

**Northwest Power and Conservation Council
Resource Adequacy Advisory Committee-- Steering
March 26, 2019**

Tom Eckman, consultant, began the meeting with introductions.

**2024 Adequacy Assessment for the Pacific Northwest, Work Plan Schedule
John Fazio, NWPCC**

Review and Discussion of the Council's Resource Adequacy Standard

Tom Eckman, Consultant

Richard Devlin, NWPCC Council Member, confirmed that frequency and magnitude information exists but gets lost when rolled into the LOLP metric [Slide 8.] Fazio confirmed this.

Shauna McReynolds, PNUCC, asked for more information on how the LOLP and other information effects the energy efficiency goal [Finding a better way to define resource adequacy.] Ben Kujala, NWPCC, said if the RPM sees that every system is adequate it will look for the cheapest option which may be EE.

Steve Johnson, WA UTC, noted that a physical resource adequacy model is very different than financial resource adequacy. He stated that the physical model doesn't address price, recalling that during the 2001 energy crisis the lights stayed on but some utilities suffered deep financial losses. Johnson felt that point should be emphasized and made clearer. Eckman confirmed that Johnson was looking for a financial pain threshold and not just an outage threshold. Johnson said there's a need for financial resource adequacy but wasn't sure that was appropriate work for the Council. He asked that there be a flag that says this number doesn't reflect financial resource adequacy.

Kujala wasn't sure an overlay was appropriate as a utility could hedge the financial risk and still be physically inadequate. Johnson agreed, but wondered if the developing model would offer accurate financial prices. Kujala tabled that discussion for now.

Kiren Connolly, BPA, suggested that there are two potential "boxes," one is information to inform the next Plan about needed resource attributes and the other is an annual, regional early warning indicator light. He called the second box easier to use but lacking in granularity.

Devlin said he thought the 5% LOLP was growing to 7% during times of constraint because of coal closures. He felt that this is an appropriate regional look and individual utilities are responsible for their own adequacy.

McReynolds pointed to the "High cost years" bullet calling it an outcome and not an action. She said these are actions they are willing to take, but to protect and serve the customer wouldn't want to have many unplanned events where they had to ask these customers to curtail.

Philip Popoff, PSE, noted that a cost metric that can't be crossed can be established and adopted. He said that he approves of the Value of Lost Load metric but said that it still doesn't completely solve the problem and doubted that any of the metrics would.

Tomás Morrissey, PNUCC, said that the LOLP doesn't give enough information and approved of moving towards a metric that shows the duration, magnitude and depth of events. He said that our hydro dependence could lead to more extreme events and asked what the expected outcomes are for today. Kujala said his goal was for the Steering Committee to empower and guide the Technical Committee to come up with thresholds.

Connolly voiced reluctance to throw this to the technical team as he sees it as a policy question. Eckman said the "box" (duration, magnitude and depth) has to be described at the policy level so the technical group can best measure potential problems.

Devlin stated that the model now measures frequency, he asked for the technical issues around going after duration and depth. Kujala said the more constraints you put on a system the more expensive the solution. Devlin asked if you could keep the frequency and have more information about potentials within that frequency. Kujala said that has always been the case. Fazio said they have been reporting this for over a decade. Kujala said there's a difference between the Power Plan which has 20-year strips that had to meet the standard and the Adequacy assessment which reports this out.

Devlin said he thought this was addressed qualitatively in the Seventh Plan which said this is an energy-driven region with long-duration capacity events. Kujala said the 5% LOLP can stay or go and asked about better ways to understand what an adequate system looks like.

Popoff liked the slide as first step, but cautioned that deals utilities make with individual customers would not be made available to the market. He said DR solutions are very seasonal-dependent. Eckman confirmed that the Whitebook doesn't count handshake contracts. McReynolds said that no DR program can handle a 2000MW hit and posed the question, "what is an actual curtailment?"

McReynolds asked if turning off volunteer customers counts as a curtailment. Popoff said it's too far if the lights actually go out, or if the governor has to ask for voluntary curtailment and that the present definition of curtailment is a good one. Fazio noted that no utility plans for 100% reliability and said he liked Popoff's earlier proposal of testing a high-priced fake resource to measure and limit its frequency.

Clay Norris, Tacoma Power, noted that some risk is unavoidable and he directs dispatchers to shed load when needed. He wondered if unserved energy was a possible metric. Fazio said yes. Kujala said there's a difference between curtailing in response to a 100-year weather event versus forgetting to hedge and asked where that comfort line is. Eckman suggested discarding the extreme weather event games.

Fazio said the most common metric around the world is one event in 10 years which aligns with a 5% LOLP.

