

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UM 1302

In the Matter of)	
)	
PUBLIC UTILITY COMMISSION OF)	
OREGON)	ORDER
)	
Investigation into the Treatment of CO ₂)	
Risk in the Integrated Resource Planning)	
Process.)	

DISPOSITION: GUIDELINE 8 ADOPTED

I. BACKGROUND

In Order No. 07-002 the Public Utility Commission of Oregon (Commission) adopted “integrated resource planning” (IRP) as the preferred approach to utility resource planning. By its use of the term “IRP,” the Commission meant to emphasize that all available resources should be considered, and it recognized that “least-cost” is not the only criterion for selecting the best portfolio of resources.

In Order No. 07-002 the Commission adopted 13 specific IRP guidelines. It also announced that it was opening two new proceedings:

First, we will initiate a rulemaking docket to promulgate rules consistent with our order. Specifically, a rule must be adopted that requires the filing of an IRP two years after Commission action on the previous plan, with a yearly update to be provided to the Commission. Second, we will open a proceeding to examine the treatment of carbon dioxide (CO₂) risk in IRPs. Among other things, this investigation will address the CO₂ value that a utility should use for its base case, what CO₂ costs should be used for sensitivity analysis, and what analysis of “trigger-point” values should be required.”

Order No. 07-002 at 2-3 (ftn. omitted).

This is the “second” proceeding.

Among the Guidelines adopted was Guideline 8, Environmental Costs:

Utilities should include in their base-case analyses the regulatory compliance costs they expect for carbon dioxide (CO₂), nitrogen oxides, sulfur oxides, and mercury emissions. Utilities should analyze the range of potential CO₂ regulatory costs in Order No. 93-695, from zero to \$40 (1990\$). In addition, utilities should perform sensitivity analysis on a range of reasonably possible cost adders for nitrogen oxides, sulfur oxides, and mercury, if applicable.

This Guideline is intended as interim, pending the outcome of this proceeding.

In Order No. 07-002 we stated our expectations for this case:

The investigation will cover not just the base case value for CO₂ but also the sensitivity analyses that should be conducted. It will address what CO₂ costs should be used for sensitivity analysis as well as what analysis of trigger-point values should be required. Sensitivity analyses on CO₂ costs normally assume the base case values for other variables. Once a potential trigger-point is identified, however, it may be useful to treat it like a new base case value for CO₂ and conduct sensitivity analyses for other variables (such as loads and fuel prices) around that trigger-point CO₂ value to help determine which portfolio is best. (Footnote omitted.)

In this decision we adopt a refined Guideline 8.

II. INTRODUCTION

This investigation was initiated by the Commission on February 8, 2007. Following the first workshop the parties submitted the following proposed statement of issues:

1. What CO₂ regulatory cost stream should utilities use in their IRP base case, and what assumed CO₂ regulatory future, e.g., a fixed carbon adder or a carbon policy modeling constraint, should serve as the basis for the base-case cost stream?
2. What alternative CO₂ regulatory cost streams should utilities use in their IRP scenario analyses, and what assumed CO₂ regulatory futures should serve as the bases for these alternative cost streams?
3. How should the existing, and potential future, carbon or other greenhouse gas emission goals of the State of Oregon be included in utility IRP?

4. What probability weighting, if any should utilities assign to the CO₂ base-case and scenario analyses?

5. How should utilities vary the CO₂ regulatory cost streams to identify the “trigger point” (or CO₂ regulatory future) that changes the preferred resource portfolio, and should utilities vary other model inputs to achieve logical consistency and to test the sensitivity of the trigger point to the changes in other variables?

6. Are the alternative futures used in the scenario analyses an adequate measure of the cost risk associated with choosing one portfolio over another? Should utilities use a different approach when considering the risk of future CO₂ regulation?

By ruling dated April 20, 2007, the Administrative Law Judge (ALJ) adopted the statement of issues.

The adopted schedule called for initial comments to be filed on July 26, 2007. Parties filing comments included the Commission Staff (Staff); the Oregon Department of Energy (ODOE); Idaho Power Company (Idaho Power); PacifiCorp, dba Pacific Power (Pacific Power); and Portland General Electric Company (PGE). Joint comments were filed by the Citizens’ Utility Board of Oregon (CUB), Ecumenical Ministries of Oregon (EMO), NW Energy Coalition (NWEC), and Renewable Northwest Project (RNP) (Joint Parties).

A Commission workshop was held with all parties on August 16, 2007. All Commissioners participated in the workshop. At the workshop Staff offered a revised version of Guideline 8. At the conclusion of the workshop, the parties agreed to another meeting to discuss whether a common ground might be found.

After the meeting, and following the circulation of a further revised version of Guideline 8, parties filed reply comments on Staff’s proposal on September 13, 2007. Comments were filed by ODOE and Joint Parties. Joint comments also were filed by PGE, Pacific Power, and Idaho Power (the Utilities).

Further comments were filed on September 26, 2007. Parties filing further comments were Joint Parties, Staff, ODOE, and the Utilities.

Upon further consideration, parties were invited to file comments on Staff’s final draft version of the guideline and on clarifying comments filed by Staff as well. The Commission also indicated that it planned to hold another workshop.

Additional comments were filed on November 15 and 16, 2007. Parties filing additional comments were ODOE, the Joint Parties, and the Utilities.

A final workshop was held on January 3, 2008. Following the workshop, on January 17, 2008, Staff filed its final version of proposed Guideline 8.

On February 6, 2008, the Utilities filed their final comments. On January 31, 2008, RNP submitted a letter stating its support for Staff's final proposed guideline.

III. INITIAL COMMENTS

In their initial comments parties addressed the specific issues as stated in the statement of issues.

