

Conservation Advisory Council Meeting Notes

February 8, 2017

Attending from the council:

Jess Kincaid, Bonneville Power Administration (for Brent Barclay)
Elaine Prause, Oregon Public Utility Commission (for JP Batmale)
Holly Braun, NW Natural
Roger Kainu, Oregon Department of Energy
Julia Harper, Northwest Energy Efficiency Alliance
Andria Jacob, City of Portland
Don Jones, Jr., Pacific Power
Don MacOdrum, Home Performance Guild of Oregon
Garrett Harris, Portland General Electric
Lisa McGarity, Avista
Jeff Mitchell, Northwest Energy Efficiency Alliance
Tyler Pepple, Industrial Customers of Northwest Utilities
Stan Price, Northwest Energy Efficiency Council
Jim Abrahamson, Cascade Natural Gas
Charlie Grist, NW Power and Conservation Council

Attending from Energy Trust:

Mike Bailey
Tom Beverly

Amber Cole
Kim Crossman
Sue Fletcher
Fred Gordon
Corey Kehoe
Scott Leonard
Spencer Moersfelder
Thad Roth
Peter West
Jessica Iplikci

Others attending:

Lindsey Hardy, Energy Trust board
Alan Meyer, Energy Trust board
Ken Canon, Energy Trust board
John Frankel, NW Natural
Aquila Velonis, Cadmus
Mark Duty, Rogers Machinery
Jennifer Stout, Northwest Energy Efficiency Alliance
Ann Curran, Northwest Energy Efficiency Alliance
Amanda Potter, CLEARResult
Sara Fredrickson, CLEARResult
Brien Sipe, CLEARResult
Bob Stull, CLEARResult
Dave Bamford

1. Welcome and introductions

Kim Crossman convened the meeting at 1:30 p.m. The agenda, notes and presentation materials are available on Energy Trust's website at: <https://www.energytrust.org/about/public-meetings/conservation-advisory-council-meetings/>.

2. Old business and announcements

Members approved previous meeting minutes.

Kim Crossman: Outlook meeting invitations have gone out, which included call-in information this time. We will see that going forward. Your packets include a list of evaluations in process or planned in 2017. We don't present on them here, but we thought some of you might have an interest. The next time we meet we will discuss what should come to Conservation Advisory Council in 2017. Let us know if any of these evaluation items would be interesting to hear more about at an upcoming meeting.

Jim Abrahamson: I wanted to say thank you to everyone for the wonderful plaque from the November council meeting. I appreciated it.

Kim Crossman: Scott Inman from the Oregon Remodelers Association will be retiring and leaving the council. This raises a discussion for us about Conservation Advisory Council membership requirements, which we will have later in the meeting.

3. Preliminary 2016 results

Peter West presented on the Energy Trust preliminary 2016 results. The official results and highlights will be available in the 2016 OPUC Annual Report released April 14.

Peter West: These are preliminary annual savings and generation results for 2016. I'm not providing financial information today, which will be in the OPUC report. Today's presentation will give you a flavor of why we got to where we did.

2016 was a great year for savings and generation. You don't get here without help from a lot of people, including utilities, trade allies and stakeholders. Thank you for your contribution to these results. This was our best year ever in annual gas and electric savings since. We also did this without a megaproject. Previous record years included some sort of very large project. I have to stress that this is a portfolio. NEEA's work is also embedded in these numbers. NEEA hit 103 percent of goal in 2016.

We are two years into our five year strategic plan. We have achieved 40 percent of the electric and 55 percent of the gas strategic plan goal, and we're ahead of expectations.

In many areas, results exceeded forecasted expectations. In a few other areas, results fell short. Custom projects in Existing Buildings and industrial didn't perform as well as we hoped. It's flagged in our action plans and we'll do some analysis. In contrast, standard Existing Buildings and industrial projects exceeded goals.

