Northwest Power and Conservation Council

January 29, 2009

MEMORANDUM

TO: Council Members

FROM: John Fazio, Senior Power System Analyst
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SUBJECT: Briefing on treatment of climate policy in the 6th Power Plan

Today's presentation proposes assumptions for CO_2 allowance price, production tax credits (PTC), investment tax credits (ITC), and renewable energy credits (REC) to be used in the development of the Sixth Power Plan (pending the Power Committee's approval). It also proposes a set of potential studies that will address key issues for the Council.

CO_2 price, PTCs, ITCs, and RECs present major uncertainties in the development of the Sixth Power Plan. They affect the cost of resources, electricity prices, electricity demand and levels of cost-effective conservation. For the plan, assumptions regarding ***expected average*** CO_2 prices over time are needed to forecast future electricity prices. A ***wide range*** of CO_2 prices over time along with a ***probability distribution*** for that range are required for the portfolio model in order to develop a set of viable resource strategies. Table 1 below summarizes assumptions used in the Fifth Plan and the proposed assumptions for the Sixth Plan. Proposed assumptions regarding renewable resource financing incentives are still under development.

Table 1: Proposed CO2 Allowance Cost Assumptions

	5th Plan	6th Plan
Average CO_2 Price	$7.85/ton	$47.72/ton
High End CO_2 Price	$30/ton	$100/ton
Futures with CO_2 Price	67%	95%

The fundamental approach to developing the power plan must consider the impact of state renewable portfolio standards (RPS) and the least-cost approach to achieving various levels of power system carbon dioxide production. To accomplish this, a three-phase study approach is proposed:

- A least-cost plan given state RPS mandates
- A least-cost plan that achieves the same CO_2 production but without the RPS
- Multiple studies to identify least-cost plans that further reduce CO_2 production

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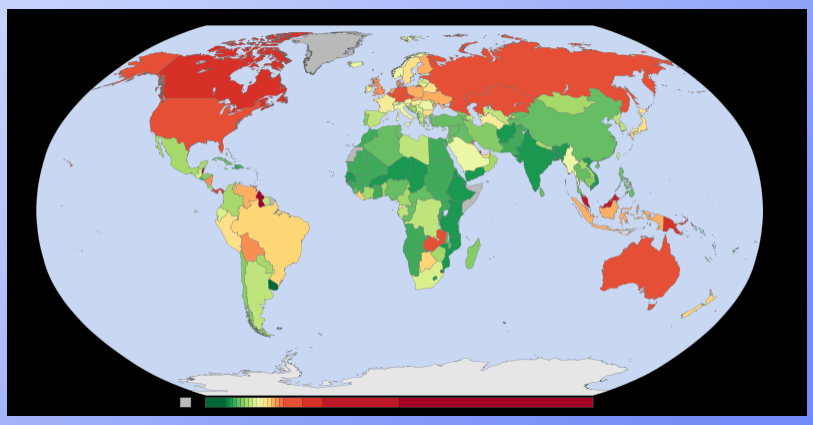
Briefing on the Treatment of Climate Policy in the 6th Power Plan

Council Meeting
Portland, Oregon
February 11-12, 2009



Outline

- Proposed CO_2 price assumptions and supporting analysis
- Assumptions for renewable resource financial incentives and renewable energy credits
- Proposed analyses for the Sixth Plan

Needed for the Plan

- Central tendency CO_2 price for electricity price forecasts
- High and low range and probability distribution of CO_2 prices for the Portfolio Model
- Assumptions for renewable energy credits (RECs) and financial incentives (production tax credits (PTCs) and investment tax credits (ITCs)

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Carbon Related Assumptions

	5th Plan	6th Plan
Average CO_2 Price	$7.85/ton	$47.72/ton
High End CO_2 Price	$30/ton	$100/ton
Futures with CO_2 Price	67%	95%
PTC Range	$0 to $10	Under Review
Average REC	$4	Drop from analysis

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EcoSecurities scenarios

- Regional initiatives
  - 15% below 2005 levels by 2020 (regional)
  - $10 - $20 during 2020 - 30, primarily as "green" subsidies (e.g., PTC/ITC)
- 1990 emissions or 15% below 2005 emissions by 2030
  - 1990 CO2 emissions by 2030
  - $20 - $50 during 2020 - 30
- Atmospheric stabilization
  - Stabilizing atmospheric concentrations of CO2 by 2100
  - $30 - $50 during 2020 - 30

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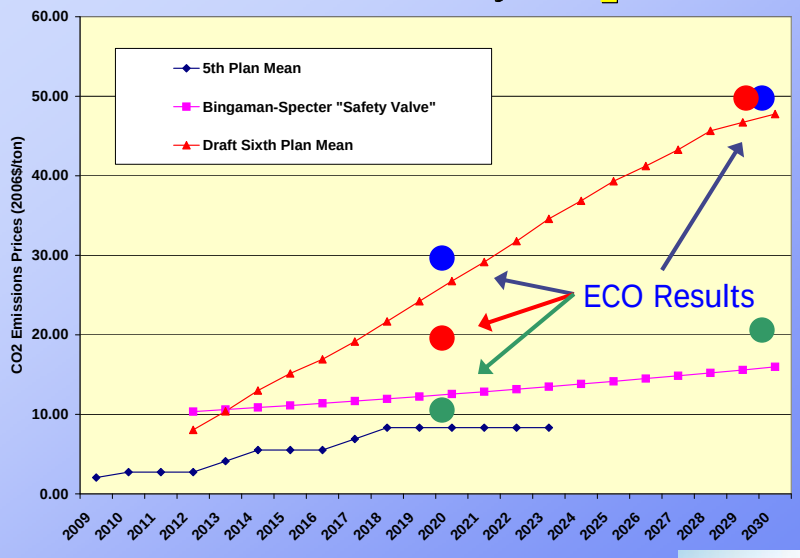
Central Tendency CO_2 Price



