Chapter 10. BEST AVAILABLE RETROFIT TECHNOLOGY (BART) EVALUATION

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10.5 TASCO BART Determination

10.5.1 History of TASCO BART Process and Overview of Changes

TASCO BART control equipment was initially determined to be the existing baghouse for the control of PM emissions, a spray dry flue gas desulfurization (FGD) system for the control of SO2 emissions, and a low NOx burner system (LNB) with over-fired air for the control of NOx emissions. BART emission limits, a BART alternative to control NOx, and other BART requirements were incorporated in Tier II Operating Permit No. T2 2009.0105, which was issued on September 7, 2010. On October 12, 2010, TASCO filed a contested case petition seeking review of the permit. During negotiations to resolve the contested case, TASCO provided additional information concerning the feasibility of SCR and over-fired air control technologies, requested revision of the initial BART determinations, and proposed a BART Alternative to the Spray Dry FGD control technology. The BART determinations in this document have been updated based on the revised BART determinations and the approved BART Alternative. The specific revisions to BART and to the BART Alternative, along with the supporting technical analyses, regulatory review, and a discussion of the revised permit conditions has been provided in Appendix F "Revised TASCO BART Determination" and in the Statement of Basis to the reviesed Tier II Operating Permit No. T2 2009.0105, Project 60867, issued December 23, 20ll.

The initial BART determinations made under T2 2009.0105 issued September 7, 2010 have been revised based on engineering design information specific to the Riley Boiler retrofit project. A summary of the revised BART determinations is provided below.

<u>BART for the control of NO_x</u>

- Following the initial BART determination, it was determined that SCR is not technically feasible for retrofit on the Riley Boiler. Selective catalytic reduction (SCR) is a post-combustion control device that reduces thermal and fuel NO_x emissions with a reagent (generally ammonia or urea) in the presence of a catalyst to form water and nitrogen.
- Following the initial BART determination, it was determined that incorporating over-fired air as part of a coal-fired low NO_x burner system (LNB) is not technically feasible for retrofit on the Riley Boiler. Low NO_x burners with over-fired air (LNB with OFA) utilize fuel and air mixing optimization and/or staged combustion techniques to reduce thermal NO_x formation.

- Following the initial BART determination, a coal-fired low NO_x burner system (LNB) has been determined to be BART for the control of NO_x emissions from the Riley Boiler. Low NO_x burners (without over-fired air) utilize fuel and air mixing optimization and/or staged combustion techniques to reduce thermal NO_x formation.
- Although considered initially as a BART alternative to the control of NO_x emissions, the shutdown of three coal-fired pulp dryers has instead been included as part of the BART Alternative to the control of SO_2 emissions.

<u>BART Alternative to the control of SO_2</u>

- The shutdown of three coal-fired pulp dryers and the retrofit of coal-fired low NO_x burner systems (LNB) on two B&W Boilers have been proposed as part of a BART Alternative to the control of SO_2 emissions from the Riley Boiler. The Pulp Dryer shutdowns will eliminate NO_x, PM, and SO_2 emissions from the pulp dryers, while LNB will reduce NO_x emissions from the boilers. These controls are predicted to result in greater visibility improvement to Class I areas within 300 km of the facility than the BART determination for SO_2 (Spray Dry FGD), which remains unchanged from the initial BART determination.

For spray dry flue gas desulfurization (Spray Dry FGD), the flue gas is introduced into a tower and contacts an atomized spray of lime slurry, which absorbs and neutralizes SO_2. (TASCO has documented concerns regarding the affordability and environmental impacts of Spray Dry FGD; however, for the purposes of this BART determination, Spray Dry FGD was considered feasible.)

<u>Natural Gas-Fired Operation</u>

- The Riley Boiler was designed to combust coal and/or natural gas fuels. Discussion has been provided supporting why BART control equipment and emission limits were applied exclusively to the coal-fired operating scenario.

