

**Conservation Resources Advisory Committee**  
**September 2, 2015**  
**Northwest Power and Conservation Council**

Charlie Grist, NPCC, opened the meeting at 12:30. The agenda was reviewed and adopted as were the minutes from the last CRAC meeting. Introductions were made.

**Analysis Regional Portfolio Model Results**  
**Charlie Grist presented**

**Key Resource Strategy Findings [Slide 4]**

Deborah Reynolds, WTC, asked how these findings differed from previous plans. Jim Lazar, RAP, answered that previous plans did not include coal retirements or 111(d). Grist noted that the findings are generally the same but Demand Response has been analyzed and found to be valuable as was the capacity value of energy efficiency.

Ralph Cavanagh, NRDC, asked if the Council found energy efficiency to be more valuable in capacity than it is in energy. Ben Kujala, NPCC, stated that we see near-term capacity need and energy efficiency helps fill that need. Cavanagh rephrased the question asking if energy efficiency saves more on peak than on average. Kujala answered that energy efficiency saves more on system peak than any average hour.

**Expected Cost and Risk Metrics [Slide 12]**

Lazar asked what the Council is measuring as the Net Present Value. Grist answered that the numbers on the slide are for illustration purposes only. Kujala added the NPV costs represent the system costs going forward and include new capital and operation costs. Existing capital costs are not included.

**Notable RPM Revisions Since the Sixth Plan [Slide 14]**

David Clement, NEEA, asked if the adequacy reserve margin (ARM) is based on the loss of load probability (LOLP). Grist answered yes and that the LOLP was developed with the Resource Adequacy Advisory Committee (RAAC). He added that this is different from the Sixth Plan.

**Key Finding [Slide 16]**

John Morris, CLEAResult, asked what Increased Market Reliance means. Grist answered it means using more imports from the Southwest to meet reliability. He noted that the RAAC set a 2500 MW limit on the amount of power that can be imported.

Lazar asked what the criteria for this number were. Kujala answered that they relied on the judgment of the RAAC for risk tolerance.

Stan Price, NEEC, asked if there were any other system effects found in the RPS at 35% scenario. Grist answered yes, and that they could be found in the workbook.

Fred Gordon, Energy Trust, pointed out that variation looks tight until you get out to 2035. Grist agreed and listed uncertainty in market prices and loads and resource balancing, to account for this.

**Key Finding: Average New Renewable Resource Development Does Not Significantly Increase Under Carbon Emissions Reduction Policy Scenarios.....[Slide 18]**

Lazar asked if there is an assumption of the development of distributed rooftop solar. Kujala stated utility scale PV is a resource that could be selected in the RPM, but not distributed rooftop. Grist added that a small amount of distributed solar is included in the load forecast, and more will be included in the emerging technology scenario.

**Key Finding: There is a Low Probability of Any Thermal Development by 2026... [Slide 20]**

Clement asked why a high social cost of carbon or maximum CO2 reduction would trigger more thermal development. Kujala answered

that a new combined cycle is so much more efficient than the existing fleet that it would be better to build and run them in these scenarios. Wendy Gerlitz, NW Energy Coalition, clarified the existing thermal generation is not being dispatched; rather, new efficient thermal is dispatched, so it's not that there is more gas, just switching from inefficient to efficient gas plants.

Gordon commented on the sporadic deployment of DR. So we invest in Demand Response because it is cheaper and more readily available, but is it really available on such an infrequent basis.

Grist stated we need available capacity when the weather is cold and dry, when market prices may be high. Kujala stated that we don't buy resources for adequacy based on market prices.

### **Key Findings EE [Slide 30]**

Price asked for clarification of the second bullet. Lazar stated that EE & DR meets all load growth & retirement 90% of the time. Grist agreed, calling it a big finding.

### **Meet Most Load Growth with EE & DR [Slide 33]**

Lazar asked if the whole load forecast for the Seventh Plan is below the Sixth. Grist answered yes. Tomas Morrissey, PNUCC, asked about price elasticity in the load forecast. Kujala answered there is some elasticity.

