# ATTACHMENT "E": BART ALTERNATIVES

## I. GENERAL

**A.** The requirements under this Attachment "E" shall become effective on the date of final action by the U.S. Environmental Protection Agency (EPA) approving Attachment "E" as part of the State Implementation Plan for Arizona, provided that such final EPA action also revokes or rescinds EPA's Federal Implementation Plan {published at 77 Federal Register 72511 (December 5, 2012), and 81 Federal Register 21735 (April 13, 2016)}, insofar as that Federal Implementation Plan establishes emission limits and other requirements for $NO_x$ and $SO_2$ emissions from Unit 1 and Unit 2 of the Coronado Generating Station.

**B.** Where multiple emission limits, standards, or requirements apply to a unit, compliance with the most stringent emission limit, standard, or requirement shall be deemed compliance with less stringent emission limits, standards, or requirements.

## II. COMPLIANCE OPTIONS– BART ALTERNATIVES

**A.** BART Alternative - Final Operating Strategies

[A.A.C R18-2-306.A.2]

The Permittee shall notify the Administrator and the Director of the selection of one of the following two BART Alternative operating strategies by December 31, 2022, and shall thereafter implement the selected operating strategy:

1. Operating Strategy-1 (OS-1): Installation and operation of SCR on Unit 1 no later than December 31, 2025.

2. Operating Strategy-2 (OS-2): Unit 1 shutdown no later than December 31, 2025.

**B.** BART Alternative- Interim Operating Strategies

The Permittee shall comply with one of the three Unit 1 curtailment options under the BART Alternative interim operating strategy requirements listed in Condition II.D beginning no later than December 5, 2017, and continuing until the Permittee either has permanently shut down Unit 1 in accordance with Condition II.A.2 or has installed and commenced operation of a SCR system on Unit 1 in accordance with Condition II.A.1.

[A.A.C R18-2-306.A.2]

**C.** Emissions and Operational Limitations for Particulate Matter and $H_2SO_4$

1. The Permittee shall not emit filterable particulate matter below 10 micron size ($PM_{10}$) in excess of 0.030 lb/MMBtu from Unit 1 and 0.030 lb/MMBtu from Unit 2, as determined by annual performance tests conducted in accordance with the particulate matter testing provisions of 40 CFR 60.46.

[40 CFR 52.145(e)(1) and A.A.C R18-2-306.A.2]
[Partial SIP Approval on December 5, 2012; 77 FR 72511]

2. If a SCR on Unit 1 begins operation as provided by Condition II.A.1, the Permittee shall not emit total filterable and condensable particulate matter (as a surrogate for $PM_{10}$ and $PM_{2.5}$) below 10 micron size in excess of 0.033 lb/MMBtu from Unit 1, as determined by annual performance tests in accordance with Condition II.F.3.

[A.A.C. R18-2-406.A.4]

3. If a SCR on Unit 1 begins operation as provided by Condition II.A.1, the Permittee shall not emit $H_2SO_4$ in excess of 0.0050 lb/MMBtu from Unit 1, as determined by annual performance tests in accordance with Condition II.F.4.

[A.A.C. R18-2-406.A.4]

4. Authority to construct the SCR system on Unit 1 shall terminate if the Permittee does not commence construction within 18 months after the date of issuance of this proposed final Class I Permit or if, during construction, the Permittee suspends work for more than 18 months.

[A.A.C. R18-2-402.I.4]

**D.** Emissions and Operational Limitations for Unit 1 and Unit 2 for $NO_x$ and $SO_2$

[A.A.C R18-2-306.A.2]

1. BART Alternative - Interim Operating Strategy Requirements

   a. Until operating under a final BART Alternative operating strategy pursuant to Condition II.A.1 or II.A.2, the Permittee shall not exceed the following $NO_x$ emission rates on a 30-boiler-operating-day average

      (1) 0.320 lb/MMBtu for Unit 1.