Staff's Comments

According to Staff, utilities have addressed or included environmental costs in their IRPs, by performing scenario analyses. The utility typically determines a base case and several alternative cases that may be challenged by other parties. A recent development has been the use of trigger-point analysis to search for the CO₂ adder that causes the least-cost resource portfolio to switch from using one type of resource to using another.

Staff recommends that the Commission require utilities to include in their IRP base case the CO₂ regulatory costs that the utility expects will prevail for the planning period. Staff opposes the use of a single Commission determined stream of CO₂ adders in the IRP process.

According to Staff, the practical effect of the Commission requiring specific CO₂ cost adders is to narrow the search for the CO₂ regulatory future that would signal a switch in the preferred resource strategy. Analyzing a range of CO₂ cost adders is an exercise in locating the trigger point for a change in the preferred resource.

Staff recommends the Commission not adopt specific probability weights to assign to the CO₂ base case and alternative cases in IRP.

According to Staff, in current resource planning the utilities typically analyze how candidate resource portfolios perform under a high CO₂ cost scenario, which is not the same as designing a preferred portfolio for a high-cost scenario. While the utilities have begun to conduct analyses that identify CO₂ cost scenarios that cause a change in the least-cost resource, this is not the same as identifying the trigger point at which the utility would change its preferred portfolio.

Staff recommends the Commission require the utilities to develop a high CO₂ cost scenario that achieves logical consistency among model inputs. The Utilities should indicate their judgment of the likelihood that this high CO₂ cost scenario will become legally binding.

In its initial comments, Staff recommended that the Commission adopt the following environmental cost guideline for the IRP process:

Utilities should include in their base-case analyses the regulatory compliance costs they expect for carbon dioxide (CO₂), nitrogen oxides, sulfur oxides, and mercury emissions. The utilities should identify the portfolio that is preferred given a broad range of potential regulatory compliance costs. Utilities should also identify a distinct time-profile of high CO₂ compliance costs that results in a significantly different resource portfolio as the preferred portfolio. The utilities should fully develop the preferred portfolio for this high CO₂ cost scenario and compare its performance to that of the portfolio that is preferred given the range of potential cost adders. Finally, the utilities should indicate their judgment of the likelihood that this high CO₂ cost scenario will become legally binding.

ODOE's Comments

ODOE states that the overall question before the Commission in this docket is how should the integrated resource plans consider the likelihood that future federal or state policy will cap and then reduce CO₂ emissions from the power sector. The Commission's order should require that utility IRPs evaluate irreversible utility commitments to standard coal plants, based on an assumption that Oregon's CO₂ goals will be met for the electric sector.

ODOE states that the base-case CO₂ regulatory cost stream should be based on the midrange estimate of the IPCC Working Group III contribution to the Fourth Assessment Report with induced technological change. This scenario also should be used by gas utilities. Most cap and trade proposals have CO₂ allowance trading at market-clearing prices between the electric and natural gas sectors. Gas and electric utilities should face the same CO₂ allowance prices.

According to ODOE, the appropriate analyses will depend on the kind of technology/strategy options being evaluated. Trigger-point analyses should be conducted on decisions on the thermal efficiency of major new thermal plants in proposed action plans.

ODOE states that trigger-point analyses can illuminate decisions without the Commission having to specify a value or range of CO₂ adders. The Commission order should require IRPs to do such analyses for major action plan decisions. These decisions include whether more expensive but more efficient major thermal power plants are economic over their planned lifetime.

PGE's Comments

PGE believes that a fixed set of carbon cost adders should not be codified into an order or rule – rather, the order or rule should set forth general policies regarding treatment of CO₂ risk in resource planning. Because of uncertainties, the best approach is to maintain flexibility.

PGE believes that current Commission precedent provides sufficient alternative cost streams for use in examining CO₂ in the IRP process. As noted, in its recent IRP filing, its base case assumes a federal legislative tax adder. However, a utility also should consider other sources of information, such as competitive markets or other legislative proposals.

PGE believes that consideration of a state-level emissions performance standard should be tempered by consideration of the potential interaction with existing laws regarding carbon taxes, renewable portfolio standards, renewables tax credits, etc. Because the form, amount, and timing of any future state standard is unknown, no cost stream from a hypothetical standard should be included in the “base-case” modeling for IRP.

According to PGE, the current IRP process already identifies trigger points through the use of scenario analysis. PGE agrees that impacts to other modeling assumptions due to CO₂ legislation should be considered. It may be most prudent to study and develop appropriate changes in useful modeling inputs and relationships; therefore, PGE recommends a joint study on how to approach this topic, to provide guidance for Oregon utilities.

Pacific Power's Comments

Pacific Power states that it has included CO₂ risk analysis in its IRPs for many years. It suggests that the Commission not be “unduly prescriptive” in how it asks the utilities to address CO₂ risks, given the uncertainties surrounding state policy. The IRP analysis must be adaptable to rapidly changing regulatory circumstances.

Pacific Power states that hypothetical CO₂ regulatory cost debates inevitably turn on technology assumptions, with cost debates “inherently intractable.” It is difficult for Oregon to prescribe what should be the future federal or neighboring state policy for IRP base-case modeling.

Pacific Power states that the Commission should provide general policy guidance for the construction of CO₂ regulatory cost scenarios, while the issue of what scenario design assumptions should be applied to capture CO₂ cost risk should be left to the utilities' discretion.

Pacific Power does not advise that subjective weights be added to the CO₂ cost adder because the relative likelihood of alternative values is unknown.

The application of probabilities implies a degree of precision that is not warranted. Pacific Power supports a robustness criterion in which portfolios are assessed according to CO₂ cost and emissions performance across scenarios.

