

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UM 1355

In the Matter of)	
)	CITIZENS' UTILITY BOARD
THE PUBLIC UTILITY COMMISSION)	OF OREGON'S OPENING BRIEF
OF OREGON,)	
)	
Investigation into Forecasting Forced)	
Outage Rates for Electric Generating Units.)	
_____)	

I. INTRODUCTION

This investigation into Forecasting Forced Outage Rates for Electric Generating Units was brought pursuant to ORS 756.515. The docket grew out of the proceedings in UE 180 where PGE argued that if the Commission were to change its policy from the four year rolling average to generic data (staff wanted NERC data used) it should do so in a generic docket.¹ The Commission agreed. The Commission opened this docket on November 2, 2007, to review the forecasting methodology used to predict the amount of forced outages and other downtime a generating plant will experience in a given year.² Calculating Forced Outage Rates (FOR) for individual plants is useful because it can help forecast future plant performance and thus assist with maintenance planning.³ When performing its forecast analysis Oregon generally uses forward looking test years.⁴

¹ *Re. Portland General Electric Co. Request for General Rate Revision*, Docket UE 180, Order No. 07-015 at 13 (Jan. 12, 2007). In its Order in that case the Commission stated that it sought “. . . the most accurate forecast of forced outages at the relevant plants.” It also stated that it continued to believe “that past performance is the best predictor of a plant’s outage rate.”

² UM 1355/CUB/100 Jenks 1 at 3-4.

³ UM 1355/CUB/100 Jenks 1 at 5-6.

⁴ UM 1355/CUB/100 Jenks 1 at 4-5.

The Commission likely hoped to adopt one standard - with no exceptions - for its forecasting method for thermal generating plants. It has, however, become obvious to the parties in the course of this proceeding that while a general standard can be adopted there must be room for appropriate adaptation within that standard. Each active utility party has, therefore, searched for a workable version of the standard appropriate to their individual circumstances.

Idaho Power Company (IPC), Portland General Electric (PGE) and PacifiCorp were the original active parties in this docket. At the time of this briefing PGE (with Staff, CUB and ICNU) has filed a Stipulation with supporting joint testimony settling all issues in this docket with regard to PGE⁵; IPC (with CUB and Staff) has filed a Stipulation and Joint Brief also settling all issues in this docket in regard to IPC.⁶ The sole investor owned utility that has not entered a full settlement of this docket is PacifiCorp. But even PacifiCorp has been willing to agree to certain matters and so a partial stipulation and settlement agreement was filed on PacifiCorp's behalf on September 4, 2009.⁷ The parties to the PacifiCorp partial settlement have agreed to litigate the remaining issues.

Retained for litigation in the TAM proceeding (UE 207) were non-outage related ramping adjustments and planned maintenance outages in addition to heat rate curve

⁵ Staff, ICNU, CUB, PGE UM 1355/100 Stipulation and Joint Testimony, filed September 9, 2009 by PGE.

⁶ Staff, CUB, IPC Stipulation and Joint Brief filed September 1, 2009 by IPC.

⁷ The PacifiCorp Partial Stipulation and Settlement Agreement provides at (5):

5. The Parties agree that this Stipulation and the Partial Settlement Agreement ("Agreement"), attached hereto as Appendix A, will govern the Company's future outage calculations for all thermal plants. The Agreement also governs adjustments to the Company's forced outage rates resulting from new capital investments and future wind availability reporting requirements. Nothing in this Agreement or this Stipulation prevents any Party, including the Company, from advocating in a future general rate case or other proceeding that these agreements or calculations should be revised based upon new information.

UM 1355 Partial Stipulation at 2(5).

minimum duration. The parties also agreed that PacifiCorp would continue to use a four-year average for modeling planned outages but did not agree on how to model PacifiCorp's planned outage schedule using a four-year average. The parties agreed that testimony from UM 1355 on these issues would be included in the record for UE 207.

The issues remaining for adjudication in this UM 1355 Investigation into Forecasting Forced Outage Rates for Electric Generating Units are:

1. Excluding extreme events/outliers for coal units to increase forecast accuracy, and
2. Heat rate curve-minimum deration.⁸

II. ARGUMENT

1. Events that are unlikely to happen should not be included in the FOR:⁹ The NERC collar.

CUB has testified in this docket to its belief that “the cause and duration of a given outage should be taken into account when considering whether an event should be included in the rolling average. Although it may be difficult to establish a hard-and-fast rubric that could encompass all potential causes of outages, the establishment of a general set of guidelines, coupled with a standardized review, would likely cover almost all events. Ultimately, we have to review the historic outages that a utility proposes to include in the FOR and make a judgment as to whether that outage should be used to predict future performance of the plant.”¹⁰ For example, regardless of how we decide to model the four-year average, outages that were caused by imprudent behavior should be excluded from the four-year average.¹¹

⁸ UM 1355 Partial Stipulation at 2(6).

