

**Commercial Advisory Committee (CAC)**  
**Wednesday, April 18, 2018**  
**NEEA Office, Portland, OR**



**Attendees:**

In Person:

Mark Lensen – Puget Sound Energy  
Michelle Lichtenfels – Bonneville Power Administration  
Oliver Kesting – Energy Trust of Oregon  
Charlie Grist – NW Power & Conservation Council  
Sinh Tran – Snohomish PUD  
Joe Fernandi – Seattle City Light  
Mattias Jarvegren – Clallam PUD  
Blake Shelide – OR Dept of Energy (ODOE)  
Kevin Smit – NW Power & Conservation Council (NWPCC)

On Phone:

Katie Pegan – Idaho Office of Energy & Mineral Rsrcs.  
Deb Martin Young – NorthWestern  
Shelley Martin – Idaho Power  
Peter Meyer – Tacoma Power  
Bill Hibbs – Clark Public Utilities

**Guests:** Kevin Van Den Wymelenberg, University of Oregon, Kathleen Belkhat, Energy Trust of Oregon

**NEEA Staff:** Emily Moore, Maria Murphy, Christian Miner, Alisyn Maggiora, Stacy Blumberg, Maria Alexandra Ramirez, Charlie Stephens, John Jennings (phone), Bing Liu, Debbie Driscoll, Becca Yates, Natalie Fish, Anne Curran

**Resources**

- *Packet link on Conduit:* <https://conduitnw.org/Pages/File.aspx?rid=4389>
- *Slides link on Conduit:* <https://conduitnw.org/Pages/File.aspx?rid=4399>

**Welcome, Introductions, and Housekeeping Items**

- A. Welcome
  - 1) Meeting commenced at 10:05am
- B. Meeting [packet](#) review; see page 3 for links to newsletters and past meeting notes
  - 1) Commercial Portfolio Updates (p. 22-23)
  - 2) Commercial Code Enhancement Update (p.24)
  - 3) CAC Conference Coordination (p.25)
  - 4) Summary of Emerging Technologies (p. 26)
- C. Announcements
  - 1) Reminder: [Efficiency Exchange Conference](#) in Tacoma this year, May 15-16
    - i. Registration deadline is May 10.
    - ii. Free attendance to funders for interactive workshops on 2<sup>nd</sup> day afternoon (May 16)
    - iii. Tacoma Power organizing a pre-conference tour of local LEED platinum buildings and the LeMay Museum – be sure that you are registered for the conference in order to attend the pre-conference events.
  - 2) Revised NEEA website launching soon – has individual funder portals/landing pages that provides quick access, local funder information all in one place.
    - i. If anyone is willing to be a beta tester, please let Becca Yates know ([byates@neea.org](mailto:byates@neea.org) | 503-688-5450).
    - ii. Energy Trust and BPA volunteered.

## High Performance HVAC – High Efficiency Dedicated Outdoor Air Systems Initiative Start (IS) Program Review

Maria Murphy (NEEA) introduced the initiative. *The desired outcome is for CAC to understand the initiative and provide support for Initiative Start (IS) Milestone vote at RPAC on May 14, 2018. Refer to [slides 8-24](#) and page 4-18 in the [packet](#) for greater detail.*

### Presentation Highlights

#### A. Overview

- 1) Market Transformation Theory: The program will leverage opportunities resulting from an aging equipment stock, a growing demand for improved indoor air quality (IAQ), reduced carbon emissions and enhanced performance, to present the VHE DOAS solution to the market.
- 2) Context: HVAC efforts have been developing at NEEA for over 10 years, testing 3-4 different types of equipment including control schemes for evaporative cooling – seeking to turn rooftop units into a more efficient system. Ideal goal, particularly over the past 4-5 years, has been to focus on an efficient heat recovery ventilation system that separates heating and cooling from ventilation. Until now, there really hasn't been the right technology and we believe this one may have the potential for market transformation.
- 3) Key Activities Post-(IS):
  - a) Further **validate savings estimates, costs, and other key assumptions** through additional data collection and analysis
  - b) Conduct significant **research and market characterization**, which will help shape strategy launch in subsequent phases.
  - c) Encourage additional high efficiency HRV manufacturers
  - d) Explore adaptation and/or development of **software tools** to better address design and increase sales
  - e) **Raise awareness and educate** key market actors, particularly within the supply chain

#### B. Updates on NEEA pilot projects and prototype modeling work, including energy savings and peak demand reduction

- 1) (2) Portland; (2) Montana; (2) Corvallis; (2) Seattle
- 2) Have started working on reports for initial 4 for which we have 12 months of data, and will start working on reports for most of others in late summer once final data comes in
- 3) EUI Modeled, calibrated to 12 months actual data on 4 projects so far.
- 4) **ACTION ITEM – edit the units presented for demand reduction to watts/sf (in lieu of kW/sf)**
- 5) For specific details on preliminary results for each of the pilots, see slides 14-16

