

Bruce A. Measure
Chair
Montana

Rhonda Whiting
Montana

W. Bill Booth
Idaho

James A. Yost
Idaho



Tom Karier
Washington

Phil Rockefeller
Washington

Bill Bradbury
Oregon

Joan M. Dukes
Oregon

Wind Integration Forum Steering Committee Meeting Notes June 6, 2011

These notes have not been reviewed by the speakers quoted

Paul Norman, Meeting Facilitator - Presented the [agenda](#) and introduced new Steering Committee [members](#): Jeff Goltz, WUTC; Travis Kavulla, Montana PSC; Greg Reimer, BC Hydro (absent); Lisa Grow, Idaho Power; Mike Cashell, NorthWestern Energy; Mark Maher, WECC; John Saven, Northwest Requirements Utilities; and Roby Roberts, Horizon Wind Energy.

Introductory Remarks [[Audio - AM Session](#) (28M mp3)]

Tom Karier, NWPC, Forum Co-Chair – Thanked everyone for coming and recognized staff for organizing the event. Everyone complains about the weather but no one does anything about it – Mark Twain. May not do anything about it, but the Northwest is significantly affected by it. Approaching 6,000 MW of wind generation on the system soon, well in advance of the 20-year timeframe envisioned in the Power Council's Fifth Power Plan. No matter what happens in California, there remains great uncertainty about the development of wind. Renewable targets for WA and OR will result in the significant development in wind. We know we've made a lot of progress on integration aspects of this in the region. The Wind Integration Forum's (Forum) [Action Plan](#) four years ago accomplished much of that work. Wind integration is a process of continuous improvement, rather than a finished project. Integration is becoming very complex – dispersed geographically and institutionally. The Forum understands and tracks those efforts and looks for overlooked opportunities. In retrospect, we probably underestimated the region's ability to manage conditions of excess supply. There is an opportunity for the Forum to highlight and prioritize long and short term solutions and address it systematically going forward. We need to consider future role of the Forum– I think the Forum can support regional processes to evaluate and process solutions to over-supply, but it's the Steering Committee members who will decide its future.

Steve Wright, BPA, Forum Co-Chair – Recognized great work of former facilitator Walt Pollock, and looks forward to working with Paul Norman. I recall our first meeting when Rachel Shimshak suggested 6,000-10,000 MW of wind coming to the region, and thinking that seemed farfetched at the time. Now, we are roughly a decade ahead of the wind acquisition schedule we thought we were on. BPA is pursuing four major transmission lines that will result in accommodating 7,000 MW of wind. The lines are in various stages of completion and environmental review. The success we have seen in developing wind resources presents

challenges. We will be looking at it from a regional perspective of where the need is for new renewable resources.

There are 3 major challenges – 1.) Issues associated w/ balancing. Ramp up and down. 2.) Potential for periodic undersupply of energy and need for flexible capacity. 3.) Potential for overcapacity. Need for activity in tackling periodic oversupply. We've looked a lot at balancing and undersupply, but we need to look more at oversupply. What does the supply curve look like? What regional actions are available? What makes the most sense if we operate the system as one utility? Not all problems justify capital expenditures. If there are justifiable expenditures for oversupply, we will have to talk about who pays. This is a completely voluntary activity. The Forum exists because this is an opportunity to talk as a region. Success going forward depends on our willingness to find regional solutions.

Norman– Introduced guests from California: Dave Docken -Northern California Power Agency (NCPA), Mark Ullrich, Niel Mallard - California ISO.

Wind Energy Development in the Pacific Northwest Briefing - [[Presentation](#)]

Slide 2 - Elliot Mainzer, BPA - Checking Facts and Connecting Dots. Get grounded in fundamentals. Wind development in the Northwest has clearly been impacted by the Regional Portfolio Standards (RPS) from four states – including California. Objectives today are to review multiple regional activities– hope people will read the [reference materials](#), 22 pages of work, toward balancing and flexibility adequacy issues. We will discuss the role of transmission - There will be about 6,000 MW of wind developed and on the system by the end of the year in the Northwest. We will continue to be affected by California and the new 33% RPS.

Rachel Shimshak, Renewable Northwest Project - Regarding RPS, the standards are not just for wind. Hydro, biomass, solar, etc. count. [[Audio - AM 21:29](#)]

Mainzer –Yes, non-wind resources currently make up about 15% of the portfolio.

Slide 5 – Mainzer - The average annual capacity factor for wind on the BPA system is around 30%.

Slide 6 – Mainzer - Described the estimated economic benefits - including \$12 billion in capitol investment, and the environmental benefits - about 30 million tons of carbon dioxide reduction; 2011 reductions equivalent to taking about a million cars off the road.

Slide 7 – Mainzer - Cost ledger included utility expenditures and rate impacts; wind integration charges. BPA collects about \$60 million in wind integration charges annually. Others pay that. Wholesale electric prices are somewhat lowered– benefit or cost depending on market position. Council analysis suggests a reduction in wholesale market prices of 4-8% annually by 2020, as much as 20% during spring. Wear and tear on hydro supposed, but not yet quantified. [am 26:40]

Slide 8 – Mainzer - Shows differences between supply-side and demand-side with respect to renewables. The blue bars in the graph reflect the supply side of the equation – ~ 6,000 MW currently operating or under construction. There are several thousand additional megawatts in the interconnection queue - total of ~14,400 MW supply between existing projects and

interconnection requests. In the CA ISO, there are 68,000 MW of interconnection requests, which reflects proposed projects that don't reflect demand side. Using the Council's assumptions about load growth in the region in 2020, the current RPS suggests 6,500 MW of demand for renewable resources in PNW (assuming all wind).

Angus Duncan, Bonneville Environmental Foundation - How much of the 14,400 MW is sited on this side of Rockies?

Mainzer – All of the wind resources are on the west side of the Rockies. The region is well ahead of current NW RPS targets. We think now that California utilities will trend out at about 3,000 MW of Northwest wind over the next ten years. California is targeting in-state and distributed renewable resources. The Caithness Shepherd's Flat is a huge addition. Resource (proposed) supply side appears very large (looking at 10,000 MW in 2020). The black line in the graph represents the amount of transmission capacity that BPA has sold over the past several years through three rounds of network open season (NOS). BPA sold about 7,000 MW through NOS and identified four critical transmission builds: I-5 corridor; John Day-McNary; Big Eddy-Knight; Lower Monumental-Central Ferry.

