 28
Educational materials/programs	12.00	10.00	5.00	17.00
Direct install measures	10.00	9.00	2.00	17.00
Free home energy audits	9.00	9.00	3.00	15.00
Manufactured home decommissioning	6.00	6.00	3.00	9.00
Marketing tools	8.00	4.00	4.00	8.00
No additional program support	1.00	2.00	2.00	1.00
Other: web based self audit	0.00	1.00	0.00	1.00
Other: Clearly defined eligibility standards.	1.00	0.00	1.00	0.00
Other: funding	1.00	0.00	1.00	0.00

Question 14B: Please provide any suggestions on support you would like BPA to provide to reach low and moderate income households.

Total Respondents:	14
Total Skipped:	28

Non-SRR

- We already offer free home energy audits.
- The education and materials are not measurable.
- Big fan of the High Performance manufactured homes. I like the idea of partnering with local community action and perhaps an organization like Habitat for Humanity to eliminate substandard housing.
- Incentive levels are critical.
- Outreach to landlords to promote benefits of program participation and encourage buy-in/sighn-ups
- Two thumbs up (way up!) for Manufactured Home Decommissioning!!!
- Opportunities for addressing duplex, Triplex and Quadplex owners just below the MF designation.
- Programs for renters
- Ways to streamline paperwork requirements
- Provide additional funding. Work with regional/national/international governments/nonprofits/companies to secure new avenues of collaboration and sources of funding.
- Our CAP Agency provides for our low income

- A MH decommissioning pilot project should be looked at. I understand that this is a challenging topic. However, we recently put $14k of LIWX into a MH that wasn't worth $500, if that. This just doesn't seem to make sense, long term.
- See manufactured home decommissioning. Provide incentives for residents to upgrade to a more efficient manufactured (or stick-built) home.

SRR

- Most of the low income folks aren't going to be home owners so the trick is to come up with a program that motivates the landlords to take significant measures.
- Web based energy audit for homeowners to complete themselves.
- No comment.
- We've worked with CAP agencies that use BPA funding and most of the time weatherization measures are done on manufactured homes that heat with wood. I thinks its better for the utility to provide educational materials and screen for members that have permanently installed electric heat and do measures on those homes.
- Maintain the high levels of reimbursement currently offered to the low income sector. Without the current level of reimburesment very few projects would be completed.

Appendix 7: Survey

Question 15: Currently BPA offers the Simple Steps program, which is a midstream retail model. There are many opportunities for additional midstream and upstream program opportunities. Please select the statement you agree with most.

Total Respondents:	47
Total Skipped:	1

Unweighted	Total n = 47	Non-SRR n = 29	SRR n = 18
Residential upstream and midstream programs may be a way to capture savings at lower costs in the future.	20.00	14.00	6.00
Residential upstream and midstream programs may be a way to capture savings at lower costs in the future, but there are issues to address before my utility will participate in those programs.	17.00	11.00	6.00
No opinion	7.00	4.00	3.00
Residential upstream and midstream program approaches do not work for my utility.	3.00	0.00	3.00

Weighted	Total n = 44	Non-SRR n = 26	SRR n = 18
Residential upstream and midstream programs may be a way to capture savings at lower costs in the future.	19.50	13.50	6.00
Residential upstream and midstream programs may be a way to capture savings at lower costs in the future, but there are issues to address before my utility will participate in those programs.	14.50	8.50	6.00
No opinion	7.00	4.00	3.00
Residential upstream and midstream program approaches do not work for my utility.	3.00	0.00	3.00

Weighted	West of Cascades n = 24	East of Cascades n = 20	I-937 Utility n = 9	Non I-937 Utility n = 35
Residential upstream and midstream programs may be a way to capture savings at lower costs in the future.	11.50	8.00	5.50	14.00
Residential upstream and midstream programs may be a way to capture savings at lower costs in the future, but there are issues to address before my utility will participate in those programs.	8.50	6.00	3.50	11.00
No opinion	2.00	5.00	0.00	7.00
Residential upstream and midstream program approaches do not work for my utility.	2.00	1.00	0.00	3.00

Question 15A: BPA should develop additional RESIDENTIAL upstream/midstream programs.

Total Respondents:	37
Total Skipped:	0

Unweighted	Total n = 37	Non-SRR n = 25	SRR n = 12
Strongly Agree	5.00	4.00	1.00
Agree	14.00	9.00	5.00
Neutral	17.00	12.00	5.00
Disagree	0.00	0.00	0.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	1.00	0.00	1.00

Weighted	Total n = 35	Non-SRR n = 23	SRR n = 12
Strongly Agree	5.00	4.00	1.00
Agree	12.67	7.67	5.00
Neutral	16.33	11.33	5.00
Disagree	0.00	0.00	0.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	1.00	0.00	1.00

Weighted	West of Cascades n = 21	East of Cascades n = 14	I-937 Utility n = 10	Non I-937 Utility n = 25
Strongly Agree	5.00	0.00	3.00	2.00
Agree	7.67	5.00	5.67	7.00
Neutral	8.33	8.00	1.33	15.00
Disagree	0.00	0.00	0.00	0.00
Strongly Disagree	0.00	0.00	0.00	0.00
Don't Know	0.00	1.00	0.00	1.00

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Question 15B: What measures would you like to see BPA explore for upstream and midstream program approaches? Check all that apply.

Total Respondents:	19
Total Skipped:	0

Unweighted	Total n = 19	Non-SRR n = 13	SRR n = 6
LEDs	18.00	12.00	6.00
Consumer Electronics	15.00	10.00	5.00
Existing appliances (refrigerators, clotheswashers)	14.00	9.00	5.00
Future appliances (heat pump dryer)	14.00	12.00	2.00
High efficiency windows	9.00	6.00	3.00
Continued support for CFLs	7.00	4.00	3.00
Continued support for showerheads	6.00	3.00	3.00

Weighted	Total n = 17	Non-SRR n = 11	SRR n = 6
LEDs	17.00	11.00	6.00
Consumer Electronics	13.00	8.00	5.00
Existing appliances (refrigerators, clotheswashers)	13.00	8.00	5.00
Future appliances (heat pump dryer)	12.00	10.00	2.00
High efficiency windows	9.00	6.00	3.00
Continued support for CFLs	7.00	4.00	3.00
Continued support for showerheads	6.00	3.00	3.00

Weighted	West of Cascades n = 12	East of Cascades n = 5	I-937 Utility n = 8	Non I-937 Utility n = 9
LEDs	12.00	5.00	8.00	9.00
Consumer Electronics	8.00	5.00	7.00	6.00
Existing appliances (refrigerators, clotheswashers)	9.00	4.00	5.00	8.00
Future appliances (heat pump dryer)	10.00	2.00	7.00	5.00
High efficiency windows	7.00	2.00	4.00	5.00
Continued support for CFLs	4.00	3.00	4.00	3.00
Continued support for showerheads	4.00	2.00	2.00	4.00

Question 15C: What program elements are important to your utility in an upstream or midstream offering?