### General Comments

- Post-conversion EUI has been adjusted for weather using TMY data and calibrated to 12 months of post-data.
    - EUI is for the whole building, or whole area served by system.
  - Savings may have been larger in one project if systems were downsized as recommended
  - Using “Energy+” modeling software
  - **ACTION ITEM: NEEA (Maria) to set up separate meeting for utility engineers to dive deep on some of the technical aspects of pilots and technology**
- C. Why focus on Very High Efficiency Dedicated Outdoor Air Systems (VHE DOAS)? → Simpler, cheaper and easier to maintain, and also:
- 1) Lower energy consumption
    - a) Little to no supplemental heating & cooling of incoming air

- b) Decreased run time
  - c) Down-sized heating and cooling system
  - d) High efficiency variable speed fans
- 2) Increased functionality
  - 3) Lower maintenance

**Discussion**

- **PSE:** *Costs about the same?* NEEA (Charlie) clarified that for new construction, this is about 2/3 the cost of a VAV system.
- **Clallam PUD:** *Is the cost the same with Montana?* NEEA (Charlie) confirmed; most are about \$16/sq ft installed (includes everything)

**D. Comparison Based on Initial Assumptions**

System Type	Total cost (\$/sf)	Incr. Cost (\$/sf)	Savings (%)	Savings kBtu/sf	S/C (kBtu/\$)
VHE DOAS (HP/VRF w/ 85%+ HRV)	\$17	\$11	50%	30	2.7
HE DOAS (HP/VRF w/ 70% HRV)	\$18	\$12	30%	18	1.5
E DOAS (HP/VRF w/ 50% HRV)	\$12	\$6	25%	15	2.5
Low E DOAS (WA Code) (Code Min. RTU w/ 50% HRV)	\$9	\$3	10%	6	2
Code RTU (Code Min. RTU only)	\$6	0	0	0	0

- 1) These assumptions will be refined in the next phase through additional research and analysis
- 2) This is all retrofit so far, no new construction information is available yet
- 3) S/C = simple annual savings to first cost ratio
- 4) Don't have any non-energy benefit data yet, but anecdotally occupants are reporting significant improvements in indoor air quality
- 5) Note: metrics on WA code option is different than others (will change once we move to sensible effectiveness)
- 6) This is done on electric systems only right now as only qualifying htg/cooling system to meet spec is electric – the NEEA gas team will be investigating the gas side and both NEEA teams are coordinating on this effort. Maria Murphy will present an overview of this effort at the Natural Gas Advisory Committee meeting on May 10.

**Discussion**

- **SCL:** *Is the heat pump for the VRF efficiency considered a constant between each scenario, and only HRV is changing?* NEEA (John) noted that on VHE DOAS the heat pump/VRF has CEE tier 1 or better, and they have lower tier VRF as you move down – this does increase the cost though. Heat pump can be ductless.
- **PSE:** Would like to showcase going forward that over half the market, those that have gas RTUs have options – they need to compare the benefits. Providing the basic numbers around electric savings and gas savings where gas-heated as well as conversions to electric, this will at least offer some talking points. NEEA (Mark) added that additional detail on electric analysis, as well as initial comparisons on gas will be fleshed out once we pass the IS milestone. Mark R. noted that we run into questions around promotion of fuel switching when comparing gas to electric systems.

**E. Influencing the HVAC Industry**

- 1) This is a long-road
- 2) Predicting minimal energy savings in next 8-10 years until traction picks up

- F. The opportunity  
1) Savings range: 15aMW up to 130aMW

**Roll Call of Support (recommending the vote to RPAC member):**

- 1) **BPA:** Our team is excited to see what's next; still a lot to uncover, very interested to see where this goes
- 2) **Clallam PUD:** No reservations; a little skepticism because numbers look so promising
- 3) **NWPCC:** No reservations; looking forward to it and excited about it
- 4) **ODOE:** No reservations, have more questions based on more data to come
- 5) **NorthWestern:** In support
- 6) **PSE:** Very promising, looks fascinating; wrestling with making sure the gas opportunity is explored.
- 7) **SCL:** Recommending yes vote, appreciate the roadshow efforts; our team has looked at it pretty deeply and is in support
- 8) **Snohomish:** In support
- 9) **Energy Trust:** Great opportunity, no reservations
- 10) **Idaho Office of Energy & Mineral Rsrcs.:** No reservations, recommends Idaho Power votes yes
- 11) **Tacoma Power:** Recommend a yes vote, thank you to NEEA staff for their responses during the roadshow, well done.
- 12) **Idaho Power:** Agree with moving forward; need to pay attention to cost-effectiveness on electric savings, concerned that there's only one manufacturer and no local trade ally support.
- 13) **Clark PUD:** In support

## Utility Share-outs/Round Robin

**A. Snohomish PUD:**

Lighting program on track; reducing incentives significantly for TLEDs. Lighting equipment slow this year, thinking about pushing it this summer. Working with NEEA on TLED mid-stream program down the road. Rebates on small equipment needs a push, increased the budget/goal for that this year and offering a 25% bonus on these, including deemed and custom projects – July deadline. ESI and SEM going very strong (all industrial customers). Pay-for-performance pilot moving along, just made first payment. Building commissioning pilot about to roll out (40,000 sqft or larger, existing construction, 50,000 kwh or more; paying \$0.20/kwh in the first year, \$0.05 in second year). Looking to fill an engineering position.

