

**Northwest Power and Conservation Council
Demand Response Advisory Committee
December 13, 2018**

Tina Jayaweera, NWPCC, began the meeting at 9:30 with introductions and a review of the agenda. She pointed to a SurveyMonkey poll about the top barriers to DR that will determine the afternoon's discussion.

Jennifer Light, NWPCC, asked for volunteers for the Regional Technical Forum's subcommittee on DR. Ahlmaz Negash, Tacoma Power, asked what kind of per-unit savings will be analyzed. Light answered that they are looking at connected thermostats in the summer and winter and heating equipment based on climate zones. Negash asked how you differentiate between EE and DR savings. Light said they are specifically looking at DR savings from programs.

Overview of Barriers

Infrastructural/ Technical

Lee Hall, BPA, disagreed with the phrasing of the top two barriers, noting that lack of AMI data is not a mandatory barrier to all DR but only to Time of Use rates and Time-Based DR. Jayaweera thanked him and noted that there will be a chance to vote on the top barriers

Conrad Eustis, PGE, asked if there will be separate barriers for residential versus larger C&I. Jayaweera answered that could be covered in Perceptual Barriers but there is no separation by end-use customers. She agreed that that could become part of the discussion. Eustis said certain technologies have very different barriers based on end-use customer sectors.

Perceptual Barriers

Hall pointed to "lack of clear business case" and suggested separating the idea of "people haven't tried it" and a "cost-effective business case to address a specific need." He felt that as stated it looks as if the analysis hasn't been done and it has. He suggested a re-phrasing of the choice.

Suzanne Frew, Snohomish PUD, agreed with Hall then moved to "Low Power Costs" and stated that the equation has become more complex. She said we have to go beyond making a business case for DR alone. Frew used the example of a technology and/or programs having a DR and EE benefit that brings balance to the cost equation.

John Ollis, NWPCC, spoke to regional planning and the Council's suite of tools stack. He stated that regional adequacy drove the need for DR and each utility might have a different need.

Gurvinder Singh, Puget Sound Energy, stated his planning group looks at ELCCs of different resources and found that DR's capacity value contribution is higher than expected. He then said that, for planning, DR is flexible enough to get you over a hump, but the planning process is

challenging especially for programs that only last for three to four years. Singh also said that this also makes bidding difficult.

Jayaweera called this falls under “connecting planning needs to implementation realities” and “appropriately characterizing DR in planning models”

Hall noted that it is hard to appropriately characterize DR in planning models. Ollis agreed and discussed the different kinds of models that don’t capture DR’s benefit well.

Hall stated that he was okay with “Lack of clearly defined needs....” but wanted to reassure the group that there is no lack of thorough analysis.

David Nightingale, WA UTC, referenced Singh’s earlier point and stated that looking at DR in this fashion shows well what exists today but is not good at showing what is possible. He asked if it’s possible to run a model to show deficits and use that to define the problem and see if DR could be developed to fill the gap. Ollis said the model still might not pick the product.

New choices were added to the poll.

Jason Salmi Klotz, PGE, noted that his utility is looking beyond capacity in DR values to things like flexibility and as an emergency resource. He pointed to cost effectiveness methodology filed with the Commission and suggested looking at Appendix A of their test bed filing.

Carl Linvill, RAP, referred to option “lack of clearly defined needs....” and said he thought needs were being more defined over time. Jayaweera said this ties into Salmi Klotz’s statement about flexibly and additional values.

Eustis agreed that there are a lot of value propositions for DR but not all utilities have a long-term capacity need. He asked if there is any doubt that DR is a cost-effective option if a utility does have a long-term capacity need. Hall agreed that different utilities have different capacity needs and noted other factors, like keeping overall rates as low as can be reasonably achieved, that come into play.

Rob Pratt, PNNL, pointed to a lack of an organized market and trading across balancing authorities (BAs) as a barrier. He called the fact that individual pockets are not short on capacity a major issue and almost a fatal proposition as DR is by nature, a diffuse resource. There is nodding of agreement in the room.

Pratt said DR doesn’t need a market but a mechanism that is convenient, transparent, and available.

Hall noted that BPA has moved DR across BAs and said the main barrier is e-tagging.

Zeecha Van Hoose, Clark PUD, noted how the region put a value on EE and while Clark doesn't have a value for DR in their territory, they do see a regional value in keeping costs down through their Purchase Power Agreements.

Jayaweera asked the group to vote during the break.