      (2) 0.080 lb/MMBtu for Unit 2.

   b. Until operating under a final BART Alternative operating strategy pursuant to Condition II.A.1 or II.A.2, the Permittee shall not exceed the following $SO_2$ emission rates on a 30-boiler-operating-day average

      (1) 0.060 lb/MMBtu for Unit 1.

      (2) 0.060 lb/MMBtu for Unit 2.

   c. For the first compliance year (2017), the Permittee shall cause Unit 1 to be shut down on December 5, 2017, and shall not re-start the unit before January 20, 2018, or January 31, 2018, depending on the applicable Interim Operating Strategy option as listed in Table 1.

   d. Beginning in calendar year 2018 and continuing each year thereafter until the Final BART Alternative Compliance Date pursuant to Condition II.D.2.b, the Permittee shall select, for each such year, an Interim Operating Strategy option as outlined in Table 1 and shall implement the selected interim operating strategy with respect to that year.

**Table 1: Seasonal Curtailment Options for Unit 1 Interim Operating Strategies (IS)**

| Strategies | Unit 1 (lb/MMBtu) (Highest 30-boiler-operating-day average) | | Unit 2 | Unit 1 Curtailment Period |
|---|---|---|---|---|
| | $NO_x$ | $SO_2$ | | |
| IS 2 | 0.320 | 0.060 | 0.060 | Oct. 21 to Jan. 31 |
| IS 3 | 0.320 | 0.050 | 0.050 | Nov. 21 to Jan. 20 |
| IS 4 | 0.310 | 0.060 | 0.060 | Nov. 21 to Jan. 20 |
| IS 2, IS 3, and IS 4 | | 1,970 tons of $SO_2$ per calendar year starting in 2018 (Unit 1 and Unit 2 combined) | | |

(1) To qualify for an Interim Operating Strategy option, the Permittee must demonstrate that $NO_x$ emissions from Unit 1, and $SO_2$ emissions from Unit 1 and Unit 2, did not exceed the emission limit specified for that IS option in Table 1 during the calendar year.

(2) By October 21 of each calendar year, the Permittee shall notify the Administrator and the Director of the applicable Interim Operating Strategy option for the calendar year in which the notification is given, except that for 2017, notification shall be given no later than December 5, 2017. This notification shall include the highest 30-boiler-operating-day average $NO_x$ emission rate for Unit 1, the highest 30-boiler-operating-day average $SO_2$ emission rate for Unit 1, and the highest 30-boiler-operating-day average $SO_2$ emissions for Unit 2 for each boiler-operating-day during the calendar year up to and not including the October 21 notification date.

(3) For each calendar year after selecting an Interim Operating Strategy option, the Permittee shall not allow $NO_x$ emissions from Unit 1 to exceed the emission rate associated with that option beginning on October 21 of the calendar year in which the strategy was selected through the end of the Unit 1 curtailment period. In the event the emissions limits are exceeded, the excess emissions provisions of Attachment A shall apply.

(4) For each calendar year after selecting an Interim Operating Strategy option, the Permittee shall not allow $SO_2$ emissions from Unit 1 or Unit 2 to exceed the emission rate associated with that option beginning on October 21 of the calendar year in which the strategy was selected through the end of the Unit 1 curtailment period. In the event the emissions limits are exceeded, the excess emissions provisions of Attachment A shall apply.

e. Beginning January 1, 2018, the Permittee shall not emit more than 1,970 combined tons of $SO_2$ from the stacks of Unit 1 and Unit 2 in any calendar year.

2. BART Alternative - Final Operating Strategy Requirements

a. Table 2 below lists the $NO_x$, $SO_2$, and $PM_{10}$ emission standards that Unit 1 and Unit 2 shall meet upon final implementation of a final BART Alternative Operating Strategy pursuant to Condition II.A.1 or II.A.2.

