BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Puget Sound Energy's 2013 Integrated Resource Plan Work Plan pursuant to WAC 480-100-238	Docket UE-120767

SIERRA CLUB COMMENTS

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1. Sierra Club hereby provides the following comments to the Washington Utilities and Transportation Commission (Commission) addressing Puget Sound Energy's (PSE) 2013 Integrated Resource Plan (IRP). Sierra Club participated extensively in PSE's 2013 IRP stakeholder process. On May 30, 2013, Sierra Club issued a report on the IRP based on the draft IRP and information provided by stakeholders.[1] PSE issued its final 2013 IRP on May 31, 2013. The following comments reiterate many of the issues addressed in Sierra Club's earlier report and provide additional details that have come to light since that time.

I. INTRODUCTION

2. PSE has made good progress in the development of renewable energy generation, and the company supports many clean energy programs. However, 20 percent of the energy supplied by Puget Sound Energy still comes from one of the biggest, most polluting coal-fired power plants in the West—the Colstrip Generating Facility in Eastern Montana. This reliance on an old and dirty coal plant to provide electricity puts PSE's ratepayers at risk. PSE's 2013 IRP which concluded May 30, 2013, showed that PSE is not taking these risks seriously. The Company still plans to operate the Colstrip plant for at least the next 20 years, at possibly as long as 32 years.

3. From cradle to grave, mining and burning coal wreaks havoc on the health and vibrancy of our communities. Coal mining devastates landscapes, contaminates waterways, and causes harmful air pollution. It also poses serious health threats to local communities and coal-related employees. Burning coal produces smog, soot, mercury and other toxic air pollutants, including huge amounts of climate change inducing greenhouse gases like carbon dioxide. Air and water pollution from PSE's coal plant threatens local ranchers' water supply and exposes people to life-threatening pollutants near the plant. Rosebud County, where Colstrip is located, has the 3rd highest asthma rate in Montana.

[1] A copy of that Sierra Club report was filed with the Commission in this docket on July 29, 2013.

4. The amount of carbon pollution that spews from Colstrip's smokestacks is almost equal to two eruptions at Mt. St. Helen's every year. This is equivalent to nearly 3 million passenger car or about half of all passenger cars in Washington. Here in Washington, we are already experiencing the impacts of climate change: drought; forest fires; flooding; storm-water pollution; ocean acidification; and earlier river runoff.

5. Washington's cities are incurring higher costs in preparing for future climate change, with challenges to water supplies, stormwater, and higher risks of flooding due to sea level rise. Washington's shellfish industry may be among the first industrial casualties to ocean acidification, potentially losing $77M in annual revenue.[2] The timber industry may lose due to pine bark beetle infestations and larger forest fires. Colstrip is one of many sources inflicting worldwide damage and economic harm on our state, with no overt recognition of the problem let alone reparations. Cities, residents and industrial customers of our utilities need to be protected from the harm done by Colstrip and the utilities that are keeping the plant open.

6. PSE specifically examined the costs of continuing to operate Colstrip over the next 20 years. The results of the IRP analysis show that continuing to spend money on Colstrip is an economic gamble for PSE's customers. After evaluating several likely scenarios – including the finalization of rules to control harmful coal ash disposal at Colstrip, the implementation of a carbon tax or other CO_2 regulation, or the continued depression in natural gas fuel prices – PSE's own IRP analysis showed that Colstrip is in many cases a more expensive resource than other, cleaner generation alternatives.

II. RELEVANT CHANGES SINCE PSE'S PUBLICATION OF THE FINAL IRP

7. Since the publication of PSE's final IRP in May, the future outlook for Colstrip has only become more dire. In a June 25, 2013 climate policy speech, President Obama announced that the EPA would begin developing regulations to reduce the emission of greenhouse gases from existing power plants.[3] The Colstrip coal-plant, like all coal plants, is a major source of greenhouse gas emissions. The upcoming regulations for greenhouse gases from existing sources will directly impact Colstrip and require

[2] http://www.psparchives.com/publications/our_work/waste/shellfish/fact_sheets/economy_web1.pdf

[3] http://www.whitehouse.gov/the-press-office/2013/06/25/remarks-president-climate-change

significant changes to the facility. There is no accounting for this contingency in PSE's final IRP, and in fact PSE assumes in its base case scenario that there will be no cost of carbon whatsoever for operating Colstrip. Even without a market based cap and trade system, it is highly likely given the President's position and the pending existing source greenhouse gas rules that there will be a real economic cost imposed on Colstrip in the near future.

8. In addition to the economic impacts that regulating carbon will impose on Colstrip, further evidence shows that estimates of the social costs of carbon continue to increase. EPA recently revised its estimated social cost of carbon to $40 in 2015, increasing up to $76 by 2050.[4] PSE had based its "low" carbon estimate ($6 in 2014, increasing to $20 in 2033) on EPA's previous social cost of carbon publication. (Final IRP, p. 4-8.) The significant change in EPA's estimated social cost of carbon demonstrates that PSE's planning assumptions for carbon are out of date and do not reflect the true risks that a carbon-intensive plant like Colstrip poses both for customers and for society broadly. This error in analysis is further exacerbated by the fact, discussed in more detail below, that PSE assumed a $0 cost of carbon in its base case.