Clement stated the scenarios don't drive the demand and there are no drivers for demand between the scenarios. Grist stated that in the 800 futures there is a factor that increases conservation potential if loads go up or down. He said higher load growth is different than elasticity but there are no differential drivers of load growth.

### **Conservation is the Single Largest Source of Winter Peak Development in Least Cost Resource Strategies [Slide 44]**

Kujala stated that this slide illustrates two effects: the shape of conservation is advantageous to system capacity and it frees up the hydro system to meet capacity. Lazar asked if the hydro system will

follow wind. Kujala restated that it will respond to system peaking needs. Grist stated that hydro is valuable resource that is carbon free.

Gordon restated that efficiency reduces peak because it reduces loads and it allows the restoration of water behind dams off peak. Kujala said there are more complications in the details but that is essentially correct.

Juliet Homer, PNNL, asked about the relationship between resource adequacy and energy efficiency. She stated that the model is picking it to meet resource adequacy while she is in a “cost effective mindset.” She asked how energy efficiency adder corresponds to cost effectiveness. Grist stated that the question is how you implement these findings in the day-to-day, cost-effectiveness analysis. He pointed to the cost effectiveness methodology proposal that will be presented later.

### **Lower Gas Prices Reduce Coal Use & Exports, Increases Gas Use, Little Change in EE [Slide 54]**

Lazar stated that gas will chase coal and exports out of the market. Kujala stated that if you get into a hard spot and the market prices for importing power are lower there is a cheap source of power.

Gordon asked about the dispatch of gas under the low gas-price scenario. Kujala answered that in general the amount of dispatch in the region is less under a low-gas scenario to meet the same demand as you are relying more on external markets.

Lazar called it interesting that our exports in both cases exceed our coal generation and said it looks like all of our coal is running for export. Kujala stated that on average the region is a net exporter and has been for a long time.

### **Results of Ramp Rate Sensitivity [Slide 62]**

Price wondered about efficiency’s contribution to capacity. He asked if this finding states that if we defer efficiency too long you’re unable to

build fast enough to catch up. Kujala answered yes. Heads nods of agreement were seen around the room.

### **Findings from Carbon Scenarios [Slide 73]**

Gordon restated that under maximum emissions reduction scenario (3A) the model still chooses more new gas over renewables. Kujala said yes. Gordon said there are no resource constraints or cost curves and in the national pool gas prices are flat. Kujala explained that in the maximum reduction, they retired coal and inefficient gas and allowed the model to pick any resource and it picked efficient gas. Kujala stated that at this time there are no renewable resources that can supply winter capacity.

Gordon asked about looking at summer peak vs. winter peak. Kujala stated that the range of temperatures used to inform the loads is historical and admitted more study is needed. Kujala then stated that every utility has specific needs but winter peak remains regionally relevant within the six years of the Action Plan.

Grist pointed out that in 15 years you get to a point of parity on a regional basis. Lazar stated that Puget Sound is a winter region while Idaho is already summer.

Grist stated that the gas solution is dependent on the suite of modeled renewables: solar and wind. He noted the others are really expensive, which limits the number of no-carbon options.

Kujala noted that staff is working on a partial narrative scenario beyond 3A, which is scenario 3B.

Lazar stated that it looks like all scenarios meet 111(d). Grist agreed. Dave Warren, WA PUD, asked which 111(d) option was used: emission rate or mass-based limits. Kujala noted these are on a regional requirement. Lazar added it was tested on a mass basis. Grist stated that we can't meet it without efficiency but the new 111(d) is a bit easier.

Grist concluded by saying we wouldn't be where we are now without all of the efficiency we already put into place. Lazar agreed.

Warren asked if closing Colstrip was modeled. Kujala answered that in 3A they modeled all coal closing but in the baseline scenario Colstrip stays online.

### **Summary EE Observations [Slide 74]**

Warren asked about the price of the DR projects. Kujala stated that they set up potential DR in the region based on technical feasibility and cost. He noted that the process was vetted by regional DR experts and divided into four cost bins.