Total Respondents:	9
Total Skipped:	10

Non-SRR

- Integrated heat pump heating system and water heater is also a good idea.
- As a utility, we have been giving away CFL's for so long it is now time we begin to hand out LED products to promote effiency. If upstream the cost of LED are driven down, it allows utilities to make bulk purchases and give them away easier.
- Easy to understand and access, customer friendly, regular participation reports, opportunitites to review products before program implementation to ensure the products meet current needs.
- I admit that I have done a 180 on this. I previously felt that the rebates we offer to customers for appliances was an important piece to the customer service aspect of our utility. At this point, I would just like to see an upstream model and a regional distribution of savings. This lowers overhead in the staffing department. However, I think it's important to get the utility's logo (essentially, the credit for the price reduction) in front of the consumer at their local retail outlet. For a rural Mason 3, that is a challenge since we share our major retail outlets with PSE.
- Minimize overlap between programs; BPA should stay farther upstream than we can work.
- Retail markdown for existing appliances would be a great benefit.
- Keep utilities in the loop and seek their feedback.

SRR

- rebates for new energy star appliance installation
- If the rebates are modest and the admin is significant, it would be an ideal target.
- Lighting and appliances are ones. All our members can benefit from them. Because we have varying heating systems most other up stream marketing ventures would have limited appeal or success.

Question 15D: Who, if anyone, should develop midstream or upstream program models for the region?

Total Respondents:	8
Total Skipped:	10

Non-SRR

- BPA in partnership with the Utilities
- NEEA
- NEEA OR OTHER NON PROFIT ENTITY
- BPA should explore this option
- NEEA for upstream
- Fluid Marketing for upstream
- Don't overlap. Be careful not to create redundancies.

SRR

- NEEA.....
- Not sure.
- BPA, but it would be a difficult decision for utilities to partner in the effort by participating financially, say as a cost share from our EEI budgets.

Question 15E: Why do you think upstream and mistream programs are not viable for your utility?

Total Respondents:	2
Total Skipped:	1

Non-SRR

- None.

SRR

- being from a small rural utility we would not be able to offer "utility sponsored price reductions" nor would we be able to committ the added hours of work to monitor the program
- the community is too small

Question 15F: What information do you need to help decide if RESIDENTIAL upstream/midstream program opportunities make sense for your utility?

Total Respondents:	1
Total Skipped:	6

Non-SRR

- I have not paid much attention to the Simple Steps program. Instead we have concentrated in commercial lighting

SRR

- None

Question 16: BPA should sponsor a third-party rebate processor.

Total Respondents:	47
Total Skipped:	0

Unweighted	Total n = 47	Non-SRR n = 29	SRR n =18
Strongly Agree	4.00	2.00	2.00
Agree	10.00	7.00	3.00
Neutral	12.00	8.00	4.00
Disagree	12.00	6.00	6.00
Strongly Disagree	7.00	4.00	3.00
Don't Know	2.00	2.00	0.00

Weighted	Total n = 45	Non-SRR n = 27	SRR n = 18
Strongly Agree	4.00	2.00	2.00
Agree	9.33	6.33	3.00
Neutral	12.00	8.00	4.00
Disagree	11.33	5.33	6.00
Strongly Disagree	6.33	3.33	3.00
Don't Know	2.00	2.00	0.00

Weighted	West of Cascades n = 25	East of Cascades n = 20	I-937 Utility n = 10	Non I-937 Utility n = 35
Strongly Agree	2.00	2.00	0.00	4.00
Agree	4.33	5.00	2.33	7.00
Neutral	7.00	5.00	5.00	7.00
Disagree	5.33	6.00	1.33	10.00
Strongly Disagree	4.33	2.00	0.33	6.00
Don't Know	2.00	0.00	1.00	1.00

Question 16A: Which of the following elements are important to your utility in a residential rebate processor? Please select all that apply.

Total Respondents:	13
Total Skipped:	1

Unweighted	Total n = 13	Non-SRR n = 9	SRR n = 4
Customized web portals for each participating utility	11.00	9.00	2.00
A competed regional contract for an on-line rebate processor	7.00	4.00	3.00
Development of customizable marketing material	6.00	4.00	2.00
Centrally-provided Field services to market and promote rebate programs	5.00	2.00	3.00
Utility-provided Field services to market and promote rebate programs	4.00	4.00	0.00

Weighted	Total n = 13	Non-SRR n = 9	SRR n = 4
Customized web portals for each participating utility	11.00	9.00	2.00
A competed regional contract for an on-line rebate processor	7.00	4.00	3.00
Development of customizable marketing material	6.00	4.00	2.00
Centrally-provided Field services to market and promote rebate programs	5.00	2.00	3.00
Utility-provided Field services to market and promote rebate programs	4.00	4.00	0.00

Weighted	West of Cascades n = 6	East of Cascades n = 7	I-937 Utility n = 3	Non I-937 Utility n = 10
Customized web portals for each participating utility	6.00	5.00	3.00	8.00
A competed regional contract for an on-line rebate processor	4.00	3.00	3.00	4.00
Development of customizable marketing material	2.00	4.00	1.00	5.00
Centrally-provided Field services to market and promote rebate programs	2.00	3.00	1.00	4.00
Utility-provided Field services to market and promote rebate programs	2.00	2.00	3.00	1.00

Appendix 7: Survey

Question 16B: Why do you disagree?

Total Respondents:	18
Total Skipped:	1

Non-SRR

- In our utility, it has never worked as well as simply handing out energy saving products to customers and this also promotes better customer relations with our utility.
- Third party rebates may take too long and it would eliminate some customers from participating if internet or ability to use internet is not present.
- Each Utility has different financial requirements
- Rebates are old fashion, costly, and are typically used by manufactures as a way to provide an incentive with hops the customer does not follow through. We should move beyond rebates to a mid-stream program that uses the Retail Allocation Methodology to allocate savings.
- The papertrail and documentation are important to our utility. I would not want to see this moved to a third party.
- Although these rebates are labor intense they do offer a connection between the utility and its customer.
- That is the serving utility's business.
- Clatskanie PUD would like to control the distribution of incentives.
- The utility should maintain control of their funding and their customers.
- We usually include a number of custom materials in our "Congratulations" packet that contains a rebate. We think we would lose some the ability to make decisions on what goes into each individual packet to the customer.

SRR

- We don't want to relinquish in house control nor the ability to change our programs and funding at our own discretion.
- keep the work in my department
- We feel the customer or end user should see the value the utility is offering to it's customer through it's conservation programs.
- Our co-op likes to maintain the relationship with the member. EE is a member loyalty program and we like to be the one handing out the money.
- We want our members to come to the Co-op. We're the local contact and we want them to know we're the local expert.
- Because I do it at my utility now and it is working if a 3rd party did it it takes some personalization out of the program
- We are 50% self funded; it would not benefit KEC to outsource half of the processing, unless it was available for the self funded rebates also.
- don't think it would work for my customers/members

Question 17: BPA should provide more support to utilities to implement and claim savings from RESIDENTIAL behavior based programs.

