THE OREGON INDEPENDENT EVALUATOR'S FINAL CLOSING REPORT ON PACIFICORP'S 2008R-1 RENEWABLES RFP

PRESENTED TO

THE OREGON PUBLIC UTILITY COMMISSION

by

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I. INTRODUCTION AND SUMMARY

A. INTRODUCTION

This is Boston Pacific Company's Final Closing Report on PacifiCorp's 2008R-1 RFP. Boston Pacific serves as the Oregon Independent Evaluator (the "IE"). We have previously filed initial and supplemental comments on the proposed RFP design and the Final RFP as issued.

The primary purpose of this report is to provide to the Oregon Public Utility Commission (the "Commission") the Oregon IE's recommendation on acknowledgement of PacifiCorp's (the "Company's") selection of a final shortlist. This report is also intended to provide the Commission with a record of the 2008R-1 RFP process since the issuance of the final RFP in October.

B. SUMMARY

Boston Pacific, as the Oregon IE, recommends that the Commission acknowledge the final shortlist as presented. Our recommendation is based upon the following six points:

(i) The selected bids represent the resources with the greatest net benefit to ratepayers as determined by the Company's Alternative Cost of Compliance (ACC) method. The ACC method used to develop the final shortlist nets the cost of a bid against the benefit of the bid, as determined by PacifiCorp's Planning and Risk (PaR) model.

(ii) The bids represent the top options from a very competitive process. The RFP received bids from [redacted]. Some of these projects offered multiple options. In total there were [redacted] bid

options analyzed. This represents a total of over [redacted] offered, or about [redacted] times PacifiCorp's advertised need.

(iii) Boston Pacific's independent analysis confirmed that the selected bids represented the lowest cost alternatives for ratepayers, with an accounting for risk. Our independent analysis included the creation of our own cost annuity models for each bid option, a review of PacifiCorp's models, and a thorough review of the terms and conditions of each bid.

(iv) The shortlist provides a diversity of projects, bidders, and transaction types for negotiations going forward. In total, the list contains [redacted] projects from [redacted] different bidders and total supply of about [redacted] MW. These projects include [redacted]

(v) The RFP aligns with the Company's Integrated Resource Planning (IRP) process. The initial and final shortlist analyses used current assumptions from the IRP. In addition, the ACC analysis uses a model from the Company's IRP process to calculate the benefit of renewable resources.

(vi) While we have identified two issues - accuracy of output projections and asset life - [redacted], the Company has agreed to conduct an analysis at the time it makes its ultimate procurement decision to show how those two issues were reflected in their final decision.

[redacted]

[redacted]

As stated, we recommend that the Commission acknowledge the final shortlist for the six reasons stated above. Additionally, we base our recommendation on our participation in the entire RFP process from design through bid receipt and analysis to selection of the final shortlist. During that time we:

(a) Reviewed multiple drafts of the RFP;

(b) Wrote multiple sets of comments on the RFP regarding such issues as the ACC method, proposed mandatory asset sale clauses, capacity values for intermittent resources, wind integration costs, and risk adjustments for Company Benchmarks;

(c) Participated in workshops regarding transmission and wind integration;

(d) Answered bidder questions and responded to bidder concerns;

(e) Confirmed the assumptions used in the analyses;

(f) Supervised the receipt of bids in person;

(g) Confirmed the initial qualification of bidders and the confirmation of proposal details;

(h) Provided input with respect to bidder disqualifications;

(h) Reviewed the price and non-price scores for the Company's Initial Shortlist process and confirmed the Company's selection of an Initial Shortlist.

Throughout this time we were in constant contact with the Company and had multiple discussions on dozens of issues. We believe the quality of the effort is reflected in the excellent response to the RFP. All of this work has led to what we believe was a fair and transparent process which complies with Commission guidelines and will, we hope, lead to a positive result with the supply of new renewable resources for the ratepayers of Oregon.

II. RFP DESIGN AND ISSUANCE

PacifiCorp filed its request to open this docket in March of 2008.[1] Boston Pacific was selected as the IE later that month. The Company filed its initial draft RFP on April 28, 2008.[2] The RFP sought to acquire up to 500 MW of system-wide renewable resources.[3] Resources had to be able to deliver to PacifiCorp's system and be on-line by December 31, 2011.

