

**Northwest Power and Conservation Council
Conservation Resources Advisory Committee
October 23, 2018**

Charlie Grist, NWPCC, began the meeting at 9:30 am with a review of the day's agenda. Chuck Murry, WA Energy Office moved to approve. Bing Liu, NEEA, seconded. The agenda was approved.

Grist then asked for approval of the minutes from June, 2018. Brandon O'Donnell, Seattle City Light moved. Whitney Rideout, Evergreen Consulting, seconded. The minutes were approved.

Grist reviewed the Conservation Resources Advisory Committee charter. O'Donnell asked if there is to be only one representative per organization. Grist said no, explaining that the Council looks for broad representation and expertise from committee members but the meetings are open to everyone.

**Whole Building Consumption Data
Charlie Grist, NWPCC**

**Whole Building Data Analysis: Challenges of Using AMI Data
Tony Koch, BPA**

Grist asked about the prevalence of missing interval data (Slide 4.) Koch said that it's proportional to the sophistication and size of the utility and software systems used. Grist asked if this is because larger utilities are using this data. Koch said generically, larger utilities do have more use for the data, but more importantly, staff to manage it.

O'Donnell agreed that SCL struggles with storing and using interval data.

Grist asked how peak demand is recorded on an old-school meter. Koch explained the process for a mechanical and electronic meter.

Liu asked if there are product differences between AMI meter manufacturers. Koch answered that the meters are basically all the same, with the same telecommunications issues.

Grist inquired about the issues with powerline carriers (Slide 5.) Koch answered that the challenge is lack of bandwidth to transfer the information, no matter the meter. He provided an anecdote about lost information because of expired software and lack of personnel to monitor problems.

Koch stressed that AMI can be a rich data source provided there is staff to monitor and analyze it. He moved to (Slide 7) to address needed staff skillsets, noting that utilities tend to be thinly staffed and overworked. Koch suggested peer sharing or third-party analysts as possible answers. There were head nods in the room.

Koch asked for further comments (Slide 9.) O'Donnell noted that the learning curve is difficult because this work is not part of billing or customer care. He asked Koch if he's seen a connection between staff doing load research or program implementation and meter management. Koch answered no and suggested approaching the issue at the Vice President/Director level and stressing the multiple internal clients that could benefit from AMI data.

Grist theorized that pooling business cases and sharing resources may be useful. Koch thought this might be a good region-wide goal for the Council. Grist stated that this might be a good topic for an upcoming Northwest Energy Efficiency Leadership (NEEL) meeting.

Rideout asked if utility customers are asking for or using this information. Koch said a daily energy report for a customer might be a good thing. Kurtis Kolnowski, Applied Energy Group, called accessibility a barrier, noting that logging into the system can be cumbersome.

Harnessing Data in Whole Building Programs

Joe Fernandi, Seattle City Light

Koch asked about billing customers when using Energy Efficiency as a Service (Slide 30.) Fernandi explained that triple net lease customers are billed on a baseline as if there is no improvement. Koch asked if the baseline is fixed or moving. Fernandi answered that it travels to account for non-routine events.

Koch extended his question to new windows in a multi-family housing unit, noting that the windows save but occupant numbers can change. Fernandi agreed, noting that this program is starting with existing commercial projects with master meters. He said new construction buildings will be explored but individually metered multi-family might not be workable because of equity issues.

Grist stated that EEaS has been around for at least five years and SCL has one customer so far. Fernandi agreed, pointing to interest from other parties and explaining the complexities of projects of this size. He also noted that this pilot program is still in its early stages.

Murry asked about if and how SCL deals with other fuels. Fernandi explained the process, collecting information on the fuel use in buildings, noting that there are provisions to guard against fuel switching.

Liu asked for more information about EEaS for new construction as Seattle already has outcome-based code options for new construction. Fernandi said they plan to use a regression model based on billing history for existing buildings, but as new construction has no history they hope to use Pay for Performance (P4P). He noted the benefit of having the targeted performance code path and hoped to leverage it, perhaps by requiring all-electric facilities. Fernandi concluded by agreeing that EEaS would be harder here but there are baseline questions for both existing and new construction.

Mohit Chhabra, NRDC, asked if the existing construction baseline is frozen or evolves and how it is normalized. Fernandi said it is frozen with prior 12-month history and is loaded with TMY weather. He noted that performance period will be adjusted to TMY weather to keep an apples-to-apples comparison.

Chhabra pointed to the Council's use of Current Practice baseline and asked how that is accounted for. Fernandi said retrofit projects use an existing conditions baseline, calling it the California approach.

Chhabra asked about accounting for project lifetime. Fernandi admitted that they had to guess with the initial grouping which is why they require 15% of savings from capital. Chhabra noted that California also does free ridership analysis. Fernandi, and the entire room, said they will not be doing that.

