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September 1, 2009

VIA ELECTRONIC FILING AND U.S. MAIL

PUC Filing Center
Public Utility Commission of Oregon
PO Box 2148
Salem, OR 97308-2148

Re: Docket No. UM 1355

Enclosed for filing in the above-referenced docket are an original and one copy of PacifiCorp's Request for Submission of Data Requests into the Record.

A copy of this filing has been served on all parties to this proceeding as indicated on the attached certificate of service.

Very truly yours,



Katherine McDowell

cc: Service List

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CERTIFICATE OF SERVICE

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I hereby certify that I served a true and correct copy of the foregoing document in

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Docket UM 1355 on the following named person(s) on the date indicated below by email

4

and first-class mail addressed to said person(s) at his or her last-known address(es)

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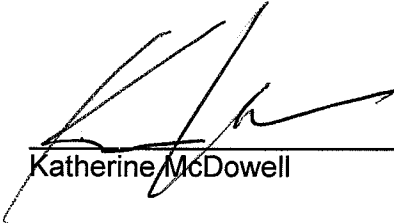
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DATED: September 1, 2009



Katherine McDowell

1 **BEFORE THE PUBLIC UTILITY COMMISSION**
2 **OF OREGON**

3 **UM 1355**

4 In the Matter of
5 THE PUBLIC UTILITY COMMISSION
6 OF OREGON,
7 Investigation into Forecasting Forced
8 Outage Rates for Electric Generating Units.

**PACIFICORP'S REQUEST FOR
SUBMISSION OF DATA REQUESTS INTO
THE RECORD**


8 Pursuant to Administrative Law Judge Allan J. Arlow's Ruling on August 20, 2009,
9 PacifiCorp d/b/a Pacific Power (the "Company") hereby submits to the Public Utility
10 Commission of Oregon ("Commission"), for inclusion in the record, the following data requests
11 and responses:

- 12 1. Staff of the Public Utility Commission of Oregon ("Staff") responses to the
13 following data requests from PacifiCorp: 4.5-4.9, 4.13-4.16, 5.1-5.4; 6.1 and 6.3-
14 6.4.
15 2. Industrial Customers of Northwest Utilities ("ICNU") responses to the following
16 data requests from PacifiCorp: 1.2, 2.8, and 3.3.

17 All requests and responses submitted for inclusion in the record are attached.

18 DATED: September 1, 2009

McDowell & Rackner PC

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21 Katherine McDowell
Attorneys for PacifiCorp

22 PACIFICORP

23 Michelle R. Mishoe
24 Pacific Power
25 Legal Counsel
26 Suite 1800
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Portland, OR 97232-2135

Request:

4.5 See Staff/300, Brown/4, lines 3-5. Did Staff apply any statistical analyses other than RMSE and Absolute Mean Error to the collar/benchmark mechanism? If yes, please describe the analyses and provide the results of those analyses.

Response:

Yes. Staff calculated the RMSE, Sum of Absolute Error and the Absolute Mean Error statistics. The results of the Sum of Absolute Error are provided in testimony at Staff/300, Brown/4, Lines 12-13 and show a 20 percent increase in forecast accuracy as compared to the simple four-year average. Also, see the spreadsheet attachment to Staff response to data request No. 4.4.

The steps used to calculate the Sum of Absolute Error are simply a sum of the absolute value of the error terms, when comparing the forecast to the actual value that occurred. Using absolute value terms is important so that positive and negative errors do not cancel.

Request:

4.6 See Staff/300, Brown/4, table at line 12 and Staff/300, Brown 5. Please compare the RMSE of 4.01 associated with the PacifiCorp's benchmark mechanism to the RMSE of 4.17 associated with Staff's benchmark mechanism/collar.

- a. Doesn't an RMSE of 4.01 demonstrate less deviation between forecast and actual results than an RMSE of 4.17? If not, why not?
- b. Is Staff's position that the FOR and EOR RMSE results are noncomparable?