New Homes helped builders construct 2,600 homes above code in 2015 and 3,600 in 2016. We achieved 38 percent market penetration in our territory. There were also more than 400 New Buildings projects completed and over 500 projects are in the pipeline this year.

We pursued targeted marketing for renters, and we expanded the financing option with repayment through utility bills to moderate-income Savings Within Reach customers. Energy Trust provided incentives for 900 furnaces between Savings Within Reach and rental homes. We did some research with focus groups of diverse customers, with the goal of expanding participation in 2017 and beyond.

We expanded the Trade Ally Network. The trade ally-delivered standard track was successful. There were 52 new trade allies in Existing Buildings.

We achieved 125 percent of goal for NW Natural in Washington, with exceptional savings for Washington residential customers.

Finally, we created 415 new measures and updated 616. That's a lot of work and analysis.

Stan Price: This is outstanding news. Conversations throughout the region are often different. They touch on declining availability and the end of low-hanging fruit. Have you thought about organizing the mix of ingredients in a way that talks about themes and combinations of

relationships, innovation and other things that came together to do this? Is there a narrative that the rest of us can use to learn from your successes in 2016?

Peter West: That sounds like the NEEA Energy Exchange Conference in May. We'll work on this between now and April. Seven years ago we started on the previous plan which was to double our savings. We did a lot along the way and learned. We reapplied what we learned. We appreciate support from the board and stakeholders where we are doing well.

Stan Price: You're right that it's important for the Efficiency Exchange attendees to hear.

Alan Meyer: I want to compliment everyone on a job well done. Missing the goals wouldn't have been good, but exceeding them by too much wouldn't have been good either.

Andria Jacob: I'm struck by Peter's comments about delving into communities we haven't reached very well. It's great to hear, and I hope it continues.

4. Residential assessment project update

Thad Roth provided an update on the residential sector assessment project. In January, staff held a Conservation Advisory Council workshop to have an in-depth conversation about proposed residential sector changes. The workshop included council members, trade allies and representatives from NEEA, Bonneville Power Administration and the utilities. It gave staff a chance to get into the details behind proposed changes. In general, there was an appreciation for the challenges the sector is facing. There are big changes to savings on the residential side; particularly electric savings. There's great acceptance of LEDs in retail efforts and the sector has seen saturation of showerheads.

Staff is looking at a single program management contractor, PMC, model, supported by program delivery contractors, PDCs, for specific technologies. The concept seemed to be understood at the January workshop. There were some concerns expressed with moving to a single PMC. Staff took the feedback and is moving quickly with decisions.

The next step is to present the plan to the board on February 22. Transition planning will be from March through December. The actual transition will be in January 2018. At the July or September board meeting, staff will recommend to the board the selected PMC and remaining structure. The rest of 2017 will be spent engaging with the PMC and PDCs in the structure.

Don MacOdrum: It seems like the PMC selection announcement will happen in July. Is that about right?

Thad Roth: Energy Trust rebids PMC contracts periodically. Existing Buildings was last year, and presented its PMC recommendation to the board at the July 2016 board meeting. We'll try to match that schedule. There's a need for a transition phase, so that gives an appropriate amount of time.

Don MacOdrum: With July as a target, when will the RFP go out?

Thad Roth: We're finalizing the schedule now, but the plan is to send it out before May. There will be a notice earlier to help people start preparing.

Elaine Prause: You are looking at one PMC and multiple PDCs. Did you get to discuss if the PDCs will contract directly with Energy Trust or subcontract with the PMC?

Thad Roth: We received comments and have experience with this structure. We haven't finalized the number of PDCs. We also need to decide who will have the contractual relationship with the PDCs. Energy Trust currently does it both ways now. The commercial sector approach is to have the PDCs subcontract with the PMC while the Production Efficiency program

contracts directly with PDCs. We don't want to limit approaches in the RFP. Based on the RFP scope, responses may vary and it could be a collaboration. Subject matter experts may be out there and we may want a direct relationship with them or PMCs may choose to partner with potential PDCs directly as part of their response to the RFP.

