BEFORE THE WASHINGTON UTILITIES & TRANSPORTATION COMMISSION

In the Matter of the Petition of

PUGET SOUND ENERGY, INC.,

For Approval of a Power Purchase Agreement for Acquisition of Coal Transition Power, as Defined in RCW 80.80.010, and the Recovery of Related Acquisition Costs

DOCKET UE-121373

DIRECT TESTIMONY OF KEVIN D. WOODRUFF (KDW-1HCT)

ON BEHALF OF

PUBLIC COUNSEL

CORRECTED NOVEMBER 15, 2012

REDACTED VERSION

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I. INTRODUCTION / SUMMARY

Q: Please state your name and business address.

A: My name is Kevin Woodruff. My business address is 1100 K Street, Suite 204, Sacramento, California 95814.

Q: By whom are you employed and in what capacity?

A: I am Principal of the consulting firm Woodruff Expert Services, a firm I founded ten years ago to provide consulting services to parties representing the interests of small electric consumers before state utility regulatory commissions on issues pertaining to electric utility resource planning and procurement, electric asset valuation, and electric system and market modeling.

Q: On whose behalf are you testifying?

A**:** I am testifying on behalf of the Public Counsel Section of the Washington Attorney General's Office (Public Counsel).

Q: Please describe your professional qualifications.

A: I have worked over twenty-five years in the energy utility industry, principally in the fields of my current practice cited above. I worked almost seventeen years for consulting and software firms that offered such services and related software and data products. For almost ten years, I have run my own consulting practice providing expert analysis and testimony regarding such issues to organizations representing the interests of small electric consumers before state utility regulatory commissions. My resume is provided as Exhibit No. KDW-2 to this testimony.

Q: What is the purpose of your testimony in this proceeding?

A: I am presenting my analysis and recommendations regarding the "Coal Transition Power Purchase and Sale Agreement" (Coal Transition PPA or PPA) that Puget Sound Energy, Inc. (PSE) is asking this Commission to approve.

Q: Please describe PSE's proposal in this docket.

A: Briefly, PSE is asking this Commission to approve the Coal Transition PPA, pursuant to which it would purchase certain quantities of electric power from TransAlta Centralia Generation, LLC (TransAlta) from December 1, 2014 through December 31, 2025. PSE is also asking the Commission to approve certain related terms and conditions, including some specified by the State of Washington's coal transition power statute (statute).[1]

Q: Do you agree with PSE's request and its supporting analysis?

A: No. I do not believe PSE has made a case that its proposal meets the various ratepayer protections outlined in the statute. Specifically, I question whether, when considering "the long-term economic risks and benefits" to PSE customers, the Coal Transition PPA (a) provides "adequate protection to ratepayers…during the term of such agreement or in the event of early termination," or (b) meets PSE's resource needs in a "cost-effective manner as determined under the lowest reasonable cost standards under chapter 19.280[.]"[2]

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[1] Engrossed Second Substitute Senate Bill 5769, which was approved in 2011.
[2] All the quoted phrases are from RCW 80.04.570(4).

Q: Do you have any comments on PSE's recommendation regarding the equivalent plant that should be used to establish the equity component to which PSE is entitled by RCW 80.04.570(6)?

A: Yes. My analysis concludes that PSE's recommended equivalent plant is not the least cost option that is available.

Q: Do you have any recommendations for Commission action on PSE's proposal?

A: Yes. I recommend the Commission condition approval of the Coal Transition PPA upon a requirement that the PPA be restructured as a unit contingent contract and that it incorporate dispatch rights for PSE. These modifications will allow Centralia's coal transition power to be managed more cost-effectively on behalf of PSE's customers.

In addition, if the Commission approves the Coal Transition PPA, with or without conditions, I recommend that the Commission adopt as the equivalent plant the **[Begin Highly Confidential]** XXXXXXXXXXXXXXXXX **[End Highly Confidential]** rather than the **[Begin Highly Confidential]** XXXX XXXXXXXXXX **[End Highly Confidential]** as recommended by the Company.

II. THE COAL TRANSITION POWER STATUTE

Q: What is the coal transition power statute you cite above and what are its key features that you address in your testimony?

A: In April 2011, Governor Christine Gregoire signed the Coal Transition Energy statute into law. This change in law removed limitations on the sale of power from coal-fired facilities and provided a process for electric utilities to petition

this Commission for approval of contracts to purchase "coal transition power" from such facilities. In addition to allowing a utility to recover the costs of the contract in rates, the statute also allows a purchasing utility to earn the equity component of its authorized rate of return in rates as if it had purchased or built an equivalent plant.

The statute establishes criteria for UTC review of a petition for approval of a coal transition power purchase agreement. The UTC must approve such a contract:

> "*only if* the commission determines that, considering the circumstances existing at the time of such a review:
>
> The terms of such an agreement provide *adequate protection* to ratepayers and the electrical company during the term of such an agreement or in the event of early termination;
>
> the resource *is needed* by the electrical company to serve its ratepayers
>
> and the resource meets the need in a *cost-effective* manner as determined under the *lowest reasonable cost* resource standards under chapter 19.280 RCW, including the cost of the power purchase agreement plus the equity component as determined in this section.
>
> As part of these determinations, the commission shall consider among other factors, the *long-term economic risks and benefits* to the electrical company and its ratepayers of such a long-term purchase." [3]

Q: Does the statute apply to any other facilities other than the coal-fired generating units at Centralia owned and operated by TransAlta?

A: No. The statute defined the term "coal transition power" as "the output of a coal-fired electric generation facility that is subject to an obligation to meet the

[3] RCW 80.04.570(4) (emphasis added).

standards contained in RCW 80.80.040(3)(c)."[4] I understand that this section effectively applies only to the Centralia coal-fired generating units.

Q: Did the Attorney General (AG) provide the Governor an informal opinion regarding the "coal transition power" statute?

