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February 11, 2008

## **MEMORANDUM**

**TO:** Power Committee

**FROM:** John Fazio, Senior System Analyst

**SUBJECT:** A Proposed Resource Adequacy Standard for the Pacific Northwest

At its February meeting, the Council will be asked to approve the release of a draft resource adequacy standard for public comment. The proposed adequacy standard represents the completion of the 5<sup>th</sup> power plan's action items ADQ-1 and ADQ-2.

The standard described in Council document number 2008-01 "A Resource Adequacy Standard for the Northwest" (included in the full Council packet) is the result of several years of effort by the Northwest Resource Adequacy Forum. The forum consists of a technical committee, directed by John Fazio and Mary Johannis (BPA), and a policy steering committee chaired by Tom Karier and Paul Norman (BPA). The achievement of the agreement embodied in this document is an extremely significant step for the region.

This agenda item provides the Power Committee an opportunity to discuss the adequacy language and to develop a recommendation for the full Council to release it for public comment.

## A Resource Adequacy Standard for the Pacific Northwest



Power Committee Meeting  
February 11, 2008  
Portland, Oregon

## Outline

- 5<sup>th</sup> Power Plan Action Items
- Objectives for a resource adequacy standard
- Guidelines for developing a standard
- A proposed standard for the Pacific NW
  - ✓ For annual (energy) needs
  - ✓ For hourly (capacity) needs

## 5<sup>th</sup> Power Plan Action Items

- **ADQ-1:** Establish regional and West-wide reporting standards for the assessment of adequacy.
- **ADQ-2:** Carry out a process to establish an adequacy standard.

*The Council will establish a Northwest Resource Adequacy Forum. This forum will examine alternative adequacy metrics and standards for the Northwest.*

## Objectives for a Resource Adequacy Standard

- Early warning system
- Transparent and easy to calculate
- Linked to a more sophisticated analysis (like a loss-of-load-probability assessment)
- Should provide reasonable protection against
  - ✓ Unwanted curtailments (**physical standard**) and
  - ✓ High and/or volatile prices (**economic standard**)

## Guidelines for a Standard

- Components of a standard:
  - Metric** – a unit of measurement
  - Target** – acceptable value for the metric
- To address needs for:
  - Peak **hourly** demands – Capacity
  - Average **annual** demand – Energy

## Pacific NW Metrics

- **Energy** – Annual average load/resource balance in units of average megawatts\*
- **Capacity** – Planning reserve margin in units of percent (surplus sustained-peaking capability over the expected peak load)

\*One average megawatt is equivalent to 8,760 megawatt-hours.

## PNW Adequacy Standard

- Targets for a **physical** adequacy standard are chosen so that the resulting loss-of-load probability (LOLP) is 5% for both energy and capacity events.
- Targets for an **economic** standard result in a much lower LOLP and lead to more resources and a higher average system cost but reduce the risk of high cost years. The Council's power plan is used to derive these targets.

## Energy Standard

### Annual Average Load/Resource Balance

#### Annual Average Load

- Averaged over all hours of the year
- Based on normal weather
- Includes net interregional firm contracts
- Includes conservation savings

## Energy Standard

### Annual Average Load/Resource Balance

**Resources** – Annual average, accounting for maintenance and derating for forced outages

- Firm thermal and other non-hydro resources
- Wind – derived from a wind data analysis
- Uncommitted IPP generation – Full availability in winter and 1000 MW in summer
- Hydroelectric generation – Critical year average
- Planning Adjustment – derived from the LOLP analysis (currently 1,300 MWa)

## Capacity Standard

### Planning Reserve Margin

#### Peak Duration Load

- Averaged over the peak duration hours – 6 highest load hours/day over 3 consecutive days
- Based on normal weather
- Includes net interregional firm contracts
- Includes conservation savings

# Capacity Standard

## Planning Reserve Margin

### Resources – Averaged over the peak duration

- Uncommitted IPP generation
  - Winter – all available
  - Summer – 1000 MW
- Hydroelectric – Critical year for winter and summer
- Wind – Derived from wind study
- Out-of-region market supply
  - Winter – 3000 MW
  - Summer – Zero
- Incremental hydro – additional sustained-peaking capability available in better than critical years

## Resource Adequacy Targets\* and Assessments\*

<b>Energy</b>	2010	2012	Target
Load/Res Bal	4000	3800	<b>0</b>

<b>Capacity</b>	2010	2012	Target
Winter	46%	N/A	<b>23%</b>
Summer	43%	N/A	<b>24%</b>