Don Furman, Iberdrola Renewables – The big growth in CA demand looks high. The blue bars representing the supply side don't mean much– anyone can file for permit. Leveling off at around 6,000 MW in the foreseeable future to meet the NW RPS targets. Consistently see early RPS compliance as utilities look for the best deals. Looking toward a pretty significant breather with respect to wind development in the future. [Audio - AM 34:35]

Slide 9 – Mainzer - BPA is not the only one with transmission, including IPP lines like MATL to Alberta. May be good time for a time-out on NOS to start thinking about financing and planning. Think that economics are constraining the build outside Oregon and Washington. BPA is taking a hard look at a possible Colstrip upgrade. Also looks like modest upgrades to the DC line to CA and the northern intertie to BC. Brownfield Optimization Group (BOG) report suggested price tag for 3,000 MW was \$5-6 billion for big intertie expansions. There is probably not a compelling business opportunity at those prices, which raises the question whether this is the time to open an intertie NOS. BPA will likely continue to see build-out in the Oregon and Washington footprint. Are we thinking about the sub-grid sufficiently? Voltage stability? BPA is holding a technical conference on Aug 23 to look at that. [Audio - AM 42:25]

Slide 10 - Ken Dragoon, NWPPC – Resource adequacy forum findings. Although the work is not definitive or complete, the analysis shows the NW system is expected to have sufficient energy and peaking capability to meet demand through 2015. The region appears to have shifted to a system that is constrained by energy as much as its peaking capability. Analysis considers some import capability, and some availability of merchant generation, but not 100% of plant capability.

Slide 11- Dragoon - PNUCC looked at the load resource balance, assuming critical water and firm resources. Its analysis also seems to show energy and peaking capability about equally constrained. While some utilities are individually short, the region as a whole has surplus generation that can cover the deficit.

Slide 12 - Dragoon – The Council’s Sixth Power Plan looked at what resource additions and replacement energy is needed in scenarios where there was less coal generation. About half of the lost energy comes from reduced exports. [Audio - AM 49:30]

Slide 13 - Mainzer - There are three interrelated challenges facing the system: provision of balancing services, oversupply, and system flexibility.

Slide 14 - Mainzer – Curtailing transmission schedules. Dispatcher Order 216 allows BPA to drop wind generation or delivery schedules as needed when reserve requirements exceed amounts BPA has agreed to carry. This situation has called to question firmness of wind deliveries and calls out for access to within-hour capability across balancing areas. Debate exists over whether contingency reserves should be used to address extreme, but relatively rare, wind ramps. [Audio - AM 56:30]

Slide 15 – Mainzer - Balancing initiatives. In July 2011, a new trading platform will be put in place to allow for 30-minute intra-hour scheduling. BPA is offering a discounted balancing charge for those willing to schedule on 30-minute basis. Iberdrola has been self-supplying imbalances by essentially running an energy imbalance market within BPA’s balancing area. The Western Systems Power Pool (WSPP) has designed two standard products to help make a more liquid intra-hour market. A proposal at WECC for an energy imbalance market is undergoing cost-benefit analysis, to be finished June 22. An intra-hour market may not realize all of the efficiencies that might come from an energy imbalance market. BPA is also still looking at dynamic transfer capability, ACE Diversity still moving, RBC pilot across interconnection is underway, and looking now at demand side for providing balancing services—several pilots and grants the Council is very involved with. [Audio - AM 01:02:00]

Shimshak – Round of applause for all the good work? (applause)

John Savage, Oregon PUC –How do we know if we are successful for all or most of these?

Mainzer - The total reserve requirement is one of the metrics, total wind integration rates. Those are the right questions. The cost-benefit analysis from WECC will force people to look at that.

Slide 16 - Mainzer - Oversupply Issue. The region is facing a new dynamic with high water and high wind. Lots of anguished decisions have been made at BPA with respect to interim Environmental Redispatch policy. The hope is that we are all aligned with finding a long-term solution. BPA curtails non-wind resources first. BPA has moved down to about 100 MW of thermal resources during ER implementation. Curtailed nightly since May 18 through today (June 6) with two exceptions, about 15% of the total wind generation was reduced in that period. Economics vary by entity– BPA is avoiding negative prices, others RECs and PTCs, or even entire contract prices.

Slide 17 – Dragoon - The likelihood of excess energy events appeared to increase from 2008-2010, leveling off as loads catch up with the renewables build-out. The Council examined three scenarios. The GENESYS model is being used to find more detail. Chart shows normal hydro. [Audio - AM 01:09:00]

Slide 18 - Mainzer - We are working our way through our first spring of Environmental Redispatch. Interties haven’t been loaded up at night– California having its own over-supply

issues. Need to look at physical infrastructure options. There is a relationship between balancing and oversupply, addressing balancing may have a small effect but will not solve the oversupply issue.

Bill Drummond, Western Montana G&T – Is new inertia capability a solution?

Mainzer – New inertia capability appears to be the high-cost option... On questions of flexibility and ability to meet load, we know that wind is not providing a lot of capability to meet peak demand reliability. So utilities are adding other resources to meet peak demand. We do see the absolute ramping of wind increasing over time. Have seen significant ramps and need to keep our eyes on that. Moving to 30-minute scheduling will reduce the need for balancing reserves. Looking toward developing a flexibility metric as another dimension of reliability/adequacy. Smart grid efforts are looking at ability to tap load to provide flexibility.

Slide 18 - Mainzer - The absolute magnitude of ramps on BPA's system is increasing, although ramping as a percentage of the installed wind capacity is declining a bit (reflecting some diversity value).