A: Yes. The AG did issue such a letter.[5] Briefly, the letter stated that once a contract is approved, the cost of "resupply" power not generated by the Centralia plant may be recovered under the statute.[6] In addition, the informal opinion concludes that resupply power does not affect recovery under the "equivalent capacity" section of the law. This opinion does not affect my discussion of the Coal Transition PPA in this testimony.

III. PSE'S PROPOSED COAL TRANSITION PPA

A. The Nature of the Contract.

Q: Please describe the Coal Transition PPA.

A: Under the Coal Transition PPA, TransAlta will deliver to PSE firm, flat (7x24) electrical energy from December 1, 2014, through December 31, 2025.[7] The deliveries will be largely constant within any year, but will range from 180 megawatt-hours per hour (MWh/hr) and 380 MWh/hour over the term of the contract. TransAlta would deliver such energy at one of several delivery points specified in the Coal Transition PPA. PSE would pay TransAlta a price for each MWh that is fixed in advance in the contract.[8]

[4] RCW 80.80.010(5).
[5] Provided in Exhibit No. RG-8HC at pp. 449-459.
[6] RCW 80.04.570(6)(a) and (b).
[7] Exhibit No. RG-1HCT, 9:4-5.
[8] Exhibit No. RG-1HCT, 9:1-11:2. Table 1 shows the quantities of energy to be delivered and Table 2 shows the prices PSE will pay for such energy.

Q: How do you characterize the Coal Transition PPA?

A: When evaluating the Coal Transition PPA, it is important to focus not on the contract's label, but on its contents. Key contract terms make the Coal Transition PPA, above all else, a long-term, firm, must-take, baseload, fixed-price energy contract.

Q: What are the key terms of the Coal Transition PPA that lead you to draw the conclusion that it is a contract for long-term, firm, must-take, baseload, fixed price energy?

A: A contract term of eleven years and one month qualifies the Coal Transition PPA as "long-term." Washington law only requires a five year term for a power purchase contract to be considered long term.[9] Two key attributes that lead to the conclusion that the PPA is a firm, must-take, baseload contract are (a) TransAlta's obligation to deliver power to PSE in all hours of the year for the term of the contract, except in case of *force majeure*,[10] and (b) PSE's inability to refuse or curtail such deliveries for any reason other than *force majeure*.[11] Finally, the PPA is a "fixed price" contract because the prices PSE would pay for such power are also fixed and known through the end of the contract's term.[12] These contract provisions make the contract a long-term, firm, must-take, baseload, fixed-price energy contract to PSE customers.

[9] RCW 80.04.570(9) provides that for purposes of this statute, the term "power purchase agreement" means a long-term financial commitment as defined in RCW 80.80.010(15)(b). Now located in subsection 16(b), that definition provides that a: "'Long-term financial commitment' means….A new or renewed contact for baseload electric generation with a term of five or more years[.]"
[10] PSE Response to Public Counsel Data Request No. 14. *See also,* Exhibit No. RG-1HCT, 9:2-15, including Table 1.
[11] PSE Response to Public Counsel Data Request No. 13.
[12] Exhibit No. CB-3HC, p. 4. *See also,* Exhibit No. RG-1HCT, 10:8-11:2, including Table 2.

B. Sources of Power Under the PPA.

Q: Does the PPA require that power delivered pursuant to the PPA be generated at Centralia?

A: No, it does not.[13] Section 3.2(a) of the PPA states ~~**[Begin Confidential]**~~ "Except as provided in Section 3.2(b), Seller will…supply the Hourly Contract Quantity from the CTCF." ~~**[End Confidential]**~~ But Section 3.2(b) of the PPA continues ~~**[Begin Confidential]**~~ "Seller will be entitled, at any time that the output of the CTCF is reduced or curtailed *for any reason*, to provide the Hourly Contract Quantity from any source or sources that Seller may determine; provided, however, that any such deliveries will be required to be in accordance with the terms and conditions of this Agreement applicable to the Delivery Point(s) to which such deliveries are being made."[14] ~~**[End Confidential]**~~ Further, I could not find any specific provisions of the PPA that ~~**[Begin Confidential]**~~ *required* the continued operation of Centralia. ~~**[End Confidential]**~~ The possible exercise of *force majeure* provisions to amend or terminate the contract in case Centralia cannot continue generating **[Begin Confidential]** XXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXX[15] **[End Confidential]** There are thus only weak contractual links between the operation of Centralia and the delivery and pricing terms of the PPA. ~~**[End Confidential]**~~

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[13] PSE Response to Public Counsel Data Request No. 15.
[14] Exhibit No. RG-3C (italics added, underlining in original).
[15] Exhibit No. RG-3C, Article 9. *See also,* RG-1HCT, p. 10:1-7.

From the perspective of PSE's customers, Centralia is barely relevant to the basic structure of the Coal Transition PPA. PSE customers will be required to purchase fixed amounts of power delivered by TransAlta for every hour from December 1, 2014, to December 31, 2025 at fixed prices regardless of whether the Centralia plant is operating.[16]

Q: Will Centralia be a source of the energy TransAlta delivers to PSE under the Coal Transition PPA?

A: It may or may not be. While some of the power TransAlta delivers to PSE will likely be generated at Centralia, it is also likely that at least some, and possibly substantial amounts, of the power delivered to PSE per the Coal Transition PPA will *not* be generated at Centralia.

Q: If Centralia is not the source of all the energy delivered to PSE pursuant to the Coal Transition PPA, where will the rest of the deliveries come from?

A: Under the Coal Transition PPA, TransAlta has the ability to deliver power to PSE from any source, as long as it is delivered to a point on the transmission grid specified in the PPA[17] and meets other criteria.[18] (*See*, Exhibit No. KDW-3 and Exhibit No. KDW-4, which are PSE Responses to Public Counsel Data Request Nos. 14 and 15, respectively.) TransAlta could thus make deliveries from many sources other than Centralia, such as other specific generators or generic market purchases.

