

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

IN THE MATTER OF AN ]  
ADMINISTRATIVE ORDER AGAINST: ]  
TransAlta Centralia Generation LLC ]  
\_\_\_\_\_ ]

FIRST REVISION:  
ORDER NO. 6426

TO: Mr. Bob Nelson,  
TransAlta Centralia Generation LLC  
913 Big Hanaford Road  
Centralia, WA 98531

This is an Administrative Order requiring your company to comply with WAC 173-400-151 by taking the actions that are described below. Chapter 70.94 RCW authorizes the Washington State Department of Ecology's Air Quality Program (Ecology) to issue Administrative Orders to require compliance with the requirements of Chapter 70.94 RCW and regulations issued to implement it.

Ecology has determined that portions of your facility are subject to the provisions of the state visibility protection program (WAC 173-400-151), which is implemented consistent with the requirements of the federal visibility protection program (40 CFR Part 51, Subpart P). The rules require that the State determine what technologies and level of emission control constitute Best Available Retrofit Technology (BART) for the eligible emission units at your facility. The rules also require the installation and use of those emission controls on the BART-eligible emission units. The emission controls are to be installed as expeditiously as possible, but in no event may the State allow them to start operation later than five years after the State's Regional Haze SIP amendment is approved by the United States Environmental Protection Agency (EPA).

**FINDINGS**

- A. The TransAlta Centralia Generation LLC ("TransAlta") Centralia Power Plant is a coal fired power plant larger than 750 MW output subject to BART. The power plant is comprised of 2 identical coal fired units referred to as BW21 and BW22.
- B. BART emission limitations for sulfur dioxide and particulate matter were determined by the Environmental Protection Agency in 2003. The Centralia Power Plant's Operating Permit incorporates the BART emission limitations determined by EPA.
- C. BART for nitrogen oxides at the Centralia Power Plant is based on:
  - a. Use of selective noncatalytic reduction (SNCR) for nitrogen oxides control.
  - b. Use of low NO<sub>x</sub> burners with separated and close coupled over fire air systems (aka LNC3).
  - c. Use of a sub-bituminous Powder River Basin coal or other coal that will achieve similar emission rates.

- d. Use and installation of additional boiler heat recovery equipment and boiler tube cleaning equipment to maximize the extraction of fuel energy into boiler steam.
- D. RCW 80.80.040 was amended in 2011 (Chapter 180, Laws of 2011) adding greenhouse gas emission requirements applicable to this facility that reduce the remaining useful life of each coal fired unit at the plant to approximately 8 and 13 years, starting from June 2011. The greenhouse gas emission requirements are:
- a. Amendments to Chapter 80.80, Revised Code of Washington passed in 2011 require both coal fired units at the Centralia Power Plant to comply with the greenhouse gas emission performance standard requirements of Revised Code of Washington 80.80.040. One unit is required to comply by December 31, 2020. The other unit is required to comply by December 31, 2025. The plant owner, the Governor's office, and environmental organizations anticipate that compliance with this requirement will be accomplished by decommissioning the units.
  - b. The requirement to meet the greenhouse gas emission performance standard does not apply if the Department of Ecology determines that a state or federal requirement requires the installation of selective catalytic reduction for Nitrogen oxides control on the coal units.

Additional information and analysis is available in the BART Determination Support Document for the Centralia Power Plant, by the Washington State Department of Ecology, November 2008 (revised April 2010 and May 2011); and the BART Analysis for the Centralia Power Plant, June 2008 and the BART Analysis Supplement, December 2008, and supplemental information dated March 2010; and Chapter 180, Laws of 2011.

