

WIF Steering Committee – 5/14/12

Steering Committee Attendees:

Steve Wright, BPA

Tom Karier, NPCC

Jeff Goltz, WUTC

Jorge Carrasco, SCL

Travis Kavulla, Montana PSC

John Prescott, PNGC

Jim Lobdell, PGE

Rachel Shimshak, RNP

Lisa Grow, Idaho Power Co.

David Mills, PSE

Angus Duncan, BEF

Kevin Lynch, Iberdrola Renewables

Paul Norman facilitating.

BPA and Council anxious to get feedback on OTOC report. Intend to ask Steering Committee members input after Ken gives his presentation, then input from others.

Steve – Grateful to folks who worked on this WIF OTOC group. Volunteer effort, substantial amount of work done. Good product. Opportunity for feedback. Impressed with the work that went into this. It has been almost a year since we have been together as a SC, so think about what we as a region should be thinking about in regards to wind integration issues.

Tom – Issues like load shifting to light load hours was the leading solution when we talked about this. Interested in hearing your opinion about that. Thanks.

Round of introductions.

Ken Dragoon:

WIF SC meeting in June. Council was asked to take leadership role to find physical changes to the power system to address the oversupply issue. Asked the Steering Committee members to each appoint members to WIF OTOC. OTOC met and started w/ a brainstorm session. The group then winnowed them down to things that were more tenable. Work teams were organized around 5 major categories. Technical workgroups were open to everyone – fairly good participation from folks with technical expertise throughout the region. The groups operated on consensus – excellent, positive process. No votes. The group was able to adopt recommendations, while not always unanimous agreement on every detail. The Steering Committee members and their organizations were not asked to sign off on this. Members didn't feel they had the authority to sign off for their organizations. Good representation of the sense of the group.

Slide 3 – Solution Set Limited by Cost

BPA estimates 300,000 MWh average per year with an expected cost of \$12M per year. So far this year, they have had 20,000 MWh. Not a huge amount of money in context. Largest displacement in 2011 was 1500 MW, though BPA has hit 2,000 MW this spring.

Wrote a paper that represents recommendations for future study. Didn't have resources to delve too deeply, but were able to winnow out those that were deemed less feasible. Potential measures have merit and deserve attention in immediate future.

High potential and feasibility recommendations:

1. Shifting load to light load hours – the measure I will spend the most time on today.
2. Increased power system coordination
3. Resistive loads

Load shifting.

Municipal water supply example briefly discussed. Municipal water pumps and reservoirs act equivalent to pumped storage facilities.

First realization – oversupply is mainly a light load hour issue. Demand is most likely to be saturated at that time. Originally had thought the energy storage challenge was to move energy seasonally over weeks or months, but storage on the order of hours or shifting demand from heavy load hours to light load hours can be effective. Called municipal water pumping system and they said they could pump at night, used to, but don't anymore because they have a rate disincentive. Other loads also were found to have flexibility. Irrigation, server farms, commercial bldg, cooling systems all appear to have some flexibility. Why wouldn't these industries use this energy during the night? Although energy rates are typically lower at night, separate peak demand charges are levied. In some cases the demand charge is conditioned on when the peak occurs, but not others. There appears to be a diversity among the tariffs. A small survey of tariffs suggested that there might be significant amount of load where the charge doesn't differentiate between heavy and light load hours. The recommendation is to look into this more fully. There is hope that the tariffs could be changed. BPA recently changed its tariff structure – the new structure being conducive to shifting load. Not a seasonal problem, but could be viewed as a day/night problem. Cost of service to the region would drop significantly, potentially saving much more than the \$12 million annual cost of the displacement BPA estimated. Whether this would fully address the oversupply issue is not known. Load shifting may not be able to get to 1,500 or 2,000 MW, but should pursue the idea further.

Power system coordination.

BPA does wind forecast 3 days in advance. Example of how better information could be used. Not talking just about hydro system coordination. BPA has done a lot and a good job already. Not calling that into question at all. Additional opportunities may exist – better river and runoff forecasting. Additional study warranted. Improved wind forecasting. Increased incentives for entities outside BA by displacing generation, more dynamically calculated flood control rule curves.

Resistive Loads.

Chief Joseph Dynamic Brake is a 1,200 MW resistive load to provide grid stability. Other examples include commercial boilers for providing steam or hot water for commercial use or in district heating systems. Resistive loads are incredibly cheap with no rotating machinery involved. Next best thing, costs money for resistive load banks that don't make use of the energy, but are very inexpensive to implement and can be implemented on a large scale. Provides market depth around zero market price. May be a reasonable interim step toward the more efficient use of energy anticipated in the other recommendations.

Moderate Potential and Feasibility.

