Exh. DCG-4
Dockets UE-190529/UG-190530 and
UE-190274/UG-190275 (*consolidated*)
Witness: David C. Gomez

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**DOCKETS UE-190529 and UG-190530 *(consolidated)***
In the Matter of the Petition of **PUGET SOUND ENERGY** **For an Order Authorizing Deferral Accounting and Ratemaking Treatment for Short-life UT/Technology Investment**	**DOCKETS UE-190274 and UG-190275 (*consolidated*)**

EXHIBIT TO TESTIMONY OF

David C. Gomez

STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

Idaho PUC Case No. AVU-E-17-01, Direct Testimony of Dr. Ezra D. Hausman, Sierra Club

November 22, 2019

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE APPLICATION OF AVISTA CORPORATION DBA AVISTA UTILITIES FOR AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR ELECTRIC AND NATURAL GAS SERVICE IN IDAHO	)	CASE NOS. AVU-E-17-01 AVU-G-17-01

DIRECT TESTIMONY OF

EZRA D. HAUSMAN, PH.D.

ON BEHALF OF SIERRA CLUB

REDACTED

November 14, 2017

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Exhibit List

I. Professional Qualifications and Purpose of Testimony

Q. Please state your name, occupation, and business address.

A. My name is Ezra D. Hausman, Ph.D. I am an independent consultant doing business as Ezra Hausman Consulting, operating from offices at 77 Kaposia Street, Auburndale, Massachusetts 02466.

Q. Are you providing any exhibits with your testimony?

A. Yes. I am sponsoring Exhibit Nos. 601-613.

Q. What is your educational and professional background?

A. I hold a BA in Psychology from Wesleyan University, an MS in Environmental Engineering from Tufts University, an SM in Applied Physics from Harvard University, and a PhD in Atmospheric Chemistry from Harvard University. I have been involved in analysis of both regulated and restructured electricity markets for approximately 20 years.

I have worked as an independent consultant and expert based on my expertise and experience in energy economics and environmental science since 2014. From 2005 until early 2014, I was employed at Synapse Energy Economics, Inc., a research and consulting company located in Cambridge, Massachusetts, where I served most recently as Vice President and Chief Operating Officer. From 1998 through 2004 I served as a Senior Associate at Tabors Caramanis and Associates (TCA) of Cambridge, Massachusetts. In 2004, TCA was acquired by Charles River Associates (CRA), where I remained until 2005.

I provide expert consulting services in several areas relating to energy markets

and energy market regulation on the state, regional, and federal levels; energy dispatch and planning modeling, quantification of the economic and environmental benefits of displaced emissions; and treatment of energy efficiency and renewable energy in electricity and capacity markets. I have provided testimony and/or appeared before public utility commissions or legislative committees in Arizona, Illinois, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, Nevada, South Dakota, Vermont, and Washington State, as well as at the federal level. I have also provided expert representation for stakeholders at the PJM ISO, the California ISO, the Midwest ISO, and at the FERC. While most of my testimony and analytical work has centered on issues concerning electricity market economics, I have also brought my expertise as a scientist to bear on cases involving energy efficiency programs and greenhouse gas regulation and mitigation in the electric sector.

I have provided a detailed resume as Exhibit No. 601.

Q. Have you previously testified before the Idaho Public Utilities Commission?

A. No.

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

A. My testimony is provided in response to both the initial filing by Avista Corporation ("Avista" or "Company") and the proposed multiparty Stipulation and Settlement filed with the Commission on October 20, 2017 ("Settlement Agreement"), I address three issues of relevance to this proceeding concerning the

treatment of Avista's shares of Units 3 and 4 of the Colstrip coal-fired electric generating plant in eastern Montana:

1) Avista approved capital expenditures totaling $3,040,933 (Avista's share) to install Smartburn controls for emissions of nitrogen oxides ("NOx") as part of the Colstrip capital budgets in 2015-2017. These capital expenditures at Colstrip were unnecessary and imprudent. The Smartburn projects are not required for any reliability, economic, or regulatory purpose, were the result of poor oversight and management by Avista, and did not result in a significant reduction in NOx emissions at the units. Idaho ratepayers should not be responsible for these unnecessary and imprudent expenditures.

2) Avista's review process for capital projects at Colstrip Units 3 and 4 is fundamentally flawed. Of relevance to this proceeding, Avista provided only a cursory explanation for over $24 million in capital spending at Colstrip that it is seeking to include in rate base. Avista also included in rate base in a prior proceeding capital expenditures for projects that were not in service at the time the relevant rates went into effect.

3) Avista is using an unrealistic end-of-life date for the Colstrip units for depreciation purposes, leading to the likelihood of stranded assets and/or intergenerational inequities in the future.

Q. Is the Settlement Agreement as currently proposed in the public interest?

A. No. The Settlement Agreement is not in the public interest because it fails to remove from rate base capital spending at Colstrip Units 3 and 4 that was unnecessary and imprudent. Although Sierra Club supports the efforts of parties to reach a settlement agreement on the majority of issues presented in the rate case, it is not in the public interest to condone Avista's lax oversight and poor management of capital spending at the Colstrip coal plant in Montana. Unless those practices are addressed and remedied, Idaho ratepayers will be compelled to pay for those imprudent capital expenditures for years to come, and they will be at risk of continued imprudent spending on a coal plant that is nearing the end of its

useful life.

Q. What are your recommendations for the Commission in this case?

A. I recommend that the Commission either reject the stipulation or condition its approval on the Parties' acceptance of the following:

1) A finding by the Commission that Smartburn NOx controls installed on Colstrip Units 3 and 4 were unnecessary and imprudent. The Commission should make the following adjustments to Avista's rate base pursuant to this finding:

    a. Remove $1,047,417 from Avista's rate base on a going-forward basis for costs associated with the Smartburn installation on Colstrip Unit 3. There was no economic or regulatory benefit from this capital expenditure, and Idaho ratepayers should not be required to pay for it. Moreover, based on the first months of available emissions data, there appears to be little or no environmental benefit from the project.

    b. Remove $1,993,516 from Avista's rate base on a going-forward basis for costs associated with the Smartburn installation on Colstrip Unit 4, and included in rate base in its prior rate case in Case No. AVU-E-16-03. The Unit 4 Smartburn project should be removed because, as with the Smartburn controls on Unit 3, there was no economic or regulatory benefit from the capital expenditure, and little if any environmental benefit. Furthermore, based on the record in this proceeding, this figure appears to have included at least a portion of the spending on the project at Unit 3, which was not yet used and useful when rates from Case No. AVU-E-16-03 went into effect on January 1, 2017.

2) Direction to Avista to adopt and exercise more rigorous review and approval procedures for future capital expenditures at Colstrip Units 3 and 4. As Colstrip nears the end of its useful life, I recommend that the Commission guard against unnecessary or imprudent spending at Colstrip by requiring Avista to thoroughly review and justify any and all capital projects that increase the plant balance. The Commission should make clear that the company can no longer take a passive role with respect to capital investment decisions in these units, and cannot assume that this Commission will simply rubber-stamp decisions of the Colstrip Owner's Committee without proof that Avista is making its best efforts to act in the interests of Idaho ratepayers.

3) If the Settlement Agreement is rejected, either by the Commission or after modification by the settling parties such that this proceeding returns to litigation, I recommend that the Commission hold open this rate case and consolidate the proceeding with Avista's next depreciation filing. Avista should have included in this proceeding updated end-of-life assumptions for Colstrip Units 3 and 4 that reflect the realities of today's coal and electric industry economics, and the likelihood of future carbon constraints that will adversely or fatally impact coal plants such as Colstrip.

4) If the Commission accepts the Settlement Agreement, the Commission should make clear that nothing in this proceeding precludes further adjustments to rates pursuant to Avista's upcoming depreciation filing.

Q. Are you recommending a change to the revenue requirement proposed by the Settlement Agreement?

A. No. While the changes to rate base that I recommend would normally flow through to reduce annual revenue requirement, I am not recommending a change to revenue requirements or rates in this proceeding. Settlement agreements necessarily represent a compromise among the parties. The majority of issues included in the Settlement Agreement have nothing to do with Colstrip, and therefore I hesitate to disturb a revenue requirement agreement that reflects a balance among the interests of a diverse group of stakeholders.