9. Colstrip also showed its age this summer. The 740-megawatt (MW) Unit 4 at Colstrip shut down on July 1 and is likely to remain down for at least six months. The damage, which will apparently require repairs to the stator, core and rotor, among other components, could cost an estimated $30 million to repair. This forced outage comes after another recent failure, also at unit 4, that required the unit be shut down from March through October in 2009. PSE estimated that the latest outage could result in replacement power costs of up to $12 million, which Moody's noted would negatively impact the credit ratings of Colstrip's owners.[5]

10. It is time for PSE to plan for a future without coal. Governor Inslee recently stated his support for this concept at a meeting of the Northwest Power Council: "The [7th Power Plan] should facilitate and accelerate the transition from coal power and identify

[4] Assuming a 3% discount rate and 2011 dollars. Available here: http://www.epa.gov/climatechange/EPAactivities/economics/scc.html

[5] *Moody's sees Colstrip 4 outage as credit negative for PPL, utility co-owners*, SNL, July 22, 2013.

the steepest, reasonable glide path for making this final transition…As a 20 year plan it should lay out a clear and date certain path to an electrical system that is 100% carbon free and renewable… And as a start we will look for a date certain for completion of Washington State being coal-free in electricity."[6] PSE does not need Colstrip, and PSE's customers cannot afford the economic, health and environmental impacts of Colstrip. The 2013 IRP fails to acknowledge this reality and instead plans for another 20 years of reliance on an old, outdated, and extremely polluting coal plant.

III. SIERRA CLUB PARTICIPATION IN IRP PROCESS

11. The IRP process is an important planning tool that allows the public an opportunity to engage with PSE in the development of its long term resource strategy. Sierra Club participated extensively in past IRP proceedings with PSE and in the most recent 2013 IRP stakeholder process. Based on Sierra Club's prior recommendations, the Commission directed PSE to take a hard look at Colstrip and the costs of continuing to operate Colstrip in the 2013 IRP. In PSE's last general rate case, the Commission provided two directives for PSE to complete in the 2013 IRP process:

    1. PSE should model a scenario without Colstrip that includes results showing how PSE would choose to meet its load obligations without Colstrip in its portfolio and estimates of the impact on Net Present Value (cost) of its portfolio and rates.
    2. PSE should conduct a broad examination of the cost of continuing the operation of Colstrip over the 20-year planning horizon, including a range of anticipated costs associated with federal EPA regulations on coal-fired generation.

12. Sierra Club appreciates the Commission's leadership in providing this direction. While planning the costs of retirement of an individual plant has traditionally not fallen within the purview of an IRP, waiting for a rate case hearing to address these important issues will be too late, too limited in scope, and too brief to be properly informed. The number of variables affecting Colstrip's economic viability are too numerous to ignore in an IRP. The long-term planning in the IRP greatly impacts the ability to make informed decisions about the future of Colstrip. For example, this IRP revealed that a seemingly

[6] Remarks from Washington Governor Jay Inslee to Northwest Power Council, July 11, 2013. Available at: http://www.youtube.com/watch?v=0PQ_2PnA3V4 (min: 18:10).

innocuous decision of whether to use a 10 year or 20 year ramp rate for demand side resources had a substantial impact on the economic viability of Colstrip. The Commission's direction to PSE to engage in a careful review of Colstrip was well-founded, and we hope this sets a useful precedent for future IRP discussions.

13. PSE held a series of meetings with the IRP Advisory Group ("IRPAG") at which assumptions, methodology, and results were presented, and at which stakeholders and members of the public could ask questions and offer comments. Sierra Club and other stakeholders also provided written comments between meetings, and PSE responded to some of those comments either by providing written responses or by addressing them at the meetings. Sierra Club's correspondence and PSE's written responses are included here as Attachment 1. Many of PSE's assumptions, scenarios, and sensitivity cases derived from stakeholder input, including that of Sierra Club.

14. While the IRPAG process was extensive and PSE staff provided a detailed review of the process, there were a number of important limitations in terms of the information provided to stakeholders and the ultimate reporting of the results. It is clear that PSE declined to produce underlying data and final conclusions in ways that undermine the integrity of the public participation process.