1. Efficient Generation Displacement
2. Reduce TDG levels
3. Transmission trading enhancements
4. Mini energy imbalance market

Longer term efforts

1. Cross balancing area exchanges
2. Aquifer recharge
3. Electric vehicle charging coordination- growth fairly certain, quantity likely to be fairly modest.
4. Keys Pump-generating plant improvements.

Other ideas – see list.

Rob Petty:

Preliminary analysis. Relative cost and timing of some potential oversupply options as well as range of potential offsetting benefits. See chart. Boxes highlighted in red indicate size restricted.

Ken Dragoon:

Possible Next Steps.

These are things that need more attention and additional study. A lot are being addressed, several by the newly formed Market Assessment and Coordination Committee, but some need more attention (load shifting). OTOC may be a natural home for some of these – load shifting?

Thanks everyone who was involved. There were very positive attitudes and positive contributions by members of the OTOC and workgroups. Value the functionality of this group.

Questions.

Geoff Carr, NRU – pleasure working with the group. Certainly like to see these recommendations continue to move along.

Dave Arthur – MSR – Is the problem one of more commercial deployment or understanding? Or are we still at the earlier stage? Do we have to invest in something that has yet to be invented? Ken – most things we have talked about exist. Not seeing a lot of new stuff here. Dave – what is behind getting policy response. Ken – this meeting is a big part of that. Get people aware of issues. May be reasons for the tariffs – need to continue to understand those.

Rachel Shimshak – questions on load shifting. Some utilities already have appropriate tariffs in place. In addition to utilities putting tariffs in place, need to have outreach with customers soon. Ken Dragoon– agree. Rachel-- Did the OTOC review and adopt the cost chart? Rob – BPA developed the chart but the Council did review it (chart that Rob discussed).

Travis Kavulla – Agree we should look at the tariffs.

Dave LeVeé – to Rob, looking at difference between DR and retail rate design. What is involved in customer response? Rob- retail design – behavioral changes due to price signals. Ken – I think the question was about the math behind the DR cost figures. Rob—with regards to DR – estimates of infrastructure costs and controls to enable load shifting for some customers.

Paul Norman – Input from SC members. Where should we focus? A lot of these options are being worked on in some regard. Do we need to do something for resistive load banks, load shifting , power system coordination, gas reduction, efficient displacement?

Rachel Shimshak – One other thing that I didn't see on the list that I think ought to be. Return to annual refueling of the nuclear facilities. I would like to see this on Rob's chart. Another thing would be ways of reducing TDG caps, get agreement for temporary relaxation of gas caps under certain conditions. Probably a combination of many of these recommendations will be needed – not one single answer. I would like to have a timeline and budget for this.

John Prescott – resistive load – not sure I would be ok spending a lot more time on this. Intrigued by idea on load shaping. Might have double benefit. Curious about long term strategy in terms of load growth especially with regards to spending capital on things that might not be needed in a few years.

Angus Duncan - Acknowledge ingenuity of this group of people. While not all ideas are as strong, I think they did a terrific job. One comment on chart – nervous about spending too many resources on electric vehicles-- may have overstated the penetration levels. Need to look at meeting Oregon/WA carbon goals. Would like to refocus attention on recommendation # 6 from the SC meeting and Gen -12 Power Plan action item to examine low carbon futures.

Roby Roberts -- Have BPA sit down and analyze all of these and make a recommendation and timeline for each.

David Mills – fully support first recommendation on shifting load especially with regards to HLH and LLH. Not all set up for complicated load shifting to specific hours. Other ask – go through and identify the forum(s) that the issues are being talk about in. Identify what activities are ongoing and not duplicate efforts. Keep this document updated and track progress of initiatives over-time.

Jorge Carasco – Echo comments earlier re work of group. Ask BPA to examine recommendations and see if they concur with the characterization. BPA should identify what they can implement, and where they would need support from the utilities?

Jeff Goltz – Agree w/ what has been said. The document is very good. Removing barriers to load shifting is the low-hanging fruit. Issues that need more explanation – electric vehicle, pumped storage, aquifer recharge – need to explain why they are longer term.

Travis Kavulla – The need to pay negative prices may change over time as, for example, the production tax credit expires. A five-year pay back for resistive load banks is a good thing because the negative prices could go away by then.

Randy Hardy- involved in irrigation load shifting pilot. Seems most promising of all of these. Need to offer incentive for more than one year, (3?) so that the irrigators have something to invest in. For \$2 million a significant amount of irrigation load could shift, holding the utilities harmless for something like \$2/kW-month. Money well spent.

Geoff Carr – BPA does have an irrigation pilot project in place. Rate design and load shifting seem promising. Great if the Council would put out an issue paper and promote a wider discussion of this.

Kevin O'Mera (PPC) – comment on Rachel's annual refueling of Columbia generating station. Significant amt of radiation dosages in the industry are due to refueling which is why the industry moved away from annual cycles. This would go against that. Echo a lot of the other concerns about duplication of efforts.