However, allowing Avista to include its imprudent Colstrip expenditures in rate base would have a much longer-lasting detrimental impact on Idaho ratepayers. If left unchallenged, Avista's wasteful spending on capital projects at Colstrip will stay on the books for years. Implicitly approving those imprudent actions by unconditionally accepting the Settlement Agreement would be against the public interest because it would condone behavior that puts ratepayers at risk of further

imprudent spending. The Commission need not disturb the annual revenue requirement agreed upon in the Settlement Agreement, but it should require Avista to remove the outstanding cost of Smartburn at both Colstrip units from rate base for purposes of all future proceedings.

II. Capital Investments in Colstrip Units 3 and 4 Were Imprudent

Q. Please describe the capital expenditures at Colstrip Units 3 and 4 that are at issue in the current rate case.

A. Avista's application included a total of $24.29 million for capital additions at Colstrip for years 2017-2019.[1] In the Settlement Agreement, according to Staff, all of the capital additions budgeted for 2019 and "most" of the proposed additions in 2018 were removed.[2] In addition, Avista requested to add $1,047,417 to rate base for recovery of its share of the cost of installing Smartburn technology on Colstrip Unit 3 that went into service in June 2017.[3]

Q. Does your testimony address other capital projects at Colstrip that were not included in the Company's current filing?

A. Yes. In Avista's previous general rate case (Case No. AVU-E-16-03), Avista sought approval to include $1,993,516 million in rate base for Smartburn technology on Colstrip Unit 4.[4] That case was resolved in a settlement, and the merits of specific capital investments were never adjudicated or deemed prudent

[1] Direct Testimony of Scott J. Kinney at p.31.
[2] Direct Testimony of Randy Lobb at p.10.
[3] Avista Response to SC PR 3-7(b), Exhibit No. 602, page 8 of 8.
[4] Avista Response to SC PR 3-6(b), Exhibit No. 602, page 5 of 8.

by the Commission. However, these past expenditures in 2015 and 2016 on Smartburn projects at Colstrip Unit 4 suffer from the same deficiencies as the later investment at Unit 3.

Q. What are the Smartburn capital projects that you are challenging in this proceeding?

A. Colstrip, like all coal-fired power plants, emits pollution that is harmful to public health and the environment. Smartburn is a form of emissions control technology installed by the Colstrip owners between 2015 and 2017 on Colstrip Units 4 and 3 that purportedly would reduce the emission of oxides of nitrogen, commonly referred to as "NOx", which is harmful to human health and causes visibility impairments in the environment. Smartburn is a far less effective, but also less expensive, means of reducing NOx emissions than installing Selective Catalytic Reduction ("SCR").

Q. When were the Smartburn controls completed at Colstrip Units 3 and 4?

A. According to Avista's responses to Sierra Club's production requests, the installation of Smartburn on Unit 4 was completed on June 30, 2016, and on Unit 3 on June 30, 2017.[5]

Q. How much did the Smartburn projects cost?

A. The Smartburn projects cost a total of [redacted] million on a plant-wide

[5] Avista Response to SC PR 3-6(b) and 3-7(b), Exhibit No. 602, pages 5 and 8 of 8.

basis at Units 4 and 3, respectively.[6] Avista's share for these two projects totaled $3,040,933, "not including any overheads [sic] incurred by Avista."[7]

Q. When were these costs incurred?

A. The following confidential table shows the annual expenditures on each Smartburn project, according to the 2016 Capital Project Authorization forms provided by Avista during discovery.

Confidential Table 1: Annual Cash Flow for Smartburn Capital Projects at Colstrip

	2015	2016	2017
Unit 3 Smartburn	[redacted]	[redacted]	[redacted]
Unit 4 Smartburn	[redacted]	[redacted]	[redacted]

These two projects are summarized in Confidential Exhibit No. 605, which is extracted from Confidential Attachment G to Avista's response to Sierra Club Production Request 1-3.

Q. How much of the capital expenditure is Avista claiming in this rate case?

A. It appears that Avista is only claiming its share of the final year (2017) of capital spending for Smartburn at Unit 3 ($1,047,417).[8] In its previous rate case, Case No. AVU-E-16-03 Avista included nearly two-thirds of its share of the total Smarburn spending for both units, or ($1,993,516).[9] Because The Smartburn controls at

[6] SC PR 1-3C, Confidential Attachment G, p. 41 and 50 of 74, Exhibit No. 605.
[7] Avista Response to SC PR 3-6(b), Exhibit No. 602, page 5 of 8.
[8] Avista Response to SC PR 3-7(b), Exhibit No. 602, page 8 of 8.
[9] Avista Response to SC PR 3-6(b) and 3-7(b), Exhibit No. 602, pages 5 and 8 of 8 (showing that Avista included 66% of total Smartburn expenditures in its 2016 rate case, and 34% in the current 2017 rate case).

Units 3 and 4 should cost roughly the same amount, this suggests that Avista included a portion of spending on Unit 3 Smartburn in rates beginning January 1, 2017. As noted above, the Unit 3 Smartburn did not go into service until June 2017; thus it appears Avista was charging ratepayers for this project before it went into service.

Q. Were the Colstrip owners required to install these projects?

A. No. The projects appear to be completely unnecessary. There were and are no regulatory or statutory compliance obligations that required Colstrip Units 3 and 4 to reduce emissions of NOx in 2016 and 2017. There is no evidence provided by Avista in this docket that these projects improved the economics or production capabilities of Colstrip Units 3 and 4. Finally, the emissions data from Colstrip show that there has been almost no change in the average emissions of NOx from either unit since the installation of the Smartburn controls.

Q. What was the Company's justification for these two projects?

A. Sierra Club specifically asked Avista in discovery the following question about Smartburn controls for each of Unit 3 and Unit 4: "Please provide a narrative description of what Avista understands its regulatory obligations are today that necessitate the installation of [Smartburn NOx controls], including but not limited to compliance deadlines and emissions limit."[10] In response to Sierra Club's data request, Avista provided only a vague and cursory justification for the Smartburn

[10] Avista Response to SC PR 3-6(h) and 3-7(d), Exhibit No. 602, pages 5-6 and 8 of 8.

projects. Avista did not include any specific compliance deadlines, nor did it include any specific NOx emission limits that Colstrip Units 3 or 4 were required to meet.

Instead, Avista included a general description of the Regional Haze Program, which is a regulation under the federal Clean Air Act that is intended to eliminate man-made visibility degradation in Class I areas by the year 2064.[11] However, as discussed in more detail below, there are no enforceable current or planned compliance obligations under the Regional Haze Rule that are applicable to Colstrip Units 3 and 4.

Along with this general reference to the Regional Haze Program, Avista provided the following explanation:

> *Anticipating that Colstrip Units 3 & 4 could be ordered to install Selective Catalytic Reduction (SCR) during the 2017 review period, the Colstrip Owners' proactively installed the Smart Burn technology to reduce the formation of Nitrous Oxides (NOx) in combustion zone for two major benefits:*
> - *Make proactive and verifiable NOx reductions and*
> - *Optimize the size, scope and ammonia use of any future SCR installation.*[12]

Avista also provided several documents as attachments pertaining to various unrelated rules and actions dating back to 2011. Avista then supplemented its response on October 26, 3017 (nearly seven weeks after the original discovery

[11] Avista's response included a reference to emissions limitations and pollution controls for Colstrip Units 1 and 2 from a September 18, 2012 Final Implementation Plan (FIP) finalized by EPA. However, Avista does not own any portion of Units 1 and 2, and those units are not at issue in this proceeding.
[12] Avista Response to SC PR 3-6(d), Exhibit No. 602, page 6 of 8.

request and after the Settlement Agreement was filed) to include a series of confidential emails between Avista employees and other Colstrip owners.[13]

Q. Is Avista's explanation reasonable?

A. No. Avista's narrative response suggests that the controls were installed proactively because Colstrip 3 & 4 *could* be required as part of the Regional Haze Program to install a different and much more expensive and more effective type of pollution control –SCR – at some point in the future. However, there is no discussion or explanation as to why or how installing Smartburn in 2016 and 2017 was required. Even if Smartburn-like technology can help to "optimize the size, scope and ammonia use of any future SCR installation" as Avista suggests, it is clearly imprudent to make that investment up to a decade before SCR *may* be required.