[16] Unless TransAlta wishes to claim *force majeure*, as discussed above.
[17] Exhibit Nos. KDW-4 and KDW-5 (PSE Responses to Public Counsel Data Request Nos. 14 and 15.) *See also,* Exhibit No. RG-3C, Sections 3.2(b) and 3.3.
[18] Exhibit No. RG-3HC, Section 4.2(b).

Q: Is it possible, under the PPA, that TransAlta *could* meet its contractual obligations entirely *without* Centralia generation?

A: Yes, as I read the contract and PSE's responses to data requests. TransAlta could choose to curtail or eliminate generation from the Centralia plant and supply the contract entirely from other sources if it wishes. **[Begin Confidential]** XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXX. **[End Confidential]**

Q: Do you think TransAlta *would* opt to meet its delivery obligations entirely *without* Centralia generation?

A: Probably not. I anticipate that the cost of generation from Centralia will sometimes be less than wholesale electricity market prices in the Pacific Northwest (PNW). I would thus anticipate that TransAlta would operate Centralia at high capacity factors to provide the power needed to meet its delivery obligations under the Coal Transition PPA.

Further, key provisions of the PPA suggest that TransAlta views Centralia as important to its continued performance under the PPA. The PPA allows TransAlta to claim events of *force majeure* that limit its obligation to perform under the PPA or even lead to termination of the PPA.[19] (*See,* Exhibit No. KDW-5, PSE Response to Public Counsel Data Request No. 16.) One such potential event is ~~**[Begin Confidential]**~~ "damage to or destruction of the CTCF during the

[19] Exhibit No. KDW-5 (PSE Response to Public Counsel Data Request No. 16.) *See also,* Exhibit No. RG 3C, Article 9; and Exhibit No. RG-1HCT, 10:1-7.

Delivery Term."[20] ~~**[End Confidential]**~~ These contract terms suggest to me that TransAlta views Centralia's continued operation is important to its ability to meet their obligations under the PPA. However, **[Begin Confidential]** XXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX [21] **[End Confidential]** so it would be possible for TransAlta to continue delivering power for the entire term of the PPA even if Centralia were no longer operating.

Q: Do you think TransAlta could meet its delivery obligations entirely *with* Centralia generation?

A: No. It would be impossible for TransAlta to meet its delivery obligations of this 24x7, firm, flat, long-term contract entirely with Centralia generation. Over the Coal Transition PPA's eleven-year-one-month term, the Centralia plant will experience a number of outages, both planned and unplanned. During any outage, TransAlta will need to use other sources to meet its delivery obligations under the PPA.

In addition, the quantities of power TransAlta is obligated to deliver to PSE will range from 180 MWh/hour to 380 MWh/hr.[22] However, these amounts may not, in and of themselves, enable TransAlta to operate either of Centralia's two units safely and reliably, much less efficiently.[23] In such cases, TransAlta

[20] Exhibit No. RG-3C, Article 9; and Exhibit No. RG-1HCT, 10:1-7.
[21] *Id*.
[22] Exhibit No. RG-1HCT, 9:8-15, including Table 1.
[23] PSE Response to Public Counsel Data Request No. 56, Highly Confidential Attachment B, page 13. In this document, TransAlta told PSE that the "minimum stable generation" for each unit was **[Begin Highly Confidential]** XXX **[End Highly Confidential]** MW/hour (or **[Begin Highly Confidential]** XXX **[End Highly Confidential]** MW/hour if both units are running). Each unit's maximum capacity is 670 MW. TransAlta also said each unit's heat rate rises from **[Begin Highly Confidential]** XXXXX **[End Highly Confidential]**Btu/kWh at its maximum capacity to **[Begin Highly Confidential]** XXXXX **[End Highly Confidential]** Btu/kWh at this minimum stable level.

would need to meet its PPA delivery obligations by using other sources or operate a unit at its minimum capacity and sell the additional output to other parties.[24]

Finally, during periods when the market prices in the PNW are below Centralia's variable operating costs, TransAlta would be expected to make the economically rational decision to reduce Centralia's output – possibly to zero – and purchase power from other sources to meet its delivery obligations under the PPA. During such periods, this strategy should be quite advantageous to TransAlta.

V. THE COAL TRANSITION PPA IS NOT AN INDUSTRY STANDARD APPROACH TO CONTRACTING FOR POWER FROM AN INDIVIDUAL PLANT

Q: You characterized the Coal Transition PPA as a firm, long-term, must-take, baseload, fixed-price energy contract. To your knowledge, do utilities commonly enter contracts with the mix of such provisions found in the Coal Transition PPA?

A: No. In my experience, utilities rarely sign contracts with the mix of restrictive terms found in the Coal Transition PPA. Contracts tend to have much more flexibility in one or more the above terms so that utilities have more flexibility in managing their portfolios. For example, utilities enter fixed-price or fixed-quantity contracts to meet specific energy needs and/or mitigate particular risks. However, such contracts tend to be much shorter in duration than this PPA.

[24] The Memorandum of Agreement between the State of Washington and TransAlta (MOA), which memorialized the Statute in contractual form, allows TransAlta to terminate the MOA if it does not sell at least 500 megawatts (MW) of Centralia's capacity by December 15, 2012. *See,* Exhibit No. RG-1HCT, 8:1-20. Under the PPA, a termination of the MOA would **[Begin Confidential]** XXXXXXXXXX XXXXX **[End Confidential]***See,* RG-3C, Section 17.3.

Conversely, longer-term contracts tend to include much more flexibility regarding the scheduling of power and the price to be paid. Utilities use such contracts (and possibly self-build options) to meet longer-term resource plan needs while allowing themselves flexibility in the use of resources.[25]

Q: What is a more typical structure for a contract for the output of power from a specific thermal generator, such as Centralia?