**Table 2: Final BART Alternative Operating Strategy**

| Final BART Alternative Operating Strategies | Unit 1 (lb/MMBtu) (30- boiler-operating-day average) | | | Unit 2 (lb/MMBtu) (30- boiler-operating-day average) | | | Annual Combined Unit 1 and Unit 2 $SO_2$ Cap (Tons/year) |
|---|---|---|---|---|---|---|---|
| | $NO_x$ | $SO_2$ | $PM_{10}$[1] | $NO_x$ | $SO_2$ | $PM_{10}$ | |
| OS-1 SCR Installation* | 0.065 | 0.060 | 0.033 | 0.080 | 0.060 | 0.030 | 1,970 |
| OS-2 Unit 1 Shutdown** | 0.00 | 0.00 | 0.00 | 0.080 | 0.060 | 0.030 | 1,080 (Unit 2 only) |

* SCR installation and operation no later than December 31, 2025. Unit 1 will be subject to a 0.033 total $PM_{10}/_{2.5}$ BACT limit in Condition II.C.2.
**Unit 1 shut down no later than December 31, 2025.
Notification of selection of the Final BART Alternative Operating Strategy shall be sent by SRP to EPA and ADEQ by December 31, 2022.
[1] $PM_{10}$ BART limits are based on filterable PM testing using method 5 as provided in Attachment B.

b. The date on which both Unit 1 and Unit 2 begin complying with the emission limits in Table 2, which shall be no later than December 31, 2025, shall be the "Final BART Alternative Compliance Date."

**E.** Air Pollution Control Requirements

1. *At all times during the operation of Unit 1 and until the SCR system is installed on Unit 1, the Permittee shall operate the low $NO_x$ burners and overfire air in a manner consistent with technological limitations, manufacturer's specifications, and good engineering and good air pollution control practices for minimizing emissions.*

[A.A.C. R18-2-306.A.2 and A.A.C. R-18-2-331.A.3.e]
[Material Permit Condition indicated by italics and underline]

2. *If OS-1 is selected, the Permittee shall install a SCR system on Unit 1 no later than December 31, 2025. At all times during the operation of Unit 1 after the SCR commences operation, the Permittee shall operate the SCR in a manner consistent with technological limitations, manufacturer's specifications, and good engineering and maintenance practices for minimizing emissions to the extent practicable.*

[A.A.C. R18-2-306.A.2 and A.A.C. R-18-2-331.A.3.c & e]
[Material Permit Condition indicated by italics and underline]

3. *At all times during the operation of Unit 2, the Permittee shall operate the low $NO_x$ burners, overfire air, and the SCR system in accordance with manufacturer's specifications and good engineering practices to minimize emissions to the extent practicable.*

[A.A.C. R18-2-306.A.2 and A.A.C. R-18-2-331.A.3.e]
[Material Permit Condition indicated by italics and underline]

4. *At all times, including during periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate each unit in a manner consistent with good air pollution control practices for minimizing emissions to the extent practicable.*

[A.A.C. R18-2-306.A.2 and A.A.C. R-18-2-331.A.3.e]
[Material Permit Condition indicated by italics and underline]

5. *The Permittee shall, at all times when Unit 1 and Unit 2 are operating, continuously operate the Wet Flue Gas Desulfurization systems and Hot Side Electrostatic Precipitators in accordance with manufacturer's specifications and good engineering practices to minimize emissions to the extent practicable.*

[A.A.C. R18-2-306.A.2 and A.A.C. R-18-2-331.A.3.e]
[Material Permit Condition indicated by italics and underline]

**F.** Compliance Determination Requirements

1. Oxides of Nitrogen ($NO_x$)

a. *At all times, the Permittee shall calibrate, maintain, and operate a continuous emissions monitoring system for monitoring $NO_x$ emissions in accordance with 40 CFR Part 75 requirements.*

[A.A.C. R18-2-306.A.3.c and A.A.C. R-18-2-331.A.3.c]
[Material Permit Condition indicated by italics and underline]

b. The Permittee shall demonstrate compliance with the $NO_x$ emission limitations specified in Condition II.D.1 or 2 (whichever is applicable) in accordance with the following procedure:

[A.A.C R18-2-306.A.3.c]