Pacific Power sees little value in trigger points for resource decision making, because each trigger point applies to changes for only one variable. A new trigger point could be associated with a change in coal cost, variable operating and maintenance cost, natural gas cost, capital costs for each resource type, forward market prices, inflation estimates, load forecasts, thermal performance, or hydro conditions. The permutations are endless and the usefulness of the end product is questionable.

Idaho Power's Comments

Idaho Power states that it recognizes that there continues to be uncertainty surrounding the implementation of carbon taxes and CO₂ mitigation policies. It supports a range of future carbon taxes, bound by zero at the lower end and by \$80 per ton at the upper end.

Idaho Power believes there is too much uncertainty surrounding greenhouse gas regulation for the Commission to define a specific set of standards. National regulations and policies may be developed, such that it may be appropriate for the Commission to identify specific standards for CO₂, other greenhouse gases, or other emissions that are consistent with national regulations or policies.

Idaho Power states that it continues to research new tools to be applied to resource planning. It strongly supports including analytical methods to identify the trigger points where one generation technology supplants another technology in resource planning. Idaho Power believes it would not be prudent for the Commission to dictate a specific technology or analytical method to identify the trigger points.

Joint Parties' Comments

In their comments, the Joint Parties undertook to survey “the likely regulatory treatment of CO₂ on the federal, regional and state levels.” Their approach “points to a convergence of policies,” leading them “to recommend, for utility resource planning, a low carbon regulation scenario, a medium carbon regulation scenario (the base case) and a high carbon regulation scenario.” To adequately plan for a range of possible regulatory futures, they recommend that the Commission direct utilities to: (1) present and analyze one or more portfolios that would comply with each of the low, base-case, and high-carbon regulatory futures; (2) present and analyze one or more portfolios that would comply with the emissions reduction targets set in Oregon statute; and (3) incorporate the value of optionality when evaluating different portfolios, citing the NW Power Council’s model as highly developed and available to the utilities.

Regarding policy measures for curbing greenhouse gas emissions, they note that “cap-and-trade” and carbon taxes are among the most likely to be adopted.

Both measures internalize the costs of greenhouse gases by assigning a monetary value to these emissions – the cap-and-trade method allows the market to set the price; a carbon tax policy sets a specific price.

The Joint Parties compare a number of different federal cap-and-trade proposals. They also summarize several state and regional initiatives. From their survey they assert that “it is increasingly certain that Oregon utilities will face greenhouse gas emissions regulations of some kind in the near future.”

There are two points of emphasis: First, no currently proposed policy allows for an overall increase in greenhouse emissions. Second, all current policy proposals target a return to emissions levels somewhere near 1990 emissions levels by the 2020-2030 time frame.

They offer an analysis of price estimates for cap-and-trade proposals, based on an MIT study. Their analysis is intended to illustrate how a safety valve provision that is set too low can undermine the integrity of a cap-and-trade policy, resulting in actual emissions reductions that fall below the targets specified in the legislation. They posit that, in such circumstances, the safety valve price will be revised upwards. Relying on a safety valve price in modeling implicitly accepts continued uncertainty and risk that the price may be revised.

An additional approach discussed in their comments is a trigger-point analysis, designed to determine what CO₂ value would be required to make two alternatives equal from a financial point of view. This type of analysis could be used to find the trigger-point CO₂ value between utility resource portfolios. Trigger-point analysis can illuminate decisions without the Commission having to specify a value or range of CO₂ adders.

The Joint Parties ask the Commission to consider “the bigger picture.” The risk of global warming cannot be quantified. Faced with the threat of potentially imminent danger, regulation of greenhouse gases is likely to increase. They warn against “the specter of the financial dislocation for customers” of purchasing and then abandoning resources that do not meet those regulatory restrictions.

They advise the Commission that the risk of global warming is asymmetric. The risk of planning for a too-lenient carbon regulatory structure is far greater than planning for one that is too stringent. The risk of being overly cautious lies primarily in rate impacts. The risk of not being cautious enough is unbounded.

The Joint Parties state that rate impacts are the least of humanity’s concerns in regard to global warming, but that is the subject matter of utility regulation. It would be nonsensical to not reduce greenhouse gas emissions and instead make resource decisions based on incidental rate impacts, while ignoring the tremendous environmental, social, and economic externalities that will drive strong carbon regulation.

The Joint Parties note that all of the financial risk associated with climate change comes from outside this Commission's jurisdiction. CO₂ costs or limits will be imposed by federal and/or state mandate. Thus, the utility models and methodology must be able to properly deal with uncertainty.

The Joint Parties compare the NW Power Council's model to the models used by utilities. They find that the NW Power Council model is much more dynamic. They state that model produces flexible portfolios that are less costly, due to the utility's ability to change course when conditions warrant.

The Joint Parties state that a trigger-point analysis can help determine what emissions allowance prices would be necessary to induce change. In addition, trigger-point analysis can be used to consider major resource decisions, including: (1) the efficiencies of new thermal plants and their technologies; (2) natural gas combined cycle turbines vs. traditional pulverized coal; (3) IGCC and/or traditional pulverized coal, with sequestration vs. other baseload generation options; and (4) a greater percentage of renewable generation than required by state energy policy.

IV. STAFF'S REVISED GUIDELINE 8

As noted above, at the August 16, 2007, workshop, Staff circulated a proposed revised Guideline 8.

