

EXHIBIT NO. _____ (CBY-1T)
DOCKET NOS. UE-170033/UG-170034
2017 PSE GENERAL RATE CASE
WITNESS: CAMERON B. YOURKOWSKI

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PUGET SOUND ENERGY,

Respondent.

DOCKETS UE-170033 and UG-170034
(Consolidated)

PREFILED RESPONSE TESTIMONY (NON-CONFIDENTIAL) OF

CAMERON B. YOURKOWSKI

ON BEHALF OF NW ENERGY COALITION, RENEWABLE NORTHWEST, AND

NATURAL RESOURCES DEFENSE COUNCIL

JUNE 30, 2017

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1 I. INTRODUCTION AND SUMMARY

2 **Q Please state your name and qualifications.**

3 A My name is Cameron Yourkowski. I am currently employed by Renewable Northwest
4 and have spent the last ten years working on renewable energy transmission, integration, and
5 market issues at the technical, regulatory, and policy levels. My qualification statement is
6 attached in Exhibit No. ____ (CBY-2).

7 **Q What is the purpose of your testimony?**

8 A The purpose of my testimony is threefold: (1) to support PSE’s decision to join the
9 California Independent System Operator’s (“CAISO”) Energy Imbalance Market (“EIM”) and
10 PSE’s proposal to include the costs and benefits associated with joining and participating in the
11 EIM in this rate case; (2) to describe various transmission operational issues on the Colstrip
12 Transmission System (“CTS”) that create uncertainties about the usefulness of certain PSE
13 transmission assets and rights after Colstrip Units 1 and 2 retire; and (3) to propose that a
14 “sunset” provision be placed on the acceptance of the transmission costs associated with Colstrip
15 1 and 2 into rates, unless PSE develops an acceptable transition plan for these transmission
16 assets.

17 As I describe throughout my testimony, these transmission operational questions are
18 complicated and involve time-consuming technical studies and regulatory approvals in order to
19 be resolved. My understanding is that the Washington Utilities and Transportation Commission
20 (“Commission”) will consider the decommissioning costs associated with retiring Colstrip Units
21 1 and 2 in this rate case; my testimony raises similar transitional issues related to the CTS that
22 follow directly from the retirement of these same units. These transmission issues and the costs
23 associated with these transmission assets that are currently in the rate base have an impact on
24 Washington ratepayers and Washington public policy matters that is distinct from the direct

1 impact associated with the retirement of the Colstrip generation units themselves. In this
2 testimony, I take no position on the questions surrounding the treatment of the generation units
3 themselves or any of the associated costs of operating or decommissioning the generating units.

4 II. THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR'S
5 ENERGY IMBALANCE MARKET ("CAISO EIM")

6 **Q Please describe your position on PSE's involvement in the CAISO EIM.**

7 A The CAISO EIM provides multiple benefits to participating utilities, both on the
8 generation and transmission side: (1) the EIM helps utilities dispatch their own units in a least-
9 cost manner and allows utilities to trade in 5-minute intervals with other participating entities to
10 further reduce dispatch costs; (2) the EIM provides additional transmission access to a liquid
11 market and can be the source of additional wholesale marketing revenues for the utility; (3) the
12 EIM manages real-time congestion on the transmission system in a reliable and least-cost
13 manner; (4) the EIM enables the improved flow and consumption of renewable energy resources,
14 such as wind and solar, thereby reducing curtailments and helping to reduce carbon dioxide
15 emissions.¹ For all of these reasons, I support PSE's participation in the CAISO EIM. It is my
16 understanding that PSE is proposing in this rate case to include the costs of joining and
17 participating in the EIM in its rates and that these costs are offset by the benefits to ratepayers
18 described above.² Based on this understanding, and my knowledge about the benefits of the
19 EIM, I agree with PSE that the inclusion of the EIM-related costs in rates is appropriate.

20 III. COLSTRIP TRANSMISSION SYSTEM UTILIZATION
21 AFTER COLSTRIP 1 & 2 RETIRE

22 **Q Have you reviewed PSE's treatment of Colstrip transmission assets in its direct case**

23 ¹ The Direct Testimony of Mr. David E. Mills (DEM-1T), pg. 13, identifies \$10-\$20 million per year in
24 potential savings for PSE electricity customers.

² See Direct Testimony of Mr. Paul K. Wetherbee, (PKW-1T), pg. 46.