Total Respondents:	47
Total Skipped:	0

Unweighted	Total n = 47	Non-SRR n = 29	SRR n = 18
Strongly Agree	6.00	6.00	0.00
Agree	19.00	13.00	6.00
Neutral	11.00	7.00	4.00
Disagree	7.00	1.00	6.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	4.00	2.00	2.00

Weighted	Total n = 45	Non-SRR n = 27	SRR n = 18
Strongly Agree	5.33	5.33	0.00
Agree	18.33	12.33	6.00
Neutral	11.00	7.00	4.00
Disagree	7.00	1.00	6.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	3.33	1.33	2.00

Weighted	West of Cascades n = 25	East of Cascades n = 20	I-937 Utility n = 10	Non I-937 Utility n = 35
Strongly Agree	4.33	1.00	3.33	2.00
Agree	8.33	10.00	3.33	15.00
Neutral	8.00	3.00	2.00	9.00
Disagree	2.00	5.00	1.00	6.00
Strongly Disagree	0.00	0.00	0.00	0.00
Don't Know	2.33	1.00	0.33	3.00

Appendix 7: Survey

Question 17A: Which of the following elements are important to your utility in a RESIDENTIAL behavior-based offering? Please select all that apply

Total Respondents:	24
Total Skipped:	1

Unweighted	Total n = 24	Non-SRR n = 19	SRR n = 5
Evaluation support	15.00	11.00	4.00
Suggested program design models with a 24-month strategy map to follow	13.00	8.00	5.00
A dedicated BPA program manager to answer questions and develop offerings	12.00	10.00	2.00
BPA facilitation of monthly or Bi-monthly meetings for program participants to share successes and challenges	8.00	6.00	2.00
Third party implementation contractor	8.00	8.00	0.00
Obtain competitive pricing	7.00	6.00	1.00
Other: deemed savings values	1.00	1.00	0.00
N/A	1.00	1.00	0.00
Other: all of the above with claimable savings	1.00	1.00	0.00
Other: Pre-paid metering rebate program	1.00	1.00	0.00

Appendix 7: Survey

Weighted	Total n = 23	Non-SRR n = 18	SRR n = 5
Evaluation support	15.00	11.00	4.00
Suggested program design models with a 24-month strategy map to follow	13.00	8.00	5.00
A dedicated BPA program manager to answer questions and develop offerings	12.00	10.00	2.00
BPA facilitation of monthly or Bi-monthly meetings for program participants to share successes and challenges	8.00	6.00	2.00
Third party implementation contractor	8.00	8.00	0.00
Obtain competitive pricing	7.00	6.00	1.00
Other: deemed savings values	1.00	1.00	0.00
N/A	1.00	1.00	0.00
Other: all of the above with claimable savings	1.00	1.00	0.00
Other: Pre-paid metering rebate program	1.00	1.00	0.00

Appendix 7: Survey

Weighted	West of Cascades n = 10	East of Cascades n = 13	I-937 Utility n = 6	Non I-937 Utility n = 17
Evaluation support	7.00	8.00	5.00	10.00
Suggested program design models with a 24-month strategy map to follow	7.00	6.00	5.00	8.00
A dedicated BPA program manager to answer questions and develop offerings	5.00	7.00	3.00	9.00
BPA facilitation of monthly or Bi-monthly meetings for program participants to share successes and challenges	5.00	3.00	4.00	4.00
Third party implementation contractor	5.00	3.00	4.00	4.00
Obtain competitive pricing	5.00	2.00	4.00	3.00
Other: deemed savings values	1.00	0.00	1.00	0.00
N/A	0.00	1.00	0.00	1.00
Other: all of the above with claimable savings	1.00	0.00	1.00	0.00
Other: Pre-paid metering rebate program	0.00	1.00	0.00	1.00

Appendix 7: Survey

Question 18: We have just discussed multiple program delivery models for the residential sector. Thinking about your utility's needs in the next two to five years in the RESIDENTIAL sector, please select those areas most important for your utility.

Total Respondents:	46
Total Skipped:	1

Unweighted	Total n = 46	Non-SRR n = 29	SRR n = 17
Program Model 4 Targeting low and moderate income households	24.00	15.00	9.00
Program Model 1 Home Energy Audits	20.00	9.00	11.00
Program Model 2 Direct Install	19.00	13.00	6.00
Program Model 7 Behavior-based program support	17.00	13.00	4.00
Program Model 5 Upstream/midstream models	17.00	11.00	6.00
Program Model 3 Competitively Contracted	11.00	9.00	2.00
Program Model 6 Rebate Processor Model	9.00	6.00	3.00
N/A	3.00	1.00	2.00
Other: traditional rebate model	1.00	1.00	0.00

Weighted	Total n = 43	Non-SRR n = 26	SRR n = 17
Program Model 4 Targeting low and moderate income households	23.00	14.00	9.00
Program Model 1 Home Energy Audits	20.00	9.00	11.00
Program Model 2 Direct Install	18.00	12.00	6.00
Program Model 7 Behavior-based program support	16.00	12.00	4.00
Program Model 5 Upstream/midstream models	15.00	9.00	6.00
Program Model 3 Competitively Contracted	10.00	8.00	2.00
Program Model 6 Rebate Processor Model	8.00	5.00	3.00
N/A	3.00	1.00	2.00
Other: traditional rebate model	1.00	1.00	0.00

Appendix 7: Survey

Weighted	West of Cascades n = 23	East of Cascades n = 20	I-937 Utility n = 9	Non I-937 Utility n = 34
Program Model 4 Targeting low and moderate income households	12.00	11.00	5.00	18.00
Program Model 1 Home Energy Audits	9.00	11.00	3.00	17.00
Program Model 2 Direct Install	10.00	8.00	2.00	16.00
Program Model 7 Behavior-based program support	9.00	7.00	7.00	9.00
Program Model 5 Upstream/midstream models	9.00	6.00	7.00	8.00
Program Model 3 Competitively Contracted	4.00	6.00	4.00	6.00
Program Model 6 Rebate Processor Model	5.00	3.00	2.00	6.00
N/A	2.00	1.00	1.00	2.00
Other: traditional rebate model	1.00	0.00	0.00	1.00

Appendix 7: Survey

Question 19: Thinking about your utility's needs in the next two to five years in the residential sector, please rank your selections, with 1 being most important to your utility.

Total Respondents:	39
Total Skipped:	3

Type	Program Model 1 Home Energy Audits	Program Model 2 Direct Install	Program Model 3 Competi-tively Contracted	Program Model 4 Targeting low and moderate income households	Program Model 5 Upstream/mid stream models	Program Model 6 Rebate Processor Model	Program Model 7 Behavior-based program support
Non-SRR	3	1					2
SRR	1				3		2
SRR		2			3	1	
SRR	1					2	
SRR	1			2			
Non-SRR	2			1	3		
Non-SRR		1					2
Non-SRR	2		3		1		
SRR	2	1					
Non-SRR		2		1			
Non-SRR	4		2	1	3	6	5
SRR	2	3		1			
Non-SRR	1	2	5	4		3	
Non-SRR			3	1	2		
Non-SRR					1		2
Non-SRR		1	3	4		2	5
SRR	1	4		3			2
SRR	2			1		3	
Non-SRR				3	1		2
Non-SRR	1	2					
Non-SRR	3	1		2			
Non-SRR					1		2
Non-SRR				1	2		
SRR		3		1	2		
SRR	1			2	3		
SRR	4			1	2		3
Non-SRR		1	4		3	2	
Non-SRR		3				1	2
Non-SRR				1			2
SRR	2	1	3	6	7	5	4
SRR	1	2		3			
Non-SRR		1		2			

Non-SRR	1	2	4	5	6	7	3
SRR			2				1
Non-SRR		1		2			
Non-SRR	2	3		1			
Non-SRR			3		2		1
SRR			1	2	3		
Non-SRR	7	4	2	5	3	1	6

Question 20: Thinking about the RESIDENTIAL sector, are there any delivery models, infrastructure support or program ideas that this questionnaire did not address that you would like BPA to offer to support your utility?