<u>Terminology</u>

BART Terminology

- In this document the *initial BART* is defined to mean the initial BART determinations for PM, SO_2, and NO_x that were determined under Tier II Operating Permit No.T2-2009.0105, issued on September 7, 2010.
- In this document the *revised BART* is defined to mean the BART determination for NO_x, which is being revised by this permitting action. (The BART for PM and SO_2 have not been revised and remain the same as what was determined under Tier II Operating Permit No. T2-2009.0105, issued on September 7, 2010.)

BART Alternative Terminology

- In this document the *"BART Alternative"* scenario is defined to mean the combination of BART for PM (Riley Boiler with the existing baghouse), revised BART for NO_x (Riley Boiler with low NO_x burners), and the BART Alternative to the control of SO_2 (B&W Boilers #1 and #2 with low NO_x burners and the three Pulp Dryers shut down).

- In this document the *"BART"* scenario is defined to mean the combination of BART for PM (Riley Boiler with the existing baghouse), revised BART for NO_x (Riley Boiler with low NO_x burners), and BART for SO_2 (Riley Boiler with Spray Dry FGD), with the addition of the sources affected by the "BART Alternative" scenario: B&W Boilers #1 and #2 and three Pulp Dryers in full operation.
- In this document the *"Alternative Benchmark"* scenario is defined to mean the Riley Boiler with the existing baghouse, B&W Boilers #1 and #2, and the three Pulp Dryers. This scenario allows comparison of both the "BART" and "BART Alternative" scenarios against the same benchmark that includes all of the affected sources.

10.5.2 BART Determinations

Background

In accordance with 40 CFR 51.308(e) and IDAPA 58.01.01.668.02.c, Best Available Retrofit Technology (BART) means an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by an existing stationary facility. The emission limitation must be established, on a case-by-case basis, taking into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology. (These considerations were included in Step 4 of the BART determinations.)

The BART analyses and determinations followed the five-step process provided in Guidelines for BART Determinations Under the Regional Haze Rule (Appendix Y to Part 51):

1) Identify all retrofit control technologies
2) Eliminate technically infeasible options
3) Evaluate control effectiveness of the remaining control technologies
4) Evaluate the impacts of each remaining control technology (including energy, non-air quality environmental, and cost impacts; and the remaining useful life of the source)
5) Select BART and determine the degree of visibility improvement

SO_2, NO_x, and PM emissions were the visibility-impairing pollutants evaluated in the BART analyses and determinations. See table 1 below for more information.

Based on CALPUFF air dispersion modeling results, the Riley Boiler was determined to contribute to visibility impairment at three Class I areas, including the Eagle Cap Wilderness (Oregon), Hells Canyon National Recreation Area (Oregon/Idaho border), and Strawberry Mountain Wilderness (Oregon), primarily during the winter time. A single emission source which is responsible for a one-half (0.5) deciview change or more in any mandatory Class I Federal Area "contributes" to visibility impairment as defined in IDAPA 58.01.01.668.02.b.

As part of the initial and revised BART determinations, modeling analyses were conducted to evaluate visibility impacts at seven Class I areas within a 300 km radius around the Riley Boiler. In addition to the three areas listed above, the analyses included Craters of the Moon National Monument, Jarbidge Wilderness, Sawtooth Wilderness, and Selway-Bitterroot Wilderness.

Table 1 BART DETERMINATIONS [a]

Pollutant[b]	Step 1	Step 2	Step 3		Step 5	Step 6
	Technologies Identified	**Technically Feasible (Yes/No)**	**Control Level (lb/hr)**	**Control Ranking**	**Modeled Impairment Contribution[c] (Days>0.5 □dv)**	**Most Effective (Yes/No)**
PM	Wet ESP	Yes	12.4	1	--[d]	No[d]
	Dry ESP	Yes	12.4	1	--[d]	No[d]
	Enhanced Baghouse	Yes	12.4	1	--[d]	No[d]
	Existing Baghouse	Yes	12.4	1	--[d]	Yes
SO_2	Wet FGD	Yes	26	1	43	No[f]
	Spray Dry FGD	Yes	104	2	51	Yes
	Dry Trona FGD	Yes	183	3	58	No
	Dry Lime FGD	Yes	235	4	66	No
	Low Sulfur Coal	Yes	444	5	90	No
	Base Case[e]	Yes	522	6	127	No
NO_x	SNCR	No[g]	--	--	--	--
	SCR	No[h]	--	--	--	--
	ULNB	No[i]	--	--	--	--
	LNB/OFA	No[j]	--	--	--	--
	LNB	Yes	147	1	60	Yes
	Base Case[e]	Yes	374	2	127	No