Lisa McGarity: What type of budget do you have for the transition, or is it too early to say?

Peter West: The cost of the transition will depend on the responses we get. How much we choose to contract with PDCs along with the PMC will inform the cost. A significant measure of success is that the customer perceives no change and that's our focus.

Thad Roth: We will bring in a third party to help manage the RFP and transition to keep it from impacting day-to-day delivery of the existing programs. It's about a six-month project. Other transition costs impacting PMCs will need to be accounted for.

5. Key measure updates expected in 2017

Mike Bailey: Around 50 measures are scheduled to expire this year. To put it into perspective, about one-third of our measures expire each year. Some come up more often due to changing circumstances.

Kim Crossman: These are some things that could come to the council. The presentation covers high interest and high touch measures, but isn't an exhaustive list.

Julia Harper: Do you have a timeframe on the expected Residential Energy Tax Credit changes?

Mike Bailey: July or August is when we plan to have things settled.

Julia Harper: There are multiple bills in the legislature now, so we'll know by July.

Roger Kainu: There could be a special legislative session, which is key. It could go all the way into the fall.

Mike Bailey: We have sometimes needed to make contingency plans to allow us to proceed and adjust.

Charlie Grist: What do you do in these updates? What does the end product look like?

Mike Bailey: Each document is a logic-model description of the measure, baseline, assumptions and cost effectiveness. One document can have a single measure or 20 to 30. Lighting is an example of a single measure approval document but it includes 30 different measures for types of lamps and cases. The documents tell people the basis for why we think it saves energy, what it's worth and the Energy Trust incentive.

Charlie Grist: Does this help you decide how to design programs and step on the gas in some places?

Mike Bailey: It's a combination of engineering, statistical analysis and market strategy.

Kim Crossman: Our agriculture program is going to try to develop standard measures for cannabis production facilities.

Mike Bailey: Residential is also looking at possible cannabis standard measures for products.

Don MacOdrum: Is this list of new measures a complement to the long list of evaluation projects included in the Conservation Advisory Council packet?

Mike Bailey: These are pilots of potential new measures, more like research projects. So evaluations look at impact and process of existing programs, pilots are investigating potential future measures.

6. Launch of 2017 Conservation Advisory Council, part 1

Kim Crossman: We do an annual review of Conservation Advisory Council operating principles. The council felt they were fine the last two years. One of the changes this year is including remote meetings. Most of us agreed that it's better to have everyone in the room. The reality is that Lisa flies in for the meeting and we have a Central Oregon board member. Others do a lot of travel. Remote capability is a work in progress.

Don MacOdrum: You've made a great effort to honor this in a new way with invitations going out ahead of time, along with agendas and calendar items.

Kim Crossman: The budget meeting is the toughest one every year. We are often down to the wire before that meeting. You also suggested a formal onboarding for new council members, which seemed successful in 2016.

Charlie Grist: How is Conservation Advisory Council input to the board going?

Alan Meyer: It's more for people who don't attend the council meetings. Board members read the summaries of these meetings. It's effective, but it's unrealistic to expect everyone to be at the Conservation Advisory Council and Renewable Energy Advisory Council meetings along with the board meetings.

Kim Crossman: Our board members do a great job reading packets and being prepared. Thank you to Alan and Lindsey for being here after council members gave feedback in past years that it's helpful to have a board presence.

Alan Meyer: I learn a lot from these discussions. People here are close to where the rubber meets the road.

Kim Crossman: Thank you for your input, and we'll move forward with these as-is. At the next meeting, we will talk about what comes to the Conservation Advisory Council as an exercise. Since Scott Inman gave his notice to the Conservation Advisory Council, we want to review criteria for selecting new members today. There are several internal discussions about it and we would like your feedback so we can take it to the board for consideration.