Following the workshop on August 16, 2007, the parties met again on August 30, 2007. Staff then circulated its next draft version of the Guideline 8. That revised version was as follows:

- a. **SCENARIOS:** The utility should construct a base-case scenario to reflect what it considers to be the most likely regulatory compliance future for carbon dioxide (CO₂), nitrogen oxides, sulfur oxides, and mercury emissions. The utility also should develop a broad array of compliance scenarios ranging from the present CO₂ regulatory cost to the upper reaches of credible proposals by governing bodies (*i.e.* at least \$100 per ton, as levelized in 2005 dollars). Each scenario should maintain logical consistency, to the extent practicable, between CO₂ regulatory costs and other key inputs, including, but not limited to, expected interactive effects with fuel and electricity prices. Each scenario should include a time profile of CO₂ compliance costs. The utility should identify whether it envisions those costs to be in the form of taxes, a ban on certain types of resources, or CO₂ caps (with or without flexibility mechanisms such as trading or a safety valve).

b. **PREFERRED PORTFOLIO:** The utility should identify, among reasonable alternatives, the portfolio that it prefers in recognition of both its base-case scenario, the broad rate of potential regulatory compliance scenarios described above, other analyses conducted during the course of the integrated resource planning cycle, and management discretion. The utility should estimate the twenty-year (as a minimum) present value of revenue requirement (PVRR) for each of the studied portfolios for several illustrative regulatory compliance futures within the range of scenarios. End-effect considerations should be incorporated in the analyses to allow for comparisons of portfolios containing resources with different economic lives. In addition, and if material, sensitivity analyses on a range of reasonably possible regulatory futures for nitrogen oxides, sulfur oxides, and mercury should be included to further substantiate the preferred portfolio selection.

c. **TRIGGER-POINT ANALYSIS AND ALTERNATIVE PORTFOLIOS:** The utility should identify at least one set of CO₂ compliance costs within the range of alternative regulatory scenarios considered that would lead to, or “trigger,” a set of resources that is substantially different from the preferred portfolio. The utility should fully develop an alternative portfolio optimized for each of these “trigger-point scenarios” and compare the portfolio’s expected cost and risk performance to that of the initially preferred portfolio under the base-case conditions and under each of the CO₂ compliance scenarios. For each of the trigger points identified through the analyses, the utility should include an assessment that a CO₂ regulatory future will be mandated that is equally or more stringent.

d. **PORTFOLIO CO₂ RISK ADAPTABILITY:** The utility should assess the costs and risks of adapting the preferred portfolio to a scenario (or scenarios) where the utility must change course unexpectedly due to a major change in the CO₂ compliance requirements. The utility should describe the timing and magnitude of new CO₂ requirements that would elicit the indicated portfolio modifications. The utility should compare the cost and risks of the adapted preferred portfolio with those of an optimized alternative portfolio designed to be more adaptable in the event of such a change in the CO₂ compliance requirements. Comparative factors such as lead times for site acquisition, engineering, and construction should be incorporated in the

characterization of the alternative portfolio. The utility should provide its assessment of such a CO₂ regulatory shift taking place.

e. OREGON COMPLIANCE PORTFOLIO: If none of the alternative portfolios is consistent with Oregon energy policies (including state goals for reducing greenhouse gas emissions reductions), the utility should construct an optimized portfolio that achieves that consistency, present the costs and risk parameters, and compare them to those of the preferred and alternate portfolios.

VI. REPLY COMMENTS

The reply comments address the expanded revised version of Guideline 8 as circulated by the Staff after the meeting on August 30, 2007.

The Utilities

The Utilities proposed three sets of changes to Staff's draft revision of Guideline 8. First, they propose deleting the "Preferred Portfolio" (Section b) "because the selection of a preferred portfolio is already addressed in the Commission's new IRP guidelines, specifically Guideline 1c."¹ Second, in the "Trigger-Point Analysis and Alternative Portfolios" (Section c) the Utilities propose deleting certain text. Third, in the "Oregon Compliance Portfolio" (Section e) the Utilities propose language intended "to make one correction and one clarification."

Joint Parties

The Joint Parties stated that they strongly support the Staff draft guideline, as it directs utilities to perform the thorough analysis of the risk of future CO₂ regulation that should be an integral part of any utility's planning. They believe that the current policy environment fully warrants the expanded and rigorous analysis of CO₂ risk and risk mitigation strategies encompassed by Staff's draft guideline.

Regarding the Utilities' documentation of their base-case scenario, Joint Parties propose adding language directing each utility to "document and explain its rationale for choosing its base-case scenario from among the other possible CO₂ regulatory futures."

While they are sympathetic to concerns expressed by PGE and Pacific Power to the effect that there is little value in requiring the Utilities to provide an estimate

¹ Guideline 1c provides that the primary goal of the IRP is the selection of a portfolio of resources "with the best combination of expected costs and associated risks and uncertainties for the utility and its customers."

of the probability that any of several possible regulatory futures is more likely, Joint Parties observe that the Utilities already are making assumptions about the relative likelihood of different possible regulatory futures when they choose their base-case scenario. They ask that the utility's judgment be made explicit in the IRP and be supported by a "robust and up-to-date" survey of current policy proposals.

ODOE

ODOE proposes to add certain language to Section b of Staff's guideline.

ODOE states that it does not agree with Pacific Power's assumptions of a 40-year lifetime for conventional coal plants and a 20-year lifetime for wind plants.

ODOE observes that recent wind acquisitions by PGE will be rate-based with a lease-option up to 50 years. This approach may become the primary mode of wind acquisition by Oregon investor-owned utilities. Differential treatment of wind and coal resources should be based on differences in the technologies. CO₂ regulations may significantly shorten the economic lifetime of a coal plant, while wind may prove to have a similar or even longer economic life than conventional coal resources.