Total Respondents:	12
Total Skipped:	36

Non-SRR

- I think many of the past (last 5 years) have worked very well and should be continued.
- In-store at-the-register instant rebates.
- Investor-driven financing. Utility-owned efficiency equipment in customer homes (e.g. "I got a PUD heat pump installed and I love it").
- trainings for trade allies.
- Questionnaire addressed appropriate ideas. BPA may offer, but would prefer option to select BPA or non-BPA partner.
- The preceding has all been about new programs and I believe it is good to look for new ways of doing things smarter and more effectively. However, when I think of infrastructure support I would like to suggest that BPA consider adding some more EER staff to provide support. These EER folks seem to be spread way to thin to be effective. Developing better communications between utilities and BPA is a beginning place in thinking of how to work smarter and more effectively. Let's fix the broken out window before thinking of investing in a new high efficiency heat pump!
- N/A

SRR

- training for performing a thorough home audit
- I would like to see a delivery model of having the utility customers do for and help themselves as much as they can. We have found in the past in doing free energy audits on home & irrigation systems that if you do the audit there is no gaurantee the end user is going to complete any of the recomendations made to save energy.

- The question above is difficult to answer. This utility performs onsite audits for all projects. Customers are given lists of pre-qualified installers who they solicit for bids. Our model doesn't totally fit any of the models listed above. Its more of a hybrid of them.
- I think residential energy efficiency 101 workshops, seminars, or webinars would be a good idea. Residential members are constantly bombarded by marketing materials in national magazines and on the web for energy saving gimmicks. I think a regional workshop that provides factual information would be helpful.
- No

Question 21: Next, we will ask questions about COMMERCIAL delivery models. Do you want to answer questions about commercial delivery models?

Total Respondents:	46
Total Skipped:	1

Unweighted	Total	Non-SRR	SRR
Yes	36	23	13
No, please skip me past commercial delivery model questions.	10	6	4

Question 22: BPA should offer a COMMERCIAL pay-for-performance program for existing and new commercial buildings.

Total Respondents:	41
Total Skipped:	1

Unweighted	Total n = 41	Non-SRR n = 26	SRR n = 15
Strongly Agree	6.00	4.00	2.00
Agree	19.00	10.00	9.00
Neutral	8.00	6.00	2.00
Disagree	4.00	4.00	0.00
Strongly Disagree	1.00	0.00	1.00
Don't Know	3.00	2.00	1.00

Appendix 7: Survey

Weighted	Total n = 37	Non-SRR n = 22	SRR n = 17
Strongly Agree	5.50	3.50	2.00
Agree	17.83	8.83	9.00
Neutral	6.33	4.33	2.00
Disagree	4.00	4.00	0.00
Strongly Disagree	1.00	0.00	1.00
Don't Know	2.33	1.33	1.00

Weighted	West of Cascades n = 21	East of Cascades n = 16	I-937 Utility n = 9	Non I-937 Utility n = 28
Strongly Agree	4.00	1.50	1.00	4.50
Agree	9.33	8.50	4.33	13.50
Neutral	3.25	3.00	1.33	5.00
Disagree	2.00	2.00	1.00	3.00
Strongly Disagree	0.00	1.00	0.00	1.00
Don't Know	2.33	0.00	1.33	1.00

Question 22A: Which of the following elements are important to your utility in a pay-for-performance offering? Please select all that apply.

Weighted	West of Cascades n = 21	East of Cascades n = 16	I-937 Utility n = 9	Non I-937 Utility n = 28
Strongly Agree	4.00	1.50	1.00	4.50
Agree	9.33	8.50	4.33	13.50
Neutral	3.25	3.00	1.33	5.00
Disagree	2.00	2.00	1.00	3.00
Strongly Disagree	0.00	1.00	0.00	1.00
Don't Know	2.33	0.00	1.33	1.00

Total Respondents:	26
Total Skipped:	0

Unweighted	Total n = 26	Non-SRR n = 15	SRR n = 11
Measurement & verification support	22.00	14.00	8.00
Training program for contractors and engineers	17.00	10.00	7.00
A dedicated BPA program manager to answer questions and develop offerings	16.00	11.00	5.00
Turnkey incentive processing	13.00	7.00	6.00
Facilitation with other utilities offering the program to share successes and challenges	10.00	5.00	5.00
Program marketing materials	8.00	3.00	5.00
Customer outreach and recruitment	8.00	6.00	2.00
N/A	1.00	1.00	0.00

Appendix 7: Survey

Weighted	Total n = 26	Non-SRR n = 15	SRR n = 11
Measurement & verification support	22.00	14.00	8.00
Training program for contractors and engineers	17.00	10.00	7.00
A dedicated BPA program manager to answer questions and develop offerings	16.00	11.00	5.00
Turnkey incentive processing	13.00	7.00	6.00
Facilitation with other utilities offering the program to share successes and challenges	10.00	5.00	5.00
Program marketing materials	8.00	3.00	5.00
Customer outreach and recruitment	8.00	6.00	2.00
N/A	1.00	1.00	0.00

Weighted	West of Cascades n = 15	East of Cascades n = 11	I-937 Utility n = 7	Non I-937 Utility n = 19
Measurement & verification support	13.00	9.00	6.00	16.00
Training program for contractors and engineers	9.00	8.00	5.00	12.00
A dedicated BPA program manager to answer questions and develop offerings	10.00	6.00	3.00	13.00
Turnkey incentive processing	8.00	5.00	3.00	10.00
Facilitation with other utilities offering the program to share successes and challenges	7.00	3.00	3.00	7.00
Program marketing materials	4.00	4.00	2.00	6.00
Customer outreach and recruitment	4.00	4.00	2.00	6.00
N/A	1.00	0.00	1.00	0.00

Question 22B: Why do you disagree?

Total Respondents:	5
Total Skipped:	0

Non-SRR

- Most folks cannot afford whole building improvements. They can only afford a bit at a time.
- Pay for performance has traditionally had a higher cost.
- It is much simpler on a widget basis.
- So the challenge here is that customers are reluctant to commit to making an investment until they understand what the net out-of-pocket cost are in determining a simple payback or ROI. Custom Projects with incentives based on $ per kWh saved require a calculator or technical study to provide this information. I'm not sure that is what you have in mind for this program. If so, I would be in favor of the pay-for-performance program.

SRR

- most of our commercial entities use gas to heat and would not qualify for a whole building approach. Commercial lighting needs to be kept as a standalone and not tied to the competion of other measures.

Appendix 7: Survey

Question 23: Currently BPA offers the Simple Steps program, which is a residential midstream retail model. There are similar opportunities for commercial midstream and upstream program opportunities. Please select the statement you agree with most.

Total Respondents:	42
Total Skipped:	0

Unweighted	Total n = 42	Non-SRR n = 27	SRR n = 15
Commercial upstream and midstream programs may be a way to capture savings at lower costs.	14.00	9.00	5.00
Commercial upstream and midstream programs may be a way to capture savings at lower costs, but there are issues to address before my utility will participate in those programs.	14.00	10.00	4.00
Commercial upstream and midstream program approaches do not work for my utility.	5.00	2.00	3.00
No opinion	9.00	6.00	3.00

Appendix 7: Survey

Weighted	Total n = 37	Non-SRR n = 22	SRR n = 15
Commercial upstream and midstream programs may be a way to capture savings at lower costs.	13.50	8.50	5.00
Commercial upstream and midstream programs may be a way to capture savings at lower costs, but there are issues to address before my utility will participate in those programs.	10.67	6.67	4.00
Commercial upstream and midstream program approaches do not work for my utility.	4.33	1.33	3.00
No opinion	8.50	5.50	3.00

Appendix 7: Survey

Weighted	West of Cascades n = 21	East of Cascades n = 16	I-937 Utility n = 9	Non I-937 Utility n = 28
Commercial upstream and midstream programs may be a way to capture savings at lower costs.	8.50	5.00	5.50	8.00
Commercial upstream and midstream programs may be a way to capture savings at lower costs, but there are issues to address before my utility will participate in those programs.	4.17	6.50	2.17	8.50
Commercial upstream and midstream program approaches do not work for my utility.	3.33	1.00	0.33	4.00
No opinion	5.00	3.50	1.00	7.50

Appendix 7: Survey

Question 23A: BPA should develop COMMERCIAL upstream/midstream programs.

