

ANNUAL COLSTRIP REPORT

ON DECOMMISSIONING AND REMEDIATION

PUGET SOUND ENERGY
DOCKETS UE-170033 AND UG-170034
(CONSOLIDATED)

NOVEMBER 27, 2019

BACKGROUND

Pursuant to paragraph 119 of the Multiparty Settlement Agreement approved in Dockets UE-170033 and UG-170034 (consolidated), Puget Sound Energy (“PSE”) submits this Annual Colstrip Report on Decommissioning and Remediation. The intent of this report is to provide the second annual update to the Commission on Colstrip’s status, provide PSE’s most recent estimates for retirement dates, and the amount of decommissioning and remediation expenditures since the last report along with an update to the estimated future decommissioning and remediation costs. The annual report also provides a detail of the sufficiency of the retirement account established pursuant to RCW 80.84.020 to cover the estimated decommissioning and remediation costs of Units 1&2. Additionally, this report will provide updates regarding the sufficiency of the depreciation rates for Colstrip Units 3&4 to cover decommissioning and remediation costs for those units. In those years where an IRP is filed, the report will also include information regarding replacement power costs.

DEFINITIONS

Decommissioning and remediation can be interpreted differently by different parties. In an effort to provide clarity and mutual understanding, PSE will refer back to definitions used in previous proceedings to set a level of understanding as to how PSE uses the terms.

Decommissioning – In the 2017 PSE general rate case, PSE shared its interpretation of “decommissioning” generally as the estimate of costs to suspend operations, and remove some or all of the above grade structures associated with Colstrip Units 1&2, followed by reasonable restoration in these areas.

Remediation – In the “Written Comments of Puget Sound Energy on the issues Identified and Addressed in the Nine Questions Presented in the Commission Notice, Dated July 21, 2015”, PSE defines remediation as, “additional requirements (state or federal) associated with soil or groundwater. These requirements may be a function of (i) environmental laws or regulations not yet promulgated, (ii) amendments to existing laws or regulations that require greater stringency for certain constituents associated with the operation of Colstrip Units 1&2, (iii) accidental leaks or spills that have not yet been identified, (iv) litigation, and/or (v) state or federal negotiated or mandated requirements.”

PSE continues to use the above definitions in providing information for this report and considers these same definitions to apply to Colstrip Units 3&4. Essentially, decommissioning is related to the above grade structures of Colstrip. Remediation relates to addressing the legal requirements of the environmental impact related to Colstrip operation.

Decommissioning –

There are currently no laws or regulations related to the shut down or removal of the physical structures of Colstrip. However, in practical terms the retirement of a coal generating unit needs to address the physical safety of the structures and protect human health and the environment.

In this report PSE will discuss its updated estimates for decommissioning below in question iii.

Remediation –

An Overview of How the Remediation Process Generally Works

Remediation projects, whether they are managed within the Federal Superfund program or a State led program, follow a set process that was originally developed as part of the Federal Superfund program. The core of the program and process are the Remedial Investigation (“Investigation”), Feasibility Study (“Study”) and Engineering & Remedial Design (“Design”) phases. During the Investigation phase, the nature and extent of contamination is determined through the performance of soil and groundwater investigations. The information obtained through those investigations is used to identify cleanup criteria based on the chemicals of concern, the areas and medium affected by those chemicals, the concentrations of the chemicals and any existing or potential receptors that could be impacted by the chemicals. The Study phase builds upon the information developed as part of the Investigation phase and identifies technologies that are capable of addressing the contamination as well as the potential costs with the ultimate goal of identifying a Preferred Alternative that is agreed upon by the regulatory agency. At this point, the level of design is typically 5 to 10% which results in the cost estimates being high level and subject to change. Upon the completion of the Investigation and Study phases, the agency will typically direct the performing party to proceed with the next step which is the Engineering & Remedial Design. During this stage, the primary focus is the engineering and design of the Preferred Alternative as well as identification and completion of potential additional investigation needed in support of the design stage. Final design, permitting and contracting eventually provide greater clarity as to what the final cost will be.