VII. FURTHER COMMENTS

Staff

In its further comments, Staff offers its revised "final draft" version of Guideline 8, incorporating many changes intended to address comments from other parties. Staff provided notes that explain its major changes.

Regarding Section a, Staff's draft replicates the original guideline's requirement that each utility should construct a base-case scenario that reflects its expectations regarding emission standards. Rather than design a specific range of potential compliance costs, as did the original version, Staff's final version is more general, recognizing that the range will evolve.

Regarding Section b, Staff states that its purpose is to estimate the discounted, present-value expected revenue requirement and risks for a number of candidate portfolios under the various compliance scenarios.

Regarding Section c, Staff notes the expectation that some portfolios will be superior to a utility's preferred resource portfolio at high CO₂ cost levels while also being inferior at lower cost levels. The intent of Section c is to "reveal" the cross-over point where one portfolio becomes preferable to another.

Regarding Section d, Staff notes that the earlier sections are "static," in the sense that they assume that future CO₂ compliance costs are already known or

anticipated. Because of the uncertainties regarding future CO₂ compliance costs, there is value in choosing a portfolio with flexible elements – to be determined or adjusted over time.

The Utilities

As a general concern, the Utilities state that the overall content of an adopted Guideline 8 may need to be reassessed soon, as it will contain details on near-term analytical requirements needed during a period of considerable regulatory uncertainty. The Utilities recommend that the adopted guideline address the need to maintain flexibility.

The Utilities state that the Joint Parties continue to propose requirements without the opportunity for parties to discuss the specifics, including consideration of modeling complexity. They cite Joint Parties' proposal to include upstream CO₂ emissions as a very complex issue that was not sufficiently addressed in the record.

While the Commission may wish to set an upper limit CO₂ cost value of \$100 per ton, the Utilities warn that such a value may not be consistent with the CO₂ regulatory futures to be applied in future IRPs. To address their concern, the Utilities offer the following language: "The utility should also develop scenarios ranging from current CO₂ regulation to the upper reaches of credible proposals by governing bodies."

Joint Parties

Joint Parties are pleased that all parties agree that a more rigorous analysis of carbon risks is necessary.

Joint Parties support ODOE's proposal to expand the language regarding the expected useful life of a power plant. Consistent and reasonable assumptions regarding a plant's useful life are a critical element of robust IRP analysis.

Joint Parties oppose the Utilities' proposal to strike language specifying "at least \$100 per ton." They state that the language provides useful guidance regarding the minimum range of adders, while leaving the Utilities free to adjust the range upwards, as necessary.

Joint Parties oppose the Utilities' proposal to modify Section c by substituting certain language. They state that this change would result in a comparison of the alternate portfolio(s) under the trigger-point scenario(s) to the preferred portfolio under the original CO₂ compliance scenarios. The performance of the alternate portfolio(s) should be compared to the preferred portfolio under the same scenarios as is called for in Section a.

ODOE

ODOE opposes the Utilities' proposal to strike the reference to \$100 per ton. ODOE states that the reference is necessary to help standardize utility analyses. Without a set standard, it will be difficult to compare analyses by different utilities. If a zero adder is used at the lower end of the range, a value above \$100 per ton is highly likely, if serious efforts are made to reduce greenhouse gas emissions.

ODOE supports Joint Parties' proposals regarding: (1) documenting the choice of a base-case scenario, (2) inclusion of price elasticity, and (3) comparison of cost differences in terms of risk performance.

VII. ADDITIONAL COMMENTS**The Utilities**

The Utilities, Pacific Power, PGE, and Idaho Power, again filed joint comments. They state their view that "guidelines should remain broad to allow utilities flexibility to adapt to rapidly changing regulatory circumstances." They state that Staff's draft guideline requires an unprecedented level of specific and detailed analysis "that might prove superfluous," once the regulatory framework is clearly defined.

The Utilities would prefer a more streamlined guideline that would serve as "the starting point" for addressing the treatment of CO₂ risk in resource planning. They believe that their approach would then be informed by more current regulatory and legislative conditions.

Joint Parties

The Joint Parties, Ecumenical Ministries of Oregon, NW Energy Coalition, and RNP again filed joint comments.² They "strongly" support replacing the specified range of CO₂ compliance costs in the current Guideline 8 with a new directive to define a range of potential CO₂ compliance scenarios that can evolve over time to accurately reflect the current policy environment. They state that a flexible guideline that can accommodate the evolving policy environment is critical.

Joint Parties state that they agree that \$100/ton is an acceptable value to reflect the upper range of current CO₂ policy proposals, but that utilities should have the freedom to adjust the range upward if appropriate. They strongly caution against setting a fixed upper range in the CO₂ compliance scenarios.

Joint Parties agree that CO₂ regulatory scenarios may be in the form of a ban on certain resources, rather than a tax or cap-and-trade scenario. They appreciate that Staff explicitly includes price elasticity of demand in relation to scenarios.

² CUB participated earlier in filing joint comments with these parties. The Joint Parties report that CUB was "unable to join" them in this filing.

Joint Parties strongly support the addition of trigger-point analysis. However, they note that Staff's proposed guideline only directs the utility to identify one trigger point and develop a single substitute portfolio. The Joint Parties state that it is "highly likely" that there is more than one turning point within the range of potential CO₂ regulatory costs at which different portfolios would be optimal.

ODOE

ODOE proposed several specific revisions to Staff's final draft version of Guideline 8. ODOE proposed to include the following language: "The utility also should develop several compliance scenarios ranging from the present CO₂ regulatory level to the upper reaches of credible proposals that, within four decades, would stabilize CO₂ and other greenhouse gas concentrations in the atmosphere."

