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Montana

**Tom Karier**
Washington

**Phil Rockefeller**
Washington

March 5, 2013

# MEMORANDUM

**TO:** Council Members

**FROM:** Charlie Black

**SUBJECT:** Presentation on BPA White Book and Resource Program

In February, Bonneville issued its 2012 Pacific Northwest Loads and Resources Study (White Book) www.bpa.gov/power/pgp/whitebook/2012/index.shtml and its 2013 Resource Program www.bpa.gov/power/p/resourceprogram/ .

The White Book is BPA's latest projection of Pacific Northwest regional retail loads, contract obligations, contract purchases, and resource capabilities. The 2012 edition is a snapshot of conditions as of October 19, 2012, documenting the loads and resources for the Federal system and region for the 10-year study period 2014 through 2023.

BPA's 2013 Resource Program updates the 2010 Resource Program, released in September 2010. The 2013 edition primarily provides updates to key inputs and analysis. The potential power supply obligation needs are based on the Needs Assessment contained in the White Book. The 2013 Resource Program details how BPA intends to address the potential power supply obligation needs, including actions it is taking consistent with the Council's Sixth Northwest Power Plan.

At the Council meeting on March 12, 2013 Tina Ko and Rob Petty of Bonneville will present summaries of the White Book and the Resource Program.

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# BPA White Book and Resource Program

March 12, 2013

Outline

- 2012 White Book Overview
- 2013 Resource Program Overview
- Energy Conclusions
- Capacity Conclusions
- Balancing Reserve Conclusions
- Key Areas of Focus – Updated Action Plan





## What is the White Book

- Also known as BPA's Loads and Resources Study
- Reviews BPA's contractual load (supply) obligations and its resources, providing a 10-year forecasts for the Federal System and the PNW region
- Analyses and metrics presented are used to illustrate the potential bounds (high and low) of the Federal System and the PNW region and/or developed to provide key inputs for strategic planning activities.
- Not used to guide the day-to-day operations of the FCRPS, set operational or purchasing strategy, or determine BPA revenues or rates.
- Produced annually.



## The 4 Studies in the White Book

- Federal System Analysis
  - Deterministic projection of the Federal System assuming normal (expected) loads under 1937-critical water conditions
- Federal Needs Assessment
  - Projection of the Federal system's expected capability of existing resources to meet specific sets of projected load obligations under a range of conditions
- Federal Resource Adequacy
  - Stochastic simulation of the Federal system's capability of meeting load obligations under many different combinations of uncertain future load and resource conditions
- Regional System Analysis
  - Deterministic projection of the region, assuming normal (expected) loads under 1937-critical water conditions



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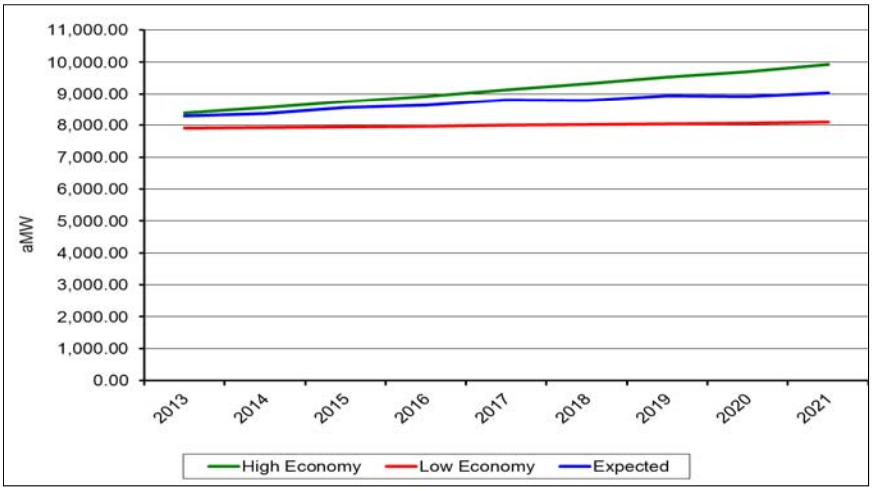
## The 4 Studies in the White Book – Major Conclusions

- Federal System Analysis
  - Similar to 2011 White Book, energy and January 120 hour capacity deficits appear throughout the study period
- Federal Needs Assessment
  - Results are contained in the following slides
- Federal Resource Adequacy
  - BPA continues to investigate draft resource adequacy metrics appropriate for a large hydro-based system
- Regional System Analysis
  - Results largely dependent on IPP generation assumption – how much is available to serve regional load?
    - Assuming all IPP generation available – large surpluses throughout the study period
    - Assuming no IPP generation available – significant deficits starting in the middle of the study period