BREAK

Jayaweera presented the results of the survey.

Eustis spoke further about interoperability, saying it's not an issue for commercial products but is for residential.

Todd Brix, OCO Corporation, spoke about the value to the end-use customer. He referenced an energy-intensive business that wants to relocate to the Pacific Northwest and noted that other regions have clear and published criteria around Demand and Curtailment. Jayaweera stated that this is close to "a lack of a market and infrastructure." Brix said a market was not necessarily needed but more clearly defined need by utility.

Salmi Klotz emphasized and separated out the Value to the Customer. He stated that a lot of the questions were utility or market focused and this is a customer-sited resources that the customer has to understand. Jayaweera said that may have been captured in part by Lack of a Business Case.

Riley Peck, AWEC, said there is a business case for C&I but appropriate valuation is missing.

Van Hoose agreed there is no problem recruiting C&I customers but felt that consistent and long-term programs are the issue as flexing customers in an out means it's not something they can count on. Hall agreed that there hasn't been a long-term program yet. He said he has been approached by end-use customers who are interested.

Mary Ann Piette, LBNL, expanded on her comments on valuing and procuring DR, pointing to DR enabled-lighting and advanced-controlled HVAC as a good way to approach the customer.

Salmi Klotz said there needs to be more thought around delivery. He pointed to the regional entity around EE and asked why there is no combined EE/DR entity. Jayaweera said that is up to the funders.

Van Hoose said there is a lot of lost opportunity around LED lighting without integrated controls.

Frew commented on "snap-back" concerns saying that it might be an issue with some control technologies. Jayaweera said it might be a system operation barrier.

Hall stated some technologies, like electric water heat, want to return to normal but industrial, ag, and other systems don't. He seconded the comments and said that it's manageable.

Ollis asked about penetration, saying there's a bank and there could be a plan to have more regulation. Frew said it depends on the situation, for example standard DR versus an emergency case.

Jayaweera focused on the top three barriers with the goal of having actionable items to work on.

Singh said there is little that can be done on number 2 (Economic/Market low power costs), calling it important but out of our control. Ollis said that we might have lower power costs but some utilities might have high demand charges. Nightingale said power costs don't really matter for individual businesses or low-income residents and then pointed to consciousness around energy usefulness and conservation.

Van Hoose said she was looking at this from a utility pricing standpoint and her lack of demand charges which gave it a different value.

Hall stated that all of these barriers were developed from BPA and BPA customer perspective and cautioned that they might not be universally applicable and depend on motivations.

Eustis said it would be okay to remove number 2 from the list but pointed to the difference between power and energy and asked what number 2 really means. Hall said this is mostly energy costs and capacity has not been an issue as BPA and most of their customers are long on capacity. Eustis suggested replacing the word with energy and noted that his IOU faces capacity costs. Ollis suggested a parenthesis that stated this is dominated by energy payments. Eustis suggested looking at it from a resource perspective, noting that we plan for energy and capacity in separate views.

Van Hoose said she thinks about demand and capacity and not the energy. Eustis asked if her primary indicator is the demand charge or a need for capacity resources. Van Hoose answered neither. Hall added that BPA customers with a demand charge are load following.

Linwill stated that low power costs are not uniformly low so there are arbitrage opportunities but supported taking it off.

Singh said in the past getting energy and capacity means going through and RFP where DR could bid in. He said comparing resources low prices does make a difference. Ollis agreed that capacity contracts compete directly with DR.

Negash said the number one priority is figuring out the value to the customer which can be done with education and marketing.

Nightingale spoke about the nature of tariffs, saying there is no long-term prospects but noted that there are tariffs that are long term for supplying renewable resources. He noted that this is not widely common but could be part of the solution.

Van Hoose liked the idea of longer, more stable DR engagement as flexing in and out of pilot programs is harder to promote.

Brix liked the idea of discussion around customer value over the long term. Peck also agreed saying it will maximize participation and value for everyone (utility and customer).

Frew pointed to customer-based DERs and increasing renewable bases like EVs, saying another piece is identifying the value of customer investment in technologies to customers.

LUNCH

Mitigation Measures

Customer perceived value – specifically end-use customer

Hall stated that his team submits ideas to bodies like NEEA/BPA efficiency exchange that do not have a DR panel. He recommended shifting EE outreach and devoting more resources, by design, to advancing DR as opposed to a separate DR exchange.