15. The 2013 IRP process created solid progress on the overall analysis for planning the future of Colstrip. PSE provided the public with a more detailed look at the costs of operating Colstrip than it has ever previously provided. However, PSE still fell short on many aspects of the IRP process. PSE either ignored or rejected several public comments regarding the environmental harms and associated costs of operating Colstrip such as state-based actions on coal ash or increasing mining costs. In many cases, PSE did not provide any factual or evidentiary support for its capital cost assumptions, even when those assumptions conflicted with other, higher costs documented by Colstrip's other owners.[7] PSE also refused to provide underlying data and assumptions to support its modeling. Instead, PSE presented the results as a "black-box" analysis without providing an opportunity for the public to verify or refute the methodology or results. PSE similarly

[7] See Sierra Club Letters of March 1, 2013 and January 10, 2013, Attachment 1.

refused to break-out and quantify its conclusions on Colstrip Units 1&2 separately from Units 3&4, despite the obvious evidence showing that Colstrip Units 1&2 are much more costly for customers. PSE had verbally promised to model these units separately at the beginning of the IRP, but ultimately the company only presented combined results, ostensibly to protect their ability to sell Colstrip to a hypothetical buyer.

16. Sierra Club recommends that in future IRP proceedings, the Commission require a formalized written comment and response process. As evidence by the letters included in Attachment 1, this process developed somewhat informally during the 2013 IRP process. While Sierra Club appreciated the response from PSE's staff to our concerns, many issues remained unaddressed and unresolved.

17. Sierra Club also recommends that the Commission set clear guidelines on the access to underlying data and modeling information. Without access to data and assumptions underlying PSE's modeling and results, it is impossible for stakeholders to verify or challenge the presentations made by PSE. We are forced to rely as a matter of faith on PSE's calculations and conclusions, and we are prohibited from providing any alternative analyses that look at different sensitivities or planning assumptions. The overall result is a planning process that remains firmly in the control of PSE. PSE can take or leave suggestions as it likes. This lack of transparency results in a presentation of the company's business plan rather than a collaborative stakeholder process.

IV. IRP RESULTS

18. The IRP process involved a review PSE's generating portfolio options with many moving parts. It is difficult, if not impossible, to be certain about the impacts of any single resource choice because many of the most influential factors impacting electricity supply, such as natural gas prices or carbon prices, are variable and uncertain. Nevertheless, Sierra Club, with the assistance of technical experts at Synapse Energy Economics, drew the following conclusions from PSE's final IRP:

- PSE's own analysis shows **substantial economic and regulatory risks** of continuing to operate Colstrip, **particularly at Units 1&2**.
- PSE is likely to face **hundreds of millions** in new capital and operating costs at Colstrip in the coming years (beginning in 2015) to comply with environmental regulations.

- Replacement of Colstrip Units 1&2 would have **less than a 1%-2% rate impact** in PSE's conservative "Base scenario." In more plausible scenarios (such as moderate CO_2 prices) **replacing Colstrip Units 1&2 would result in a relative decrease in customer electricity rates**.
- Natural gas prices and future CO_2 regulations have significant impacts on the relative economics of continuing to operate Colstrip.
- Accelerated investment in Demand Side Resources (DSR) such as energy efficiency dramatically reduced the relative economic value of Colstrip.

19. With respect to process, it is important to reiterate that, as discussed above, the IRP analysis and all of the IRP results remained within the exclusive control of PSE throughout the process. PSE's IRP results must therefore be viewed appropriately. Without public transparency, PSE's conclusions run the risk of being perceived as self-serving to support preexisting internal business plans of the company.

20. Despite the limited transparency of PSE's analysis, the 2013 IRP results do allow the public to draw several important conclusions about PSE's energy portfolio.

A. Colstrip Analysis

21. Colstrip provides approximately 20% of PSE's energy. The four-unit plant is best considered as two pairs of units: Units 1&2 are older (1975/76), and PSE owns 50% of those units along with PPL Montana; Units 3&4 are not quite as old (1984/86), and PSE owns 25%, with the balance split among five other owners.

22. The Commission directed PSE to model a scenario in its 2013 IRP without Colstrip. Colstrip is a large part of PSE's resource mix, and the utility would require a different plan and resource mix to meet its customers' needs in the absence of Colstrip. PSE did not develop a scenario that optimized its portfolio without Colstrip. Instead, PSE assumed that without Colstrip it would meet its load obligations by relying on undefined "replacement power." The Commission also directed PSE to examine the costs of continuing to operate Colstrip in the face of upcoming environmental regulations and other costs. In order to estimate the cost impacts between spending money on Colstrip or replacing it with PSE's undefined "replacement power," PSE compared the total costs in each scenario with three different Colstrip "Cases" (i.e. regulatory compliance cost assumptions) against the total cost in each scenario using "replacement power." This method provides an estimate for the value of the plant to PSE's customers. It also allows

PSE and the public to see how the relative cost of Colstrip changes depending on different external variables such as fuel prices or CO_2 costs.