The Conservation Advisory Council represents broad interests of the industry and organizational perspectives versus individual businesses. Candidates need to be strategic and dynamic to connect their topics to our needs, consider and care about Energy Trust's full mission, be geographically diverse, have well-rounded experience and represent diversity. Other program administrators are often valuable. We've historically had more Conservation Advisory Council members with a strong stake in residential. It's a challenge to get commercial and industrial representation.

Don MacOdrum: Without saying association, you alluded to people with a high level stake in various sectors being good candidates. Have you identified program areas that are under-represented?

Kim Crossman: There aren't any agriculture sector representatives at the table. They are a particular niche. We were concerned about commercial buildings last year on the Conservation Advisory Council, and BOMA filled that role.

Andria Jacob: When I think about under-represented, we've had low-income representation here, but end users are another group. I suggest we start exploring what the equity community looks like and how they fit at the table.

Don Jones: The list sounds good to me. It's a challenge to find people with both time and skills outside the residential sector. We deal with that at PacifiCorp, also. We have to go to agricultural folks to visit them, for example.

Lisa McGarity: Maybe you focus a meeting toward the sectors like agriculture.

Alan Meyer: Geographic diversity is a good thing. People around Portland are more likely to be here for the meetings. Contractors outside of Portland have different views and we need to find a way to get their input.

Ken Canon: When you are thinking about people, make sure you have a good mix of planners, representational association people and those who are on the ground. I would think about those groups.

Kim Crossman: Implementers mostly come to listen, but we do value the participation.

Don Jones: NEEA, BPA and PacifiCorp representation gives you program administration representation.

Sara Fredrickson: Peter mentioned trade allies. Expanding in that sector would be interesting.

Tyler Pepple: Given that the funding comes from customers, ratepayer representation is important.

Kim Crossman: Jeff Bissonnette left the Citizens' Utility Board, CUB, and we haven't added anyone from CUB to replace him. BOMA and Tyler both hold that role for now.

7. Residential air conditioning measure opportunity scan

Spencer Moersfelder: We currently don't have prescriptive residential air conditioning measures, but we have undertaken a preliminary study to identify potentially cost-effective measures for air conditioning. Promising measures will be subjected to an additional review.

Don MacOdrum: Is there a focus on new or existing homes?

Spencer Moersfelder: Both.

Charlie Grist: Can you touch on how you do the capacity analysis? We are finding that the value of peak capacity is big. We need to know how you did it, because it was one of the biggest things we ran into. Capacity factoring into cost effectiveness is a big piece.

Spencer Moersfelder: The relative value of savings in terms of summer and winter peak are included in the avoided costs used in our total resource cost test.

Kim Crossman: Ted Light presented that in 2016, and maybe we should get into that presentation again.

Spencer Moersfelder: Cooling zones one and two cut across the Portland Metro area. In one zone the same measures aren't looking cost effective but they look better in the other.

Don MacOdrum: During the summer, zone one is the coolest and zone three is the hottest. Are you looking at this because of current trends in the climate and weather causing increased cooling loads to come online? This is six or seven year old data. How do those reconcile?

Spencer Moersfelder: We will have to think about that in the future. Weather data was broken into different chunks. Traditionally, we've used historical data. Now there's evidence that the climate is warming and you can see trends toward hotter temperatures. For future consideration we need to determine if that is a blip or something we can depend on.

Aquila Velonis: For weather data, the Regional Technical Forum, RTF, relies on TMY 3, but for Portland they rely on TMY 2. TMY stands for typical meteorological year.

Charlie Grist: On those TMYs, they are typical years. They look at a 30-year period and pick the most typical year representative of that set. They consider solar insolation and temperature. All sorts of factors are traded off.

Spencer Moersfelder: The benefit cost ratios are the total resource cost, not the utility cost test.

Charlie Grist: Are you using the RTF methodology for two-tier savings?

