

July 24, 2009

***VIA ELECTRONIC FILING
AND OVERNIGHT DELIVERY***

Oregon Public Utility Commission
Attention: Filing Center
550 Capitol Street NE, Suite 215
Salem, OR 97310-2551

Attn: Filing Center

Re: UM 1355 – Supplemental Testimony

PacifiCorp (dba Pacific Power) submits for filing an original and five (5) copies of the Supplemental Testimony of Gregory N. Duvall and David J. Godfrey in the above-referenced matter.

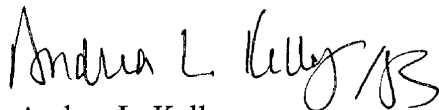
PacifiCorp respectfully requests that all data requests regarding this matter be addressed to:

By e-mail (preferred): datarequest@pacificorp.com

By regular mail: Data Request Response Center
PacifiCorp
825 NE Multnomah, Suite 2000
Portland, OR 97232

Please direct informal correspondence and questions regarding this filing to Joelle Steward, Regulatory Manager, at (503) 813-5542.

Very truly yours,



Andrea L. Kelly
Vice President, Regulation
Enclosures

cc: UM 1355 Service List

CERTIFICATE OF SERVICE

I hereby certify that I served a true and correct copy of the foregoing document on the date indicated below by email and/or US mail, addressed to said parties at his or her last-known address(es) indicated below.

Service List UM-1355

G. Catriona McCracken (W) (C)
Citizens' Utility Board of Oregon
610 SW Broadway, Suite 308
Portland, OR 97205
catriona@oregoncub.org

OPUC Dockets (W)
Citizens' Utility Board of Oregon
610 SW Broadway, Suite 308
Portland, OR 97205
dockets@oregoncub.org

Robert Jenks (W) (C)
Citizens' Utility Board of Oregon
610 SW Broadway, Suite 308
Portland, OR 97205
bob@oregoncub.org

Melinda Davison (C)
Davison Van Cleve PC
333 SW Taylor, Suite 400
Portland, OR 97204
mail@dvclaw.com

Michael T. Weirich (C)
Department of Justice
Regulated Utility and Business Section
1162 Court Street NE
Salem, OR 97301-4096
Michael.weirich@doj.state.or.us

Oregon Dockets (W)
PacifiCorp
825 NE Multnomah, Suite 2000
Portland, OR 97232
oregondockets@pacificorp.com

Michelle R. Mishoe (C) (W)
Pacific Power
825 NE Multnomah, Suite 1800
Portland, OR 97232
Michelle.mishoe@pacificorp.com

Rates & Regulatory Affairs
Portland General Electric
121 SW Salmon Street, 1WTC-0702
Portland, OR 97204
Pge.opuc.filings@pgn.com

Douglas C. Tingey
Portland General Electric
121 SW Salmon Street, 1WTC13
Portland, OR 97204
doug.tingey@pgn.com

Kelcey Brown
Oregon Public Utility Commission
P.O. Box 2148
Salem, OR 97301
kelcey.brown@state.or.us

Lisa C. Rackner (W) (C)
McDowell & Associates PC
520 SW Sixth Ave., Suite 830
Portland, OR 97204
lisa@mcd-law.com

Wendy McIndoo (W) (C)
McDowell & Associates PC
520 SW Sixth Ave., Suite 830
Portland, OR 97204
wendy@mcd-law.com

Randall J. Falkenberg (C)
RFI Consulting Inc.
PMB 362
8343 Roswell Road
Sandy Springs, GA 30350
consultrfi@aol.com

Barton L. Kline (W)
Idaho Power Company
P.O. Box 70
Boise, ID 83707-0070
bkline@idahopower.com

Gregory W. Said (W) (C)
Idaho Power Company
P.O. Box 70
Boise, ID 83707-0070
gsaid@idahopower.com

Scott Wright (W) (C)
Idaho Power Company
P.O. Box 70
Boise, ID 83707-0070
swright@idahopower.com

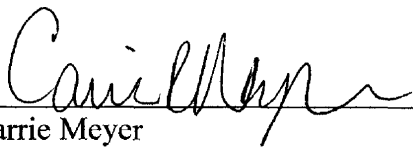
Christa Bearry (W)
Idaho Power Company
P.O. Box 70
Boise, ID 83707-0070
cbearry@idahopower.com

Lisa D. Nordstrom (W) (C)
Idaho Power Company
P.O. Box 70
Boise, ID 83707-0070
lnordstrom@idahopower.com

Tim Tatum (W)
Idaho Power Company
P.O. Box 70
Boise, ID 83707-0070
ttatum@idahopower.com

Gordon Feighner (W)
Citizens' Utility Board of Oregon
610 SW Broadway, Suite 308
Portland, OR 97205
Gordon@oregoncub.org

DATED: July 24, 2009.



Carrie Meyer
Coordinator, Administrative Services

Docket No. UM-1355
Exhibit PPL/102
Witness: David J. Godfrey

**BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON**

PACIFICORP

Supplemental Testimony of David J. Godfrey

July 2009

1 **Q. Please state your name, business address, and present position with**
2 **PacifiCorp dba Pacific Power (the “ Company”).**

3 A. My name is David J. Godfrey, my business address is 1407 West North Temple,
4 Suite 320, Salt Lake City, Utah, and my position is Director, Asset Management
5 and Compliance for PacifiCorp Energy.

6 **Q. Have you previously filed testimony in this case?**

7 A. Yes. I filed direct and rebuttal testimony in this case.

8 **Q. What is the purpose of your supplemental testimony?**

9 A. I discuss two issues: (1) the non-comparable and non-verifiable nature of the
10 NERC data Staff proposes to use in its benchmarking proposal for forced outage
11 rates; and (2) technical problems with Staff’ s proposed benchmarking proposal
12 for forced outage rates, including the fact that Staff set the 90 percent benchmark
13 level based upon a “ visual interpretation” instead of statistical analysis and that
14 Staff proposes a mismatched comparison of one year of plant data to a four-year
15 benchmark, instead of comparing four years of plant data to a four-year
16 benchmark. I also present an analysis of Staff’ s benchmarking proposal and
17 PacifiCorp’ s alternate proposal for excluding extreme events from the forced
18 outage rate.

19 **Excluding Extreme Events from Forced Outage Rates**

20 **Q. Please explain your general concerns about the use of NERC data in Staff’ s**
21 **benchmarking proposal.**

22 A. NERC generally supplies information on a summary level, meaning average unit-
23 year statistics. NERC can provide a frequency distribution of performance indices

1 broken out by fuel type and size; however, there is no guarantee that the units in
2 the frequency distribution remain constant year to year, nor is there any unit-
3 specific data readily available for the calculated indices.

4 **Q. Why would it matter whether the units in the NERC data set have different**
5 **characteristics from the Company’ s units?**

6 A. Certain characteristics are correlated with higher or lower forced outage rates. A
7 significant characteristic not included in the NERC data is the age of the unit. As
8 I mentioned in my rebuttal testimony, PacifiCorp has an aging fleet. Older units
9 are more likely to have more frequent forced outages. In addition, certain
10 operational characteristics and design features may result in higher forced outage
11 rates. For example, a unit with a scrubber is more likely to have more forced
12 outages than a unit that does not since it has an additional piece of equipment that
13 can break down and cause the unit to shut down. Operational characteristics, such
14 as the maintenance of high capacity factors, can also impact the frequency of
15 outages. The NERC data used by Staff does not differentiate between new and
16 old units, units with or without scrubbers, and units run at relatively high or
17 relatively low capacity factors. Because these factors could all materially impact
18 forced outage rates, it is unreasonable to rely on the NERC data used by Staff as a
19 basis for forecasting unit-specific forced outage rates.

20 **Q. At the Commission workshop on May 28, 2009, Staff claimed that the non-**
21 **comparability of NERC data was a “ very, very small noise factor” in the**
22 **analysis. (Commission Workshop Tr. 66.) Do you agree?**

23 A. No. The only stated basis for this position was Staff’ s “ visual interpretation” of

1 the NERC data distributions. (Commission Workshop Tr. 66.) While Staff
2 denies that the use of NERC data with comparable vintage, operating
3 characteristics and design to a utility' s fleet would improve the accuracy of Staff' s
4 benchmarking proposal, it has also acknowledged that it has performed no
5 analysis of this issue. See PPL/103 (Staff Response to PacifiCorp DR 3.11).

6 **Q. Does NERC itself recommend against benchmarking using only fuel type and**
7 **size range?**

8 A. Yes. Staff proposes to use NERC data but ignores NERC' s advice on its proper
9 application. The following quote is from the NERC website, under the
10 benchmarking tab:

11 “ Whenever we benchmark a generating plant' s
12 performance, it is vital that we start by selecting a peer group that
13 have as close a similarity in design and operating characteristics as
14 possible. Certainly, we would never compare a fossil steam unit
15 against a group that included nuclear, hydro or combined cycle
16 units. However, many benchmarking programs have assumed that
17 for fossil steam units, fuel type and size ranges are the proper
18 select criteria. We have found from our extensive benchmarking
19 studies that fuel types and especially the arbitrary size ranges (100-
20 199MW, 200-299MW, etc.) are relatively much less statistically
21 significant than other design and operational characteristics such as
22 criticality, duty cycle, vintage, pressurized/balanced draft, etc.
23 Because each individual unit is unique, our process ensures that the
24 optimal peer group is selected; balancing the need for similarity in
25 design and operations with the need for a large enough sample size
26 for statistical validity. Without this objective analysis to find the
27 optimal peer select criteria any conclusions drawn from the
28 comparisons could very well be invalid and misleading.”