1 **and PSE's responses to the applicable data requests?**

2 A Yes, I read the direct testimony of Mr. Wetherbee, Mr. Piliaris, Mr. Mills, Mr.
3 Gilbertson, and Ms. Koch looking for information related to PSE's treatment of Colstrip
4 transmission assets. I also reviewed all of the responses to the data requests we submitted related
5 to the CTS. Given the impending retirement of Colstrip Units 1 and 2, I found very little
6 mention of the Colstrip transmission assets and costs in PSE's direct case. The company's data
7 responses did help to explain PSE's proposal for how to treat the costs associated with the CTS
8 and related third-party transmission rights once Colstrip Units 1 and 2 retire. I summarize the
9 key takeaways from PSE's data responses as follows:

10 1. PSE states that the CTS transmission capacity and the Eastern Intertie ("EI")
11 capacity currently associated with Colstrip Units 1 and 2 will be used to carry electricity
12 generated by Colstrip Units 3 and 4 after the closure of Units 1 and 2. Exhibit No. ____ (CBY-
13 3C), PSE Response to NWEC-RNW-NRDC Data Request No. 003(a).³

14 2. PSE's total revenue requirement for its entire share of the CTS is \$5,128,029.
15 Exhibit No. ____ (CBY-4), PSE Response to NWEC-RNW-NRDC Data Request No. 002, Att. C.

16 3. PSE states that the company currently has no basis for assuming that any
17 particular Montana-based generation resource or other generation resource would use PSE's
18 transmission capacity on the CTS or its transmission rights under the Montana Intertie
19 Agreement ("MIA"). Exhibit No. ____ (CBY-3C), PSE Response to NWEC-RNW-NRDC Data
20 Request No. 003(a).

21
22 ³ PSE's response appears carefully crafted to avoid any claims that portions of its total CTS capacity are
23 "associated with" or "dedicated to" any specific Colstrip Units or shares of units. Here, I use the phrase
24 "associated with" to plainly make the connection between PSE's share of Colstrip Units 1 and 2 (307
MW) and the *pro rata* transmission capacity (307 MW) necessary to deliver that energy to PSE's
Balancing Area.

1 4. PSE plans to make its available transmission capacity (“ATC”) on the CTS
2 available in accordance with the Colstrip Transmission Agreement (“CTA”) (Appendix A) and
3 PSE’s Open Access Transmission Tariff (“OATT”). Exhibit No. ____ (CBY-3C), PSE Response
4 to NWEK-RNW-NRDC Data Request No. 003(a).

5 5. PSE does not anticipate proposing changes to the regulatory treatment of its CTS
6 assets and believes its entire share of CTS will remain “used and useful” in carrying electricity
7 generated by Colstrip Units 3 and 4. Exhibit No. ____ (CBY-3C), PSE Response to NWEK-
8 RNW-NRDC Data Request No. 003(c).

9 6. PSE has not conducted any transmission studies regarding whether the current
10 transfer path rating of the CTS (Path 8) will be maintained after the closure of Colstrip Units 1
11 and 2. Exhibit No. ____ (CBY-5), PSE Response to NWEK-RNW-NRDC Data Request No. 014.

12 7. PSE has not provided notice to the Western Electricity Coordinating Council
13 (“WECC”) about the impending closure of Colstrip Units 1 and 2. Exhibit No. ____ (CBY-6),
14 PSE Response to NWEK-RNW-NRDC Data Request No. 016.

15 8. PSE has not completed or requested a path ratings study for Path 8 (Montana to
16 Northwest) and assumes that NorthWestern Energy will deal with these questions. Exhibit No.
17 ____ (CBY-7), PSE Response to NWEK-RNW-NRDC Data Request No. 017.

18 9. PSE is exposed to paying the Bonneville Power Administration (“BPA”) for
19 transmission over the Eastern Intertie regardless of whether that transmission is being utilized,
20 and PSE has not developed a transition plan for this transmission when Colstrip Units 1 and 2
21 retire. PSE Response to NWEK-RNW-NRDC Data Request No. No. 003(d) (Exhibit No. ____
22 (CBY-3C)), PSE Response to NWEK-RNW-NRDC Data Request No. 013 (Exhibit No. ____
23 (CBY-8), and Exhibit No. ____ (CBY-9), PSE Response to NWEK-RNW-NRDC Data Request

1 No. 022.

2 10. PSE has not developed a transition plan for the use of any of the transmission
3 rights it holds on BPA's Network ("main grid") after Colstrip Units 1 and 2 retire. Exhibit No.
4 ____ (CBY-8), PSE Response to NWECC-RNW-NRDC Data Request No. 013, Exhibit No. ____
5 (CBY-10), PSE Response to NWECC-RNW-NRDC Data Request No. 019; Exhibit No. ____
6 (CBY-3C), PSE Response to NWECC-RNW-NRDC Data Request No. 003(d).

7 **Q What is your reaction to PSE's testimony and data responses?**

8 A I am perplexed by the statement that all of PSE's shares of the CTS and the Eastern
9 Intertie will be used by Colstrip Units 3 and 4 after Units 1 and 2 retire. Overall, my review
10 leaves me concerned about what appears to be a lack of urgency to ensure CTS assets and other
11 third-party transmission costs currently recovered through rates will remain utilized after
12 Colstrip 1 and 2 retire. As I discuss in detail below, there is a risk that PSE's transmission assets
13 currently associated with Colstrip Units 1 and 2 will endure an unknown length of time where
14 they are significantly underutilized. Moreover, PSE is missing an important opportunity to
15 address transmission issues that would give the company more options for cost-effectively
16 meeting its Renewable Portfolio Standard ("RPS") obligations, serving its voluntary renewable
17 energy program customer demands, and contributing to state climate goals.