A: Contracts for power generated at specific thermal plants – such as gas-fired and coal-fired plants – tend to promise to deliver power only when a unit is available and do not provide power when a unit is not available. Such contracts are often know as unit contingent because the receipt of power is contingent upon the unit being available.[26]

Q: Are there other common features of contracts for the output of individual units you wish to identify at this time?

A: Yes. In addition to unit contingency, many contracts for the output of individual plants also provide the purchasers rights to dispatch the plant—that is, to choose the amount of generation the unit provides in any given hour. This gives a purchasing utility the ability to reduce output to an amount that is less than a plant's maximum capacity or possibly even turn the unit off entirely when appropriate. Dispatchability is also useful for dealing with seasonality.

[25] The exceptions to this general rule tend to be purchases of renewable energy and purchases from Qualifying Facilities (QFs).
[26] Contracts for deliveries of power that are not unit contingent tend to rely upon a utility system or some other portfolio of resources, so that deliveries are not reliant on an individual unit.

Q: Does PSE solicit PPAs that are unit contingent and/or afford dispatch rights?

A: Yes. For example, in its 2011 RFP, submitted as Exhibit No. RG-5, PSE included a prototype term sheet for a natural gas tolling arrangement. That prototype anticipated PSE possessing rights to dispatch the plant. Such tolling agreements are also implicitly unit contingent in nature.[27]

Q: Could PSE have pursued a unit contingent and/or dispatchable contract for power from Centralia?

A: **[Begin Confidential]** XXXXXXXXXXXXXXXXXXXXXX. **[End Confidential]** During discovery, as permitted by the statute, Public Counsel asked for all information provided by TransAlta to the PSE for evaluating the costs and benefits associated with acquisition of coal transition power.[28]

Material provided in PSE's response to this request indicates that, when submitting its proposal to PSE, TransAlta said **[Begin Confidential]** XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXX [29] **[End Confidential]** PSE responded by asking TransAlta in a follow-up data request about **[Begin Confidential]** XXX

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[27] Exhibit No. RG-5, pp. 74-88.

[28] Public Counsel Data Request No. 56. RCW 80.04.570(3) requires that "information provided by the facility owner [TransAlta] to the purchasing electrical company for evaluating the costs and benefits associated with acquisition of coal transition power must be made available to other parties to the petition [.]"

[29] Exhibit No. KDW-6HC, p. 4 (PSE Response to Public Counsel Data Request No. 56, Highly Confidential Attachment A, (excerpt)).

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXX [30] **[End Confidential]**

TransAlta's response stated **[Begin Confidential]** XXXXXXXXXXX XXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX[31] XXX XXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX [32] XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX[33] **[End Confidential]**

It is clear from this information **[Begin Confidential]** XXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXX. **[End Confidential]**

Q: Would it be preferable for PSE to have a dispatchable contract for Centralia power?

A: Yes. A dispatchable contract for coal transition power would allow PSE to better match the purchase to its need, similar to what it does now when it buys power from Centralia. In the confidential response to Public Counsel Data Request No.

[30] PSE Response to Public Counsel Data Request No. 56, Highly Confidential Attachment C. **[Begin Confidential]** XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX. **[End Confidential]**
[31] Exhibit No. KDW-7HC, p. 4. (PSE Response to Public Counsel Data Request No. 56, Highly Confidential Attachment D (excerpt)).
[32] *Id*., p. 4.
[33] *Id*., p. 6.

52, PSE provided data regarding its purchases of Centralia power in recent years. These data, which are summarized in Exhibit No. KDW-8C, **[Begin Confidential]** XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX. **[End Confidential]** A dispatchable contract would enable the company to accommodate this current seasonal purchase pattern in the new contract, presumably better matching PSE's needs.

Q: Did PSE conduct an analysis of a unit contingent or dispatchable contract option from Centralia?

A: No. None of the PSE-provided documents or workpapers in this docket indicate that the Company considered a unit contingent or dispatchable contract from Centralia in either the screening or optimization analysis of the RFP evaluation. PSE's last stage of analysis in the RFP process was a July re-evaluation of various parties' revised offers.[34] PSE's re-evaluation, based on optimization modeling, found that the Coal Transition PPA is included in the lowest cost portfolios in four of the five scenarios PSE tested.[35] However, that analysis only considered one option for the structure of the Coal Transition PPA. PSE did not consider a unit contingent or dispatchable contract as an option in its RFP analysis.

Q: Do other utilities purchase power from a portion of a coal plant on the type of basis you have described above?

A: Yes. The PPA structure I recommend above is commonplace in the industry, including in contracts for output of coal-fired generators. Perhaps the most

[34] This re-evaluation is detailed in Exhibit No. CB-4HC.
[35] Exhibit No. CB-4HC, pp. 6-7 (including Figure 5).

pertinent example to this docket is the example of two California utilities that purchase capacity and energy from the Boardman Generating Station (Boardman).

Q: Please describe Boardman and its ownership arrangements.

A: Boardman is a 585 MW coal-fired generating station in eastern Oregon. The Portland General Electric Company (PGE) owns 65 percent of the plant and also operates it. The Bank of America, Idaho Power Company and Power Resources Cooperative (PRC) also have fifteen, ten and ten percent shares, respectively, of the plant. These facts are documented in Exhibit No. KDW-9, which is an excerpt from a presentation PGE made regarding Boardman.

Q: What are the contractual arrangements between the California utilities and Boardman's owners for the sale and purchase of Boardman's capacity?

A: The San Diego Gas & Electric Company (SDG&E) and the Turlock Irrigation District (TID) purchase fifteen percent of the plant's capacity from PGE and ten percent of the plant's capacity from PRC, respectively. I do not have access to either of these contracts due to parties' confidentiality concerns. But I can document some aspects of these parties' contracts.