29 **Q. Please explain why the NERC dataset cannot be verified.**

30 A. Staff proposes using NERC forced outage data, which are based on self reports by
31 utilities. The data are not audited or verified by a third party. As a result, there is

1 no way to determine whether the data reported to NERC are accurate or that they
2 have been reported in a uniform manner.

3 **Q. Does Staff acknowledge that it is unable to verify the NERC data due to**
4 **restricted access of the data by third parties?**

5 A. Yes. See PPL/103 (Staff Response to PacifiCorp DR 3.13). Staff also
6 acknowledges that utilities voluntarily report outage data to NERC. See PPL/103
7 (Staff Response to PacifiCorp 3.14).

8 **Q. Does Staff agree that NERC outage reports are not subject to audit by**
9 **NERC?**

10 A. No. But in support of this position, Staff relies upon a citation to NERC' s website
11 which addresses NERC' s ability to audit reliability issues. See PPL/103 (Staff
12 Response to PacifiCorp DR 3.15). This is a very different function from NERC' s
13 GAD (Generation Availability Reporting) function.

14 **Q. Has NERC ever audited PacifiCorp' s outage reports?**

15 A. No. PacifiCorp has reported outage information to NERC since the early 1980' s.
16 NERC has never audited these outage-related reports.

17 **Q. How should the Commission use NERC generation availability data?**

18 A. As I indicated in my reply testimony, as long as the Commission recognizes and
19 addresses the limitations of the NERC data set, this data could inform a prudence
20 review of fleet maintenance practices. This is very different than Staff' s
21 benchmarking proposal, however, where NERC data is used to forecast future
22 unit performance in the place of unit-specific operating data.

1 **Technical Problems With Staff’ s Benchmarking Proposal**

2 **Q. Please explain your concern about how Staff set the benchmark levels for its**
3 **benchmarking mechanism.**

4 A. Staff’ s benchmarking proposal uses the 90th and 10th percentile of NERC data as
5 the cut-off points for outlier years without any analysis or support for doing so.

6 **Q. How did Staff calculate the 90th and 10th percentiles?**

7 A. It does not appear that those amounts were calculated at all. At the Commission
8 workshop on May 28, 2009, Staff witness Ms. Kelcey Brown stated that the way
9 that she determined the 90th percentile was “ visually.” (Commission Workshop
10 Tr. 56). There is no evidence to show that Staff analyzed whether use of the 90th
11 and 10th percentiles is more appropriate than other figures Staff could have
12 chosen.

13 **Q. By setting the benchmark levels at 90 percent and 10 percent, is Staff**
14 **effectively eliminating from the comparison 20 percent of all forced outage**
15 **rates reported to NERC?**

16 A. Yes. Presumably the basis for doing so is that these forced outage rates are
17 “ extreme events” or “ outliers.” However, 20 percent of all forced outage rates
18 reported is a very large number of “ outliers.” See Staff/200, Brown/10 (indicating
19 that in the distribution example provided, 298 of 372 units fell between the 90th
20 and 10th percentile, excluding 74 units or 20 percent of all forced outage rates
21 reported).

1 **Q. Would it have been more appropriate for Staff to set a confidence level to**
2 **determine outliers than assign percentages?**

3 A. Yes. Confidence levels are set to improve or validate a data set by removing
4 outliers if they are present. On the other hand, Staff' s use of fixed percentages
5 automatically results in exclusion of 20 percent of all forced outage rates reported,
6 even if these are not truly outliers as compared to the rest of the data set.

7 **Q. Did Staff consider using a confidence interval as opposed to percentages in**
8 **designing its benchmark mechanism?**

9 A. No. Without explanation, Staff disputes that use of a 95th percentile confidence
10 level is an appropriate statistical approach for determining events that are unlikely
11 to occur. See PPL/103 (Response to PacifiCorp DR 3.3(a) and (b)).

12 **Q. Does the Company have other technical concerns about Staff' s application of**
13 **the benchmark mechanism?**

14 A. Yes. Staff proposes to calculate the NERC benchmark using a four-year average.
15 It then applies the benchmark to one year of plant performance data, instead of a
16 four-year average. Staff acknowledges that this mismatch—applying a four-year
17 average to one year of unit performance—will increase the likelihood that the
18 benchmark will apply in any given year. See PPL/103 (Response to PacifiCorp
19 DR 3.6(c)). When asked to explain why it applied the benchmark in this manner,
20 Staff pointed to another DR response, DR 3.3(d), which stated Staff' s view that
21 outage data is skewed toward the upper end of the data set. Staff provided no
22 further explanation.

1 **Q. In your opinion, does the asymmetrical distribution of the forced outage rate**
2 **data justify application of the benchmark mechanism in a mis-matched**
3 **manner?**

4 A. No. While the asymmetrical nature of the data might be relevant to the
5 calculation of where to set the benchmark, it provides no justification for applying
6 a benchmark derived from a four-year average to one year of actual performance
7 data, instead of applying it to a four-year average of actual performance data.

8 **Analysis of Proposals**

9 **Q. Have you prepared an analysis of how Staff’ s benchmarking proposal would**
10 **have operated historically for PacifiCorp?**

11 A. Yes. This analysis is attached as Confidential Exhibit PPL/104.

12 **Q. Please explain how you prepared this analysis.**

13 A. I attempted to replicate Staff’ s calculations as closely as possible. Staff’ s
14 testimony does not contain a step-by-step explanation of the calculations
15 embedded in the benchmark mechanism, however, so I generally attempted to
16 follow the benchmark example contain at Staff/201, Brown/2.

17 First, I calculated an annual forced outage rate for each unit using the Staff
18 formula shown in Staff/200, Brown/3. Next, these forced outage rate values were
19 compared to the four-year average 90th and 10th percentiles, as provided in
20 Staff/105, Brown/1-5, for each individual year in the four-year period being
21 analyzed.¹ If the calculated values for forced outage rates were higher or lower
22 than the benchmark, they were replaced with the four-year average 90th or 10th

¹ Staff/105, Brown/1-5 presented Staff’ s 90th and 10th percentile analysis of NERC data for units between only 300 and 699 MW. Accordingly, PacifiCorp’ s analysis in Confidential PPL/104 was prepared for units between only 300 and 699 MW.

1 percentile value, respectively. Finally, I calculated the four-year average using
2 these adjusted values. I calculated the four-year average using a simple average.
3 It appears from Staff/201, Brown/2 that Staff may use a weighted average based
4 upon hours to calculate the four-year average. Staff does not explain its approach
5 or rationale for using a weighted four-year average. However, in the example in
6 Staff/201, Brown/2, the difference between Staff' s weighted average and a simple
7 average is immaterial. Therefore, I elected to use a simple average in my
8 analysis.

9 **Q. What are the key conclusions from this analysis?**

10 A. The analysis shows that the 90th percentile benchmark would regularly apply to
11 PacifiCorp' s generating units in contrast to Staff' s statement at the Commission
12 workshop that the benchmark would have limited application. In fact, the
13 benchmark would systematically increase the availability percentage beyond
14 actual levels. It also shows that the 10th percentile benchmark would rarely apply,
15 demonstrating the asymmetrical quality of the mechanism.

16 **Q. Have you prepared a summary of PacifiCorp' s alternate proposal for
17 excluding extreme events?**

18 A. Yes. A narrative description of the proposal is Exhibit PPL/105. Confidential
19 Exhibit PPL/106 is an analysis demonstrating how the proposal would have
20 operated historically for PacifiCorp' s generating units.

21 **Q. Please describe your analysis demonstrating the operation of PacifiCorp' s
22 alternate proposal.**

23 A. PacifiCorp' s alternate proposal for excluding extreme events compares a unit' s

1 forced outage rate against available actual operating history to determine whether
2 the rate is anomalous. To demonstrate the operation of this proposal, I first
3 computed the Equivalent Outage Rate (“ EOR”) for each year of operating history,
4 using between 10-20 years of data, based on the amount of historical data
5 available. I then adjusted these EORs, for any single event that exceeded 28 days,
6 by removing the outage days from day 29 to the end of the event and replacing
7 these days with the same amount and type of hours from the exact number of days
8 preceding the event. Next, I determined the mean and standard deviation for the
9 adjusted EORs. I then reviewed and changed as necessary the adjusted EORs
10 using two standard deviations from the mean as an upper and lower limit on the
11 adjusted EOR. Confidential Exhibit PPL/106 highlights the EOR whenever the
12 EOR was changed to reflect the limit of two standard deviations from the mean.

