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July 28, 2011

## MEMORANDUM

**TO:** Council Members

**FROM:** Ken Dragoon

**SUBJECT:** Finalizing Surplus Energy Paper

Staff presented a summary of public comments received on “The Effects of an Increasing Surplus of Energy Generating Capability in the Pacific Northwest” draft paper and proposed responses to the comments at the April 25, 2011 Power Committee meeting. The draft paper was released on March 28 and received a total of 17 responses prior to the April 14 deadline. Comments came from a range of stakeholders and signaled strong interest in the subjects of the paper, but also regarding the development of wind energy generally. All comments received are posted to the Council web site<sup>1</sup>.

Council Member Yost expressed concerns over the draft paper at the April 25 meeting and requested time to review the content with staff and potentially propose changes. Staff has revised the paper, including clarifications proposed by Member Yost. The proposed changes chiefly clarify potentially ambiguous terms used in the paper, principally “capacity” and “reserves.” Some additional editing reflects events that have transpired since the draft was released; including passage of California’s revised renewable portfolio standard, and BPA wind curtailments under the high spring 2011 runoff.

A summary of public comments is attached. Public comments fell into the following general categories:

1. Framing of the issues (e.g., too much or too little emphasis on wind as *the issue*).
2. Analytical Methods (fuller description, better methods, more or different studies).
3. Measures List (Suggested additions to the measures, requests for deeper analysis of them).
4. Next Steps (Move to a more public venue-- Wind Integration Forum).

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<sup>1</sup> <http://www.nwcouncil.org/library/report.asp?docid=51>

The revised paper includes the following responses to public comment:

- Revised framing language in the paper to ensure neutrality to the extent possible, and posing the analysis as “initial” or “preliminary” and not conclusive.
- Added detail on important modeling assumptions and results.
- Identified follow-on processes being undertaken to provide greater precision and detail around the effects of wind generation and potential means of more efficiently accommodating it (e.g., Resource Adequacy Wind Study and Wind Integration Forum Action Items).

Staff will make the revised paper available to Council members by August 3, 2011 for their review and requests approval to release the revised version as final, with any changes the Council may adopt.

## Summary of Comments and Responses

### 1. Framing the Issue

The paper favored some resources over others or failed to present a balanced view of the issues. Comments ranged from criticism that the paper overemphasized the problems associated with rapid wind development in the Northwest while lacking any discussion of the benefits of renewable development to comments that the paper treated wind development as suffering from inequitable treatment if displaced without compensation.

- Paper represents the issue of negative pricing or excess energy events as being caused solely by wind
  - There are more drivers to excess energy events than wind and TDG restrictions. The existence of other drivers is evident where there are times when the region experiences excess energy events when there is neither high wind generation nor fish passage restrictions in effect.
  - Test all power system components (not just wind generation) for causation in terms of frequency and magnitude of future excess energy events. By only examining wind's effects, Council unfairly emphasizes wind developments' effects on excess energy events.
  - Draft should provide a more balanced assessment of long-term benefits of negative pricing due to surplus generation events instead of focusing on potential negative financial impacts to utilities with surplus hydropower generation that rely on wholesale or secondary markets for their revenue requirements needs.
- Council should not advocate against wind subsidies; rather it should support increasing wind in the PNW.
- Paper frames issue as though wind generation suffers inequitable treatment if displaced without compensation. That is a legal judgment and should not be made in an analytical paper—rather staff needs to represent the costs incurred by all parties.
- Emphasize it is public power customers that have the most at risk if negative prices are recovered through a wind integration charge and the rate is too low to allow full recovery of costs.
- Clarify that the issue the Council dealt with “excess energy events” is not identical to the issue BPA analyzed with respect to developing an Environmental Redispatch protocol.
- Clarify that regional “need” includes the need to meet RPS standards in NW and CA as opposed to needing more power to serve the region.

#### Staff Response

The primary purpose of the paper is to describe analysis done to assess the effect of increasing amounts of wind energy on market prices and potential for excess energy events. It was not meant to advocate for or against any resource, or present an in-depth cost-benefit analysis of the socio-economic and environmental effects of wind generation. Staff to revise the paper to clarify its purpose, scope, and limitations of the analysis.

## 2. Analyzing the Issue

Commenters generally found the Council's analysis should be more robust and called for more analysis generally. Commenters also questioned some of the conclusions reached by the Council in light of the analysis performed and called for more transparency with respect to model inputs and assumptions.

- Data used in the analysis is not refined enough to provide confidence it accurately represents actual operations of the grid or the market.
  - Provide measure of error analysis
  - Model forecast should use better Aurora input data - i.e., wind generation curves that correlate with actual water years modeled, adding renewable resources to the new resources sheet, updated natural gas forecasts
  - Report excess generating events in terms of seasons as opposed to annually which spreads it out and results in understanding the actual consequences where spring and summer months are more likely to have excess generating events.
- Explain what assumptions were input into the Aurora model (i.e., what did Council assume about intertie capability) and what values the Council used in the model (i.e., for minimum hydro generation) so people can understand and verify the conclusions.
  - Clarify that wind was represented as a must-run resource in terms of not responding to system conditions for purposes of running Aurora, but that doing so may not mirror reality
  - Explain how the data supports the conclusions –i.e., why high and medium-high water cases show a decrease in excess energy hours between now and 2015, while low hydro shows an increase.
- Do more or different analysis:
  - extra financial and environmental costs to PNW due to failure to account for benefits of EE in state RPSs
  - magnitude of surplus energy events, not just frequency
  - range of financial impacts on wind developers if they should lose RECs or PTCs due to environmental redispatch
  - thermal plant behavior during over generation conditions
  - in general, further sensitivity analyses to add robustness to assessment
  - reassess 4 lower Snake dams in oversupply events as well as their value in broader context of regional costs and benefits
  - impacts of wind integration on designated habitat
  - reexamine relationship between development of intermittent resource in the region and conservation targets
  - examine Network Open Season terms and conditions, etc.
  - conduct more detailed financial analyses of market impacts of excess generation as well as costs of proposed solutions to the problem
  - include multiple transmission expansion study cases under a variety of water years
  - explore sensitivity of excess energy events to increased thermal displacement
  - run model based on June 2010 scenario to compare model results to actual dispatch
  - expand analysis to include possible expenditures diverted from conservation to renewables development from 15-20 year resource overbuild