18 **Q Do you agree with PSE's assertion that after Units 1 and 2 retire, all of PSE's share**
19 **of the CTS will remain "used and useful" by Colstrip Units 3 and 4?**

20 A No, based on the information I have seen and based on my understanding of whether an
21 asset is the "used and useful",⁴ there are serious questions surrounding the continued utilization

22 _____
23 ⁴ My general understanding is that an asset is considered "used and useful" in Washington if it provides
24 direct service to customers. If it does not provide direct benefits, I understand that there are additional
steps the utility must take to show that the resource provides benefits to customers.

1 of PSE's share of the CTS currently associated with Colstrip Units 1 and 2 after those units
2 retire. For example, in data response No. 003(c) (Exhibit No. ____ (CBY-3C)), PSE asserts that
3 all of PSE's share of the CTS will remain used and useful by carrying electricity generated by
4 Colstrip Units 3 and 4, but does not explain why those generators that already have sufficient
5 transmission capacity would suddenly require more, or how dedicating additional transmission
6 capacity to those generators would make sense for its ratepayers.

7 The statements by PSE that the CTS capacity currently associated with Colstrip 1 and 2
8 would remain "used and useful" simply because Colstrip Units 3 and 4 are still in operation and
9 that no changes in the regulatory treatment of CTS should be anticipated should not be taken for
10 granted. As I describe below, there are several engineering questions surrounding the usefulness
11 of portions of the CTS after Colstrip 1 and 2 retire. These questions warrant the development of
12 a "transition plan" for the PSE's transmission assets and rights associated with Colstrip Units 1
13 and 2.

14 The implication of PSE's statements is that PSE proposes to carry roughly 750 MW of
15 transmission capacity for 370 MW of generation from Colstrip Units 3 and 4, more than double
16 the necessary amount.⁵ PSE offers no other justification for its proposal to carry this surplus
17 transmission. In my experience, this type of transmission portfolio is highly atypical. Either
18 PSE has some other plans for this transmission that PSE did not reveal in its data responses or
19 PSE is asking Washington ratepayers to pay for twice as much transmission as is required to

21 ⁵ Under the CTA, PSE has 746 MW of transmission from Colstrip to Broadview and 758.6 MW of
22 transmission from Broadview to Townsend. Exhibit No. ____ (CBY-11), PSE Response to NWEC-RNW-
NRDC Data Request No. 002, Attachment A, pg. 3. I use 750 MW above as a rough average of PSE's
transmission capacity over the two segments.

23 PSE has a 25% share of Colstrip Units 3 and 4, each with a net generating capacity of 740 MW. PSE
24 total MW share of Units 3 and 4 is 370 MW ((740MW*2)*0.25=370MW). *See*
https://pse.com/aboutpse/PseNewsroom/MediaKit/064_Colstrip.pdf.

1 deliver PSE's share of Colstrip Units 3 and 4. If the latter is the case, this approach is not in PSE
2 ratepayers' interest. If the former is the case, it would be helpful to understand what those plans
3 consist of in order to evaluate whether it makes sense to hold onto such a large amount of
4 transmission capacity and to discuss how to best ensure its utilization.

5 **Q Would PSE be able to contract its transmission capacity out to third-parties**
6 **interested in using the 307 MW of CTS and EI capacity you identify as surplus once**
7 **Colstrip Units 1 and 2 retire?**

8 A In theory, yes, PSE would—and that would be an entirely appropriate course of action
9 under the terms and conditions of PSE's OATT—however, there are unique operational and
10 regulatory questions that, unless proactive action is taken, will delay the use of this capacity by
11 any generators other than Colstrip 3 and 4. I discuss these operational and regulatory questions
12 in more detail below. Colstrip Units 3 and 4 already have sufficient transmission capacity.
13 When asked if PSE assumed if the portion of the CTS associated with Colstrip Units 1 and 2
14 would be utilized by some other generation resource, PSE replied that it had no basis for
15 assuming that any other generator in Montana may want to utilize the transmission associated
16 with Colstrip Units 1 and 2. Exhibit No. ____ (CBY-3C), PSE Response to NWEA-RNW-NRDC
17 Data Request No. 003(a).