Is Staff's position that FOR data may not be compared to EOR data for purposes of the analysis or operation of the collar/benchmark mechanism?

Response:

(a) Yes, an RMSE of 4.01 demonstrates less deviation between forecast and actual results than an RMSE of 4.17. However, PacifiCorp's model predicts EOR and Staff's model predicts FOR. It is inappropriate to assume that PacifiCorp's model would also have a lower RMSE if it were used to predict FOR. It is Staff's position that it is inappropriate to assume that just because the PacifiCorp model exhibits less deviation when predicting maintenance and forced outage rates (EOR) it will also exhibit less deviation if it were used to predict only forced outage rates (FOR). The RMSE gives you no information as to the models ability to predict something else. The RMSE is used to provide information on what is a more accurate forecasting model, but only when comparing models that are attempting to forecast the exact same variable.

(b) Yes. Staff's position is that the RMSE test of forecast methodologies *based* on the FOR and EOR data sets are incomparable.

No. Staff is not attempting to assess the quality of the FOR or EOR data sets. Staff is simply recognizing the inclusion of an additional variable in the EOR data set.

Request:

4.7 See Staff/300, Brown/9, lines 16-20. Please provide the analysis for the 10th percentile equivalent to the analysis Staff conducted for the 90th percentile.

Response:

The 10th percentile of the Collar mechanism would have been implemented 1 percent of the time over 153 observations.

Request:

4.8 See Staff/300, Brown/8, lines 9-15. Out of PacifiCorp's 26 thermal plants, does Staff acknowledge that PacifiCorp has 20 years of available data for all but the six jointly owned plants cited in this section of the testimony?

(a) Regarding the available data for new plants, does Staff agree that PacifiCorp would have to build or acquire a new coal plant for this to be an issue?

Response:

No. There are 7 plants that do not have 20 years worth of available data:

Craig 1

Craig 2

Colstrip 3

Colstrip 4

Hayden 1

Hayden 2

Cholla 4

(See PPL/106/Godfrey/1)

(a) Yes. The proposed collar mechanism is only applied to coal plants.

Request:

- 4.9 See Staff/300, Brown/9, lines 14-20. Please provide all workpapers and analysis supporting the conclusion that the collar/benchmark mechanism would be implemented 16% of the time at the 90th percentile.
- a. Please provide the percentage of time the collar/benchmark mechanism was implemented at the 10th percentile for the same set of observations.
 - b. Is Ms. Brown's position that 16% of PacifiCorp's outage rate results during the observation period were outliers?

Please reconcile Ms. Brown's statement at the Commission workshop that the collar/benchmark mechanism "will likely go into effect...possibly once or twice in the plant life," (Tr. 59-60), with Ms. Brown's testimony that the mechanism would have applied 16% of the time during the observation period.

Response:

The work papers and analysis were provided concurrent with testimony on August, 13 2009. Additionally, Staff e-mailed an electronic version of all work papers on August 14, 2009. Within the "Accuracy workpapers" file, tabs 300-399, 400-499, 500-599, 700-799, are the results of applying the Collar mechanism.

- (a) The Collar mechanism was implemented 1% of the time at the 10th percentile.
- (b) Yes.
- (c) At the Commission workshop Staff stated that the mechanism would *likely* go into effect possibly once or twice in a plants life. Over the observation period that Staff used to analyze the performance of the collar mechanism almost all of the 26 units are in-line with Staff's statement. There were only two units (Dave Johnston 4 and Jim Bridger 4) which had forced outage rates higher than the NERC 90th percentile point more than twice. Staff continues to believe that, with the possible exception of these two units, it is likely that the mechanism will go into effect a very limited number of times in a plant's lifetime.

Request:

- 4.13 See Staff/300, Brown/13, lines 14-19. Please provide all data and workpapers: (1) showing the corrected application of the collar/benchmark mechanism; (2) showing the lower rate of application of the collar/benchmark mechanism if it is applied as explained in this testimony. If the lower rate of application is material, please quantify the corrected rate of application as compared to the rate of application shown in the Company's analysis.