(a) This table summarizes each BART determination. The BART determination for NO_x has been revised as described in this section.
(b) SO_2, NO_x, and PM emissions were the visibility-impairing pollutants evaluated.
(c) Δdv = delta deciviews; result is based on changes to visibility at the Eagle Cap Wilderness Area.
(d) Because the cost of the enhanced baghouse, dry ESP, and wet ESP options were determined to outweigh the improvement, BART was selected based on costs of compliance and the pollution control equipment in use (existing baghouse). Specific modeling of each PM control scenario was not analyzed.
(e) The "Base Case" represents continuous coal-fired operation of the Riley Boiler (without controls).
(f) Wet FGD was not determined to be effective due to non-air quality environmental impacts of compliance related to wastewater treatment.
(g) SNCR was not considered feasible due to concerns that the flue gas would not have adequate residence time to achieve reliable control.
(h) SCR was not considered feasible upstream of the baghouse due to insufficient space necessary to accommodate the control device, in addition to concerns regarding catalyst fouling and erosion. SCR was not considered feasible downstream of the baghouse due to exhaust gas cooling below the effective operating temperature range of the control device.
(i) ULNB was not considered feasible due to concerns that the boiler firebox would not be large enough to accommodate the full burner/flame management system required.

(j) It was determined that insufficient vertical distance is available between the top burner elevation and the furnace nose arch, which is necessary to provide adequate fuel combustion residence time and to accommodate the OFA burner/flame management system.

10.5.3 Revisions

The initial BART determinations made under T2-2009.0105 issued September 7 2010 have been revised based on engineering design information specific to the Riley Boiler retrofit project. A summary of the revised BART determinations is provided below, followed by a discussion of the specific changes. Additionally, although not considered a change in the initial BART determinations, analysis has been provided for each Riley Boiler fuel operating scenario supporting that BART requirements were considered applicable only when firing coal in the Riley Boiler.

Infeasibility of SCR

As provided in Table 1, based on the results of an engineering design review of the Riley Boiler it has been determined that selective catalytic reduction (SCR) is not technically feasible for retrofit on the Riley Boiler. SCR was not considered feasible upstream of the baghouse due to insufficient space necessary to accommodate the control device, in addition to concerns regarding catalyst fouling and erosion. SCR was not considered feasible downstream of the baghouse due to exhaust gas cooling below the effective operating temperature range of the control device.

Infeasibility of OFA

As provided in Table 1, based on the results of an engineering design review of the Riley Boiler, it has been determined that over-fired air (OFA) is not technically feasible for retrofit on the Riley Boiler. It was determined that insufficient vertical distance is available between the top burner elevation and the furnace nose arch, which is necessary to provide adequate fuel combustion residence time and to accommodate the OFA burner/flame management system.

As provided in Table 2, LNB is expected to result in the reduction or elimination of 37 days of visibility impairment at Eagle Cap Wilderness - the Class I area showing the greatest impact from the Riley Boiler - over the baseline case of no NO_x controls.

Table 2 NO_X BART VISIBILITY IMPROVEMENT

Eagle Cap Wilderness, OR	Delta-deciview impacts greater than contribution threshold (Δdv>0.5)							
	2003		2004		2005		2003-2005	
	8th highest[a]	Total days[b]	8th highest[a]	Total days[b]	8th highest[a]	Total days[b]	22nd highest[c]	Total days[d]
Base Riley Boiler Scenario (wzl10471)	0.721	15	1.086	41	1.109	41	1.086	97
NOx Control Scenario 1 – LNB (wzl10496)	0.467	7	0.766	25	0.823	28	0.760	60

(a) The 8th highest delta-deciview impact for the calendar year.
(b) Total number of days in the 1-year period that exceeded 0.5 delta deciviews.
(c) The 22nd highest delta-deciview impact for the 3-year period.
(d) Total number of days in the 3-year period that exceeded 0.5 delta deciviews.