18 **Q How do you respond to PSE's claim that the company currently has no basis for**
19 **assuming that any other generator in Montana may want to utilize the transmission**
20 **associated with Colstrip Units 1 and 2?**

21 A I'm surprised by this claim. As an active participant in industry discussions about the
22 benefits of Montana wind resources, I consider it to be common knowledge among Northwest
23 electric utility industry professionals that Montana wind generation is highly valued for its high
24

1 capacity factors and energy profiles that align well with Northwest loads.⁶ I also consider it to
2 be common knowledge among Northwest electric utility industry professionals that transmission
3 costs and operational questions have been identified as key barriers to accessing this resource.⁷
4 Indeed, PSE's own integrated resource planning ("IRP") process recognizes the high capacity
5 factors and capacity credits associated with Montana wind, while at the same time, identifying
6 transmission costs as a limiting factor. In order for the transmission capacity associated with
7 Colstrip Units 1 and 2 to remain utilized after those units retire, PSE should be actively pursuing
8 all necessary steps and options to ensure that these transmission questions (discussed below) are
9 addressed in a timely manner. If, on the other hand, PSE does not believe there is any basis for
10 assuming that other generators in Montana may want to utilize PSE's CTS rights, then PSE's
11 data response calls into question the "usefulness" of the CTS capacity associated with Colstrip
12 Units 1 and 2 once those units retire.

14 ⁶ First, the Northwest Power and Conservation Council conducted a study in August of 2016 identifying
15 both the high value of Montana wind and transmission barriers. Available at:
16 <https://www.nwccouncil.org/news/blog/montana-wind/>. Second, PSE's interconnection queue currently
17 contains two large projects actively seeking interconnection to the CTS. Available at:
18 http://www.oatioasis.com/PSEI/PSEIdocs/6-5-2017_Interconnection_Queue.pdf. Several new generation
19 projects in Northwestern Energy's interconnection queue are actively requesting service at Colstrip and
20 Broadview and could use PSE's CTS capacity after Colstrip 1 and 2 retire. One of these projects at
21 Colstrip has a signed LGIA. NWE's Interconnection Queue is available at:
22 <http://www.oatioasis.com/NWMT/NWMTdocs/GenConnect7.html>. In PSE's IRP documentation,
23 discussed immediately below, PSE cites to some of these same studies.

19 Third, PSE's currently acknowledged 2015 IRP identifies Montana wind as having high capacity
20 factors and capacity value but also higher transmission costs compared to other renewable resources they
21 modeled. See Appendix D at: [https://pse.com/ABOUTPSE/ENERGYSUPPLY/Pages/Resource-
22 Planning.aspx](https://pse.com/ABOUTPSE/ENERGYSUPPLY/Pages/Resource-Planning.aspx). Fourth, PSE's draft IRP currently under development has also identified Montana wind as
23 an important resource consideration.

21 Here, PSE adds the transmission costs associated with their Colstrip to Townsend capacity to the
22 cost of new resources using this transmission after Colstrip Units 1 and 2 retire, demonstrating that PSE
23 places value on the opportunity cost of this asset and that there is commercial interest in utilizing it.
24 Available at: [https://pse.com/aboutpse/EnergySupply/Documents/E_2017-02-02%20_2017-
25 IRP_Montana-Wind-Handout.pdf](https://pse.com/aboutpse/EnergySupply/Documents/E_2017-02-02%20_2017-IRP_Montana-Wind-Handout.pdf).

24 ⁷ See *supra*, note 4.

1 **Q How do you summarize this portion of your testimony?**

2 A PSE's vague assertion that simply because Colstrip Units 3 and 4 would still be in
3 operation following the retirement of Colstrip 1 and 2 and will use some of PSE's share of the
4 CTS and Eastern Intertie does not appear to show a tangible and quantifiable use of at least 307
5 MW of PSE's total share of the CTS and Eastern Intertie. If PSE does not actively pursue
6 resolution of certain transmission operational and regulatory questions (discussed below), in my
7 opinion, it is more likely than not that PSE's share of the CTS and Eastern Intertie currently
8 associated with Colstrip Units 1 and 2 will go underutilized for years after Colstrip Units 1 and 2
9 retire.

10 IV. PSE MUST BEGIN TO ADDRESS OPERATIONAL QUESTIONS
11 ON THE CTS IN ORDER TO ENSURE THE TIMELY UTILIZATION OF THE
12 TRANSMISSION CAPACITY ASSOCIATED WITH COLSTRIP UNITS 1 AND 2

13 **Q Please explain the transmission operational questions and regulatory requirements**
14 **you have mentioned that pose a risk to the usefulness of the transmission capacity**
15 **currently associated with Colstrip Units 1 and 2 once those units retire.**

16 A Without proactive engagement to address transmission operational questions, it could
17 take years before new generating resources are approved by NorthWestern Energy (as the
18 operator of the CTS) and Western Electricity Coordinating Council to use the portion of the CTS
19 currently associated with Colstrip Units 1 and 2.⁸ Several issues have been identified by the
20 relevant transmission planning entities: (1) a new path rating study and approval process will
21 likely need to be completed; (2) new Remedial Action Schemes ("RAS") will have to be

22 _____
23 ⁸ This testimony applies to the future retirement of Colstrip Units 1 and 2 and the associated transmission
24 capacity and operational questions that arise under such a retirement scenario. This testimony does not
apply to any currently unutilized or underutilized capacity on the CTS or the EI under the status quo, with
all Colstrip Units in operation.