13 **Q. Why is there a difference between in the 4-year averages shown in**
14 **Confidential Exhibits PPL/104 and PPL/106?**

15 A. As previously mentioned, the 4-year averages shown in Confidential PPL/104 are
16 calculated in accordance with Staff’ s proposed forced outage rate. The 4-year
17 averages shown in Confidential PPL/106 were calculated using the EOR. The
18 primary difference between these calculations is that the EOR includes
19 maintenance outages and therefore results in a higher level of unavailability. The
20 reasonableness of using the EOR was previously discussed in the Rebuttal
21 Testimony of Mr. Gregory N. Duvall, Exhibit PPL/400.

1 **Q. Why does the Company’ s proposal set the EOR limit at two standard**
2 **deviations from the mean?**

3 A. A standard deviation is commonly used to measure confidence in statistical
4 conclusions. For example, the margin of error in polling data is determined by
5 calculating the expected standard deviation in the results if the same poll were to
6 be conducted multiple times. Typically the reported margin of error is about twice
7 the standard deviation, the radius of a 95 percent confidence interval.

8 **Q. What are the key conclusions you draw from your analysis of the Company’ s**
9 **proposal?**

10 A. Confidential Exhibit PPL/106 demonstrates that the Company’ s proposal changes
11 the forced outage rate in years where that rate deviates significantly from a unit’ s
12 historical performance, but not otherwise. By excluding forced outages over 28
13 days, using past performance as a predictor of a plant’ s outage rate and by setting
14 the “ outlier” limit statistically, the Company’ s proposal is more targeted and
15 effective than Staff’ s benchmark mechanism at identifying and addressing
16 “ outlier” outage rates.

17 It also is more consistent with Staff’ s position that the mechanism would
18 have limited application. For instance, Confidential PPL/104 shows that the Staff
19 benchmark would impact the 4-year average for Dave Johnston 4 in every year
20 between 2002 and 2007. Under PacifiCorp’ s alternate proposal, however, the
21 actual EOR for the unit falls within the 95 percent confidence interval in all years
22 since 1989. PacifiCorp’ s alternate mechanism results in a 4-year average that is a
23 much truer reflection of the unit’ s performance history than Staff’ s benchmark

1 mechanism.

2 **Q. Does this conclude your supplemental testimony?**

3 A. Yes, it does.

Docket No. UM-1355
Exhibit PPL/103
Witness: David J. Godfrey

**BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON**

PACIFICORP

Exhibit Accompanying Supplemental Testimony of David J. Godfrey

Staff's Responses to Data Requests

July 2009

Request:

- 3.3 See page 56-57 of the May 28, 2009 transcript. Was Staff's goal in selecting the 90 percent and 10 thresholds to determine the level at which outage events were unlikely to occur?
- (a) Please explain why Staff set these thresholds on a "visual" basis rather than applying traditional statistical approaches for determining 95 percent or 99 percent confidence levels, equivalent to two or three standard deviations from the mean.
 - (b) Does Staff agree that application of a 95th percentile confidence level is an appropriate statistical approach for determining events that are unlikely to occur?
 - (c) Did Staff set the thresholds on a "visual" basis relying only on the distribution set forth at Staff/200, Brown/9 or did Staff review other distributions? Please provide all distributions relied upon in visually setting the thresholds.
 - (d) Does Staff agree that forced outage rate distributions are bounded by zero and asymmetrically skewed toward high forced outage rates? Did Staff consider the effects of this asymmetrical distribution in setting the 90 percent and 10 percent thresholds?
 - (e) Does Staff agree that utilities are more likely to hit the 90 percent benchmark than the 10 percent benchmark? If not, please explain.
 - (f) Is Staff's position that 20% of the forced outages reported to NERC in each year are outliers or extreme events unlikely to recur?

Response:

Yes.

- (a) Staff used the information provided by NERC in the manner that is laid out in testimony and in the referenced transcript. Staff did not consider at that time using a confidence interval.
- (b) No.
- (c) Staff relied on NERC data provided at Staff/105, Brown/1-5.
- (d) Yes, Staff agrees that the data set is bound by zero and skewed. Yes, the data points at the upper end of the data set, which positively skew the distribution, would be considered outlier events. These outlier events, especially for purposes of a four-year average forecasting methodology, will have a tendency to overweight the average in the next year.
- (e) Staff has not performed the analysis to determine whether a utility will "more likely" fall outside of the 90th versus the 10th percentile level.
- (f) No.

Request:

- 3.6 Please confirm that Staff prepares a four-year forced outage benchmark using its 90 percent/10 percent proposal and then compares this benchmark to each year within a unit's four-year forced outage rate.
- (a) If this is Staff's proposal, please explain why Staff does not compare the four-year benchmark to the unit's four-year average.
 - (b) If Staff has tested the proposal under both approaches, please provide all relevant documents and workpapers.
 - (c) Please confirm that, all else equal, comparing a four-year benchmark to the single years within the four-year average is more likely to result in application of the benchmark than comparing the four-year benchmark to the four-year average.

Response:

Yes. See Exhibit Staff/201, Brown/2.

- (a) See Staff response to 3.3(d).
- (b) Staff has not tested both approaches.
- (c) Yes. However, Staff does not consider the calculation of the 90th or 10th percentile values to be a "four-year benchmark."

Request:

- 3.11 See page 66 of the May 28, 2009 transcript. Does Staff rely on anything other than a "visual interpretation" of the NERC data for its position that vintage and other plant specific factors are a "very, very small noise factor"?
- (a) Does Staff agree that the age of a unit could impact its forced outage rate? If not, please explain.
 - (b) Does Staff agree that the operating characteristics of a unit (such as capacity factor or fuel source) could impact its forced outage rate? If not, please explain.
 - (c) Does Staff agree that design characteristics of a unit (such as criticality or the installation of scrubbers) could impact its forced outage rate? If not, please explain.
 - (d) Does Staff agree that use of NERC data with comparable plant vintage, operating characteristics and design to the utility's fleet would improve the accuracy of its benchmark proposal? If not, please explain.

Response:

Staff's response on page 66 of the May 28, 2009 transcript is as follows: "There's eight years' worth of information. If, as PGE claims, there is incentives or if the vintage were involved or all these other considerations that were taken into consideration that were somehow biasing this on an annual basis, you would not see this consistent pattern from year to year." Staff does not characterize this response as a visual interpretation.

- (a) Yes. In the first two years of a plant's life it is more likely to experience higher forced outage rates.
- (b) Staff has not performed the requested analysis.
- (c) Staff has not performed the requested analysis.
- (d) No. Staff did not request from NERC the peer group data needed to perform the requested analysis.

Request:

- 3.13 Does Staff believe that the NERC data it proposes to use in its benchmark proposal is verifiable? If so, please explain all steps that Staff has taken or proposes to take to verify the accuracy of the data upon which it will rely in the benchmark mechanism.

Response:

No. Staff is unable to “verify” the NERC information due to restricted access of the data by third parties. However, the following excerpt from the NERC web site shows the information to be widely regarded and used.

NERC reporting system, initiated by the electric utility industry in 1982, expands and extends the data collection procedures begun by the industry in 1963. NERC GADS is recognized today as a valuable source of reliability, availability, and maintainability (RAM) information. This information, collected for both total unit and major equipment groups, is used by analysts’ industry-wide in numerous applications. GADS maintains complete operating histories on more than 5,000 generating units representing 72% of the installed generating capacity in the United States. GADS is a voluntary industry program, open to all participants in the Regional Councils and any other organization (domestic or international) that operate electric generating facilities.

See <http://www.nerc.com/page.php?cid=4|43|45>

Request:

3.14 Does Staff agree that utilities voluntarily report outage data to NERC?

Response:

See Staff response to 3.13 above.

Request:

3.15 Does Staff agree that utility reports to NERC are not subject to audit by NERC?

Response:

No. The following excerpt from the NERC website clearly states that NERC actively audits utilities for determination of non-compliance.

Along with the Regional Reliability Organizations, NERC has the legal authority to enforce compliance with NERC Reliability Standards, which it achieves through a rigorous program of monitoring, audits and investigations, and the imposition of financial penalties and other enforcement actions for non-compliance.

Potential violations of reliability standards are identified through means including:

- Self-reporting by owners, operators and users of the bulk power system, of specific incidents and events
- Information provided in periodic reports:
 - Annual Compliance Reports
 - Regional Audit Reports
 - Vegetation Management Reports
- Information received by NERC from other industry participants
- Audits and other monitoring programs conducted by NERC or the Regional Entities
- Investigations by NERC or the Regional Entities

See <http://www.nerc.com/page.php?cid=1|7>

Docket No. UM-1355
CONFIDENTIAL
Exhibit PPL/104
Witness: David J. Godfrey

**BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON**

PACIFICORP

CONFIDENTIAL

Exhibit Accompanying Supplemental Testimony of David J. Godfrey

Application of Staff's Benchmark Proposal to PacifiCorp Units

July 2009

**THIS EXHIBIT IS CONFIDENTIAL
AND IS PROVIDED UNDER
SEPARATE COVER**

Docket No. UM-1355
Exhibit PPL/105
Witness: David J. Godfrey

**BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON**

PACIFICORP

Exhibit Accompanying Supplemental Testimony of David J. Godfrey

Description of PacifiCorp' s Alternative Proposal to Exclude Extreme Events

July 2009

Narrative description of PacifiCorp' s alternate proposal

Step 1: Calculate RAW EOR

1. The Company calculates the EOR values for each unit using the available data up to 20 years.

Step 2: Adjust for Extreme Events

2. Next the Company identifies single forced outage events that lasted greater than 28 days.

3. These events are truncated to 28 days. Days from 29 to the end of the event are replaced with the same amount and type of hours from the exact number of days preceding the event.