[1] Pacific Power, Application to Open Docket and Request to Issue Solicitation for Independent Evaluator, March 4, 2008, Oregon Public Utility Commission Docket UM-1368.
[2] Pacific Power, Draft Request for Proposal for New Renewable Resources, April 28, 2008, Oregon Public Utility Commission Docket UM-1368.
[3] This was later expanded to include up to five viable bids.

Boston Pacific filed comments on the draft RFP on July 3, 2008.[4] In our comments we looked to see if the RFP as proposed would yield the best possible deal for ratepayers in terms of price, risk and reliability. To do this, we sought to answer four questions: (a) Is the process fair and transparent? (b) Does the process properly measure and assign risk? (c) Will the process likely lead to a positive result? and (d) Does the process comply with regulatory rules and guidelines? We found that the RFP had many positive factors but that there were some areas of concern. These included (a) potential undervaluation of resources due to the absence of REC values and only a low "single-point" CO_2 emissions tax in the ACC calculation, (b) lack of accounting for the higher ratepayer risks of the Company's cost-of-service benchmark resources, (c) the uncertainty, at the time, surrounding the extension of the Production Tax Credit (PTC), and (d) a proposed mandatory asset-purchase clause in the pro forma PPA.

PacifiCorp filed a revised RFP on July 28 in response to these and other issues.[5] We filed supplemental comments on some of these issues on August 22.[6] On September 15, after further discussions with the IE and Staff, PacifiCorp filed a letter with the Commission detailing several changes it would make in response to the concerns of Staff, the IE and interveners.[7] On September 18, a special public meeting was held where we presented our thoughts to the Commission regarding the RFP. We recommended approval, subject to several conditions.

The Commission ultimately approved the RFP with several conditions. These conditions included, among other things, (a) removal of the mandatory asset purchase clause, (b) risk-adjustment for company benchmark bids, (c) adjustments to the valuation process to account for the capacity benefit of renewable resources, and (d) in the case of the Company selecting bids with positive (i.e. adverse) ACC values, potential additional

[4] Boston Pacific Company, The Oregon Independent Evaluators Assessment of PacifiCorp's 2008R-1 Renewables RFP Design, July 3, 2008, Oregon Public Utility Commission Docket UM-1368.
[5] Pacific Power, Comments and Revised Draft RFP of Pacific Power, July 28, 2008, Oregon Public Utility Commission Docket UM-1368.
[6] Boston Pacific Company, Supplemental Comments of the Independent Evaluator, August 22, 2008, Oregon Public Utility Commission Docket UM-1368.
[7] Pacific Power, Letter in Response to Staff's Reply Comments and Oregon Independent Evaluators Supplemental Comments, September 16, 2008, Oregon Public Utility Commission Docket UM-1368.

assessments of Renewable Energy Credit value, Renewable Portfolio Standard requirements, and ACC values with differing CO2 emissions costs.[8]

PacifiCorp issued the RFP to the market on October 6, 2008. We filed an assessment with the Commission in November to assess how the issued RFP matched with Commission guidelines.[9] We found no major issues. For the next two months we remained available to answer bidders' questions or to pass them on to the Company. We also held follow up discussions with the Company on areas such as wind integration costs and capacity value.

Bid submission also ran according to RFP rules. Benchmark bids were to be presented prior to bid receipt, but PacifiCorp ultimately chose not to submit benchmarks in this process. Third-party bids were due on December 16, 2008. Boston Pacific was on-hand in Portland to supervise the opening of the bids. Because of a major snowstorm in the Portland area which shut down roads and the airport the receipt deadline was extended for roughly a week. Ultimately the Company made sure that all bids were received. To our knowledge there were no bids rejected because they arrived after the deadline.

Before bids could be analyzed, PacifiCorp determined that it would be required by Utah Senate Bill 202 to file an RFP in January of any year in which is expects to acquire renewable resources, regardless of whether a procurement was underway or not. Rather than file a separate RFP the Company requested and had approved a re-issuance of the 2008R-1 RFP, allowing new bidders to submit bids and current bidders to update their proposals. The call for new and revised bids was put out on January 26, 2009. The revised deadline for bid receipt was February 27, 2009. The company did receive some updates to existing proposals as well as new proposals.