23. During the IRPAG meetings, Sierra Club and other stakeholders (including Commission staff) expressed particular interest in extensive analysis of the future of Colstrip. PSE ultimately provided a detailed list of possible future environmental requirements and upgrades at the four Colstrip units, along with PSE's projected compliance costs. (the "Colstrip Matrix", Final IRP, Appendix J, pp. J-18 to J-23) PSE then defined four scenarios from "low-cost" (Case 1) to "very high cost" (Case 4) to characterize the forward-going cost trajectories at the plant. These Colstrip cost cases helped define the range of potential costs that Colstrip may face depending on developing environmental regulations and the technical costs to comply with those regulations. There were several instances where PSE underestimated or omitted certain costs that could impact Colstrip in the future; nevertheless, the Colstrip cases generally provide a reasonable range of potential environmental compliance costs facing Colstrip.

24. Of the four Colstrip units, Units 1&2 are subject to higher compliance costs and are closer to the margin economically. According to PSE's own estimates, Units 1&2 may be required to spend up to $130 million in 2015 to install baghouses to comply with the Mercury and Air Toxics (MATS) rule, and up to an additional $65 million in 2017 to remove sulfur dioxide and nitrogen oxides to comply with regional haze requirements (followed by another $78-$190 million by 2022-2027). Even under PSE's lower regulatory scenario (Case 2), capital costs would exceed $24 million in 2015 and $38 million in 2017 at Units 1&2. Units 3&4 do not face all of the same environmental regulations as Units 1&2 and therefore do not face the same level of capital expenses as quickly. However, PSE still estimates that Units 3&4 face costs of up to $190 million by 2022-2027 to control nitrogen oxides.

25. In addition to the capital costs at all four units, PSE may face additional expenditures that could be required under the federal coal combustion residuals (CCR) rules. This rule, which is still under development, would regulate the handling and disposal of the harmful fly ash waste produced by Colstrip. Several major fly ash spills have occurred in recent years including the 2008 spill at the Tennessee Valley

Authority's (TVA) Kingston coal plant and the 2011 spill at the Oak Creek Power Plant into Lake Michigan. Colstrip is a huge producer of harmful coal ash, and if CCR rules classify coal ash as "hazardous waste," PSE has estimated that disposal costs could range from $8 - $24 per megawatt-hour (MWh), which is between $42 - $125 million[8] annually, beginning in 2018.

26. The risk of a catastrophic dam failure at Colstrip is not implausible. The Colstrip plant has two major impoundments located several miles from the power plant. The Units 1&2 Stage Two Evaporation Pond (STEP) is located approximately two miles northwest of the plant, and the Units 3&4 Effluent Holding Pond (EHP) is located approximately 3.5 miles southeast of the plant.[9] The Units 1&2 STEP have been classified as a high hazard impoundment due to the potential for loss of life in the event of a dam breach because of the close proximity of residences within the flood inundation area. An independent contractor recently recommended that the Units 3 & 4 EHP be reclassified as Significant Hazard based on the likelihood of significant economic/environmental cost associated with a dam breach.[10] These risks, and the potential liability associated with them, must be part of Puget Sound Energy's planning around Colstrip.

27. In addition, multiple environmental lawsuits in Montana state and federal courts could require additional expenditures at Colstrip to clean up harmful pollution from coal ash. Specifically, a recently filed lawsuit asserts that the Montana Department of Environmental Quality must provide better enforcement of Montana water quality laws with respect to groundwater contamination from Colstrip's leaking coal ash ponds. Another suit challenges the sufficiency of the Montana Department of Environmental Quality's administrative order on consent governing remediation of the contaminated coal ash ponds. A federal suit asserts that Colstrip's owners violated the Clean Air Act by making changes to Colstrip without obtaining proper permits and making necessary environmental improvements. If successful, these lawsuits could create significant

[8] Assuming operation of 5.2 million MWh per year.

[9] *Coal Ash Impoundment Specific Site Assessment FINAL Report - PPL Montana: Colstrip Power Plant,* GEI Consultants, Sept. 2009, pp.3-4. Available at: http://www.epa.gov/epawaste/nonhaz/industrial/special/fossil/surveys2/ppl-colstrip-final.pdf

[10] Id.

compliance costs for PSE and the other Colstrip owners. Even though PSE did not fully account for these potential liabilities, and therefore understated the economic risks of Colstrip, the results of PSE's analysis nevertheless show that Colstrip is a risk for customers.

28. PSE also did not estimate increases in the future costs of mining coal at the Rosebud mine, despite earlier statements that fuel costs were increasing. It is possible, if not likely, that the Rosebud mine may run out of coal within the next 10 to 15 years, which would require the mine to be expanded or coal to be hauled in via rail. Either of these options would impose additional costs on Colstrip. Expanding the mine may be more expensive than the current mining operation, or may not be possible due to restrictions imposed in the Montana permitting processes. These direct economic risks were not modeled in the IRP.