ODOE states that the Commission should encourage utilities to examine all credible factors that might influence resource and fuel costs. Reasonable forecasts of fuel and resource costs should account for these likely impacts.

IX. STAFF'S FINAL VERSION

Staff

Several editorial revisions to Staff's Guideline 8 were made at the January 3, 2008, workshop. Subsequently, Staff proffered its final version of the proposed guideline in its filing on January 17, 2008. Staff's final draft guideline is attached as Appendix A.

Staff states that the January 3, 2008, workshop "produced a major movement seemingly to reduce the scope of the CO₂ RISK ADAPTABILITY topic," which would have the utility determine the CO₂ adder increase that would lead it to make a substantial portfolio modification. While Staff does not object to deleting a portion of that section, Staff resists other changes. If the Commission were to decide to make the changes as proposed by other parties, Staff recommends the Commission incorporate Staff's language into the discussion part of this decision, so as to give the utilities a proper sense of the Commission's expectations.

Staff recommends that the Commission retain the adaptability portion of the guideline as a separate section. Staff believes that the thrust of the CO₂ risk adaptability directive is sufficiently distinct from the mandates in other sections to be separately stated. Staff found that shifting the first sentence in the Adaptability section to an earlier section would put in the same paragraph the task of designing a potentially dynamic portfolio that is somehow optimized in consideration of a much higher CO₂ adder trajectory and an evaluation of portfolios that appear optimal, given a relatively low base-case CO₂ adder and their performance if higher adders were applied and the portfolios are not altered. Staff found that shifting the first sentence in the Adaptability

section to an earlier section would put in the same paragraph the task of designing a potentially dynamic portfolio that is somehow optimized in consideration of a much higher CO₂ adder trajectory and an evaluation of portfolios that appear optimal, given a relative low base-case CO₂ adder and their performance if higher adders were applied and the portfolios are not altered.

Staff worked through some hypothetical analytics to illustrate the workings of its proposed guideline. From its calculations, Staff concludes that the risk adaptability provision of the guideline should be augmented slightly, not attenuated.

In performing its Trigger-Point Analysis, Staff shows that, while two candidate trigger-point portfolios would have identical performances at a \$15 trigger-point CO₂ adder level, they would have quite different expected costs at other adder levels. To be able to select an “adaptable” portfolio over the ostensibly preferred portfolio requires knowing how the adaptable portfolio’s cost and risk performances, given base-case CO₂ regulations, would compare with the performances of the “preferred portfolio under those same conditions.”

Staff includes three tables that illustrate the key modeling results of its proposed Adaptability section. The first step allows the utility to discern the timing and subsequent trajectory of an unexpected shift in the CO₂ compliance requirements that would cause it to fundamentally change course. The next table shows the expected costs of the three new portfolios that were designed to be more adaptable than the preferred portfolio. The third table shows the various portfolios’ risks that were estimated and compiled for the various CO₂ adder scenarios.

According to Staff, for a utility to be able to assess the costs, risks, and benefits of a portfolio designed to be more adaptable than the preferred portfolio, it would be imperative that the utility posit some associated adverse CO₂ regulatory trajectory to be able to compare costs and risks of new and preferred portfolios. To capture the multiple dimensions of the attempt to assess the more “risk adaptable” portfolio,” more than one complying portfolio should be developed to reveal the degree to which risk can be mitigated by accepting additional base costs.

Further, in defense of its proposed Adaptability paragraph, Staff states that there would be considerable value in knowing what would be the optimal portfolio in the event of high-cost CO₂ adders, and how much such a portfolio would cost under less stringent conditions.

Rather than assume a very high-cost CO₂ adder to begin soon, Staff argues it makes more sense to assume the base-case level for some period, to be followed by a large ramp-up in CO₂ costs. Staff believes this approach achieves a greater level of credibility and relevance than would be the case otherwise.

The Utilities

The Utilities reiterate their view that the guideline “should remain broad enough to allow utilities the flexibility to adapt to rapidly changing regulatory circumstances.” They state that the guideline should not require specific and detailed analysis that might prove superfluous, once a regulatory framework for CO₂ is clearly defined. To that end they propose “streamlining” Staff’s proposed guideline as much as possible. Their proposed “redline” version of Staff’s guideline is attached as Appendix B.

Specifically, they urge the Commission not to adopt Section d of Staff’s proposed Guideline (CO₂ Risk Adaptability). They characterize the provision as “overkill.”

The Utilities acknowledge that the provision is intended to elicit a portfolio that is flexible, in the face of changing CO₂ regulation. While they agree that such a portfolio should be developed, they don’t agree that Section d is necessary to achieve that result.

They observe that a flexible portfolio is likely to: (a) minimize any capital commitments to new high CO₂ resources; (b) minimize any capital commitments to new low CO₂ but high-cost resources; and (c) include a combination of short- and medium-term power-purchase agreements. They state it is “almost certain” that such a portfolio will be submitted as one of the scenarios in any case.

The Utilities state that the trigger-point analysis required under Section c of the Guideline provides another approach for addressing the same issue. They also argue that the public process, where stakeholders work with the utility to examine important issues, also provides a forum for developing such a portfolio. They conclude that there is no need to specifically require the Section d analysis, which would require significantly more work and provide little value.

The Utilities offer several other changes to the proposed guideline that they describe as non-substantive and offered for the benefit of clarity.

X. DISCUSSION

In this case the process may be more important than the result. The parties have worked their way through the issues in a collaborative process that mimics their interaction in resource planning. Their resulting understanding of the interests and concerns of the other parties will likely serve them better in the IRP process than any guideline that we might prescribe.