Response:

For the corrected application and lower rate of application of the collar/benchmark mechanism see Staff Work papers, provided concurrent with Supplemental Reply testimony on August 13, 2009. The corrected rate of application is 16 percent over 153 observations. The Company analysis showed an 18 percent rate of application over 153 observations.

Request:

4.14 Staff/300, Brown 19, lines 5-9. Please provide the evidence relied upon for Staff's conclusion that PGE uses the same methodology for adjusting heat rate curves as proposed by ICNU.

(a) Does PGE use heat rate curves in the referenced "PGE model"? Please explain any differences in PGE's modeling related to this issue.

Response:

Staff relied on three sources of information with respect to its conclusion that PGE's model recognizes that the derating of the unit in the model, associated with forced outages, has no impact on the unit's efficiency at converting fuel into energy.

(1) PGE's response to Staff Data Request No. 263, ICNU Data Request No. 209 in UE 197, PGE General Rate Case (see Attachment OPUC 4.14).

(2) A recent conversation with PGE staff responsible for the model.

(3) Staff's own experience with PGE's MONET model.

(a) Due to the confidentiality associated with PGE's model MONET, Staff cannot disclose or discuss its modeling methodologies or formulas.

April 30, 2008

TO: Brad Van Cleve
Industrial Customers of NW Utilities

FROM: Randy Dahlgren
Director, Regulatory Policy & Affairs

**PORTLAND GENERAL ELECTRIC
UE 197
PGE Response to ICNU Data Request 3.209
Dated April 16, 2008
Question No. 209**

Request:

It appears that the Company uses the same heat rates at minimum capacity irrespective of the level of capacity deration applied for outages in monet. For example, if Monet included a 100 mW unit with a 5% EFOR and a 50 mW minimum, it would be modeled in the program as a unit with a minimum of 47.5 mW. However, the heat rate for the unit when derated to 47.5 mW would be equal to that of the unit at minimum load (50 mW) without deration. Please confirm if this is correct, and please explain why.

Response:

This is correct. Monet is in effect modeling a 100 MW plant operating at a heat rate appropriate to 50 MW operation with the plant (operating at 50 MW) not available 5% of the time.

Request:

4.15 Staff/300, Brown 19, lines 10-13. Is Staff's recommendation that only the derated maximum and derated minimum values of the Company's heat rate curve should be adjusted? If the answer is no, please explain your answer in detail.

- (a) Does Staff believe any of the other points on the heat rate curve should be adjusted? If your answer is yes, please explain your answer in detail.
- (b) Is it Staff's understanding that the derate method accounts for both full and partial forced outages? If your answer is no, please explain your answer in detail.
- (c) Is it Staff's understanding that the heat rate associated with partial forced outages would be less efficient than the heat rate when the unit is running at its maximum?

Response:

Staff's recommendation is that the Company's modeled heat rate should be unaffected by the derate associated with forced outage rates, consistent with PGE.

(a) See the response above.

(b) Yes. The deration method accounts for both full and partial forced outages. The forced outage rate formula takes into consideration both full forced outages and calculates the equivalent forced outage hours associated with partial forced outages.

(c) Yes. In actual operations when a unit experiences a partial forced outage it would be operating at a heat rate that is less efficient than when the unit is running at its maximum capacity. In modeled operations in GRID, units operate at a lower heat rate at partial output than at maximum output.

Request:

4.16 See Staff/300, Brown 20, lines 5-13. Please provide the evidence relied upon for Staff's conclusion that PGE uses the same methodology for adjusting the minimum operating capacity as proposed by ICNU. Please explain any differences in PGE's modeling from PacifiCorp's related to this issue.

Response:

Staff relied on three sources of information with respect to its conclusion that PGE adjusts its minimum operating capacity as proposed by ICNU.