Ted Light, EES Consulting, asked how to account for backsliding performance. Fernandi noted that they don't have any project data yet, but thought that incenting performance will prevent backsliding.

Grist addressed the Virtual Energy Assessment, asking about the experience of using third party software. Fernandi said that the project has not launched yet, but other utilities have done this. He admitted that there are conversations about the results being as good as an ASHRAE Level 2 audits which is why this is marketed as an engagement tool.

BREAK

Pay for Performance, Testing a New Model Jessica Mitchell, Snohomish PUD

O'Donnell confirmed that there are 10 years of payments, calling it generous (Slide 8.) Mitchell agreed saying she doesn't recommend the monthly transaction. Chris Johnson, Benton PUD, asked if the full amount is paid. Mitchell said yes, but only measured and as delivered, plus \$40 per kW-yr for capacity reductions.

Grist noted that Snohomish is trying to be agnostic but can't. Mitchell agreed noting the termination agreements required knowing the assets.

Chhabra asked if there were constraints on any equipment. Mitchell said they have just enough constraints to know that their termination provision is not a gift. Allie Mace, BPA, asked if there is a minimum percentage of savings from capital similar to SCL's program. Mitchell said there is no fixed rule in place but called it a good idea.

Grist asked if the contractor agreement is based on kWh and what happens if they don't make the number. Mitchell said yes and they have to make it whole with money. Grist asked if this financial contract is symmetrical and the contractor will get funds if they perform better. Mitchell said they will pay up to 15% more above the agreed amount, anything more will require permission.

Johnson noted that 10 years is a long time and asked about bankruptcy protections. Mitchell agreed, saying they do not pay for savings if a business closes their doors.

Grist asked if the models tied building performance to weather and occupancy. Mitchell answered yes.

Rideout asked how reduction during peak demand is captured (Slide 11.) Mitchel said they have 15-minute data and good data on eligible buildings. Grist called it challenging to get the counterfactual close enough without being too expensive. Mitchell agreed, noting that this is a pilot.

Johnson asked about the rate. Mitchell said \$40 per kW-yr and only in the winter.

Koch asked how the contractor, who is crunching the kWh, is compensated. Mitchell pointed to upfront payment for services from the finance company and the customer pays the finance company over time. She agreed that paying the contractor who is doing the modeling is a sensitive issue and the shop was split on it, but ultimately got to a place of trust.

Koch asked how much effort MacDonald-Miller (implementation firm) is putting into getting their M&V compensation. Mitchell said Snohomish gets a service report from them but doesn't compensate them. Koch asked how they get revenue. Mitchell moved back to (Slide 8) and said it depends on the agreements [blue arrows] noting that there is a boilerplate agreement with some built in flexibility.

Koch asked what happens if there is no savings for one month. Mitchell answered that there are no payments from Snohomish and the contractor is responsible.

Chhabra asked if SCL only pays for first year savings. O'Donnell answered that there are two structures: a three-year structure where they pay for the same savings realized each year and a five-year incremental structure with different rates. Fernandi added that both cases are first year. Chhabra wondered why customers still participate as it's a better deal for SCL. Fernandi agreed that incentives are based on new first year savings and they only claim new or incremental savings from year to year so they don't overlap.

Chhabra confirmed that you only claim the first year of savings even if there was a capital-intensive project where the average weighted measures are 10 years. Fernandi stated that they don't have the granularity to look at measure certainty, so they apply the 10-year measure life to all savings that occur.

Chhabra asked Grist if the Council intends to include these in the next Power Plan. Grist said staff will take advice from the CRAC on that, adding that he sees these mechanisms as ways to implement physical measures. Chhabra noted that SCL's approach is holistic while trying to capture process improvement and that will be missed if you calculate on a measure-by-measure basis. Grist said getting data on that missing piece would be great.

Mitchell concluded by saying it's interesting to take away the "bean counting" i.e. this HVAC system or that light fixture and enable people instead. She admitted that there is risk but, as this is a pilot, with limited scope and scale and was optimistic about results.

Energy Trust New Buildings, Approaches to Driving Building-level Design
Jessica Iplikci, Energy Trust

[Customer focus: sizing systems to loads]

Liu noted the ten-times difference in Healthcare EUI. Iplikci pointed to the asterisk, saying that health care building types don't align well. She said there might be an individual clinic on a Net-Zero path but not a hospital.

Liu stated that there are a lot of process loads in healthcare that are not covered by codes and standards and we don't have a good grasp of the challenge.

Murray supported the idea of using targeted EUIs in new construction, noting that new construction capital projects must be LEED-rated in WA which allows some "fooling around" with the baseline. He noted that they are shifting to asking design teams and contractors to meet EUIs, calling the approach more successful.