In PSE’s 2017 general rate case, cost estimates for compliance with the Coal Combustion Residuals Rule (“CCR” or “Rule”) were provided in a report from Geosyntec Consultants (“Master Plan”)¹. Although the Colstrip owners had not yet entered into the Investigation phase of remediation, it was important to understand the potential impacts of the CCR and the Montana Administrative Order on Consent (“AOC” or “Order”)². The Master Plan was compiled in order to provide an order of magnitude for what compliance with the new regulations might entail. At the time the Master Plan was

¹ See Exh. RJR-24 in Docket UE-170033.

² The AOC and Order are described in more detail on the following page.

developed, it was still early in the process and the manner under which Colstrip owners could comply with the CCR was just being determined. Since the last Annual Colstrip Report filed in 2018, work has continued related to the Investigation and Study phases of the remediation project for Units 1&2. This work is described in more detail below. Accordingly, the Master Plan is no longer the most updated source of cost estimates.

The Process of Remediation as it Relates to Colstrip

Remediation work at Colstrip is driven by two regulations, the Federal Environmental Protection Agency's ("EPA") Coal Combustion Residuals Rule and the Montana Administrative Order on Consent.

CCR (Federal)

The CCR was published by EPA on April 17, 2015 and became effective October 19, 2015. In 2016 the U.S. Senate passed legislation amending the Rule. The Rule's intent is to regulate coal combustion residuals under the Resource Conservation and Recovery Act, Subtitle D. The CCR rule addresses the risks from coal ash disposal and sets out recordkeeping and reporting.

AOC (State)

The AOC addresses impacts to groundwater from Colstrip. It was entered into in 2012 by Talen Montana ("Talen")³ as operator of Colstrip and the Montana Department of Environmental Quality ("DEQ"). It provides an extensive process for determining groundwater impact and assessing previous work to address impacts, as well as, laying out standards for addressing contamination and evaluating options for ultimate clean-up. The Order provides a process for investigation and for the development of reports and plans necessary for the remediation of Colstrip. The Order provides that investigations are overseen by the DEQ and it is the DEQ that will ultimately review and approve all reports and plans. The AOC splits Colstrip environmental impact into the following three areas for working purposes:

1. the Plant Site (includes the area near the physical plant structures, some of which are common structures for Units 1-4),
2. Units 1&2, and
3. Units 3&4.

The vast majority of the costs for CCR are encompassed in the AOC. Therefore, the AOC reports are used as the basis for amounts disclosed in this annual report.

³ The original operator of the Colstrip plant was Montana Power Company. In 1999, PPL purchased the Montana Power Company ownership portion of Colstrip and took over the operator role. In 2015 PPL restructured their assets and created Talen Energy which then assumed the operator role at Colstrip. Talen Energy has since had an ownership change but still remains operator at Colstrip in the form of Talen Montana ("Talen").

A synopsis of the process from the DEQ website (<http://deq.mt.gov/DEQAdmin/mfs/ColstripSteamElectricStation>) is provided below.

- *Step 1: First, Talen must prepare “Site Characterization Reports” for each of the three areas that describe the existing conditions, including the extent of the contamination. The reports must also describe what has been done so far to address the contamination, and how effective those measures have been in remediating the contamination.*
- *Step 2: Next, Talen will prepare Cleanup Criteria and Risk Assessment Reports. These reports will identify the standards that Talen will have to achieve in its remediation of the contamination.*
- *Step 3: Finally, Talen must prepare Remedy Evaluation Reports, which will evaluate different options for remediation of the contamination.*
- *DEQ will use the Remedy Evaluation Reports to select a remediation plan for Talen, who will be required to submit final designs based on that plan. After DEQ approves the final plans, Talen will be required to implement the selected remediation.*

Currently, all three steps have been completed for the Plant Site Area, the Units 1&2 and 3&4 areas are in the Site Characterization phase of the process.