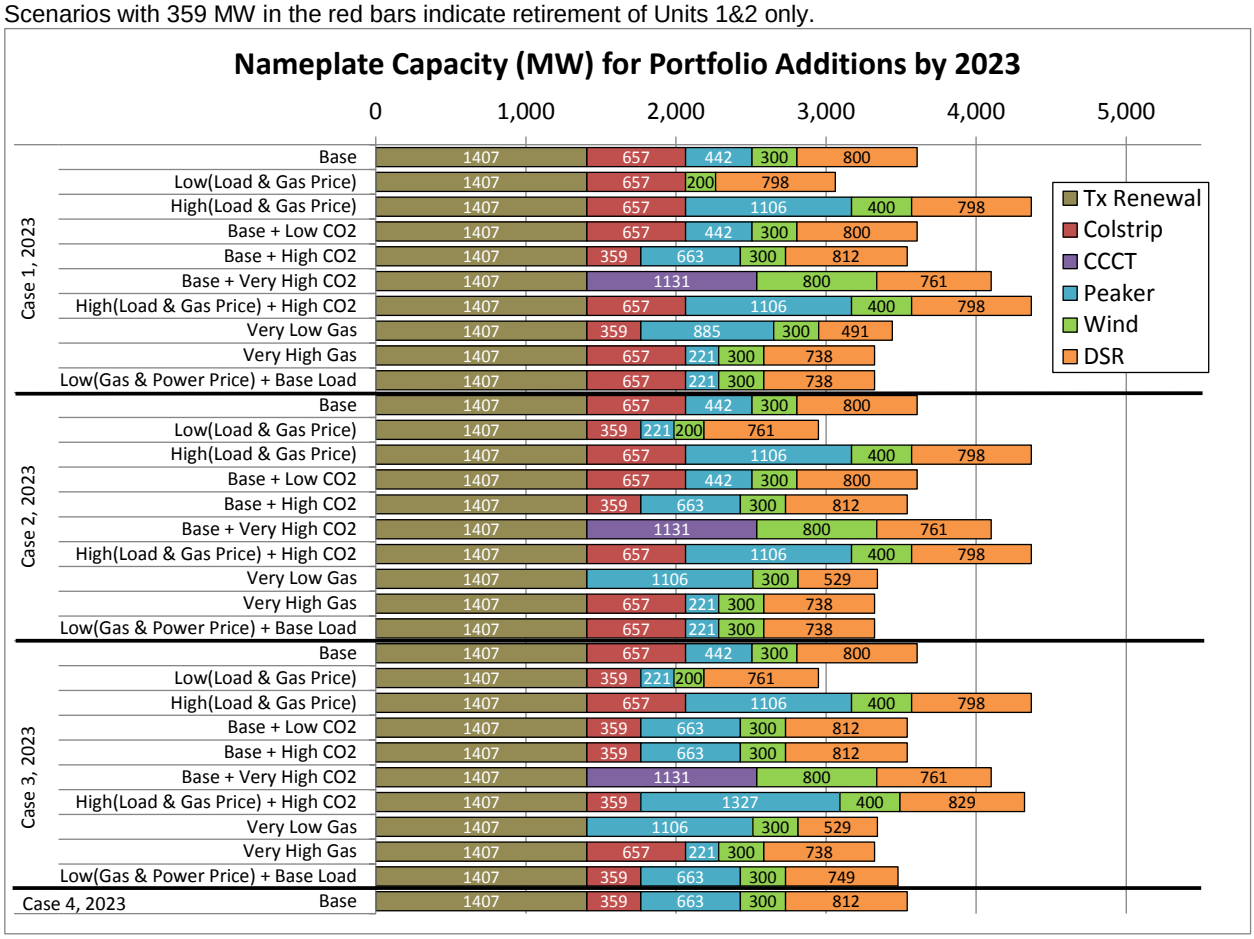
29. The results of PSE's analysis strongly suggest that Units 1&2 are economically close to the margin, and a large number of scenarios render those units uneconomic. However, despite obvious liabilities facing Units 1&2, which do not affect Units 3&4 the same way, the IRP generally treats all four units together as a single generation source, obscuring any conclusions that could otherwise be drawn about the viability of Units 1&2 relative to Units 3&4. The refusal to disaggregate results for Units 1&2 from Units 3&4 is a serious shortcoming in the IRP.

B. PSE's Conclusions and Remaining Colstrip Issues

30. PSE generally concludes that continued reliance on Colstrip to provide electricity reduces cost and market risks for customers. This conclusion is overly simplistic and misleading because it fails to account for the significant risks, particularly at Units 1&2, that customers face under many of the scenarios. As noted above, to the extent that PSE's results for Units 1&2 can be disaggregated from the results for Units 3&4, it is clear that the results for these two pairs of units are very different. This is evident in Figure 1, below, which shows a snapshot of PSE's expected resource mix under various scenarios

in 2023. In scenarios where some or all of Colstrip retires, PSE assumed that the retirement occurred in 2017.[11]

Figure 1: Resource Builds by Scenario
Source: PSE Final IRP, Figure 5-20
Scenarios with 359 MW in the red bars indicate retirement of Units 1&2 only.