Based on the limited explanation provided by Avista, the only plausible rationale for Smartburn controls is that the Colstrip owners believed that somehow installing Smartburn controls in 2016 and 2017 could help avoid the requirement for more effective and expensive controls sometime in the next decade. If this was the strategy Avista and the other owners relied on, it is unlikely to be successful, as the discussion below of regulatory actions related to the "Reasonable Progress" phase of the Regional Haze Rule will demonstrate. Installing the Smartburn controls today is unlikely to have any material impact on any future compliance

[13] SC PR 3-6C, Supplemental Confidential Attachment A, Exhibit No. 607.

obligations at Colstrip Units 3 and 4.

Absent any evidence or support for the Smartburn capital projects at Colstrip Units 3 and 4, the Commission must conclude that these discretionary expenditures were imprudent and remove these costs from rate base. Even if the Commission finds that speculating on future regulatory actions was a reasonable use of ratepayer money, the actual environmental data coming from Colstrip Units 3 and 4 show that the controls have thus far been largely, and predictably, ineffective at reducing NOx emissions.

1) <u>The Smartburn Projects Were Significant Discretionary Capital Projects that Were Not Required to Meet any Existing Compliance Obligation</u>

Q. How did Avista describe the Smartburn projects in its filing to the Idaho Public Utilities Commission?

A. Avista did not specifically identify the Smartburn projects in its application or testimony in this proceeding. Instead, it appears that Avista lumped the Smartburn projects in with other capital spending at Colstrip that it describes as "ongoing capital expenditures associated with normal outage activities on Units 3 & 4 at Colstrip."[14] Avista described these costs as "mandatory and compliance" capital projects, including "Environmental Must-Do", a category that that "typically includes projects done for compliance with laws, rules, and contract requirements that are external to the Company (e.g. State and Federal laws, Settlement Agreements, FERC,

[14] Kinney Direct Testimony at p.31.

NERC, and FCC rules, and Commission Orders, etc.)."[15]

Q. Mr. Kinney's direct testimony stated that additional details can be found in Exhibit No. 4, Schedule 3.[16] Did you review that exhibit?

A. Yes. In Exhibit No. 4 at Schedule 3, page 90 of 180, Mr. Kinney provided only a three page "Business Case Justification Narrative" addressing all capital spending at Colstrip Units 3 and 4 for the years 2017 through 2019. The Business Case Justification stated that "Colstrip Capital is required as part of ongoing operations of the facility."[17] That same document included four categories of project: (1) ENVMD- Environmental Must Do, (2) Sustenance, (3) Regulatory, (4) Reliability Must Do.

Q. In your opinion, would you characterize the Smartburn projects as required "Mandatory and Compliance" projects or "Environmental Must Do" projects?

A. Neither. I would describe them as discretionary and ineffective, and at best premature. As discussed in detail below, there was and still is no legal compliance obligation that required Colstrip Units 3 or 4 to reduce NOx in 2016 or 2017, or any future date. The projects should therefore not be considered "Mandatory and Compliance" or "Environmental Must Do" projects and instead should be evaluated as discretionary projects. As such, Avista should have been required to demonstrate that investing the substantial capital resources in Colstrip was

[15] Kinney Direct Testimony at p.30.
[16] Kinney Direct Testimony at p.31.
[17] Kinney, Exhibit No. 4, Schedule 3, page 90 of 180.

somehow in the interests of ratepayers, or should have exercised its right as a participating owner to object to the project and attempt to have it removed from the capital spending plan.

Q. Avista's Exhibit No. 4, Schedule 3 stated that discretionary items are reviewed by Talen (the plant operator) in a hurdle rate analysis.[18] Was a hurdle rate analysis completed for the Smartburn controls?

A. [redacted] In response to Sierra Club's production request 1-3, Avista provided numerous "Capital Project Authorization Forms" for individual projects. [redacted].[19]

Q. Compared to other capital projects, how significant were the Smartburn control projects?

A. The Smartburn controls represented a significant portion of the capital outlays for Colstrip in 2015, 2016 and 2017. The following table shows the annual cash flow for Smartburn at Colstrip compared to the total projected capital costs at Colstrip Units 3 and 4, according to the business plan provided by Avista, for each of the years 2015, 2016, and 2017.

[18] Kinney, Exhibit No. 4, Schedule 3, page 91 of 180.
[19] SC PR 1-3C, Confidential Attachment G, p. 41 and 50 of 74, Exhibit No. 605.

Confidential Table 2: Smartburn Cash Flow as a Percentage of Total Colstrip 3&4 CapEx (millions)

	2015	2016	2017	Total
Total Colstrip 3&4 Capex[20]	[redacted]	[redacted]	[redacted]	[redacted]
Smartburn[21]	[redacted]	[redacted]	[redacted]	[redacted]
Percentage	[redacted]	[redacted]	[redacted]	[redacted]

As can be seen in Table 2, Smartburn accounted for [redacted] to [redacted] of total projected CapEx at Colstrip Units 3 and 4 for each of the years 2015, 2016, and 2017.

Q. What is the Regional Haze Rule referenced by Avista and how does it affect Colstrip Units 3 and 4?

A. Congress established "as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution." 42 U.S.C. § 7491(a)(1).

In 1990, after finding that the U.S. Environmental Protection Agency ("EPA") and the states had not made adequate progress toward reducing visibility impairment in the nation's Class I areas,[22] Congress amended the Clean Air Act to curb emissions that may reasonably be anticipated to cause or contribute to visibility

[20] SC PR 1-3C, Confidential Attachments A-C, Exhibit No. 604. Values shown are for the first year of each capital expenditure plan.
[21] See Table 1 Above. Data from SC PR 1-3C, Confidential Attachment G, p. 41 and 50 of 74, Exhibit No. 605.
[22] Areas designated as mandatory Class I Federal areas (or Class I for short) consist of national parks exceeding 6,000 acres, national wilderness areas and national memorial parks exceeding 5,000 acres, and all international parks that were in existence on August 7, 1977. See 42 U.S.C. § 7472(a).

impairment at national parks and wilderness areas. *Id.* § 7492.

Congress delegated implementation of the Clean Air Act's visibility program to EPA. In 1999, EPA promulgated the Regional Haze Rule, which requires the states to make incremental, "Reasonable Progress" toward eliminating human-caused visibility impairment at each Class I area by 2064. 40 C.F.R. § 51.308(d)(1), (d)(3). In the 1999 regulations, EPA recognized that visibility impairing pollution was a regional problem that required regional solutions; the regulations create the necessary region-wide scheme to restore Class I areas to natural conditions. Furthermore, the regional haze regulations require evaluation of *all* sources of visibility impairment.

In order to achieve the goal of natural visibility in Class I areas, individual states are subject to implementation plans that must contain "emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward the national goal." 42 U.S.C. § 7491(b)(2). The Regional Haze Rule includes several interlocking measures designed to make "Reasonable Progress" towards achieving natural visibility by 2064. These measures include requirements to (1) develop Reasonable Progress goals based on the evaluation of any and all sources contributing to visibility impairment; (2) determine baseline and natural visibility conditions; (3) create a long-term strategy for compliance with Reasonable Progress; and (4) implement the best available retrofit technology (BART) for some of the oldest sources of haze-causing pollutants. *Id.*;

40 C.F.R. § 51.308(d), (e).

Q. What actions have the state and EPA taken to implement the Regional Haze Rule in Montana?

A. On September 18, 2012, the EPA issued a final Federal Implementation Plan ("FIP")[23] to address regional haze in Montana.[24] Under the Regional Haze Rule, Colstrip Units 1 and 2 were required to undergo a BART analysis. Units built after 1977 such as Colstrip Units 3 and 4 are not "BART eligible" units,[25] but they still fall under the Reasonable Progress requirement. The Montana FIP addressed both the BART analysis at Colstrip Units 1 and 2, and Montana's obligations under Reasonable Progress that apply to Units 3 and 4.