To date, only the Remedy Evaluation Report for the Plant Site area has received conditional approval from DEQ. The original draft of the Units 1&2 Remedy Evaluation Report was rejected by DEQ and at the request of DEQ the Units 1&2 Remedy Evaluation Report has been required to be separated into two parts. The content of each of the two parts is discussed in detail in response to question iii, below. Part 1 of the Units 1&2 Stage I Evaporation Pond (“SOEP”)/Stage II Evaporation Pond (“STEP”) Revised Remedy Evaluation was submitted to DEQ October 1, 2019. DEQ is currently reviewing the document. Part 2 of the Units 1&2 SOEP/STEP Revised Remedy Evaluation is in progress and is anticipated to be submitted to DEQ in April 2020. The draft Units 3&4 Remedy Evaluation Report was submitted to DEQ on August 30, 2019 and is currently under consideration by DEQ.

The plan submission is as follows –

Report	Initial Filing to DEQ	DEQ Approval/Rejection
Plant Site Remedy Evaluation	September 2016	October 2018; Alternative 4 received conditional approval
Units 1&2 Remedy Evaluation Part 1	May 2018; Revised Part 1 Submitted October 1, 2019	August 2018; Rejected all 4 alternatives; Revised Part 1 under DEQ review
Units 1&2 Remedy Evaluation Part 2	May 2018; Revised Part 2 in progress	Submission to DEQ expected April 2020
Units 3&4 Remedy Evaluation	August 2019	Under DEQ review

As previously discussed, the above reports are used as the basis for the amounts discussed in the detailed reporting sections below.

Colstrip Reporting Requirements

PSE provides the following responses to the specific questions outlined in paragraph 119 of the Multiparty Settlement Agreement approved in Dockets UE-170033 and UG-170034 (consolidated):

(i) [T]he most recent estimate of the actual retirement date for Colstrip Units 1&2 and Colstrip Units 3 and/or 4.

PSE and Talen are 50 percent partners in Units 1&2 and have agreed to retire the Units beginning on December 31, 2019 with final generation targeted for January 4, 2020. The actual final hour of generation will depend on when the last coal is consumed in the Units. The reasons for moving the retirement date from July 2022 to December 31, 2019 are discussed below in the response to question ii.

Colstrip Units 3&4 do not have an identified retirement date at this time. However under the Washington Clean Energy Transformation Act (“CETA”), Washington utilities will be required to eliminate coal-fired resources from their generation portfolios by December 31, 2025. Units 3&4 are jointly owned by six independent entities and the Units 3&4 Ownership & Operating (“O&O”) Agreement is largely silent on the project’s retirement process. Under ongoing operations each owner must provide their share of coal to run the units as long as one owner requests generation from the Units. The term of the agreement runs as long as the project is capable of providing electricity. Finally, the only direct reference to the cessation of the project is when it is no longer capable of producing electricity; however no criteria or process is set out to determine when that

point occurs. Consequently, past interpretation of the agreement has been that all owners must unanimously agree to the final retirement dates of Units 3&4.

(ii) [I]n the event of an estimated retirement date earlier than July 1, 2022, for Colstrip Units 1&2, and upon the determination by PSE of an estimated retirement date for Colstrip Units 3 and/or 4, a discussion and evaluation of consequences to customers arising from those estimated retirement dates.

In the spring of 2019, Talen indicated to PSE that they were no longer interested in operating Units 1&2 past 2019 due to economic conditions. Forward looking power market prices and coal pricing were factors considered in the retirement decision. Additionally, the coal supply contract for Units 1&2 will expire on December 31, 2019 and an acceptable replacement contract was not found. This outcome is consistent with what PSE stated in last year's report "Regardless of the date chosen to retire Units 1&2, PSE continues to evaluate the units and their economics within the portfolio of generation options available to the company, in the interest of providing customers with the lowest reasonable cost generation supply." Accordingly, Units 1&2 costs were not included in the revenue requirement in PSE's ongoing general rate case in Docket UE-190529. The net impact of not including Colstrip Units 1&2 in this rate case has resulted in a decrease of approximately \$24.5 million for power costs and fixed production costs during the proposed rate year of May 2020 - April 2021.

