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June 30, 2010

MEMORANDUM

TO: Power Committee Members

FROM: John Fazio -- Senior Power System Analyst

SUBJECT: Status Report on the Reassessment of Power Supply Adequacy

The Council created the Resource Adequacy Forum in 2005 and in April of 2008, adopted the Forum's proposed resource adequacy standard for the Pacific Northwest. Every year the Forum reassesses the adequacy of the power supply 3 and 5 years out, to provide an early warning should resource development fall short. In 2009, the Forum's assessment indicated that by 2015 the power supply might not be able to adequately provide summer peaking capacity. The Forum added, however, that the 2009 assessment was made by counting existing resources only (as specified in the standard) and went on to say that if expected resource development were added to the assessment, the power supply would remain adequate throughout the study period.

However, as agreed upon by Forum members, the 2009 result triggered a series of actions that include a reevaluation of the data and methods used to assess resource adequacy. The work was split into two phases. The first phase is to reassess the power supply's adequacy using updated information. The second phase is to reevaluate the underlying methodology used to determine whether a power supply is adequate or not.

It was anticipated that the first phase of the Forum's work plan would be completed by June of 2010 -- but obviously that did not happen. The reassessment was delayed primarily because of; 1) the need to thoroughly review the hourly dispatch logic in the Genesys model and 2) to incorporate additional reserve requirements to hydro operations to account for within-hour wind generation balancing needs. It is now anticipated that the reassessment will be completed by early fall. The Forum's Technical Committee is scheduled to meet on July 28th to review progress on phase 1 tasks. The Steering Committee will meet sometime in early fall to review the reassessment for 2015.

The second phase, which is to reevaluate the underlying methodology, may not be completed until early 2011. Among other things, that work will include; 1) addressing the issue of transmission bottlenecks within the region, 2) reevaluating methods used to integrate variable generation resources, 3) developing a temperature-correlated wind data set and 4) reconsidering what constitutes an adequate power supply.

Resource Adequacy Assessment for 2015

Status Report



NW Power and Conservation Council
Power Committee Conference Call
July 8, 2010

Outline

- 2009 Adequacy Assessment
- How Was It Interpreted?
- What Actions Were Taken?
- 2010 Adequacy Forum Work Plan
- Status of Work Plan Tasks
- Issues and Recommendations

2009 Adequacy Assessment (Existing Resources Only)

	2013	2015	Min
Annual Energy (MWa)	4,651	3,958	0
Winter Capacity (%)	50%	47%	23%
Summer Capacity (%)	27%	24%	24%

Potential problem for summer capacity needs in 2015
Preliminary assessment resulted in a **Yellow Alert**

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How Was It Interpreted?

1. Based only on existing resources, the power supply may fail to provide sufficient summer peaking capability by 2015.
2. This resulted in a **Yellow Alert** status, which triggered specific actions.
3. However, the region is currently developing resource acquisition strategies.
4. With expected regional resource additions, the Yellow Alert is avoided.

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What Actions Were Taken?

✓ **Green Status**

- Proceed with normal planning activities
- Compare results with other regional reports

✓ **Yellow Alert**

- Regional report (Chapter 14 in the 6th Power Plan)
- Review of data and assumptions (Work Plan developed)

✓ **Red Alert**

- Regional conference
- Regional review of data and assumptions
- Identify areas of inadequacy

2010 Adequacy Forum Work Plan

- **Phase I:** Reassess Adequacy for 2015
 - Update load and resource data
 - Review resource simulation logic
 - Recalculate LOLP
 - Recalibrate deterministic metrics
- **Phase II:** Peer review of methodology
 - If necessary, amend the standard, and
 - Reassess adequacy for 2015

Status of Phase I Tasks

- | | <u>Status</u> |
|---|---------------|
| • Data updates | |
| – Thermal resources data | Done |
| – Firm out-of-region contracts | Done |
| – 2008 BiOp constraints | Done |
| – Temperature-correlated wind data | (late summer) |
| – Non-temp-correlated wind | Done |
| – New hydro capacity w/wind reserves | (mid-July) |
| – East-west transmission nomogram | (mid-July) |
| – 2015 hourly loads (w/conservation) | Done |
| – 2015 hourly loads (w/o conservation) | (mid-Aug) |
| • Model updates | |
| – Revise emergency hydro dispatch | (mid-July) |
| – Add light-load hour purchase capability | (mid-Aug) |
| – Revise transmission loss calculation | Done |
- **Completion Date: September 2010**

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Status of Phase II Tasks

- Survey probabilistic adequacy metrics
 - Is LOLP appropriate for NW?
 - If not LOLP, then what metric?
 - Define contingency resources
 - Reassess reserve requirements
 - Review non-firm resource assumptions
 - Add more transmission bubbles in the model (TBA)
 - If needed, amend the adequacy standard, the corresponding deterministic metrics and minimum thresholds
 - If standard is changed, reassess supply adequacy
- **Completion Date: Early 2011**

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Issues and Recommendations

- Must complete temperature-correlated wind data (staffing issue at BPA)
- Should explore better ways to simulate hourly hydro dispatch (underway)
- Need to ensure that integration of variable generation resources is properly simulated
- Must address within region transmission limitations