**EXHIBIT NO. ___(MLJ-15T)**
**DOCKET NO. UE-072300/UG-072301**
**2007 PSE GENERAL RATE CASE**
**WITNESS: MICHAEL L. JONES**

**BEFORE THE**
**WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

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| **WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,**<br><br>**Complainant,**<br><br>**v.**<br><br>**PUGET SOUND ENERGY, INC.,**<br><br>**Respondent.** | **Docket No. UE-072300**<br>**Docket No. UG-072301** |

# PREFILED REBUTTAL TESTIMONY (NONCONFIDENTIAL) OF MICHAEL L. JONES ON BEHALF OF PUGET SOUND ENERGY, INC.

**JULY 3, 2008**

**PUGET SOUND ENERGY, INC.**

**PREFILED REBUTTAL TESTIMONY (NONCONFIDENTIAL) OF MICHAEL L. JONES**

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**PUGET SOUND ENERGY, INC.**

**PREFILED REBUTTAL TESTIMONY (NONCONFIDENTIAL) OF MICHAEL L. JONES**

## I. INTRODUCTION

**Q. Are you the same Michael L. Jones who submitted direct testimony in this proceeding on December 3, 2007 on behalf of Puget Sound Energy, Inc. ("PSE" or "the Company")?**

A. Yes. On December 3, 2007, I filed direct testimony, Exhibit No. ___(MLJ-1CT), and thirteen supporting exhibits, Exhibit No. ___(MLJ-2) through Exhibit No. ___(MLJ-14).

**Q. Please summarize your rebuttal testimony.**

A. My testimony responds to (1) Commission Staff's proposal to adjust the range of historical forced outages when developing the forced outage rates used in AURORA for PSE's Colstrip Steam Electric Station generating units ("Colstrip"), *See* page 11 of Exhibit No. ___T(APB-T), and (2) Commission Staff's and Public Counsel's recommendation to extend the depreciation life of Colstrip to sixty years. *See* Exhibit No. ___(WHW-1T), page 8, lines 3-4, and Exhibit No. ___(CWK-1T), page 12, line 4.

## II. COLSTRIP FORCED OUTAGE RATE

**Q. Do you agree with Commission Staff's proposal to change the method for determining the Colstrip forced outage rate?**

A. No. PSE has consistently used a forced outage rate ("FOR") for Colstrip based on the average of the actual outage rates from the most recent seven-year period as the basis for Colstrip outages in AURORA modeling. The seven-year average methodology was first approved by this Commission in 1993, and PSE has applied this methodology consistently from 1993 to the present.[1]

Commission Staff rejected this long-standing approach and recommended an adjustment that removes from the outage calculations those years with "both a higher and a lower than 'normal' range." *See* page 9 of Exhibit No. ___(APB-T). Commission Staff provided no explanation, either in the testimony or in its response to PSE's data requests, regarding the criteria used to determine which data was to be removed and which would be retained. Commission Staff's proposal would result in one year being removed from the Colstrip Unit 1 and 2 FOR calculation and two years from the Colstrip Unit 3 and 4 FOR calculation supporting PSE's April 2008 Power Cost Projection, set forth in the Prefiled Supplemental Testimony of Mr. David Mills, Exhibit No. ___(DEM-9T). In

[1] *See Wash. Utils. & Transp. Comm'n.*, Docket No. UE-920499 *et. al.*, Eleventh Supplemental Order (Sep. 21, 1993) at 41.

contrast, PSE's method uses actual historical data without any adjustments such as those proposed by Commission Staff.

Unlike PSE's method, Commission Staff's proposal is not symmetric (it does not eliminate the same number of “high” and “low” years), and it uses no defined or repeatable methodology to determine which historical data should be used and which should be eliminated. Moreover, Commission Staff's approach eliminates a significant amount of available data (14% for Colstrip 1 and 2; 28% for Colstrip 3 and 4) without determining that the discarded years constitute "outliers." This approach randomly eliminates years and is inconsistent with the previous methodology approved by this Commission, which relies on a mathematical calculation that is consistent, known and repeatable.