31. Figure 1 shows that the relative economic costs and benefits of Colstrip are very different between Units 1&2 and Units 3&4. The red bars in Figure 1 represent PSE's share of Colstrip's capacity, up to a maximum of 657 MW. If the entire 657 MW bar remains, this means that the model found it economical to continue to operate all four Colstrip units. If only a 359 MW red bar is shown, then the model replaced Colstrip Units

[11] The fixed retirement date of 2017 reflects a limitation of the company's approach. PSE's models could not shift the retirement date forward or backward to account for potential differences in costs depending on when the units were replaced. In future IRP's, PSE should work to model scenarios with variable replacement dates that account for potentially avoidable capital costs near the end of the units expected replacement date.

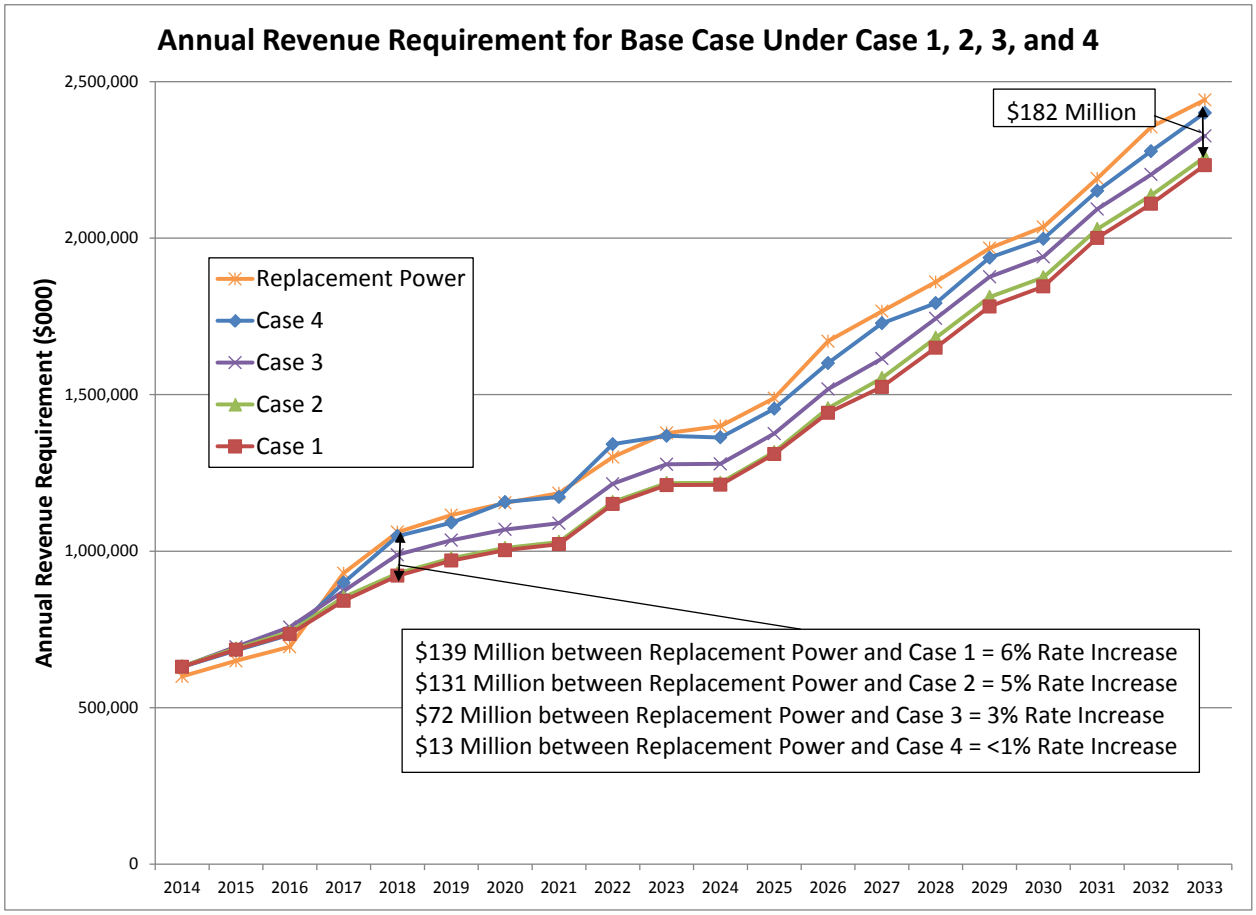
1&2 in 2017. If there is no red bar for Colstrip, then the model replaced all four Colstrip units in 2017. Figure 1 shows that it is more economical to replace Units 1&2 in a large proportion of the scenarios (15 out of 31). Units 3&4 are also replaced under very low gas prices or very high CO_2 prices.[12] Despite this clear divergence between the pairs of units, for most of Chapter 5 in the IRP PSE treats Colstrip as a single resource, and the analysis compares costs with and without the entire plant. This raises the question of how each of these results and graphs would look if PSE treated Units 1&2 separately, a question the IRP does not address.