Grist addressed Liu's earlier statement, saying this is mostly working with designers and owners to create a building that meets these conditions. He asked how deeply they are touching the designs, i.e. occupancy changes where the new tenant uses much more energy. Iplikci said this is a pay for design approach that goes after lost opportunity and not about restricting business operations or discouraging building owners from attracting any kind of business.

Jennifer Light, NWPCC

Called for data to improve Energy Plus models. Grist added that any AMI data would be welcome.

Liu added that NEEA plans to enhance the data for new construction and make that open for anybody to use. Light emphasized the importance of scheduling data, noting that Christian Douglass, RTF CAT, found big discrepancies in outcomes from two model where the main difference was scheduling.

LUNCH

T&D Deferral Value

Dr. Tina Jayaweera, NWPCC

Bobbie Wilhelm, Idaho Falls Power, stated that (Slide 5) looks at the scale by utilization factor and finds that significant upgrades provide significant value in certain areas, but pointed to scenarios where you upgrade because you need 500 MW of capacity and the planners say if you can't save it all we're building. She asked how you are thinking about the probability of not reaching the goal. Jayaweera answered that she is not because she's thinking about Energy Efficiency over the long term. Jayaweera admits that there's a temporal aspect that's hard to capture as they are looking at the time value of money and taking it to net present value. She also stated that utilities use a different implementation number when planning their T&D system.

Grist pointed to the blue box saying it's over 10 years and it includes unmade investments and asked if it's a double count. Jayaweera noted that you never know the counterfactual with EE and there may be undercounting. She says the data request is asking for a fairly large time frame to hopefully accommodate that issue and the utilization factor was not applied on the transmission side.

Chhabra confirmed that the utilization factor is the extent to which EE can defer upgrades across the regions. T. Light said that he thinks of it as: EE is broadly distributed in a service territory but some parts may have 60% capacity constraints so only 60% of EE investments are useful in addressing the problem.

Chhabra asked how you parcel out the maintenance versus new construction. Jayaweera said she was hoping to go to FERC form one data but knew that it would not be completely accurate because of O&M. She explained the complexities and how they used 26% as a default value for utilities that don't have data.

Chhabra suggested looking at the relationship between distribution upgrades because of growth and transmission upgrades for the same growth. Jayaweera said she didn't know but suggested that might miss some costs as they are not that connected.

O'Donnell asked for an explanation of the variation in the utilization factor on (Slide 6.) Jayaweera opened the spreadsheet to explain, noting that the data included are not real. She said it looks at system peak over the system carry and was developed by PacifiCorp which covers many states. O'Donnell said this makes sense, then asked how O&M investments are incorporated. Jayaweera said there is a default value of 26% for growth but you could put in a different number.

Wilhelm moved to (Slide 6) and clarified that the 15 MW of capacity only looks at the coincident peak value of EE. Jayaweera said the capacity is based on the rated capacity of the transformer. She said when valuing it for the EE measure gets a \$ per kW-yr and when applying to EE we multiply by the kW contribution only at coincident to peak.

Grist stated that the (Spreadsheet) valued utilization factor as peak capacity divided by system carrying capacity and asked what the carrying capacity is. Jayaweera said it's based on the transformer rating. She said this is a way to provide a proxy value for the "Peanut Butter" factor.

Grist noted that this has no time factor but is a step function and that's the cost of the step. Jayaweera agreed, saying the multiyear look helps smooth out the lumpiness.

Grist noted that the peak and system carrying differentials will be different across projects depending on their distance to the upgrade. Jayaweera agreed.

T. Light asked if different kinds of growth, i.e. growth because of new construction was brought up when discussing cost for growth. "We sure did," answered Jayaweera, saying they used term brownfield versus greenfield growth, where the brownfield would be deferrable. Grist said this works because there has been growth.

Chhabra asked if the utilities just supply numbers or if you give them a methodology, noting that if utilities share it could help build best practices. Jayaweera stated that few in the work group felt confident in their approach and there might be value in an annual regroup.

Grist noted that part of the CRAC's work is looking at this methodology. Grist asked if the utilization factor calculation is before or after the upgrade. Jayaweera answered that this is to come up with a dollars per kW value to represent EE or DR. Chhabra said it's before.

Chhabra asked what was done in the past. Grist said it was done in many different ways including looking back at 10 years of distribution expansions at two different NW utilities and taking out O&M to look at gained capacity.

Chhabra voiced concern over getting a very different answer this time. Jayaweera predicted getting a smaller number than last time and still using it. She said this is trying to improve methodology for regional consistency, noting that in the Draft Seventh Plan the value was removed and it didn't change things that much.