[8] Oregon Public Utility Commission, Order No 08-476, September 23, 2008, Oregon Public Utility Commission Docket UM-1368.
[9] Boston Pacific Company, Comments on PacifiCorp's Final 2008R-1 RFP, November 7, 2008, Oregon Public Utility Commission Docket UM-1368.

III. BID RECEIPT AND BIDDER QUALIFICATION

Ultimately [redacted] suppliers submitted a total of [redacted] projects. Some projects contained several options, typically differences in project size, equipment, or transaction type. The total number of bid options offered was [redacted]. A list of those bid options is shown in Attachment 1.

Bids were held to several requirements: being (a) commercially operational by December 31, 2011, (b) under 300 MW in size, (c) deliverable to PacifiCorp's system, (d) a minimum output of 25,000 MWh per year, (e) unit-contingent supply, (f) qualification under RPS standards in California, Utah, Oregon and/or Washington, (g) demonstration of a right to purchase major equipment (e.g. wind turbines), and (h) a transaction in the form of a BOT, PPA or sale of an existing asset. Bidders had to provide the following information and items:

1. Pricing input sheet;
2. Appendices with estimated annual output by month and peak/off-peak period;
3. In the case of wind asset, one year of wind data;
4. Site information;
5. Permitting status;
6. Project development timelines;
7. Bidder's qualifications;
8. Bidder or credit provider's financial information;
9. Transmission plan;
10. Proposed modifications to pro forma documents;
11. A bid fee of $10,000.

Upon final receipt of bids, PacifiCorp went to work confirming bid details with bidders. Bidders provided and confirmed project information. The IE was copied or forwarded all major communications between the Company and bidders.

[redacted]

We were consulted on the decision to remove each of these bidders and bid options and we agree with the decision to remove them. The most difficult decision, in our mind, was the removal of the [redacted]. The size of these projects suggested that perhaps [redacted] The decision was made to remove these bids because we wanted to be fair to the [redacted]. We understand that PacifiCorp is looking at [redacted]

An additional decision point was reached when [redacted] proposed a delay in the process because they could not find an entity to [redacted] Because no other bidders requested a delay, the evaluation went on as scheduled. [redacted] did eventually submit a revised proposal, but not until mid-[redacted]. We discussed the revised proposal with PacifiCorp and the Utah IE but all agreed that it would be unfair to use this updated price without allowing other bidders to re-bid as well. Given the significant response already received from bidders and the amount of time already put in to analyzing the bids we did not want to further delay the analysis for the sake of [redacted]. [redacted] bid was therefore evaluated under the terms of its original proposal.

IV. INITIAL SHORTLIST DEVELOPMENT

After the bids were received and bid details were confirmed, the Company began the Initial Shortlist evaluation. The Initial Shortlist ranking is determined by a point score. Bids may receive up to a maximum of 100 points. The score is broken down into two parts, a price score analysis (worth up to 70 points) and a non-price score analysis (worth up to 30 points).

A. PRICE SCORE ANALYSIS

The price score analysis of each bid is separate and distinct from the ACC analysis used in the final shortlist ranking. To determine the price score PacifiCorp compares the costs of a bid versus the benefits of a bid using its RFP base model.

The costs of a bid are the following:

1. Energy payment (in the case of a Power Purchase Agreement)
2. Annual capital revenue requirement (in the case of a Build-Own-Transfer project)
3. Operating and maintenance costs (in the case of a Build-Own-Transfer project)
4. Wind integration costs
5. Third-Party transmission charges (if necessary)

The benefits of a bid are the following:

1. The avoided cost of wholesale market purchases (i.e. cost of electric power purchases from the market that would have been made absent the bid)
2. Renewable Energy Credits (RECs) produced by the bid
3. Production Tax Credits produced by the bid (in the case of a Build-Own-Transfer)

As an example calculation, say a bidder offered a PPA with a $70/MWh energy price. The cost of the bid in a given hour would be $70/MWh, plus $10/MWh for integration, leading to a total cost of $80/MWh. Additionally, assume that, in the same hour, the Company could have replaced this generation with a wholesale market purchase costing $60/MWh. Additionally, the bid produced a REC worth $5/MWh, leading to a total benefit of $65/MWh.