**YOU ARE ORDERED:** To install and operate in accordance with the following conditions:

### **BART Emission Limitations**

#### **1. Nitrogen Oxides Emissions**

- 1.1. Starting no later than the dates in Condition 1.1.1 and 1.1.2, emissions of nitrogen oxides from the two coal-fired utility steam generating units (known as BW21 and BW22) at the Centralia Power Plant are limited to a maximum of:
  - 1.1.1. From the date of issuance of this Order, until 30 operating days after December 31, 2012, the nitrogen oxides emission limitation is 0.24 lb/MMBtu, 30 operating day rolling average, both units averaged together, including all emissions during unit start-up and shut-down.
  - 1.1.2. Beginning on the 31st operating day after December 31, 2012, the nitrogen oxides emission limitation is 0.21 lb/MMBtu, 30 operating day rolling average, both units averaged together, including all emissions during unit start-up and shut-down.

- 1.1.3. The 30 day rolling average will be determined per Condition 7.
  - 1.2. Beginning January 1, 2013, injection of ammonia or urea to control nitrogen oxides from a specific boiler must:
    - 1.2.1. Commence when the flue gas at the point(s) of injection in the boiler has reached the minimum SNCR operating temperature as identified by the system vendor in the system specific operation manual.
    - 1.2.2. End no sooner than the time coal is no longer introduced to the furnace of the boiler or the flue gas temperature at the injection point(s) is below the minimum SNCR operating temperature.
  - 1.3. Compliance with the nitrogen oxides emission limitation will be determined by use of a continuous emission monitoring system meeting the requirements of 40 CFR Part 75.
  - 1.4. Coal used is required to be a sub-bituminous coal from the Powder River Basin or other coal that will achieve similar emission rates.
  - 1.5. Nitrogen oxides emission reduction through the use of SNCR will be optimized as required in Condition 5. At the conclusion of the SNCR optimization study, the nitrogen oxides emission limitation contained in Condition 1.1.2 may be revised based on the results of the SNCR optimization study.
2. Ammonia emissions
- 2.1. Starting no later than the date in Condition 2.2, emissions of ammonia from the two coal-fired utility steam generating units at the Centralia Power Plant are limited to a maximum of:
    - 2.1.1. Starting on January 1, 2013, the ammonia emission limitation is 10 parts per million, dry volume (ppmdv) 30 operating day rolling average, both units averaged together.  
EXCEPTION: During the portion of the optimization study directed by Condition 5.2.3.1, the ammonia emission limitation is 20 ppmdv daily average, both units averaged together.
    - 2.1.2. In the event that during a given day, only one unit operated, the average of both units will be the calendar day average of the operating boiler. The emission rate of zero for the unit that did not operate must not be included in calculating the average emissions.
  - 2.2. Determination of compliance with the 30 operating day rolling average for ammonia will commence at midnight on the end of the 30<sup>th</sup> operating day after January 1, 2013.

- 2.3. Ammonia emission resulting from the use of SNCR will be optimized as required in Condition 5. The ammonia emission limitation contained in Condition 2.1.1 may be revised based on the results of the SNCR optimization study.

### **Schedule for Compliance**

3. Compliance with the 30 operating day rolling average nitrogen oxides limitations begin on the dates given in Condition 1.1.1 and 1.1.2. Compliance with the 30 operating day rolling average ammonia emission limitations begins on the date given in Condition 2.1.
4. Coal units BW21 and BW22 will permanently cease burning coal and be decommissioned as follows:
  - 4.1. One coal fired unit must permanently cease burning coal no later than December 31, 2020.
  - 4.2. The second coal fired unit must permanently cease burning coal no later than December 31, 2025.
  - 4.3. Conditions 4.1 and 4.2 do not apply in the event the Department of Ecology determines as a requirement of state or federal law or regulation that the selective catalytic reduction technology must be installed on either coal fired unit.

### **Nitrogen Oxides and Ammonia Reduction Optimization**

5. The operation of the selective noncatalytic reduction (SNCR) system for control of nitrogen oxides will be optimized to produce both the lowest nitrogen oxides emission rate and the lowest ammonia emission concentration possible at the same time.
  - 5.1. The nitrogen oxides control system will be optimized to achieve both the lowest 30 operating day average pound nitrogen oxides/MMBtu emission rate and the lowest 30 day average concentration of ammonia in the flue gas that is reasonably achievable without significant adverse effect on mercury capture, boiler cleaning processes (aka soot blowing) or byproduct salability .
    - 5.2. To achieve the goal of Condition 5.1, The owner of the Centralia Power Plant will:
      - 5.2.1. Develop an SNCR optimization plan and submit it by April 30, 2013 to Ecology and the SWCAA for their joint review and acceptance.
        - 5.2.1.1. A draft optimization plan will be submitted to Ecology and SWCAA by January 30, 2013 for their review and comment. Ecology and/or SWCAA will respond with written comments within 45 days of receipt of the draft optimization plan. If a request for a copy of this draft optimization plan is

received, the agency receiving the request will provide the requester a copy of the draft optimization plan.