Modeling of the revised BART was completed using the same protocol as described in Appendix F (this protocol was also used in the BART modeling analyses for Tier II Operating Permit No.T2-2009.0105, issued on September 7, 2010).

10.5.4 BART Alternative

Revisions

Shutdown of the pulp dryers, in combination with installation and operation of LNB on the B&W Boilers, has been proposed as the BART Alternative for the control of SO_2 emissions from the Riley Boiler.

The "BART Alternative" scenario is expected to achieve greater reasonable progress than the "BART" scenario because this scenario results in greater emissions reductions and in greater visibility improvements, as described below.

Although this alternative primarily reduces NO_x emissions, with some reduction in PM and SO_2 emissions also resulting from the pulp dryer shutdowns, the "BART Alternative" scenario is expected to result in greater emission reductions in regional haze pollutants (PM, SO2, and NOx) than the "BART" scenario, and the visibility improvement at all Class I areas was predicted to be greater for the "BART Alternative" scenario – with the reduction or elimination of 41 additional days expected when compared to the "BART" scenario. A description of the "BART" and "BART Alternative" scenarios that were evaluated is provided in the History and Overview of Changes section.

The BART alternative in Tier II Operating Permit No. T2-2009.0101 issued September 7, 2010, (which involved shutdown of three pulp dryers in lieu of installing a SCR control technology for the control of NO_x emissions), is no longer under consideration as initially proposed. Shutdown of this equipment has instead been incorporated as part of the new BART Alternative to the control of SO_2 emissions as described above, in lieu of installing Spray Dry FGD on the Riley Boiler.

Emission Reductions

For evaluation of the "BART Alternative" scenario emission reductions, the "BART Alternative" scenario was compared to the "BART" scenario. The "Alternative Benchmark" scenario is included for reference to represent baseline (existing) operating conditions. As provided in the tables below, the "BART Alternative" scenario is expected to result in greater emission reductions in regional haze pollutants (PM, SO_2, and NO_x) than the "BART" scenario. Refer to Appendix F Revised BART Determination for additional information regarding the emission reduction estimates. The BART emission reductions are also provided in the tables below.

Table 3 "BART" EMISSION REDUCTIONS

Pollutant[a]	**Emission Source**	**"BART" Emissions lb/hr[b]**	**"Alternative Benchmark" Emissions lb/hr[c]**	**Net Emission Reductions lb/hr**
PM	Riley Boiler	5.9	12.4	6.5
	B&W Boilers #1 & #2	56.9	56.9	0.0
	North, South, & Center Pulp Dryers	92.7	92.7	0.0
SO_2	Riley Boiler	104.0	522.3	418.3
	B&W Boilers #1 & #2	435.0	435.0	0.0
	North, South, & Center Pulp Dryers	17.9	17.9	0.0
NO_x	Riley Boiler	147.0	373.8	226.8
	B&W Boilers #1 & #2	227.0	227.0	0.0
	North, South, & Center Pulp Dryers	191.2	191.2	0.0
Total		***1,277.6***	***1,929.2***	***651.6***

(a) SO2, NOx, and PM emissions were the visibility-impairing pollutants evaluated.

(b) "BART" scenario includes the Riley Boiler with BART for the control of PM (with the existing baghouse), with BART for the control of NO_x (LNB), and with BART for the control of SO_2 (Spray Dry FGD); full operation of the B&W Boilers (without LNB), and full operation of the three pulp dryers. This control scenario represents BART as described in the BART Determinations section.

(c) "Alternative Benchmark" includes the Riley Boiler (with the existing baghouse), full operation of the B&W Boilers (without LNB), and full operation of the three pulp dryers. Estimated emission reductions attributable to shutdown of the pulp dryers were provided in Table 7 of the BART determination submitted February 9, 2009.