Hall then suggested thinking about DR within our own power and EE organizations. Jayaweera noted PSE restructuring which put DR in Power to help engage the relationship.

Negash said her company's conservation group is now called Customer Energy Programs to encompass more than EE and encourage a culture change among staff. She also pointed to customer surveys that asked about controls and DR. Jayaweera asked if employees are thinking more holistically, Negash said yes and pointed to an employee who is adding DR to his conservation work.

Hall stated that the TVA, who among other organization, renamed their EE group. He pointed to the need for bold programs.

Negash pointed to a "share the benefit rate" noting that it's taking a long time and wished she could use the conservation budget.

Ollis asked if the problem is that DR is not characterized as conservation. Hall said this will start many legal arguments. He suggested that movement has to be done in incremental steps like encouraging existing institutions to include more combined "energy services" concepts. He also stressed that the landscape is changing quickly and this should be done proactively.

Ollis pointed to internal Council discussion about what gets categorized in the Power Act. He said if the Council weighs in it could affect major change but admitted that this could be tricky.

Hall said this makes him think: 1. Don't ask the questions unless you can live with the answer and 2. Be careful what you ask for. He called EE important and valuable and should be preserved and suggested working around the edges.

Jayaweera asked Nightingale to speak about paying for EE versus DR incentives. Nightingale called it a struggle as there are policies around EE and a decoupling issue where you don't want to hurt an IOU for doing EE. He said, aside from the legal issues, DR is a valuable resource that displaces traditional resources so we may not have to redefine things completely but work on getting as much of it as cost effectively as we can. Nightingale admitted that WA needs to work on more policy to line up the need with the regulatory scheme and suggested that the Council take the lead on that.

Hall stated that utilities have had success selling DR as a "green" product that is equivalent to renewables and that could be a strategy for the NW. Ollis said this is something the Council could potentially call out.

Ollis asked Nightingale about the use and usefulness of capacity resources. Nightingale felt that DR was an easier sell than lumpy, steel-in-the-ground resources.

Eustis mentioned the concept of the "green power plant" and suggested that NW customers might respond to DER and the need for flexible resources to integrate solar and wind. He acknowledged that economics is not a big driver now, but customers have a perceived value that can be leveraged with marketing.

Ollis asked if Eustis means renewables in general or if DR can help balance DERs that are also renewable. Eustis said it's more about balancing which is a more difficult concept to message to consumers.

Brix felt presenting utilities' operating constraints and a quantification of the benefit, specifically financial benefits, would be good. He used an example of an Eastern WA manufacturing facility where their energy consumption will be shape shifted. He suggested a messaging structure focused around degrees of flexibility and benefits like a demand charge and rate reduction or take advantage of FERC 945 and pay marginal costs, which is something other utilities do back east.

Hall added that there has been lots of benchmarking with other utilities and discussed how Dairyland Power (G&T cooperative in Wisconsin) is savings money through DR without direct incentives to the customers. They are selling it as a way for customer members to keep the power prices low. He cautioned, however, to keep the message simple.

Lack of Established Tariffs and Contractual Framework for DR

Eustis discussed concluding a two-year pilot with an opt-out TOU. He said his organization will move forward with a TOU variant with critical peak pricing with an opt-out option. He said this

will require education as the first phase is behavior driven. Ollis said this could be a way to effect big change with a small investment.

Nightingale said the universality of this could be tricky but called it aspirational. Van Hoose said this opens up individual utility structure issues as they have different customers and technologies. She said looking at a region-wide mandate forces the diversity of the region to rear its head. Ollis said he wasn't advocating for a region-wide mandate but offering an example of using rate structures to effect change.

Hall encouraged a portfolio approach meaning TOU rates don't cover all contingencies and needs for DR like, for instance, a non-wires situation. Ollis suggested that we could offer a best-practices tariff structure.

Negash voiced approval for a mandatory opt-out TOU rate as it would force customers to think about their electricity consumption.

Jayaweera asked Van Hoose about some holistic options. Van Hoose pointed to smart thermostats that don't need meter-level data and actual integrators for larger loads. She saw TOU being more for load shaping and less for DR. Jayaweera clarified that tariffs would be around non-firm, non-callable DR. She then asked how Van Hoose could make that case to her customers without AMI. Van Hoose did not see an easy pathway without data validation.

Nightingale asked to hear about longer term tariff structures and contracts that exist in the region.

