

W. Bill Booth
Chair
Idaho

James A. Yost
Idaho

Tom Karier
Washington

Dick Wallace
Washington



Bruce A. Measure
Vice-Chair
Montana

Rhonda Whiting
Montana

Melinda S. Eden
Oregon

Joan M. Dukes
Oregon

January 4, 2010

MEMORANDUM

TO: Power Committee

FROM: Terry Morlan

SUBJECT: Changes in \$0 to \$100 Carbon Risk Scenario

Much of the resource strategy for the Power Plan is based on the \$0 to \$100 Carbon Risk scenario (we propose naming it the Carbon Risk Scenario in the final plan). Therefore, we began our revised analysis for the final plan with that case. This memo summarizes the results of the revised analysis and how it compares to the draft plan.

Both the input assumptions and the model have changed as a result of completing another analysis cycle, further staff evaluation, and public comments received on the draft plan. We presented the major input changes to the Council at the November and December meetings. To review very briefly these include: lower natural gas prices, lower demand in the near-term to reflect the recession, minor revisions to generating resource and conservation supply assumptions, and updated RPS requirements. These assumptions resulted in lower wholesale electricity prices, especially in the near term, but also in the long term. We also made some corrections and refinements to the Resource Portfolio Model.

The net effect of all these changes has not been substantial, in the sense that the basic resource strategy has not changed. Conservation remains the primary new resource, renewables are developed to meet RPS requirements, and natural gas provides the additional electricity needs. The table below shows the average resource development by 2030 for the draft and final \$0 to \$100 Carbon Risk scenarios. It includes selected key variables to characterize the results- net present value cost, carbon dioxide emissions, and average acquisition of new resources.

The total net present value power system costs are significantly lower in the final plan analysis. This isn't because we found a lot of cheaper resources. It is mainly because we corrected the discount rates used in the analysis from 4 percent to 5 percent. The effect of that change is to discount future costs more significantly. The one percent discount rate increase does not have a large effect on relative cost-effectiveness. Conceptually, a higher discount rate would tend to favor resources with higher future costs (e.g. favor natural gas relative to conservation).

	Draft Plan	Final Plan
NPV Cost w/o CO2 Penalty (Billion 06\$)	85.1	63.9
2030 CO2 Emissions (generation) (MMtpy)	37.1	39.7
2030 CO2 Emissions (demand) (MMtpy)	24.7	29.0
Conservation (MWa)	5745	5895
RPS Renewables (MWa)	1800	1453
Combined-Cycle Natural Gas (MWa)	97	402
Simple-Cycle Natural Gas (MWa)	7	20
Demand Response (MWa)	37	4

The cost-effective conservation level averaged over all 750 futures is not changed significantly from the draft. RPS resources are about 350 average megawatts lower than in the draft. That is mainly due to adding to existing wind projects, which qualify as meeting RPS requirements but aren't counted as new renewables in the plan. There is considerably more natural gas-fired resource in the final plan although the total amount built is not large. This may be a result of lower natural gas and electricity market prices and a higher discount rate, but could also partially reflect the changes made to the treatment of plant costs that extend beyond the planning horizon. As might be expected with additional natural gas-fired generation, the carbon emissions are a little higher in the final plan analysis for this case.

Changes in the Carbon Risk Scenario: Draft to Final

Power Committee Web Meeting
January 8, 2010

Present Value System Cost

Scenario	Draft	Final
	\$0-\$100 Carbon Least Risk L811	Carbon Risk Least Risk L813
COST & RISK		
NPV Cost (BI. 2006\$)	1056	789
NPV Risk (BI. 2006\$)	1555	1235
NPV Cost (BI. 2006\$) (w/o carbon penalty)	851	639

Reduced costs are primarily a result of using a higher discount rate in the final plan, not a big change in basic cost assumptions.

Carbon Emissions

	Draft	Final
CARBON		
2030 Emissions (Gen Based, MMtpy) adjusted	37.1	39.7
2030 Emissions (Use Based, MMtpy) adjusted	24.7	29.0

Carbon emissions are a little higher in the final study due to increases natural gas plants

Resource Strategy Changes

	Draft	Final
RESOURCES		
Total Conservation (Average Development)	5827	5895
RPS Resources (Forced in)	1800	1453
CCCT (Amount Optioned)		
Earliest Option	378	3402
Earliest Construction Date	2015	2019
Maximum Optioned	756	3402
Average Built		402
SCCT (Amount Optioned)		
Earliest Option	162	162
Earliest Construction Date	2015	2015
Maximum Optioned	162	648
Average Built		20
Average Market Purchases	-1934	-1977

Conservation unchanged; RPS lower due to increased current and planned renewables; More NG generation

Changes to Rates and Bills

	Draft	Final
RATES		
Retail Rates (w/o carbon penalty)	72.5	71
Retail Rates (w/ carbon penalty)	77.4	76
2010-29 Growth rate of rates (w/o carbon penalty)	0.8%	0.3%
BILLS		
Monthly Residential Bills (w/o carbon penalty)	70.1	79
Monthly Residential Bills (w/ carbon penalty)	74.7	84
2010-29 Growth rate of bills (w/o carbon penalty)	0%	-0.70%

Little change in rates

Higher bills are due to increasing the share of revenues collected from residential sector (comment response)