(1) PGE's response to Staff Data Request No. 263, ICNU Data Request No. 207 in UE 197, PGE General Rate Case (see Attachment OPUC 4.14).

(2) A recent conversation with PGE staff responsible for the model.

(3) Staff's own experience with PGE's MONET model.

(a) Due to the confidentiality associated with PGE's model MONET, Staff cannot disclose or discuss its modeling methodologies or formulas.

April 30, 2008

TO: Brad Van Cleve
Industrial Customers of NW Utilities

FROM: Randy Dahlgren
Director, Regulatory Policy & Affairs

**PORTLAND GENERAL ELECTRIC
UE 197
PGE Response to ICNU Data Request 3.207
Dated April 16, 2008
Question No. 207**

Request:

It appears that the Company applies the same deration factor to unit minimum capacities as it does to the maximum capacities (generally 1-EFOR in months w/o planned outages) in Monet. Please confirm whether this is correct, please explain the purpose of this adjustment, and please explain why it is proper.

Response:

This is correct. Monet is in effect modeling a 100 MW plant with a 50 MW minimum level of operation as if plant operation at 50 MW is not available 5% of the time.

Oregon Public Utility Commission Staff Response
UM 1355 - PacifiCorp's Fifth Set of Data Requests to OPUC

Dated August 17, 2009

Question Nos. 5.1 – 5.4 – Due August 25, 2009

Request:

- 5.1 See workpaper "Accuracy Workpapers.xlsx." Does Staff agree that the following units are excluded from the analyses? If yes, please explain why.
- a. Carbon 1
 - b. Carbon 2
 - c. Dave Johnston 1
 - d. Dave Johnston 2
 - e. Naughton 1
 - f. Hayden 1
 - g. Naughton 2
 - h. Dave Johnston 3
 - i. Hayden 2

Response:

Yes. At this time Staff has only requested NERC information for thermal facilities in the size range of 300 MW – 799 MW. These facilities are below 300 MW in size, therefore Staff could not apply the Collar methodology.

Request:

- 5.2 See workpaper "Accuracy Workpapers.xlsx," tab "Accuracy 300-399."
- a. Does Staff agree that the following lines have errors?
 - i. Line 5
 - ii. Line 8
 - iii. Line 32
 - b. Does the Staff agree that the formulas in the following lines are swapped?
 - i. Line 6
 - ii. Line 7

Response:

- i. Yes
- ii. No
- iii. No
- b. Yes. However, they are the exact same value.

Request:

5.3 See workpaper "Accuracy Workpapers.xlsx" tab "Accuracy 400-499."

a. Does the Staff agree that the following lines have errors?

- i. Line 29
- ii. Line 30
- iii. Line 31
- iv. Line 33
- v. Line 34

b. Does the Staff agree that the following units are missing from the calculations for this category of units? If yes, please explain why.

- i. Craig 1
- ii. Craig 2
- iii. Huntington 2
- iv. Hunter 3

Response:

a. Line 29-line 34 were in error. Please see the attached spreadsheet for the corrected worksheet. (Attachment OPUC 5.3)

b. Yes. The analysis that Staff conducted was to calculate whether or not the collar mechanism was more accurate than the simple four-year average. Since the collar mechanism is not used in those units over the observed time period they contribute nothing to the evaluation of comparing the accuracy of the simple four-year average to the Collar methodology. Including those units in the accuracy check does not change Staff's results that the Collar methodology is more accurate than the simple four-year average.

Request:

5.4 Does Staff have an estimate of the impact on overall fleet availability for PacifiCorp which would result from implementation of its collar/benchmark proposal? If so, please provide it.

Response:

No.