**B. Seattle City Light (SCL):**

Preparing to make changes to downstream lighting retrofit calculator; major features will be to reduce incentives, promoting controls, shifting commodity products in mid-stream, adopting non-res lighting specifications. Also hope to launch NEEA's mid-stream program on August 1. Two ordinances passed recently on pay-per-performance efficiency as a service: hoping to launch deep retro PPP program in June; looking to launch pay-per-performance efficiency as a service later in 2018, no date for that yet. Working on RFP for virtual energy assessments for Seattle building tune-up ordinance. Reviewing proposals for new DSM tracking system, as well as another proposal for a building analytics database. Joining with PSE on commercial retro commissioning program in the next few months.

**C. PSE:**

Lighting intake has dropped by about 20% in past few months compared to previous years; not sure what's playing into that. Pay for performance pilot slow going. Looking to streamline cannabis lighting – have a pretty good baseline already, thinking about pulling the incentive on the incremental cost to get customers to have more skin in the game and improve education around options. Gas demand response new construction project. Got approval to do a pilot on

gas demand response on the residential side – will use Nest thermostats to do a test this winter. Still working on commercial HVAC mid-stream program, reviewing business cases to finalize savings, incentives, etc. on a variety of equipment; working with a vendor on these details.

**D. ODOE:**

Going through update for commercial (entire structural) code right now; committee deliberating in coming month in preparation for October code update. Have an open position for a facilities engineer as well.

**E. NWPCC:**

Last month RTF approved commercial connected thermostats planning measure. Will be looking at updating the commercial cooking and grocery refrigeration measures in May and secondary glazing and power strips in July. Starting to think about regional commercial building models for working measures and savings plans. Let Kevin know if you have any interest around that or other models you'd like us to look at. Recently approved measure that requires verification installed at the setting; there was an equipment-only option that was NOT approved. Second tier of the measure is initial settings, but on-going check-ins.

**F. Clallam PUD:**

Looking to finish the current biennium strong. Already adjusted the BPA lighting calculator to pay 70%, will probably pull back to 50% to accommodate budget. Rely heavily on residential Simple Steps, trying to expand the portfolio without increasing costs. Washington State solar incentive program consuming a great deal of time, plan to pick back up on work with the lighting calculator this fall, aligning with local agencies.

**G. BPA:**

Have a lot of staffing updates – Brent Barclay moving into new role as EE rep for southern utilities and targeted NEEA work. Michelle will be permanent fixture on CAC, Jess Kincaid now taking over RAC role on residential side. Have a temp helping, hoping to keep on permanently. Selected vendor to help integrate trade ally network (Evergreen Consulting, with help from Cadeo and Energy 350). Hoping to break down some of the silos between HVAC and lighting. This is a great time for input if you have it. Commercial lighting calculator 4.0 is out there and going well so far. Will do more lighting strategy and modeling to evaluate what lighting expected savings will look like from a more holistic approach. HVAC is coming back up, Implementation Manual cycle beginning in preparation for October 2019 changes – looking to create some more consistency across HVAC measures. Impacted by the decision to not renew CEE membership, even though we still use their measures. Will likely have to change some specs so looking for feedback/input and will likely form a workgroup around this.

**H. Energy Trust:**

No big changes since last quarter. Recently wrapped up water sub-metering pilot in multifamily (hot water focus), which ended in little interest so have shelved it due to cost. Working with some utilities on targeted DSM to help in potentially constrained areas; leveraging Multnomah County funds. Working with the City of Portland on benchmarking activities. Recently launched two Voice of the Customer projects around small-medium business and hard-to-reach customers to see how we can improve our efforts there. Had some conflicts with SEM on capital projects and retro commissioning – not seeing the savings as expected, will refine for next year. Lighting calculator is on the list but will be delayed to later in the year. New buildings RFP – selecting a program management contractor for next year. Working on a few internally focused efforts around budget process improvement, measure development process, and diversity/inclusion.

**I. Tacoma Power:**

Planning to roll out commercial SEM pilot – issued RFP and selected Stillwater and Energy 350. Targeting healthcare, institutional customers primarily. On track to meet targets this year. Interviewing for commercial lighting specialist. Working with facility staff to reduce energy

consumption by 10% by 2020 – has been interesting! Encouraging all to attend Efficiency Exchange and join the Tacoma Power tours beforehand!

**J. Idaho Power:**

Still working through major evaluation for lighting and non-lighting; roll-out date keeps moving back due to data delays. May add some measures as well as adjust others, hoping to finalize in next month and put something out to trade allies. Still hoping to offer network lighting control incentives for products on the DLC, preliminary numbers showing its not cost-effective; will likely reach out via email to the region to see what others are using for measure life on that and how they're factoring in non-energy benefits as well.

## C&I Lighting Regional Strategic Marketing Plan (RSMP)

Debbie Driscoll (NEEA), in conjunction with Charlie Grist (NWPCC) and Michael Lane (PSE), provided an overview of recent progress with the strategic plan. *The Desired outcome is to inform the committee and solicit feedback and support for the next plan.* Refer to [slides](#) 27-64 and page 19 in the [packet](#) for greater detail.