**Q. Isn't it true that the forced outage rate reported to the North American Electric Reliability Corporation ("NERC") Generator Availability Data System is lower than the forced outage rate PSE used in AURORA? *See* Exhibit No. ___T(APB-1T), page 12.**

A. Yes. The FOR used in PSE’s AURORA modeling is not the same as the forced outage rate reported to the NERC Generator Availability Data System ("GADS") database. The GADS forced outage rate is lower than the FOR PSE uses in AURORA because the GADS forced outage rate includes only the time that a unit is *forced* offline or suffers a *forced* derating. PSE’s FOR is calculated to include all forced *and planned* outages and deratings except the planned triennial

overhaul on each unit, which is scheduled specifically in the AURORA modeling. For this reason, PSE's FOR will always be higher than the NERC GADS forced outage rate.

Also, the AURORA model uses three data inputs for Colstrip. In addition to FOR, PSE's AURORA modeling also uses the same seven-year average of heat rate and variable cost ($/MMBtu), and PSE's AURORA modeling uses these same assumptions for both PSE's ownership interest in Colstrip and the Colstrip interest purchased under contract from NorthWestern Energy. Commission Staff testimony did not address how these inputs would be dealt with. Staff testimony also does not adjust the Colstrip energy purchased under contract from NorthWestern Energy. Commission Staff did not propose any changes to PSE's outage rate related to its contract with NorthWestern Energy.

**Q. How do you respond to Commission Staff's concern that certain years used in PSE's seven-year forced outage rate are outliers and should be removed?**

A. Commission Staff proposes no specific criteria for determining or defining "outliers". Therefore, Commission Staff's proposal lacks the consistency and repeatability needed to determine how their adjustment would be applied going forward.

**Q. Is the Company proposing a change in the calculation of the Colstrip forced outage rate?**

Yes. While I believe that the seven-year forced outage rate is appropriate for ratemaking purposes because of the reasons described above, PSE is willing to adjust this calculation to address concerns that the seven-year average delays customers' receipt of the benefit of recent efficiency improvements made at Colstrip. For this reason, PSE proposes to apply a four-year average of the historical outages to determine the FOR used in the AURORA modeling in this and subsequent proceedings. The four-year average PSE proposes captures the full period since the above-referenced efficiency improvements were implemented. In the modeling included in Mr. Mills's rebuttal testimony, Exhibit No. ___(DEM-12T), a four-year average is used for FOR, heat rates and $/MMBtu, and these rates are used for modeling both the PSE ownership and the NorthWestern Energy contract purchase of the Colstrip. PSE provided parties with information regarding the effect of PSE's four-year FOR proposal in PSE's initial and supplemental Response to Public Counsel Data Request No. 271.

**Q. Are there any drawbacks to using a four-year average forced outage rate?**

Using the shorter averaging period may lead to increased volatility in future Colstrip power costs projections. If this Commission determines that it is appropriate to move away from the seven-year average for Colstrip outages that it has applied since 1993 to a four-year average, PSE's proposed four-year average

should be used in future proceedings unless there are compelling reasons to change. The parties should not be permitted to game the system by picking and choosing years on which to base the FOR when there is no principled basis for a change. Further, if the seven-year forced outage rate is changed, then PSE must adjust the heat rate and resulting variable cost ($/MMBtu).

## III. COLSTRIP SERVICE LIFE

**Q. Do you agree with Public Counsel's recommendation to extend the service life of the Colstrip units to sixty years?**

A. No. There are several reasons why the Commission should reject the recommendations by Commission Staff and Public Counsel to extend the depreciation life span of the Colstrip units to 60 years. First, Public Counsel Witness Charles W. King erroneously links PSE's Integrated Resource Plan ("IRP") data to the Colstrip life spans PSE uses for purposes of calculating depreciation rates. The IRP includes only those resources for which PSE has an ownership interest or binding contract right to use as a resource. PSE-owned units and contracts are shown for the full IRP planning period unless there has been a binding commitment to retire the unit or the contract has a termination date within the planning period. In contrast, for depreciation purposes, a resource's existing physical condition, capital expenditures, fuel supply and environmental and other regulations all have an effect on plant life, and therefore must be evaluated.

Second, the life spans of the Colstrip units, particularly Units 1 and 2, also depend on the availability of a cost efficient supply of coal that can be utilized while meeting emission regulations.

Third, Colstrip's life span (as the life of any thermal plant) can be affected by state and federal environmental laws and enforcement actions.