(1) Sum the total pounds of $NO_x$ emitted from each unit during the current boiler operating day and the immediately preceding twenty-nine (29) boiler operating days for that unit;

(2) Sum the total heat input to each unit, in MMBtu, during the current boiler operating day and the immediately preceding twenty-nine (29) boiler operating days for that unit; and

(3) Divide the total number of pounds of $NO_x$ emitted from each unit during the thirty (30) boiler operating days by the total heat input during the thirty (30) boiler operating days. A new 30-boiler-operating-day average $NO_x$ emission rate shall be calculated for each new boiler operating day. Each 30-boiler-operating-day average $NO_x$ emission rate shall include all emissions and all heat

input that occur during all periods within any boiler operating day, including emissions from startup, shutdown, and malfunction.

c. If a valid $NO_x$-pounds-per-hour value or a valid heat input value is not available for any hour for a unit in a given boiler operating day, the $NO_x$-pounds-per-hour value or the heat input value (as the case may be) for that hour shall not be used in the calculation of the 30-boiler-operating-day average.

[A.A.C R18-2-306.A.3.c]

d. The Permittee shall maintain records of the 30-boiler-operating-day average $NO_x$ emission rate for each unit for each boiler operating day.

[A.A.C R18-2-306.A.3.c]

2. Sulfur Dioxide ($SO_2$)

a. *At all times, the Permittee shall calibrate, maintain, and operate a continuous emissions monitoring system for monitoring $SO_2$ emissions in accordance with 40 CFR Part 75 requirements.*

[A.A.C. R18-2-306.A.3.c and A.A.C. R-18-2-331A.3.c]
[Material Permit Condition indicated by italics and underline]

b. The Permittee shall demonstrate compliance with the $SO_2$ emission limitations specified in Condition II.D.1.b or Condition II.D.2.a (whichever is applicable) in accordance with the following procedure:

[A.A.C R18-2-306.A.3.c]

(1) Sum the total pounds of $SO_2$ emitted from each unit during the current boiler operating day and the immediately preceding twenty-nine (29) boiler operating days for that unit.

(2) Sum the total heat input from each unit, in MMBtu, during the current boiler operating day and the immediately preceding twenty-nine (29) boiler-operating days for that unit.

(3) Divide the total number of pounds of $SO_2$ emitted from each unit during the thirty (30) boiler operating days by the total heat input during the thirty (30) boiler operating days. A new 30-boiler-operating-day average $SO_2$ emission rate shall be calculated for each new boiler operating day. Each 30-boiler-operating-day average $SO_2$ emission rate shall include all emissions and all heat input that occur during all periods within any boiler operating day, including emissions from startup, shutdown, and malfunction.

c. In determining the 30-boiler-operating-day average $SO_2$ emission rate, the Permittee shall use CEMS in accordance with the procedures of 40 CFR Part 75 except for the following, as to which the Permittee shall follow 40 CFR Part 63.10010(e)(4) and (f):

[A.A.C R18-2-306.A.3.c]

(1) $SO_2$ emissions data shall not be bias adjusted,

(2) The missing data substitution procedures from 40 CFR Part 75

shall not apply, and

(3) Diluent capping (i.e., 5% $CO_2$) will be applied to the $SO_2$ emission calculation for any hours where the measured $CO_2$ concentration is less than 5% following the procedures in 40 CFR Part 63.10007(f).

d. If a valid $SO_2$ pounds per hour value or a valid heat input value is not available for any hour for a unit in a given boiler operating day, the $SO_2$ pounds per hour value or the heat input value (as the case may be) for that hour shall not be used in the calculation of the 30-boiler-operating-day average.

[A.A.C R18-2-306.A.3.c]

e. The Permittee shall maintain records of the 30-boiler-operating-day average $SO_2$ emission rate for each unit for each boiler -operating day.

f. The Permittee shall demonstrate compliance with the $SO_2$ emission limitation specified in Condition II.D.1.e by daily summing the total tons of $SO_2$ emitted from each unit during the current calendar year.