Total Respondents:	28
Total Skipped:	0

Unweighted	Total n = 28	Non-SRR n = 19	SRR n = 9
Strongly Agree	5.00	5.00	0.00
Agree	13.00	10.00	3.00
Neutral	8.00	4.00	4.00
Disagree	0.00	0.00	0.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	2.00	0.00	2.00

Weighted	Total n = 26	Non-SRR n = 17	SRR n = 9
Strongly Agree	4.50	4.50	0.00
Agree	12.50	9.50	3.00
Neutral	7.00	3.00	4.00
Disagree	0.00	0.00	0.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	2.00	0.00	2.00

Weighted	West of Cascades n = 14	East of Cascades n = 12	I-937 Utility n = 9	Non I-937 Utility n = 17
Strongly Agree	3.00	1.50	4.00	0.50
Agree	7.50	5.00	4.50	8.00
Neutral	3.50	3.50	0.50	6.50
Disagree	0.00	0.00	0.00	0.00
Strongly Disagree	0.00	0.00	0.00	0.00
Don't Know	0.00	2.00	0.00	2.00

Appendix 7: Survey

Question 23B: What measures would you like to see BPA explore for COMMERCIAL upstream and midstream program approaches? Check all that apply.

Total Respondents:	18
Total Skipped:	0

Unweighted	Total n = 18	Non-SRR n = 15	SRR n = 3
LED lamps	16.00	14.00	2.00
Packaged HVAC (heat pumps, rooftop air conditioning units)	14.00	12.00	2.00
T-8 Lamps	8.00	7.00	1.00
Commercial foodservice equipment	8.00	8.00	0.00
IT measures (servers)	7.00	5.00	2.00
Other: water heaters	1.00	1.00	0.00

Weighted	Total n = 17	Non-SRR n = 14	SRR n = 3
LED lamps	15.00	13.00	2.00
Packaged HVAC (heat pumps, rooftop air conditioning units)	13.00	11.00	2.00
T-8 Lamps	8.00	7.00	1.00
Commercial foodservice equipment	7.00	7.00	0.00
IT measures (servers)	6.00	4.00	2.00
Other: water heaters	1.00	1.00	0.00

Weighted	West of Cascades n = 10	East of Cascades n = 7	I-937 Utility n = 8	Non I-937 Utility n = 9
LED lamps	9.00	6.00	7.00	8.00
Packaged HVAC (heat pumps, rooftop air conditioning units)	9.00	4.00	6.00	7.00
T-8 Lamps	7.00	1.00	7.00	1.00
Commercial foodservice equipment	4.00	3.00	3.00	4.00
IT measures (servers)	3.00	3.00	4.00	2.00
Other: water heaters	1.00	0.00	1.00	0.00

Questions 23C: What program elements are important to your utility in a COMMERCIAL upstream or midstream offering?

Total Respondents:	8
Total Skipped:	10

Non-SRR

- Not double-counting the savings through a different utility program. An acceptable amount of uncertainty when it comes to savings numbers and installation rates.
- Having a strong network of professionals both on design and implementation side. We have newer schools in our district that were designed, but never commissioned properly and are performing miserably. If we have midstream HVAC offerings, it is critical that we match the advanced technologies with competent professionals.
- seamlessness for the customer, consideration of effectiveness of technology available
- If the efficiency and cost gains are worked out with the manufacturers and sales then it is easier for utilities to convince members to select the more efficient measure. The better economic choice is the one the building owner will pick. Make the choice easy and they will participate in utility programs.
- The program must be easy to understand and validate savings.
- Lighting, LED and new technology, already being addressed by NEEA.

SRR

- Having the MVP customer see the value and energy savings in the product that was purchased and the purchase price savings that was achieved through and because of their local utility.
- Commercial restaurant equipment- impossible to track at the moment.

Questions 23D: Who, if anyone, should develop COMMERCIAL midstream or upstream program models for the region?

Total Respondents:	5
Total Skipped:	5

Non-SRR

- Commerical Utility Representatives and perhaps NEEA
- NEEA OR OTHER NON PROFIT ENTITY
- The Market players

SRR

- I need to know more about this program process before I would feel comfortable answering this...
- Contractor.

Questions 23E: Why do you think BPA should not develop COMMERCIAL upstream/midstream programs?

Total Respondents:	0
Total Skipped:	0

Non-SRR

- None.

SRR

- None.

Questions 23F: Why do you think COMMERCIAL upstream and mistream programs are not viable for your utility?

Total Respondents:	2
Total Skipped:	3

Non-SRR

- We have working commercial programs that serve our customers. Adding mid-stream and up-stream programs creates market confusion and increases the potential for double counting.

SRR

- There hasn't really been any one technology for our commercial sector. We only have a few of many different kinds of industry that what works for one doesn't work for the rest.

Question 23G: What information do you need to help decide if COMMERCIAL upstream/midstream program opportunities make sense for your utility?

Total Respondents:	4
Total Skipped:	5

Non-SRR

- I am not familiar with this program.
- A better understanding of them.
- What simple steps does. How it works.

SRR

- More complete details on the program's requirements, benefits, and costs.

Question 24: BPA should offer an energy management program for the COMMERCIAL sector.

Total Respondents:	42
Total Skipped:	0

Unweighted	Total n = 42	Non-SRR n = 27	SRR n = 15
Strongly Agree	6.00	4.00	2.00
Agree	18.00	11.00	7.00
Neutral	13.00	8.00	5.00
Disagree	2.00	2.00	0.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	3.00	2.00	1.00

Appendix 7: Survey

Weighted	Total n = 38	Non-SRR n = 23	SRR n = 15
Strongly Agree	5.50	3.50	2.00
Agree	15.83	8.83	7.00
Neutral	12.33	7.33	5.00
Disagree	2.00	2.00	0.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	2.33	1.33	1.00

Weighted	West of Cascades n = 22	East of Cascades n = 16	I-937 Utility n = 10	Non I-937 Utility n = 28
Strongly Agree	4.00	1.50	2.00	3.50
Agree	8.33	7.50	3.33	12.50
Neutral	8.33	4.00	3.33	9.00
Disagree	0.00	2.00	1.00	1.00
Strongly Disagree	0.00	0.00	0.00	0.00
Don't Know	1.33	1.00	0.33	2.00

Appendix 7: Survey

Question 24A: What type of energy management program would your utility want BPA to offer? Please select all that apply.