**Q. Please explain the factors that resulted in the life spans for Colstrip PSE used for depreciation purposes.**

A. For PSE's depreciation study in this proceeding, I spoke with Mr. C. Richard Clarke regarding the Colstrip retirement dates used in PSE's prior depreciation study. The prior study was based on a 40-year plant life from the in-service date of each Colstrip unit. Colstrip Unit 1 would retire in 2015; Colstrip 2, in 2016; Colstrip 3, in 2024; and Colstrip 4, in 2026. As I noted in my Prefiled Direct Testimony, Exhibit No. ___(MLJ-1T), Units 1 and 2 are extremely sensitive to the sodium level in coal, and the current supply from Western Energy's Rosebud mine adjacent to the plant contains much less sodium than other Powder River Basin coals. Only after the owners of Colstrip Units 1 and 2 obtained a commitment for a new coal supply agreement with the Rosebud mine did I recommend extending the terminal dates used in the depreciation study to 2019 for Colstrip Units 1 and 2. This extension yields an increased service life of 44 years for Colstrip Unit 1 and 43 years for Colstrip Unit 2.

**Q. Please explain how environmental regulations could affect Colstrip's life span?**

The Federal Clean Air Act and numerous other federal and state regulations strictly limit the construction, operation and maintenance of electric generating units. Additionally, since 2005, the U. S. Environmental Protection Agency ("EPA") has issued both the Clean Air Interstate Rule and Clean Air Visibility Rule. Further, Montana has enacted a Mercury Emission Control rule, as have numerous other states. Compliance requirements of these and other environmental regulations may have an adverse effect on the useful life of coal-fired units such as Colstrip. I discuss potential effects of specific environmental regulations later in my testimony.

As discussed extensively in PSE's IRP, there is also a high level of concern about global warming and control of green house gases. There are new laws, such as Washington State's RCW 80.80, and proposed laws that address control of green house gasses and which may shorten the life of existing coal-fired plants. These laws and proposed legislation affect the ability of Colstrip and other coal-fired plants to continue to operate economically, even if the plant "hardware" can still be safely operated. I did not, however, consider future regulations in my estimation of retirement dates, only regulations already enacted.

**Q. Does either Commission Staff or Public Counsel recognize the possible affects of these laws and regulations on plant life?**

A. No. By considering only historical data, neither Commission Staff witness William Weinman nor Public Counsel witness Charles King notes these increasingly strict laws or the affect they could have on plant life.

In response to a data request asking specifically about 1) the Clean Air Interstate Rule, 2) the Clean Air Visibility Rule and 3) the Montana Mercury Emission Rules, Mr. Weinman provided only copies of papers addressing carbon dioxide sequestration, which is not the subject of any of these rules, and stated, "The sequestering technology for capturing CO2 is not available for large coal plants. Therefore, the ability to convert the Colstrip units is a matter of speculation." *See* Exhibit No. ___(MLJ-16). Mr. Weinman's use of the term "speculation", implying that technology improvements should not be considered in a depreciation study, is inconsistent with his testimony regarding the ability to convert Colstrip Units 1 and 2 to use another source of coal. On page 10, line 2, of Exhibit No. ___T(WHW-1T), Mr. Weinman states that he does not have any reason to question results of PSE's conversion modification studies, but "I believe there will be a technical solution that resolves this issue."

**Q. Please describe the effects of the Federal Clean Air Visibility Rule on Colstrip's service life.**

A. The Clean Air Visibility Rule was adopted to address regional haze or regionally-impaired visibility caused by multiple sources over a wide area. The rule defines Best Available Retrofit Technology ("BART") requirements for electric generating units, including presumptive limits for sulfur dioxide, nitrogen oxide and particulate controls for large units. In February 2007, EPA notified PSE that Colstrip Units 1 and 2 are subject to BART requirements. Colstrip's initial analysis indicated that the BART requirements would add significantly to plant capital and operating costs with very limited improvement to regional visibility. In January 2008, EPA requested the Colstrip Units 1 and 2 BART analysis be augmented with estimates of the (1) nitrogen oxide emission reduction with the addition of a Selective Catalytic Reduction system on each unit; (2) upgrades to the existing scrubber systems for sulfur dioxide emissions; and (3) addition of an electrostatic precipitator or fabric filter for reduction of particulate emissions. Such additions would further increase Colstrip capital and operating costs.