1 developed and coordinated with the Acceleration Trend Relay (“ATR”)⁹ that would remain at
2 Colstrip Units 3 and 4; and (3) additional dynamic stability studies, voltage stability studies, and
3 sub-synchronous resonance studies have also been identified by the Northern Tier Transmission
4 Group (“NTTG”) as necessary before new resources could utilize the transmission capacity made
5 available by the retirement of Colstrip Units 1 and 2. PSE has identified these same uncertainties
6 in its current IRP process, stating that the “costs to mitigate transmission impacts of retiring
7 Colstrip 1&2 are currently unknown,” and specifically identifying “voltage support equipment,
8 overdutied equipment, RAS, relay upgrades, [and] communication upgrades, etc.”¹⁰

9 **Q What specific experience informs your perspective on this issue?**

10 A For the past five years, I have been working with NorthWestern Energy and NTTG to get
11 answers to these questions. Although we have collectively advanced the understanding on some
12 of the questions, new issues, such as the path rating process, have only recently been identified
13 and potentially add 1-2 years before new generators could utilize this transmission. What we do
14 know is that (1) the CTS is a unique and complicated portion of the Western grid that was
15 engineered specifically around the Colstrip Units; (2) the technical capability to ensure that any
16 new generation could reliably utilize the CTS does exist, but the exact solutions and associated
17 costs are uncertain at this time; and (3) proactive engagement to plan ahead and address these
18 questions will decrease the risk and length of time that this transmission capacity goes
19 underutilized.

20 **Q Please summarize your understanding of the relevant WECC requirements as they**

21 ⁹ The ATR is a unique type of RAS utilized at the four Colstrip units in order to increase the reliable
22 transfer capability of the CTS. Any new generation on the CTS will have to have its own separate RAS
23 but it will also have to coordinate with the ATR as long as Colstrip Units 3 and 4 are operating. The
24 design and WECC approval of this new RAS could take multiple years.

¹⁰ https://pse.com/aboutpse/EnergySupply/Documents/E_2017-02-02%20_2017-IRP_Montana-Wind-Handout.pdf.

1 **relate to the retirement of Colstrip Units 1 and 2 and the ability of the CTS to**
2 **maintain its current path rating.**

3 A The relevant WECC document is the “Project Coordination, Path Rating and Progress
4 Report Processes,” available on WECC’s website.¹¹ Projects subject to these WECC Policies
5 and Procedures include generation projects 200 MW or greater (p. 9), which are required at the
6 “earliest possible time... [to] notify the PCC, TSS, and TEPPC of the...purpose of the project”
7 (p.19). Paths shall complete the Path Rating Process if a generator or Remedial Action Scheme
8 that an existing rating depends on is modified (p. 29). PSE agrees that Colstrip Units 1 and 2
9 have a RAS associated with them. Exhibit No. ____ (CBY-12), PSE Response to NWECC-RNW-
10 NRDC Data Request No. 018. In order to ensure that this transmission capacity does not go
11 underutilized, PSE should have already notified WECC of its intent to retire Colstrip Units 1 and
12 2 and began a review of the Path Rating and the RAS questions. PSE has not submitted this
13 notification or otherwise began this process, and instead states that it anticipates that the next
14 “base case submittal” to WECC that includes PSE’s loads and resources will reflect closure of
15 Colstrip Units 1 and 2. Exhibit No. ____ (CBY-6), PSE Response to NWECC-RNW-NRDC Data
16 Request No. 016. However, the WECC Policies and Procedures specifically state that,
17 “notifications should be made prior to submittal of project data for the WECC Data Collection
18 Process” (p. 19); delaying the start of this process will only contribute to the underutilization of
19 these transmission assets.

20 In my conversations with the relevant WECC committee chairs and the Path 8
21 transmission operators (NorthWestern, BPA, and Avista), the sense is that a new path rating
22 process is warranted given the resource changes already announced at Colstrip, and that the

23 _____
24 ¹¹https://www.wecc.biz/Reliability/Project_Coordination_Path_Rating_and_Progress_Report_Processes_20170316.pdf.

1 process may take one to two years once it is initiated.

2 **Q How do you envision the overarching process to address these questions should**
3 **work in practice given that we don't know yet which, if any, resources will take**
4 **service over the transmission capacity currently associated with Colstrip 1 and 2?**

5 A PSE should be working with WECC and the other Path 8 operators to reach agreement
6 about the path rating questions and develop an agreed-upon work plan and timeline to answer as
7 many of these technical questions as soon as is practicable. In an effort to minimize the amount
8 of time the CTS is underutilized, as many questions as possible should be answered prior to the
9 retirement of Colstrip Units 1 and 2. Much time could be saved by reaching such agreement and
10 by beginning to collect the necessary data and models to conduct the studies. PSE and the other
11 entities could make progress by utilizing scenario planning and representative data for potential
12 new generation profiles and characteristics. Advancing the discussion about what type of RAS
13 to use and how it might interact with the very unique ATR at Colstrip would significantly narrow
14 the amount of engineering work that will have to be done once new generators begin to
15 interconnect to the CTS. Additional study and engineering work would have to be completed
16 when new generation actually interconnects to confirm the prospective analysis described above,
17 but if PSE waits until this time to even begin this lengthy process, it only prolongs the amount of
18 time that the CTS would go underutilized.