Slide 23 - Mainzer - Four key takeaways: 1) Supply of potential new resources exceeds RPS demand; 2) Transmission builds appear sufficient to meet resource demand through 2020; 3) Economics of inertia expansion aren't encouraging to building new inertia capability; 4) Oversupply is the most acute challenge today. There are challenges, but they don't look insurmountable. [Audio - AM 01:18:40]

Panel - Additional Observations by Entities with Significant Wind Generation

Stefan Bird, PacifiCorp - Commercial and trading organization, responsible for balancing. Agree with BPA's three areas of system challenges, but would add market rules. PacifiCorp has about 2,000 MW in Pac BA and about 200 MW in BPA's BA. We do balance and curtail at times. Operate under all environmental requirements imposed on our hydro, and empathetic with BPA on its issues. Our IRP suggests the need to double current wind levels. Oregon's RPS is 25% by 2025 - this is an important focus for us. Washington limitation on where the renewables can be located affects our costs. The Energy Gateway transmission project is critical for us. We take issue with ER as a value transfer to other customer classes. We expect to remove our projects from BPA's BA to avoid ER and DSO 216, and we believe we can balance them at lower cost. Will need new transmission to add more resources. Agree that tremendous collaboration on balancing initiatives will help reduce needed reserves– not solve oversupply issue– but expect to see results as early as this summer. [Audio - AM 01:25:35]

Dana Toulson, Snohomish PUD - Snohomish perspective: lobby sign says, "Your Northwest renewables utility"; Commissioners have long been interested and worried about greenhouse gases, directed all load growth to be met with conservation and non-carbon renewables (no gas). Snohomish purchased 220 MW of wind through RFP. Looking now at tidal and geothermal resources, but wind is the predominant renewable resource. We will likely be adding to or doubling our wind fleet. Snohomish is BPA's single largest customer – 10%. Use slice to integrate wind on hour-to-hour basis. Preference customer. Special relationship w/ BPA– in the BPA family. Within BPA's balancing authority. Thirty minutes after hour we nominate wind and slice/block schedules. Pay for wind integration and other ancillary services. We forecast wind ourselves. From hour to next hour, we adjust slice to accommodate wind– if insufficient,

we have to market for balancing and it “can be a wild ride” at times. Snohomish has a foot in both camps – wind and BPA-side. Want low BPA rates, but also want wind-integration rates to be fair. Want a healthy and vibrant wind industry that we rely on for our future. Symbiotic relationship w/ both parties.

Snohomish view’s the federal hydro system and wind as a limited resource that needs to be managed on a sustainable basis. Although all technical fixes may stretch the system– worried about a modern day tragedy of the commons. Each new wind project to add to the wind integration rate puts pressure on all existing projects. Need rules around managing FCRPS sustainably in a way that recognizes different interests including preference rights, existing projects, and new projects. Have a great history of working together in this region to come up with solutions that work for everyone.

Laura Beane, Iberdrola Renewables - IBR has 350 MW of merchant wind which is a challenge to manage in this market, but DSO 216 and ER present even greater challenges. Self supply pilot went live last October. In Mar/Apr performance began to suffer due to insufficient balancing resources. Could not add balancing resources and costs rose beyond our expectation and need. ER reduced reserves and made it much more difficult when reserves were dropped. BPA started to re-engage 8 weeks ago, and we may be able to add new resources. The fact that transmission has been available during ER events suggests it’s really an economic issue, not an environmental or fish issue. [[Audio - AM 01:35:50](#)]

David Mills, Puget Sound Energy – Puget is in a unique position with respect to wind resources. We have Hopkins Ridge, 157 MW on BPA’s BA and looking at moving it into Puget’s BA and ER is adding data points to that analysis. We have 270 MW Wild Horse in PSE BA, and 120 MW of third party wind in PSE BA. Each is managed differently. PSE IRP shows resource choice is renewables and peaking resources that can also be used for balancing. We think tax treatment, not RPS, is a major factor in wind development, though we agree that the region will not likely build significantly beyond the RPS requirements. I worry that we might be targeting a trajectory and end point that is outside our headlights. We need to clearly articulate what is driving us to the end-state. Concerned about number of balancing initiatives – a lot, how are they going to come together, w/ the many BAs in the region? Tend to get distracted by new initiatives such as EDT/EIM– more like the end state than the foundation building initiatives to get us there. Have also been distracted by Environmental Redispatch, and hopefully ER is an interim step.

Neil Millar, CA ISO – Mainzer did good job characterizing California. There are a number of moving parts. Developed least regrets portfolio approach – looking at wide range of scenarios for out-of-state generation– looking at 2,000-7,000 MW; base case 3,000 MW. Working to sort this out still.

Marc Ulrich, Southern California Edison (phone) – All three utilities launched new renewable solicitations. New bill significantly deters out of state renewables. Can apply excess build-out both forwards and backwards now, making us a lot less hungry for renewables. Next 5-7 years focus is on existing contracts. Only extremely attractive out-of-state deals will be pursued.

David Dockham, CA, Northern California Power Agency – Two reports published annually and semi-annually by CEC: Integrated Energy Policy Report and Strategic Transmission Investment Study. Both provide information on utility RPS compliance and needed transmission. CAISO

has said we have all the transmission we need to meet the 33% standard. We have \$15 billion of transmission approved by state and FERC, though some is held up by environmental challenges, representing 30,000 MW of new transmission. ~\$10/MWh rate impact in the state— hard to justify out-of-state purchases with that kind of investment in state infrastructure. AB 32 requires utilities to limit CO2 emissions. In the long run, carbon limits will be more important than RPS. [Audio - AM 01:47:42]

Millar – The position of the CA ISO, we have enough approved transmission projects at this time to meet the 33% standard. We will move forward with additional transmission if necessary.

Savage – Question for CA utilities: No mention on views of intertie upgrade or DC upgrade.

Millar – There are a number of projects that are proposed that would provide an upgrade to our facilities. At this point, w/ procurement objectives, we hadn't identified the need for additional reinforcement of interties at this time. Do need to test those assumptions.

Ulrich – Don't want to spend a billion dollars to solve a hundred million dollar problem.

Duncan – Interested in the comment about the difference between California's RPS target and its carbon reduction target. Have you looked at this delta and how big it is?

Millar – At the ISO, we are looking at a number of studies and requirements. Work simultaneously in progress. There are a number of moving parts. We are largely turning to the state agencies for forecasting and additional planning input.