To get the point value for the price score analysis PacifiCorp divided the cost of the bid by the benefit. In our example above, they would divide the $80/MWh cost by the $65/MWh benefit. This leads to a ratio of 123%. Bids with a cost/benefit ratio of 80% or less received 70 points, bids with a cost-benefit ratio of 140% or more received no points. Any ratio in between ratio in the middle was linearly interpolated. This bid , then, received 19.8 points ([17/60]*70).

In the RFP Base model, the calculation of costs and benefits was performed for each month and peak/off-peak period in the asset lifespan and discounted back to the present day, at which point the cost/benefit ratio and price score were calculated as described in the example above. In terms of inputs, on the cost side, bidders provided the PPA energy payment price, the cost to construct a BOT project, O&M costs for a BOT project, and third-party transmission costs. PacifiCorp added the wind integration costs (which were $11.98/MWh in 2011 and escalated at 2.5% a year thereafter) and calculated the annual capital revenue requirements of BOT bids. On the benefit side, PacifiCorp calculated the avoided cost of market purchases from its Company-wide Forward Price Curve, as well as the value for RECs (using its 2007 IRP value of $5 per MWh for the first 5 years of operation of the asset, amortized over the life of the asset). For BOT bids only, PacifiCorp added the value of the Federal Production Tax Credit for all eligible output (about $34/MWh,[10] increasing at 2% per year, for the first ten years of the project). Bidders provided a schedule of annual output by month and by peak and off-peak period.

B. NON-PRICE SCORE

The non-price score was worth 30 points and consisted of five categories:

1. Conformity to RFP requirements;
2. Conformity to pro forma agreements;

[10] The $34/MWh value reflects the $21/MWh credit grossed up for taxes.

3. Development and feasibility of the proposal;
4. Site control and Permitting;
5. Operational Viability.

Each category was worth 6 points and bidders could earn either: (a) 100% of the points, (b) 75% of the points, (c) 50% of the points, (d) 25% of points or (e) no points.

The Company provided us with all of the initial shortlist models and the non-price score sheets. Some models were later revised based on our review and comment in order to correct for capacity factors, tax credits for solar bids, and for the fact that [redacted]

The Company also changed the 80% and 140% bounds to 80% and 200% respectively. This was done to make sure that the non-price score did not become too much a determinant of bid ranking.

C. RANKING THE BIDS

We independently verified the scores in three ways: (a) we reviewed each model on a line-by-line basis to make sure that the details of the bids were properly input and that all bids used the same default assumptions, (b) we reviewed the terms and conditions of the bids and compiled our own non-price scores, and (c) we made a check of PacifiCorp's models by putting key costs of each bid option into our own cost model, which determined an annual $/MWh annuity cost for the bid option. This third step was not meant to produce a definitive value for the bid, only to make a check on PacifiCorp's more complicated models. After we reviewed the bids we conferred with PacifiCorp and the Utah IE to come to a consensus on shortlist candidates.

The overall ranking of all the bid options along with our price model rank is shown in Attachment 2.[11] The top performing bids were mostly [redacted]. In order to actually select the initial shortlist, bids were divided into the categories, per the RFP, of East Wind, West Wind and Non-Wind. The bids, grouped by categories, can be seen in Attachment 3.

In order to select groups of bid options for the initial shortlist, PacifiCorp and the IEs had several goals in mind in setting the cut-off point for shortlist inclusion: (a) selecting the bids with the greatest net benefit in terms of price and non-price benefits, (b) a diversity of bidders and projects, (c) a mix of PPAs and BOTs, (d) a relatively clear split between the score of the last bid picked and the next bid that was not selected, and (e) the RFP goal that each category contain up to 1,000 MW or 5 bids. Our comments on each shortlist category are as follows.

[redacted]

This group was selected because (a) they are the bids which delivered the most net benefit to ratepayers according to this analysis, (b) they represent a diverse mix of transaction types, bidders, and projects (c) they represent an appropriate amount of

[11] Some of these projects included several options, for example, [redacted] PacifiCorp ran a separate analysis on each option. Therefore, the rankings in Attachment Two and Three include scores for all options proposed by bidders.

supply (potentially over [redacted] MW), and (d) there is a clear and distinct gap between the last bid selected (the [redacted]) and the next highest bid (the [redacted]).