Aquila Velonis: We used one-third of the effective useful life as a proxy to estimate remaining useful life. On this basis we calculated the net present value of cost and savings divided by the full measure life to calculate annual costs and savings.

Spencer Moersfelder: We are going to discontinue looking at retrofit/early replacement measures.

Charlie Grist: Let's look at avoided costs and peak capacity before you throw it out.

Spencer Moersfelder: We will walk Charlie through how capacity values factor into avoided costs offline.

Aquila Velonis: We estimated the consumption of window air conditioners. For example, we assume window air conditioners are one ton vs. four tons for central air conditioning. We scaled the RTF SEEM model central air conditioning consumption down accordingly to estimate the consumption of a window air conditioner. We also looked at the ENERGY STAR calculator, but they are revamping and revising their tool. As a result, we decided that the RTF tonnage adjustment method is more representative of circumstance in Energy Trust territory.

Lisa McGarity: Did you take a longer run time into account for a one ton unit to cool?

Aquila Velonis: No. We assumed it would cool a very local space in the home like a room. While we agree it may not actually have the same run hours. There's a discrepancy between window air conditioning and central. There are also behavioral differences between them. However, for this preliminary analysis, we did not change run times from central to window air conditioners. [Post meeting note from staff: To correctly answer this question specific for the northwest, it could require window air conditioning metering to determine the appropriate hours of use.]

Lisa McGarity: In climate zone three it would probably run continuously.

Aquila Velonis: The window air conditioning results are close enough that they warrant another look.

Don MacOdrum: Can you explain early replacement retrofit vs. time of purchase?

Aquila Velonis: A time of purchase upgrade is at the failure of equipment. People won't replace it until it fails. At that point they can go with the federal baseline or an efficient unit. Early replacement products are still operational. It could happen through audits and identifying areas for upgrade.

Don MacOdrum: Time of purchase could be an existing homeowner buying a new unit or replacing equipment because it failed?

Aquila: Yes. We found that all cooling zones were cost effective for package terminal air conditioners in multifamily.

Garrett Harris: How does this compare to package terminal heat pumps? We may be driving people toward package terminal air conditioners instead of package terminal heat pumps.

Aquila Velonis: There's no distinction between them in the DOE Technical Source Documentation.

Spencer Moersfelder: That's based on the manufacturer costs, but doesn't account for markups in the market. We need to look at prices in the market. This is the beginning of more research. Our suspicion is that cost information will challenge the cost-effectiveness. We suspect that the market is marking up the more efficient equipment.

Elaine Prause: This is great to see. Maybe give a little more context around what you're using in cooling load growth and resource potential. What's the size of the opportunity? We are looking at avoided costs this year.

Don MacOdrum: We were supposed to have an avoided cost docket last year and it got pushed back. Is there a timing on that?

Elaine Prause: This spring. A lot of things got in the way.

Lisa McGarry: Are you looking at this in commercial as well?

Spencer Moersfelder: We are looking at new multifamily construction. This study wasn't otherwise commercial. To some extent, weather information would be a great topic to discuss. What data would be appropriate for analysis for the future? We're interested in regional opinions and understanding the right course of action. It could impact cost effectiveness. Do we look at recent trends or historical data?

Charlie Grist: This is what the electrical system will see as stressful times: three-day heat waves. We have a lot of these events connected more often for a longer time. We see the region moving more toward equivalent peak summer and winter peaks. Winter used to be the peak here. Systems operate differently during stress than during average times. We want to think about how we approach these things and think about peak here and at the RTF.

Elaine Prause: You raise consistency assumptions and there's a desire to raise consistency with the utilities also.

Fred Gordon: There are many questions behind this analysis. Room air conditioning is used differently by different people. We have no real load research on how this equipment is used.

