

Northwest Power and Conservation Council
Systems Analysis Advisory Committee
June 23, 2015

Ben Kujala, NPCC, opened the meeting at 1pm. Introductions were made and the agenda presented. Kujala began his presentation

Tomas Morrissey, PNUCC, asked about the first bullet of [Slide 7] which states that “Some penalties were unavoidable at the beginning of the study...” Morrissey said that he remembers from a previous RAAC meeting that the region is adequate until 2021 while this suggests that the region is inadequate at the start of the study in 2016.

Kujala confirmed this. John Fazio, NPCC, reminded Morrissey that in his adequacy study the number picked was in the middle of the LOLP heat chart, which had as many red squares as green squares. Fazio stated that this means that there was an equal chance of being inadequate as there was of being adequate or better.

Kujala stated that he is working on “crosswalking” between the needs assessment and the resource adequacy work to get a full picture.

Sibyl Geiselman, EWEB, asked for clarification on why the Council chose to compare a penalty to the most expensive resource as found on the second bullet in the slide. Kujala explained that he wanted to give the model a signal to build. Tom Eckman, NPCC, explained that setting the model at a lower level truncates the options and the model will always choose the penalty.

Geiselman asked if the penalty can change over time as the Council is overstating the adequacy need in the early years. She stated that a lower penalty during this time would make sense and get the model to fit that adequacy assessment. Kujala answered that they can't do that now but perhaps in the future. Geiselman voiced her concern that the need is being overstated in the first five years which could send a signal to build.

Mike McCoy, stated that this treads on other planning areas and asked how the \$6 Million number was determined. Kujala said it was determined by the options that were given to the model.

Model Revisions [Slide 10]

Morrissey asked if the \$24 Million penalty per MW per year is different than the penalty per MW hour. Kujala answered yes and explained the three penalties in the model.

Morrissey asked if the Staff tracks the instances and size of the penalties. Kujala answered yes and noted that it is rare to find a penalty for unserved energy. Morrissey wondered if the system was too conservative. Kujala explained that the goal is an economic solution with the 5% LOLP standard as the floor.

Morrissey asked about the penalty again and wondered if there was any literature on what a reasonable penalty might be. Kujala replied that he was unaware of any literature for capacity but stated that they chose a middle range of curtailment for capacity.

John Ollis, NPCC, stated that they tried intermediate numbers and they affected magnitudes but not the narrative.

Model Revisions [Slide 11]

Historic Regional Peak Load [Slide 15]

Geiselman asked if these are one hour peaks. Kujala answered yes and explained he also looked at a two-hour peak which takes the number to 25,000. He said any changes would increase the percentage of the ARM but result in the same amount of build.

Geiselman asked if the thermal on this slide is based off of winter capacity, hydro and load. Kujala answered yes to all.

Geiselman asked if Kujala looked at a 10-hour sustained peak, or a different metric for the load side of the equation. She started that the 10-hour hydro doesn't incorporate the flexibility of the system. Kujala answered that it is a proxy number to coordinate with Genesys. He noted that they are presently checking with Genesys to see if the RPM numbers make sense. He explained that the number is a way to show context and discover if we are really starting out in a deficit.

Gut Check Since 2001 for capacity... [Slide 17]

Morrissey noted that the NRF shows us in a 900 MW deficit as well so he's not that uncomfortable with these results. Kujala asked if he thinks he would have to build 900 MW of generation right now. Morrissey said no, explaining that the numbers don't include what's available from California or NW IPPs.

Fazio stated that's why we plan to a 5% LOLP. Kujala stated that there is an energy surplus.

Morrissey asked how you translate the utility-only slight deficit into a need to build. Kujala stated that this is regional peak load and critical water together. He then stated that he feels the whole story, which includes supply from California and British Columbia's activity, is not captured here.

Fazio noted the 600 MW gap in estimates for 2016's current load and beginning load. He then called attention to the flexibility of the hydro system. He also noted the 1000 MW of borrowed hydro in Genesys which is not in the RPM.

Morrissey asked if Kujala took resource availability in 2001 into account. Kujala stated no but acknowledged that there was some resource manipulation at that time.

Kate von Reis Baron, asked if the wind integration capacity number was scaled down. Kujala stated that the BPA holds a constant amount for wind integration which is the majority of the number.