Q. What subsequent state or federal actions are necessary under the Regional Haze Rule?

A. Under Reasonable Progress, states are required to report in five-year intervals that they are making progress toward achieving natural visibility conditions by 2064. In developing these Reasonable Progress goals and the emission reductions needed to meet them, the state must develop a long-term strategy that considers four factors: (1) the costs of compliance, (2) the time necessary for compliance, (3) the energy and non-air quality environmental impacts of compliance, and (4)

[23] If a state fails to develop its own State Implementation Plan ("SIP"), the EPA develops a Federal Implementation Plan.
[24] 77 Fed. Reg. 57864 (Sep. 18, 2012), Exhibit No. 610.
[25] In response to Sierra Club PR 3-6(f), Avista provided two attachments (SC PR 3-6 A and B) that purportedly discussed a "BART analysis" for Colstrip Units 3 and 4. That analysis was not actually conducted under the Regional Haze Rule, but instead was part of a requirement in Colstrip Unit 3 and 4's prevention of significant deteriorate ("PSD") permit.

the remaining useful life of any potentially affected sources. 42 U.S.C. § 7491(g)(1); 40 C.F.R. § 51.308(f)(2)(i).

States are required to submit periodic plans demonstrating how they have and will continue to make progress towards achieving their visibility improvement goals. The first state plans were due in 2007 and covered the 2008–2018 planning period.[26] The second planning period covers 2018-2028. Prior to 2017, states faced a requirement to submit comprehensive State Implementation Plan ("SIP") revisions in 2018 to address the second planning period. However, a recent Regional Haze Rule changed the deadline for states to submit their next comprehensive Regional Haze Plan SIP revisions from 2018 to 2021.[27] This change gives states more time to submit comprehensive SIP revisions, but otherwise the Reasonable Progress requirements remain the same, including the 2028 end date of the second planning period.[28]

Q. Were any emissions reduction required at Colstrip Units 3 and 4 in 2016 or 2017 under the EPA's FIP implementing the Regional Haze Rule?

A. No. EPA's 2012 Montana FIP, which EPA issued because Montana declined to issue a SIP in 2006, specifically concluded "not to require additional emission controls on Colstrip Units 3 and 4 in the relevant planning period" (i.e. 2008-

[26] *See*, 82 Fed. Reg. 3078, 3080 (Jan. 10, 2017), Exhibit No. 608, page 3 of 4.
[27] 82 Fed. Reg. 3078 at 3080 (Jan. 10, 2017), Exhibit No. 608, page 3 of 4.
[28] *See,* Proposed Amendments to Requirements for State Plans, 81 Fed. Reg. 26942, 26965 (May 4, 2016), Exhibit No. 609, page 3 of 5; *see, also*, 82 Fed. Reg. 3078, 3080 (Jan. 10, 2017), Exhibit No. 608, page 3 of 4 ("Other than the one-time change to the next due date for periodic comprehensive SIP revisions, no change is being made for due dates for future periodic comprehensive SIP revisions").

2018) and that "[w]hether additional emission reductions from reasonable progress sources, including Colstrip Units 3 and 4, are necessary will be re-evaluated in subsequent planning periods."[29] There was no compliance deadline or emissions limit set, or any requirement for additional NOx controls at Colstrip Units 3 or 4, for 2016 or 2017 or any future year.

Q. Did the State of Montana determine that Colstrip Units 3 and 4 were required to install environmental retrofits under the Reasonable Progress requirements for Montana?

A. No. The Montana Department of Environmental Quality (MDEQ) has concluded that nothing further is required from Colstrip Units 3 and 4 during the current evaluation period. In MDEQ's most recent "Regional Haze 5-Year Progress Report" in August 2017, Colstrip Units 3 and 4 are listed among Montana sources "for which the Montana FIP analysis did not result in emission limits."[30] The report goes on to note that while Smartburn was installed on Colstrip units 3 and 4 in 2016 and 2017, this was done "in the absence of regulatory emission limits in the Montana FIP."[31]

Simply put, there was no federal or state requirement for the Colstrip owners to spend [redacted] on NOx pollution controls between 2015 and 2017.

[29] 77 Fed. Reg. 57864, 57902 (Sep. 18, 2012), Exhibit No. 610, page 4 of 5.
[30] Regional Haze 5-Year Progress Report, August 2017, at p.2-7, Exhibit No. 611 (full report available at: https://deq.mt.gov/Portals/112/Public/PublicComment/Documents/RegionalHaze_ProgressReport_8-2017.pdf).
[31] *Id.* at p. 2-8.

Q. Have you seen evidence of when the Colstrip co-owners, including Avista, believed Colstrip Units 3 and 4 might require upgrades to reduce NOx emissions under the Reasonable Progress rule?

A. Yes. Avista itself acknowledged in its recently completed 2017 IRP that the Regional Haze Rule will not affect Colstrip Units 3 and 4 at this time. The IRP states, "Colstrip Units 3 and 4 are not currently affected, although the units will be evaluated for Reasonable Progress at the next review period in September 2017. Avista does not anticipate any material impacts on Colstrip Units 3 and 4 at this time."[32]

However, Avista and other Colstrip owners do acknowledge that further controls will likely be required in the next planning period – and have made statements indicating that they expect SCR controls – not Smartburn – will be required in the next planning period (2018-2028). For example, PacifiCorp's 2015 IRP included an assumption that it will incur costs to install SCR at Colstrip 3 and 4 in 2023 and 2022, respectively.[33] Portland General Electric's 2016 IRP assumed that SCR would be required by 2027 in order to meet Reasonable Progress requirements.[34] Avista's own 2017 IRP base scenario assumed an SCR would be necessary in

[32] Avista 2017 IRP at p.7-6 (available at: https://www.myavista.com/about-us/our-company/integrated-resource-planning).
[33] PacifiCorp 2015 IRP, Vol. 1, footnote to Table 7.2 at p. 148: "Colstrip 3&4 SCR 2023/2022" is "common to all scenarios".
https://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2015IRP/PacifiCorp_2015IRP-Vol1-MainDocument.pdf.
[34] Portland General Electric 2016 IRP, Ch. 3, p.78 (available at: https://www.portlandgeneral.com/our-company/energy-strategy/resource-planning/integrated-resource-planning).

2028; the Company also evaluated a sensitivity case with SCR in 2023.[35]

Avista provided a series of e-mails on this topic in its confidential supplemental response to Sierra Club Production Request 3-6. It is clear from these e-mails that

[redacted]

Q. Given this evidence, how would you characterize the decision by Avista and the other Colstrip owners to install Smartburn technology at Units 3 and 4?

A. It is clear from the record that the Smartburn installations on Units 3 and 4 were elective, as they were not mandated by any federal or state law or rule, and that any investment in technology to reduce NOx emissions at these units in 2016 and 2017 was premature at best.

2) <u>The Installation of Smartburn in 2016-2017 is Unlikely to Avoid SCR in a Future Compliance Period.</u>

Q. Avista states that it "proactively installed Smart Burn technology" because it "Anticipat[ed] that Colstrip Units 3 & 4 could be ordered to install Selective

[35] Avista 2017 IRP at p.12-2 and 12-6.
[36] SC PR 3-6C Supplemental Attachment A, Exhibit No. 607.

Catalytic Reduction (SCR) during the 2017 review period..."[37] Is this approach reasonable?

A. No. Avista appears to be saying that it installed Smartburn in 2016-2017 in order to avoid a possible future requirement to install SCR at some undefined date. Avista provides no analysis whatsoever showing that gambling over $3 million in ratepayer money on this risky and speculative "pre-compliance" strategy is likely to pay off. If this was indeed Avista's strategy, it is a poor one because the Smartburn controls are unlikely to have any material impact on the ultimate control technology that will be required at Colstrip Units 3 and 4.

Q. Why do you conclude that installing Smartburn is unlikely to avoid a future SCR requirement?

A. Avista, Talen, and the other co-owners should have known that Smartburn would not be an effective way to achieve meaningful reductions in NOx emissions at Units 3 and 4. Both general industry experience[38] and Talen's own experience at Colstrip Unit 2, demonstrate that in the absence of SCR, Smartburn technology is capable of achieving NO_x emission levels of 0.15 lbs/MMBtu. This is very close to the levels that were already being achieved at Colstrip Units 3 and 4.

As seen in *Figure 1*, there was only a very small reduction in the emission rate at each unit, if any, after the in-service date for Smartburn at Unit 4 (June 30, 2016)

[37] SC PR 3-6(d), Exhibit No. 602, pages 5-6 of 8.
[38] See, for example, Power Engineering, 2003, "Combustion Control Techniques Achieve 0.15 lb/MMBtu NO_x Levels Without SCR." Available at http://www.power-eng.com/articles/print/volume-107/issue-1/features/combustion-control-techniques-achieve-015-lb-mmbtu-nosubx-sub-levels-without-scr html.

and Unit 3 (June 30, 2017). Prior to the installation of Smartburn, both Units 3 and 4 were averaging about 0.16 lbs NOx/mmbtu. After installing Smartburn, based on the data available thus far, the average rate dropped to about 0.15 lbs NOx/mmbtu.