Clement asked how the model selects between building more energy efficiency for capacity and DR. Kujala explained in broad terms that everything has a price and if a loss is taken by building efficiency it's added into the price. Kujala stated the model takes a holistic view of the end resource cost.

### **Seven Principal Elements of Least-Cost & Least-Risk Resource Strategies [Slide 76]**

Gerlitz stated that the fourth principal, "Option limited gas-fired generation for capacity and other ancillary services as dictated by local utility circumstances" doesn't adequately reflect the probability that we see in the charts of builds. She called this bullet a mismatch from model outputs. Kujala stated that the *probability* of a build is different than an *option* to build in a resource strategy. Gerlitz agreed but stated that the bullet does not capture the spirit of the model's output and suggested moving it below bullet five and adding more context.

Lazar suggested combining some bullets. He stated we are going to develop conservation region wide and that includes utilities with stable or declining loads. He noted that that will free up generation to serve load growth within the region and reduce exports. He stated that the

institutional requirements to accomplish those transfers are not trivial. Head nods in the room showed agreement.

Homer asked if the exports [bullet 5] primarily came from Bonneville. Kujala answered that it is regional and a lot of the variance of exports is driven by variables on the hydro system and Bonneville is the majority of that. Homer asked if the bullet takes timing into account. Kujala stated that an adequacy target is held based on the 5% LOLP so there is always some potential for surplus hydro.

Lazar stated that when we reduce exports and increase efficiency we pick up flexibility in the hydro system to serve other regional load at other times of the year. Kujala agreed, but said it was a complex subject handled in the RAAC. He summarized by saying overall we are trying to not be overly dependent on water and pointed to the 5% LOLP.

Price asked if the corollary of bullet three was to not build beyond existing RPS. Grist said the expanded RPS scenario looks more expensive. Homer asked if this was true under the social cost of carbon scenario. Kujala said yes, in the near term but in five years it could be different.

Gordon asked if the model was insensitive to future ranges of reasonable renewable costs. Kujala described a scenario which had lower cost solar, stating that they saw some more development there. He noted that staff tried to force the model into building more renewables but the resulting scenarios didn't seem reasonable.

Tina Jayaweera, NPCC, noted that solar has an embedded declining cost curve. Kujala agreed but said they used a more extreme decline for that scenario.

Clement asked how the model accounted for solar production tax credits. Kujala stated that they didn't have PTCs in the model, but had a REC component.

Elaine Prause, OPUC, asked how high up the supply curve the model was willing to pay. Kujala answered that the model was willing to pay a lot when it was in an adequacy deficit. He said it was more willing to spend on DR which is small and incremental than a gas peaker. Grist stated that they could mine for more information on that but called our regional familiarity with the DR supply curve adolescent. He suggested looking at the distribution of the magnitude frequency and duration as that describes what DR needs to be.

Kujala pointed to research done in the RAAC which found short duration capacity needs. Lazar asked if short duration was under 50 hours a year. Kujala said yes. Lazar said that DR is well suited to that. Kujala noted that there are policy barriers to DR and described them.

## **Development of Conservation Targets for the Seventh Power Plan Kevin Smit, NPCC**

### **Comparison of 6P Targets/Actual with 7P Results [Slide 8]**

Clement asked if this graph shows programmatic and non-programmatic conservation. Smit answered that this is programmatic plus NEEA and does not include non-programmatic codes and standards. Clement asked how feasible this is compared to the last plan. Grist explained that when they start the Seventh Plan conservation potential assessment they take into account adopted codes and savings which sets the momentum savings to zero. He stated that some of the things we are counting in 2015 will not be able to be counted in 2016.

Grist continued saying some of the savings from white goods found in the Sixth Plan target went away. Grist noted that the momentum savings can grow over time and there's uptake of some measures in the market outside of programs, for example solid state lighting.

Grist concluded that the overall target comes from all sources: programmatic and non-programmatic. He noted that there are 1600



measures in the group, but called them niche-y. He stated that the days of big easy wins are over.