Eckman called attention to starting in a hole, saying it leaves us with the basis of building being the fundamental assumptions behind the adequacy assessment. He stated that out-of-region power purchases violates the assumptions that were made in the resource assessment and opens up market risk.

Morrissey checked the 2500 MW number saying it is for spot and could be 3400 for imports. Fazio confirmed that 2500 MW is for the spot market and 3000 MW is for purchase ahead, 3400 MW is the inertia limit to accommodate firm contracts.

Geiselman stated that she approved of the gut check concept. She asked if Kujala looked at the power crisis information for any data on the penalties. Kujala said he didn't but stated that it was expensive. Fazio stated that BPA spent \$1.5 Billion that year.

Capacity Loads & Resources 2016-35 [Slide 18]

Morrissey asked for an explanation of high and low load. Kujala stated that it's expected peak for economics in a low and high, synched up and matched to an 85th percentile.

Kujala stated that the needs assessment is not inconsistent with the idea of a deficit. He then said this makes him uncomfortable because it doesn't seem to meet with circumstances on the ground but they can't find evidence to the contrary. McCoy asked if this came as a surprise. Kujala said yes and noted the strong reactions to DR.

Morrissey clarified that this hole is measured by using metered resources. Fazio said rate-based. Kujala said a willingness to lean on IPPs and markets could make this go away but we have assumptions in Genesys and the ARM is the vehicle for those assumptions.

Fazio said if the RAAC were to assume more imports, which aren't rate based so they don't show up here, the ARM would go down and the RPM would build less. Kujala agreed.

111(d) CO2 Emission in 2030 Scenario Comparison [Slide 21]

Morrissey asked if the slide should include new builds. Eckman explained that under 111(d) there are two compliance paths and one is "existing only." Morrissey said that made sense. McCoy asked where the number 26 million metric tons came from. Eckman answered the EPA Clean Power Plan.

Average Conservation Development Across Scenarios Increases When Uncertainty and Carbon Risk are Considered But Does Not Increase With Full Coal Retirement [Slide 24]

Morrissey asked if 2021 is five or six years in the Plan. Eckman answered six to line up with coal retirements. Morrissey then asked if these results are higher than past model runs. Eckman answered yes, a couple 100 MW.

Kujala opened the model to show the annual purchase of conservation

Morrissey asked if the survey of utilities revealed that they buy 200 MW of conservation a year. Eckman stated that it was more than 240 and closer to 260. Kujala said they need to approach the Council with purchasing more each year. Eckman noted that the BPA "flatlined" it and had to jump up instead of ramping up.

Kujala said the curves are a function of the supply curve and there may not be 200 available the first year.

Charlie Grist, NPCC, added that the supply curves are from a new baseline that assumes codes and standards so they take away some conservation.

Cumulative Conservation [slide in the model]

Kujala noted that Bucket 2 gets to 1232. Grist asked if this is supply available. Kujala said it's achievable. Eckman said the model hones in on 4000 to 4500 in every scenario by the end of the study.

The Least Cost Strategies for Scenarios 1B, 2C and 3A Distributions of Thermal Resource Development Through 2021 for Capacity [Slide 28]

Morrissey asked how this differs compared to previous iterations.

Kujala answered that there is a strong signal to build thermal plants to meet adequacy.

DR slide in the model

Morrissey asked if there was a new DR build. Kujala stated yes and it was the same every time. He explained that DR is built to fill capacity needs. He said for winter peak it's built to 2500 MW.

Morrissey called this a different need story. Kujala agreed and explained that you're carrying need forward from the start and then adding coal retirements. Ollis called this an inexpensive insurance policy choice.

Morrissey asked if the “inexpensive insurance policy” idea would be articulated in the report. Kujala said yes. Morrissey asked about the contract structure. Kujala said they are exploring if the capacity need is true.

Morrissey said he was comfortable with the NRF capacity deficit if you only look at utility-owned resources. Kujala stated that the RPM takes the Adequacy assessment which includes the markets. Eckman reminded him that it still has limits. Morrissey stated that it seems conservative. Kujala agreed and said it could be expensive.

Kujala showed that the system couldn't get to the need fast enough. Morrissey said he didn't feel the story was correct or incorrect just very different. Eckman agreed and stated that is why they are doing a gut check. Morrissey again pointed out that this is very different from the press release put out by the RAAC. Kujala agreed and said they are working on walking between the adequacy assessment and the needs assessment.