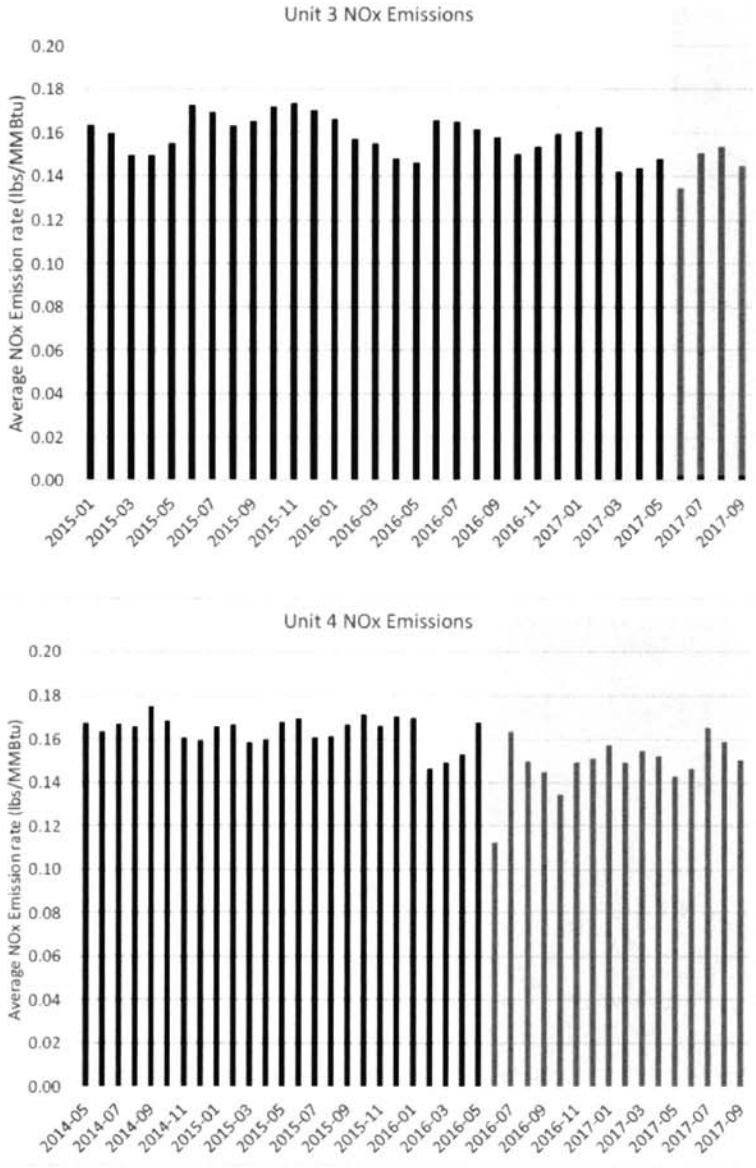

Figure 1. NO_x emission rate at Colstrip Units 3 (top) and 4 (bottom) before and after installation of Smartburn technology. Shaded region is post-installation. Data source: US EPA Air Markets Program Data (AMPD)[39]

[39] Available at https://ampd.epa.gov/ampd/.

Q. Does this decrease in emissions mean that Colstrip will be able to avoid further NOx controls on these units?

A. No. The Smartburn controls achieved only a very small reduction in NOx pollution from Colstrip Units 3 and 4, as shown in *Figure 1*. Other pollution control technologies, such as SCR, are far more effective at reducing the amount of NOx pollution from coal plants such as Colstrip. The EPA will determine at a later date whether further NOx controls will be required on the units, and I have seen no indication that Smartburn technology is an acceptable alternative to more effective and expensive controls such as SCR or SNCR.[40]

Further, Colstrip is by far the largest single source of emissions in Montana. It would be highly unlikely – and essentially noncompliant - for Montana to ignore Colstrip Units 3 and 4 in its long-term strategy. That means Montana will still need to apply the four statutory factors mentioned earlier to determine whether emissions controls, such as SCR, must be installed on Colstrip Units 3 and 4. Nothing about installing Smartburn in 2016-2017 affects any of those factors.

3) <u>Even if Smartburn might be a useful component of a possible future SCR project, it is illogical and imprudent to install it up to a decade in advance.</u>

Q. Avista claimed that the Smartburn controls will "optimize" the installation of SCR at Colstrip in the future. Is this a reasonable justification for the Company's investments in this technology in 2016 and 2017?

[40] Selective Non-Catalytic Reduction

A. No. Part of Avista's explanation for this investment was that it would "optimize the size, scope and ammonia use of any future SCR installation."[41] However, that does not explain why Avista would believe investment in these projects to be prudent in 2016 and 2017. This future compliance obligation is speculative, so it is not known if the Smartburn technology will ultimately be operating in concert with other NOx control technology such as SCR. If SCR is required, it could be up to a decade into the future. It is not prudent to spend ratepayer money today on the chance that it will somehow be a useful component for future technology that may or may not ever be installed.

As noted above, Avista was fully aware that the timing of any requirement to install SCR controls on Colstrip Units 3 and 4 was and remains speculative. Internal Avista emails show that Talen was assuming the cost of SCR on Colstrip Unit 3 alone was [redacted].[42] Given the tenuous economic situation facing Colstrip, it is likely that, were SCR controls required to continue operating these units in the future, a lower cost compliance alternative may well be to forgo combustion of coal at Colstrip. Pursuing a non-coal alternative would mean that any investment in Smartburn technologies installed in 2016 and 2017 would no longer be used or useful in any sense, and would not have been prudent because they were never required for any environmental compliance requirement, did not meaningfully reduce emissions, and were never used to "optimize" anything.

[41] SC PR 3-6(d), Exhibit No. 602, pages 5-6 of 8.
[42] SC PR 3-6C Supplemental Attachment A (page 4 of 9), Exhibit No. 607, page 4 of 9.

Finally, even if SCR is ultimately required, and if today's Smartburn does somehow turn out to be the logical technology for optimizing the SCR controls of the 2020s, Avista has presented no explanation for why it should have been installed in 2016 and 2017. If Smartburn is a prudent and reasonable component of SCR installation, then Avista should have considered it as part of the overall cost of the SCRs, if and when they are required.

Q. Is there an environmental benefit to installing Smartburn controls as soon as possible?

A. Not much. As I have shown, the Smartburn controls on Units 3 and 4 have produced little if any reduction in NOx emissions. Much more effective and expensive SCR technology would be required to achieve significant reductions in NOx emissions as long as Colstrip continues to operate as a coal-fired power plant. An even greater environmental benefit could be realized were Avista and the other co-owners to responsibly plan for the retirement of Colstrip. My client, the Sierra Club, routinely advocates before environmental agencies to require polluting facilities to install stringent pollution controls. But that does not mean it is appropriate to spend tens of millions of dollars on unnecessary and ineffective capital expenditures at coal plants, or even to invest in effective controls when lower cost and lower risk alternatives are available. With the current low price of cleaner and cheaper generating technology, utilities are frequently able to achieve even more environmental benefits at lower cost if they instead rely on other, cleaner alternatives.

III. Avista's Review Process and Request for Recovery of Colstrip Costs is Unreasonable

Q. What is the process by which capital investments such as the Smartburn technology on Units 3 and 4 are approved by Avista and the other co-owners.

A. In response to Sierra Club Production Request 1-5 (Exhibit No. 602), Avista explained as follows:

> *After the first of a given year, Talen updates the existing capital plan to include projects carried forward from a prior year. It also adds in all newly proposed capital projects that were not part of the prior year's 2 year projection. Talen's management team vets all of the projects to ensure that the projects that are included as proposed capital projects are justified and prioritized and included based on a financial analysis or are required for environmental, regulatory, or safety reasons.*[43]

Q. Did Talen provide a financial analysis in support of the Smartburn installations on Units 3 and 4?

A. As noted above, Talen identified these projects as [redacted] even though there was no mandate requiring them and, as far as I have been able to determine, no financial analysis was performed.