Eli Morris, PacifiCorp, looked back at the definition of DR to see how TOU fits in. Ollis recalled robust discussions that found that TOU does fit within the definition of DR. Morris wondered if TOU rates would be modeled in the Eighth Plan.

Singh stated that TOU rates are a demand reduction approach that more aligns with traditional EE while DR is more reactive to a dynamic situation. He said Critical Peak Pricing is more akin to DR.

Eustis pointed out that Critical Peak Pricing is near dynamic when called but said the best way to think of TOU rates is like training wheels. He stated that the main population doesn't understand dynamic costs but they will be common in about a decade, even for residential customers. He stated that TOU rates are good for reducing peak demands which is why the Seventh Plan asked for DR resources.

Singh said there's more to DR than TOU. Eustis agreed but called TOU a DR mechanism that is responsive. Hall said you cannot say that TOU is *the* DR mechanism. He liked the training wheels analogy but said TOU is not the only mechanism to get into DR and cautioned against looking at one DR solution.

Singh agreed that TOU is useful but called it a tool that fits into a different bucket. Eustis agreed that TOU barriers are probably different than a callable resource and thought it would be helpful to figure out where it sits.

Singh said that a tariff structure that allowed Critical Peak Pricing pilots would be helpful.

Hall asked for the Region and the rest of the country to share best practices widely and often.

Nightingale wondered if the region needs to go beyond PNDPR or the Efficiency Exchange and if the Council could start a brain trust or working group to accelerate the work. Van Hoose pointed to other groups like SmartGrid NW that have been focused on this work. She wondered if the desire to not shift rate burden could be a barrier.

Jayaweera asked for comments on developing a regional-wide cost-effectiveness methodology. Morris pointed to region-wide methodology for EE but noted that individual utilities and states don't use it exactly as is. He felt there might be value in making it clear how the Council sees the value and suggested a white paper in the Eighth Plan. He was interested in the costs and benefits the group sees and pointed to using California protocols as a starting point.

Hall said it's one thing to provide a suggested framework and another to mandate it for use and cautioned against a mandate. Ollis wasn't sure the Council could mandate this but thought that the DRAC could recommend a cost-effective methodology for the next Plan.

Nightingale suggested going further than the DRAC with the RTF or the yet-to-be-formed DR-RTF offering insight if we wanted to have regional effect. He noted that there isn't something like that now and there should be if we wanted to move forward.

Transfer-ability (how to connect those with a need to those with a supply)

Hall noted that BPA figured out a way to move across BAs within BPA and e-tags were the big issue.

Ollis discussed his trading floor experience and the disconnect between marketers and the capability of DR. He wondered if it would be useful to bring in someone to discuss the scheduling process. Hall suggested Rob Johnson.

Hossain Haeri, Cadmus, recalled that EE was one of the four pillars of the Clean Power Plan and the Western Area Transmission Organization and Western Area Power Administration put thinking into trading EE savings across territories and 11 states. He suggested looking at that literature for guidance.

Eustis commented on the BPA-PGE deal saying that it was a standard bi-lateral agreement between two wholesale traders. He thought that BPA's resources were metered so they could be measured and verified. He said the problem was standardizing the quantification of how the DR benefit was produced. He added that scheduling adds another problem that CAISO solved for CA.

Eustis said it's one thing for an IOU that already trades and another for smaller BPA customers that don't have the sophistication or the need to meet Balance constraint, so BPA would have to act on their behalf. Hall agreed that BPA has lots of customers and some do have the capability to transact on the market on their own. Eustis said that's great but there are more that don't than do. Hall said that the ones that can could possibly bring lots of DR to the market.

Ollis asked for mitigation takeaways for Council Staff. Hall again suggested Rob Johnson as he has given this talk to NEEA. Jayaweera echoed the need for a forum and the need for the DRAC to advise the Eighth Plan. She suggested having the DRAC and PNDRP be back to back.

Van Hoose thought the role of aggregators could be explored further.

Jayaweera summarized that the DRAC could put together a framework around cost effectiveness. Ollis noted the desire for a clearinghouse for best tariff structures and thought RAP would be a good resource.

BREAK

Northwest DR Model

Joan Wang, Cadmus

Jayaweera noted the RTF's exploration of leveraging per unit KW impact [Slide 7.] Hall asked what "leveraging" means. Jayaweera said using it for supply curve development. Hall asked where the other model inputs come from. Jayaweera pointed to many regional resources like the RBSA.