⁹ UM 1355/CUB/100/ Jenks/ 4.

¹⁰ UM 1355/CUB/100/Jenks/ 4.

¹¹ See for example UE 191 where the Commission stated:

In addition to imprudent outages, CUB has recommended that “extreme” forced outage events should be excluded from consideration in forecasting future outage rates because they are not likely to reoccur. The parties have spent considerable time in this docket, and in other proceedings, attempting to define the extreme events that would preclude an outage from being included in the four-year average. Should all outages over a specific length of time (28 days, for example) be excluded? Should each disputed outage be litigated on a case-by-case basis? Over the course of this docket, CUB has concluded that Staff’s proposal to use NERC data as a benchmark and collar to identify forced outages that are outside of normal operations, and then to exclude them, is a fair and reasonable approach to the questions previously posed.

Four year rolling averages of the 90th and 10th percentiles of industry-wide plant performance data should be sufficient indicators of what should be considered a normal level of performance.¹² Thus, this methodology provides an

For ratemaking purposes, we do not assume that Pacific Power will be imprudent during the test year. Imprudently incurred costs are not recoverable in rates. Imprudently caused plant outages must be removed from the calculation of the outage rate for TAM purposes. We do make a distinction between outages caused by management failure (imprudence) and operator error (mistake). We recognize that mistakes are part of the real time operation of a complicated facility in a complicated system. If the rate of operator error were to appear excessive, we might also characterize that result as a management failure. Because of Pacific Power’s overall performance, there are no grounds to infer that management failure has contributed to operator error. Management failure occurs “upstairs,” away from the control room, with time for deliberation and consideration of all factors. Management failure constitutes imprudence. Pacific Power’s RCA reports are highly probative evidence of the consequences of Pacific Power’s management decisions. Re PacifiCorp, OPUC Docket No. UE 191, Order 07-446 at 20 (October 17, 2007).

¹² UM 1355/Staff/100 Brown/2-3.

objective way to eliminate extreme events from the four-year rolling average.

CUB recommends that plants with outage rates outside of the range of these

benchmarks be adjusted to the benchmark level for forecasting purposes.¹³

Staff's NERC collar is intended to provide for an improvement in outage rate forecast accuracy.^{14, 15, 16} The collar would replace "annual outage rates that fall outside of a pre-defined range with more normal ones."¹⁷ This should then result in a more accurate forecast. Staff describes the Collar this way:

The Collar is a mechanism that uses NERC data for the comparable plant size and fuel type in order to objectively determine the point at which an annual forced outage rate (FOR) would be considered an outlier. Taking 2008 as an example year, and using the most recent four years of NERC data, one calculates the 90th and 10th percentile values to compare to the reported forced outage rate in 2008. If the outage rate fell above the 90th or below the 10th percentile values the outlier value would be replaced with the NERC 90th or 10th percentile value for all four years of the four-year rolling average calculation.¹⁸

I propose the use of industry data provided by the North American electric Reliability Council (NERC) for benchmark purposes, in order to objectively define the level at which a plant has experienced an extreme forced outage event, or on a cumulative basis, an extreme forced outage year. The definition of extreme outage event generally refers to an extended time period, beyond what would be considered "normal". The benchmark will be set according to a discrete probability distribution of the industry outage information, with the benchmark set at less than 10 percent probability occurrence. The tool will allow the commission to objectively define whether the reported forced outage rate is reasonably likely to occur in the test period. If the benchmark shows that the rate is unlikely to occur in any given year, then an adjustment will be made to the forced outage rate.

¹³ UM 1355/CUB/200 Jenks-Feighner/3.

¹⁴ UM 1355/ICNU/300. Falkenberg/1 Mr. Falkenberg also believes that an outage rate collar could serve a second purpose of implementing a minimum performance requirement for a company with a PCAM. UM 1355/Staff/200 Brown/8.

¹⁵ UM 1355 Staff/200 Brown/11. "The benchmark proposal is an objective tool for the Commission to use in determining the level at which an event, or cumulative events in a calendar year, is unlikely to occur in a future period."