Exhibit Nos. KDW-10 and KDW-11 present summary information regarding their Boardman contracts that SDG&E and TID respectively filed with the California Energy Commission last year. Exhibit No. KDW-10 shows that SDG&E reported that though Boardman capacity and energy are available in all hours (7 by 24), the contract is not a must-take contract. SDG&E also stated that the contract is unit contingent, that is, that SDG&E receives power when the plant

is operating and receives no power when it is not operating. SDG&E also reports that PGE may also choose "not to operate plant for economic reasons."

Exhibit No. KDW-11 shows that TID also reported that its contract with PRC was unit contingent. TID also reported that it pays a "pro-rata share of cost" (PRC) for power from Boardman.

Q: Is there other evidence indicating that PGE may choose not to operate Boardman for economic reasons, in other words economically dispatch the plant?

A: Yes. Exhibit No. KDW-12 is an excerpt from PGE's 2009 *Integrated Resource Plan* which states "Boardman typically shuts down once a year in the spring to perform its annual planned maintenance. The plant is primarily a base-load resource, but is economically dispatched during some periods when regional loads and prices are low. Economic dispatch and load cycling generally occurs only in the spring."

Data SDG&E filed with the California Public Utilities Commission (CPUC) support PGE's statements. Exhibit No. KDW-13 is an excerpt from the public version of exhibits SDG&E filed in support of its 2007-2016 Long-Term Procurement Plan. This exhibit shows that SDG&E informed the CPUC that it expected to have 86 MW of capacity from Boardman in all months of the years of 2010 to 2013 and very similar deliveries of energy in most months of those years, but much smaller deliveries of energy during the spring months, particularly May.

Q: Based on this information, what do you conclude?

A: PSE's proposed Coal Transition PPA is not a standard approach for purchasing

capacity and energy from such a thermal generating plant for such a long-term. PSE customers would be better served if PSE had negotiated a PPA that was unit contingent and – even better – offered PSE some dispatch rights over Centralia's operation. Such terms would**[Begin Confidential]** XXXXXXXXXXXXXXX XXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXX **[End Confidential]**

IV. CONCERNS WITH THE COAL TRANSITION PPA

Q: Do you believe that the long-term, firm, must-take, baseload, fixed price nature of the Coal Transition PPA make it a reasonable contract for PSE ratepayers to purchase coal transition power?

A: No. I do not believe the Coal Transition PPA meets the customer protection requirements in RCW 80.04.570(4). Specifically, I question whether, when considering "the long-term economic risks and benefits" to PSE customers, the Coal Transition PPA (a) provides "adequate protection to ratepayers…during the term of such agreement or in the event of early termination," or (b) meets PSE's resource needs in a "cost-effective manner."[36]

As discussed in my testimony, there are alternative approaches PSE and TransAlta could have taken to develop a PPA for "coal transition power" that could have provided PSE customers a more cost-effective contract. At a

[36] All the quoted phrases are from RCW 80.04.570(4).

minimum, such alternate structures would have avoided perhaps the most obvious flaw of the Coal Transition PPA.

Q: What is this major flaw in the Coal Transition PPA?

A: The Coal Transition PPA would require PSE customers to purchase energy in fixed quantities at fixed prices in every hour from the first hour of December 1, 2014, to the last hour of December 31, 2025, except in cases of *force majeure*. I believe these contract provisions expose PSE customers to substantial risks, both with respect to price, and in terms of lack of flexibility to respond to short term variations in loads and resources, and to seasonal needs.

Q: Why do you believe that PSE concludes that the Coal Transition PPA would reduce customer risk?

A: By fixing the price of substantial amounts of power for over eleven years, PSE's modeling will naturally find that the distribution of PSE power costs will decrease under the Coal Transition PPA, in other words, that the range of possible power costs will be narrowed.

Q: Do you agree with PSE's interpretation of these results that the Coal Transition PPA reduces customer risk?

A: No. There is another way to look at the Coal Transition PPA from the customers' perspective: in taking on a long-term contract with such rigid terms, PSE is making a big bet on the future of market prices. The bet may pay off nicely for PSE customers – or it may instead prove to be quite expensive. The risks of such a bet rise with the PPA's duration and size.

Q: Has PSE described the energy market conditions that would give rise to a need for flexibility in resource planning and power contracting?

A: Yes. In the Executive Summary to the 2011 IRP, PSE said:

> Since 2008, the energy marketplace has evolved considerably. The historical growth that pressured the region to increase generating capacity has subsided and given way to a "new normal" in the aftermath of the recession of 2008 and secular industry decline. Energy efficiency, diminished demand due to the recession, and the rapid growth of zero variable cost renewable energy result in the Pacific Northwest being surplus on generation resources. *This has led to so called "surplus energy" events which occur when the supply of electricity is greater than the demand and tend to drive market prices to low or even negative levels. Events like these are common in a hydroelectric based system, like the Pacific Northwest, but the situation has been exacerbated by the recent development of renewable resources intended to meet state renewable energy targets.* Significant operational challenges and portfolio value implications exist for both the company and the regional transmission provider, as the region seeks ways to better integrate renewable resources in a manner that balances compliance with environmental mandates yet does not create winners or losers in the regions energy and renewable market place. *These surpluses are expected to last for the foreseeable future and will undoubtedly create downward pressure on short-term market prices. The outlook for natural gas supply and price has also changed significantly now that new technology has allowed economic access to large shale bed deposits in British Columbia, and across North America*.[37]

This discussion, particularly the italicized sections, demonstrates that the circumstances of the market require utility companies to remain flexible and adaptable in terms of resource acquisition.

Q: Has PSE made other statements regarding the importance of system flexibility and seasonality in its resource procurement?

A: Yes. In its 2011 RFP, PSE told potential bidders:

[37] Exhibit No. RG-4, p. 5 (emphasis added).