4. New EOR values are calculated for the affected years and replace the raw calculated values.

5. Next the mean, minimum, maximum, range and standard deviation values are calculated.

6. Confidence limits are established for plus or minus two standard deviations.

7. The Adjusted for Extreme Event EOR values are then compared to these confidence limits.

Step 3: Adjust for Confidence Intervals

8. If the Adjusted for Extreme Events EOR falls outside the confidence limits, this value is replaced with the confidence limit value.

Step 4: Adjust 4-year Averages

9. A 4-year Average Adjusted value is calculated for unit by means of a simple average.

10. The mean, minimum, maximum, range and standard deviation values are calculated for the 4-year adjusted averages.

Docket No. UM-1355
CONFIDENTIAL
Exhibit PPL/106
Witness: David J. Godfrey

**BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON**

PACIFICORP

CONFIDENTIAL

Exhibit Accompanying Supplemental Testimony of David J. Godfrey

Analysis of PacifiCorp' s Alternative Proposal to Exclude Extreme Events

July 2009

**THIS EXHIBIT IS CONFIDENTIAL
AND IS PROVIDED UNDER
SEPARATE COVER**

Docket No. UM-1355
Exhibit PPL/405
Witness: Gregory N. Duvall

**BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON**

PACIFICORP

Supplemental Testimony of Gregory N. Duvall

July 2009

1 **Q. Please state your name, business address, and present position with**
2 **PacifiCorp dba Pacific Power (the “ Company”).**

3 A. My name is Gregory N. Duvall, my business address is 825 NE Multnomah St.,
4 Suite 600, Portland, Oregon 97232, and my present title is Director, Long Range
5 Planning and Net Power Costs.

6 **Q. Have you previously filed testimony in this case?**

7 A. Yes. I filed rebuttal testimony in this case.

8 **Q. What is the purpose of your supplemental testimony?**

9 A. My testimony follows up on the Commission workshop on May 28, 2009, which
10 brought a number of issues in this case into sharper focus. On certain issues,
11 particularly the Staff’ s benchmarking proposal and ICNU’ s PacifiCorp-specific
12 adjustments for minimum deration and heat rate and planned maintenance
13 schedule, PacifiCorp’ s policy and analytical objections have become more clear.
14 On the balance of the issues, PacifiCorp’ s concerns have moderated, allowing the
15 Company to propose revised positions that more closely align with Staff and
16 intervenor positions in this case. PacifiCorp sought to file supplemental
17 testimony to update its case position on both the controverted and more generally
18 resolved issues.

19 **Q. Please summarize your supplemental testimony.**

20 A. My testimony addresses the policy implications and practical problems associated
21 with Staff’ s benchmarking proposal. If the Commission decides a benchmark
22 mechanism to remove extreme events from the forced outage rate is warranted, I
23 present an alternative mechanism more suitable for PacifiCorp which benchmarks

1 a plant against its own outage rate history. I demonstrate how the Company’ s
2 mechanism is more effective for PacifiCorp in accomplishing the stated goal of
3 Staff’ s benchmarking proposal, which is to remove extreme events and increase
4 forecast accuracy. Mr. David J. Godfrey, PacifiCorp’ s Director of Asset
5 Management and Compliance who filed direct and rebuttal testimony in this case,
6 sponsors the Company’ s technical analysis of the Staff’ s proposal and the
7 Company’ s alternate proposal.

8 My testimony also responds to ICNU’ s PacifiCorp-specific adjustments
9 proposed in this generic docket: minimum deration and heat rate and planned
10 maintenance outage schedule.

11 Lastly, my testimony outlines PacifiCorp’ s compromise positions on other
12 issues.

13 **Excluding Extreme Events from Forced Outage Rates**

14 **Q. Please describe Staff’ s benchmark mechanism for addressing extreme outage**
15 **events.**

16 A. Staff recommends removing “ extreme events,” by benchmarking an individual
17 unit’ s annual forced outage rate against outage rate information from the North
18 American Electric Reliability Corporation (“ NERC”). If a utility’ s reported
19 forced outage rate for a unit in a given year is higher than the 90th percentile of
20 NERC data for units of similar size and fuel type over a four-year period, Staff
21 proposes adjusting the forced outage rate to the 90th percentile. Staff would make
22 the same adjustment if the utility’ s forced outage rate for a unit fell below the 10th
23 percentile.

1 **Q. Please summarize why the Commission should reject application of Staff’ s**
2 **benchmark proposal to PacifiCorp.**

3 A. PacifiCorp believes that Staff’ s benchmarking proposal should be rejected for the
4 following reasons:

- 5 • The benchmarking proposal will decrease the accuracy of the four-year forced
6 outage forecast for PacifiCorp because it substitutes actual plant performance data
7 with non-comparable industry data. Mr. Godfrey addresses the non-comparable
8 nature of the NERC industry data in his Supplemental Testimony.
- 9 • The benchmarking proposal is ineffective in addressing the impact of extreme
10 events on the four-year forced outage forecast for PacifiCorp, such that the
11 proposal may apply in the absence of extreme events or fail to apply when
12 extreme events occur.
- 13 • Staff has not demonstrated that PacifiCorp’ s four-year forced outage forecast is
14 inaccurate as a result of extreme events or overstated as a result of the operation
15 of a PCAM.
- 16 • Because PacifiCorp does not have a PCAM mechanism, the application of the 90
17 percent benchmark reduces the Company’ s net power cost recovery without any
18 demonstration that outages which exceed the benchmark are imprudent.
- 19 • The application of an industry benchmark to reduce the Company’ s net power
20 cost recovery deviates from cost-of-service rate regulation without complying
21 with the guidelines set forth in ORS 757.212(2)-(4) for alternative forms of
22 regulation.
- 23 • Staff’ s benchmark mechanism has technical problems, including the fact that

1 Staff set the 90 percent benchmark level based upon a “ visual interpretation”
2 instead of statistical analysis and that Staff proposes a mismatched comparison of
3 one year of plant data to a four-year benchmark, instead of comparing four years
4 of plant data to a four-year benchmark. Mr. Godfrey addresses these issues in his
5 Supplemental Testimony.

6 **The Benchmark Mechanism Will Not Improve the Forced Outage Rate Forecast**

7 **Q. What is Staff’ s stated goal for its forced outage rate proposal?**

8 A. Staff has actually provided different goals for its proposal. On the one hand, Staff
9 has stated that its proposal is intended to determine whether “ the unit has incurred
10 forced outages on a scale that is abnormal compared to all other industry units.”
11 Staff/200, Brown/10. On the other hand, Staff has stated that the purpose of its
12 proposal “ is to achieve a forecasted forced outage rate that is likely to occur in the
13 test year.” Staff/200, Brown/11.

14 **Q. What is the Commission’ s objective with respect to determining forced**
15 **outage rates?**

16 A. The Commission stated that the goal in determining a method to establish forced
17 outage rates is to find “ the most accurate forecast of forced outages at the relevant
18 plants.” Order No. 07-015 at 15 (UE 180).

19 **Q. Has the Commission previously identified the key input required for an**
20 **accurate forecast of forced outage rates?**

21 A. Yes. In Order No. 07-015 at 15, the Commission stated “ that past performance is
22 the best predictor of a plant’ s outage rate.”

1 **Q. In Staff’ s Opening Testimony, does Staff expressly endorse the view that a**
2 **unit’ s historical performance is the best predictor of what will occur in the**
3 **future?**

4 A. Yes. See Staff/100, Brown/2 at 7-9.

5 **Q. Does Staff’ s benchmarking mechanism use the historical performance of a**
6 **unit to improve the accuracy of the forecast?**

7 A. No, to the contrary. In cases where the benchmark mechanism applies, the
8 proposal sets the forecast using industry average data, narrowed only by fuel type
9 and size range, in the place of the historical performance of the generating unit.

10 **Q. At the Commission workshop, Staff assured the Commission that the**
11 **benchmark was focused on removing extreme events from the forced outage**
12 **rate and “ will likely go into effect.possibly once or twice in the plant life.”**
13 **(Commission Workshop Tr. 59-60). Do you agree?**

14 A. No. First, Staff has not provided any evidence to support this statement,
15 acknowledging that it was an “ intuitive statement” based on the distribution of
16 NERC data. PPL/406 (Staff’ s Response to PacifiCorp DR 3.4). Second, Staff has
17 indicated that it is unwilling to change the design the benchmark mechanism to
18 limit its application to one or two years in the life of the plant. PPL/406 (Staff’ s
19 Response to PacifiCorp DR 3.4 (a) and (b)).