Q. Does Avista have veto power over capital projects at the Colstrip plant?

A. No. According to Avista's confidential response to Sierra Club Production Request 1-4 (Exhibit No. 603):

[redacted]

[43] SC PR 1-5(c), Exhibit No. 602, pages 3-4 of 8.

[redacted]

Q. Did Avista object to the Smartburn projects at issue here?

A. No. According to the Company, "Avista didn't vote 'no' on any of the Colstrip 3&4 projects included in the rate case application."[45]

Q. To your knowledge, has Avista ever objected to a proposed capital expenditure at Colstrip?

A. No. When asked whether Avista had ever voted "no" on any capital project at Colstrip, Avista responded that it does not keep individual project records, but that it "do[es] not recall an instance at this time."[46]

Q. Why is it important for a minority shareholder like Avista to perform an independent evaluation of capital investments in the Colstrip units?

A. Although Avista is a minority owner of each of the units, the Company does have an opportunity and an obligation to review and, if appropriate, object to capital investments if it believes they are unwarranted or not in the interest of Idaho ratepayers. However, it has never exercised this right, or at least it cannot recall a time that it has objected to any capital spending at Colstrip.

As a regulated utility in the state of Idaho, Avista has an obligation to ensure that ratepayer funds are spent prudently, and that any capital investments are made in the context of least-cost planning to reliably meet customer needs, and subject to

[44] SC PR 1-4(b), Exhibit 603.
[45] SC PR 1-5(d), Exhibit No. 602, page 4 of 8.
[46] SC PR 1-5(f), Exhibit No. 602, page 4 of 8.

known – not speculative – regulatory requirements.[47] This responsibility includes the responsibility to refrain from making imprudent capital investments. As I have demonstrated, the Smartburn pollution controls are a good example of imprudent capital spending. The controls are not required by any state or federal mandate, and they have not been shown to be in the interest of ratepayers, and they have been largely and predictably ineffective at reducing NOx emissions.

Q. Would it be futile for Avista as a minority owner to oppose those capital expenditures?

A. Avista claims that it is not able to veto any specific project by itself. According to the ownership agreement provided by Avista in response to Sierra Club PR 1-5(a), [redacted][48] At a minimum, Avista should have at least identified its concerns and raised them with the other co-owners, particularly Puget Sound Energy, PacifiCorp, and Portland General Electric, who all operate as regulated utilities and have a responsibility to ensure prudent spending on behalf of their ratepayers.

[47] *Cf. In the Matter of Idaho Power Company's Application for a Certificate of Public Convenience and necessity for the Investment in Selective Catalytic Reduction Controls on Jim Bridger Units 3 and 4*, Case No. IPC-E-13-16, Order No. 32929 at p.9-10 (finding that Idaho Power had presented a sufficient analysis showing that expenditures were the least-cost, least-risk alternative to both reduce environmental effects and allow reliance electric service to continue).
[48] SC PR 1-5C Attachment A, Exhibit No. 606, Section 17 "Project Committee."

Regardless of whether Avista voting "no" would affect the ultimate outcome, the utility still had an obligation to protect the interests of its customers. This responsibility cannot be abdicated, nor should recovery of and on such capital projects be approved, merely because Avista's minority stature does not give it a veto power over such expenditures. The Company should provide a full justification for any such expenditure, including a cost-benefit analysis and a credible analysis of alternatives for meeting its customers' specific needs, exactly as it would were it were the sole owner of the units.

If Avista had voted "no" on the Smartburn capital projects, and despite those objections the other co-owners overruled the Company and installed the projects anyway, then it might be reasonable for the Commission to conclude that Avista's management had acted prudently within the bounds of its authority under the contract. That is not what happened here. Avista was presented with an unnecessary and imprudent project that it affirmatively approved. The costs of that imprudent capital project should therefore be removed from Avista's rate base. The Commission need not reach the question in this proceeding of what it would have done had Avista been overruled, because in this instance Avista never bothered to object to the project.

Q. Do you have any concerns with the timing and manner in which Avista presented the capital costs of Smartburn to the Commission?

A. Yes. In both this proceeding and its prior rate case in AVU-E-16-03, Avista lumped the costs of Smartburn controls in with other more routine capital projects

at Colstrip. There was no separate analysis discussing the unique situation that allegedly required the installation of Smartburn. This is troubling because, as discussed above, Smartburn accounted for about [redacted] of Colstrip 3 and 4's annual capital budget each year from 2015-2017. Avista should have called out these costs more explicitly in its application and testimony to allow for a thorough review of those costs, particularly considering that the costs were based on a novel and speculative compliance strategy.

Q. Why was Avista's requested capital expense for Smartburn at Unit 4 in the 2016 rate case nearly twice as expensive ($1,993,516) as the current request for Smartburn controls at Unit 3 ($1,047,417)?

A. Avista appears to have combined some or all of the 2016 project costs for Units 3 with the costs for Unit 4 in the 2016 rate case. [redacted].[49] However, Avista front-loaded recovery of those costs by claiming nearly two-thirds of those costs as part of Unit 4 and the remaining one-third as part of Unit 3.[50]

Q. Do you have any concerns with this discrepancy in timing?

A. Yes. According to the Commission's order approving the 2016 rate case settlement, the test-year for that proceeding was based on a 12-month period

[49] SC PR 1-3C, Confidential Attachment G, p. 41 and 50 of 74, Exhibit No. 605.
[50] Avista Response to SC PR 3-6(b) and 3-7(b), Exhibit No. 602, pages 5 and 8 of 8.

ending December 31, 2015 with rates that became effective on January 1, 2017.[51] That means that the Smartburn project for Colstrip Unit 3 was not complete until a full 18 months after the test year in AVU-E-16-03 and that Idaho ratepayers were paying for the project for a full 6 months before it was in service.

Adjustments to rate base should not be made for plant additions unless and until those projects actually go into service before the higher rates go into effect.[52] While some allowance can be made for capital additions that fall outside the test year, which would account for the 2016 project costs of Smartburn on Unit 4 being included in the last rate case's 2015 test year, this does not justify Avista including expenses for Smartburn Unit 3 in the prior rate case because that project was not expected to be completed until June 2017, six months after rates went into effect.

Q. Are you suggesting that the Commission should revise its prior order approving the 2016 rate case settlement?

A. No. As discussed in more detail below, I am recommending that the Commission remove the total costs from rate base for the Smartburn capital project at both Units 3 and 4. However, I am not suggesting that the Commission try to recover any of the revenues collected by Avista from January 1, 2017 through today. The

[51] Order No. 33683, Case No. AVU-E-16-03 (Dec. 28, 2016) at p.1-3.
[52] Order No. 29505, Case No. IPC-E-031-13 (May 25, 2004) ("Once a test year is selected, adjustments are made to test year accounts and rate base to reflect known and measurable changes so that test year totals accurately reflect anticipated amounts for the future period **when rates will be in effect**.")(emphasis added)(internal quotations omitted).

revenue requirement in both the 2016 rate case and the current proceeding were the result of a negotiated settlement. There is no need to revisit whether the agreed upon revenue requirement was appropriate.

While I am not recommending that the Commission attempt to claw-back any previously collected revenue, it is nevertheless entirely appropriate to adjust the Company's rate base on a going forward basis now that the presence of imprudent expenditures has been identified. The 2016 rate case proceeding settled without a direct or implicit finding of fact or law regarding the prudence of capital expenditures at Colstrip Unit 4.[53] The Commission would therefore not be overturning any agreed-upon prudence finding related to Smartburn on Unit 4.

In the alternative, if the Commission declines to remove capital costs related to Smartburn on Unit 4, it should at a minimum address the discrepancy in timing whereby Avista claimed twice the costs for Smartburn on Unit 4 than it now claims on Unit 3. The capital costs attributable to Smartburn on each unit should be roughly the same.

I also raise the issue here to provide further evidence that Avista's management of Colstrip expenditures has been deficient. In order to avoid similar problems in the future, the Commission should require a more rigorous review of capital

[53] Paragraph 20 of the 2016 Stipulation expressly provided that "No findings of fact or conclusions of law other than those stated herein shall be deemed to be implicit in this Stipulation." Mot. for Approval of Stipulation and Settlement, filed Oct. 24, 2016 in Docket AVU-E-16-03.

expenditures at Colstrip in future proceedings.