### Presentation Highlights:

- A. Commercial + Industrial Lighting Regional Strategic Market Plan Steering Committee members include: Fred Gordon (Energy Trust), Lori Moen (SCL), Peter Meyer (Tacoma Power), Debbie Driscoll (NEEA), Charlie Grist (NWPCC), and Michael Lane (PSE).
- B. Progress update on 2017 priority strategies
  - 1. Completed second prototype of [lamp and fixture pricing data dashboard](#), which uses webscraping technology to collect LED lamp prices from three major distributors/retailers.
  - 2. Toward our goal of "better informed customers," a regional work group completed [Good-Better-Best LED retrofit guidance](#) for customers and trade allies that may be leveraged by all funders.
  - 3. Updates on each strategy can be found in our [quarterly newsletter](#). Overview of 2018 priorities and planned approach
  - 4. [Online lighting data tool](#) (through Tableau) demonstrated
  - 5. There is also information available on the [NW Lighting Network site](#) - you can take the base code from this site and paste into your own site for content, but will retain your site's look/feel/branding.
- C. 2018 Updates to Plan
  - 1. Two prioritized strategies for 2018:
    - a) Increase adoption of advanced lighting control systems
    - b) Inform program planning for commodity lamps (TLED, HID-LED, CFL-LED, etc.)
  - 2. **COMMITTEE ASK: Feedback/discussion on [2018 plan](#) – how would you like your organization to be involved?**
  - 3. For any questions about the proposed discussion, please contact Debbie Driscoll ([ddriscoll@neea.org](mailto:ddriscoll@neea.org) | 503-688-5487).
- D. 2015-2017 Lessons Learned
  - 1. More informed
  - 2. Greater collaboration and mutual understanding
  - 3. Data and customer-facing resources that are increasingly hitting the mark
  - 4. Long timeframes to get to deliverable
  - 5. Not always clear that results are being used or effecting progress toward goals
  - 6. Strategies are not interrelated/reinforcing

7. Updated approach

- a) **More focused** on the priority challenges that emerged in the survey
- b) **More integrated** – information feeds directly into problem we’re collaboratively tackling
- c) **More applicable** – first and foremost, results should serve your programs

E. NWPCC (Charlie Grist):

1. Regional Survey

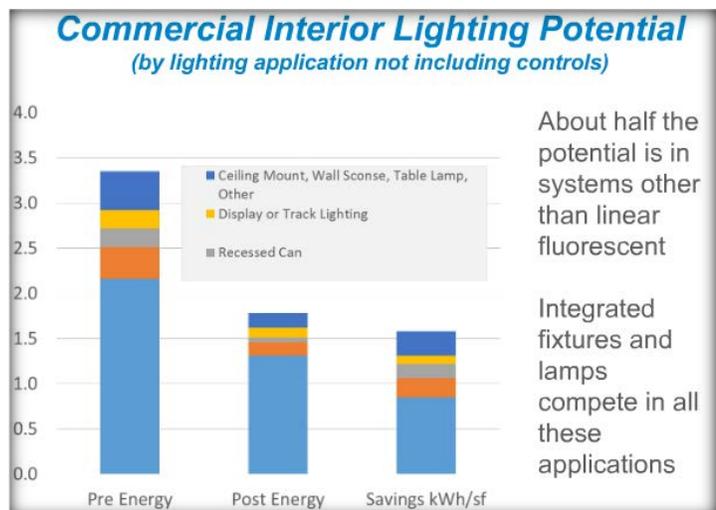
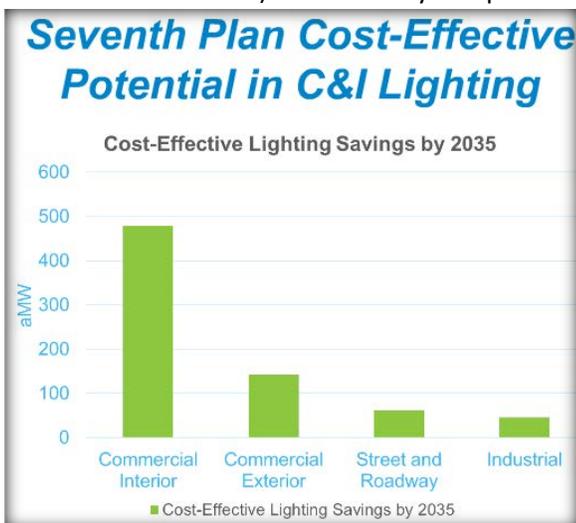
- a) Responses collected from: Avista, BPA, Energy Trust, NorthWestern Energy, Clark PUD, Idaho Power, Seattle City Light, Snohomish PUD, NWPCC, NEEA, Evergreen Consulting, Lighting Design Lab, PNW National Labs
- b) Most valuable outcomes:
  - i. Data
  - ii. Good-better-best guidance
  - iii. Coordination on midstream and incentives
- c) Inherent value in RSMP driving conversations that help us learn from and coordinate with each other

2. Recommended Priorities:

- a) Market data to inform programs
  - i. Avoid duplicate cost & effort. Help us see what measures could take over programs 'by storm' such as TLEDs did. What’s next?
- b) Advanced lighting controls
  - i. Expand beyond interoperability; Identify opportunities to collaborate, be more unified in approach to market
- c) Up/mid/downstream coordination
- d) Emerging technology
  - i. Have info & tools to stay up-to-date on changes
- e) Market actor training