19 **Q What does PSE say about the timing for developing a new RAS?**

20 A PSE witnesses did not testify about the timing for developing a new RAS. In response to
21 Data Request No. 14 regarding transmission studies, PSE called particular attention to pages 9-
22 10 of NorthWestern Energy's "111-D study," which includes the statement that, "any RAS can
23 only be developed once the state of the system is known." Exhibit No. ____ (CBY-5).

1 My concern is that PSE provides this citation to suggest that no work on these
2 transmission questions can be done until “the state of the system is known,” which in this context
3 means until we know if any generation will replace Colstrip Units 1 and 2, what kind, and where
4 it is located. I agree that more detailed information about the new generation replacing Colstrip
5 Units 1 and 2 is required before a RAS can be “engineered,” but significant progress can still be
6 made on the path rating process by assuming that the RAS tripping requirements will be met by
7 any new generation. Such an approach was in fact used to analyze the dynamic stability
8 questions in two of the four studies provided by PSE in response to Data Request No. 014.
9 Additionally, progress could be made on deciding what type of RAS should be pursued and how
10 to coordinate it with the ATR at Colstrip 3 and 4.

11 **Q Please briefly explain your reaction to the four studies PSE provided.**

12 A When asked if PSE conducted any studies to demonstrate whether the current transfer
13 capability of the CTS would be maintained and could be reliably used by generators other than
14 Colstrip Units 1 and 2 (Data Requests 014 (Exhibit No. ____ (CBY-5)) and 015 (Exhibit No. ____
15 (CBY-13), PSE Response to NWECC-RNW-NRDC Data Request No. 015), respectively), PSE
16 submitted four studies conducted by other entities, none of which were conducted on PSE’s
17 behalf. One of these studies is not relevant to the question of “reliable operations,” and the
18 remaining three are the exact work products that led me to conclude that these operational
19 questions pose a risk to the timely utilization of the CTS following the retirement of Colstrip 1
20 and 2, and to sponsor this testimony. Each of the studies submitted by PSE in its response to
21 data request No. 015 is briefly discussed below:

22 1. NorthWestern Energy’s “EPA 111 D Consideration Retirement of CS units 1&2”
23 dated April 2015:

1 This study is the most relevant to the questions in this case because it examines scenarios
2 where Colstrip Units 1 and 2 are retired and replaced with a mix of different resources, but the
3 remaining two units continue to run. This study came about indirectly in response to an NTTG
4 study request submitted by Renewable Northwest and the NW Energy Coalition, and provided
5 value by being the first to study the dynamic stability questions surrounding retirement of
6 Colstrip Units 1 and 2. The results of this study were positive, but it does raise issues
7 surrounding the RAS, frequency, voltage support, and path rating. For example, page 6 states
8 that "...without Colstrip generation...transmission capability out of Montana will also reduce—
9 nearly at a one-for-one basis to the amount of generation reduction."

10 2. NorthWestern Energy's "EPA 111-D Clean Power Plan Consideration Study:
11 Retirement of All Coal-Fired Generation in Montana" dated November 2015.

12 This study examines the relevant transmission operational issues but has limited
13 applicability to the questions in this case because it only looked at scenarios in which all four of
14 the Colstrip units retired, and some of the scenarios even looked at removal of the CTS
15 altogether. That said, this study speaks to the same operational concerns that PSE should be
16 examining: path rating, voltage stability, and RAS (among others).

17 3. NTTG's Draft "NTTG Study Report for the 2016-2017 Public Policy
18 Consideration Scenario" dated May 8, 2017.

19 Renewable Northwest and NWECA requested this study from NTTG, and I consider the
20 draft results to be a positive step forward in answering some of the relevant reliability questions
21 surrounding the future of the CTS under various scenarios. This study suggests that replacing
22 coal with wind may be feasible on the CTS but clearly states that "nothing in this study
23 constitutes a path study..." (p. 8). The main contribution of this study is that it conducted the
24

1 transient stability analysis and found no violations under these scenarios and assumptions. This
2 study did not consider sub-synchronous resonance issues. It also assumed that an effective RAS
3 would be in place but did not specify the design of such a RAS.

4 4. ColumbiaGrid’s “Economic Planning Study Impacts from Coal Shutdown Final
5 Study Report” dated June 18, 2015.