We had only two major differences between our price model rankings and the Company's combined price and non-price score. First, [redacted] was ranked high by our model and scored well on the Company's price-score (earning [redacted] points, about the same as the shortlisted bids). However, it was not chosen for the shortlist because the bid did not fare well on the non-price rankings. Specific non-price deficiencies included [redacted]

Second, [redacted] did not fare well in our cost ranking, but we were willing to accept it on the list for several reasons including [redacted]

The reasons for selecting this particular group were the same as our selection of the [redacted] shortlist. The bids delivered the greatest net benefit according to this analysis, provided for adequate supply (over [redacted] MW), and represented a diversity of

bidders, projects and transaction types. In addition, there was a clear gap in scores between the last bid selected ( ) and the next highest bid, ( ).

When these results are compared to our cost models we again have general agreement on the selection, with just two differences compared to our cost model. Had we used only our model ranking to take the top bids, we would have taken the . We think PacifiCorp's choice was appropriate considering the improved risk-allocation of a PPA project. Also, PacifiCorp did not initially select the for the shortlist because they gave it a much lower non-price score that we did. We discussed this with PacifiCorp, and, after review, this non-price score was revised upward and was selected for the initial shortlist.

Although we created our own non-price scores, because we were able to verify PacifiCorp's shortlists with our simple price model, we did not undertake an intense comparison of more than a handful of PacifiCorp's non-price scores versus our own. The most prominent exceptions are noted above. Generally the non-price scores made little difference in the overall shortlist selection.

V. FINAL SHORTLIST DEVELOPMENT

A. THE ACC METHOD

To develop a final shortlist, bids on the initial shortlist were screened using the ACC method. The ACC method, while sharing similar inputs, is a separate and distinct analysis from the initial shortlist price score analysis discussed earlier. The ACC analysis is also performed within the Company's RFP base model model, and seeks to calculate the costs and benefits of a bid. For the ACC analysis the costs are:

1. Energy payment (in the case of a Power Purchase Agreement);
2. Capital revenue requirement (in the case of a Build-Own-Transfer project);
3. Operating and maintenance costs (in the case of a Build-Own-Transfer project);
4. Wind integration costs;
5. Third-Party transmission charges (if necessary).

Benefits are

1. The avoided cost of electric power purchases from the market or generation that would have been run absent renewable resources;
2. Production Tax Credits produced by the bid (in the case of a Build-Own-Transfer);
3. The ACC value.

The lists above are similar to the initial shortlist's price score analysis, but contain two major differences, both on the benefit side. First, instead of calculating the cost of wholesale market purchases that would have been made absent the bid, the ACC method looks at the cost of replacing renewable supply using both generation and market purchases under a variety of scenarios.

PacifiCorp does this by using its Planning and Risk (PaR) model. The model is an hourly dispatch model used in the IRP process which dispatches the Company's system based on changes in load, wholesale market prices, gas prices, thermal outages and hydro generation levels. To calculate the cost of replacing renewable supply, the PaR model is run twice, once with the preferred portfolio proxy renewable resources from the Company's IRP and once without. The model estimates the cost to replace these resources via least-cost dispatch, purchasing from the market, and running available generation as it sees fit. These additional costs are divided by the MWh replaced to determine a dollar per MWh cost of replacing renewable resources.

As an example, let us say that, in one hour, the PaR model is run using the IRP preferred portfolio and produces 200 MWh of generation from proxy renewable resources. These resources are removed, and PaR is re-run. In the second PaR run this 200 MWh is replaced by a combination of 100 MWh of generation from gas-fired plants, which cost $70 per MWh, and 100 MWh of market purchases, costing $80 per MWh. Thus, the avoided cost benefit for renewable resources in this hour is $75 per MWh. This calculation is "rolled up", or grouped by year, month and peak or off-peak period.