In the 2017 general rate case settlement Dockets UE-170033 and UG-170034 ("Settlements"), PSE agreed to set aside production tax credits and hydro-related Treasury Grants to offset the unrecovered plant balances, decommissioning and remediation costs. Both the plant balance and the treasury grant balances are already included in current rates. Pursuant to the Settlement, the unrecovered plant balance at retirement will become a regulatory asset that would be allowed rate base treatment – mirroring the treatment of the existing plant balance – which results in similar treatment whether the balance is in plant accounts or in regulatory asset accounts. Finally, monetized PTCs accrue interest at PSE's authorized rate of return in order to simulate rate base treatment until they can be incorporated into rates. Therefore, PSE does not consider there to be an impact to customers related to the plant balances for the earlier retirement date. See further discussion below in question (iii) regarding work related to the early construction of a capture well storage pond related to the decision to retire Units 1&2 in 2019.

Regarding Colstrip Units 3&4, as stated above, PSE cannot unilaterally determine a retirement date for these units and at this time there are no discussions under the O&O Agreement to set a retirement date. Therefore, it is premature for PSE to discuss and evaluate the consequences of the retirement of these units.

(iii) [D]ecommissioning and remediation expenditures associated with Colstrip Units since the time of the last report and updated estimates of future costs.

As of September 30, 2019, there have been \$0.3 million of decommissioning costs incurred for Units 1&2 which primarily consists of planning activities. The majority of physical structure work will not occur until after the last day of electricity generation. Remediation expenditures recorded for Units 1&2 since the last Annual Colstrip Report filed in 2018 were \$0.7 million which were offset by the treasury grant funding allowed pursuant to Chapter 80.84 RCW. Remediation expenditures recorded for Colstrip 3&4 for the same period were \$4.2 million and are covered by current depreciation rates. There have been no decommissioning expenditures for Units 3&4.

The following addresses PSE's current estimates of future decommissioning and remediation costs for the Colstrip Units.

Decommissioning –

PSE and Talen have engaged an outside contractor, Burns and McDonnell, with experience in plant facility decommissioning to coordinate the retirement process. The goal is to bring Units 1&2 to a cold, dark, dry and safe state until the retirement of Units 3&4.

For Units 1&2 the overall scope of the retirement process has been outlined and currently the specifics of work and timelines for implementation are being developed. The target to finalize initial decommissioning work is November 2020. Concurrent with or after that point, selected demolition of the balance of plant equipment may occur. The most recent estimate for decommission costs total \$8.8 million, with PSE responsible for 50 percent, or \$4.4 million. This high level estimate includes contingency costs since estimation is difficult to perform in some areas of an operating facility. A significant portion of the estimate is related to asbestos abatement.

Given the fact there is no identified retirement date for Colstrip Units 3&4 there has been no estimate for decommissioning of the physical structures of that portion of the facility. An assumed amount of non-legal cost of removal totaling \$40 / KW is included in both the existing and proposed depreciation rates for Colstrip Units 3&4.

Remediation –

Plant Site

The Plant Site Remedy Evaluation Report was conditionally approved by the DEQ in 2018, prior to the filing of last year's report and has not changed. The 2018 total estimated cost for the Remedy Evaluation report for the Plant site is \$93.1 million in 2018 dollars. PSE's share of the obligation is \$33.7 million and of that \$20.9 million is allocated to Units 1&2 and \$12.9 million is related to Units 3&4. When adjusted for inflation, PSE's share of the estimated costs total \$44.2 million, with \$27.0 million and \$17.2 million allocated to Units 1&2 and Units 3&4, respectively. Attachment A to this

report provides the breakdown by year of these cost estimates. An additional cost not fully reflected in the AOC reports is the accelerated addition of a groundwater capture storage pond. The need for this pond was identified in the Plant Site Remedy Evaluation Report with design and construction costs planned in 2020 and 2021. The total estimated costs for the pond are \$16 million, split 60% to Units 1&2 and 40% to Units 3&4. In total PSE is responsible for approximately \$6.4 million, \$4.8 million for Units 1&2 and \$1.6 million for Units 3&4 and these costs will be recognized in 2019 and 2020 rather than in 2020 and 2021 as was originally included in the conditionally approved plan.