> PSE's capacity needs are greatest in winter. Therefore, resources will be evaluated based on their ability to fill winter deficits, while minimizing summer surpluses. PSE will consider the seasonality of the generation, PSE's ability to control the project's output to match its needs (up to and including real-time dispatch and displacement), and contractual mechanisms to shape project output to PSE's need. [38]

In describing its Evaluation criteria, PSE said:

> PSE prefers proposals that offer control of project output whereby the Company may respond to seasonal and real-time fluctuations in load/resource balance and system reliability events. This includes, for example, dispatch or displacement of the project in real time[.][39]

PSE also said of its Evaluation Criteria:

> PSE prefers proposals that offer the Company the flexibility to adjust its position in a resource long term, up to and including termination.[40]

Q: Did PSE apply these criteria in the RFP process?

A: In some cases. For example, PSE declined to pursue one alternative to the Coal Transition PPA that seemed cost-competitive in part because "the project does not have the ability to provide system benefits such as load management and wind-integration."[41]

Q: Do these PSE statements support PSE's argument that the long-term, firm, must-take, baseload, fixed-price energy contract it has brought to this Commission is an appropriate resource?

[38] Exhibit No. RG-5, p. 11.
[39] *Id*., p. 25.
[40] *Id*., p. 29.
[41] Exhibit No. CB-1HCT, p. 36:14-15.

A: No. The above statements suggest exactly the opposite, that is, that the Coal Transition PPA PSE has proposed lacks the flexibility PSE needs to manage its resources reliably and cost-effectively on behalf of its customers.

VI. REMEDIES FOR CONCERNS WITH COAL THE TRANSITION PPA

Q: Is there an alternative approach to structuring a PPA for coal transition power that could be more cost-effective for PSE customers?

A: Yes. There is a well-established alternative approach to structuring the purchase of capacity and energy from power plants, including coal-fired plants. Further, I think it reasonably likely that PSE's pursuit of such a contract with TransAlta would have yielded a contract for "coal transition power" that is better for customers than the proposed Coal Transition PPA.

A. Unit Contingent Contract.

Q: How could PSE reduce its risk of being exposed to PPA prices that may be higher than market prices?

A: Two contract components could protect PSE from excessive contract prices and even help PSE manage Centralia capacity better on behalf of its customers. The key contract terms were those discussed above: unit contingency and dispatchability.

Q: Please explain why you recommend that a unit contingent contract would be beneficial for PSE and its customers.

A: Under this approach, PSE would receive its contracted quantities of Centralia power when Centralia is operating and *receive no power when Centralia is not operating* because its variable operating costs are above market prices.

As discussed above, SDG&E and TID purchase Boardman capacity under unit contingent arrangements and apparently benefit from in the spring months when PGE reduces Boardman's generation. Such provisions would be beneficial to PSE in a PPA for coal transition power because it is reasonable to anticipate that TransAlta will reduce Centralia generation – and possibly even turn off the plant – when market prices are low. In such cases, PSE would not be required to buy energy from TransAlta at prices above Centralia's variable operating costs.

Q: How are sellers typically reimbursed in unit contingent contracts if they are not selling fixed quantities of energy?

A: In contracts providing fixed quantities of energy, prices can be given simply in "$/MWh," as is the case with the Coal Transition PPA.[42] However, when the amounts of energy that can be delivered may vary, contracts typically provide for "capacity" payments (typically stated in $/kW-yr or similar terms) and "energy" payments (typically stated in $/MWh or similar terms). Capacity payments typically cover the fixed costs of operating and maintaining a plant plus the moneys needed to provide a return of and return on invested capital. Energy payments typically cover the variable costs of generating an incremental unit of energy, and typically include the cost of fuel, other consumables, and possibly an estimate of the incremental wear-and-tear on a unit. This structure allows a seller of a plant's capacity to maintain its unit and keep it available for service – and earn a profit – regardless of whether it generates any electric energy, but also

[42] Exhibit No. RG-1HCT, 10:8-11:2, including Table 2.

compensates the owner for the costs of generating electric energy when called upon.

B. Dispatchability.

Q: Please explain how dispatchability components in the PPA would be beneficial for PSE and its customers.

A: A contract for coal transition power would likely be better for PSE customers if PSE were granted the rights to commit and dispatch Centralia, that is, the rights to decide whether Centralia is actually running and if so, at what level of output. If PSE were granted such rights, PSE could better adapt the operation of Centralia to PSE's specific load, resource and cost conditions than would happen if TransAlta were generally operating Centralia in response to market prices. For example, PSE may face a variable cost that differs from market prices or have specific needs for flexible capacity, and thus benefit from a different level of Centralia dispatch than TransAlta might set if it has full dispatch rights. Possessing dispatch rights would also enable PSE to reduce or eliminate Centralia generation at times when PSE's system operators may face challenges due to "minimum load" conditions, which strongly correlate with low market prices for electricity.

VII. EQUIVALENT PLANT

A. Background.

Q: Please discuss how the cost of an equivalent plant relates to the equity component included in PSE's proposal.

A: Under RCW 80.04.570(6) a utility "is allowed to earn the equity component of its authorized rate of return in the same manner is if it had purchased or built an

equivalent plant." This cost is in addition to the cost of the PPA. The Commission may thus allow PSE shareholders to collect – and PSE customers to pay — additional costs above and beyond the cost of the power provided under a coal transition PPA. The "cost of an equivalent plant" is a major variable that will determine this equity component.

Q: How is the cost of an equivalent plant to be determined?

A: The statute states the following on how the value of an equivalent plant should be established:

> For purposes of determining the equity value, the cost of an equivalent plant is the *least cost* purchased or self-built electric generation plant with *equivalent capacity*. In determining the least cost plant, the commission may rely on the electrical company's most recent filed integrated resource plan. The cost of an equivalent plant, in dollars per kilowatt, must be determined in the original process of commission approval for each power purchase agreement for coal transition power.[43]

Q: Is the equivalent plant an important determinant of the equity component PSE will receive in addition to the costs of the PPA itself?