Total Respondents:	24
Total Skipped:	0

Unweighted	Total n = 24	Non-SRR n = 15	SRR n = 9
Low-cost energy management offering for small-medium customers.	21.00	15.00	6.00
A strategic energy management approach for large customers	16.00	11.00	5.00
A resource conservation manager approach	9.00	6.00	3.00
Monitoring-based commissioning for large customers	6.00	3.00	3.00
N/A	1.00	0.00	1.00
Other: Use BPA Engineers	1.00	0.00	1.00

Weighted	Total n = 22	Non-SRR n = 13	SRR n = 9
Low-cost energy management offering for small-medium customers.	19.00	13.00	6.00
A strategic energy management approach for large customers	15.00	10.00	5.00
A resource conservation manager approach	9.00	6.00	3.00
Monitoring-based commissioning for large customers	6.00	3.00	3.00
N/A	1.00	0.00	1.00
Other: Use BPA Engineers	1.00	0.00	1.00

Weighted	West of Cascades n = 12	East of Cascades n = 10	I-937 Utility n = 6	Non I-937 Utility n = 16
Low-cost energy management offering for small-medium customers.	11.00	8.00	6.00	13.00
A strategic energy management approach for large customers	10.00	5.00	5.00	10.00
A resource conservation manager approach	7.00	2.00	3.00	6.00
Monitoring-based commissioning for large customers	3.00	3.00	1.00	5.00
N/A	1.00	0.00	0.00	1.00
Other: Use BPA Engineers	0.00	1.00	0.00	1.00

Question 24B: Which of the following elements are important to your utility in a COMMERCIAL Energy Management Program? Please select all that apply.

Total Respondents:	24
Total Skipped:	0

Unweighted	Total n = 24	Non-SRR n = 15	SRR n = 9
Support for project measurement & verification	22.00	15.00	7.00
A dedicated BPA program manager to answer questions and develop offerings	18.00	13.00	5.00
Engineering support to develop baselines	17.00	9.00	8.00
Third party contract support	14.00	8.00	6.00
Facilitation with other utilities offering the program to share successes and challenges	12.00	7.00	5.00
Coaching and audits	11.00	7.00	4.00
Marketing materials	8.00	4.00	4.00
Training and hiring support for customers	7.00	5.00	2.00

Appendix 7: Survey

Weighted	Total n = 22	Non-SRR n = 13	SRR n = 9
Support for project measurement & verification	20.00	13.00	7.00
A dedicated BPA program manager to answer questions and develop offerings	16.00	11.00	5.00
Engineering support to develop baselines	15.00	7.00	8.00
Third party contract support	14.00	8.00	6.00
Facilitation with other utilities offering the program to share successes and challenges	12.00	7.00	5.00
Coaching and audits	10.00	6.00	4.00
Marketing materials	8.00	4.00	4.00
Training and hiring support for customers	7.00	5.00	2.00

Weighted	West of Cascades n = 12	East of Cascades n = 10	I-937 Utility n = 6	Non I-937 Utility n = 16
Support for project measurement & verification	13.00	7.00	6.00	14.00
A dedicated BPA program manager to answer questions and develop offerings	10.00	6.00	4.00	12.00
Engineering support to develop baselines	7.00	8.00	2.00	13.00
Third party contract support	7.00	7.00	4.00	10.00
Facilitation with other utilities offering the program to share successes and challenges	7.00	5.00	3.00	9.00
Coaching and audits	7.00	3.00	3.00	7.00
Marketing materials	4.00	4.00	2.00	6.00
Training and hiring support for customers	5.00	2.00	4.00	3.00

Question 24C: Why do you disagree?

Total Respondents:	2
Total Skipped:	0

Non-SRR

- I think it is too complicated a process for the commercial market.
- Currently, Northwest Energy Efficiency Council offers a building operator certification course, and they seem to do it well. We don't see the reason for the duplication of efforts.

SRR

- None.

Question 25: BPA should offer a small COMMERCIAL direct install program.

Total Respondents:	42
Total Skipped:	0

Unweighted	Total n = 42	Non-SRR n = 27	SRR n = 15
Strongly Agree	5.00	3.00	2.00
Agree	18.00	12.00	6.00
Neutral	10.00	7.00	3.00
Disagree	5.00	2.00	3.00
Strongly Disagree	3.00	2.00	1.00
Don't Know	1.00	1.00	0.00

Weighted	Total n = 38	Non-SRR n = 23	SRR n = 15
Strongly Agree	5.00	3.00	2.00
Agree	17.00	11.00	6.00
Neutral	8.33	5.33	3.00
Disagree	4.33	1.33	3.00
Strongly Disagree	2.33	1.33	1.00
Don't Know	1.00	1.00	0.00

Weighted	West of Cascades n = 22	East of Cascades n = 16	I-937 Utility n = 10	Non I-937 Utility n = 28
Strongly Agree	3.00	2.00	1.00	4.00
Agree	10.00	7.00	5.00	12.00
Neutral	4.33	4.00	3.33	5.00
Disagree	2.33	2.00	0.33	4.00
Strongly Disagree	1.33	1.00	0.33	2.00
Don't Know	1.00	0.00	0.00	1.00

Question 25A: What measures would your utility want to offer through a direct install COMMERCIAL program? Please select all that apply.

Total Respondents:	23
Total Skipped:	0

Unweighted	Total n = 23	Non-SRR n = 15	SRR n = 8
Refrigeration	20.00	13.00	7.00
Lighting	18.00	12.00	6.00
Lighting controls	17.00	13.00	4.00
Motors	17.00	12.00	5.00
HVAC	17.00	13.00	4.00
Variable frequency drives	14.00	11.00	3.00
Faucet aerators and showerheads	13.00	8.00	5.00
Other: water heaters	1.00	1.00	0.00

Weighted	Total n = 23	Non-SRR n = 15	SRR n = 8
Refrigeration	20.00	13.00	7.00
Lighting	18.00	12.00	6.00
Lighting controls	17.00	13.00	4.00
Motors	17.00	12.00	5.00
HVAC	17.00	13.00	4.00
Variable frequency drives	14.00	11.00	3.00
Faucet aerators and showerheads	13.00	8.00	5.00
Other: water heaters	1.00	1.00	0.00

Weighted	West of Cascades n = 13	East of Cascades n = 10	I-937 Utility n = 6	Non I-937 Utility n = 17
Refrigeration	11.00	9.00	5.00	15.00
Lighting	11.00	7.00	5.00	13.00
Lighting controls	11.00	6.00	5.00	12.00
Motors	10.00	7.00	4.00	13.00
HVAC	8.00	9.00	3.00	14.00
Variable frequency drives	6.00	8.00	3.00	11.00
Faucet aerators and showerheads	8.00	5.00	6.00	7.00
Other: water heaters	1.00	0.00	1.00	0.00

Question 25B: Which of the following elements are important to your utility in a COMMERCIAL direct install offering? Please select all that apply.