In formulating the guideline we are of two minds. On the one hand, a broad guideline can be more descriptive and less prescriptive and more attuned to the long term. On the other hand, a more detailed guideline can be more useful to the parties

as they apply the guideline to the next round of IRP filings, so long as they understand that the purpose of the guideline is to describe the process, not to define it.

Staff deserves the appreciation expressed by the other parties for the effort it put into formulating a workable guideline. The efforts of all parties are greatly appreciated.

We recognize that there is some overlap (or redundancy) between the expanded guideline prepared by Staff and the other Guidelines adopted in Order No. 07-002. (IRP Guidelines.) We prefer to characterize that apparent redundancy as an explicit link between two provisions, with the more specific language in Guideline 8b expanding on the more general language in Guideline 1.

Regarding Section d (CO₂ Risk Adaptability), Staff's version offers more specific direction to the utilities than would be provided by the Utilities' own version of the guideline. However, we share the Utilities' concern that the more detailed guideline may be more likely to hinder the IRP process than to promote it.

There are so many variables to be taken into account in resource planning that the process must maintain sufficient flexibility to be able to respond to changes in these many elements. The more detailed the guideline, the less flexible will be its application.

Thus, we agree with the Utilities that the guideline "should remain broad enough to allow utilities the flexibility to adapt to rapidly changing regulatory circumstances." We share their view that the guideline should not require specific and detailed analysis that might prove superfluous, once a regulatory framework for CO₂ is clearly defined. Furthermore, we expect that the Utilities and their stakeholders will identify a variety of resource portfolios to test in the planning process, some of which will be more adaptable to changing CO₂ regulation than others.

We prefer the Utilities' version of the guideline because it treats the preferred portfolio as one that is selected from the group of alternative portfolios. Staff's language presumes the portfolio is separate and already identified, before the Section b analysis.

The most important "guideline" is that the resource planning process be collaborative. We expect that Staff and other parties will be part of that process from its inception, and we expect that the utilities will be respectful of their concerns and views. To the extent that those concerns and views require that the utilities perform additional studies and analysis, we will address any utility issues as they arise.

The adopted guideline is attached as Appendix C. We have adopted the Utilities' version of Staff's final draft, with minor changes.

In Section a we retain “that would likely have a significant impact on its resource decisions” as the remainder of the sentence that begins “The analysis should recognize significant and important upstream emissions.” The retained language helps define when upstream emissions are significant and important.

Although we have deleted the language “including, but not limited to, expected interactive effects with sales volumes and fuel and electricity prices” at the end of Section a, we recognize that these effects are among the possible interactions to be tested for “logical consistency.”

In Section d we substitute “those” for “the Oregon energy.”

In all other respects we adopt the Utilities’ (Portland General Electric Company, Pacific Power, and Idaho Power) final proposed guideline.

ORDER

IT IS ORDERED that Guideline 8, as set forth in Appendix C, is adopted for purposes of Integrated Resource Planning as intended in Order No. 07-002.

Made, entered, and effective JUN 30 2008 .



Lee Beyer
Chairman



John Savage
Commissioner



Ray Baum
Commissioner



A party may request rehearing or reconsideration of this order pursuant to ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-014-0095. A copy of any such request must also be served on each party to the proceeding as provided by OAR 860-013-0070(2). A party may appeal this order by filing a petition for review with the Court of Appeals in compliance with ORS 183.480-183.484.

- 1 c. TRIGGER POINT ANALYSIS: The utility should identify at least one CO₂
2 compliance "turning point" scenario which, if anticipated now, would lead to, or
3 "trigger," the selection of a portfolio of resources that is substantially different from
4 the preferred portfolio. The utility should develop a substitute portfolio appropriate
5 for this trigger point scenario and compare the substitute portfolio's expected cost and
6 risk performance to that of the preferred portfolio -- under the base case and each of
7 the above CO₂ compliance scenarios. The utility should provide its assessment of
8 whether a CO₂ regulatory future that is equally or more stringent than the identified
9 trigger point will be mandated.
- 10 d. CO₂ RISK ADAPTABILITY: The utility should assess the cost, risks and benefits of
11 at least two portfolios that use different strategies and technologies to be more
12 adaptable than the preferred portfolio in the event of an unexpected future shift in the
13 CO₂ compliance requirements that causes the utility to fundamentally change course
14 – by abandoning or scaling back key operating or planned-for resources and
15 substituting new resources. The utility should employ a best cost/risk standard in
16 formulating the adaptable portfolio, and compare its cost and risks with those of the
17 preferred portfolio in the contexts of: 1) The base case scenario itself, and 2) the as-
18 shifted CO₂ compliance time profile that would cause the course change. The utility
19 should describe the timing and magnitudes of the new CO₂ requirements that would
20 elicit the indicated portfolio modifications and provide an assessment of such a CO₂
21 regulatory shift taking place.
- 22 e. OREGON COMPLIANCE PORTFOLIO: If none of the above portfolios is
23 consistent with Oregon energy policies (including state goals for reducing greenhouse
24 gas emissions) as they are applied to the utility, the utility should construct the best
25 cost/risk portfolio that achieves that consistency, present its cost and risk parameters,
26 and compare them to those of the preferred and alternative portfolios.

Joint Utilities' Redline of Staff's Final Draft Filed 1/17/08

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Guideline 8: Environmental Costs

a. BASE CASE AND OTHER COMPLIANCE SCENARIOS: The utility should construct a base-case scenario to reflect what it considers to be the most likely regulatory compliance future for carbon dioxide (CO₂), nitrogen oxides, sulfur oxides, and mercury emissions. The utility also should develop several compliance scenarios ranging from the present CO₂ regulatory level to the upper reaches of credible proposals by governing entities. Each compliance scenario should include a time profile of CO₂ compliance requirements. The utility should identify whether the basis of those requirements, or "costs," would be CO₂ taxes, a ban on certain types of resources, or CO₂ caps (with or without flexibility mechanisms such as allowance or credit trading or a safety valve). The analysis should recognize significant and important upstream emissions. Each compliance scenario should maintain logical consistency, to the extent practicable, between the CO₂ regulatory requirements and other key inputs.