IV. Useful Life for Colstrip Units 3 and 4

Q. Do you have concerns with the end of life assumptions Avista is making with regard to Colstrip Units 3 and 4?

A. Yes. Avista requested a substantial amount of capital spending ($24.29 million) on Colstrip Units 3 and 4 in its application for the years 2017-2019. While the Settlement Agreement removed all of the capital additions budgeted for 2019 and "most" of the proposed additions in 2018,[54] the overall rate of spending at Colstrip continues to reflect an assumption that the plant will essentially run indefinitely. This is an assumption that is no longer reasonable to make given the current economic environmental facing Colstrip.

Q. How do end-of-life assumptions for Colstrip affect rates in this proceeding?

A. The capital expenditures that Avista requested to include in rate base, and the increases allowed in rate base under the Settlement Agreement, will be paid for by ratepayers based on the depreciation scheduled for each asset. For each capital project, a shorter depreciation schedule generally means a higher depreciation expense, which increases the Company's revenue requirement.

Q. Did Avista propose any changes to its depreciation schedules in this proceeding?

A. No. For Colstrip and other non-transportation assets, Avista relied on depreciation

[54] Direct Testimony of Randy Lobb at p.10.

schedules based on a depreciation study completed nearly seven years ago, on December 31, 2010.[55]

Q. Why is an outdated depreciation study a concern?

A. The depreciation schedules relied on by Avista, particularly with respect to the Colstrip units, are stale. The Company should have studied and revised its depreciation assumptions before submitting its general rate case. That update would have allowed the Commission and other parties a more accurate analysis of revenue requirement based on more up-to-date assumptions. Having failed to update its depreciation schedules, it is now likely that Avista will soon return to the Commission to request yet another rate increase to account for a faster rate of depreciation.

Q. Is it reasonable to require Avista to use an updated depreciation study in this proceeding?

A. Avista's witness, Karen Schuh, stated in her direct testimony that "Avista's next depreciation study is currently underway and is expected to be completed towards the end of 2017."[56] This suggests that Avista had already begun the process of updating its depreciation assumptions. Had Avista finished that study and submitted it along with this proceeding (or at the same time) the Commission could have consolidated multiple issues impacting revenue requirement and rates into a single docket.

[55] Direct Testimony of Karen Schuh at p.10.
[56] Direct Testimony of Karen Schuh at p.9.

Q. How does the Settlement Agreement impact your recommendation that Avista be required to consolidate its general rate case with its upcoming depreciation filing?

A. In my opinion, it may have been premature for parties to agree to a revenue requirement in this proceeding without addressing whether and how rates may change again soon in an upcoming depreciation proceeding. However, I do not want to second-guess the rationale for each party's decision to settle. If the Commission accepts the Settlement Agreement, it should make clear that nothing in this proceeding precludes Avista or any other party from arguing that rates could change to reflect updated depreciation schedules.

If, on the other hand, the Settlement Agreement is not accepted, the Commission should require Avista to file its depreciation study and consolidate that proceeding with this rate case so that the Commission and parties will be better able to understand the full extent of the proposed rate increases.

Q. Why do you conclude that rates are likely to go up in Avista's next depreciation case?

A. As discussed in more detail below, Avista's current depreciation schedules for Colstrip Units 3 and 4 are based on unrealistically long operating life assumptions. If Avista follows the trend of its other Colstrip owners such as Puget Sound Energy, Portland General Electric, and PacifiCorp, it will likely accelerate the depreciation schedule at Colstrip. All else equal, that would lead to an increase in rates.

Q What is Avista's current end-of-life assumption for Colstrip Units 3 and 4 for depreciation purposes?

A. Avista's most recently completed depreciation study was produced in December 2010 by the consulting firm Gannett Fleming, Inc; this study was provided to Sierra Club as Attachment A to Sierra Club Production Request 2-5. The Gannett Fleming study used retirement dates of December 2034 for Colstrip Unit 3 and December 2036 for Colstrip Unit 4.

Q. What was the basis of this projected end-of-life date?

A. According to the Gannett Fleming Study (p.I-4), although there were a number of analytical and judgment-related considerations, "retirement data for the years 1989 through 2010 were used in the actuarial life table computations which were the primary statistical support of the service life estimates."

Q. Is this a reasonable approach? Why or why not?

A. While this approach may have been more reasonable in 2010, it is certainly not reasonable today. The economic and regulatory environment for coal today is manifestly different from the economic conditions during the time period referenced by Gannett Fleming, rendering such a statistical analysis irrelevant to estimating the future lives of the Colstrip units.

Throughout the 20th century and into the first decade of the 21st, there were very few retirements of coal plants, as demand for power grew exponentially and the availability and cost of coal made it more attractive to utilities than alternative energy sources. In addition, the environmental and public health impacts of coal

combustion were less well-known than they are today, and/or were considered an acceptable cost of this engine of economic growth. In 1970, the US Congress passed the Clean Air Act and began the process of requiring coal plants to install pollution controls to reduce the environmental and health impacts of their emissions. However, Congress exempted many existing coal plants from strict emissions control requirements. This loophole had the perverse consequence of actually prolonging the life of many coal plants that lacked modern pollution controls, as companies sought to avoid the costs associated with the technology that would be required on new, or substantially refurbished, coal-fired power plants.

Since around 2010 the rate of coal plant retirements has increased dramatically. In much of the country the growth in demand for electricity has slowed or even halted due to factors such as stringent appliance energy efficiency standards, along with utility-run energy efficiency programs. (The US Department of Energy's Annual Energy Outlook (AEO) for 2017 projects a total increase in electricity consumption of just 2.0% in the Western region of the United States by 2035 over 2015 levels, despite an 804% increase in electricity demand for transportation.[57]) More recent environmental regulations have required existing coal-fired plants to reduce their emissions of harmful and haze-inducing pollutants, in addition to better management of their water use, their impact on

[57] US Department of Energy, Energy Information Administration, Annual Energy Outlook for 2017. Available at https://www.eia.gov/outlooks/aeo/.

aquatic life, and disposal of combustion residuals (a.k.a. ash). These mandates often necessitate costly equipment upgrades for plants to continue operating.

At the same time, the availability of natural gas has increased with the development and widespread use of hydraulic fracturing, and the current and expected cost of gas has dropped to the point where it is often cost-preferable to coal as a generation fuel. The cost of renewable energy sources has also plummeted, while the demand for renewable-sourced energy has increased as a result of state Renewable Portfolio Standards and other policies. AEO 2017 projects an increase in renewable generation of 81.2% over 2015 levels by 2035, replacing not just coal (decrease of 77.8%) but also natural gas (decrease of 46.4%.)

Finally, coal-fired plants such as Colstrip are very large point-sources of carbon dioxide (CO_2) and other greenhouse gases, which have well-documented and extremely harmful long-term impacts on the Earth's climate and environment, human health, and economic well-being. The United States currently lags other countries in federal policies to address this threat. However, numerous states, including western states such as Washington, Oregon, and California, are moving aggressively to reduce the greenhouse gas emissions associated with electricity production and other economic activity, transforming the regional electricity market by pushing the generation mix away from high-carbon sources such as Colstrip and towards cleaner generating technologies. There has also been

widespread recognition throughout the electric industry that the United States will ultimately implement policies that impose a price on greenhouse gas emissions, as the deleterious effects of global climate change become increasingly difficult to ignore or deny.

These factors have led to conditions where many coal plants cannot compete economically, and even more cannot justify continued investments in either environmental upgrades or other significant capital improvements given their long-term outlook. As a result, coal plants have been retired, or repowered to burn gas, at an unprecedented rate over the last decade. As tallied by the Sierra Club, 732 units at 259 coal plants have retired or committed to retire since 2010, representing almost 50% of 2010 coal capacity in the United States.[58] Today, even larger, younger coal plants are struggling to survive the economic competition from cleaner, cheaper energy sources.[59]

Q. Has the wave of coal plant retirements you describe reached Montana?

A. Yes. The other two Colstrip units, Units 1 and 2, will be retired in 2022. The 2022 retirement date represents a dramatic acceleration of retirement relative to that unit's owners' previous projections – Puget Sound Energy, for example was previously using a retirement date of 2035 for Units 1 and 2, based on a settlement of that company's 2007 rate case. While Units 1 and 2 are older and

[58] http://content.sierraclub.org/coal/.
[59] See, for example, E&E News, April 27, 2017: "Big Young Power Plants are Closing. Is it a new trend?" Available at https://www.eenews.net/stories/1060053677.

less efficient than Units 3 and 4, the newer units are subject to the same regulatory and economic pressures that have rendered the older units uneconomic in the longer term.