Shimshak – Have you taken a look at the interaction between renewable resources and traditional generation between the regions?

Millar – A great deal of analysis around what it will take to deliver the actual energy, reserve requirements. Preliminary results are available on our web site at the 33% level.

Drummond – Of PacifiCorp's 2,000 MW of wind in BA, how much is exported, how much is serving native load?

Bird– almost all serving native load. Mainzer added that 85% of the wind in BPA's BA is exported. [Audio - AM 01:55:25]

Scott Corwin, PPC – Regarding the capability on the interties during the ER, was there load to move generation?

Mainzer – Understanding at this point, prices have been in negative territory in northern California as well. Given the policy we have, we call ER events under those conditions.

Tim Culbertson, Grant Co. PUD – Could you move NW energy through the CA system to the desert SW?

Mainzer – Going east, the additional available transmission capacity has been loaded up. Offered up as much zero price energy in California as possible. We have operators getting together to see if there are other opportunities.

Teresa Conway, Powerex – There is space available going north. Is the oversupply issue about load or economics?

Jim Lobdell, Portland General Electric –How effective has the ER been? Is it now being considered extended long term, rather than temporary?

Mainzer – Discretionary actions that we can take to minimize incremental dissolved gas, it is working quite effectively from a physical perspective. The wind generation community has been impeccable w/ their compliance. Very massive water year, and TDG levels have been high regardless of the ER. BPA certainly hopes that we can find another long term solution to this. Policy has a termination towards the end of next spring. Look for other alternatives. [[Audio - AM 02:00:35](#)]

Additional Observations by Steering Committee Members on Recent and Future Challenges [[Audio - PM Session](#) (32M mp3)]

Norman – Add perspectives on what Steering Committee members think about what is going on with wind integration right now.

Lisa Grow, Idaho Power – Mainzer described well the issues we are facing. We have had to curtail wind, having simply run out of down regulation. Peak load 3,200 MW in the summer, 1,110 MW light load– can have 400 MW of wind show up and run out of options. One incident lasting 15 minutes, the other for an hour. Another 300 MW new wind under approved contract and 300 MW or so awaiting approval from the PUC. Only ~ 100 MW of the 400 MW came out of our IRP process. Not getting a lot of diversity. We have not identified a need for 1,000 MW– concerned about whether we could physically shut everything else off. Paying avoided cost prices for PURPA wind, but not all MW are equal. Have asked PUC for temporary reduction of maximum size of resources eligible for the published avoided cost rate to 100 kW. We don't have unlimited ability to integrate the resources. We don't have an RPS and don't get the RECs. Need to look at the rules.

Travis Kavulla, Montana PSC –All on or all off is indicative of what we are seeing. Montana is interested in the debate over local versus distant resources. Need to value the deliverability of the wind, not just base comparisons on capital cost per kW. Lots of our wind occurs on heavy load hours and during the winter. Would like to explore how to quantify the value of variability. IRPs are arguing for local resources, but there is not one abstracted value of wind, depending on seasonality and diversity. [[Audio - PM 08:45](#)]

Furman – Thanks to BPA for a good presentation. We operate in all major markets around the country. I do think there are solutions to this that are lower cost and in everybody's interests. There does seem to be a leveling off of development that will give us time to figure this out. I would be happy to make our people available who have experience working through such issues in other places.

Culbertson – Agree with Furman that there are solutions. Find myself more in agreement with Shimshak than I would have imagined five years ago. Transfer of value. Given up wholesale revenue, and have been paying negative price. Also, trying to work from the change we are seeing and derive some value from the changes. Participating in a pilot project w/ Iberdrola.

Providing products and services for four different wind entities in the region. People are starting to come together to address the issues. Do we design and fix our problems, or do we let FERC, NERC, and WECC decide? We are far better off solving them amongst ourselves.

Pat Reiten, PacifiCorp – Massive wind build up in our system. We have been managing this there. Look at E. WY, occasionally have overgeneration issues, ramping issues, curtailment, limit new LGIAs, Energy Gateway Project – solution for serving more wind in that load bubble. Near term actions as well. On the down ramp side, we have engaged in commercial agreements w/ customers to shed load in those circumstances. Important to be able to pay market prices for those services. Available inertia capability does indicate the issue is economic, not wanting to pay negative prices. Can debate whether the actions are discriminatory or violate the LGIAs, real impetus is to figure out how not to be in this situation next year. Congratulate folks who worked on the regional initiatives. We will go to half hour scheduling next month. We will support an energy imbalance market if it is shown to have economic benefits. Have to work together on transmission expansion. Want BPA's help looking into COI and DC line upgrades with California partners. Displacement of REC and PTC is useful, but if BPA has trouble meeting integration obligations, would like help amending I-937 to source WECC-wide. Amazing progress to date on regional initiatives. [\[Audio - PM 18:23\]](#)

Corwin – Agree with some of Reiten's comments, especially working together. We have a lot of big issues in the region. Good to take a step back to appreciate what we've accomplished. What has been accomplished is impressive. We have a different perspective as preference customers—most of us are starting out 95% emissions free, mostly hydro, almost 10% nuclear. Huge investment in energy efficiency, laying on top of that all this effort on renewables. Time to ask tougher questions and ask what the next steps are. Need to ask not just whether we can keep up with the current pace, but whether we should. We are ready to work together with folks around the table.

Jeff Goltz, Washington UTC –What is the state's role? Undersupply issues, states have traditionally been involved. Oversupply issues seemed like a federal issue, that state entities wouldn't have to worry about. Over time, it has caused a big headache at the state level. If some of our IOUs are not able to reach their RPS, may have to deal with it. I am concerned about public relations issues. It is difficult to explain why rate increases are needed when gas prices are low. Now that gets even more difficult with BPA giving away power for free. Resistive load bank has similar issue— how do we convince the region that makes sense after our long history of conservation? It will take a lot of work getting people to understand that. [\[Audio - PM 23:55\]](#)

Lobdell – We portray this as a wind integration forum, but it's really about the RPS. It's all about the economics associated with chasing load. ER is a toolkit that is being used today; curious as to whether it is efficient from BPA's perspective. We don't think it is. We recognize BPA's issues, and feel some ownership for it. The systems of today are not the systems of tomorrow— there is not enough flexibility to deal with this problem. PGE is in the right place at the right time. We have a hole in our portfolio and appreciate that wind is keeping prices down, and has come to be our friend. Here to help out, find a solution. [\[Audio PM 25:40\]](#)

Wright – We have come to the view that wind has been developed to meet RPS resources. Would like to test the idea of whether there is consensus about that. Are there any other views about that?