¹⁶ UM 1355/Staff/300 Brown/2. "The proposed benchmark mechanism, now termed "Collar" is intended to improve the predictive ability of the four-year rolling average forecast of forced outage rates. With only four years of data being used it is important that the data set reflect values that are likely to occur in the test year and would not be considered outliers."

¹⁷ UM 1355/ICNU/300 Falkenberg/1.

¹⁸ UM 1355/Staff/300 Brown/2-3. For further discussion of the Collar see Staff/100 Brown/18-21 and Staff/200 Brown 8-11.

PacifiCorp does not agree with Staff's proposal and offers a different methodology.¹⁹ As reviewed and described by Staff, "PacifiCorps['s] method is a two-step method based on a unit's history of outage rates, from 10-20 years depending on the unit. First, the Company identifies outage events that are greater than 28 days. Those days beyond the 28th day are removed and replaced with prior period information. Second, the Company calculates a confidence interval using the mean (average) of the data and the standard deviation. It then uses this mean and standard deviation to determine the 95 percent confidence level that a forced outage rate will occur."²⁰ Like Staff, CUB has concerns with this methodology. CUB agrees with Staff that the use of a limited data set, such as that available for Colstrip 3 and 4 (only ten years of data) has the tendency to create erratic results on a year to year basis. CUB notes that even a 20 year data set is likely insufficient for the same reason.²¹ CUB prefers use of the more extensive NERC data set.

PacifiCorp's concern over using NERC data rather than plant specific data would have greater validity if the proposal was to use NERC averages to determine the four-year rolling averages. But that is not what is being proposed. The proposal is to use NERC data for the limited purpose of identifying and normalizing outlier years. The Collar is only used to identify outlier years as compared to all units in the peer group by size and fuel type.²² This is a limited and appropriate use of national industry data.

Mr. Falkenberg describes the PacifiCorp proposal as "replacing a unit's worst year in history with one nearly as bad." He then describes Staff's proposal as

¹⁹ UM 1355/PPL/102 Godfrey 8-9; UM 1355 PPL/405 Duvall/13-14; UM 1355/PPL/105 and 106.

²⁰ UM 1355/Staff/300 Brown/16.

²¹ UM 1355/Staff/300 Brown/16-17.

²² UM 1355/Staff/300 Brown/9.

“exclude[ing] outage rates with data that is well outside normal operating results for the industry as a whole.” His summation is that both proposals share some shortcomings but he concludes that” [t]he Staff method is reasonable and it does not pose an unreasonably difficult standard.”²³

2. Heat Rate Curve Minimum Deration.

CUB did not submit testimony related to this matter. Having reviewed the testimony provided by the Company²⁴, Mr. Randy Falkenberg²⁵, and by Ms. Kelcey Brown²⁶, CUB supports ICNU’s position on this issue and believes that this methodology problem needs to be fixed in GRID for results to be realistic.

III. CONCLUSION

CUB respectfully recommends that the Commission adopt Staff’s proposed NERC Collar. CUB also supports ICNU’s requested heat rate curve minimum deration adjustment.

DATED this 16th day of September, 2009.

Respectfully submitted,



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²³ UM 1355/ICNU/300 Falkenberg/2.

²⁴ UM 1355/PPL/400 Duvall/1-16.

²⁵ UM 1355/ICNU/100 Falkenberg 53-57.

²⁶ UM 1355/Staff/300 Brown/18-20. “A heat rate curve is the input/output relationship for a generating unit. Generally, thermal units show a declining amount of thermal energy needed as output rises; they become more efficient at converting fuel into energy as the output increases. When PacifiCorp’s model derates the maximum capacity of the unit, (i.e. 600 MW to 540 MW) the corresponding heat rate indicates the plant is less efficient than it actually is at the operating maximum, and creates an unrealistic scenario in the GRID model.”

UM 1355 – CERTIFICATE OF SERVICE

I hereby certify that, on this 16th day of September, 2009, I served the foregoing **OPENING BRIEF OF THE CITIZENS' UTILITY BOARD OF OREGON**, in docket UM 1355 upon each party listed in the UM 1355 PUC Service List by email and, where paper service is not waived, by U.S. mail, postage prepaid, and upon the Commission by email and by sending an original and five copies by U.S. mail, postage prepaid, to the Commission's Salem offices.

(W denotes waiver of paper service)

(C denotes service of Confidential material authorized)

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