A: Yes. Under the methodology PSE proposed to calculate the equity component,[44] a change in the cost of the equivalent plant will have a linear impact on the amount of the additional costs PSE customers would pay if the Coal Transition PPA is approved. In other words, for every percent reduction in the cost of the equivalent plant, customer costs related to the equity component will be reduced by an identical percentage.

[43] RCW 80.04.570(6)(b) (emphasis added).
[44] This testimony only addresses the value of the equivalent plant, and does not address any other aspect of the computation of the equity component.

B. PSE's Proposed Cost of An Equivalent Plant.

Q: How did PSE calculate the cost of an equivalent plant for purposes of the Coal Transition PPA?

A: PSE calculated that an equivalent plant would be 346 MW in size, based on the average volume of power to be delivered during the term of the Coal Transition PPA.[45] PSE then calculated the projected cost of an equivalent plant as approximately $215 million by multiplying 346 MW by **[Begin Highly Confidential]** XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX. **[End Highly Confidential]** The Company argues that **[Begin Highly Confidential]** XXXXXXXX **[End Highly Confidential]**is the correct choice of equivalent plant because it was the "least cost purchased or self-built electric generation plant (expressed in dollars per kilowatt) of the proposals offered in response to the 2011 RFP."[46] The use of **[Begin Highly Confidential]** XXXXXXXX **[End Highly Confidential]**as the equivalent plant yielded PSE's proposed equity component of $2.92 MWh.

C. Analysis and Recommendation.

Q: Do you believe PSE's proposed choice of the [Begin Highly Confidential] XXXXXXXXXXXXXXXXXXXX [End Highly Confidential] as the equivalent plant meets the requirements of the statute?

A: No. **[Begin Highly Confidential]** XXXXXXXX **[End Highly Confidential]** is not the appropriate equivalent plant under the requirements in RCW 80.04.570(6)

[45] Exhibit No. RG-1HCT, p.24:12-13.
[46] *See*, Exhibit No. RG-1HCT, p. 24:22-25:2.

for several reasons. First, **[Begin Highly Confidential]** XXXXXXXX **[End Highly Confidential]** is not the least cost plant available to PSE. In response to Staff Data Request No. 2, provided as Exhibit No. KDW-14HC, PSE acknowledged that the lowest cost option identified in the 2011 RFP was the proposal for the **[Begin Highly Confidential]** XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX. **[End Highly Confidential]**

Q: If that is the case, why did PSE choose [Begin Highly Confidential] XXXXX XXX **[End Highly Confidential] as the equivalent plant?**

A: PSE justified choosing **[Begin Highly Confidential]** XXXXXXXXXXXXXX XXXXXX **[End Highly Confidential]** on the basis that it represents the "*next* lowest capital cost" resource after **[Begin Highly Confidential]** XXXXXX **[End Highly Confidential]** thus making it the "lowest capital cost resource available to PSE."[47] This is not an appropriate rationale. The statute does not state that the value of equivalent plant is to be determined as the plant with the "next lowest capital cost." Rather, the statute simply says "least cost." Under a "plain English" interpretation of the phrase "least cost," the least cost option would instead be **[Begin Highly Confidential]** XXXXXX. **[End Highly Confidential]**

[Begin Highly Confidential] XXXXXX **[End Highly Confidential]** is also not the least cost plant if the phrase "least cost" is interpreted as the term of art used in electric utility resource planning and acquisition. In the electric utility industry, the term "least cost" refers to the electric resource(s) expected to provide

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[47] *See,* Exhibit No. KDW-14HC, p. 3; emphasis added. *See also,* Exhibit No. RG-1HCT, p. 25:16-20.

a utility's customers with reliable service at the lowest overall expected long-term cost. As discussed below, PSE itself found that **[Begin Highly Confidential]** XXXXX **[End Highly Confidential]**did not meet this criterion.

Q: Was [Begin Highly Confidential] XXXXXXXX **[End Highly Confidential] a least cost resource in PSE's analysis of its options in the 2011 RFP?**

A: No. PSE's July re-evaluation of parties' revised offers, provided as Exhibit No. CB-4HC, found that **[Begin Highly Confidential]** XXXXXXXX **[End Highly Confidential]**is not PSE's least cost resource option. For example, that exhibit shows that in PSE's original optimization results**[Begin Highly Confidential]** XXXXXXXX **[End Highly Confidential]** was not selected as part of any least cost portfolio in any of the five analytic scenarios – the only resource among ten options that was not selected in at least one of the five scenarios.[48] Nor was **[Begin Highly Confidential]** XXXXXXX **[End Highly Confidential]**chosen in the additional optimization analyses performed of the revised proposals PSE received on June 22, 2012 and July 5, 2012.[49] PSE also said in its qualitative review that the **[Begin Highly Confidential]** XXXXXXX **[End Highly Confidential]** "[p]roject economics [are] less favorable than alternatives."[50]

Figure 11 of Exhibit CB-4HC, which details the results of the re-evaluation, identified four resources to meet PSE's identified capacity need: the Coal Transition PPA, **[Begin Highly Confidential]** XXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX. **[End Highly**

[48] Exhibit No. CB-4HC, p. 4 (Figure 2).
[49] *Id*., pp. 5-6 (Figures 3 and 4).
[50] *Id*., p. 10.

Confidential] The re-evaluation also observes that although **[Begin Highly Confidential]** XXXXXXX **[End Highly Confidential]** was "offered at a seemingly attractive price" it "exceeds PSE's current need, making it less cost-competitive."[51]

PSE thus has no basis to claim that the **[Begin Highly Confidential]** XXXXXXX **[End Highly Confidential]**project is "least cost" under the statute.