20 **Q. Did PacifiCorp review its historical plant performance data to determine**
21 **how its plants would perform under Staff’ s benchmark mechanism?**

22 A. Yes. Mr. Godfrey sponsors this analysis in his testimony. In summary, the
23 analysis showed that the 90 percent benchmark mechanism applied considerably

1 more than once or twice in the life of the plant. Indeed, in some cases, the 90
2 percent benchmark applied in several consecutive years or multiple times within a
3 small number of years. The result was a systematic reduction in plant
4 unavailability (or an increase in plant availability), especially when the
5 benchmark applied to several individual years within the four-year period. The
6 analysis also shows that while the 90 percent benchmark applies regularly, the 10
7 percent benchmark applied very rarely, demonstrating a lack of symmetry in the
8 operation of the mechanism.

9 **Q. If the benchmark mechanism applies to a unit over several consecutive years**
10 **or multiple times within a small number of years, what does that suggest in**
11 **terms of the accuracy of the resulting forecast?**

12 A. If a plant is performing above the 90 percent industry average in several
13 consecutive years or multiple times within a small number of years, the year-to-
14 year application of the benchmark mechanism to reduce the forced outage rate
15 systematically decreases the accuracy of the forced outage rate forecast. For
16 example, assume that a unit is being operated in a prudent manner, but a particular
17 factor such as vintage, coal supply or environmental equipment results in a
18 somewhat higher forced outage rate than the NERC industry average. If the unit
19 has an annual, average forced outage rate of approximately 12 percent, and the
20 90th percentile of NERC data is consistently at 11 percent, each year the
21 benchmark mechanism would operate to reduce unit unavailability in the forecast
22 by 1 percent, even though this is inconsistent with a forecast based upon the
23 actual plant operating data from the prudent and cost-effective operation of the

1 unit.

2 **Q. Has Staff explained how it can claim that its benchmark mechanism**
3 **improves the accuracy of the four-year forecast when it operates in this**
4 **manner?**

5 A. No. When asked about this in discovery, Staff did not explain how application of
6 the benchmark in several consecutive years could be justified from the standpoint
7 of increasing the accuracy of the forecast, nor did it explain how outages excluded
8 by operation of the benchmark under this scenario can be considered to be
9 extreme events or outliers. PPL/406 (Staff’ s Response to PacifiCorp DR 3.4 (d)).
10 It is clear that Staff proposes to benchmark a unit’ s forced outages to a
11 performance standard even if the four-year average of forced outages is actually
12 representative of the unit’ s forced outage rate.

13 **The Benchmark Mechanism is Ineffective at Excluding Extreme Events**

14 **Q. Staff states that its proposal is intended to address the question of whether**
15 **extreme events should be included in the forced outage rate determination.**
16 **Does Staff’ s benchmarking proposal apply only when a unit experiences an**
17 **extreme forced outage?**

18 A. No. Staff claims that the benchmarking proposal increases the accuracy of the
19 forecast by removing “ extreme events” or “ outliers.” But, the mechanism applies
20 to annual forced outage rates, rather than to individual extreme events. As a
21 result, the mechanism may not exclude an extreme outage event or may apply in a
22 year when a unit has not had an extreme outage event.

1 **Q. Has the Commission previously limited a forced outage to 28 days as a way of**
2 **mitigating the impact of an extreme forced outage event?**

3 A. Yes. In UE 191, Order No. 07-446, the Commission limited a particular forced
4 outage to 28 days for purposes of calculating a forced outage forecast.

5 **Q. Does Staff’s benchmark mechanism exclude outages over 28 days?**

6 A. No, because the mechanism is based on annual forced outage rates. See PPL/406
7 (Staff’s Response to PacifiCorp DR 3.5 (b)). In discovery, Staff indicated that it
8 is unwilling to limit the application of the mechanism so that it applies only if a
9 unit experienced an outage over 28 days in the year. PPL/406 (Staff’s Response
10 to PacifiCorp 3.5 (d)).

11 **Staff has Not Justified Application of the Benchmark Mechanism to PacifiCorp**

12 **Q. Has Staff produced any evidence demonstrating that PacifiCorp forced**
13 **outage rate is overstated as a result of the inclusion of extreme events or**
14 **outliers?**

15 A. No. Staff has acknowledged that it has not conducted any analysis of whether
16 PacifiCorp’s forced outage rate is currently overstated as a result of inclusion of
17 extreme events or outliers. PPL/406 (Staff’s Response to PacifiCorp DR 3.19).
18 Thus, there is no evidence in the record that application of the proposal to
19 PacifiCorp is warranted.

20 **Q. Does Staff justify application of the benchmark mechanism based upon the**
21 **risk of over-recovery through a power cost adjustment mechanism**
22 **(“ PCAM”)?**

23 A. Yes. Staff testified that “ the possibility of over-recovery is significant” under a

1 PCAM mechanism unless the four-year forced outage is adjusted to remove
2 extreme events. Staff/200, Brown/12. Staff claims that “ In addition to improving
3 the accuracy of the four-year average, the benchmark proposal also provides
4 mitigation to the issue of double recovery.” Staff/200, Brown/15.

5 **Q. Has Staff explained why it proposes to apply the benchmark to PacifiCorp,**
6 **which does not have a PCAM and does not present the same perceived risk of**
7 **over-recovery?**

8 A. No. PacifiCorp asked a data request on this issue. See PPL/406 (Staff’ s
9 Response to PacifiCorp 3.17). Staff responded by pointing to a different data
10 request response, PacifiCorp 3.5(e). That response cited Staff’ s general
11 explanation of the benchmark mechanism found at Staff/200, Brown/11, lines 11-
12 19. Nothing in that testimony specifically addresses the justification for
13 application of the benchmark mechanism to PacifiCorp in the absence of a
14 PCAM.

15 **Q. Should the Commission apply the benchmark mechanism to PacifiCorp on**
16 **the basis that the Commission may apply the benchmark mechanism to**
17 **PGE?**

18 A. No. PGE and PacifiCorp are not similarly situated: PGE has a PCAM unlike
19 PacifiCorp; PGE has 3 units to which the benchmark would apply, while
20 PacifiCorp has 26; and this docket was opened to address specific forced outage
21 rate concerns raised in a PGE rate case, not a PacifiCorp case. In the same way
22 that the differences between the two utilities have historically justified alternate
23 approaches to the calculation of planned outage rates, they also justify alternate

1 approaches to the calculation of forced outage rates. Finally, it is significant that
2 PGE may agree to application of the benchmark mechanism as a part of a
3 settlement, waiving the many technical and legal objections it might otherwise
4 have raised.

5 **The Benchmark Mechanism Functions Contrary to Traditional Ratemaking**

6 **Q. What is the effect of the application of the 90th percent benchmark to a**
7 **plant' s outage rate for PacifiCorp?**

8 A. The application of the 90th percent benchmark would reduce the plant' s outage
9 rate, imputing a higher level of plant availability. This imputation unfairly
10 reduces net power costs.

11 **Q. In the absence of a PCAM, is there any way for PacifiCorp to recover the**
12 **difference between the actual plant outage rate and the imputed level?**

13 A. No. The imputation would function as a permanent and unreasonable
14 disallowance.

15 **Q. Is such a disallowance consistent with traditional ratemaking principles?**

16 A. No. Staff claims that the benchmark mechanism is designed only to set a forced
17 outage rate forecast that is objectively reasonable. Semantics aside, determining
18 whether the forecast is objectively reasonable is analytically and functionally
19 indistinguishable from conducting a prudence review of the underlying costs of a
20 plant' s forced outage rate. The problem is that Staff' s benchmarking mechanism
21 conducts this review under a higher standard than a normal prudence review
22 without considering all of the necessary evidence. The result is that Staff' s
23 benchmark mechanism may function to deny recovery of prudent costs.

1 **Q. Has Staff claimed that it is “ common practice” for the Commission to use**
2 **benchmarks?**

3 A. Yes. In support of this point, Staff’ s testimony cites Staff’ s use of industry
4 information to determine the reasonableness of wind facility costs in Docket UE
5 200, PacifiCorp’ s Renewable Adjustment Clause. Staff/100, Brown/18.

6 **Q. How do you respond to Staff’ s point that the Commission previously used**
7 **benchmarks as a test of reasonableness in Docket UE 200?**

8 A. This proves my point that Staff’ s proposal is not really a forecast proposal. In
9 Docket UE 200, Staff used benchmark data to evaluate the prudence of wind
10 resources for which the Company sought recovery. Staff was not using
11 benchmark data in that case to develop a forecast, but as a measure of prudence.
12 In this case, Staff’ s proposal amounts to a prudence disallowance for forced
13 outages in excess of the 90th percentile of units in the NERC study. As Mr.
14 Godfrey discussed in his rebuttal testimony, PPL/101, it would be inappropriate to
15 assume that unusually high forced outage rates are by definition imprudent, but
16 that is exactly what Staff’ s proposal does. The Commission explicitly stated in
17 Order No. 07-446 at 20 in Docket UE 191 that it would not assume that
18 PacifiCorp will be imprudent in the test year when setting rates.