**Q. Describe the effects of the Montana Mercury Control Rule on Colstrip's service life.**

A. In 2006 the Montana Board of Environmental Review adopted new regulations requiring all coal-fired electric generating units in the state to reduce their mercury emissions by 90% or to a maximum level of 0.9 lb./trillion Btu of heat

input (the "Emission Limit") starting January 1, 2010. Testing at Colstrip was conducted during 2006 and 2007 and additional testing is being conducted this year. While a combination of sorbent injection and coal treating has provided the highest level of mercury emission reduction during short test periods, none of the tests have shown the ability to reduce mercury emissions to the Emission Limit. Also, none of the tests were able to determine the effect on existing plant equipment when utilized continuously during daily operation.

PSE must submit an application to the Montana Department of Environmental Quality ("MDEQ") to modify Colstrip's air quality permit to establish a mercury control strategy to meet the Emission Limit for the facility by January 1, 2009. The application must include an analysis of mercury control options. If the MDEQ determines that the proposed strategy will achieve compliance with the Emission Limit, the MDEQ shall include the provisions of the mercury control strategy as a condition of Colstrip's air quality permit.

The regulations allow that if the owners have properly implemented an MDEQ-approved mercury control strategy but determined the unit cannot reasonably comply with the Emission Limit, the Colstrip owners may submit an application for an Alternative Mercury Emission Limit. If MDEQ establishes an Alternative Mercury Emission Limit, which cannot be higher than 2.4 lbs./trillion Btu, MDEQ must include a requirement that the owners demonstrate that their mercury emission control strategy constitutes a continual program of mercury control progression able to achieve the Emission Limit. No Alternative Mercury

Emission Limit may extend after January 1, 2018, when full compliance is required as a condition of continued operation.

**Q. Describe the effects of the RCW Chapter 80.80 on Colstrip's service life.**

A. This new law, in its present form, should not affect PSE's Colstrip ownership.

**Q. Please describe the effects of the Federal Clean Air Interstate Rule on Colstrip's service life.**

A. This regulation, in its present form, should not affect PSE's Colstrip ownership because it applies only to coal-fired plants east of the Mississippi River. This regulation is expected to force some affected plant owners to shutdown existing facilities.

**Q. Are there rules limiting the ability of coal plant owners to modify their plants to extend the plants' useful lives?**

A. Yes. The ability of plant owners to maintain and modify existing plants is governed by the Federal Clean Air Act and regulations issued by the EPA. On November 3, 1999, the Department of Justice and the EPA announced the filing of civil complaints against seven electric utility companies operating coal-fired power plants, charging they had made illegal modifications to extend the operating life of their plants. EPA also issued an administrative order against the Tennessee Valley Authority citing similar claims. To date, complaints, Notices of Violation and administrative orders have been issued to over fifty plants owned

by more than twenty utilities. Many of these actions have been settled by multi-million dollar fines and agreements to install state-of-the art emission controls at the cost of billions of dollars. The effects of these new rules and the effects of enforcement strategies for existing rules will all adversely affect the lives of currently operating plants. However, neither Commission Staff nor Public Counsel addresses either.

Based on these considerations, current plant conditions and maintenance practices, and the execution of a new coal supply agreement for Colstrip Units 1 and 2, I recommended Mr. Clarke use 2019 as the retirement dates for Colstrip Units 1 and 2 and continue to use 2024 and 2026 as the retirement dates for Units 3 and 4, respectively.

**Q. Do you agree with Public Counsel's recommendation to increase Colstrip's life span because PacifiCorp's Colstrip Unit 4 currently has a 60-year life span? *See* Exhibit No. ___(CWK-1T), page 11, lines 12-14.**

A. No. PacifiCorp agreed to a sixty-year life span for its interest in Colstrip Units 3 and 4 as part of a settlement agreement.[2] PacifiCorp's decision to accept a 60 year life span for its interest in Colstrip Units 3 and 4, which was based on a stipulation, does not apply to this proceeding because PacifiCorp's interest in

[2] *In the Matter of the Petition of PacifiCorp, d/b/a Pacific Power, For An Accounting Order Authorizing a Revision in Depreciation Rates,* Docket UE-071795, Order No. 01, (April 10, 2008).