The second major difference is that the ACC value is substituted for the REC value. The ACC value is the value that, on a per-MWh basis, makes the net benefits equal *zero*. For example, if the overall avoided cost benefit of the bid is $75/MWh and the cost of the bid is $80/MWh the ACC value is $5/MWh, since $75+$5=$80. The lower the ACC value, the more beneficial the bid. Note that a negative ACC value means the bid has a positive net benefit and vice versa.

B. ADDITIONAL ANALYSES

Beyond the methods described above, there were three additions to or modifications of cost and benefit categories for this ACC analysis; they are (a) integration costs, (b) terminal value, and (c) capacity value. These modifications came

out of the RFP design process and changes in the Company's IRP process. The changes include (a) a more granular calculation of integration costs that considers both asset size and location, (b) an additional terminal value adder for BOTs and PPAs with a purchase option, to reflect the value of the Company owning the site after the life of the asset and (c) [redacted] In each case, the Company produced a description of the methodology behind these additions. For the record, we have included these descriptions as Attachment 4.

These additions ended up having no effect on the selection of bidders to the final shortlist. We reviewed and approved the methods for each of these additions. However, to be very clear, our acceptance of these methods does not mean that we agree with them 100%. Instead, our current acceptance merely means that we felt these methods were acceptable enough to use in an initial calculation. In light of the fact that they had no effect on the final shortlist selection, we did not feel the need to scrutinize them further. Had they come into play we would have gone into a more extended debate with PacifiCorp regarding some of the assumptions. We should also make it clear that PacifiCorp also views these methods as works in progress, and will be looking to further refine them in their IRP process and in future RFPs.

C. RESULTS

The results of the ACC analysis are shown in Table One. The shaded bids are the bids selected to the final shortlist.

TABLE ONE

RANKING OF BIDS FOR FINAL SHORTLIST

THIS TABLE IS NON-PUBLIC AND IS PROVIDED UNDER SEPARATE COVER

This Table shows the complete ranking of all bids which were selected to the initial shortlist. As in the initial shortlist evaluation, some bids contain multiple options (e.g. difference in turbine types or project size) so each option is the subject of a separate analysis.[12] The bids are ranked by the "ACC Value" column, which shows their ACC value prior to adjustments for capacity contribution and terminal value. Recall that the ACC value is the $/MWh benefit required to make the bid benefits equals the bid costs. The lower the ACC value, the more net benefit the bid produces.

[redacted][13]

The far right-hand column shows our cost model ranking of the bids. The ranking changed slightly from the initial shortlist ranking due to changes in [redacted] bids as a result of disclosures during the due diligence process. [redacted] This new, revised offer raised the ACC value of the bid from [redacted], out of the range of the other shortlisted bids. Based on this new, revised ACC score, the bid was removed from the final shortlist. [redacted] While this changed the bid's ACC value the bid remained in the final shortlist. [redacted] Table One reflects the revised ACC values for these [redacted] bids along with our updated price model rankings based on the revisions.

[12] For example, [redacted]

[13] Note that because these are beneficial adjustments, and a lower ACC indicates a more beneficial bid they actually reduce the ACC value. [redacted]

[redacted]

We concur with the selection of this shortlist for six reasons. First and foremost, these bids represent the resources with the greatest net benefit to ratepayers as determined by the ACC method. Looking at Table One, we see a clear split between the last bid chosen, [redacted] This gap between the selected group and the rest of the projects remains, even when we adjust the ACC to account for terminal value and capacity contributions.

Second, these bids represent the best offers from a very competitive procurement process. The RFP received bids from [redacted] suppliers offering a total of [redacted] projects. As noted, some of these projects offered multiple options. In total there were [redacted] bid options analyzed. This represents a total of over [redacted] MW offered, or about [redacted] times PacifiCorp's advertised need. The fact that there were so many bids offered gives us a good indication that we are really seeing and selecting the best bids the market can offer.

Third, Boston Pacific's independent analysis confirmed that the selected bids represented the lowest cost alternatives for ratepayers, with some accounting for risk. Our cost model essentially identified the same projects as being the least-cost options for ratepayers (the chief exception being the [redacted], which was not taken, for reasons discussed earlier). The fact that our model agrees with PacifiCorp's more complicated analysis gives us confidence that these are indeed the best choices for ratepayers. In addition, our opinion is further reinforced by (a) our auditing of the

Company's Initial shortlist price score models and the ACC models, and (b) our review and evaluation of all the terms and conditions of each bid.