Q: Are there other reasons [Begin Highly Confidential] XXXXXXXX **[End Highly Confidential]is not an appropriate choice of the equivalent plant?**

Yes. First, the capacity of the **[Begin Highly Confidential]** XXXXXXXXXXX XXXXXX, **[End Highly Confidential]** is considerably greater than the capacity of the Coal Transition PPA (which averages 346 MW and varies between 180 MW and 380 MW). PSE had different options in the RFP from which it could have chosen, including **[Begin Highly Confidential]** XXXXXXXXXXX XXXXXXXX **[End Highly Confidential]**. While neither**[Begin Highly Confidential]** XXXXXXXXXXXXXX **[End Highly Confidential]** is precisely the same capacity as the Coal Transition PPA, **[Begin Highly Confidential]** XXXXX **[End Highly Confidential]**is much closer to the PPA's capacity and hence a better equivalent on that score.

In addition, because **[Begin Highly Confidential]** XXXXXXXXXXXX **[End Highly Confidential]** size greatly exceeds PSE's residual need, is very unlikely PSE would actually purchase the project. In its qualitative analysis, PSE had downgraded **[Begin Highly Confidential]** XXXXXXX **[End Highly**

[51] *Id*., p. 15.

Confidential] for similar reasons, stating it **[Begin Highly Confidential]** XXXX XXXXXXXXXXXXXXXXXXXXX **[End Highly Confidential]**[52]

Q: Are there other qualitative risks associated with [Begin Highly Confidential] XXXXXXXX [End Highly Confidential] that make it an inappropriate choice for the equivalent plant?

A: Yes. In addition to its size, PSE identified a number of serious qualitative risks associated with **[Begin Highly Confidential]** XXXXXXXX. **[End Highly Confidential]** Among these risks was the fact that the offer was "conditioned on closing Dec. 2012."[53] Additionally, the Company found that there were qualitative risks associated with the condition of the plant, the availability and cost of transmission, the adequacy of the pipeline capacity, and the likely possibility that the plant could not be economically be upgraded to meet Emissions Performance Standards.[54] Thus, there are a number of quantitative and qualitative reasons that disqualify **[Begin Highly Confidential]** XXXXXXXX **[End Highly Confidential]** from consideration for setting the "cost of an equivalent plant."

Q: Do you agree with Mr. Garratt that the Company's proposed cost of an equivalent plant is likely understated because the Coal Transition PPA is a firm, 24x7 product, whereas the capacity factors of the projects bid into the RFP are less than 100%?

[52] Exhibit No. RG-6HC p. 125.
[53] Exhibit No. CB-4HC, p. 10.
[54] *Id.*

A: No. First, since no plant can operate at a 100 percent capacity factor, there is arguably no plant that is truly equivalent to the Coal Transition PPA and thus no "true capital cost of an equivalent plant."[55] Further, as discussed above, a firm, 24x7 product – particularly one with no curtailment rights for PSE – is not necessarily more valuable than a product that operates at less than 100 percent capacity factor.

Q: What is your recommendation to the Commission regarding its choice of an equivalent plant for purposes of computing PSE's equity component pursuant to RCW 80.04.570(6)?

A: I recommend that the cost of equivalent plant should be based on the **[Begin Highly Confidential]** XXXXXXX **[End Highly Confidential]** rather than the **[Begin Highly Confidential]** XXXXXXXXXXXXXXXXXXXX. **[End Highly Confidential]** PSE identified the **[End Highly Confidential]** XXXXXXX **[End Highly Confidential]** as a least cost option in its RFP analysis, it is close to the capacity of the Coal Transition PPA, and is a realistic purchase option—**[Begin Highly Confidential]** XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXX.[56] **[End Highly Confidential]**

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[55] Exhibit No. RG-1HCT, 24:16-19.
[56] PSE Response to Public Counsel Data Request No. 33.

Q: What is the impact on the equity component of choosing the [Begin Highly Confidential] XXXXXXXX [End Highly Confidential] as the equivalent plant rather than the [Begin Highly Confidential] XXXXXXXXXXX XXXXX? [End Highly Confidential]

A: If the other aspects of PSE's proposed equity component computation are adopted, but the cost of the**[Begin Highly Confidential]** XXXXXXXXXXXXX XXXXXXXXX**[End Highly Confidential]**is replaced with the costs of the **[Begin Highly Confidential]** XXXXXXXXXXXXXXX **[End Highly Confidential]** the cost to customers of the adder for the equity component would be reduced by almost half, from $2.92/MWh to $1.49/MWh.[57] PSE customers' annual payments during the years of maximum deliveries under the Coal Transition PPA (2017-2024) would fall from $9.7 million to $5.0 million.[58] PSE customers' total benefits would be a reduction in the Net Present Value of payments of the equity component from $66.76 million to $34.13 million.[59]

VIII. CONCLUSION AND SUMMARY OF RECOMMENDATIONS

Q: Based on your testimony, do you have any recommendations for Commission action on PSE's proposal?

A: Yes. I recommend the Commission condition the approval of the Coal Transition PPA upon its modification to include key provisions outlined above that will allow Centralia's coal transition power to be managed more cost-effectively on

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[57] **[Begin Highly Confidential]** XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX. **[End Highly Confidential]**
[58]**[Begin Highly Confidential]** XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXX. **[End Highly Confidential]**
[59] Exhibit No. RG-9.

behalf of PSE's customers. Specifically, the Coal Transition PPA should be modified to be unit contingent. In addition, it should provide PSE rights to commit and dispatch Centralia in response to its own system needs.

If the Commission approves the Coal Transition PPA, whether or not the approval is conditioned, I recommend that the Commission adopt the **[Begin Highly Confidential]** XXXXXXXX **[End Highly Confidential]** as the equivalent plant for purposes of the equity component calculation.

Q: Does this conclude your testimony at this time?

A: Yes.