32. PSE's refusal to provide the results of Units 1&2 separately from Units 3&4 prevents the public from drawing clear conclusions about the economic prudence of continuing to spend customer money to keep Colstrip Units 1&2 in PSE's resource mix. However, there are some rough conclusions that are apparent. For example, Figure 2 shows an estimate of the relative difference in cost of each of the four Colstrip cases in PSE's "Base" scenario. The Base scenario contains numerous flaws, including a $0 estimate for carbon price indefinitely. Yet even in this overly conservative scenario, replacement of Colstrip 1&2 would have less than a 1%-2% rate impact in terms of total revenue requirements.[13] In more plausible scenarios (such as moderate CO_2 prices) replacing Colstrip units 1&2 would result in lower rates for customers.

[12] Case 4, representing the Case 3 assumptions plus higher estimated compliance costs for selective catalytic reduction (SCR) installations and CCR regulations based on past representations made by PSE, was only tested against the base scenario. Given these high compliance costs, the model shows that Colstrip Units 1&2 are uneconomical in the base scenario, and presumably would have been uneconomical in all other scenarios as well. It is reasonable to expect that Units 3&4 would also have been found uneconomical in many of the sensitivity scenarios with Case 4 compliance costs, but PSE did not perform (or at least report) any analysis of Compliance Case 4 beyond the base scenario.

[13] A more precise estimate is not available because PSE did not provide data specific to units 1&2. The 1-2% estimate assumes that less than half of any rate impact form closing all four Colstrip units (i.e. 5% in case 2) would be attributable to Units 1&2 (i.e. less than 2.5%).

Figure 2: Annual Revenue Requirement in Base Scenario
Source: PSE, Final IRP, Figure 5-24



33. The results presented by PSE in Figure 2 show only the overly-conservative "Base" scenario. Figure 2, and PSE's conclusions based on this figure, are therefore biased in favor of retaining Colstrip. In reality, it is very unlikely that PSE will face a $0 cost for CO_2. The rate impacts shown in Figure 2 are therefore higher than what would plausibly be expected, and a more realistic analysis would reduce or even eliminate the cost of replacing <u>all four</u> Colstrip units.

34. The analysis presented in Figure 2 also does not conform with the IRP standards required by Washington law. WAC 480-100-238 requires to make, "a plan describing the mix of energy supply resources and conservation that will meet current and future needs at the lowest reasonable cost."[14] The definition of "lowest reasonable cost" includes "the

[14] WAC 480-100-238(2)(a).

cost of risks associated with environmental effects including emissions of carbon dioxide."[15] PSE has not met this standard because the IRP's analysis and the final choice of resource mix were premised on the base case scenario, which assumes a $0 cost of carbon. Simply modeling a carbon price, and then ignoring it throughout PSE's preferred case, does not meet the requirements of WAC 480-100-238. PSE must base its plan on a reasonable carbon cost. If it had, the revenue requirement differences presented in Figure 2 would be very different.

35. In scenarios other than the Base scenario, PSE's analysis shows that natural gas prices, CO_2 prices, and investment in Demand-Side Resources (DSR) have significant impacts on the relative economics of Colstrip:

- Natural gas prices: if prices remain low ($4.20, 20-yr levelized, nominal), Colstrip Units 1&2 are uneconomical in several scenarios. If price estimates drop to $3.17, all four Colstrip units are uneconomical.
- CO_2 Prices: A CO_2 price somewhere between $6-$25/ton starting in 2014 makes Colstrip Units 1&2 uneconomical in the base gas scenario ($6.06 gas, 20-yr. levelized).[16] A CO_2 price between $25-$75/ton makes all four Colstrip units uneconomical in all scenarios.
- DSR: The relative value of Colstrip is very sensitive to investment in Demand-Side Resources (energy efficiency or demand response). During the IRP process, PSE showed that accelerating the same level of DSR investment from a 20-yr period to a 10-yr period (i.e. same investment, but made sooner) resulted in a 14%-64% drop in the relatively economic value of all four Colstrip units, depending on the Colstrip environmental capital expense assumptions.[17] It is likely that further investments in DSR would similarly reduce or eliminate the relative economic value of Colstrip under all scenarios.

36. PSE's analysis also failed to account for additional costs that may increase the plant's capital needs and operating expenses. For example, increasing coal fuel costs at the plant and the cost impacts from a likely nonattainment designation under the 1-hour sulfur dioxide national ambient air quality standards (NAAQS) would increase electricity

[15] Id. at (b).

[16] Estimates assume increase to $20 and $80, respectively, by 2033. A precise tipping point is not available because PSE did not analyze this question or provide access to data.