19 **Q. In discovery, did PacifiCorp ask Staff to provide all known examples of**
20 **Commission benchmarking as a forecasting tool to increase the accuracy of a**
21 **forecast?**

22 A. Yes. Staff produced other examples of benchmarking to determine whether a cost
23 level was prudent and reasonable. However, Staff produced no examples where

1 the Commission used industry benchmarks to adjust a cost forecast, especially in
2 the automatic and routine manner proposed in this case. See PPL/406 (Staff's
3 Response to PacifiCorp DR 3.2(b)).

4 **Q. Does Staff's benchmark proposal set rates based upon performance, rather**
5 **than cost of service?**

6 A. Yes. Performance-based ratemaking sets rates based on the utility meeting
7 specified performance goals. Under Staff's benchmarking proposal, a utility may
8 recover more than its prudent cost of service if it exceeds the 10 percent
9 benchmark and less than its prudent cost of service if it exceeds the 90 percent
10 benchmark. Importantly, the benchmarks are not tied to the utility's own
11 performance, but to industry averages.

12 **Q. Does Oregon law allow the Commission to implement performance-based**
13 **rates?**

14 A. Yes, but only under certain circumstances. I have been advised that under ORS
15 757.210(2)-(4), the Commission may approve an alternative form of regulation
16 plan that uses alternatives to cost-of-service rate regulation only if the conditions
17 specified by statute are met.

18 **Q. Could the Commission approve Staff's proposed benchmarking proposal by**
19 **applying an alternative form of regulation in this case?**

20 A. No. Among other reasons, ORS 757.210(2)(c) states that an alternative form of
21 regulation plan is one adopted by the Commission "upon petition by a public
22 utility." PacifiCorp has not filed such a petition, so there is no basis for the
23 Commission to adopt an alternative form of regulation plan.

1 **PacifiCorp’ s Alternative Proposal for Excluding Extreme Events**

2 **Q. Has PacifiCorp developed a new, compromise proposal for excluding**
3 **extreme events from its forced outage rate?**

4 A. Yes. PacifiCorp’ s full proposal for addressing extreme forced outages for coal
5 units is set forth in Exhibit PPL/105 and Confidential Exhibit PPL/106 to Mr.
6 Godfrey’ s testimony. PacifiCorp’ s proposal addresses the parties’ concern that
7 including extreme forced outage events in the forced outage forecast can skew test
8 year data, but PacifiCorp’ s proposal does so in a way that: (1) relies on the
9 historical performance of a generating unit as the best predictor of what will occur
10 in the future; (2) actually ensures removal of extreme events from the forecast; (3)
11 avoids concerns around back-door prudence disallowances or performance based
12 ratemaking by relying upon PacifiCorp’ s own plant data, rather than industry
13 averages; (4) avoids the technical concerns addressed in Mr. Godfrey’ s testimony
14 regarding the problematic mechanics of Staff’ s benchmarking proposal.

15 **Q. Does PacifiCorp advocate adoption of its new proposal for excluding extreme**
16 **events?**

17 A. Not necessarily. The most simple and direct method for excluding extreme events
18 from the forced outage rate is that proposed in the Company’ s direct and reply
19 testimony: removing outages in excess of 28 days and replacing the days
20 removed (from day 29 to the end of the event) with the same amount and type of
21 hours from the exact number of days preceding the event. PacifiCorp’ s new
22 proposal includes this method as the first step. This may be all that is required,
23 given that there is no evidence that PacifiCorp’ s forced outage rate is overstated

1 as a result of extreme events or that PacifiCorp is over-recovering as a result of a
2 PCAM. If the Commission is interested in adopting some form of benchmarking
3 as proposed by Staff for PacifiCorp, however, then PacifiCorp advocates adoption
4 of its proposal instead of Staff's.

5 **Q. Please explain how PacifiCorp's new proposal works.**

6 A. PacifiCorp proposes using a two-step process for addressing extreme forced
7 outages. The first step, removing lengthy outages, is described above. Second,
8 PacifiCorp would determine the mean and standard deviation for the EOR for
9 each unit using the most recent annual data for up to 20 years. The utility would
10 compare EOR/four-year average data to the values that lie two standard
11 deviations from the mean. The utility would then change any data outside these
12 limits to the upper or lower limit as appropriate. These values would then be used
13 to compute the four-year average used to forecast forced outage rates in the test
14 year.

15 **Q. Does PacifiCorp have 20 years of data for all of its coal plants?**

16 A. Yes, with the exception of jointly owned plants. In those cases, PacifiCorp
17 proposes to use all available plant data.

18 **Q. Has the Company prepared data that demonstrate how this proposal would
19 have functioned historically for PacifiCorp's fleet?**

20 A. Yes, Mr. Godfrey sponsors this analysis in his testimony as a part of Confidential
21 Exhibit PPL/106. It shows that the proposal works as intended, sporadically
22 adjusting the forced outage rate of a unit when the rate deviates significantly from
23 its historical performance pattern.

1 **Q. Has Staff explained why its proposal benchmarks against industry data**
2 **instead of a unit’ s actual operating history to exclude extreme events?**

3 A. The only explanation Staff has provided is that: “ The operating history of a plant
4 can vary in length depending on the time it has been in service.” PPL/406 (Staff’ s
5 Response to PacifiCorp DR 3.8). PacifiCorp has no new coal-fired units,
6 however, and thus lengthy operating histories are available for all of its plants.

7 **Q. Does Staff agree that use of a unit’ s actual operating history to determine**
8 **and exclude extreme events would produce a more accurate forced outage**
9 **rate forecast for a unit than use of NERC data?**

10 A. No. The only explanation Staff has provided for this position, however, is that
11 “ The operating history of a plant can vary in length depending on the time it has
12 been in service.” PPL/406 (Staff’ s Response to PacifiCorp DR 3.9). Staff’ s
13 position is contrary to Staff’ s testimony “ that the historical performance of a
14 generating unit is the best predictor of what will occur in the future.” Staff/100,
15 Brown/2 at 7-9.

16 **Q. Does Staff agree that 20 years of plant operating history is sufficient in order**
17 **to determine and exclude extreme events from a unit’ s forced outage rate?**

18 A. No. But Staff has acknowledged that it has not analyzed the question of how
19 much historical performance data would be sufficient for this purpose. PPL/406
20 (Staff’ s Response to PacifiCorp DR 3.10).

21 **Q. Why do you believe PacifiCorp’ s proposal is superior to Staff’ s**
22 **benchmarking proposal for application to PacifiCorp?**

23 A. PacifiCorp has a large fleet of plants for which it has a significant amount of

1 historical performance data. Given the amount of plant-specific data available for
2 PacifiCorp' s plants, there is no need to benchmark to generic NERC industry data
3 to exclude extreme events, especially given the many concerns addressed above
4 and in Mr. Godfrey' s testimony regarding the Staff' s benchmarking proposal.

5 **Minimum Deration/Heat Rate Curve**

6 **Q. At the May 28, 2009 Commission workshop in this docket, ICNU' s witness**
7 **Mr. Randall Falkenberg made a presentation and introduced ICNU Exhibit**
8 **No. ICNU/W. As part of this presentation, he discussed a proposal to derate**
9 **unit heat rates and minimum generation levels. Is this proposed reasonable?**

10 A. Absolutely not. Notably, on June 4, 2009, just one week after making his
11 presentation to the Commission, Mr. Falkenberg filed direct testimony on behalf
12 of Wyoming industrial customers in a PacifiCorp Wyoming power cost
13 adjustment mechanism docket that did not include either of these adjustments.
14 This is surprising given his position, which the Company disputes, that these
15 adjustments are a longstanding industry practice and are well accepted in the
16 community of production cost modeling experts.

17 **Q. On page 13 of ICNU Exhibit ICNU/W, Mr. Falkenberg discusses the**
18 **deration of the minimum capacity. He likens it to the Company' s treatment**
19 **of shared units. Is this analogy correct?**

20 A. No. Forced outages are not handled the same as joint ownership. If the Company
21 owned 80 percent of a 100 megawatt plant that had a 20 percent forced outage
22 rate, the maximum capacity of the plant after adjustment for the ownership share
23 and the forced outage deration would be 64 megawatts, not 80 megawatts as

1 suggested in his example. The Company does not derate the heat rate curve or the
2 minimum generation for forced outages at shared plants.

3 **Q. Additionally, on page 13 of ICNU Exhibit No. ICNU/W, Mr. Falkenberg**
4 **introduces the concept of “ useful” capacity. Please comment.**

5 A. This is a new definition created and introduced by ICNU for the first time at the
6 May 28, 2009 workshop with the Commission. After creating this arbitrary
7 definition for “ useful” capacity, ICNU then proposes how to model it correctly.
8 Mr. Falkenberg implies that this is necessary to capture the capacity available for
9 load following and carrying reserves.

