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April 29, 2009

MEMORANDUM

TO: Power Committee

FROM: Jeff King, Michael Schilmoeller, Wally Gibson

SUBJECT: Capacity and Flexibility in the Plan

The analysis for the Sixth Plan deals with capacity in several ways. Resource data, including conservation and wind resources, are characterized by estimated contributions to meeting system peaks, as well as average energy contributions. Both of these contributions, energy and capacity, are evaluated in the Council's models, including the Regional Portfolio Model. The staff will review the ability of the Plan's base case (and potentially other scenarios) to meet capacity requirements of the system at the Power Committee meeting, using materials to be provided before the meeting.

Flexibility is being addressed by examining the estimates of demand for flexibility embodied in utility assessments, such as Bonneville's Resource Assessment draft and various IOU assessments. The supply of flexibility is being examined by looking at the same studies, particularly as they focus on various utility hydro systems, which we are not in a position to independently assess. We are also looking at the ramping characteristics of the existing regional thermal plants and of any thermal plants added by the Portfolio Model to see what contribution they could make to the regional flexibility supply.

The supply of flexibility, adjusted as needed to account for contingency reserves, is being compared to the total amount needed that would be implied by the amount of existing wind generation and new wind generation added by renewable portfolio standards or the Portfolio model. The needed flexibility is estimated using the approximate ratios of needed flexibility to installed wind capacity. Assumptions are being made regarding flexibility needed to integrate wind power destined for California utilities.

Any imbalances in this supply and demand for flexibility are being examined in the context of the action items that call out potential analyses and institutional and business practice changes that could help to meet the demand for flexibility, and will highlight the importance of the region's following up on those action items. The action plan has a number of specific items that the region will need to follow up on to completely address these issues.

Capacity in the Sixth Power Plan



Wally Gibson
Power Committee
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May 12, 2009

Overview

- Overall approach
- Capacity in Regional Portfolio Model (RPM)
 - How approached
 - Conservation has capacity value
 - Wind has limited capacity value
- Differences from analysis under Council's capacity adequacy standard in summer
- Interim results – Looks adequate
 - Next steps
 - Continuing to review load shape calculation

Overall Approach

- Basic resource analysis using Regional Portfolio Model
- Screen capacity adequacy of resources from specific build-outs using Council's capacity adequacy standards
- Do more detailed analysis of specific build-outs with Genesys model (model used to do annual adequacy assessments)
 - Genesys does chronological hourly values
- None of this deals with within-hour issues like flexibility
 - Doing a "back-of-the-envelope" side calculation of flexibility adequacy.

Capacity Components in the RPM

- Capacity of existing and new generation
 - Wind has limited capacity value
 - Exact calculation subject to ongoing discussion
- Conservation basically follows load shape and provides capacity contribution
- Demand response programs
- Market purchases
 - External market and in-region uncontracted IPPs
 - Both an alternative to resource investment and a resource of last resort if come up short

Preliminary Capacity Results

- Capacity from base least-risk plan generally appears to be sufficient against both January and July capacity adequacy standards
- RPM does not attempt to meet capacity adequacy margins
 - It is an economic risk model
 - Does not impose the constraints on market availability that are in the capacity adequacy standard

Next Steps

- Continuing to examine load shape more closely
 - Particularly sustained peak loads (matching sustained hydro peaking ability)
- Other potential modifications to RPM to ensure meeting capacity adequacy targets
- Caveat: capacity adequacy targets themselves are preliminary and subject to revision
 - Do not incorporate need for wind balancing reserves
 - Will be reviewing calculation for peak loads