3. Particulate Matter

a. If OS-1 is selected, within 180 days after installation and commencing commercial operation of a SCR system on Unit 1, the Permittee shall conduct a performance test to determine compliance with the total particulate matter emission limitation established in Condition II.C.2 using EPA Method 5, in 40 CFR part 60, Appendix A-3, and Method 202 in 40 CFR Part 51- Appendix M, and/or other approved alternative test methods. Thereafter, the tests shall be conducted annually.

[A.A.C R18-2-306.A.3.c and A.A.C. R18-2-312]

b. A test protocol shall be submitted to EPA and ADEQ a minimum of 30 days prior to the scheduled testing. The protocol shall identify which method(s) will be used to demonstrate compliance.

[A.A.C R18-2-306.A.3.c and A.A.C. R18-2-312]

c. Each test shall consist of three runs, with each run at least 120 minutes in duration and with each run collecting a minimum sample of 60 dry standard cubic feet. Results shall be reported in lb/MMBtu using the calculation in Method 19 in 40 CFR Part 60 Appendix A-7.

[A.A.C R18-2-306.A.3.c and A.A.C. R18-2-312]

4. Sulfuric Acid ($H_2SO_4$) Mist

[A.A.C. R18-2-312]

a. If OS-1 is selected, within 180 days after installation and commencing commercial operation of a SCR system on Unit 1, the Permittee shall conduct performance tests using EPA Conditional Test Method 13 (CTM-13) or an approved alternative test method, to show compliance with the emission limit in Condition II.C.3. Thereafter, the tests shall be conducted annually.

b. If the Permittee requests approval of an alternative test method, the Permittee must submit its request for approval to the Director at least 60 days prior to commencing the test program. The Permittee must notify the Director at least 30 days prior to commencing the test program and shall submit the test report to the Director within 60 days after completing the test program.

**G.** Monitoring Requirements

1. *At all times, the Permittee shall calibrate, maintain, and operate CEMS, in full compliance with the requirements of 40 CFR Part 75, to accurately measure $SO_2$, $NO_x$, diluent, and stack gas volumetric flow rate from each unit.*

[A.A.C R18-2-306.A.3.c and A.A.C R-18-2-331A.3.c]
[Material Permit Condition indicated by italics and underline]

2. All valid CEMS hourly data shall be used to determine compliance with the emission limitations for $NO_x$ and $SO_2$ in Condition II.D.

[A.A.C R18-2-306.A.3.c]

**H.** Recordkeeping Requirements

[A.A.C. R18-2-306.A.3.c]

The Permittee shall maintain the following records for five years:

1. All CEMS data including the date, place, and time of sampling or measurement; parameters sampled or measured; and results.

2. Daily 30-boiler-operating-day average emission rates for $NO_x$ and $SO_2$, when applicable, for each unit calculated in accordance with Conditions II.F.1 and 2.

3. Records of quality assurance and quality control activities for emissions measuring systems, including, but not limited to. Any records required by 40 CFR Part 75.

4. Records of the relative accuracy test for hourly $NO_x$ and $SO_2$ lb/hr measurement and hourly heat input measurement.

5. Records of all major maintenance activities conducted on emission units, air pollution control equipment, and CEMS.

6. Any other records required by 40 CFR Part 75.

7. Records of annual $SO_2$ emissions from Units 1 and 2.

**I.** Reporting Requirements

[A.A.C. R18-2-306.A.3.c]

All reports shall be submitted to ADEQ and the EPA.

1. The owner/operator shall notify the Administrator and the Director within ten (10) business days after completion of any installation of a Selective Catalytic Reduction system on Unit 1 subject to this section.

2. Within 30 days after the end of every calendar quarter, the Permittee shall submit

a report that lists the daily 30-boiler-operating-day average emission rates for $NO_x$ and $SO_2$ for each unit calculated in Conditions II.F.1.b and II.F.2.b, respectively, and $SO_2$ annual emissions calculated in Condition II.F.2.f.

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