10 **Q. Does this new argument from ICNU have merit?**

11 A. No. Derating the minimum generating level violates the physical limits of the
12 thermal units. ICNU has never provided any evidence to support why modeling
13 units at generation levels they are not capable of generating at is reasonable. This
14 newly created argument is no exception. The deration method is intended to
15 reduce the useful capacity of thermal units to reflect the fact that they are not
16 available all the time for providing generation, load following or reserves.
17 ICNU’ s proposed adjustment attempts to take back a portion of that derating and
18 should be rejected.

19 **Q. What is the impact of ICNU’ s proposal to reduce the minimum rating of**
20 **thermal units below their physical capability?**

21 A. The impact of this change is about a \$0.9 million reduction to total Company
22 NPC using the Company’ s GRID study filed in UE 207. On an Oregon basis,
23 NPC would be reduced by about \$0.25 million.

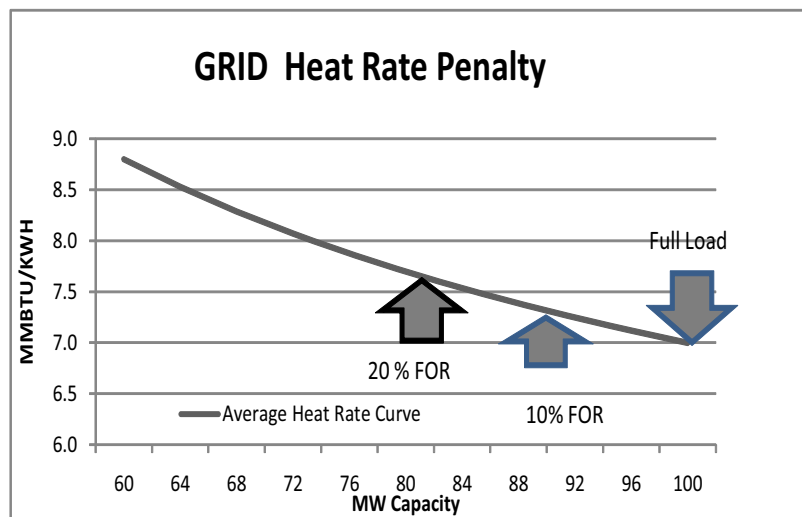
1 **Q. On page 16 of ICNU Exhibit No. ICNU/W, ICNU shows a graph of a**
2 **hypothetical heat rate. At the workshop, Mr. Falkenberg claims that when**
3 **you “shrink” the unit, you should “shrink” the heat rate curve. Do you**
4 **agree?**

5 A. No. The hypothetical graph presented by ICNU is misleading since none of the
6 Company’ s units have a forced outage rate approaching 20 percent. In addition,
7 the graph doesn’ t show the serious problem or unintended consequence that
8 “shrinking” the heat rate curve has on the majority of the heat rate curve.

9 **Q. Please explain the unintended consequences of ICNU’ s proposal to “shrink”**
10 **the heat rate curve.**

11 A. For illustrative purposes, Figure 1 below is ICNU’ s graph that was presented at
12 the Workshop.

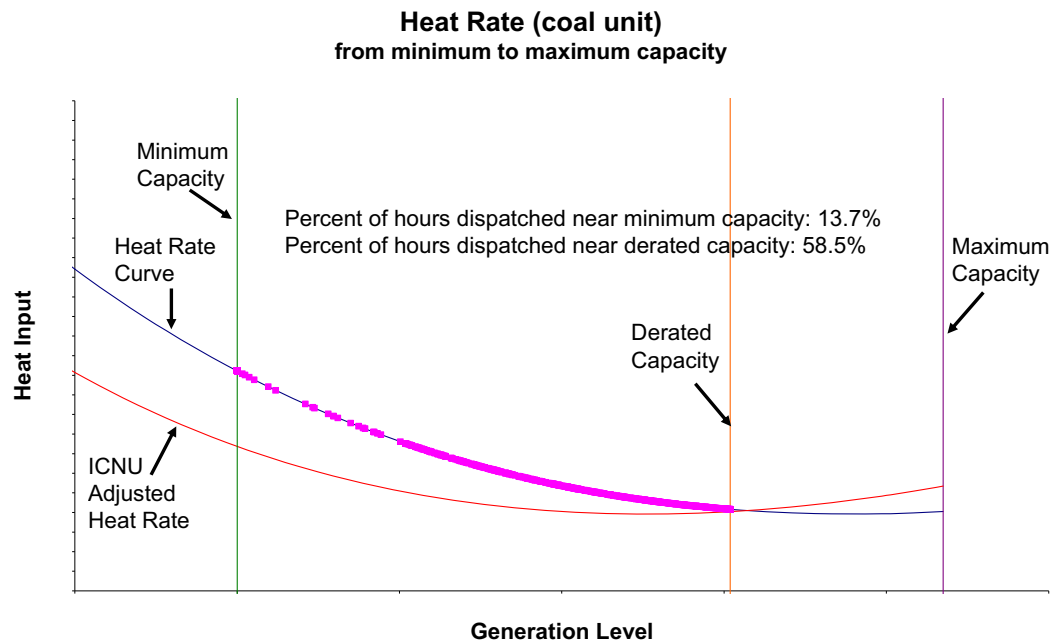
13 Figure 1



14 Figure 2 is a more accurate depiction of what happens to the heat rate curve
15 under ICNU’ s proposal.

1

Figure 2



2

3

4

5

6

7

8

9

10

11

12

13

14

15

ICNU' s proposed “ shrinking” of the heat rate curve makes it invalid in the operating range between the minimum and derated maximum generating levels.

As can be seen from these two graphs, the issue that ICNU is trying to address (i.e. the heat rate to use at the derated capacity level) is near zero in this example, and is not nearly as large as the error they create. The unintended consequence of ICNU' s proposal is to make each thermal unit more efficient than it really is based on heat rate curves that are developed from Company operating data. This has the effect of artificially lowering NPC.

Q. Have you quantified the effect of ICNU' s proposal to “ shrink” the heat rate curves?

A. Yes. System NPC decrease by \$5.6 million using the Company' s GRID study filed in UE 207. On an Oregon basis, NPC would be reduced by about \$1.4 million.

1 **Q. What is your recommendation on ICNU’ s proposal to derate the heat rate**
2 **curve and minimum generation level of thermal units?**

3 A. The Commission should reject these two proposals made by ICNU since they
4 ignore actual unit performance data and produce erroneous heat rate curves and
5 artificially assume thermal units can operate at levels below which they are
6 physically capable of operating. In addition, they artificially and unfairly reduce
7 NPC to a level the Company has no opportunity of achieving.

8 **Planned Maintenance Schedule**

9 **Q. How does ICNU propose to model PacifiCorp’ s planned maintenance**
10 **schedule?**

11 A. It is not clear. In ICNU’ s direct and reply testimony in this docket, ICNU
12 proposed an approach involving the overlay of four annual schedules based upon
13 actual historical data. ICNU claimed that this was the “ gold standard.”
14 ICNU/100, Falkenberg/36. In PacifiCorp’ s current TAM case, UE 207, ICNU
15 proposes what it refers to as a less “ complex” approach, one that modifies the
16 planned maintenance schedule prepared by the Company primarily by proposing
17 to move certain maintenance outages from the fall to the spring. While ICNU’ s
18 testimony in UE 207 states that it still stands by its comments on this issue at the
19 Commission workshop in UM 1355, it explains its change in position in UE 207
20 as one designed to limit the areas of disagreement in UM 1355. UE 207,
21 ICNU/100, Falkenberg/48-49

1 **Q. Does ICNU’ s change of position on this issue effectively eliminate this issue**
2 **from this case?**

3 A. Yes. While ICNU and PacifiCorp do not agree on all of the details of
4 PacifiCorp’ s planned maintenance schedule, ICNU’ s testimony in UE 207
5 indicates that there is no longer any significant difference between ICNU and the
6 Company on the basic modeling issues involved. Therefore, the issue is not
7 appropriately a part of this generic docket.

8 **PacifiCorp’ s Compromise Positions on Other Issues**

9 **Q. Has PacifiCorp modified its position on the other issues pending in this case**
10 **in an effort at compromise?**

11 A. Yes. On the remaining issues, the Company’ s position is now either aligned with
12 or much closer to the positions of Staff and intervenors.

13 **Q. Please outline these compromise positions.**

14 A. These positions are as follows:

- 15 • **Calculating forced outage rates on thermal plants other than**
16 **peaker plants.** PacifiCorp proposes to continue to use the Equivalent
17 Outage Rate (“ EOR”¹)and derive outage rates using the
18 Commission’ s traditional four-year historical average approach, but
19 will model this outage rate on a weekday/weekend basis. This
20 approach is comparable to Staff’ s proposal that PacifiCorp use FOR
21 and MOR modeled on a heavy load and light load basis, but it allows

¹ EOR=Equivalent Unplanned Outage Rate (“ EUOR” with Equivalent Planned Derate Hours (EPDH) added to the numerator, using the NERC definitions of EUOR and EPDH)

1 PacifiCorp to maintain consistency, both historical and multi-state, in
2 its modeling approach to this issue.

3 • **Calculating forced outage rates on peaker plants.** PacifiCorp
4 proposes to apply EFOR-d to all Gadsby units and to any new peaker
5 plants, as defined by Revised Protocol. PacifiCorp continues to object
6 to the application of EFOR-d to intermediate gas plants for the reasons
7 stated in my reply testimony and at the Commission workshop.