Hall said this is exactly what BPA's DR potential assessment might be which is why he asked about other inputs. He then asked about QA and independent review. Jayaweera pointed to supply curve QA review for EE and wondered if interested parties will comment or if there will be a contract. She said work will be publicly posted and hoped that interested parties as well as the DRAC will provide comment.

Dean Paxton, Oracle, wondered about independent valuations of behavioral changes and how to get that information to the right parties. Jayaweera said she is taking the information and the March meeting will have a proposed DR product list and a call for data. Haeri said much of the inputs will come from RBSA and CBSA.

Jayaweera said that Council workbooks will be transparent and open to the public [slide 12.] Wang said that each workbook will include a ReadMe page.

Jayaweera asked if the numbers on [Slide 13] are real or dummy. Wang answered dummy.

Hall asked about the six products [Slide 14] that will be used. Jayaweera cautioned that the list has not been fully fleshed out and there may be more than six. She noted that the six that were discussed earlier in the day were products that overlapped with RTF EE work.

Hall asked if the end game is to use the supply curve to analyze resource adequacy. Ollis said the supply curve will eventually be used in the RPM and can be formatted in several different ways. He explained that information is passed indirectly through GENESYS and other sources.

Hall said as this information will be use in a couple of different places, then QA is really important. He noted the difficulty and time commitment to getting that right. Hall then brought up the time component and the chance that this may be de-rated. There were head nods in the room.

Haeri pointed to other utilities that incorporate DR in their IRPs saying that they look at resource availability. He noted that the model has a cycling strategy for things like direct load control. He stated that uncertainty and availability will have to be examined. Hall stated that cycling hour on/hour off changes the availability which changes the cost effectiveness of a DR asset.

Haeri stated that Frank Brown at BPA knows a lot about this model.

Ollis said that there is a plan to accommodate these issues in the models and discussed SAAC work.

Eustis asked if the levelized costs on [Slide 14] are equivalent to generation busbar. Wang said typically peak load impact input assumptions are at the meter but once technical and achievable potential are estimated we translate it to the generator. Ollis said this is something we do for all resources. Eustis stated that line loss for EE and peak DR are not the same. Jayaweera agreed and said future meetings should discuss that.

Eustis pointed to the great Technical Potential number and then suggested another circle on the Achievable Potential [Slide 8] that says what percent of utilities in the region would likely develop DR because they need capacity. Ollis called this the “Big Happy Family” issue that the Council struggles with.

Hall said this is why he asked how this will be used, especially for Resource Adequacy. He hoped to not see DR MW assigned to utilities.

Haeri said the global issue is how we account for barriers in assessing potential as that factors into achievable potential. Jayaweera said that will factor into many future conversations.

Nightingale moved to [Slide 13] saying it would be fine for a measure and asked if these are the global parameters and if dynamic TOU could be done in this model. Wang answered yes, the

model is built to accommodate pricing products and dispatchable curtailment products, calling it a good framework. She said the inputs should have the assumptions built in.

Nightingale said this looks like a measure. Wang moved to [Slide 12] saying everything can't fit into the manager tab so there are three separate worksheets to host other inputs. Haeri assured him that this is only the framework and individual products must be specifically defined.

Jayaweera reviewed topics for the March 2019 meeting and adjourned at 3:30.

Attendees

Tina Jayaweera	NWPCC
John Ollis	NWPCC
Suzanne Frew	Snohomish PUD
Zeecha Van Hoose	Clark PUD
Thomas Familia	PUC
David Nightingale	WA PUC
Adam Schultz	ODOE
Lee Hall	BPA
Ahlmaz Negash	Tacoma Power
Nick Bengtson	CLEAResult
Bill Henry	PSU
Jason Salmi Klotz	PGE

Attendees via Webinar

Carl Linvill	RAP
Conrad Eustis	PGN
Christy Intihar	BC Hydro
Dan Patry	Oracle
Eli Morris	PacifiCorp
Elizabeth Osborne	NWPCC
Ryan Finesilver	Avista
Clint Gerkenmeyer	Energy NW
Jennifer Finnigan	Seattle City Light
Jim Lazar	RAP
Juan Serpa Munoz	EWEB
Will Price	EWEB
Robert Pratt	PNNL
Riley Peck	AWEC
Gurvinder Singh	Puget Sound Energy
Todd Brix	OCO Corporation
Tom Eckhart	UCONS
Wade Carey	Central Lincoln