5.2.1.2. TransAlta will submit a final optimization plan reflecting all comments provided by Ecology and SWCAA. The plan must be submitted no later than April 30, 2013. The plan will be deemed to be accepted and the owner will immediately implement the plan if Ecology and/or SWCAA do not respond by May 30, 2013. If TransAlta, Ecology, or SWCAA receive a request for a copy of the final optimization plan, the entity receiving the request will provide a copy of the optimization plan to the requestor.

5.2.2. The optimization plan will:

5.2.2.1. Provide for all optimization testing to be complete and a report on the findings submitted to Ecology and SWCAA not later than December 31, 2014.

5.2.2.2. Identify the start and end dates of the optimization study.

5.2.2.3. Describe the optimization process to be followed, including:

5.2.2.3.1. The overall schedule.

5.2.2.3.2. The specific dates for each stage of the optimization program, especially the start and end dates of the testing to determine how low of a nitrogen oxides emission rate can be achieved per condition 5.2.3.1.

5.2.2.3.3. Whether testing will be done on only one boiler at a time or both together.

5.2.2.4. Identify acceptable maximum ammonia content of fly ash used for cement and gypsum used to produce wallboard, including the basis for those maximums.

5.2.2.5. Identify all additional flue gas monitoring that will be used to determine optimum urea or ammonia injection rates for maximum nitrogen oxides reduction.

5.2.2.6. Evaluate the effect of ammonia injection on mercury capture effectiveness, fly ash ammonia content, and gypsum product ammonia content. This includes a description of the sampling and analysis processes.

5.2.3. The focus of the optimization plan, is to determine :

5.2.3.1. The maximum nitrogen oxides reduction possible with an ammonia emission rate of up to 20 ppm<sub>dv</sub>, daily average, each unit individually;

5.2.3.2. The maximum nitrogen oxides reduction with which compliance can be reasonably achieved within an ammonia emission rate of 5 ppm; and

5.2.3.3. Determine the lowest nitrogen oxides emission rate reasonably achievable that coincides with the minimum ammonia emission rate.

5.2.3.4. The ability to achieve a nitrogen oxides emission rate of less than 0.19 lb/MMbtu, 30 operating day rolling average, each unit individually.

- 5.3. Ecology and SWCAA will review the optimization study report for 60 days. At the end of the 60 days the two agencies will either request TransAlta make changes to the report or accept the report in writing.
- 5.4. Within 90 days of receiving written acceptance of the optimization study report by Ecology and SWCAA, the plant operations and maintenance manual(s) will be amended to include the operating parameters reflecting the optimized ammonia or urea injection rates developed.
- 5.5. Revisions to this BART Order
  - 5.5.1. Within 30 days of acceptance of the optimization study report by Ecology and SWCAA, TransAlta will submit a request to Ecology to revise the emission limits in Conditions 1.1.2 and 2.1.1 to reflect the results of the optimization.
  - 5.5.2. Upon receipt of the request to revise the emission limits, or within 60 days of acceptance of the optimization report by Ecology and SWCAA, Ecology will proceed to revise the emission limitations in Conditions 1.1.2 and 2.1.1 to reflect the results of the optimization study. Other approval conditions, including this condition, may be revised based on the final emission limitations.
  - 5.5.3. The nitrogen oxides limitation will not be raised above the level in Condition 1.1.2 as it existed on the date of issuance of this Revised Order.
  - 5.5.4. The ammonia limitation will not be raised above the level in Condition 2.1.1 as it existed on the date of issuance of this Revised Order.