Units 1&2

For Units 1&2, all four alternatives of the SOEP/STEP Remedy Evaluation Report were rejected by DEQ in October 2018. In 2019 DEQ required that the revised report split the Units 1&2 report into two parts. Part 1 of the Revised Remedy Evaluation Report was submitted to DEQ in October 2019 for review. As requested by DEQ, it focuses on (i) existing source control components at the STEP ponds, (ii) proposed STEP cell closures, and (iii) additional proposed source control measures in groundwater for both SOEP and STEP. Part 2 of the Revised Remedy Evaluation Report will evaluate additional source control measures for the SOEP source area. The Part 2 report is expected to be complete and submitted to DEQ in April 2020, thus no cost estimates exist for Part 2 at this time. For the estimated remediation costs for Units 1&2 in last year's report, PSE used the now rejected Units 1&2 Remedy Evaluation Report. As discussed above DEQ has now required the costs be separated into two parts in the Revised Remedy Evaluation Reports. Accordingly, estimates of Units 1&2 decommissioning costs between this report and last year's report cannot be compared as the Part 2 costs have not been developed.

The draft of Part 1 of the Revised Remedy Evaluation Report provides five alternatives for DEQ to consider. The total cost of these alternatives ranges from a low of \$7.4 million to a high of \$57.5 million in 2019 dollars. PSE's share of the estimates range from \$3.7 million to \$28.7 million in 2019 dollars. When adjusted for inflation, PSE's share of the estimates range from \$5.8 million to \$37.5 million. Again, Part 2 of the Revised Remedy Evaluation Report is currently in progress and is estimated to be complete in April 2020. As a result it is not possible to provide a Part 2 cost estimate in this report.

Units 3&4

The Units 3&4 Remedy Evaluation Report was filed on August 30, 2019⁴. This report provides five alternatives for DEQ to consider. From these alternatives, the range of total costs are from a low of \$9.7 million to a high of \$392.9 million. PSE's share ranges

⁴ As there was no draft Remedy Evaluation Report in 2018 PSE used the most current estimates from the unapproved Units 3&4 Closure Report. Closure Reports are DEQ reports that include high level estimates that are due every five years as opposed to Remedy Evaluation Reports which contain more detailed estimates of the same costs and are considered to be living documents that are updated when needed.

from \$2.4 million to \$98.2 million in 2019 dollars. When adjusted for inflation, the estimates range from \$3.7 million to \$145.8 million. PSE anticipates approval of a Remedy Evaluation Report alternative by the close of 2019.

The following tables summarize PSE's estimated future remediation costs associated with Units 1&2 and Units 3&4. The inflation adjustment of 2.5% used in this report comes from PSE's 2017 IRP report. In light of the current CPI, this remains a reasonable estimate. The reason for the change for Units 3&4 from last year's report is due to the fact that last year, because there was no draft Remedy Evaluation Report available for Units 3&4, amounts were based on the draft Closure Report which estimates costs on a very high level, preliminary basis. In contrast, the draft Remedy Evaluation Reports that are available this year, by nature of the process, provide much more granular and detailed cost estimates.

Summary of Units 1&2 Decommissioning & Remediation Estimate PSE's Share

	Alternative 1 (Low)		Alternative 5 (High)	
	Current Dollars *	Inflation Adj. @2.5%	Current Dollars *	Inflation Adj. @2.5%
Decommissioning ¹	\$ 4,400,000	\$ 4,400,000	\$ 4,400,000	\$ 4,400,000
Plant Site Remedy Eval ²	20,850,492	27,001,429	20,850,492	27,001,429
1&2 Remedy Eval Part 1 ³	3,720,000	5,799,484	28,745,500	37,472,309
1&2 Remedy Eval Part 2 ⁴	not yet estimated	not yet estimated	not yet estimated	not yet estimated
Total	\$28,970,492	\$37,200,913	\$53,995,992	\$68,873,738