### **Cost of Conservation [Slide 9]**

Lazar asked if the price discrepancy between the Sixth and Seventh plan was because all of the cheap measures were already embedded in codes and standards. Smit answered yes. Gordon stated that the cheap stuff doesn't need us anymore.

Someone on the phone asked if the \$100/MWh is the total cost and not the utility. Smit stated that \$100/MWh is a proxy for what is cost effective. (Slide incorrectly used kWh as the unit).

Price stated that he's hearing two conflicting narratives. On one hand he hears that the easy stuff is gone and now we have to work harder to find more expensive conservation. On the other there are things that people are doing on their own without intervention. Price stated that he can't square those two statements and suggested picking one and not try to use both. Craig Smith, Seattle City Light, agreed.

Grist stated that he thinks it's different by measure and pointed to televisions as an example of a market that took off even though it was thought of as hard to get. Price stated that he's troubled by robust narratives on both sides.

Grist admitted that they have to get a handle on what's happening in the market. He pointed to the momentum savings research from Bonneville and lighting research.

Morris stated that he thought the RBSA data found an average of 24 sockets per home that qualified for better lighting which doesn't square with the notion that lighting is improving on its own. Grist admitted that squaring this is important and pointed out that the RBSA data is three years old.

Gordon stated the paradox: to keep the same volume you need more products and some will be easy and others will be hard.

Lakin Garth, Cadmus, moved back to **Cost of Conservation [Slide 9]** saying that T&D benefits and negative levelized costs are excluded. He asked if they excluded the savings from the measures that have negative levelized costs? Jayaweera explained how they emulated the utility portion of the total resource cost to get to the \$6.2 million number by setting any measures with negative levelized costs to zero cost.

Garth then asked if staff considered looking at the levelized cost of capacity savings. Grist stated that they have not. Bud Tracy, Independent, noted that everyone has their own accounting system and asked why we can't get an actual cost. Grist answered that it is tracked regionally. Tracy stated that he has reservations about the quality of those numbers. Grist suggested improving the kind of data collected to move the ball forward on that issue. Tracy agreed saying he's impressed with the basis for the Plan but is concerned about the follow through.

Grist stated that there is an action plan item to get better cost and impact evaluation data. Smith added that the annual reports are getting more granular as well.

Gerlitz asked if the \$4 million per aMW number was the average across the entire plan. Jayaweera answered that it is a weighted average until 2026. Gerlitz asked if the cost would go down if you shortened the timeframe to 2021. Jayaweera stated that she didn't remember exactly but that it wasn't a dramatic difference. She imagined it was somewhat cheaper in the early years because of the ramp rates.

Gerlitz noted that BPA's assumed cost for their last IPR, \$1.9M, was significantly lower.

Gordon stated that this model doesn't incorporate the free stuff. He said the model says if you need to pay for it you should but it doesn't mean

you'll pay for it all as some of it will transform on its own. Gerlitz stated that there may be value in seeing what the shorter term number is for Bonneville.

Lauren Gage, BPA, stated that this number doesn't apply to the whole portfolio and there a lot of ways to slice it: self-funded, momentum savings, NEEA. Gerlitz pointed out that there are already categories that are incorporated into the budgeting and what we're really looking at are the programmatic costs to Bonneville. Gage stated that piece doesn't apply to the whole portfolio. Smit stated that they covered a broad base in this number.

Warren asked what assumptions were put in for 2016 acquisitions. Grist answered that these targets assume a third quarter 2016 start. Warren stated that starting in October means we will not see it until March which is a problem for Washington I937 utilities. Grist stated that they are almost all setting their own targets now.

Morrissey moved back to **[Slide 6] Biennial and Cumulative Targets**. He asked if there was any consideration given to putting a range on these numbers instead of a target, as discussed in the Systems Analysis Advisory Committee (SAAC). Kujala stated that staff will take an action item to the Council with targets but will note that there have been two suggestions in the SAAC to use a range, along with a desire to add a capacity target.

Grist added that they will bring up over-accomplishments in the early years suggesting that they roll over towards subsequent years.