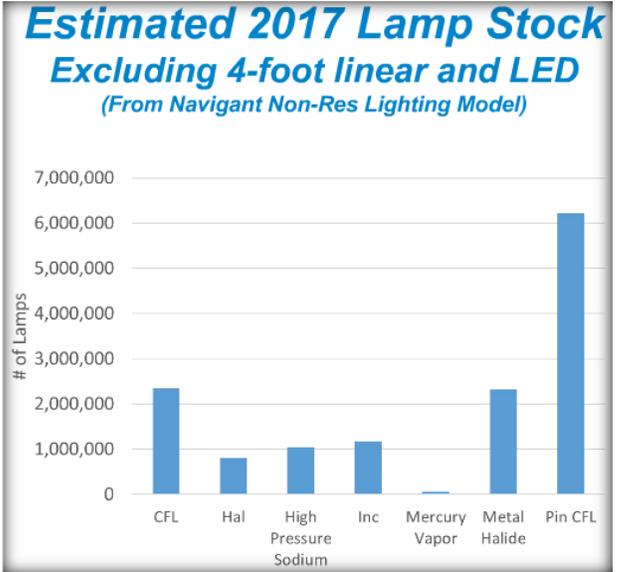
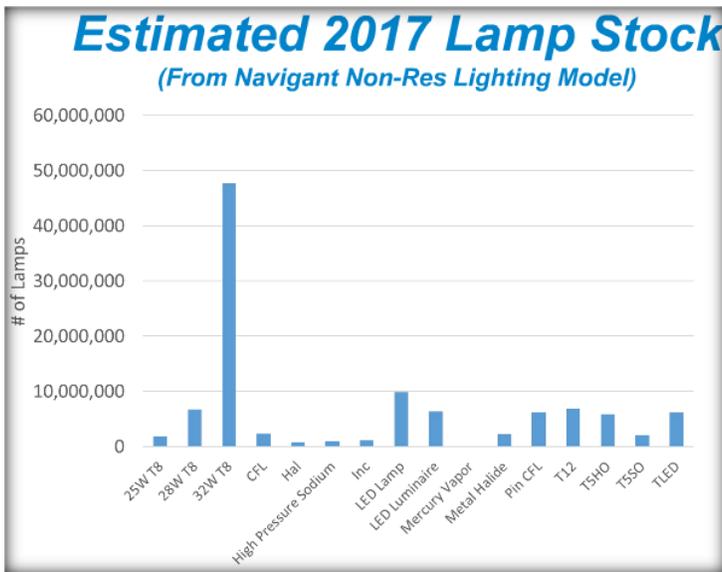
3. 2018 Planned Priorities

- a) Advanced Controls – Increase adoption
  - i. What are the key barriers keeping advanced controls from being installed (or going through programs) in the NW?
  - ii. What motivates customers to purchase (or not)? How can programs leverage these to increase adoption?
- b) Commodity Lamps – Inform program planning



About half the potential is in systems other than linear fluorescent

Integrated fixtures and lamps compete in all these applications



- i. What's next? HID-LEDs? CFL-LEDs? How can our programs better stay ahead of market shifts?
- ii. PSE 2016-17 Commodity Lamp Installations

Exterior Installations			Interior Installations		
	kWh saved	%		kWh saved	%
A21 LED	271,536	0.91%	High Bay	10,443,475	17.13%
Canopy	1,136,437	3.80%	Hort	2,709,536	4.44%
Flood Light	1,814,876	6.06%	Parking/Area	732,924	1.20%
Parking/Area	15,735,312	52.58%	T8	789,150	1.29%
Street	677,460	2.26%	TLED	31,129,569	51.06%
TLED	565,695	1.89%	Troffer	4,174,923	6.85%
Wall Pack	3,070,299	10.26%	Vapor Tight	816,977	1.34%
CFL LED	72,570	0.24%	CFL LED	623,908	1.02%
HID LED	4,865,090	16.26%	HID LED	3,934,564	6.45%
<b>Total</b>	<b>28,209,274</b>	<b>94.26%</b>	<b>Total</b>	<b>55,355,028</b>	<b>90.79%</b>

Ex: HID-LED replacement lamp comparison (100 watt Metal Halide vs 22W)

<b>Advanced Controls</b>	<b>Commodity Lamps</b>
<p><b>Proposed Priority Strategy</b> Increase adoption of advanced lighting control systems</p> <p><b>2018 Focus</b> 1. What are the key barriers keeping advanced controls from being installed (or going through programs) in the NW?  <ul style="list-style-type: none"> <li>- What can programs do to address these barriers?</li> <li>- What do customers and market partners need to support adoption?</li> </ul> 2. What motivates customers to purchase (or not)? How can programs leverage these to increase adoption?</p>	<p><b>Proposed Priority Strategy</b> Inform program planning for commodity lamps</p> <p><b>2018 Focus</b> 1. Accepting that many customers will choose replacement lamps over fixtures, what lamp characteristics or specifications should our programs/region promote?  2. How can available data be utilized to inform incentives &amp; program strategy so that we stay ahead of the curve?</p>