8. New Buildings pilots

Jessica Iplikci: New Buildings is targeting new technologies for pilots to create standard measures for a majority of Oregon's new construction opportunities in small to medium size buildings. Variable refrigerant flow is one technology. It's complicated but is broadly considered to be cost effective. Variable refrigerant flow, VRF, is a heating and cooling system that uses a lot of refrigerant to transfer heat and has zonal capabilities depending on how the system is designed and configured. This presentation is a status update on the VRF pilot.

We initially found a variation in costs, which led to the pilot. We looked into 23 projects and determined which of those could provide highly detailed cost information. Modeling was another key aspect of the work.

There is a local push that impacts this work due to the large amount of refrigerant in these systems.

Charlie Grist: Is that about refrigerant leakage?

Jessica Iplikci: The pilot revealed one code-related push against refrigerant causing one type of VRF targeted for further study through the pilot to not be possible. It's going to be an ongoing factor. It's not about leakage as much as ozone. This looks like it will be cost effective but it's difficult to see how cost effective yet.

Charlie Grist: This was a big measure in the Seventh Power Plan. You are using Skanska to do some analysis. What about using CBSA data?

Jessica Iplikci: Skanska is providing cost data, specifically incremental and baseline costs for new construction. Cindy, can you comment on potential use for CBSA data?

Cindy Strecker, New Buildings Technical Manager for CLEAResult, the New Buildings' PMC: CBSA is not used in new construction analysis because we're not using an existing buildings baseline. It's set by code and equipment. This our baseline, which sets how we define it. It's different by building type and size. Multifamily would be different from commercial.

Jessica Iplikci: We've collaborated with BPA and others since there's great interest in VRF, but we're focusing on new construction costing, codes, baseline and equipment configurations.

Charlie Grist: VRF systems are flying off the shelf, as we are seeing. This sounds like a good approach. Someone has done a lot of spec'ing of those systems. What analysis is being used?
Cindy Strecker: EQuest and performance curves of manufacturers of three systems.

Charlie Grist: We don't have actual, just what's estimated in the performance curves.

Jessica Iplikci: There are three projects in particular that came through the pilot so far, in new construction getting results can take a while, but before we develop VRF, we'll see where the cost data takes us first. Code may change in the meantime, there are updates in 2018. The field continues to change. It's a moving target. We'll share findings with BPA and the region.

Don MacOdrum: Is this the commercial equivalent of a ductless mini-split? Is it spreading the energy out to multiple head units?

Jessica Iplikci: Yes.

Charlie Grist: Pushing refrigerant around is more efficient than pushing air around.

Jessica Iplikci: The next technology and pilot we're presenting today is for lighting controls. NEEA approached us in 2016 about luminaire level lighting controls. They wanted to take steps about technology validation tests and other drivers for the technology. It's mostly for office tenant improvements. Our 2017 action plan includes launching this pilot very soon.

Ann Curran: This is a range of products that are simpler and easier to install, all the way up to full-featured, with a wide range of benefits behind efficiency. Ten manufacturers have adopted Design Lights Consortium luminaire level lighting controls spec standards with 14 products. Many of them also sell these to fixture manufacturers so they get embedded in their fixtures.

Potential savings come from a finer grade of control. The new generation of controls provide a path through problems that have held controls back in the past. There's less

wiring and less potential complexity in the design and configuration. There's adaptability, preprogramming and a better out-of-the-box experience. We want this to become the default in fixtures.

Puget Sound Energy has just offered an incentive for these controls. We'll see how much adoption there is. Other utilities in the region may also incorporate pilots.

Andria Jacob: How is it that Puget Sound Energy has an incentive? Are they ahead of us?

Ann Curran: Puget Sound Energy is going a little bit out on a limb. Efficiency Exchange will include a presentation from the utility on their experience. They have restructured their incentives. It is a little bit of an experiment from them. The RTF assigned some savings to luminaire level lighting controls in the update for retrofits, which is helping them. Puget will use those numbers to claim savings. Their effort isn't for new construction.

Jessica Iplikci: This is just in the New Buildings context. We want to use a guinea pig project in early design phase. There are utilities that take this as a new controls technology and they may have more confidence in how it works.