Colstrip is much smaller than PSE's interest. PacifiCorp owns only a ten percent interest in Colstrip Units 3 and 4 and no interest in Colstrip Units 1 and 2. Thus, the fact that PacifiCorp entered into a stipulated agreement establishing a sixty-year life span for its small Colstrip interest should not be determinative for PSE. Additionally, PacifiCorp's analysis does not appear to consider the impact of current and future regulations on the economic life of the plants.

**Q. Do you agree with Public Counsel that 60 years should be used for the Colstrip life span?**

A. No. Public Counsel's proposal is without any support. The Snavely-King 1996 Study referenced by Mr. King could not be produced, and its 2006 Update does not include any conclusion regarding the proper depreciation life for steam generating units, whether coal-fired or fueled by gas or oil. It contains no discussion of coal-fired units such as the Colstrip units. It contains no discussion of the impact of EPA's Clean Air Interstate Rule, the Clean Air Visibility Rule, the Montana Mercury Rule or other applicable laws. Additionally, the study does not address the affect of enforcement actions by EPA and state enforcement agencies against utilities that have conducted life extension modifications at existing plants. *See* Exhibit No. ___(CWK-8).

**Q. Do you agree with Commission Staff's recommendation that 60 years should be used for the Colstrip life span?**

A. No. Commission Staff provided an analysis of coal plant retirements using data from the Annual Generator Report, Form EIA-860, compiled by the U. S. Department of Energy's Energy Information Agency ("EIA"), but this data set was incomplete due to changes made by the EIA. *See* Exhibit No. ___T(WHW-1T), page 8, lines 7-14. As Mr. Weinman notes on page 9 of his testimony, his data showed no retirements prior to the year 2002. This because in 2002 the EIA combined two prior reports, EIA-860A, Utility Generators and EIA-860B, Non-utility Generators, into a single report. In the course of this change, data on retirements of coal plants prior to 2002 was eliminated. I performed an analysis of data from the 2006 EIA-860 report using the same methods as Mr. Weinman and got the same results - between 2002 and 2006, 12 twelve coal-fired power plants were retired after an average service life of 48.1 years. I also analyzed the data from the EIA-860A report for the year 2000, prior to the changes made by EIA. This analysis identifies an additional 23 plants that were retired between 1984 and 1995 at an average service life of 34.7 years. These plants are not listed in the EIA-860 databases for the year 2002 and later. Because Mr. Weinman did not use a complete set of data in his analysis, I do not believe he obtained the correct conclusion of a 60-year average plant life. Also, there is no evidence that Mr. Weinman's analysis considered how recent environmental regulations and enforcement practices would affect any analysis of service life, even if properly performed, that utilized only historical data.

## IV. CONCLUSION

**Q. Please summarize your testimony.**

A. Regarding Colstrip's forced outage rate, PSE proposes to use a forced outage rate in the AURORA power cost projections for this and future proceedings that is based on the most recent and available four years actual performance by Colstrip Units 1 & 2 and Colstrip Units 3 & 4. PSE further proposes to use the most recent 4-year average of heat rates and $/MMBtu fuels costs in its AURORA power cost projections. PSE will apply these values for modeling in AURORA to both the PSE ownership interests in Colstrip and the Colstrip power purchase agreement with NorthWestern Energy through the contract termination in December 2010.

Regarding retirement dates for each of the Colstrip units, 2019 for Units 1 & 2, 2024 for Unit 3 and 2026 for Unit 4 are appropriate considering (1) the units' ages, (2) planned capital expenditures and maintenance practices, and (3) increasingly stringent emission controls and other environmental regulations. Public Counsel's basis for recommending a 60-year service life is completely unsupported. Commission Staff based its use of historical data to justify a similar 60-year service life on incomplete data that fails to recognize increasingly stringent regulatory requirements. Such regulatory requirements did not affect coal-fired generators prior to the adoption of the 1990 and 1999 Amendments to the Federal Clean Air Act and subsequent federal and state regulations issued in

2005 and 2006 that may cause the retirement of plants like Colstrip after a shorter service life than historical data alone would predict.

**Q. Does that conclude your prefiled rebuttal testimony?**

A. Yes.