6 This study is an economic planning study, as the title suggests, and does not attempt to
7 answer the questions about path rating and reliable operations. Pages 4 and 5 explain, “...the
8 scope of this study was focused on economic impacts... .. [r]eliability aspects from these
9 scenarios such as system stability, reactive deficiencies or other related issues are outside the
10 scope of this study...”

11 **Q Are these technical transmission questions only relevant to the transmission of**
12 **variable resources like wind and solar over the CTS?**

13 A No. The path-rating question arises from the retirement of Colstrip Units 1 and 2
14 regardless of what kind of generation, if any, may utilize the transmission. Although the details
15 may be slightly different, all of the other issues need to be addressed regardless of what type of
16 generation is interconnected to the CTS. Most of the studies discussed above looked at various
17 amounts of wind and natural gas plant scenarios and largely identified the same suite of
18 questions.

19 **Q What is your reaction to PSE’s response that it plans to make any unused**
20 **transmission capacity on the CTS available to transmission customers in accordance**
21 **with the CTA and PSE’s OATT?**

22 A If PSE itself has no alternative use for that ATC to transmit power to serve its own load, I
23 think that this response—in theory—would be appropriate, but making the ATC administratively
24

1 available is not the issue here. The real issue is ensuring that the ATC is operationally usable by
2 a broad range of potential new generators and customers, including PSE's merchant side of the
3 company, as soon as possible following the closure of Colstrip Units 1 and 2.

4 **Q Please summarize your critique of PSE's transmission planning efforts in**
5 **preparation of Colstrip Units 1 and 2 retiring.**

6 A All of the evidence that I have seen makes it clear that without proactive development of
7 a transition plan for PSE's share of the CTS associated with Colstrip Units 1 and 2, and without
8 commencement of the necessary transmission studies and WECC processes, PSE risks delaying
9 its ability to use, or otherwise market to third-parties, its shares of the CTS associated with
10 Colstrip Units 1 and 2. Based on the information that PSE has provided to date, during such
11 delay, PSE ratepayers would still be paying for PSE's full share of the CTS and the Eastern
12 Intertie even though nearly half of their share would be unutilized. Given that 2022 is the very
13 latest that Colstrip Units 1 and 2 may retire, beginning to work on these transmission questions
14 immediately is the best course of action to ensure that these transmission assets remained
15 utilized.

16 **Q Given all of these questions surrounding the usefulness of the transmission**
17 **associated with Colstrip Units 1 and 2 after those units retire, what do you**
18 **recommend?**

19 A In order to ensure that PSE's share of the CTS remains fully utilized after the retirement
20 of Colstrip Units 1 and 2, and to avoid an unnecessary cost burden on PSE customers, PSE
21 should be required to develop a transition plan for its share of the CTS as soon as possible. This
22 transition plan should resolve the path rating questions, identify barriers to new generators using
23 the CTS, identify the study work necessary to address those barriers and begin as much of that
24

1 study work as soon as practicable. PSE should coordinate with Commission staff, WECC, Path
2 8 operators, ColumbiaGrid, NTTG, and other stakeholders in a public process to scope and vet
3 this transition plan.

4 V. BPA TRANSMISSION COSTS RELATED TO COLSTRIP 1 AND 2

5 **Q Please describe the Montana Intertie Agreement as it applies to PSE and the**
6 **company's rates.**

7 A PSE entered into the MIA with the Colstrip Partners and BPA to provide for the
8 transmission of Colstrip power over BPA's Eastern Intertie, from Townsend to the Garrison
9 Substation, at which point, the power is delivered over BPA's Network transmission to PSE's
10 Balancing Authority Area ("BAA"), or otherwise marketed on a wholesale basis. BPA
11 calculates the "Townsend to Garrison" transmission rate (or "TGT" rate) to charge PSE for the
12 transmission of Colstrip generation over the Eastern Intertie.¹² In data response No. 027, PSE
13 explained that it recovers the costs of paying BPA the TGT rate through its retail rates and that
14 those costs are included in its power costs. Exhibit No. ____ (CBY-14), PSE Response to
15 NWECC-RNW-NRDC Data Request No. 027.

16 One important aspects of the MIA to consider in the context of this rate case and the
17 retirement of Colstrip Units 1 and 2 is that PSE is required to pay BPA for its share of the
18 Eastern Intertie transmission capacity even if PSE or any other party is not using the
19 transmission.¹³ Given the planned retirement of Colstrip Units 1 and 2, I am also concerned
20 about the charges under the TGT rate associated with Colstrip Units 1 and 2 and their inclusion
21 in PSE's rates post retirement.

22 ¹² See Exhibits D and E of the MIA, Exhibit No. ____ (CBY-15), PSE Response to NWECC-RNW-NRDC
23 Data Request No. 002, Attachment B.

24 ¹³ See Section 11 of the MIA, Exhibit No. ____ (CBY-15), PSE Response to NWECC-RNW-NRDC Data
25 Request No. 002, Attachment B.

