Northwest Power and Conservation Council

April 27, 2006

MEMORANDUM

TO: Power Committee

FROM: Jeff King

SUBJECT: Draft study plan for further analysis of CO_2 production

The results of a staff analysis of the reduction in carbon dioxide (CO_2) production from addition of an increment of conservation or low-carbon generation to the power system was presented to the Power Committee at its April 12 meeting in Whitehorse, MT. That assessment concluded that addition of a one-kilowatt increment of conservation or other "zero-carbon" resource, on average would offset 0.85 to 1.0 lbCO_2. At the conclusion of that presentation, the Power Committee requested staff to extend the analysis to include forecasts of average and total CO_2 production of the Northwest electric power system under various scenarios of future resource development. Staff proposed to bring a plan of study to the May Power Committee meeting in Walla Walla.

A draft plan of study for additional analysis of power system CO_2 production is attached. Staff proposes to discuss and refine the plan of study with the Committee at its May meeting. In particular, Staff is seeking Committee direction regarding the specific resource development scenarios to be assessed and to which CO2 reduction proposals the resulting forecasts should be compared.

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DRAFT STUDY PLAN FOR AN ANALYSIS OF THE CO2 PRODUCTION OF THE NORTHWEST POWER SYSTEM

April 26, 2006

Purpose & Objective: The purpose of this work is to advance the understanding of the effectiveness of actions to stabilize or to reduce the carbon dioxide (CO_2) production of the Northwest electric power system. The objectives of this work are to establish a baseline forecast of the direct CO_2 production of the Pacific Northwest electric power system, to forecast the effect of selected demand and resource development scenarios on CO_2 production and to compare the resulting CO_2 production to the target CO_2 production levels of selected current proposals for CO_2 control.

Background: Generation of electric power is a prime contributor to the production of CO_2, the principal greenhouse gas. Nationwide, any meaningful effort to control greenhouse gas production will require reduction in power system CO_2 production. Average CO_2 production of the Northwest power system is lower than the national average because of the high penetration of hydropower. However, efforts to reduce CO_2 production from the Northwest power system may be more challenging because of the lower baseline and the fact that the Northwest faces many of the same new resource choices as elsewhere. The most economically efficient means of reducing carbon dioxide production is likely to be through a combination of improved end use and generating plant efficiencies, addition of generating resources having low or no production of CO_2, and CO_2 sequestration. Crafting an efficient effort to control CO_2 production requires an understanding of the current and expected magnitude of production and the effectiveness and cost of alternative approaches to reduce of the rate of CO_2 production.

Approach:

1. Using the emission tracking feature of the AURORAxmp™ Electric Market Model, estimate unit (lb/kWh) and total (tons/yr) CO_2 production of the Northwest power system for the period 2005 through 2025, for the following cases:

- 5^{th} Plan recommended portfolio, mean development
- Status Quo conservation acquisition (70% of 5^{th} Plan recommendations by 2024), mean development
- Other case(s) of interest (e.g., effect of Washington RPS initiative, expanded supply of conservation or low-carbon resources)

2. Compare the resulting CO_2 production with target reductions as proposed in one or more of the congressional or state CO_2 control efforts currently being debated (e.g. the proposed Bingaman-Domenici cap and trade system, California Governor Swartznegger's executive order, Northeast Regional Greenhouse Gas Initiative).

Schedule: Two to three months, depending upon the number of cases considered.