Oregon Public Utility Commission Staff Response
UM 1355 - PacifiCorp's Sixth Set of Data Requests to OPUC

Dated August 24, 2009

Question Nos. 6.1 – 6.4 – Due August 28, 2009

Request:

6.1 See Staffs response to PACIFICORP 4.9(a).

- a. Please provide an explanation for the apparent asymmetry in the number of excluded "outliers" as a result of using the 10th and 90th percentiles. In other words, why were only 1% of the observations defined as outliers below the 10th percentile, while 16% of the observations defined as outliers above the 90th percentile?
- b. Does the fact that outages are random events that can span dozens of days cause those events to be identified as outliers more readily than long operational runs which can span hundreds of days across multiple calendar years?
- c. Please reconcile Ms. Brown's statement at the Commission workshop that the collar/benchmark mechanism "will likely go into effect... possibly once or twice in the plant life," (Tr. 59-60), with Ms. Brown's previous response to PACIFICORP 4.9 "Over the observation period that Staff used to analyze the performance of the collar mechanism almost all of the 26 units are in-line with Staff's statement. There were only two units (Dave Johnston 4 and Jim Bridger 4) which had forced outage rates higher than the NERC 90th percentile point more than twice." Does Ms. Brown believe that the number of outlier years over a "plant life" is equivalent to the number in the observed period (1999-2007)?

Response:

(a) One possible explanation could be that the performance of PacifiCorp's resources is systematically worse (i.e., the units have higher forced outage rates) than the performance of the electric power industry's resources as a whole. This would explain more outliers on the high outage rate side of the distribution and fewer outliers on the low outage rate side of the distribution.

(b) No.

(c) As provided in response to PacifiCorp data request 3.4 (a) "Staff's statement, that the benchmark would likely only go into effect possibly once or twice in the plant life, is an intuitive statement based on the distribution of NERC data." In addition, Staff's response to PacifiCorp's data request 4.9, "At the Commission workshop Staff stated that the mechanism would *likely* go into effect possibly once or twice in a plants life. Over the

observation period that Staff used to analyze the performance of the collar mechanism almost all of the 26 units are in-line with Staff's statement. There were only two units (Dave Johnston 4 and Jim Bridger 4) which had forced outage rates higher than the NERC 90th percentile point more than twice. Staff continues to believe that, with the possible exception of these two units, it is likely that the mechanism will go into effect a very limited number of times in a plant's lifetime." Given Staff's previous responses to the question above, it should be clear that Staff is not saying that the observed time period is equivalent to the "plant life."

Request:

6.3 Staffs response to PACIFICORP 4.14 (a) is unresponsive; please answer the request with a yes or no. If the answer is no, please explain how Staff can testify that PGE uses the ICNU methodology for adjusting heat rate curves (please note that PacifiCorp has signed the protective order in this docket).

Response:

Staff is concerned that providing a yes or no answer in response to 4.14(a) would violate the informal agreement in this docket not to disclose the confidential information of one utility to other utilities participating in the docket. However, Staff can clarify its position on the ICNU methodology. Staff is not attempting to argue the technical merits of PacifiCorp's GRID model versus PGE's MONET model. Staff is simply supporting the ICNU recommendation that "PacifiCorp be required to adjust the heat rate curve of its thermal facilities so that "...it produces the same heat consumption at the derated maximum and minimum capacities as the unit would actually experience in normal operations..."¹ This assertion that PGE's model recognizes that the derate associated with forced outages has no impact on the unit's efficiency at converting fuel into energy is supported in PGE's data response to Staff in UE 197 (provided in response to PacifiCorp data request 4.14).

¹ See Staff/300, Brown/18, Lines 14-17.

Request:

6.4 Staffs response to PACIFICORP 4.15 and PACIFICORP 4.15(a) are unresponsive; please answer the requests with "yes" or "no" and provide an explanation for each portion of the Company's heat rate curve which should be adjusted.

Response:

There are many factors, for example low demand and economics, that might result in unit operation at other points on the heat rate curve other than the minimum or maximum. Staff has not considered all of the possible factors. However, Staff can clarify its position. Staff is simply discussing the concept that the derated value of a unit is not related to the ability of the unit to run at maximum efficiency. Staff is not attempting to address the issue of the technical application of this concept in the Company GRID model. Staff is willing to work with PacifiCorp, ICNU, and CUB to properly implement this concept in GRID.

**BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON**

DOCKET NO. UM 1355

ICNU'S RESPONSE TO PACIFICORP'S DATA REQUEST NO. 1.2

Data Request No. 1.2:

See ICNU/300, Falkenberg/5, lines 8-10. Please confirm that, to Mr. Falkenberg's knowledge, PacifiCorp has never proposed to use NERC data for forecasting outage rates.

Response to Data Request No. 1.2:

At present, Mr. Falkenberg does not recall any specific instances in which PacifiCorp proposed to use NERC data for forecasting outage rates. However, "never" is a very long time and, while Mr. Falkenberg has an extensive library of PacifiCorp testimony in various proceedings, Mr. Falkenberg does not have all of PacifiCorp's filings. In addition, Mr. Falkenberg has not exhaustively reviewed the PacifiCorp filings in his possession to determine if the Company has ever proposed to use NERC data for forecasting outage rates.

**BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON**

DOCKET NO. UM 1355

ICNU'S RESPONSE TO PACIFICORP'S DATA REQUEST NO. 2.8

Data Request No. 2.8:

Please confirm that the estimated impact of Mr. Falkenberg's benchmark/collar proposal is to increase overall fleet availability for PacifiCorp by approximately 0.48%. If this figure is not correct, please provide the correct estimated impact of Mr. Falkenberg's benchmark/collar proposal on overall fleet availability for PacifiCorp.

Response to Data Request No. 2.8:

Mr. Falkenberg has not performed this calculation and is not inclined to accept the Company's unsupported estimates. The Company could have provided estimates of a reasonable collar in its testimony in this case; which ICNU would have reviewed at that time.

**BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON**

DOCKET NO. UM 1355

ICNU'S RESPONSE TO PACIFICORP'S DATA REQUEST NO. 3.3

Data Request No. 3.3:

Reference to confidential workpaper "Ex 303 wp.xls," the following is an excerpt from Line 5 on tab "EX 303 and Curve:"

F.O.R.	Derated Minimum	AHR at Derated Min	Difference	Derated Maximum	AHR at Derated Max	Difference	Derated Mid Point	AHR at Derated Mid Point	Difference
7.26%	23.18	13.55	0.0000	62.14	12.02	0.0000	42.66	12.36	0.0000

Replacing 7.26% in column "F.O.R" on the same line in the above and not changing anything else produced the following:

F.O.R.	Derated Minimum	AHR at Derated Min	Difference	Derated Maximum	AHR at Derated Max	Difference	Derated Mid Point	AHR at Derated Mid Point	Difference
12.26%	21.93	13.55	0.0000	58.79	12.02	0.0000	40.36	12.36	0.0000
10.93%	22.27	13.55	0.0000	59.68	12.02	0.0000	40.97	12.36	0.0000
726.04%	-156.51	13.55	0.0000	-419.45	12.02	0.0000	-267.98	12.36	0.0000

Would the zero values in the "Difference" columns indicate the calculations are correct?

Response to Data Request No. 3.3:

ICNU objects to this data request because it asks questions based on a fundamental lack of understanding regarding how the GRID model operates. Notwithstanding the objection, ICNU answers as follows.

In this example, the Company would be using a forced outage rate of 726.04%, which is impossible as a forced outage rate can never exceed 100%. In the Company's example, the derated capacity of the unit in question would be a **negative 419.45 MW**, meaning that instead of producing electric energy the unit has become a large energy sink. In such a case, it is a bit unrealistic to assume that the example means anything. In this case, the concept of "correct" or "incorrect" really is not meaningful. However, it is worth noting that in at least one prior case, the Company has used outage rates in GRID that exceeded 100%, resulting in a unit with a negative capacity, due to an error in its ramping calculations which resulted in outage rates exceeding 100%. This was one of the many errors in the Company's ramping outage rates that have occurred over time.