## Discussion:

- **SCL:** With input already provided, these align perfectly with changes we're implementing in our programs starting in August. Want to see more advanced controls and support systems/training to ensure installations are happening correctly. Likewise, send signals with incentive dollars on lamps.
- **NWPCC:** Curious about 50% TLED chart from PSE – what could that have been if it had been fixtures?
- **Clallam:** This is on the right track. Regarding controls, our contractors need training. Commodity lamps – it's all about price.
- **BPA:** Continuing to see importance of contractor network to leverage this work and continue to break through barriers – how to change some of this behavior.
- **Energy Trust:** Right focus, would like to discuss further internally to see if there's opportunities for us to get involved.
- **NWPCC:** Heard the need for education and training with implementers. There's so many products on the market, it will take some work to craft specs on the better products; not sure the Design Lighting Consortium has the capacity for that anymore. Will take some hard work to get this done in a timely manner.
- **Tacoma Power:** We don't have ability to be highly involved in the short-term due to staffing constraints and other priorities, but very much in support
- **Idaho Power:** Very interested in advanced controls, in support

## CAC Panel Discussion: Pay-for-Performance (P4P)

Committee Members representing Seattle City Light (Joe Fernandi), Energy Trust (Kathleen Belkhat), and Puget Sound Energy (Mark Lenssen), led the panel discussion. *The Desired outcome is for CAC members to share experiences and engage in collaborative discussion on pay-for-performance program models.* Refer to [slides](#) 65-90 and page 20 in the [packet](#) for greater detail.

### P4P Overview (Seattle City Light)

- A. What is it?
  - 1) Program for improving building energy performance
  - 2) Incentive payments over time based on verified performance
  - 3) Energy savings are measured at a whole building level
- B. Benefits
  - 1) EE measured at the building meter (measure blind, captures O&M, behavioral and interactive savings)
  - 2) Supports deep-efficiency
  - 3) Helps capture multiple measures through a single transaction (don't need discrete program boxes)
  - 4) Allows for flexible and creative projects
- C. When does it make sense?
  - 1) Large projects (significant EE depth)
  - 2) Interactive effects (measures impacting multiple building systems)
  - 3) Long-term (multiple projects)
  - 4) Mix of capital improvement, operational & maintenance, behavior savings
- D. How does it work?
  - 1) "Train" a baseline model (well-behaved building)
  - 2) Ensure well-behaved (can accurately predict consumption)
  - 3) Let participant loose to do swath of activities

- 4) Evaluate savings, incentives over time based on verified performance
  - 5) Measure-blind (capital, O&M, behavioral at same rate)
- E. Program Breakouts

### Seattle City Light (SCL): Deep Retrofit Pay-for-Performance (P4P) Program

**Contact:** Joe Fernandi [[Joseph.Fernandi@seattle.gov](mailto:Joseph.Fernandi@seattle.gov)] 206-684-9729]

- 1) History
  - a) 2013 Climate Action Plan adopted by City Council – directed SCL to develop incentive program that would pay overtime in lieu of up-front payments for projected savings
  - b) Three-building pilot initiated for deep retrofits
- 2) Lessons learned
  - a) Baselines
    - i. Not all buildings well-behaved
    - ii. Difficult to isolate a stable period in time
    - iii. Variables affecting consumption are sometimes not well-understood or haven't been collected
  - b) Baseline adjustments
    - i. Adversely affects numerical precision of model
    - ii. Estimates and assumptions introduce art into science
    - iii. Can be “messy”
    - iv. Expectations and process should be clearly laid out
- 3) Stakeholder workshop
  - a) Input on incentive structure, eligibility and reporting requirements
  - b) Stakeholders wanted options (3-year & 5-year models developed as a result)
- 4) Eligibility
  - a) Existing commercial buildings
  - b) Utility interval meter required
  - c) “deep” savings – at least 15% savings from capital measures; must impact multiple building systems
  - d) “well-behaved” building (M&V requirements) – stipulates model results, not tool/model
  - e) >50K sqft OR HIGH ENERGY INTENSITY
  - f) Not eligible for other programs (+ solar is separate contract)
  - g) Workforce development and qualification / training requirements
- 5) Incentives
  - a) 3-year persistence model
    - i. \$0.08/kWh
    - ii. Paid on all “persisting” savings
  - b) 5-year tiered model
    - i. \$0.18/kWh
    - ii. \$0.02/kWh “bonus” per 5% savings increment (beyond 15%) - encourages *depth*
    - iii. Paid on all “incremental” savings
- 6) Reporting requirements
  - a) Baseline report
  - b) Implementation period report
  - c) Quarterly reports – did anything change, what's been completed, what's coming up
  - d) Annual reports – basis of payment (how did you normalize)
  - e) Project tracking