1 **Q Please describe your understanding of PSE's use of BPA Network Transmission as**
2 **it relates to the delivery of PSE's share of Colstrip Units 1 and 2.**

3 A My general assumption has always been that in order to deliver PSE's Colstrip generation
4 to its BAA PSE pays BPA for use of a sufficient amount of BPA's Network transmission. In
5 response to Data Request No. 003(d), Exhibit No. ____ (CBY-3C), PSE provided redacted
6 information that shows the exact amount and location of these BPA Network transmission rights.

7 Addressing the cost and utilization issues for PSE's BPA Network transmission rights
8 should be easier than addressing them on the CTS and Eastern Intertie because there are fewer, if
9 any, operational questions associated with the Network transmission and PSE has more options
10 to utilize this transmission for other purposes and manage its cost exposure. These options
11 include: (1) PSE can exercise redirect rights to repurpose the transmission capacity to other
12 points of receipt on BPA's Network; (2) PSE can remarket the rights to a third-party while
13 retaining the long-term ownership of those rights; or (3) PSE can release the capacity back to
14 BPA altogether and avoid having to pay for it. Of course, if PSE did release this BPA Network
15 transmission, PSE would potentially be stranding its CTS and Eastern Intertie transmission
16 capacity from its own load center and West Coast markets, thereby making the CTS and Eastern
17 Intertie transmission rights less useful for PSE and/or less valuable to potential third-party users.

18 VI. TRANSMISSION COSTS ASSOCIATED WITH COLSTRIP UNITS 1 AND 2

19 **Q What are the various transmission costs associated with the transmission of PSE's**
20 **share of Colstrip Units 1 and 2?**

21 A (1) PSE's total revenue requirement for its entire share of the CTS is \$5,128,029.
22 Exhibit No. ____ (CBY-4), PSE Response to NWEC-RNW-NRDC Data Request No. 002, Att. C.
23 The pro rata share of those costs associated with Colstrip Units 1 and 2 is approximately
24

1 \$2,325,423.¹⁴ However, the data response notes that this figure does not include taxes. I'm not
2 aware of any reason why taxes shouldn't also be included here.

3 (2) PSE's total annual revenue requirement associated with paying BPA under the
4 TGT rate equals \$4,882,128. Exhibit No. ____ (CBY-14), PSE Response to NWECC-RNW-
5 NRDC Data Request No. 027. The pro rata share of these costs associated with PSE's 307 MW
6 share of Colstrip Units 1 and 2 (compared with 370 MW of Colstrip Units 3 and 4) equals
7 \$2,196,957.¹⁵

8 (3) The BPA Network transmission costs associated with transmitting PSE's share of
9 Colstrip Units 1 and 2 can be calculated by taking the confidential amount of MW provided in
10 response to Data Request No. 003(d) (Exhibit No. ____ (CBY-3C)) (for any witness that has
11 appropriate access to the confidential information), adjusting for Colstrip 1 and 2's proportional
12 share, and multiplying by BPA's Long-Term Firm PTP transmission rate, \$1.48/KW-mo.¹⁶ I do
13 not provide that calculation here in order to keep confidential information out of my testimony.

14 **Q What recommendation do you make regarding these transmission costs?**

15 A I recommend that in this rate case, the Commission attach a "sunset" provision to the
16 acceptance of the above referenced transmission costs into rates. This provision should remove
17 the identified transmission costs from rates as soon as Colstrip Units 1 and 2 retire, unless, before
18 that time, PSE develops a transition plan (as discussed above) for the transmission freed up by
19 the retirement of Colstrip 1 and 2 and the Commission makes a determination, in a general rate
20 case or stand-alone docket, that the transition plan sufficiently demonstrates a path for utilizing

21 _____
¹⁴ (307/677)* \$5,128,029 = \$2,325,423

22 ¹⁵ (307/677)* \$4,882,128 = \$2,196,957

23 ¹⁶ As proposed in BPA's draft Record of Decision governing transmission rates for fiscal years 2018-19.
24 Available at: <https://www.bpa.gov/Finance/RateCases/BP-18/bp18/BP-18-E-BPA-11%20Transmission%20Rate%20Schedules%20and%20GRSPs.pdf>.

1 these transmission assets to serve the interests of PSE's ratepayers in the near future. If PSE fails
2 to meet this provision before Colstrip 1 and 2 retire and these transmission costs are removed
3 from rates, PSE could petition the Commission to put these transmission costs back into rates
4 once PSE has completed, and the Commission has approved, a transition plan for these
5 transmission assets. My hope is that this condition would never actually trigger. Putting the
6 condition in place ensures that PSE customers won't be burdened by transmission costs that
7 aren't providing any benefits, and gives PSE an incentive to begin the necessary work to enable
8 the continued utilization of its shares of the CTS and the Eastern Intertie associated with Colstrip
9 Units 1 and 2.

10 **Q Does this conclude your testimony?**

11 **A Yes.**