McCoy asked if the individual utility IRPs line up with these findings. Kujala stated the NRF adds up to a deficit but it is rate based. Morrissey stated that the first year planning margin is 3000 MW. Ollis added that there are different ranges of planning margins. Morrissey agreed and said their 2016 load is a 3200 planning margin without exports.

McCoy restated his question asking if the IRPs expressed surprise about the capacity deficit. Kujala stated that PGE built Port Westford II based on a capacity need.

von Reis Baron stated that Port Westford II was built as a highly flexible capacity resource. Kujala stated that he's seeing IRPs based on flexibility or capacity needs ahead of energy needs. McCoy suggested asking utilities if this lines up. von Reis Baron reiterated that it was not built for serving baseload energy

Morrissey stated that when you start to look at everyone together along with the Federal hydro system it makes the balance look different.

McCoy stated that some utilities should be feeling uncomfortable with this. Kujala said it comes down to hydro being the big story and the NRF has a higher number. He said using that number would give us a different number that wouldn't meet our 5% LOLP standard. McCoy asked why that is. Kujala answered that's the results from Genesys and why we are double checking.

Ollis asked if the critical hydro is adjusted for how reserves are carried for integration services in the NRF. Morrissey said he wasn't sure but said he uses 8% while the Staff uses the 1937 water year. Kujala said that 1937 is lower and is a question of peaking capacity metrics.

Kujala stated that he is tied to the 5% LOLP. He suggested planning on x amount of hydro and meeting capacity at critical water as another narrative. Kujala stated that the BPA has been deeply involved in the RAAC process but it doesn't mean their data has been looked at in this broader context.

von Reis Baron asked about the gut check slide. Kujala stated that the numbers on there are very rough ball park numbers.

Scenario 1B Sensitivity: With/Without Demand Response

John Ollis

Cumulative Mean New Resource Build (in MW) With DR

Grist asked if Ollis looked at the conservation difference with and without DR. Ollis answered yes and said the main difference is when you remove DR you get an over purchase of SCCT and reduced conservation.

Eckman stated that the high cost bins of DR still don't make it in. McCoy asked for an example of high cost DR. Ollis stated residential programs, controls on water heaters and smart grid water heaters, anything auto DR. Eckman said a lot of the cost is the "windshield time" of going to the house. Ollis said the less expensive DR is in the commercial/industrial market.

Zero ARM Scenario

Kujala said the results didn't change early on with a 0 ARM.

Eckman stated that the lesson from this is if you're short on capacity, DR is the cheapest solution.

Ollis pointed out that each utility has a different demand base and available DR. Morrissey asked where the potential DR programs exist. Eckman answered refrigerated warehouses.

Ollis noted that adjustments have gone into the Seventh Plan Draft about DR but it will not change the story much. Grist stated that the DR is capacity insurance. Kujala stated that you could also divest yourself of DR which is cheaper than divesting other resources. Ollis stated that there is a conservative Levelized Cost assumption and that may go down as well as there have been calls to be less conservative.

Eckman asked how many hours are we relying on DR for capacity versus how many hours are they in reserve. Ollis stated that even if it's fully dispatched you see only 1% of its capacity if you're using every hour. He said it comes to 50-60 hours a year.

Morrissey asked if it's only used 1% of the time why is it being built. Kujala stated that for purchase ahead you're not growing it but you're leaning on it.

Geiselman asked what the discount rate ranges are. Eckman answered that it's all 4% real.

Kujala closed the meeting at 4:00 pm.

Attendees on site

Ben Kujala	NPCC
John Ollis	NPCC
Tomas Morrissey	PNUCC
Michael McCoy	
John Fazio	NPCC
Tom Eckman	NPCC
Charlie Grist	NPCC

Attendees via Go-To-Meeting

Ehud Abadi	BPA
Anne Falcon	EES Consulting
Brian Dekiep	NPCC
Daniel Suurkask	
Diane Broad	
Fred Heutte	NW Energy Coalition
Kate von Reis Baron	PGE
Kevin Nordt	
Mark Stokes	Idaho Power
Massoud Jourabchi	NPCC
Michael Deen	
Mike Hoffman	PNNL
Shirley Lindstrom	NPCC
Sibyl Geiselman	EWEB
Villamor Gamponia	PSE