Popoff said you don't want the expected Value of Lost Load to exceed the cost of building a power plant. Kujala said the estimates of VoLL are pretty horrendous at the moment. Fazio explained that every customer has a different VoLL and they can't be averaged together. Popoff felt that this feels arbitrary. Kujala said VoLL is a good indicator of energy, which ties into duration but frequency is harder. Popoff felt that the VoLL calculator has those dimensions.

Kujala said a dynamically changing VoLL is not something he has seen, and magnitude has always been a problem.

Morrissey moved back to [Slide 8] and said it might be good to optimize two or three different parameters. Kujala agreed that there is some amount of money utilities would be willing to pay to turn the black line into the grey one but there's no way to measure that (There was a lot of cross talk and crackling during this exchange.)

Devlin went back to how we feed the Plan versus the annual assessment and said having a high-level, simple metric for the annual assessment is good because we're forced to unpack it. Kujala agreed. Eckman said the question is do you want this textured discussion as part of the metric or an embedded metric.

Morrissey suggested presenting other metrics to policy makers to tee up the conversation.

Fazio asked BPA about what standard they use to plan. *Tyler Llewellyn (I'm guessing)*, BPA, answered that BPA uses a number of metrics from energy to different versions of capacity deficits from peak capacity to 120-hour capacity to energy across different times of the year. Devlin asked if that can be centered on both preferred customers and other contracts. *Llewellyn* answered preferred customers and existing, long-term arrangements.

BREAK

Fred Heutte, NW Energy Coalition, said that creating a single metric losses detail, but giving all the details is impossible so he asked for balance. He agreed the LOLP has issues including the fact that there is no one way to calculate it. He didn't think there is a better answer than what we've already got.

Heutte said the "traffic light" aspect of LOLP is not being used as red is hard stop and green is full go. He called Fazio's heat map approach good but was open to replacing or adjusting the LOLP. He concluded by cautioning that we would lose something.

Eckman said a dashboard approach, with multiple metrics for a more detailed result, opens the discussion to policy makers. Kujala said all of the variable energy coming in to the grid, coupled with the way we look at reserves, could yield a 10% LOLP with a lot of noise, so you end up

chasing your tail. He said he is not worried about today or five years out, but is concerned with extending this approach out for the 20-year Plan or a scenario where retirements are replaced with renewables. Kujala said the LOLP has been good but asked for guidance on seasonality, times where we're willing to assume risk and the extreme edges. He said this better definitions are needed for future systems that may look very different than today.

Morrissey said the questions are: how do you want to measure the system and how do you want to set thresholds on those measurements.

Eckman said we can technically think through a system dominated by variable energy resources for the entire WECC, which will be important as California moves to 100% renewable.

Devlin? (guessing) Said it comes down to the underlying assumptions in the model, saying if there was a ramping miss. its severity depends on the technical tools that were used.

McReynolds asked what on [Slide 8] will move every time we run a study or add a new resource, be it EE or a renewable or DR. Kujala said there've been lots of studies that add renewables and found that adding similar renewables in the same location does less for adequacy. Eckman said this approach is about finding a fix to a problem as opposed to defining the problem. McReynolds agreed.

McReynolds referenced the amount of available data that can be used to project and said a 7% LOLP may or may not make her nervous depending on the other parameters.

Huette said his view has shifted due to events. He agreed that adding renewables gives a declining Resource Adequacy marginal value but countered that the same can be said for gas, which is plagued by delivery issues. Huette said we don't have a direct way to measure the diversity value of any of the resources. Eckman asked if this is an issue for the adequacy standard or the RPM. Heutte answered, "yes."

Eckman said the adequacy metric measure is what we have now. Heutte argued that this sited and licensed approach made sense 15 years ago and wondered if that is the case today. Eckman asked if this is a function of the input assumptions or the metric. Heutte answered the inputs.

Someone on the phone suggested first defining the nature of the problem and then finding options. He said regardless of the nature of the resources it would be captured if there is a commitment to it.

Johnsons said the region needs honesty about the energy output and capacity factors of renewable projects, noting that these estimates are often too high. Eckman called this a technical input.

McReynolds referenced a 2023 report with a table of curtailments. She said we need the statistics on this table to gauge the situation and a diversity of multi-attribute metrics to show the Council.

Popoff liked the idea of having a solid metric that turns red, as it makes it easier for him to act. He was okay with multiple metrics as long as there was a solid threshold. *Someone* countered that this presents the challenge of finding a scoring criterion for all of the metrics, particularly magnitude.