[17] Case 1=14%, Case 2=14%, Case 3=23%, Case 4=64%. PSE refused to provide this data for units 1&2 alone.

costs at the plant. Similarly, PSE's analysis ignores the environmental harm and potential litigation liability that the Colstrip owners will likely face by continuing to pollute groundwater sources in Eastern Montana and failing to meet Clean Air Act requirements. These additional potential costs that are not accounted for in PSE's analysis further degrade the relative economics of continuing to operate Colstrip compared to other cleaner electric generation sources.

37. In summary, the IRP shows that continuing to operate Colstrip creates a substantial economic risk for Washington ratepayers. PSE's analysis indicates that Colstrip Units 1&2 are economically marginal at best, and a net cost in many instances, compared to alternative sources of generation.

V. OTHER IRP ISSUES

38. In addition the concerns related to Colstrip, Sierra Club also identified other issues through our participation in the IRP process.

A. LNG Peaking Storage Facility

39. PSE identified the potential opportunity to build an LNG storage facility located to provide fuel to ships, presumably along a waterfront.[18] The Sierra Club accepts that a LNG peaking storage may be necessary, and at this time Sierra Club does not foresee any specific concern with this proposed concept. However, our position relies on the assumption that the capacity for a storage facility would never be sufficient to allow LNG exports overseas. Commission review or and support for such a project should ensure that restrictions on any LNG storage project's permits would prevent any LNG storage projects from converting into LNG export terminals without significant stakeholder review.

B. Information Disclosure during IRP is restrictive

40. PSE raised protecting partner, ratepayer and corporate interests as a reason to not disclose information during the IRP, initially hoping to release information only to parties willing to agree to some non-disclosure agreement (NDA). Such an NDA did not

[18] Final IRP, p. 6-27.

materialize, and PSE refused repeated request by Sierra Club and other participants for relevant information on the basis of confidentiality. Based on PSE's position in this IRP, it is clear that PSE will not share this type of information outside of a formal adversarial docket unless the Commission compels it. PSE's limits on transparency impeded public participation in the IRP process.

41. For example, during the IRP process ICNU asked for data about increasing the loss of load probability (LOLP) to review whether the lower electric rates resulting from a fragile electric grid would benefit their customers more than the enormous loss of productivity and inventory incurred by industrial customers when their power goes out. Sierra Club believes that ICNU's customers benefit greatly from all ratepayers paying towards a lower loss of load probability. We also believe that the costs to ICNU's constituents from even brief power outages are exceedingly high and such outages may directly harm equipment (for computer & aerospace companies), inventory (oil refineries may have to burn off all oil currently being refined), and business models (cloud computing does not work with power outages). To that end, Sierra Club would not support a position that lower electric rates are an acceptable trade-off for a fragile electric grid. Nevertheless, ICNU's request to review LOLP data was a reasonable request for information. PSE did not complete a higher LOLP analysis, nor did it provide ICNU with the data necessary to perform this analysis themselves.

42. This lack of additional analysis and information disclosure prevented ICNU from doing a reasonable cost/benefit analysis, and it prevented ICNU from making an informed determination of whether the LOLP policies are detrimental. As a result of this lack of transparency, ICNU dropped out of the stakeholder process. The inability of participants to fully review and analyze data in the IRP will likely complicate future rate case hearings needlessly, and the Commission will likely have to contend with the resulting uncertainty. Sierra Club recommends that the Commission require better information disclosure from PSE in future IRPs.

VI. CONCLUSIONS AND RECOMMENDATION

43. PSE's conclusion in the IRP that Colstrip is "economic" is overly simplistic and misleading. All of PSE's Base results unreasonably presume a \$0 CO_2 price for the next

20 years. PSE also underestimates several capital expenses that will be required to comply with environmental laws. Most importantly, PSE's conclusions do not address the relative difference between the economics of Colstrip Units 1&2 separately from Units 3&4. Several scenarios show that spending additional money on Colstrip Units 1&2 to comply with modern pollution control laws would cost PSE customers more than the cost of other available alternatives for generating electricity. At this point, it is not justified for PSE to make any additional capital expenditure at these units. PSE and Washington have better, cheaper, and cleaner alternatives for meeting customers' electricity needs.

44. Sierra Club recommends that the Commission provide greater certainty to PSE about the future by requiring PSE to seek pre-determining prior to conducting any major capital upgrades to Units 1&2 in 2015 and 2017. Given the economic uncertainty facing those units, it is not practical to wait for a general rate case to evaluate the prudency of PSE's continued reliance on Colstrip. Frontloading a prudence review of Colstrip would provide PSE with more opportunity to secure replacement power and save the Company from incurring unrecoverable expenses. Sierra Club recommends that the Commission consider this risk-reducing departure from normal regulatory proceedings to protect both ratepayers and PSE.

45. Sierra Club appreciates the opportunity to provide these comments to the Commission.

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Respectfully submitted,

*_/s/ Travis Ritchie_*

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