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Deleted: greenhouse gas
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b. TESTING ALTERNATIVE PORTFOLIOS AGAINST THE COMPLIANCE SCENARIOS: The utility should estimate, under each of the compliance scenarios, the present value of revenue requirement (PVRR) costs and risk measures, over at least twenty years, for a set of reasonable alternative portfolios from which the preferred portfolio is selected. The utility should incorporate end-effect considerations in the analyses to allow for comparisons of portfolios containing resources with economic or physical lives that extend beyond the planning period. The utility should also modify projected lifetimes as necessary to be consistent with the compliance scenario under analysis. In addition, the utility should include, if material, sensitivity analyses on a range of reasonably possible regulatory futures for nitrogen oxides, sulfur oxides, and mercury to further inform the preferred portfolio selection.

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c. TRIGGER POINT ANALYSIS: The utility should identify at least one CO₂ compliance "turning point" scenario which, if anticipated now, would lead to, or "trigger," the selection of a portfolio of resources that is substantially different from

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Staff's Final Comments

1 the preferred portfolio. The utility should develop a substitute portfolio appropriate
2 for this trigger point scenario and compare the substitute portfolio's expected cost and
3 risk performance to that of the preferred portfolio -- under the base case and each of
4 the above CO₂ compliance scenarios. The utility should provide its assessment of
5 whether a CO₂ regulatory future that is equally or more stringent than the identified
6 trigger point will be mandated.

7 d. OREGON COMPLIANCE PORTFOLIO: If none of the above portfolios is
8 consistent with Oregon energy policies (including state goals for reducing greenhouse
9 gas emissions) as the Oregon energy policies are applied to the utility, the utility
10 should construct a resource portfolio that is consistent with the Oregon energy
11 policies, present the cost and risk parameters of the compliant resource portfolio, and
12 compare the compliant resource portfolio to the preferred and alternative portfolios.

Deleted: d. CO₂ RISK ADAPTABILITY: The utility should assess the cost, risks and benefits of at least two portfolios that use different strategies and technologies to be more adaptable than the preferred portfolio in the event of an unexpected future shift in the CO₂ compliance requirements that causes the utility to fundamentally change course -- by abandoning or scaling back key operating or planned-for resources and substituting new resources. The utility should employ a best cost/risk standard in formulating the adaptable portfolio, and compare its cost and risks with those of the preferred portfolio in the contexts of: 1) The base case scenario itself, and 2) the as-shifted CO₂ compliance time profile that would cause the course change. The utility should describe the timing and magnitudes of the new CO₂ requirements that would elicit the indicated portfolio modifications and provide an assessment of such a CO₂ regulatory shift taking place. ¶

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ADOPTED GUIDELINE 8

Guideline 8: Environmental Costs

- a. **BASE CASE AND OTHER COMPLIANCE SCENARIOS:** The utility should construct a base-case scenario to reflect what it considers to be the most likely regulatory compliance future for carbon dioxide (CO₂), nitrogen oxides, sulfur oxides, and mercury emissions. The utility also should develop several compliance scenarios ranging from the present CO₂ regulatory level to the upper reaches of credible proposals by governing entities. Each compliance scenario should include a time profile of CO₂ compliance requirements. The utility should identify whether the basis of those requirements, or “costs,” would be CO₂ taxes, a ban on certain types of resources, or CO₂ caps (with or without flexibility mechanisms such as allowance or credit trading or a safety valve). The analysis should recognize significant and important upstream emissions that would likely have a significant impact on its resource decisions. Each compliance scenario should maintain logical consistency, to the extent practicable, between the CO₂ regulatory requirements and other key inputs.
- b. **TESTING ALTERNATIVE PORTFOLIOS AGAINST THE COMPLIANCE SCENARIOS:** The utility should estimate, under each of the compliance scenarios, the present value of revenue requirement (PVRR) costs and risk measures, over at least 20 years, for a set of reasonable alternative portfolios from which the preferred portfolio is selected. The utility should incorporate end-effect considerations in the analyses to allow for comparisons of portfolios containing resources with economic or physical lives that extend beyond the planning period. The utility should also modify projected lifetimes as necessary to be consistent with the compliance scenario under analysis. In addition, the utility should include, if material, sensitivity analyses on a range of reasonably possible regulatory

futures for nitrogen oxides, sulfur oxides, and mercury to further inform the preferred portfolio selection.

- c. TRIGGER POINT ANALYSIS. The utility should identify at least one CO₂ compliance “turning point” scenario which, if anticipated now, would lead to, or “trigger” the selection of a portfolio of resources that is substantially different from the preferred portfolio. The utility should develop a substitute portfolio appropriate for this trigger-point scenario and compare the substitute portfolio’s expected cost and risk performance to that of the preferred portfolio – under the base case and each of the above CO₂ compliance scenarios. The utility should provide its assessment of whether a CO₂ regulatory future that is equally or more stringent than the identified trigger point will be mandated.
- d. OREGON COMPLIANCE PORTFOLIO: If none of the above portfolios is consistent with Oregon energy policies (including state goals for reducing greenhouse gas emissions) as those policies are applied to the utility, the utility should construct the best cost/risk portfolio that achieves that consistency, present its cost and risk parameters, and compare it to those of the preferred and alternative portfolios.