Gordon stated that Energy Trust wonders if they can keep up their speed. He wondered if there was a way to stay flat for a few years. He noted that the Council is expecting more in the out years and it doesn't look like the futures they are looking at. Grist stated that they have found a 12-15 year span before our ability to acquire exceeds what's there.

Gordon stated that they are not ramping up, but are already there so they are depleting faster. He stated he would like to see a five-year cumulative basis. Kujala stated that the model is given an understanding of the ramps and the acquisition pace is part of the outcome. He stated that you can't flatten it because after year six there would be a jump.

Gordon admitted that they are part of the regional variance that might average out to this or they might live in a different world. Kujala stated that part of the assumption is that you can't get an amount if you didn't get it last year.

Danielle Walker, BPA, requested the Biennium numbers on [Slide 6] added up to 1400. Smit stated that these numbers can be cleaned up. Kujala stated that everything has been rounded.

## **Conservation Cost-Effectiveness Methodology**

### **Tina Jayaweera, NPCC**

#### **How to Define Cost-Effective? [Slide 3]**

Lazar stated that for the last few years TRC costs have been much lower. He said the utility cost has been steady at \$.03 per kWh but the TRC costs have been lower, even negative one year because the non-energy benefits. He voiced his concern that we don't have a disciplined way of looking at the non-energy benefits of other fuels.

Grist stated that if there are gas savings in a measure staff reduces the TRC levelized costs. Lazar pointed to the horizontal axis washer as a success of accounting for non-energy benefits in the past but stated that he didn't think that we had a disciplined way to calculate them in the commercial sector.

Gordon stated that there are standards of evidence that vary from state to state on what is needed to calculate non-energy benefits.

Lazar reminisced about Springfield Electric's desire to add a "1% increase in productivity" to a commercial lighting measure. He listed three alternatives: Vermont's idea where they plug in \$.03 per kwh of non-energy benefits as a default, Oregon's take anything down to a TRC benefit cost ratio of .5, and what we've done in the plan where if they're identified they're included and if they're not identified they're excluded.

Jayaweera pointed to the 10% Regional Act Conservation Credit. Lazar stated that represents the social costs and has nothing to do with non-energy impacts. He likened the benefits to efficiency to a layer cake, which includes social benefits, health benefits etcetera.

Jayaweera pointed to an example that was run without the T&D benefit and it didn't change the target very much. Lazar posed that was because 85% of the measures are inexpensive. Kujala said that it's because the adequacy drives the model to a level and if you change the cost you just change what you pay to get to that level.

#### **Capacity Benefits [Slide 4]**

Lazar stated that avoided reserves were missing from the equation. Kujala said when you look at the overall method, where the MW are an input not an output, this gets to a level that makes sense.

Gage asked if the 10% conservation credit is applied to both energy and capacity benefits. Jayaweera answered yes since it is conservation as a whole.

#### **Deferred Generation [Slide 7]**

Eli Morris, PacifiCorp, asked if these values are being used to determine the cost effectiveness of demand response. Kujala answered for deferred transmission only, not for deferred distribution. He stated that we don't have cost effectiveness criteria for DR. Morris asked if the model considers these benefits when it selects DR over a generating or conserving resource. Kujala answered yes, DR has a deferred transmission benefit as does west-side generation resources. Morris

asked if DR is just valued in the winter. Jayaweera answered no, there is summer and winter DR. Morris stated that since you are assigning a capacity value to conservation in the winter it suggests DR has no value in the summer. Kujala explained that it relates to us being a winter peaking region.

Grist stated that the RPM does not value the capacity that DR provides but tests the NPV of the DR build.

Morrissey inquired about what happens when an individual utility is capacity long. Jayaweera stated they should value the deferred generation based on their deferment.

### **Market Price + Carbon [Slide 9]**

Gordon asked if this is a chicken and egg thing; you set the price of conservation based on the conservation in the baseline. Jayaweera and Kujala answered yes. Kujala stated the end result makes sense.

Warren asked if the cost per ton was applied to every MWh. Kujala answered no, that by taking the cost out you have 800 futures with 800 marginal units that may or may not be emitting carbon.