Kujala suggested a presentation by Fazio followed by a polling of Advisory Committee members to determine a red/yellow/green threshold as opposed to a single point. He asked to think through a way to deal with the variety of inputs.

McReynolds asked if the LOLP drags results. Kujala said using any one metric or threshold will have problems and wanted to incorporate more detail. McReynolds suggested keeping the heat map with more discussion. Eckman called this objective scoring on multiple metrics.

Johnson said the problem is getting decision makers to act and pointed to the value of Red/Yellow/Green. He recommended the technical committee produce more metrics with thresholds and come up with a weighted average or formulaic composite of the three elements. Eckman confirmed that he was looking to the technical committee to come up with rules for the metrics.

Someone on the phone asked an order of operations question about the model. He said he was thinking about the changing nature of Pacific Northwest resources, the input quality and if this exercise will have to be repeated in the next year. Kujala admitted that the two models could be very different and said he hoped for a threshold that defined adequacy in the power system. He realized this might be idealistic and will require working through.

Someone thought the metric conversation might be easier but the thresholds may need to wait until the model is calibrated. Kujala called this idea fair, adding that thresholds will be based on assumptions and models constantly evolve so the assumptions have to move too.

Popoff suggested a 10-year look along with the five year. He then said the most useful information for him is how many MW of dispatchable resource it will take to get back to adequate. He concluded that no matter what metrics the group lands on he still needs that number of dispatchable resource.

Kujala said that number is an output of whatever metrics we set up. Popoff voiced concern over the output getting too squishy. Kujala said there is a lot of information already embedded in the energy and capacity outputs. Johnson insisted that no matter the metric there has to be an objective MW number to get back into balance.

Morrissey said the technical committee will have to come up with a rubric for the dashboard that translates into a big green or red light for the region. He agreed that there should be an actual value and not a feeling of comfort or discomfort.

Devlin asked if there will be some degree of subjective judgment between the metrics that might vary by utility. McReynolds said the data will let them judge their own system.

Heutte pointed to evolving past reports that show that demand has made a big difference. He called this a clue to looking at Demand Response. He noted that moving demand up and down does not produce symmetric results in the LOLP and suggested exploring these patterns.

Eckman asked if multiple metrics would provide greater information along these lines. Heutte answered that you need a balance of information to not overwhelm decision makers. He agreed with Popoff that it is not so much the metric itself but delta needed to move it.

**Pacific Northwest Resource Adequacy Assessment
2024 Operating Year
John Fazio, NWPPC**

Morrissey noted that the 352 MW from Colstrip 1 and 2 is just what's dedicated to the Northwest [Slide 3.] Fazio agreed, adding that Pasco is a small gas plant.

Devlin confirmed that there are not many events in the spring so Fazio should not dig too deeply in that area [Slide 6.] Fazio agreed that the BiOp spill to court-ordered bypass spill is a spring event.

Morrissey was pleased with [Comparison of Hourly Loads] saying it corrects too high winter extremes and too low summer extremes found in past presentations.

Popoff asked how the 15th and 85th percentiles compare to the \pm 2% [Slide 10.] Fazio wasn't sure. Morrissey said a gas sensitivity might be interesting along with more solar and wind resource. Fazio asked that more sensitivity suggestions be emailed to him.

Heutte observed that the South to North transfer topped out over 3000 MW several times proving that the wires work. He then said that the Wheatridge project raises modeling questions because it's a combination of wind, solar and battery storage and questions about what the Council considers committed. Fazio said these are decisions the Steering Committee can make.

Heutte wondered about a sensitivity around plans with bids to get a sense of what that might do to the LOLP. Popoff said this may change "planned" to means there's and RFP out which is firmer than an IRP. Kujala said the challenge is an RFP might get a response from an existing resource.

Kujala called for follow up questions to be sent to him or Fazio and closed the meeting.

Attendees

John Fazio	NWPCC
Ben Kujala	NWPCC
Richard Devlin	NWPCC member
Chad Madron	NWPCC
Tom Eckman	consultant
Pat Byrne	BPA
Fred Heutte	NW Energy Coalition
Sauna McReynolds	PNUCC
Tomás Morrissey	PNUCC
Phillip Popoff	PSE

Attendees Via Webinar

Elizabeth Osborne	NWPCC
Frank Brown	BPA
James Vander Bos	
John Ollis	NWPCC
Steven Johnson	WA UTC
Tyler Llewellyn	BPA
Kiren Connolly	BPA
Rob Diffely	BPA
Malcolm Ainspan	NRG
Garrison Marr	Snohomish PUD
Clay Norris	Tacoma Power
Garret LaBove	PSE
Rohan Chatterjee	PacifiCorp
Aliza Seelig	SCL