Total Respondents:	23
Total Skipped:	0

Unweighted	Total n = 23	Non-SRR n = 15	SRR n = 8
An in-person audit at no cost to customer	19.00	12.00	7.00
Direct installation of low-cost measures free to small businesses (lighting, showerheads)	18.00	12.00	6.00
Training for contractor trade allies	16.00	12.00	4.00
A list of qualified contractors	14.00	10.00	4.00
Educational brochures for business owner	14.00	7.00	7.00
Marketing	11.00	6.00	5.00
Partnerships with other organizations (e.g., chamber of commerce) to market	7.00	6.00	1.00
An audit cost-shared with customer	5.00	4.00	1.00
An online DIY audit at no cost to the customer	5.00	3.00	2.00
Other: partnership with utilities	1.00	1.00	0.00

Appendix 7: Survey

Weighted	Total n = 23	Non-SRR n = 15	SRR n = 8
An in-person audit at no cost to customer	19.00	12.00	7.00
Direct installation of low-cost measures free to small businesses (lighting, showerheads)	18.00	12.00	6.00
Training for contractor trade allies	16.00	12.00	4.00
A list of qualified contractors	14.00	10.00	4.00
Educational brochures for business owner	14.00	7.00	7.00
Marketing	11.00	6.00	5.00
Partnerships with other organizations (e.g., chamber of commerce) to market	7.00	6.00	1.00
An audit cost-shared with customer	5.00	4.00	1.00
An online DIY audit at no cost to the customer	5.00	3.00	2.00
Other: partnership with utilities	1.00	1.00	0.00

Weighted	West of Cascades n = 13	East of Cascades n = 10	I-937 Utility n = 6	Non I-937 Utility n = 17
An in-person audit at no cost to customer	12.00	7.00	4.00	15.00
Direct installation of low-cost measures free to small businesses (lighting, showerheads)	12.00	6.00	5.00	13.00
Training for contractor trade allies	8.00	8.00	6.00	10.00
A list of qualified contractors	8.00	6.00	5.00	9.00
Educational brochures for business owner	9.00	5.00	4.00	10.00
Marketing	5.00	6.00	4.00	7.00
Partnerships with other organizations (e.g., chamber of commerce) to market	5.00	2.00	5.00	2.00
An audit cost-shared with customer	2.00	3.00	2.00	3.00
An online DIY audit at no cost to the customer	3.00	2.00	2.00	3.00
Other: partnership with utilities	0.00	1.00	1.00	0.00

Question 25C: Why do you disagree?

Total Respondents:	6
Total Skipped:	2

Non-SRR

- Takes customer interaction out of the utility and gives to 3rd parties.
- These programs are expensive and utilities should implement this type of program.
- We want the measures, but want control of funding and managing the process.
- We have contractors and warehouse representatives that are already out selling our program. The current lighting program works, no need for direct install.

SRR

- Does not seem very cost effective for us as a small utility.

- Cost: high; Benefit: marginal

Question 26: BPA should offer a comprehensive turn-key COMMERCIAL program similar to Energy Smart Industrial.

Total Respondents:	41
Total Skipped:	1

Unweighted	Total n = 41	Non-SRR n = 26	SRR n = 15
Strongly Agree	13.00	7.00	6.00
Agree	16.00	10.00	6.00
Neutral	7.00	4.00	3.00
Disagree	4.00	4.00	0.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	1.00	1.00	0.00

Weighted	Total n = 37	Non-SRR n = 22	SRR n = 15
Strongly Agree	12.50	6.50	6.00
Agree	16.00	10.00	6.00
Neutral	5.33	2.33	3.00
Disagree	2.67	2.67	0.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	0.50	0.50	0.00

Weighted	West of Cascades n = 21	East of Cascades n = 16	I-937 Utility n = 9	Non I-937 Utility n = 28
Strongly Agree	10.00	2.50	2.00	10.50
Agree	7.00	9.00	5.00	11.00
Neutral	2.33	3.00	0.33	5.00
Disagree	1.67	1.00	1.67	1.00
Strongly Disagree	0.00	0.00	0.00	0.00
Don't Know	0.00	0.50	0.00	0.50

Appendix 7: Survey

Questions 26A: Which of the following elements are important to your utility in a COMMERCIAL comprehensive turn-key program? Please select all that apply.

Total Respondents:	30
Total Skipped:	0

Unweighted	Total n = 30	Non-SRR n = 18	SRR n =12
Custom project proposal and completion report assistance	29.00	18.00	11.00
Technical Support	28.00	16.00	12.00
A dedicated BPA program manager to answer questions and develop offerings	20.00	13.00	7.00
Turn key rebate processing	15.00	9.00	6.00
Energy Management Component	10.00	5.00	5.00
Other: the industrial model works very well. I would like it to be based on that model	1.00	1.00	0.00

Weighted	Total n = 29	Non-SRR n = 17	SRR n =12
Custom project proposal and completion report assistance	28.00	17.00	11.00
Technical Support	27.00	15.00	12.00
A dedicated BPA program manager to answer questions and develop offerings	19.00	12.00	7.00
Turn key rebate processing	14.00	8.00	6.00
Energy Management Component	10.00	5.00	5.00
Other: the industrial model works very well. I would like it to be based on that model	1.00	1.00	0.00

Weighted	West of Cascades n = 17	East of Cascades n = 12	I-937 Utility n = 7	Non I-937 Utility n = 22
Custom project proposal and completion report assistance	17.00	11.00	7.00	21.00
Technical Support	15.00	12.00	6.00	21.00
A dedicated BPA program manager to answer questions and develop offerings	10.00	9.00	4.00	15.00
Turn key rebate processing	8.00	6.00	3.00	11.00
Energy Management Component	8.00	2.00	2.00	8.00
Other: the industrial model works very well. I would like it to be based on that model	0.00	1.00	1.00	0.00

Questions 26B: Why do you disagree?

Total Respondents:	3
Total Skipped:	1

Non-SRR

- Commercial customers don't typically need the same level of support as industrial customers.
- Takes customer interaction and on the ground staff from the utility and puts it with a 3rd party.
- In our utility's service area, we don't have the large-size commercial buildings that would benefit.

SRR

- None.

Question 27: BPA should provide more support to utilities to implement and claim savings from COMMERCIAL behavior based programs.

Total Respondents:	42
Total Skipped:	0

Unweighted	Total n = 42	Non-SRR n = 26	SRR n = 15
Strongly Agree	1.00	0.00	1.00
Agree	14.00	9.00	5.00
Neutral	14.00	12.00	2.00
Disagree	9.00	3.00	6.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	3.00	2.00	1.00

Weighted	Total n = 38	Non-SRR n = 23	SRR n = 15
Strongly Agree	1.00	0.00	1.00
Agree	12.17	7.17	5.00
Neutral	11.83	9.83	2.00
Disagree	9.00	3.00	6.00
Strongly Disagree	0.00	0.00	0.00
Don't Know	4.00	3.00	1.00

Weighted	West of Cascades n = 22	East of Cascades n = 16	I-937 Utility n = 10	Non I-937 Utility n = 28
Strongly Agree	0.00	1.00	0.00	1.00
Agree	8.67	3.50	3.67	8.50
Neutral	7.33	4.50	3.33	8.50
Disagree	4.00	5.00	3.00	6.00
Strongly Disagree	0.00	0.00	0.00	0.00
Don't Know	2.00	2.00	0.00	4.00

Appendix 7: Survey

Questions 27A: Which of the following elements are important to your utility in a COMMERCIAL behavior-based offering? Please select all that apply.