### **Risk Mitigation Credit [Slide 11]**

Lazar questioned the absence of fuel uncertainty. Kujala said RPM includes a wide range of gas costs and some could be interpreted as a gas line disruption. Lazar questioned the responsiveness of that method. Warren asked if this situation would be covered in the unplanned outages scenario. Jayaweera stated that those are generating resource outages that could be caused by gas disruption. Lazar stated he's thinking of the 2000-2001 crises and asked if any of the 800 futures include a future where a NW gas line blows up. Kujala pointed to the model's jump logic that takes in wide variations of gas prices but stated it does not have a specific future where gas is interrupted.

### **Risk Mitigation, Continued [slide 12]**

Gerlitz questioned the methodology saying you can't use the capacity output from a model that doesn't have the capacity value incorporated in the levelized cost calculation from the start.

Jayaweera stated they are putting the capacity value, in kW, of conservation into the input. Grist stated that the target is a result of the measures producing energy and capacity.

Lazar stated that past plans concluded that efficiency is more reliable than other things. Kujala said we model that more intrinsically here.

Kujala readdressed Gerlitz stating that there were two possible approaches to the capacity issue: create and meet two separate targets which require solving for two variables or putting a value on capacity and putting the target on energy. Grist stated the RPM solves for kW and kWh in a physical sense but we don't know how much money is in each of those so this is a way to get to that. Kujala stated that in the end you're meeting the same energy target.

Gerlitz called this a step in the right direction but is still troubled by the last step that determines the risk mitigation value. Smit stated it is similar to the method in the Sixth Plan. Kujala stated you have to come into this methodology with a target.

Gordon asked if the adequacy adder is insurance against extreme scenarios. Jayaweera answered yes.

Reynolds asked why the aero derivative was chosen as a proxy. Jayaweera stated that a combined cycle is generally built for energy needs and aeros are generally for capacity. Reynolds stated that the Seventh Plan is a regional approach to what we should do next and questioned using the aero as a proxy. Grist stated that the aero is what we are avoiding.

Grist asked what the RPM builds for generation. Kujala answered combined cycles because it displaces less efficient generation. Reynolds suggested combining and rewording bullets to better express that idea as she was initially confused. Kujala restated that it is important to come up with a regional target for a regional benefit.

### **Next Steps [Slide 14]**

Homer asked about the date in the last bullet. Jayaweera corrected it to 2016.

Morris asked about RTF process and wondered what would happen if they didn't agree with the cost effectiveness methodology. Grist stated that the RTF typically works in alignment with Council findings and he assumes that will continue.

Reynolds asked for an outline on how the Council method is changing as she needs to present that information to IOUs. Kujala stated that this is not a completely new method and has been explored by others including Avista. Grist stated that he will put the four-page outline on the to-do list. Warren supported that suggestion.

Lazar again stated his concern with the limited addition of non-energy impacts.

## **Emerging Technology Scenario**

### **Charlie Grist**

### **The 3B Scenario [Slide 2]**

Warren asked if “not limited by cost” [bullet 3] means you did not try to estimate the cost. Grist answered that they did not optimize based on cost because we don't know what those costs really are. Kujala explained that the starting point is the 3A scenario, maximum carbon reduction, and this scenario costs more.



Reynolds asked about storage. Kujala stated that they will talk about storage's potential to fill capacity needs in the future but it is not in the model yet. Lazar called the Columbia River a big-ass battery.

Warren asked why utility-scale solar thermal were not included. Kujala answered that they looked at many technologies and mentioned them in different chapters but didn't include them in the model because they are not yet cost competitive.

Warren asked why it wasn't included in **Step 1: Identify the Gap [Slide 3]** if there is no cost limit. Kujala stated that it will be in the storage capability of renewables narrative.

### **Step 2: Fill the Gap with ET [Slide 4]**

Jess Kincaid, OR Dept of Energy, stated her office uses this information to try to determine the order of breaking technologies and wondered if the technologies were ranked in any way. She stated that her office knows what's realistic and wondered if Staff found what was just beyond realistic. Kujala stated that this is not the next realistic step but is four or five steps away from that.