Savage – We have two distinct issues: Environmental Redispatch and over-generation; and minimizing long-term costs of integrating large amounts of wind generation. Think it's short sighted to think we're going to cap out at 6,000 MW in a few years.

Lobdell – Looking around region, we're all getting close to the 2015 target. A little left to do and then we're done. It is highly unlikely to build beyond those targets. May look at repowering Boardman as a renewable resource and avoid building a lot more wind. We have time to address that and look around at other resources.

Duncan – regarding Wright's proposition, we should keep in mind the 90/10 rule. While we spend 90% of our time dealing with the issues of the day, we need to spend 10% of our time assuming that our current view of the future is wrong and that non-linear events occur. The decisions to close coal operations at Boardman and Centralia may be examples of such events. Question now is how to replace it. Second non-linear event is the delta between CA RPS and carbon targets. NW may end up in similar place. Need to think about NW greenhouse gas goals. We may need to be doing much more than we are planning for. We need to spend 10% of our thinking on how to meet the carbon goals in a cost-effective manner.

Shimshak – I agree with needing to look robustly at many different futures. The public is asking us to provide more clean energy. Recognizing that the coal plants are going to go away, we need to meet those specific needs. Appreciate the economic and environmental benefits slide, which we often seem to forget. A lot of the investments have helped keep rural economies alive. Think not only about making the power system flexible and robust; but also continue what the hydro system started: building a strong economy.

Action Planning - Open Steering Committee Discussion

Norman – We need to come up with action items by the time we leave at 3pm. Think I heard that there is general sense we are seeing a plateau in development. Savage said we shouldn't rest on our laurels. Shimshak and Duncan recognizing the world is very uncertain and that assumption may be wrong. [Audio - PM 38:10]

John Prescott, PNGC Power – Pleased with how successful the wind industry has become. We may be beyond our headlights. Propose three action items to consider: 1.) Rates – look at the true costs to integrate wind. What are they? How are they allocated? 2.) Engineering side – concerned about impact of system reliability, specifically the ability to ride through transient events. Don't know the answer, but we shouldn't add more wind until we know. 3.) Policy- Are we accomplishing what we wanted, or are there unintended consequences of the mandates and subsidies? Did it achieve what we wanted?

Lobdell – 1.) We need to look at wind integration tariff. If cost of ER shifting of value from one customer group to another. If we [BPA] were willing to pay for negative pricing, how far would you go? 2.) Would there be a specific price point that we would go to this level and no further? If can't change REC and PTC, set at that level and cover major economic issues that wind developers have. 3.) Transmission- Don't believe transmission is a way out of this. Need characteristics and attributes of this system. Dynamic transfer capability in the system needs to be increased. [Audio - PM 42:58]

Culbertson – Would be good to form effective coalition to eliminate economic consequences of REC issues, and be able to substitute hydro. Some of the legislation could be dealt with. Also need to look at consolidation of balancing authorities. Grant and Chelan have looked at it for about 18 months, and are now bringing in Avista. May be able to share the draft report in November.

Jorge Carrasco, Seattle City Light - Projections on wind resources. Need to reexamine assumptions about renewable build-out, and make sure we are not overstating the issues and implementing unneeded solutions.

Duncan – suggest a 10% solution. To sketch out what kind of system, 10-15, 20 yrs from now would capture the most benefit and come with the least risk. The kind of architectural planning we haven't done. We tend to come together when there are immediate issues– need to start thinking further down the road and describe more optimal solutions in light of potential carbon regulations that may be coming.

Furman – To clarify, I am arguing against a point forecast, and in favor of scenarios. If point forecast is 9-10,000 MW in the short-term, it is wrong. Probably are looking at a plateau for a while. Should not make reactionary decisions based on a high forecast. Are there ways that we can achieve single utility operation? Are there tools to implement that effectively? Forget about wind – this is low hanging fruit for all of us. A lot of economic benefits, and we should have a group to focus on that at a high level.

Roby Roberts, Horizon Wind Energy – All these different control areas – we have to change that and maybe this is a start. Dynamic scheduling idea – Need to figure out more regionalism, working with partners to the north and south as well. Way off on the technology too. Prices have come down. New machines bringing wind regimes that we never thought would be economic. Capacity factors 10% higher for sites closer to load. The plans are nothing, planning is everything. All our plans are probably wrong past a year or two – technology is going to change, politics and carbon are going to change, gas forecasts will change. Need to have a more robust conversation. Going to DC for PTC changes is not going to go over well, caution against that. REC rules – more regional would be welcomed. [\[Audio - PM 52:25\]](#)

John Saven, Northwest Requirements Utilities – Observation – good to make a plan, and be able to compromise. Looks like these issues are solvable. Just coming off of residential exchange experience where for many years parties were locking horns. Eventually policy makers came together with a regional solution. Want to be open and reach out to everyone. Nice to know if you are simultaneously actively litigating in other forums, but important that people aren't storming the gates and forcing us into defensive posture.

Corwin – I like the idea of drilling down on the forecasts, but not relying on them. Would volunteer for a subgroup to explore policy changes. A lot of things are moving, and more are not moving in DC right now. Let's not take things off table too early.

Brian Skeahan, Cowlitz Co. PUD – Have 125 MW of wind, relatively large compared to our load. We are equally concerned about impacts of curtailment and impacts to the PF rate. Not likely that there is going to be a magic bullet solution to this– some people think there are some low incremental cost solutions. Maybe transmission, maybe not. Maybe law changes, maybe not. Operational changes to address balancing and over-supply... Cost allocation issues matter.