Table 4 "BART ALTERNATIVE" EMISSION REDUCTIONS

Pollutant[a]	Emission Source	"BART Alternative" Emissions lb/hr[b]	"Alternative Benchmark" Emissions lb/hr[c]	Net Emission Reductions lb/hr
PM	Riley Boiler	12.4	12.4	0.0
	B&W Boilers #1 & #2	56.9	56.9	0.0
	North, South, & Center Pulp Dryers	0.0	92.7	92.7
SO_2	Riley Boiler	522.3	522.3	0.0
	B&W Boilers #1 & #2	435.0	435.0	0.0
	North, South, & Center Pulp Dryers	0.0	17.9	17.9
NO_x	Riley Boiler	147.0	373.8	226.8
	B&W Boilers #1 & #2	103.0	227.0	124.0
	North, South, & Center Pulp Dryers	0.0	191.2	191.2
Total		***1,276.6***	***1,929.2***	***652.6***

(a) SO2, NOx, and PM emissions were the visibility-impairing pollutants evaluated.

(b) "BART" scenario includes the Riley Boiler with BART for the control of PM (with the existing baghouse), with BART for the control of NOx (LNB), and with BART for the control of SO2 (Spray Dry FGD); full operation of the B&W Boilers (without LNB), and full operation of the three pulp dryers. This control scenario represents BART as described in the BART Determinations section.

(c) "Alternative Benchmark" includes the Riley Boiler (with the existing baghouse), full operation of the B&W Boilers (without LNB), and full operation of the three pulp dryers. Estimated emission reductions attributable to shutdown of the pulp dryers were provided in Table 7 of the BART determination submitted February 9, 2009.

Visibility Improvements

The *"BART Alternative"* scenario was determined to achieve greater improvement in visibility impairment in Class I areas than the "BART" scenario. Refer to Appendix F for additional information regarding these modeling scenarios.

Based on CALPUFF modeling, the highest modeled visibility impacts were predicted to occur in the Eagle Cap Wilderness Area. The combination of BART for PM, BART for NO_x, and the BART Alternative to SO_2 was predicted to result in a minimum reduction or elimination of 23 days of visibility impairment and an improvement in the 22nd highest visibility impact of 0.101 dv at the Eagle Cap Wilderness, when compared to the revised BART (as summarized in Table 5).

Table 5 "BART ALTERNATIVE" VISIBILITY IMPROVEMENT – EAGLE CAP [(a)]

Control Scenario		22nd Highest Impact (□dv)	Impairment Contribution (Days >0.5 □dv)[(b)]
"BART"[(d)]	Riley Boiler w/ Baghouse *("Alternative Benchmark")*[(c)] B&W Boilers #1 & #2 – full operation North, South, Center Pulp Dryers – full operation	2.201	195
	Riley Boiler w/ Baghouse, Spray Dry FGD, LNB [(f)] B&W Boilers #1 & #2 – full operation North, South, Center Pulp Dryers – full operation	1.512	149
	Net Visibility Improvement	*0.689*	*46*
"BART Alternative"[(e)]	Riley Boiler w/ Baghouse *("Alternative Benchmark")*[(c)] B&W Boilers #1 & #2 – full operation North, South, Center Pulp Dryers – full operation	2.201	195
	Riley Boiler w/ Baghouse, LNB [(f)] B&W Boilers #1 & #2 w/ LNB [(f)] North, South, Center Pulp Dryers – shutdown	1.411	126
	Net Visibility Improvement	*0.790*	*69*
	Difference in Improvement	***0.101***	***23***

(a) This table compares the modeled visibility impacts for the combined BART determinations and the "BART Alternative" to the "Alternative Benchmark" operating scenario. SO2, NOx, and PM emissions were the visibility-impairing pollutants evaluated.

(b) Δdv = delta deciviews; result is based on changes to visibility at the Eagle Cap Wilderness Area.