- Paper systematically underestimates frequency and magnitude of future negative pricing excursions because natural gas prices forecast is too high and because assumption about costs for emitting GHG is too high
- examine impacts on retail, not just wholesale prices
- Treat all generators selling into market as equally culpable of increasing excess energy events and distinguish generators on a contractual basis and incorporate that distinction in the analysis
- Analyze equity and cost allocation issues separately from technical review
- Eliminate case study of no RPS--not a valid policy proposal
- Discuss and/or clarify and/or emphasize particular aspects of the surplus generation issue in the paper:
  - Discuss the importance of capacity and what happens when large resources (i.e., wind) do not contribute to capacity needs of the region
  - Emphasize the substantial benefits the region gets from encouraging renewables when considering the costs of oversupply i.e., cleaner more affordable and reliable power supply and protection for fish i.e., reduction in fuel price volatility, protection of listed species, reduced GHG emissions and climate risk.
  - Recognize that curtailment of wind imposes real economic costs on wind operators

### Staff Response

Staff agrees that data relating to the analysis should be made public. Additional information is included in the revised paper where the information is relevant and not overly burdensome. Additional data will be made available to individuals on request, or posted to the web site.

Staff agrees that the analysis in the paper is preliminary in nature, especially with respect to the frequency of excess energy events and will review the paper to ensure that any conclusions are adequately supported or qualified. Staff revised language referring to work of the Resource Adequacy Forum and the Wind Integration Forum Action Items as the appropriate venues for more in depth analysis.

### **3. Measures for reducing spill and equity issues**

Comments on proposed measures to reduce the frequency and magnitude of excess energy events included offering up additional measures; criticizing proposed measures as unfeasible or in need of further analysis.

- Discuss additional mitigation measures:
  - storage
  - development of high capacity-factor resources and diversification of location of wind plants
  - curtailing non-renewable thermal generation
  - market-based solutions to issue of surplus energy
  - regional half-hour scheduling and proposed Electricity Imbalance Market (market mechanisms) to reduce reserve requirements for hydro facilities and improve flood control practices
  - proposed adjustment to wind integration costs
- Advocate for changing RPS to allow utilities more flexibility to comply

- energy efficiency savings should count
- hydropower: count efficiency improvements made to existing hydropower facilities; count hydropower as a resource for purposes of RECs or PTCs when renewables such as wind are subject to environmental redispatch and replaced by hydropower; count hydropower used to integrate eligible renewables
- encourage development and operation of higher capacity factor new renewables such as biomass, geothermal and low-impact hydro and environmentally sound new hydro
- Don't advocate for substitute hydropower to be counted as RPS/PTC resource as a matter of public policy and salmon policy.
  - Don't advocate for increasing irrigation withdrawals/developing recharge capability for depleted aquifers
  - Don't expand in-river storage/raise reservoir levels
  - Eliminate requirements that utilities acquire resources in advance of need
- Spill more - win/win for salmon and wind developers
- Review feasibility of proposed mitigation measures i.e., large-scale storage and new transmission projects may not be economically feasible or alleviate oversupply of energy for a prolonged duration
- Expand discussion of proposed mitigation measures--include indicators and criteria for screening and more rigorous assessment of pros, cons and tradeoffs

### Staff Response

The revised paper cites the Wind Integration Forum Action Items as the appropriate venue for exploring additional mitigation measures in greater detail. Advocacy for particular actions are avoided pending fuller assessments of these measures under the auspices of the Wind Integration Forum.

## **4. Next Steps**

- Role of Council
  - Council should help communicate complexities of power supply and economics to policymakers/lawmakers; can raise visibility of this challenge for region's electric power system.
  - TDG standards: oppose state exemption in water quality standards for excess energy events; advocate for same TDG caps in WA and OR
  - support BiOp and its implementation measures
  - RPS: actively pursue amending state RPS to allow hydro substituted for curtailed wind to receive RPS credit and qualifying hydro as a PTC eligible resource; pursue legislative changes to permit FCRPS power to displace renewables during Enviro Redispatch events
  - Don't promote policies that undermine conservation development or cause region to incur unnecessary costs.
  - Policies should support development of markets for RECS and carbon emissions.
  - Flesh out self-funded compensation mechanism for wind generators
  - Any policies promoted by the Council should have the burden fall on those creating the concern (i.e., developers) as opposed to NW ratepayers

- Next Steps for Council: Beyond analysis, Council can help region grapple with complex issues and to help shape resource policies that make environmental and economic sense;
  - hold a workshop or process to review response measures in terms of attributes, costs, benefits and policy aspects to help stakeholders submit more detailed views;
  - establish a technical workgroup to develop scope and specifics before finalizing paper; get peer review of the work and analysis before publishing final version
- Staff should wait for Wind Integration Forum Steering Committee to address causes/effects/potential mitigation measures that should be employed and to engage broader region
  - Endorse PNUCC/Council hydro studies

### Staff Response

The revised paper refrains from suggestions for particular policies and underscores the preliminary nature of the current analysis.

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