Ann Curran: Puget is taking a baby step toward really promoting luminaire level lighting controls.

Jess Kincaid: Washington code is further along than Oregon's.

Mike Bailey: Evergreen is actively looking for these projects in Existing Buildings, but we treat it as a different measure. We aren't getting additional savings that we may find from this NEEA pilot. We are taking a more conservative approach to counting savings, currently. The study is about whether we can claim more.

Fred Gordon: It's also about customer satisfaction and commissioning, and how we get at the data. It's not just about the numbers.

Charlie Grist: This is great that you are looking at it. RTF published the numbers, but there is a lot of variation in how customers use this. The research will help prove it out. I think it's great to get hands-on research. I hope you can touch base with the RTF. What's the baseline in the space where these are going? I hope there's a preconditioned baseline assessment before this. We found that a lot in the work we've done. A lot of office spaces don't have controls, but they also aren't lit. It will take time to get through it, but it's promising.

Jessica Iplikci: We are planning to get very willing customers to work with us for the pilot. Commissioning is a really important part of luminaire level lighting controls, and dialing it in for customers and users in individual spaces.

Charlie Grist: What spaces will be used? Warehouses? Schools?

Jessica Iplikci: It will be offices first. Some warehouses. Between those two building types, we expect a lot of variation, but also variation within offices based on user/customer preferences.

Charlie Grist: A school classroom with high use could be a good space for it. It could become prescriptive.

Jessica Iplikci: This is expected to become a much cheaper way of getting lighting controls into a space.

Ann Curran: It's expensive now, but there is new hardware which will make it cheaper.

Julia Harper: Is the \$70 incentive expected to be the incremental cost of these fixtures over others?

Ann Curran: We will look at cost through this study, but that was about where it was coming in and we hope to see it decrease over time.

Elaine Prause: What's the total estimate of the project cost?

Jessica Iplikci: I'd have to calculate that based on an actual project. Given the criteria we've set, we're targeting spaces greater than 5,000 square feet, and would apply today's lighting incentive based on lighting power density reductions and get an efficient design before we apply the luminaire level lighting controls incentive of \$70 per fixture. So the cost of the pilot projects will depend on the number of luminaire level lighting controls fixtures installed, though each pilot will have a fixed incentive for Early Design Assistance of \$1,000 to incorporate luminaire level lighting controls into a space and select a product in addition to the required commissioning and evaluation steps.

Charlie Grist: One more idea: there is a lot of connected lighting load. If we could control some of that for demand response, that's a potential new value stream. How willing would people be to accept dimming for power system control? It's something to consider and potentially a big extra value stream.

Ann Curran: It's a good point but not baked into this as a core part of the plan.

Charlie Grist: As you structure the research, be looking for opportunities to test acceptance.

Don MacOdrum: We had the residential assessment being affected by potentially losing lighting and showerheads, other things being reviewed in other sectors and home energy management systems being tested overseas. Is luminaire level lighting controls a lifeline for residential measures?

Fred Gordon: They are thinking about it right now. There are a lot of water heaters so a lot of potential savings. For lighting, once you get lighting down to six to eight watts, there's not a lot you can do with controls. We are still looking at it. Is there any way we can do it cheaply enough to touch it? Storm window inserts may be cheap enough coming up on the electric side. We are still looking.

Charlie Grist: I love the packets, but at least two of the presentations weren't included. It would be great to make sure they are all there. I can have others add comments before I get here.

Kim Crossman: They will be reposted online by tomorrow morning. We are working on that.

9. Public comment

Dave Bamford: I wanted to point out that I've been videotaping these lighting systems for Energy Trust, and they work great. People who are controlling them are doing it remotely. They are a fantastic technology.

10. Meeting adjournment

The next scheduled meeting of the Conservation Advisory Council will be on March 15, 2017 at 1:30 p.m.