* Decommissioning and Remediation costs are in 2019 Dollars

¹ Based on a high level estimate from 3rd party contractor Burns and McDonnell, work to be completed in 2020; therefore no inflation adjustment is necessary

² Based on Plant site Remedy Evaluation, Alternate 4

³ Based on Alternatives 1 and 5 from Units 1&2 Remedy Evaluation Part 1

⁴ Units 1&2 Part 2 Remediation Estimate will not be available until April 2020

Summary of Units 3&4 Decommissioning & Remediation Estimate PSE's Share

	Alternative 1 (Low)		Alternative 5 (High)	
	Current Dollars *	Inflation Adj. @2.5%	Current Dollars *	Inflation Adj. @2.5%
Decommissioning ¹	\$14,800,000	\$23,660,023	\$14,800,000	\$23,660,023
Plant Site Remedy Eval ²	12,858,046	17,165,881	12,858,046	17,165,881
3&4 Remedy Eval ³	2,436,250	3,723,830	98,225,000	145,766,530
Total	\$30,094,296	\$44,549,733	\$125,883,046	\$186,592,434

* Remediation costs are in 2019 Dollars

¹ Based on an assumption of \$40/MW as built into decommissioning costs in Depreciation Study included in PSE's ongoing general rate case in Docket UE-190529 and inflated to 2025.

² Based on Plant site Remedy Evaluation, Alternate 4

³ Based on Alternatives 1 and 5 from Units 3&4 Remedy Evaluation

(iv) [A]n evaluation of the sufficiency of the retirement account established pursuant to Chapter 80.84 RCW to fund and recover decommissioning and remediation activities for Colstrip Units 1&2.

The retirement account established contains \$95.9 million of funding available to address Colstrip Units 1&2 decommissioning and remediation activities. At this time, based on the summarized costs above and depending on the level of estimates that are established in Part 2 of the Units 1&2 Remedy Evaluation Report, the retirement account is estimated to be sufficient to address all Units 1&2 decommissioning and remediation cost scenarios.

(v) [A]n evaluation of the sufficiency of existing depreciation rates for Colstrip Units 3&4 to cover decommissioning and remediation costs for those units.

Under traditional ratemaking, depreciation rates are designed to recover both the cost of the asset as well as the cost of removal. The currently approved depreciation rates, if left in effect through December 2027, are calculated to recover approximately \$47.7 million in decommissioning and remediation. Currently, as part of its ongoing general rate case in Docket UE-190529, PSE has proposed new depreciation rates to incorporate the shortened depreciable life for Units 3&4 through December 2025 and to update the level of cost of removal included in the depreciation rates. If approved as proposed, and if the units are depreciated through December 2025, the rates are calculated to recover approximately \$71.5 million. It is important to note that depreciation studies are implemented approximately 14 to 16 months after the period on which they are studied. Therefore, there is an inherent lag incorporated into depreciation rates that makes it unlikely that the level of cost of removal included in the rates will be the amount that is actually collected while the depreciation rates are in effect. Accordingly, PSE believes that amounts actually collected will be less than the amounts included in the calculation of depreciation rates.

Based on Alternative 5 and the assumptions for Units 3&4, for cost of removal discussed above (and not considering the inherent lag in depreciation rates), approximately \$138.8 million in projected decommissioning and remediation will not be covered by existing depreciation if current depreciation rates continue through 2027. Alternatively, approximately \$115.0 million in projected decommissioning and remediation will not be covered by existing depreciation if depreciation rates as proposed in PSE's ongoing rate case are adopted through 2025.

(vi) [F]or years in which PSE issues an Integrated Resource Plan, updated replacement power costs.

With the passage of CETA, the Washington State Legislature created new statutory requirements for IRPs. As a result in Dockets UE-180607 and UG-180608, Order 02,

the Commission granted PSE an exemption from filing an IRP in 2019, hence this question is not applicable in this year's Annual Colstrip Report.