- f) Non-routine adjustments (over time)
- 7) M&V Requirements
  - a) Generally consistent with IPMVP Option C & ASHRAE Guideline 14
  - b) Linear regression analysis
  - c) Goodness of fit criteria
    - i. NMBE < 0.0005%
    - ii. Estimated savings relative precision <25%
    - iii. T-statistic for independent variable(s) larger than 1.3 for 80% confidence
  - d) Incentives and savings based on *weather-normalized (TMY)*, not avoided energy use
- 8) Challenges
  - a) Certain barriers not addressed by current design (financing, split incentive)
  - b) Reduced avoided costs – difficult to make competitive
  - c) Lack of measure certainty (measure life/attribution)
  - d) Desire to reduce documentation requirements
  - e) Internal training / competencies
  - f) Participation / program uptake – speculative on at this point
- 9) Next steps:
  - a) Deep retro program launch in June 2018
  - b) New construction program launch late 2018
  - c) EE as a Service: late 2018

#### Discussion / Points of clarification:

- **Energy Trust** sought clarification regarding \$0.02 incremental savings. SCL clarified that the baseline model stays the same, but in the second year you subtract out savings from the first year. It's \$0.02 additional per increment beyond the \$0.18.
- No funding provided up front; annual payments.
- Screening as part of eligibility to ensure getting to a well-behaved building is possible
- Performance period starts when occupancy reaches 75% to be consistent with code
- **Tacoma Power**: *How much of this was driven by customer interest vs. trade allies?* SCL replied that some large customers were interested (ex: UW) mostly contractors and other strategic partners.
  - **Energy Trust** added that the demand is coming from the energy engineering community, not so much the customers.
- **Tacoma Power**: *Is 15% deemed savings threshold a hard line?* SCL noted that they do not plan to withhold any payments but want to ensure they're reaching the depth necessary to provide a good model. May withhold payment if they find that's not happening.
- **NEEA**: *With the Bullitt Center project work, is that showing up (EE Power Purchase Agreement)?* SCL has rebranded this to EE as a service to accommodate a broader range of activities.
- **Clallam**: *Were any of your pilots reported to the Washington State Auditor or Department of Commerce?* SCL noted they weren't sure as it was handled before his time, **will have to look into it.**

#### Energy Trust of Oregon Presentation

**Contact:** Kathleen Belkhatat [Kathleen.belkhatat@energytrust.org | 503-307-6114]

##### A. Overview

- 1) Measures include O&M, behavior and capital
- 2) Incentives paid annually for 3 years (based on meter readings)
- 3) P4P allies are a key element-contract between customer and ally

B. Pilot status

- 1) Completed: ally training; design and documentation (includes a tracking tool, hoping this will simplify the process)
- 2) Working on: recruitment (only had 3 allies initially)
- 3) Upcoming: eligibility and energy reduction plans; implementation and measurement

C. Design Overview

- 1) Contract structure
  - a) Customers and P4P allies
  - b) Customer and energy Trust
- 2) Project requirements
  - a) Energy reduction plan
  - b) Installation/implementation
  - c) measurement
- 3) Savings quantification
  - a) Meter-based
  - b) Regression model
  - c) first-year savings claim
- 4) Incentives – not measure blind

O&M	Capital (includes O&M)
\$0.05/kWh	\$0.08/kWh
\$0.60/therm	\$1.00/therm
Capped at 200% of 1 <sup>st</sup> year incentives	Capped at 150% of 1 <sup>st</sup> year incentives
<= 50% of savings from capital	> 50% of savings from capital

- a) Assume customer will do as much up front as possible, also want to maximize the incentive

D. Challenges & Lessons Learned

- 1) Design
  - a) Cost-effectiveness & savings baseline
  - b) Quantification of savings
  - c) Ally requirements
- 2) Uptake
  - a) Contracting structure
  - b) Duration of contract – likely too long
  - c) Other obstacles that are unknowns
- 3) Doing an evaluation to see what changes can be made to improve

**Discussion / Points of clarification:**

- **NEEA** inquired about the ability to achieve cost-effectiveness at individual measure level for whole building; seems very challenging. Energy Trust recognizes that's a limitation, but it's a requirement. The advantage is that it can encourage folks to maximize the performance of the capital project and get paid over time, as well as claim incentives and savings, but they don't have a path currently. We just have to toss out the projects that aren't cost-effective and deduct that from the savings.
- **ODOE**: *Do you see most interest from the trade allies?* Energy Trust noted that there were some perceived loop holes trade allies were trying to drive through, but we have the process pretty tight

so there aren't loopholes; that might be why we're not getting the uptake. With commercial SEM program – that's for larger customers that are ready to take this on. This program is more designed for smaller participants; those without building operators seem to be struggling more.