## Needs Assessment – Load Scenarios Studied








## 2013 Resource Program

- The 2013 Resource Program details how BPA intends to address the potential power supply obligation needs identified in the 2012 White Book Needs Assessment and includes actions it is taking to be consistent with the Council's Sixth Power Plan.
- The 2013 Resource Program updates the 2010 Resource Program, released in September 2010, and is abbreviated primarily providing updates to the following key inputs and analysis:
  - Load forecasts
  - Needs Assessment
  - Market Assessment
  - Resource cost and characteristics
  - Resource Assessment Conclusions
  - Action Plan

## Energy Conclusions

- The 2012 Needs Assessment shows that, under a variety of conditions and timeframes, BPA could need to supplement the existing Federal system generation to meet existing and projected obligations. These conclusions reflect additional limitations on the projected capability of the FCRPS to meet BPA's load obligations since the 2010 Needs Assessment.
- Specifically, updates to the hydro modeling assumptions have, in general, decreased the expected annual and winter FCRPS forecast generation. The 2012 Needs Assessment projects more significant deficits in the January-February timeframe, some improvement to the second half of August, and increased deficits in September relative to the 2010 Needs Assessment.
- Under the expected case, modest annual energy deficits are projected under critical water. However, in studying the 10th percentile (P10) for each month, there are significant deficits (both heavy load hour and all hours), notably in January and February (winter), the second half of August, and September (summer). These deficits would be larger if BPA were to lose any current generating capability.



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## Energy Conclusions

BPA plans to address the energy need by:

- Achieving the Sixth Power Plan conservation targets, which would greatly reduce BPA's need for additional power to meet energy needs (both seasonally and on an annual average basis).
- Continuing to utilize wholesale power market purchases.
- Any residual needs are expected to be small and very seasonal in nature (winter and summer) and could be met with minimal incremental market purchases above those assumed in the studies (1,000 aMW in winter and 500 aMW in summer).

## Capacity Conclusions

- The Needs Assessment results show that the 18-hour capacity metric (measured as the six highest hours for three consecutive days in a heat wave and a cold snap) is minimal to no longer capacity surplus in either the winter or summer. The winter capacity numbers changed significantly from the 2010 Needs Assessment, largely as a result of extreme weather load differences, the expiration of winter purchases, and changes in FCRPS generation forecasts.

BPA plans to address the 18-hour capacity need by:

- Achieving the Sixth Power Plan conservation targets. This will have the effect of reducing the load and thus help to supplement the existing capacity of the FCRPS. BPA is concerned that not all the conservation may occur during times of extreme loads, and hence further study is warranted.
- Market purchases. As with the energy needs, market purchases during heavy load hours supplement BPA's ability to meet capacity needs.
- Further exploring additional Non-Treaty storage, demand response, and the application of customer non-Federal resource peaking capacity (Peak Net Requirements). These promising areas need further evaluation to determine the effects on BPA's capacity needs. BPA also plans to continue to evaluate Keys pumped storage.





## Balancing Reserves Conclusions

- The Needs Assessment reflects that the FCRPS resources are insufficient to meet the forecast 99.5 percent level of service for balancing reserve requirements in FY 2016 and FY 2019 (proxy for FY 2021).
- There are many processes occurring in the region to address balancing reserves, including:
  - Ancillary and Control Area Services (ACS) Practices Forum
  - BP-14 rate case
  - Northwest Power Pool Market Committee and the Joint Initiative
- Balancing reserve service requests are made every two years and for a period of only two years. This timing creates much uncertainty regarding the amount of balancing reserves BPA may be requested to provide.

BPA's current strategy is to make short-term purchases of additional balancing reserves, if needed, in the wholesale market.

## Key Areas of Focus - Updated Resource Program Action Plan

BPA has updated the 2013 Resource Program Action Plan to highlight the following key areas of action:

- Evaluate the contribution of conservation to meeting capacity needs.
- Further develop the definitions of system and resource flexibility, including how flexibility might be measured and possible adequacy metrics.
- Continue to evaluate demand response and Keys Pumped Generation Station.
- Explore the application of Peak Net Requirements provisions described in Regional Dialogue contracts.
- Monitor the emerging drivers that influence the potential Above-High Water Mark load placed on BPA post-FY 2019.
- Continue to evaluate how traditional thermal generation resources could supplement the capacity of, and provide flexibility and seasonal energy to, the existing Federal Columbia River Power System (FCRPS).
- Monitor factors that could reduce the capability or output of the FCRPS.
- Collaborate with the Northwest Power and Conservation Council to prepare for the Seventh Power Plan and BPA's next Resource Program.