Understandably not happy to be taking a hit— arguments of environmental versus economic. Challenge is to concurrently work towards set of solutions, and simultaneously have a conversation about who pays. Solutions that can clearly work and be supported, but you can have costs associated with these issues that have to be allocated. Solutions will be discounted because they may exacerbate cost allocation. The challenge is to come up with solutions while simultaneously tamping down fears and rhetoric. [\[Audio - PM 01:00:00\]](#)

Conway – Interesting to know how far along the current balancing initiatives get us. Cost allocation – have to be careful picking winners and losers based on customer classes.

Toulson – Have to look at cost allocation and rate design. There are ways to incent good and bad behavior within design. One way out of over-supply is new load. Want to ask Grant how that is playing with them.

Culbertson – Oversupply is an opportunity too. The market is a resource option I would choose for next ten years. If I were to purchase a ten year strip of power, how would I be affected by a carbon tax? That's the predicament we're in when we look at load growth and new resources. Lot of revenue volatility in hydro resources. \$5-80m variability in hydro conditions yearly. Lot of capacity and flexibility, but a lot of risk and uncertainty in the future.

Mike Chashell, Northwestern – Hard for us to deal with balancing having gone through deregulation and coming out with no resources to balance with. We can do a small amount of wind integration for wind serving our own loads. A larger amount will be developed for supplying loads in other BAs. Very important to think about cost allocation, rate making, and rate design. Recently went through our own wind integration analysis. Stakeholders now stepping back to try to work out an equitable solution among all stakeholders. FERC wants us to have variable energy resource rule to promote variable generation. On other hand, they have rejected market-based ancillary service charges in the Open Access Transmission Tariff. Need to band together to ask this of FERC. [\[Audio - PM 01:09:00\]](#)

Dick Storro, Avista – Have very little wind on our system right now. It's easy to go for the easy solutions, which is not always the best solution. There needs to be a list of agreed upon principles to govern the decision making.

Culbertson – Folks in operations know about being wrong— load and generation inadvertently is almost never in balance. Make decisions today and know you are going to be wrong. New things like ITAP: need to encourage people to do use it. Operators are not going to take a lot of risk, need to know the rules and standardize the processes. Lots of flexibility in the system we haven't found, because operators are not involved in processes such as ITAP. They need to understand the rules. Need to understand what it means to move from 30 minute schedules to 15 minutes. Make 30 minutes successful first. 15 would be monumental change. [\[Audio - PM 01:12:45\]](#)

Drummond – Have to address question of who pays. First have to address how big is the problem? As we look at all of the potential solutions. I also blanched at the load bank, we need to be careful about how we describe the solutions to the greater public.

Shimshak – Willing to work on policy fixes, but acknowledge risk in trying to change the policies. Wouldn't want a policy fix to keep us from actually solving the problem. Rather see a

broad range of robust solutions. Intertie upgrades – understand that they could be made with not that much money. I know BPA worked hard to establish advance agreements w/ fossil generators– maybe could have started earlier. Make resources available to try and hit a sweet spot. Want to underscore distributed resources – all the intelligence that goes into smart grid, hope there are solutions in that. Collapsing control areas Culbertson suggested.

Savage – What more do we need to do to integrate large amounts of wind and solar? What other incremental – true incremental - work is reserve sharing in NWPP? Going to continue to push for bigger, broader market solutions. Want to make sure that we are looking for the cheapest solutions for integrating all of this. Don't want to invest a lot of capital if there are cheaper solutions institutionally. Not much overlap between oversupply and balancing. Blending solutions of both into one. As a commissioner, I want the most efficient way of integrating all this to make sure this is reliable. [Audio - PM 01:20:25]

Roberts – We need to get some clarity on the cost allocation issue. How to define, how is it done elsewhere, what is fair?

Mainzer – Return to this morning's conversation. A lot of what we are talking about – oversupply, balancing, and adequacy. Need to build off of the platform of the work going on right now. Don't think we have a clear path forward, see room for physical solutions. Glimmer of hope people are willing to look at legislative fixes. One issue is how can we execute a lot of this stuff– those 23 pages of initiatives. How do we build on the institutional capacity, and coordinate effectively? Don't forget the stuff that is currently going on.

Lobdell - Need to look at transmission loss returns. We're generating to send BPA energy at these times.

Drummond – Don't have to generate to return.

Lobdell – Keeps other generation from competing with BPA's load. RPS continues to move forward, energy efficiency continuing to move forward, when do we say enough is enough? We need to come up with some other way to deal with the issue, than BPA being the one who has to fix it. Some of us want to take our issue off of the BPA system. Don't want to be subject to DSO 216 and ER. What can BPA do to help us move in that direction?

Mainzer – DTC is a huge issue. ColumbiaGrid WIST is looking at what it would take to quantify dynamic scheduling capability and what would it take to increase DTC– due out in a couple of months. They will then look at increasing available dynamic transfer capability and cost benefit analysis.

Lobdell – Provide price signals to let us know what decisions to make. [Audio - PM 01:29:00]

Norman – There are a lot of ideas on the table, anyone want to add anything?

Bird – A lot of good comments; market based solution. Troubled with cost allocation and regulatory principles. Negative pricing perceived as a bad thing by some, but it exists around the country, and incents market-based solutions. Need to keep in mind market-based solutions versus others we may come up with that might have unintended consequences.

Culbertson – Grant is not opposed to paying negative prices. If that is the condition. However, it is a cost. When I recommend what a rate cost is, I'm going to integrate that into my integration rate. We understand that and roll it into the integration rate.

Lobdell – We pay negative prices as well. Coal plant may be running off peak at a loss but we need it on peak.

Furman – We pay negative prices too. [\[Audio - PM 01:31:35\]](#)

Next Steps

Wright – Heard six things that I tried to categorize:

1.) Issue of system reliability and transient events. Group coming together to talk about that in August, but haven't spent too much time on that.

2.) Host of issues associated w/ balancing authorities. Going forward with 30 minute schedules with ITAP. There is a lot of work going on with respect to energy imbalance markets. Working on where are we as a region by early fall. Wait for June 22 report, then work more to translate how 30 minute schedules look compared with 60 minute schedules. Useful to get balancing authority group together again to decide on a direction in the early fall timeframe. Good to hear what Grant, Chelan, and Avista are working on.