Fourth, the shortlist provides a diversity of projects, bidders, and transaction types for negotiations going forward. In total the list contains four projects from four different bidders and total supply of about [redacted] MW. These projects include [redacted]

Fifth, the RFP aligns with the Company's Integrated Resource Planning (IRP) process. The alignment comes in two forms. First, the initial shortlist price score analysis and the ACC analysis used current assumptions from the IRP process in modeling the costs and benefits of the bids. Second, the ACC analysis used the Company's PaR model to value the benefits of renewable resources using the current IRP preferred portfolio of renewable resources.

Sixth, while we have identified two issues - accuracy of output projections and asset life - which could still bias the ultimate choice of resources toward a [redacted], the Company has agreed to conduct an analysis at the time it makes its ultimate procurement decision to show how those risks were reflected in their final decision. These issues are discussed further in the following section.

VI. ADDITIONAL CONCERNS GOING FORWARD

A. ADDITIONAL CONCERNS

With this selection made, PacifiCorp requested best and final offer prices from each selected project and began performing additional due diligence on the bids in order to select the final winner or winners. This additional due diligence will include reviews

of the wind data, permitting status, the equipment (i.e. turbine type) proposed, and integration costs.

Although we concur with the selection of the final shortlist, and recommend that the Commission acknowledge it, we want to make it clear that there is still much work that needs to be done. Specifically, as already noted, PacifiCorp must still analyze two issues which we believe could bias its ultimate selection towards [redacted].

The first issue is that of wind project underperformance. Studies by several of the leading wind power firms comparing predicted wind production to actual production have shown that current methods of estimating production typically overstate potential generation by between 5 and 10 percent. The reasons for this underperformance include (a) lower than expected availabilities due to poorer than expected turbine performance, and limited maintenance capabilities, (b) variations in year-to-year wind performances, (c) errors in estimating aspects such as wake effects, and (d) the use of an average-probability performance standard. We have attached three articles relating to this issue as Attachment 5.

For PPAs this underperformance risk is assigned to the bidder, because they are only paid for their output. However, for BOTs this risk is assigned to the ratepayers, since they will pay the same capital and O&M costs regardless of output. From an analytical standpoint, if the actual capacity factor for a BOT is lower than assumed for a bid evaluation this increases the actual dollar per MWh cost to the ratepayers, since the capacity price is spread over fewer megawatt-hours.

The second issue is that of asset life. There is some debate as to the asset lives of new wind projects because the wind power industry is relatively new compared to, say, the natural gas powered combined cycle plant industry. PacifiCorp assumes an asset life of 25 years for wind turbines; this matches its IRP assumptions, ratemaking treatment, and the assumptions used by some other utilities. However, it is not certain that this new

technology can achieve that asset lifespan. There are other sources that suggest this may be optimistic.

Specifically, a review of the PPAs offered in this proceeding shows that only [redacted] offered a contract term greater than [redacted] years, suggesting that [redacted] years is what the market believes to be the asset life of these turbines. Reports from the Department of Energy[14] and the Global Wind Energy Council[15] suggest that [redacted] years may actually be closer to the asset life of wind turbines.

This issue raises another potential case of [redacted] bias. For [redacted] the risks of an asset not functioning for its promised contract duration, or alternatively, higher than expected maintenance expenditures required to keep an asset functioning, are assigned to the bidder. For [redacted] these risks are assigned to the ratepayers.

B. SENSITIVITY ANALYSES

To show what these biases may mean for the ultimate bid selection, we modified PacifiCorp's ACC models to account for an across-the-board reduction in output and an increase in annual turbine O&M and capital expenditures. The increases in annual turbine O&M and capital expenditures were made to reflect the additional costs of extending the asset life of a wind plant. Specifically, we tested (a) capacity factor reductions of 5% and 10% and (b) O&M increases of 10% and 20%.

Selected sensitivity results are shown in Table Two, below. Full results are shown in Attachment 6.

[14] U.S. Department of Energy, 20% Wind Energy by 2030, July 2008, p 16.
[15] Global Wind Energy Council, Global Wind Energy Outlook, October 2008, p6.

