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## MEMORANDUM

**TO:** Power Committee

**FROM:** Jeff King

**SUBJECT:** CO<sub>2</sub> footprint of the Northwest Power System

The Council staff forecast of the carbon dioxide (CO<sub>2</sub>) production of the Northwest power system will be presented to the Power Committee and subsequently to the full Council at the July meeting. The objective of this work is to compare forecasted annual, cumulative, and per-MWh average CO<sub>2</sub> production of the power system under a base case and various alternative future resource scenarios.

The base case and principal resource scenarios are the following:

**Base Case:** Future resource development consistent with the recommended portfolio of the Fifth Power Plan

**Low Conservation Achievement:** Future resource development in accordance with the "Status Quo" portfolio analyzed during the development of the Fifth Power Plan. The Status Quo portfolio included about 70% of the conservation savings of the recommended portfolio.

**High Renewable Energy Development:** Full achievement of the renewable energy targets of the Montana, Oregon, and Washington renewable energy portfolio standards (RPS) based on the medium case load growth forecast of the Fifth Power Plan (the RPS targets are based on energy load). Full achievement of the conservation included in the recommended portfolio of the Fifth Plan is assumed. Additional resource needs are met by least-cost new fossil fuel resources (gas-only in the Washington and Oregon load-resource areas).

**Utility IRP:** Future resource development in accordance with the Integrated Resource Plans of Northwest utilities ca: Spring 2007.

Additional studies assessed the CO<sub>2</sub> impacts of removal of the Lower Snake River hydroelectric projects. For this assessment, the projects are assumed to cease power production as of January 2017. The following three scenarios, varying by replacement resource assumptions are compared to the base case described above:

- Replacement by market purchases (replacement power secured by increased dispatch of remaining Base Case resources).
- Replacement by new gas-fired resources.
- Added conservation plus a least-cost mix of new renewable energy, natural gas or coal resources.

Both the energy and capacity reserve resource needs resulting from removal of the lower Snake projects were considered in the latter two cases.

Finally, the effect on cumulative CO<sub>2</sub> production of summer spill at the Lower Snake and Lower Columbia River projects was estimated. Two spill cases were compared to operation without summer spill (original 2000 BiOp):

- 2004 BiOp operation.
- 2004 BiOp plus additional spill under 2006 Preliminary Injunctive Relief Operation.

The final results of the first four cases and the lower Snake River hydropower project removal cases are being analyzed as of this writing. The results of the Summer Spill analysis were presented at the May meeting of the Power Committee. Complete results will be presented at the July Power Committee and full Council meetings. Products of the study will include a Power Point presentation and a summary paper for release to interested parties.