(c) "Alternative Benchmark" includes the Riley Boiler (with the existing baghouse), full operation of the B&W Boilers (without LNB), and full operation of the three pulp dryers. Estimated emission reductions attributable to shutdown of the pulp dryers were provided in Table 7 of the BART determination submitted February 9, 2009.

(d) "BART" includes Riley Boiler with BART for the control of PM, NO_x, and SO_2 (with the existing baghouse, LNB, and Spray Dry FGD), full operation of the B&W Boilers (without LNB), and full operation of the three coal-firing pulp dryers.

(e) "BART Alternative" includes the Riley Boiler with BART for the control of PM (with the existing baghouse) and with BART for the control of NOx (LNB), the B&W Boilers with the BART Alternative to the control of SO_2 (Coal-Firing LNB for each boiler), and shutdown of the three coal-firing pulp dryers. This control scenario represents the control equipment described in Permit Condition 3.2.

(f) The NOx control efficiency of the Riley Boiler LNBs = 60.7%, and for the B&W Boilers LNBs = 55%.

Similar modeled visibility improvements for the "BART Alternative" scenario were predicted across all of the Class I areas evaluated (as summarized in Table 6). On the balance, visibility improvement at all Class I areas was predicted to be greater for the "BART Alternative" scenario – with the reduction or elimination of 41 additional days expected when compared to the "BART" scenario. The single exception was one additional day of visibility impairment and 22nd highest visibility impact of -0.017 □dv at the Selway-Bitterroot Wilderness. The modeling results also support that the distribution of emissions with respect to the Class I areas evaluated is not substantially different than under the "BART" scenario.

Table 6 "BART ALTERNATIVE" VISIBILITY IMPROVEMENT [(a)]

Class I Area[(a)]	"BART"[(b)]		"BART Alternative"[(c)]		Difference in Improvements[(d)]	
	22nd Highest	Days >0.5 □dv	22nd Highest	Days >0.5 □dv	22nd Highest	Days >0.5 □dv
Eagle Cap Wilderness, OR	1.512	149	1.411	126	*0.101*	*23*
Craters of the Moon National Monument, ID	0.267	4	0.245	3	*0.022*	*1*
Hells Canyon National Recreation Area, ID	1.092	87	1.059	80	*0.033*	*7*
Jarbidge Wilderness, NV	0.256	5	0.234	5	*0.022*	*0*
Sawtooth Wilderness, ID	0.319	6	0.307	6	*0.012*	*0*
Selway-Bitterroot Wilderness, ID	0.281	3	0.298	4	*-0.017*	*-1*
Strawberry Mountain Wilderness, OR	1.076	62	0.917	51	*0.159*	*11*
Total Number of Days		*316*		*275*		***41***

(a) This table compares the modeled visibility impacts for the combined BART determinations and the "BART Alternative" to the "Alternative Benchmark" operating scenario. SO2, NOx, and PM emissions were the visibility-impairing pollutants evaluated. The Class I areas evaluated were the seven areas within a 300 km radius from the Riley Boiler SO2, NOx, and PM emissions were the visibility-impairing pollutants evaluated.

(b) "BART" includes Riley Boiler with BART for the control of PM, NOx, and SO2 (with the existing baghouse, LNB, and Spray Dry FGD), full operation of the B&W Boilers (without LNB), and full operation of the three coal-firing pulp dryers.

(c) "BART Alternative" includes the Riley Boiler with BART for the control of PM (with the existing baghouse) and with BART for the control of NOx (LNB), the B&W Boilers with the BART Alternative to the control of SO2 (Coal-Firing LNB for each boiler), and shutdown of the three coal-firing pulp dryers. This control scenario represents the control equipment described in Permit Condition 3.2.

(d) Values reported in this column represent the relative difference or improvement of the "BART Alternative" over the "BART" control scenario.

10.5.5 Natural Gas-Fired Operation

The Riley Boiler was designed to combust coal and/or natural gas fuels. While the initial BART determinations were applicable only to coal combustion, supporting discussion was not provided which addressed emissions from natural gas combustion in the Statement of Basis for initial Tier II Operating Permit No.T22009.0105. Discussion and supporting information are provided below which support the requirement to operate Riley BART control equipment only when firing coal in the Riley Boiler. Modeling of fuel operating scenarios was completed using the same protocol as described in Appendix F(this protocol was also used in the BART modeling analyses for Tier II Operating Permit No.)