J. Light added that there might be a lot of potential modeling changes in the Eighth Plan so it would be hard to pin down where differences might have come from. Chhabra stated that this field is cloudy and getting two really different answers will be unsatisfying. Jayaweera noted that the Seventh Plan used inflation adjusted numbers from the Sixth Plan. She called these numbers stale and admitted that the process did not have much regional buy-in.

Jack Cullen, Energy Trust, asked who besides PacifiCorp uses this methodology. Jayaweera answered that no one else does but the utilities were glad to have it as they felt they now had something to hang their hat on.

Jeff Harris, NEEA, brought up factors of safety built into capacity purchases and asked how that conservatism and over design factors into this number. Jayaweera answered that transformers come in discreet sizes so you may need a 15 MW but they only make a 20 MW. She noted that the incremental cost of going up a size is not that much so utilities often buy big. O'Donnell noted that it would be reflected in the cost. Jayaweera agreed.

Chhabra said that it is reflected in the cost assumes you are building to size but if you're building 1.5 times bigger and compare it to peak EE savings you're not inflating that 1.5 times. Grist said there is the same safety factor in both and you need to see how long the deferral lasts to get a time value.

DRAFT Mid-Term Assessment and Eighth Plan Schedule
Charlie Grist, NWPCC

J. Light said that that dark blue bars on (Slide 2) include NEEA market change. Johnson asked for the goal numbers. J. Light answered 370 for the two years.

J. Light said these dark blue bars don't include NEEA or market changes (Slide 4.)

Chhabra asked when peak is (Slide 6.) Light answered 6:00 PM in the winter (Dec-Feb) and 6:00 PM in July or August on a weekday.

Johnson asked if (Slide 8) is for everything. Grist said this is utility costs and don't include the customer share but does have NEEA spend. J. Light said NEEA savings are pulled out to avoid double counting.

Chhabra asked if the second graph is total lifetime savings. Grist answered that it's 12-year average life. Chhabra stated that those two numbers mean different things are the units are different as well. J. Light noted that the last couple of slides in the presentation were not used in the mid-term assessment, but the workbook is available on the RTF website.

Johnson addressed the last three bullets on (Slide 9) and asked if the federal standards will be historically higher or lower. Grist did not know. Jayaweera said we had more last time due to increased activity from 2010 to 2016 and Federal Standard typically have a three-year implementation period. Grist said it will probably get smaller until there's a technological breakthrough.

Harris pointed to extreme events in Canada and Southern California that spiked prices, calling it indicative of the volatility of a system with a large variable resource (Slide 24.) He asked if there will be changes in the logic to deal with that. Grist said the RPM is a quarterly model for long-range planning and is not good with short-term volatility. He called flexibility to handle the short-term issues a key issue going forward for planners. Grist said this is handled in the adequacy realm.

Harris pointed to looking at the value of EE in reducing sensitivity to this volatility, saying it seems more important than ever to capture that. Grist said we could take that up explicitly in a future CRAC meeting.

Harris said the EE/DR interaction is a great place for the Council to weigh in and consider the order of operation.

Kolnowski asked if IDSM or modeling has been considered for EE interaction, calling it tricky. Jayaweera said that's what the Systems Analysis Advisory Committee is for as we are limited in what we can do in our models.

Harris asked when the Eighth Plan is due for Council decision. Grist answered that the final is due in April 2021 as we need the inputs for the portfolio modeling at the beginning of 2020.

Grist adjourned the meeting at 3:00.

Attendees

Tina Jayaweera	NWPCC
Jennifer Light	NWPCC
John Jennings	NEEA
Julia Harper	NEEA
Tony Koch	BPA
Ted Light	EES Consulting
Chuck Murray	WA Department of Commerce Energy Office
Bing Liu	NEEA
Brandy Neff	PNGC Power
Chris Johnson	Benton PUD
Brandon O'Donnell	Seattle City Light
Jessica Iplikci	Energy Trust of Oregon
Whitney Rideout	Evergreen Consulting
Kurtis Kolnowski	Applied Energy Group
Allie Mace	BPA
Jessica Mitchell	Snohomish PUD
Charlie Grist	NWPCC
Jack Cullen	Energy Trust of Oregon
Mohit Chhabra	NRDC
Shawnee Taha	UCONS

Attendees via Webinar

Adam Schultz	ODOE
Bobbie Wilhelm	Idaho Falls Power
Dave Hewitt	

Elaine Prause	Oregon PUC
Elizabeth Osborne	NWPCC
Frank Brown	BPA
Hossein Haeri	Cadmus Group
Jeff Harris	NEEA
Joan Wang	Cadmus Group
Joe Fernandi	Seattle City Light
Julie Banerjee	
Deborah Reynolds	WA UTC