Total Respondents:	15
Total Skipped:	0

Unweighted	Total n = 15	Non-SRR n = 9	SRR n = 6
Evaluation support	11.00	8.00	3.00
Suggested program design models with a 24-month strategy map to follow	11.00	7.00	4.00
A dedicated BPA program manager to answer questions and develop offerings	9.00	6.00	3.00
BPA facilitation of monthly or Bi-monthly meetings for program participants to share successes and challenges	6.00	5.00	1.00
Third party implementation contractor	6.00	3.00	3.00
Obtain competitive pricing	5.00	3.00	2.00

Weighted	Total n = 14	Non-SRR n = 8	SRR n = 6
Evaluation support	10.00	7.00	3.00
Suggested program design models with a 24-month strategy map to follow	10.00	6.00	4.00
A dedicated BPA program manager to answer questions and develop offerings	9.00	6.00	3.00
BPA facilitation of monthly or Bi-monthly meetings for program participants to share successes and challenges	5.00	4.00	1.00
Third party implementation contractor	6.00	3.00	3.00
Obtain competitive pricing	5.00	3.00	2.00

Weighted	West of Cascades n = 9	East of Cascades n = 5	I-937 Utility n = 4	Non I-937 Utility n = 10
Evaluation support	7.00	3.00	3.00	7.00
Suggested program design models with a 24-month strategy map to follow	7.00	3.00	4.00	6.00
A dedicated BPA program manager to answer questions and develop offerings	5.00	4.00	2.00	7.00
BPA facilitation of monthly or Bi-monthly meetings for program participants to share successes and challenges	4.00	1.00	3.00	2.00
Third party implementation contractor	4.00	2.00	2.00	4.00
Obtain competitive pricing	5.00	0.00	4.00	1.00

Question 28: We have just discussed multiple program delivery models for the COMMERCIAL sector. Thinking about your utility's needs in the next two to five years in the COMMERCIAL sector, please select those areas most important for your utility.

Total Respondents:	41
Total Skipped:	1

Unweighted	Total n = 41	Non-SRR n = 27	SRR n = 14
Program Model 5 comprehensive commercial energy efficiency program	30.00	22.00	8.00
Program Model 1 Commercial pay-for-performance	25.00	15.00	10.00
Program Model 4 Commercial direct install	19.00	11.00	8.00
Program Model 3 Energy Management	18.00	11.00	7.00
Program Model 2 Upstream/Midstream	12.00	9.00	3.00
Program Model 6 Behavior based	7.00	4.00	3.00

Weighted	Total n = 36	Non-SRR n = 22	SRR n = 14
Program Model 5 comprehensive commercial energy efficiency program	26.00	18.00	8.00
Program Model 1 Commercial pay-for-performance	24.00	14.00	10.00
Program Model 4 Commercial direct install	19.00	11.00	8.00
Program Model 3 Energy Management	16.00	9.00	7.00
Program Model 2 Upstream/Midstream	11.00	8.00	3.00
Program Model 6 Behavior based	7.00	4.00	3.00

Weighted	West of Cascades n = 20	East of Cascades n = 16	I-937 Utility n = 10	Non I-937 Utility n = 26
Program Model 5 comprehensive commercial energy efficiency program	14.00	12.00	7.00	19.00
Program Model 1 Commercial pay-for-performance	12.00	12.00	6.00	18.00
Program Model 4 Commercial direct install	11.00	8.00	5.00	14.00
Program Model 3 Energy Management	10.00	6.00	4.00	12.00
Program Model 2 Upstream/Midstream	5.00	6.00	6.00	5.00
Program Model 6 Behavior based	4.00	3.00	2.00	5.00

Appendix 7: Survey

Question 29: Thinking about your utility's needs in the next two to five years in the COMMERCIAL sector, please rank your selections, with 1 being most important.

Total Respondents:	38
Total Skipped:	1

Un-weighted	Program Model 1 Commercial pay-for-perfor-mance	Program Model 2 Upstream/ Midstream	Program Model 3 Energy Manage-ment	Program Model 4 Commercial direct install	Program Model 5 comprehensive com-mercial energy efficiency program	Program Model 6 Behavior based
SRR	3		2		1	4
Non-SRR	2	3	1			
SRR	2			1		
SRR	1		2		3	
Non-SRR		1			2	
Non-SRR	3		1	2	4	
SRR				1	2	
Non-SRR	1	3	4		2	
SRR	1			2		
Non-SRR	3			2	1	
Non-SRR					1	2
Non-SRR	3	2		4	1	5
SRR			1	2		
Non-SRR				2	1	
Non-SRR		2		1	3	
Non-SRR	1	2				
Non-SRR			2		1	3
SRR	3		1	2		4
SRR			3	2	1	
SRR	1		2		3	
Non-SRR	3			1	2	
Non-SRR	1		2			

SRR	2				1	
SRR		1		2		
Non-SRR	2	4	3		1	
SRR	2	1			3	
Non-SRR	3			2	1	
Non-SRR				1		2
Non-SRR			2		1	
Non-SRR	2		1		3	
Non-SRR	1		2			
SRR	1		3	2	5	4
Non-SRR	1		4	3	2	
Non-SRR	1			2	3	
Non-SRR		3		1	2	
SRR	1	2				
Non-SRR	2		3		1	
Non-SRR		2			1	

Question 30: Thinking about the COMMERCIAL sector, are there any delivery models, infrastructure support or program ideas that this questionnaire did not address that you would like BPA to offer to support your utility?

Total Respondents:	5
Total Skipped:	37

Non-SRR

- EE water heater installs
- just want to urge the idea that BPA has utility help in this area as the industrial area has.
- No, and want to clarify that we understand Program Model 5 is the current commercial energy efficiency program.

SRR

- These things would be highly dependent on how they were structered, the size of the business, the type of business and the amout of technical support available.
- We need to keep the programs simple and easy to implement as possible with out a lot of requirements. We are very limited on staff and funding.

Appendix 7: Survey

Question 31: To wrap up, is there anything you wish we had asked about that we did not? If so, please provide any additional feedback/comments/thoughts you may have that we did not ask about in previous questions.

Total Respondents:	11
Total Skipped:	42

Non-SRR

- How to convince utility managers and boards to start thinking about EE as a resource? And that EE is not just an added cost that effects rates and only benefits a portion of the customer base at a cost to the rest.
- And how to justify EE when loads are down and a utility's fixed costs are not being met? Thus causing pressure to raise rates or cut EE.
- Consistent use of deemed measures over the life of a Utility conservation plan tied to I-937
- BPA could work more coherently/efficiently. Do fewer things better.
- I would like to see more training opportunities both in number and variety. Whether you work for a large or small utility we are all so busy it is difficult to find time to properly train new employees in all the requirements for BPA.
- Should BPA exclusively offer these programs?
- EE Central needs to be fixed as soon as possible to address our reporting needs to AND from BPA. Currently we have absolutely no way to get information on a real-time basis. There is an incredibly high percentage of staff time spent on BPA reporting, and it seems like it could be streamlined. Please work with customers during this process to be sure the final product meets both of our needs.

SRR

- Well, you didn't ask my favorite kind of ice cream; a good survey always asks that question…
- Very happy with the BPA staff they do a good job!!!
- You have a lot of good ideas to offer. What will the additional cost of these programs be? Will the extra costs be deducted from our already shrinking budget? How much additional manpower will be needed to implement and run these programs. We are a very small electric utility and need to keep the programs as simple and user friendly for our customers and utility personell. I have seen BPA take a simple program update the programs and add alot of requirements and testing (Such as goingfrom the SGC Program to the Energy Star Home Program or Requiring PTCS testing and protocols etc. etc.....), these programs may never again reach numbers like before the changes were made. I like to see things done like energy audits on homes for the homeowners, but on the other hand there is no guarantee that the homeowner is going to complete 1 single measure to save 1 kWh either. I like to keep the funding in the service area to add as a billing credit so the customer can see the value in making the right energy efficient choice.

Appendix 7: Survey

- Good survey.
- I think part of the survey should have dealt with small/rural/residential utilities to ask them what's working in their service territories and what they might suggest to better serve their members/customers. One person energy efficiency representatives wear many hats.