Comparing the fuel operating scenarios in the table below, coal combustion resulted in higher estimated emissions of visibility-impairing pollutants than natural gas combustion, even when taking into account the emissions reductions resulting from BART control equipment.

Table 7 VISIBILITY-IMPAIRING EMISSIONS BY FUEL

Fuel / Control Scenario	PM lb/hr[(a)]	SO_2 lb/hr[(a)]	NO_x lb/hr[(a)]
Coal-Fired Riley Boiler	12.4	522	374
Coal-Fired Riley Boiler with BART	12.4	104	147
Natural Gas-Fired Riley Boiler	7.7	0.2	99

Comparing the fuel operating scenarios in the tables below, coal combustion also resulted in higher predicted visibility impacts than natural gas combustion, even when taking into account the emissions reductions resulting from BART control equipment.

Table 8 VISIBILITY IMPACTS BY FUEL – EAGLE CAP [(a)]

Fuel / Control Scenario	22nd Highest Impact (□dv)	Impairment Contribution (Days >0.5 □dv)[(b)]
Coal-Fired Riley Boiler w/ Baghouse	1.086	97
Coal-Fired Riley Boiler w/ Baghouse, Spray Dry FGD, LNB	0.343	5
Natural Gas-Fired Riley Boiler	0.166	0

(a) This table summarizes modeled visibility impacts for the Riley Boiler with the existing baghouse and coal-fired, the Riley Boiler with BART controls and coal-fired, and for the Riley Boiler natural gas-fired (without controls) operating scenarios; detailed technical information can be found in Appendix F Revised TASCO BART Determination and Modeling for SO2, NOx, and PM emissions were the visibility-impairing pollutants evaluated.

(b) Δdv = delta deciviews; result is based on changes to visibility at the Eagle Cap Wilderness Area.

Table 9 VISIBILITY IMPACTS FOR NATURAL GAS [(a)]

Class I Area[(a)]	Natural Gas	
	22nd Highest	Days >0.5 □dv
Eagle Cap Wilderness, OR	0.166	0
Craters of the Moon National Monument, ID	0.028	0
Hells Canyon National Recreation Area, ID	0.106	0
Jarbidge Wilderness, NV	0.029	0
Sawtooth Wilderness, ID	0.034	0
Selway-Bitterroot Wilderness, ID	0.028	0
Strawberry Mountain Wilderness, OR	0.099	0
Total Number of Days		***0***

(a) This table summarizes modeled visibility impacts for the Riley Boiler with the existing baghouse and coal fired, the Riley Boiler with BART controls and coal fired, and for the Riley Boiler natural gas fired (without controls) operating scenarios; detailed technical information can be found in Appendix F Revised TASCO BART Determination and Modeling for SO2, NOx, and PM emissions were the visibility-impairing pollutants evaluated.

(b) ∆dv = delta deciviews; result is based on changes to visibility at the Eagle Cap Wilderness Area.

As provided, the emissions and modeled visibility impacts when firing 100% natural gas were predicted to be significantly lower than when firing coal in the Riley Boiler, even when accounting for the use of BART controls. It was therefore considered reasonable to determine the "base case" or "no control" options as BART for the control of PM, SO_2, and NO_x emissions when combusting 100% natural gas. As an operational requirement and for compliance monitoring purposes, monitoring of average daily feed or firing rate and hours of operation per day for each fuel has been required in lieu of complying with explicit BART emission rate limits.

As a result, operation of the Riley Boiler on 100% natural gas after the BART compliance date remains a voluntary "compliance option" in lieu of installing BART and BART Alternative control equipment. Operation of BART and BART Alternative control devices is also not required (if installed) when Riley Boiler is fired exclusively on natural gas, unless required in another permit for other (non-BART) reasons.