### Puget Sound Energy Presentation

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#### A. Drivers

1. Required
2. Looking for better way to capture “difficult to calculate” energy savings and provides pathway for “opportunistic” projects
3. Facilitates multiple projects rolled into a “single” one

#### B. Program Details

1. Commercial, 50,000+, well behaved, pre-qualified with at least 15% savings potential
2. Multiple capital projects, O&M, behavior
3. Looking for both kWh and therms
4. Quarterly documentation from customer/contractor

#### C. Funding Details

1. Grant agreement between PSE and customer (similar to a standard custom grant project)

• **Base Incentive:**

- Calculated using proposed 1<sup>st</sup> year savings as percentage of baseline consumption
- Not to exceed \$.30/kWh, \$5.00/Therm
- Up to 50% of incentive can be paid after implementation of measures (end of Year 1)
- Remaining incentive will be used to calculate a \$/kWh(Therm) to be paid annually for the rest of the contract

• **Performance Incentive:**

- Savings and incentive calculated after each of the 4 performance years
- \$0.05/kWh (\$0.50/Therm) for annual savings above the proposed target

#### D. Savings methodology

1. 12 months baseline use to develop regression model
2. Fixed baseline (adjustments made for non-routine events)

### Discussion / Points of clarification:

- **Tacoma Power):** *If you don't currently offer a P4P program and were asked, what would your response be?* Energy Trust replied there's a lot of lessons learned and tools developed; try to steer it more towards O&M savings, then you don't need measure-level cost-effectiveness. Baseline is a complication, but it does allow for persistence of savings and allows folks to get more savings for the projects they are doing. Need to be careful about closing the loopholes. The providers seem to want this more than the customers, and it does lock in a customer for 3-5 years, so we need to design something that's better suited to the customers.
- **ODOE:** *Could a larger, more sophisticated customer participate without using a partner or trade ally?* SCL noted that was possible, for example schools have expressed interest to hire different partners for different projects. If they don't have the expertise to provide the regression analysis on their own, we can help with that.
- **NWPCC:** *Is this incorporated in your conservation potential assessments (CPAs)?* SCL noted that the CPAs have driven these programs.

- **BPA:** *What's the approximate time and FTE needed to run these efforts?* Energy Trust noted it takes a lot of time to develop, once that's formed, then it shouldn't require much time to run it.

## Market Opportunities

Emily Moore and Debbie Driscoll (NEEA) led the discussion. *The Desired outcome is for CAC members to share experiences and engage in collaborative discussion to help inform planning activities within all organizations.* Refer to [slides](#) 93-97 and page 21 in the [packet](#) for greater detail.

### Brainstorm / Discussion

- A. *What are changes/challenges you see coming in commercial energy use in the coming years?*
- 1) EE & DSM integration
  - 2) Discrepancy between achievements and potential
  - 3) Cost of carbon (ramifications, etc)
  - 4) Capacity challenges
  - 5) EUI reduction (lower energy use per sq ft - lower potential)
  - 6) Developing anything cost-effective above code
  - 7) Targeted savings vs. broad reach program (where to focus efforts - going after big stuff, or ???)
  - 8) Heavy reliance on BPA initiatives/programs, while there's uncertainty with reaching targets
  - 9) Changes in workforce (retirements + changing skillset needs)
  - 10) Reduction in lighting potential
  - 11) Pace of technology - role in chasing after additional savings
  - 12) How to get closer to trade allies (lighting networks)
  - 13) Smarter buildings with emerging tech
  - 14) Distributed energy resources (DG)
  - 15) Opportunities for O&M
  - 16) EVs
  - 17) Gap - Improvement of code compliance not in traditional utility program
  - 18) Plug-load challenges - difficult for utility programs to manage (including embedded data centers)
  - 19) Multifamily (aggravated split incentives)
  - 20) "Other" produce (cannabis, lettuce, indoor Ag)
  - 21) Municipal energy standards
  - 22) More data available and translation to opportunities
- B. *What changes/challenges do you think will be of concern for building owners and managers?*
- 1) Time constraints
  - 2) Resilience
  - 3) Reinforcing EE first before implementing/sourcing renewable
  - 4) Benchmarking and targets - requirements to decarbonize
  - 5) Split incentives
  - 6) Complicated process/players for new entrants (building owners/managers) - time and ability to even focus on energy efforts
  - 7) Workforce retirements
- C. *How are you preparing (or hoping to prepare) in your organization?*
- 1) Leveraging trade ally networks based on needs (maintaining flexibility) - BPA as mechanism to help train workforce
  - 2) Work w/ customers 1:1 - building closer relationships (diversifying program offerings)
  - 3) Focusing on customer experience
  - 4) Engaging more deeply with stakeholders - leveraging advice

- 5) Programs that support depth (addressing potential)
  - 6) Portfolio level value-add services (business model; ex: EE as a service, subscription for energy information services, green power purchases)
  - 7) UES deemed savings measures (simple, quickly adoptable, direct install, etc.)
  - 8) Leveraging distributor network (meeting customers where they are - midstream)
  - 9) Market solutions for new construction (meeting customers where they are)
- D. *What is the most important challenge for us as a region to get ahead of, or work collaboratively, to solve?*
- 1) Lighting strategy example today - good solution/framework
  - 2) Cost of carbon
  - 3) Code compliance support
  - 4) Plug load - End Use Load Research

## **Wrap up/Feedback on Meeting**

- A. Public Comments
  - 1) None
- B. Wrap-Up/Meeting Feedback
  - 1) Many appreciated the panel discussion – needed more time for this
  - 2) Many appreciated the brainstorming session – good timing to do this in Q2 of each year
- C. Next meeting & topic ideas
  - 1) Q3 meeting is Tuesday, July 31, 2018 in Portland at NEEA's office
  - 2) Proposed topics include:
    - a) None offered up immediately
- D. Meeting adjourned at 4:10pm