Rachel Shimshak – everyone in region working hard on solutions. It would be nice if we can set out a target to have in place next spring.

Bob Lafferty – Load shifting is an interesting idea.

Brenna Moore – think load shifting is great -- has good load potential. Clark PUD would be interested in participating in this effort.

Stefan Bird, PacifiCorp – intrigued with Randy's comments re irrigation and will look into Pac's possibilities.

John Apperson – load shifting one of the first places to follow up on. Low hanging fruit.

Snohomish – echo comments.

Fred Heutte, NW energy coalition – 1 – Question of spill caps-- can we have more flexibility that would reduce amount of restrictions necessary. 2- Potential for addition thermal displacements outside BPA balancing area. 3 – Annual Columbia Generating Station outages still worth looking into shutting CGS for a couple months – maybe without refueling.

Paul Norman – summarize. Lot of praise for what committee did. Caution for not duplication. A lot of support for load shifting and shaping. Need plan, schedule, and timeline. Didn't receive a lot of feedback on resistive load banks.

Rod Noteboom –From our experience, goal is what to do if you were all one entity/utility. Probably wouldn't do resistive load banks from a one-utility, regional perspective.

Steve Wright – chart that Rob put together is helpful and reaffirms work of committee. Do think that Rachel's comment of adding annual refueling of CGS to the chart makes sense. Encourage committee staying together longer and would like Rob to walk the Committee through the chart. We (BPA) did ask NOAA their view on spill – significant reservations on potential impact on aquatic life (salmon and steelhead) – certainly reservation here. On load shifting, really clear that people are interested in reviewing. What is the home to make sure we have something in place and soon. Awful lot of change that needs to happen. Need momentum. Re Jorge's comment – chart and recommendations tell us to focus on things on the left hand side [low cost and early implementation]. Activity needs to be taken by others on all but one of them. Surprisingly, an attractive option is resistive load banks which are completely within BPA's control. Something we could do fairly soon and appears relatively cheap. Think we are likely to spend more time exploring RLBs. It gives us something in real time.

Jorge Carasco – be clear on what you think BPA can take on, versus things you will need help from the region.

Steve Wright – resistive load banks – expect BPA to spend some time on that. The other items on the left of the chart (Legislation and Retail Rate Design) – engaged and participating but it will take a big coalition.

Tom Karier – I agree with Steve. Council interested in pursuing the recommendations but want to check whether we are on the right track. I hear that we are on the right track. OTOC to take a look at what items we might have missed. Both Council and BPA have studied how big the problem is. Focus going forward – look at the lowest cost options. Make sure we hit them hard and first. Good guidance to look forward.

Progress on other action items from June 2011 Steering Committee meeting – Elliot
Lot going on. In December 2011, Paul worked with Ken, myself and others on a summary status report that went over the 7- actions from our last meeting. Focus on December and mid-May. Probably will update the document in June/July.

1. Potential short term grid stability impacts – BPA hosted workgroup in August. Studies showing that grid stable, given that wind projects.
2. Continue examining BA consolidation. A lot of work since last June. Significant number of power pool member utilities have established and agreed to fund market assessment and coordination group. Coalesced on problem statement. Full work plan agreed upon. Governance subcommittee looking at longstanding issues. Market assessment meetings beginning in the next few weeks. Grant and Avista study of BA consolidation found relatively limited diversity between their systems – didn't see a lot of value in consolidating BAs
3. Dynamic transfer – Briefing for SC members on Nov 17. Not seeing this as a big issue today but need to evaluate implications of an Energy Imbalance Market and sub-hourly scheduling on Dynamic Transfer Capability.
4. Potential legislative issues. Fairly actively addressed in context of environmental redispatch. Lot of dialogue. Topic still on radar screen. At this point we have not seen any successful advancement of reform agenda.
5. Cost allocation – in oversupply discussion groups. Developing proposal for rough 50-50 splitting of the costs between wind schedulers and other federal system users. Mini 7(i) rate case being developed for oversupply. BPA releasing proposal in June.
6. Long term physical improvements to oversupply was covered by Ken and the group. Paul Norman is available to continue work in that area.
7. Flexibility adequacy, with a focus on NG convergence. Dick Adams, Dan Kirschner done a nice job pulling work together on this. Follow up items – scenario work (peak nat gas day events). White paper on reliability being produced.

Jim Lobdell – DTC is not an important issue? Elliot – no, it is definitely an important issue, but not binding today. Question is, over long term, how to make sure it is sufficiently available.

Paul Norman – Back to OTOC report. Summary of discussion and clarity on what's next out to you next week.

Steve Wright – retail rate design issue. Is there a specific assignment to OTOC to advance that?
Logical place is OTOC.

Tom Karier-- My assumption is the OTOC will take this on.