8 • **Calculating EOR for new plant.** PacifiCorp proposes to use the
9 manufacturer' s model specific fleet availability average to set the
10 outage rate for the first two years. PacifiCorp will phase in actual
11 operating data, using a weighted average, as the data becomes
12 available. This approach eliminates the use of the first year of actual
13 unit outage data in the calculation of EOR. This is the same position
14 that PacifiCorp has taken previously, although PacifiCorp has clarified
15 its description of its position.

16 • **Non-outage related adjustments.** PacifiCorp proposes to model its
17 ramping adjustment separate from forced outage rate. There is no
18 change on this issue, which does not appear to be controversial.

19 • **Adjustments to forced outage rate for new capital investment.**
20 PacifiCorp proposes that parties may seek an adjustment in EOR,
21 either an increase or a decrease, if: (1) a specific capital investment
22 will result in a change in unit availability; and (2) EOR is adjusted on a
23 going forward basis to avoid a double-count of the actual increase or

1 decrease in EOR. On this issue, PacifiCorp has essentially agreed to
2 the position proposed by CUB.

3 • **Calculating hydro availability.** PacifiCorp proposes to continue to
4 model forced outages of hydro facilities, as long as the modeling
5 reasonably forecasts hydro availability. PacifiCorp agrees to remove
6 hydro outages from UE 207, however, pending further refinement of
7 its modeling of this issue. While PacifiCorp maintains its position on
8 the correctness of modeling of forced outages for hydro facilities, it
9 acknowledges the need for further refinement of its modeling on this
10 issue.

11 • **Wind availability reporting.** For an initial five-year period,
12 PacifiCorp proposes to provide, concurrent with its annual results of
13 operations report, an annual report on wind availability. If the report
14 remains useful and has not been superseded by other reporting,
15 PacifiCorp may continue to provide the report after five years. The
16 annual report shall consist of: (1) projected energy by month for the
17 wind resource (MWh); (2) projected capacity factor by month for the
18 wind resource (%);(3) actual energy by month for the wind resource
19 (MWh); (4) actual capacity factor by month for the wind resource (%);
20 (5) energy variance by month (MWh) for the wind resource; (6)
21 capacity factor variance by month (%) for the wind resource; and (7)
22 wind resource availability by month as reported by the operator, along
23 with the operator' s specific definition of “ availability.” The

1 information will be provided for each wind resource at the project
2 level and will be measured via the revenue quality meter associated
3 with the large generator interconnection agreement applicable to the
4 wind resource. PacifiCorp believes that its new proposal on wind
5 availability reporting effectively gives parties all available information
6 on this issue.²

7 **Q. Does this conclude your supplemental testimony?**

8 A. Yes, it does.

² In CUB' s testimony, (CUB/100, Jenks/8), it proposed using the profile for a wind resource utilized in the RFP for the first five years of the project. Staff appeared to support this concept, at least in part. Staff/200, Brown 20-21. In response, PacifiCorp proposed to continue to use the most recent energy profile for a wind resource when setting rates, consistent with Order No. 08-548 (Docket No. UE 200). This remains PacifiCorp' s position, however, the parties now appear to be in agreement that this issue is outside the scope of this forced outage rate docket.

Docket No. UM-1355
Exhibit PPL/406
Witness: Gregory N. Duvall

**BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON**

PACIFICORP

Exhibit Accompanying Supplemental Testimony of Gregory N. Duvall

Staff's Responses to Data Requests

July 2009

Request:

- 3.2 See pages 55-56 of the May 28, 2009 Transcript and Staff/100, Brown/18. Please explain if Staff's alternative benchmark proposal to use the mean of the NERC data is "a benchmark as it's traditionally considered."
- (a) Please provide all evidence Ms. Brown relies upon for her testimony that it is "common practice" for the Commission to use benchmarks as a test of reasonableness.
 - (b) Please provide all examples of which Ms. Brown is aware where the Oregon Commission has used some form of benchmarking. In all examples provided, please indicate whether the Commission used benchmarking as a part of a prudence review to determine the reasonableness of the cost, an alternative to cost of service ratemaking or as a forecasting tool to increase the accuracy of a forecast.

Response:

Staff's alternative benchmark proposal, to use the mean of the NERC data rather than the 90th percentile value, was provided as an alternative if parties or the Commission did not believe that Staff's methodology using the 90th percentile value adequately addressed concerns of over or under-recovery. Benchmarking is a process of comparison. In most business applications those comparisons are made to best practices or a particular standard. Using the mean of the industry units as a comparison could be construed as an industry standard, and by that definition would be more of the traditional definition of a benchmark.

(a) At Staff/100, Brown/18, Lines 8-13, Staff uses the example of the docketed case UE 200, PacifiCorp's Renewable Adjustment Clause, and Staff's use of industry information to determine the reasonableness of costs for the proposed wind generation facilities.

(b) Additional examples of benchmarking for determination of reasonableness are:

In UE 180, Order No. 07-015 at 47, with respect to using decisions in other jurisdictions to determine cost of capital, the Commission stated that it would "not rely on rates authorized in other jurisdictions to determine ROE, but will use those decisions to gauge the reasonableness of our decision. See Order No. 01-777, 34."

In Order No. 95-322 at 30-31, the Commission relied on a comparison of PGE's administrative and general costs with those of Puget Sound Power and Light to reduce the company's revenue requirement.

Request:

- 3.4 See page 59-60 of the May 28, 2009 transcript. Please provide all evidence on which Staff relies for its statement that the benchmark "will likely only go into effect...possibly once or twice in the plant life."
- a. Does Staff agree that a benchmark mechanism to exclude outlier events should be designed to apply only once or twice in the life of a plant?
 - b. Is Staff willing to suspend application of the benchmark mechanism after one or two applications in the life of a particular unit?
 - c. If the benchmark mechanism applies in several consecutive years, does Staff agree that the mechanism will skew the mean?
 - d. If the benchmark applies in several consecutive years, please explain how application of the benchmark increases the accuracy of that particular unit's forced outage rate forecast. Additionally, in this scenario, please explain how outages excluded by operation of the benchmark can be considered to be extreme events or outliers.

Response:

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.

(a) No.

(b) No.

(c) The Oregon Benchmark mechanism will have no impact on the mean of the NERC data.

(d) See Staff/200, Brown/11, Lines 11-19.

Request:

- 3.5 See page 59 of the May 28, 2009 Transcript. Staff describes the purpose of its benchmark proposal as "determining what would be considered an outlier event for purposes of a four-year forecast."
- (a) Please confirm that Staff's proposal benchmarks outage data on an annual basis, not on an individual extreme event basis.
 - (b) Please confirm that Staff's benchmark proposal does not remove unit outages that are longer than 28 days from the data used to calculate the forced outage rate. Why doesn't Staff remove long outages prior to application of its benchmark mechanism?
 - (c) Is it possible that Staff's benchmark for "outlier events" could apply to a unit in a year in which no single unusual or extreme outage event occurred?
 - (d) Is Staff willing to limit its proposal so that it applies only if a unit had a major forced outage (e.g. an outage over 28 days) within the year?
 - (e) What is the justification for applying a benchmark for "outlier events" to a unit which had no extreme events within the year?

Response:

- (a) Yes. See Exhibit Staff/201, Brown/2.
- (b) See Staff response to 3.5(a). Staff's Benchmark mechanism is based on annual forced outage rates.
- (c) Yes.
- (d) No.
- (e) See Staff/200, Brown/11, Lines 11-19.

Request:

3.8 Please explain why Staff does not use a unit's actual operating history to determine and exclude extreme events.

Response:

The operating history of a plant can vary in length depending on the time it has been in service.

Request:

3.9 Does Staff agree that use of a unit's actual operating history to determine and exclude extreme events would produce a more accurate forced outage rate forecast for that unit than use of NERC data? If not, please explain.

Response:

No. See Staff response to 3.8.

Request:

- 3.10 Does Staff agree that 20 years of unit operating history is sufficient data in order to determine and exclude extreme events from the unit's forced outage rate? If not, how much historical performance data would be sufficient for this purpose?

Response:

No. Staff has not performed the requested analysis.

Request:

- 3.17 See Staff/200, Brown/12. Staff explains that the adjustment of the four-year average using the benchmark proposal is necessary to prevent over-recovery for utilities with a PCAM. Please explain why Staff proposes to apply the benchmark proposal to PacifiCorp, which does not have a PCAM and does not present the same perceived risk of over-recovery.

Response:

See Staff response to Request No. 3.5(e).

Request:

- 3.19 Does Staff believe that PacifiCorp's forced outage rate is currently overstated because it includes outliers or extreme events? If so, please provide all evidence supporting this position.

Response:

Staff has not performed the requested analysis.

