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January 4, 2012

MEMORANDUM

TO: Power Committee Members

FROM: Ken Dragoon

SUBJECT: Interim Oversupply Progress Report

At the June 6 Wind Integration Forum Steering Committee meeting, Bonneville Power Administration Administrator Stephen Wright requested the Council lead an effort to identify measures that might be undertaken to reduce the frequency and intensity of energy oversupply conditions. In response, Council staff organized an Oversupply Technical Oversight Committee (OTOC) whose members were appointed by Steering Committee members, to identify actions that have a reasonable potential to address oversupply conditions. Staff will present the list of measures identified by the OTOC for recommendation to the Power Committee.

Oversupply occurs when energy available from resources with low incremental costs saturates available wholesale markets for power. These conditions are expected to occur primarily during springtime light load hours when hydro and wind generation can be high while demand is typically relatively low. Recommended measures fell into five categories:

1. Retail Markets
2. Transmission
3. Wholesale Markets
4. Generation Redispatch
5. Hydro

Technical workgroups organized along these categories were established to flesh out individual measures that were adopted by the OTOC at a December 20, 2011 meeting. The recommendations suggest some very promising progress may be possible in addressing the region's periodic oversupply episodes. A consolidated list of specific recommendations is being prepared for the Wind Integration Forum Steering Committee that is expected to be available in February.

Attachment

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Overview

1. Background
2. Technical Oversight Committee (TOC) recommendations.
3. Next Steps.

Background

- } June 2011 Wind Integration Forum Steering Committee meeting.
 - BPA Administrator Steve Wright requested the Council lead an effort to identify measures to address the periodic oversupply events that drive wholesale market prices to negative levels.
- } July 2011 Council staff presented workplan to Council members.
- } December 2011 Technical Steering Committee adopted measures to recommend to the Steering Committee for further study.

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Addressing the Challenge

- } Technical workgroups sought to identify measures that had the most promise for further analysis.
- } The relative infrequency of events, high intensity (i.e., thousands of MW), and low levels of energy involved, creates a special challenge.
- } Measures fall into five categories around which technical workgroups were organized:
 - Market Mechanisms (Ken Corum, Council Staff)
 - Generation Displacement (Kevin Nordt, Grant County PUD)
 - Transmission (John Apperson, Pacificorp)
 - Wholesale Markets (John Apperson, PacifiCorp / Ty Bettis, PGE)
 - Hydro (Geoff Carr, Northwest Requirements Utilities)

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Market Mechanisms Recommendations

- } Load Shaping: Moving demand from daytime to nighttime hours may have the highest potential for relieving oversupply.
 - HVAC Control
 - Industrial loads
 - Water Heater Controls
 - Municipal Water Pumps
 - Irrigation Loads
 - Public Awareness Campaigns
- } Electric Vehicle Coordination
- } Aquifer Recharge
- } Resistive Load Banks

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Generation Displacement Recommendations

- } The Generation Displacement workgroup examined coordinating additional displacement of additional resources:
 - Wind -- Develop supply curve of displacement for wind and other variable energy resources.
 - Thermal – ensure a maximally efficient thermal unit commitment and dispatch method is pursued (i.e. “dispatch efficiently”); Additional fuel flexibility in the intra-day natural gas market; Additional fuel flexibility through increased storage or virtual storage; Reduce required on-line operating reserve;
 - Cogeneration – pursue maximum regional maintenance and outage coordination; Examine the potential for load/generation profile shaping across the day (e.g. HLH/LLH);
 - Hydro– examine the development of a linked preferential wind protection / hydro displacement product; Examine the development of a bulletin board / exchange platform to increase the transparency of hydro displacement potential demand and supply;

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Transmission Recommendations

- } Discount Hourly Nonfirm Transmission
- } Intra-Hour Transaction Accelerator Platform (I-TAP)
- } Platform for posting merchant unused capacity
- } Voluntary non-return of BPA losses
- } Dynamic Scheduling System (DSS)
- } Transmission Upgrades- (Potentially NTTG or Columbia Grid forums)

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Wholesale Markets Recommendations

- } Additional markets and market facilitators (e.g., ITAP, DSS, intra-hour market)
- } More exports and less imports
- } Exchanges (e.g., wind diversity)
- } NWPP regulating reserve pooling – ADI approach
- } Energy Imbalance Market
- } Release TRM in day ahead market
- } Relax intra-hour transmission market – free up transmission at xx:45 instead of earlier for example
- } Mini-EIM – phase in with limited participation, e.g., only Mid-C participants.

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Hydro Recommendations

- } Reduce Total Dissolved Gases
 - Spill patterns, spill priority, turbine efficiency, structural improvements to spillway systems, pump storage.
- } Better System Coordination
 - Coordinating flood control and forecasting, Canadian storage, thermal displacement, spill off-mainstem projects.
- } Enhancements at Keys Pumping Station
 - BPA decision on going forward with upgrades set for May 2012.

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Summary

- } Biggest single opportunity is likely changing retail rate structures to remove barriers to increasing light load hour demand.
 - Win-win measure that reduces overall cost of meeting Northwest demand.
- } There appear to be opportunities to operate the power system more efficiently that will help with oversupply to varying degrees.
 - E.g., reducing amount of reserves that must be held.
- } Other opportunities exist, but generally entail some net cost.

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Next Steps

- } Drafting report to Wind Integration Forum Steering Committee with recommended actions.
 - Report targeted for January or February.
- } Consideration by the Steering Committee
 - Preliminarily set for March 2012.
- } Analysis of selected measures targeted for August 2012.

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Questions



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