Smit stated that this could offer next step options; like geothermal which could cover everything if it was developed. Grist stated that we found that we still have winter need and solar PV doesn't help much with that. Kincaid called that good information for tax credits. Reynolds countered saying things change if you attach batteries at that level.

Kujala stated that the main recommendation is that we are good for the Action Plan period and there is a research objective to find renewables that provide dependable winter capacity. Grist stated this recommendation will help focus research and investment in analysis.

Lazar stated that we've spend the last 125 years building a power system that meets demand and must spend the next 25 building demand that meets the power system.

## **Step 2: Fill the Gap with ET & Revised Hydro Dispatch [Slide 5]**

Reynolds voiced her preference for the regional analysis of batteries over one-off analysis. She pointed to PNNL's information on battery's changing costs and wanted to see information like this reflected in the Seventh Plan.

Clement asked about enhanced geothermal vs low temperature geothermal saying low temperature could be huge.

## **Status [Slide 6] & Conservation ET Data [Slide 7]**

Warren called 4,000 aMW of rooftop solar aggressive. Grist agreed stating the number comes from RBSA analysis of available square footage on roofs and NREL SunShot estimates. Kujala called it an aggressive answer to an aggressive question.

Ken Eklund, WSU Energy Program, stated that he thinks the future is here for CO2 heat pump water heaters and there should be a UL listed this year. Jayaweera stated that these are incremental to the Seventh Plan. Eklund stated that they are cost effective and we don't have to wait to move them into the Plan.

Gerlitz stated that she finds the timelines don't match up very well to key findings and asked for clarification. Kujala stated that Scenario 3A gave us direction on how to approach this and while it still needs writing up he does not see it coming into the Action Plan. Grist pointed to Council webinars where 3B might be the subject.

Homer asked if storage will be included. Grist said not at this time. Jayaweera stated that using the Hydro system differently to exploit its storage will be a part of the narrative.

Warren asked about how the model handles the timing of shifting summer resources to the winter. Kujala answered that the hydro model takes into account, in a broad way, the ability of the hydro system to

store based on water conditions. He suggested talking to the RAAC for more information.

Shani Taha, UCONS, LLC, asked when the Action Plan items will be posted. Kujala said they will be posted on line on September 9.

Grist adjourned the meeting at 4:45

**Attendees on site**

Charlie Grist	NPCC
Ben Kujala	NPCC
Tina Jayaweera	NPCC
Kevin Smit	NPCC
Jennifer Anziano	NPCC
Elain Prause	OPUC
Juliet Homer	PNNL
Wendy Gerlitz	NW Energy Coalition
Jess Kincaid	OR Dept of Energy
Ken Eklund	WSU Energy Program
Jim Lazar	RAP
Deborah Reynolds	WTC
Stan Price	NEEC
John Morris	CLEAResult
George Pohndorf	Snohomish PUD
Craig Smith	Seattle City Light
Fred Gordon	Energy Trust
Bud Tracy	Independent
Dave Warren	WA PUD
Lauren Gage	BPA
Shani Taha	UCONS, LLC
David Clement	NEEA
Tomas Morrissey	PNUCC
Linda Esparza	Franklin PUD

Lakin Garth  
Jeremy Eckstein  
Danielle Walker

Cadmus  
Cadmus  
BPA

**Attendees via Webinar**

Adam Hadley  
Brendan O'Donnell  
Bradley Cebulko  
Chelsea Wright  
Christina Steinhoff  
Chuck Murray  
Mike Dillon  
Eli Morris  
Kathy Moore  
Ken Nichols  
Dan Liska  
Jessica Mitchell  
Ralph Cavanagh  
Cory Read  
Ryan Neale

Hadley Energy  
Seattle City Light  
UTC  
EES Consulting  
NEEA  
WA UTC  
Avista  
Pacificorp  
Umatilla Electric  
EQL Energy  
Snohomish PUD  
Snohomish PUD  
NRDC  
Idaho Power  
WPAG