Culbertson – Looked at costs of administrating a consolidated balancing area, but did not look at economics of generation optimization. Avista was interested in that and we are now looking at it. Economics without generation optimization were a push. Preliminary report of joint study is expected to be available in November. [\[Audio - PM 01:35:55\]](#)

Wright – Had several meetings of Balancing Authorities. It would be good to get them together to hear about that, and to ask whether we will have enough information to go forward with an energy imbalance market this fall.

Lobdell – WECC-wide report and PNW report– get together once that was available?

Wright – June 22 WECC report and Columbia Grid reaching out to NTTG to make the largest possible footprint. Want to make sure we have what we need in the fall to make the decisions.

Reiten – Incremental value. Regional BAs getting together is a good idea– like to hear more about Grant/Chelan/Avista work.

Wright – Let's try to do that in July timeframe.

Mainzer – June 13, group of the ColumbiaGrid leadership with John Cupparo and WestConnect parties to keep conversation going and get the best cost/benefit analysis possible out in the fall. Have been reaching out to non- BA members too. [\[Audio - PM 01:38:48\]](#)

3.) Dynamic transfer capability. Nice to know exactly what are BPA's plans for accessing DTC and plans for expanding and offering on more than a pilot basis.

Mainzer – make sure an APB goes out to the Steering Committee when the next phase of the DTC report goes out. Maybe have a webinar with the results?

Wright – We need to address both network and intertie DTC questions.

4.) PTC and REC follow-up. Think this is fundamentally market-based on public policy, associated with a payment for PTC and RECs. This is not the way we traditionally think of markets. Need more conversation about a way to address the way PTC and REC policies have been designed. This is the first I've heard Lobdell's idea of BPA paying negative market prices with some limit and charging it back to the wind schedulers. Can't go far with this outside the rate case, but interested in further conversation about this. Might have to get through the rate case first, but that might be soon.

5.) Cost allocation issues if can't address PTC and REC issues. [Lobdell and Culbertson to help pull that together]

6.) How do we deal with oversupply? Need some kind of supply curve. Transmission an expensive solution, DR, others out there. Is there an investment opportunity here? If not, we have to accept that there are times that we spill wind or something. Either there is a way to deal with it, or not. [Audio - PM 01:43:30]

Shimshak – Realignment. Every time we talk about markets and cost allocation it is a sensitive subject. Need to look across lots of solutions to determine how best to address it, and not just fold it all into the wind integration costs.

Reiten – If we are going to create more geographic diversity of wind, we need more transmission. Having managed a BPA slice system, fairly unusual to have the prices the way they are now. Not always going to be negative market in CA. Additional upgrades in transmission may need to be an option.

Norman – Fold that into item 6.

Wright - DC upgrades needs to be on the list, though California partners not looking at this now.

Duncan – Don't think we can cost allocate out of these issues. If there is an over-under supply group task, hope it is not just a cost allocation exercise.

Wright – Saw these as separate items: Supply Curve and Cost Allocation.

Corwin – Flexibility and adequacy. Longer term, need some gas represented.

Wright - NWGA event. Need executive leadership. If there are folks out there interested in co-sponsoring this. Add this as an item.

Reiten – We're interested in working on that.

Lobdell – Us too.

Wright – All the activities Mainzer cited are ongoing, the six are in addition to those. Are folks OK with that list?

Lobdell – NOS is on hold, can BPA speak to next steps?

Wright – Of reliability transient events, there is a group working on that. On BA issues, we're going to put together another BA meeting on that.

Culbertson – We can bring out our technical committee to walk through what they've found and how they did the study.

Wright – BPA will take the lead on holding the meeting and judge the interest on the basis of who shows up.

Mainzer – Will work with Jeff Miller on DTC to get a report on where we are and set up a meeting/webinar, and also get Brian Tuck to talk about what BPA can do to make the next tranche of DTC available. [\[Audio - PM 01:53:54\]](#)

Wright – PTC/RECs, Iberdrola, Grant, PGE, and a few others already involved in that. Folks interested in working on that can get in touch with us and hook you in. On cost allocation, that would take a policy change. Maybe Jim Lobdell and Tim Culbertson could help us work on that. Would like the Council to take the lead on developing an oversupply supply curve.

Karier – Think that would work for the Council. Might take some contracting, but we can do that.

Wright – Need to have more of a dialogue between gas and electric sectors. I would like to get together with Reiten and Gregg Kantor of PGE, and involve Avista as a gas/electric utility to look at how to integrate gas and electric short of a gas-electric regional plan. [\[Audio - PM 01:56:23\]](#)

Shimshak – Would like supply curve to be a catch-all for many things.

Wright - Regarding the question about network open season. Appears to be that the need for resources by 2020 may be satisfied closely by the 7,000 MW of firm transmission offered by BPA. BPA took substantial risk in first NOS, cost of studies, allowing up to 5 year deferrals. If we have potential for oversupply, we need to think about the risk of offering more. Will need to have that discussion over next few months. Have four big transmission projects, three pretty well on their way, one still having work ahead.

Shimshak – Focusing on intertie open season seems like a reasonable place to look. Caution against stopping altogether and think about what is useful next step.

Furman – Don't think anyone will build a project just because they are offered transmission. Probably folks may have signed transmission agreements that they don't need. It may be necessary to have a NOS to allow people to bid out of their contracts. NOS has been very successful program and shouldn't throw baby out with the bathwater. We are lucky to have that.

Wright – We are also concerned about our borrowing authority. Key issue is question of deferrals. We have a fairly lenient policy. We need to make sure that if we are building transmission it is sized right for the projects that are going to be there. [Audio - PM 02:15:00]

Norman – Encouraging that people are willing to work together.

Skeehan – I understand that if people have a claim to make, but we've had a lot of talking to politicians and media. Lots of people paying attention to this today, and better served by toning down the rhetoric.

Furman – Today doesn't change ER. There are principles involved that we fundamentally disagree with. The discourse here has been constructive and should be continued, but we fundamentally disagree and will pursue legal avenues.