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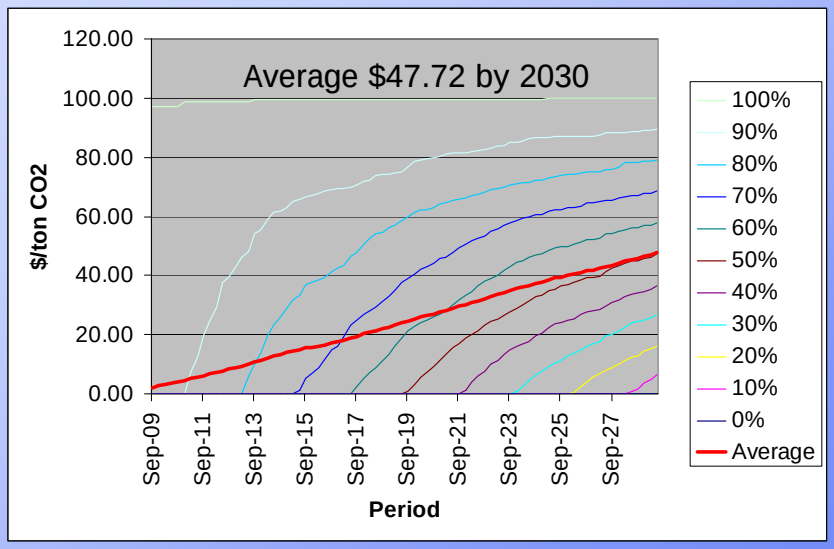
CO_2 Price Probabilities



Source: L804b illustrated.xls

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5th Plan CO_2 Price Probabilities

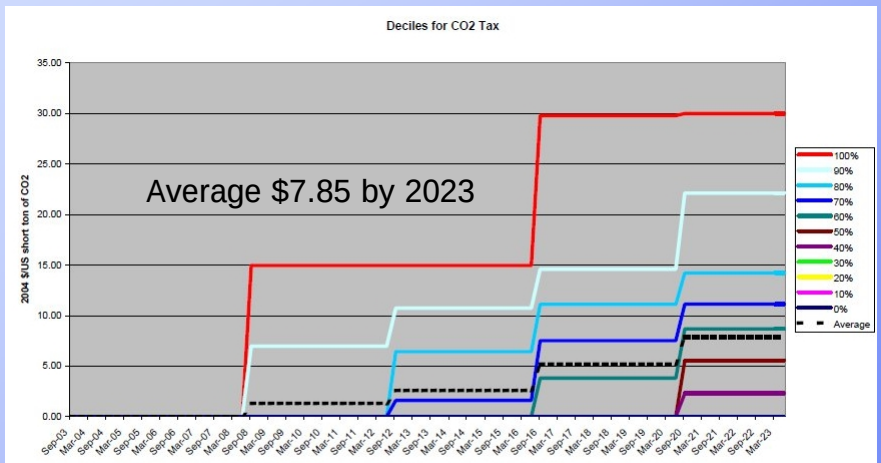

Figure P-67: CO_2 Statistics

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Issues for the Plan

1. How do these assumptions affect loads and conservation supply?
2. What level of CO_2 reduction is achieved by existing RPS; how does this level compare with existing and proposed carbon reduction targets?
3. What portion of reduction targets should the electricity sector bear?
4. What are costs of various methods to reduce carbon in the electricity sector?
5. What is the least cost approach for the electricity sector to achieve existing and proposed CO_2 reduction targets?

Impact to Load Forecasting

- Average CO_2 price will be used to assess new electricity prices
- New load forecast is then developed using the new electricity prices
- Fuels prices are adjusted to see impact on all sectors including transportation
- Examine CO_2 production to see if desired reductions are achieved

Impact to Conservation

- Average CO_2 price will be used to assess new electricity prices
- New amount of cost-effective conservation is assessed using new electricity prices
- Can change generating resource dispatch order and/or amounts, likely reducing CO_2 production

Proposed 6th Plan Analyses

1. Least-cost plan given state RPS mandates: Use proposed CO_2 price forecast and probability distribution – assess resulting CO_2 emission total.
2. Least-cost plan achieving similar CO_2 production: Remove NW RPS, change CO_2 prices until CO_2 production approximates the total in Case 1 – compare cost.
3. Least-cost path to achieve lower CO_2 production: Run multiple cases with increasing CO_2 prices to identify the least-cost path for the NW power system to achieve proposed carbon reduction targets.