Q. What end-of-life assumptions should Avista have used in this proceeding and in its upcoming depreciation study?

A. Based on my analysis, including testimony I recently prepared for the Washington Utilities and Transportation Commission, I believe that Colstrip is likely to go out of service by 2025. In this proceeding and the upcoming depreciation filing, I recommend that Avista *at a minimum* accelerate its end-of-life assumption for both Colstrip Units to 2027. This schedule would match the depreciation schedule recently proposed by Puget Sound Energy and would more closely align with depreciation schedule changes made recently by other co-owners.

Q. What end-of-life considerations affect the other (non-Avista) owners of Colstrip Units 3 and 4?

A. Puget Sound Energy (PSE), which owns 25% of Units 3 and 4, recently reached a settlement agreement before the Washington Utilities and Transportation Commission that requested, among other things, approval of a depreciation schedule that assumed a remaining useful life of Colstrip Units 3 and 4 through December 31, 2027. Several parties, including UTC Staff, industrial customers, Sierra Club and the Montana Attorney General signed on to this settlement in support of a 2027 depreciation date. While the settling parties continue to disagree on a precise retirement date for the units in that proceeding, they all agreed that

accelerating depreciation to 2027 was reasonable. The Montana Attorney General's post-hearing brief described the accelerated depreciation date as follows:

> Working to ameliorate cost uncertainty, which the adjusted depreciation schedule for Units 3 & 4 does, is in the public interest generally and the interest of Washington ratepayers specifically. **December 31, 2027, is a lawful and well-supported depreciation date** that arose from thoughtful negotiations among diverse interests.[60]

The Washington UTC's order on the PSE settlement is still pending.

In addition, Portland General Electric (PGE) owns 20% of each unit and Pacific Power's parent company PacifiCorp owns 10% of each unit. Both companies serve customers in Oregon and are required by the Oregon Clean Electricity and Coal Transition Act to eliminate coal from their portfolios serving Oregon customers by 2030. While there is a carve-out from the legislation allowing PGE to continue using power from Colstrip until no later than 2035,[61] PGE has nevertheless shortened its depreciable end-of-life assumption for Units 3 and 4 from 2042 to 2030 pursuant to this rule.[62] PacifiCorp also serves customers in Washington, where it recently requested and received permission to set its depreciation rate for the Washington-jurisdictional share of Colstrip Units 3 and 4

[60] Washington Utilities and Transportation Commission Dockets UE-170033/UG-170034, Initial Post-Settlement-Hearing Brief of the State of Montana in Support of the Proposed Multiparty Settlement Stipulation and Agreement (Oct. 18, 2017) at p. 7 (emphasis added), Exhibit No. 612, page 6 of 6.
[61] See 78th Oregon Legislative Assembly, 2016 Regular Session, Enrolled Senate Bill 1547 for bill text (https://olis.leg.state.or.us/liz/2016R1/Downloads/MeasureDocument/SB1547/Enrolled) and Oregon Clean Electricity & Coal Transition Plan (SB 1547B) for a summary (https://www.portlandgeneral.com/-/media/public/our-company/news-room/documents/oregon-clean-electricity-plan-summary.pdf).
[62] Schedule 146 of PGE's Oregon tariff, Exhibit No. 613.

using an end of life date of 2032.[63]

Talen Energy, the independent generating company that co-owns and operates Colstrip Units 3 and 4, purchases coal from the Rosebud coal mine adjacent to the plant, owned by Westmoreland Coal. In Westmoreland Coal's most recently-fled SEC Form 10-K,[64] the company reported that the "estimated mine life with current plan" for Rosebud ends in 2024. The same document states that the current contract to supply coal to Colstrip Units 3 and 4 expires in 2019.[65]

Q. Does this support your conclusion that Colstrip is likely to stop operating by 2025?

A. It does in part. I also base my conclusion on the observation that during the last several years coal plants have been trending toward earlier retirements than anticipated, resulting in large undepreciated balances for resources that are no longer used and useful. Colstrip Units 1 and 2 are excellent examples of this phenomenon, and the owners of these units and their regulatory commissions are struggling to accommodate not only large undepreciated balances but also inadequate decommissioning funds. Further, as discussed above, I think it is likely that EPA will require installation of expensive SCR technology on these units in the mid-2020s in order to continue "Reasonable Progress" in reducing regional

[63] See final order in Washington Utilities and Transportation Commission Docket No UE-152253, September 1, 2016.
[64] Available at: https://www.sec.gov/Archives/edgar/data/106455/000010645517000012/wlb-123116_10k.htm. See table on page 10.
[65] Ibid., p.34.

haze. Based on the magnitude of costs required for SCR, and the continued improvements in the cost and performance of cleaner energy sources, the units may well shut down rather than install those controls.

While it is certainly possible that the companies and commissions setting end-of-life for Units 3 and 4 closer to 2030 have gotten it right this time around, I find it much more likely that economic pressures and the opportunity to avoid capital improvements and maintenance expenses will lead the co-owners to retire the units several years earlier than that.

Q. Why is it important to use a realistic estimate of end-of-life for depreciation purposes?

A. It is a fundamental principle of utility economic regulation that customers who get the benefit of a resource should be the same customers who pay for it. Although this can rarely be achieved with precision, using a realistic end-of-life date for depreciation purposes ensures that, to the best of anyone's ability, the customers who benefit from the energy and capacity provided by Units 3 and 4 will both pay off the outstanding plant balance, and fully fund the eventual decommissioning of these units. If a utility is allowed to assume an unrealistically long lifetime for depreciation purposes, future ratepayers or utility shareholders will have to make up the shortfall for a resource from which they are receiving no benefit – a phenomenon often called intergenerational inequity.

As Avista witness Karen Schuh noted in her direct testimony, "it is sound

accounting practice to periodically update depreciation rates to recognize additions to investment in plant assets and to reflect changes in asset characteristics, technology, salvage, removal costs, life span estimates and other factors that impact depreciation rate calculations."[66] I agree with this assessment; however, Avista should have made those updates before filing its present request to increase rates.

V. Recommendations

Q. What are your recommendations for the Commission in this proceeding?

A. The Commission should conclude that Avista acted imprudently when it agreed to capital expenditures to install Smartburn at Colstrip Units 3 and 4 in the absence of any existing or anticipated compliance obligation, any showing of benefits for ratepayers, and little to no benefit in terms of reducing NOx emissions. These capital expenditures, totaling $3,040,933, should be removed from rate base on a going forward basis.

The Commission should also direct Avista to adopt and exercise more rigorous review and approval procedures for future capital expenditures at Colstrip Units 3 and 4. Avista cannot abdicate its responsibility to act in the best interests of its customers by claiming that it has no control over Colstrip expenditures as a minority owner. Avista should also provide more detailed and specific justification for significant Colstrip capital expenditures rather than simply

[66] Direct Testimony of Karen Schuh at p.10.

combining all capital costs into a single category that it claims is for "Mandatory and Compliance" purposes.

Finally, if the Settlement Agreement is rejected, the Commission should hold open this general rate case until Avista has completed and submitted its pending depreciation study. The Commission should then allow parties an opportunity to address that depreciation study and any impacts that the results will have on rates in this proceeding.

Q. Do your recommendations require the Commission to reject the Settlement Agreement?

A. No. Under Rule 276 of the Commission's Rules of Procedure, the Commission may state additional conditions under which the settlement will be accepted. Adopting my recommendations above need not disturb the agreed upon revenue requirement and rate spread in the Settlement Agreement. The adjustments I recommend to rate base are on a forward-going basis only. That is, the Commission need only issue a determination that the Smartburn capital projects were imprudent and require Avista to exclude those expenditures from rate base in all future proceedings. In doing so, the Commission would protect future ratepayers from harm while still maintaining the benefits of the Settlement Agreement currently before the Commission.

Q. Does this conclude your direct testimony?

A. Yes.