Skeehan – Understand and agree. Just mean the external stuff should be dialed back.

Corwin – We do support BPA who is between a rock and a hard place, and we will defend that.

Furman – We are very interconnected, and BPA is our most important partner. We recognize we need to be able to work together.

Norman – Will open a public forum on the internet and make summaries of comments available.

Karier – Had two objectives for meeting: raise understanding about what is happening; and action planning for what comes next. We have talked about the great successes we've had. Wright has laid out some next steps, exactly what we wanted to do. This group can give this work the broad executive oversight it merits. May need to check-in in 6 months or so. Wright and Karier will check-in and see whether we need to push harder.

Wright – thanks to the committee members. In the midst of a tough time, despite the great successes we've had. Discourse today was civil, thoughtful, and constructive. Norman will continue doing outreach and you should let him know if you think it is time to call another meeting. Next get together – perhaps late Fall.

Attendees (Steering Committee Members):

Jorge Carrasco, SCL	Lisa Grow, IPC	Roby Roberts, Horizon Wind Energy
Teresa Conway, PowerEx	Travis Kavulla, Montana PSC	John Savage, OPUC
Scott Corwin, PPC	Tom Karier	John Saven, NRU
Tim Culbertson, Grant PUD	Jim Lobdell, PGE	Rachel Shimshak, RNP
Mike Cashell, Northwestern Energy	Mark Maher, WECC	Brian Skeahan, Cowlitz PUD
Bill Drummond, WMG&T	David Mills, Puget Sound Energy (for Kimberly Harris)	Dick Storro, Avista
Angus Duncan, B.E.F.	John Prescott, PNGC	Dana Toulson, Snohomish PUD (for Steve Klein)
Don Furman, Iberdrola Renewables	Pat Reiten, Pacific Power	Steve Wright BPA
Jeff Goltz, WUTC		

Other Attendees:

Dick Adams, PNUCC	Erin Greeson, Renewable Northwest Project	Brenna Moore, Clark PUD
Keoni Almeida, CAISO	Randy Hardy, Hardy Energy	Ken Nichols, Ecofys
John Apperson, PacifiCorp	Bill Henry, PSU	Paul Norman, Facilitator
Dave Arthur, M-S-R	Fred Heutte, NW Energy Coalition	Rod Noteboom, Grant PUD
Nancy Baker, PPC	Jim Hicks, OPUC	Mark Ohrenschall, Energy News Data
Laura Bean, Iberdrola Renewables	Chris Hill, Cowlitz PUD	Stephen Oliver, BPA
Sean Bell, RES Americas	Sandra Hirotsu, NPCC	John Pease, BPA-Tech. Innovation
Syd Berwager, BPA	Doug Johnson, BPA	Arnie Quinn, FERC
Ty Bettis, PGE Merchant	Jan Johnson, Iberdrola Renewables	Mike Raschio, Elcon Associates
Stefan Bird, PacifiCorp	Steve Johnson, UTC	Len Reed, The Oregonian
Bill Bradbury, NPCC	Philip Jones, WUTC	Ishwar Saini, Macquarie Engineering
Scott Brattebo, PGP	Eric King, BPA	Ted Sickinger, The Oregonian
Michael Canon, Klickitat County	Jeff King, Consultant	Brian Silverstein, BPA
Gillian Charles, NPCC	Bob Lafferty, Avista	Rich Springer, Vestas Americas
Bryan Cox, Avista	Rhett Lawrence, Save Our Wild Salmon	Bill Thomas, E-ON
Dave Dockham, NCPA	Jimmy Lindsay, RNP	Henry Tilghman, Tilghman Assoc.
Cathy Ehli, BPA	Doug Marker, BPA	
David Elwood, HDR Engineering	Kim McRunnel, TransAlta	Sara VanMulligen, SeaBreeze Power
Stephen Enyeart, BPA	Trace Megenbier, ODE	Linc Wolverton, ICNU
Ann Fisher, MSR	Neil Miller, Cal ISO	Amanda Yang, SCE
Nicolas Garcia, Tacoma Power		Cameron Yourkowski, RNP
Wally Gibson, NPCC		

Telephone Attendees:

Baker, Loren	Dobson-Mack, Gordon	Kahn, Robert	Perusse, Brian
Bayless, Rich	Dunbar, Bill	Keogh, Ross	Rarity, Matt
Bennett, Frank	Ehli, Cathy	Kerlick, David	Robinett, Wayman
Berdahl, Rebecca	Enyeart, Stephen	kincaid, jess	Rodrigues, Tony
Bickford, Daniel	Finley, Linda	Klumpp, Liz	Rosquist, Will

Northwest Wind Integration Forum Steering Committee - June 6, 2011 Meeting Minutes

Bradshaw, Bryan	Foote, Hilary	Koehler, Birgit	Sanger, Irion
Brown, Frank	Gannett, Craig	Landauer, Marv	Schwartz, Howard
Brush, Ray	Gordon, Peter	LeVee, Dave	Shifley, Sarah
Burris, Ruth	Grassell, Suzanne	Little, Maura	Sienkiewicz, Ed
Carr, Thomas	Green, Chris	Magraw, Chuck	Smith, Allegra
Clement, David	Haase, Max	Marritz, Robert	Spraggins, Melanie
Cochlan, Marcy	Hamilton, Roger	Milstein, Michael	Sterling, Rick
Coles, Kendra	Hammarlund, Jeff	Mitchell, Peter	Till, Rick
Costa, hilary	Harmon, Jill	Munro, Christy	Tursa, Mark
Cowan, Kelly	Hatfield, Laura	Neale, Ryan	Ulrich, Marc
Cross, Robin	Hege, Scott	Netik, Irena	Vincent, Tammie
Damiano, Patrick	Henry, Marsha	Newkirk, Josh	Warren, Dave
Decker, Robert	Holbery, Jim	Osborn, Tom	West, Charles
Dekiep, brian	Jackson, Mark	Pagoaga, Rich	Williams, Dan
Deren, Jeff	James, Dan	Pascoe, William	
Dettmer, Dan	Kaake, Jon	Pavlak, Alex	