TABLE TWO

SELECTED OUTCOMES OF SENSITIVITY ANALYSES

ACC Value ($/MWh)

(After Adjustments for Terminal Value and Capacity Contribution)

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The O&M cost increase does not change the bid rankings by a dramatic amount, adding a dollar or [redacted] to the ACC value. The effect of a [redacted] reduction in capacity factor, however, is fairly [redacted]. A [redacted] cut in output, e.g. changing the overall capacity factor from say [redacted] to [redacted], leads to a [redacted] or more increase in the [redacted] value for [redacted]. A 10% output cut, about the average underestimation according to one study, increases the ACC value by over [redacted] for [redacted]. Note that the [redacted] values do change [redacted] value a bit.

We are not alone in this concern. PacifiCorp is aware of these issues and has pledged to bring in a third-party consultant to examine the wind data provided by each bid. We think this is a constructive step, but question how much any expert will be able to ascertain from the wind data. The entire point of the studies mentioned and provided is that the best firms in the world have consistently overestimated output. In our mind, sensitivity analyses such as these are needed to test the risks allocated to ratepayers that are inherent in each [redacted] bid. In its IRP process PacifiCorp does a good job of testing

many factors that cannot be accurately predicted and can increase risks to ratepayers. These include: gas prices, load changes, wholesale power prices, and potential carbon emissions taxes. We see these issues as no different, they are variables which could increase risk to ratepayers and their variance should be analyzed.

What is most important, from our perspective, and for our recommendation to acknowledge these shortlist results, is that PacifiCorp has committed at the time it makes its ultimate procurement decision, to conduct an analysis that quantifies the risks related to capacity factor and asset life and shows how those risks were reflected in their final decision. PacifiCorp will present this analysis when it comes to the Commission for rate recovery. We would encourage the Commission to thoroughly examine this analysis to make sure that PacifiCorp has accurately reflected the risks inherent in their choice of resource.

C. ADDITIONAL REQUIREMENTS

Finally, we note that all of the selected bids have positive ACC values. This means that those bids have positive net costs, as calculated by the ACC method. In the RFP design phase we were concerned about this outcome, since the ACC method fails to consider some factors which could add value to any renewable resource.[16]

Due to this concern, the Commission put in a requirement that, should bids in the shortlist have positive ACC values, additional analysis be conducted using differing levels of CO_2 emissions costs and considering potential REC values and Renewable Portfolio Standards Requirements. The point of these analyses was to show the true value of the bids.[17]

[16] Boston Pacific Company, The Oregon Independent Evaluators Assessment of PacifiCorp's 2008R-1 Renewables RFP Design, July 3, 2008, Oregon Public Utility Commission Docket UM-1368. p 2.
[17] See Order No. 08-476 at p 2.

We feel that, since the selected bids have such small ACC values, rather than performing all the additional analysis contemplated by Commission Order, the Company can simply demonstrate that these bids are acceptable by looking at a higher level of CO_2 emissions costs. In other words, the Company can re-run its PaR model, which currently assumes an $8/ton initial price for CO_2 emissions taxes, using an incrementally higher number from its recent IRP process. This increase in emissions costs will increase the cost of replacement energy for renewable resources, and thus increase the benefits of renewable generation.

The Company has committed that, at the time it makes its ultimate procurement decision, it will re-run the PaR model with a higher CO_2 cost and use those values to recalculate ACCs for the final shortlist bids. This analysis may be submitted to the Commission either in this proceeding or as part of the rate case filing mentioned above. Because of the time that it would take to perform this analysis, we are amenable to the Company performing it on a separate track rather than waiting for the analysis to recommend acknowledging the final shortlist.

ATTACHMENT 1 – List of All Bid Options Received

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ATTACHMENT 2 – PacifiCorp's Initial Shortlist Bid Ranking

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ATTACHMENT 3 – PacifiCorp's Initial Shortlist Ranking by Category

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ATTACHMENT 4 – Descriptions of Additional Valuation Analyses as Provided by PacifiCorp

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ATTACHMENT 5 – Wind Asset Underperformance Information

ATTACHMENT 6 – Sensitivity Analyses Performed by Boston Pacific

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