## **Monitoring and Recordkeeping Requirements**

### **6. Ammonia:**

- 6.1. Ammonia emissions for compliance will be monitored by means of periodic emissions testing utilizing Bay Area Air Quality Management District (BAAQMD) Method ST1B or Environmental Protection Agency Conditional Test Method 027 (CTM-027). The sampling point will be in the stack following the wet scrubber. Stack testing shall occur on the following frequency:
  - 6.1.1. Testing shall occur once each calendar quarter, with no consecutive tests less than 80 or more than 110 calendar days apart.
  - 6.1.2. If 3 consecutive tests are each less than the ammonia limitation, then the testing frequency reduces to once every 6 calendar months, provided the nitrogen oxides emission limit is complied with during the test.

- 6.1.3. If, after there are 3 consecutive tests less than the ammonia limitation, the next 2 consecutive tests are less than 50% of the ammonia emission limitation, then the testing frequency reduces to once annually, provided the nitrogen oxides emission limit is complied with during the tests.
  - 6.1.4. If at any time there is a test showing emissions above the emission limitation, then the testing frequency reverts to quarterly until the requirements in Conditions 6.1.2 and 6.1.3 are met.
  - 6.1.5. The ammonia concentration measured during the periodic emissions testing is the 30 operating day rolling average value used for compliance starting on the date of the completion of the test until the completion of the next required periodic emission test.
  - 6.1.6. During the ammonia testing using BAAQMD Method ST1B (or CTM-027), the 30 rolling ammonia emission limit is to be treated as an hourly average for the purpose of Conditions 6.1. and 6.2.
  - 6.2. For use as a routine indicator of compliance between the tests required in Condition 6.1, ammonia emissions will be estimated. The estimate will be based on a calculation which uses as inputs the reagent concentration and flow rate, a calculation or measurement of the uncontrolled nitrogen oxides rate, the continuous nitrogen oxides monitoring results measured in the stack, and other parameters as necessary.
  - 6.3. At TransAlta's option, an ammonia continuous monitoring system may be used instead of periodic emissions tests. A continuous ammonia monitoring system used for compliance must meet the monitor location requirements contained in 40 CFR Part 60 Appendix B, Performance Specification 1 or 2, and the quality assurance and quality control requirements of 40 CFR Part 60 Appendix F as applicable.
7. Nitrogen oxides monitoring and averaging
- 7.1. For any hour in which coal is combusted in a unit, the owner/operator of each unit shall calculate the hourly nitrogen oxides concentration in lb/MMBtu at the CEMS installed in accordance with the requirements of 40 CFR Part 75. The 30-day average lb/MMBtu rate is calculated by summing the hourly emissions in pounds (unit lb/MMBtu times unit heat input) from all operating units and dividing that by the sum of the hourly heat inputs in million Btu for all operating units. At the end of each boiler operating day, the owner/operator shall calculate and record a new 30-day rolling average emission rate in lb/MMBtu from all valid hourly data for that boiler operating day and the previous 29 successive boiler operating days.
  - 7.2. ). An hourly average nitrogen oxides emission rate is valid only if the minimum number of data points, as specified in 40 CFR Part 75, is acquired as necessary to calculate nitrogen oxides emissions and heat rate.

- 7.3. Data reported to meet the requirements of this section shall not include data substituted using the missing data substitution procedures of subpart D of 40 CFR part 75, nor shall the data have been bias adjusted according to the procedures of 40 CFR part 75.
  - 7.4. A boiler operating day is a 24-hour period between 12 midnight and the following midnight during which coal is combusted at any time in the boiler. It is not necessary for coal to be combusted for the entire 24-hour period.
8. Ammonia emission limitation compliance based on periodic stack sampling and parameter monitoring.
    - 8.1. Compliance with the ammonia emission limitation is demonstrated by meeting the limitation during the stack testing period. The average of the 3 discrete sampling runs will be used to determine compliance with the ammonia emission limitation until the next periodic stack testing occurs.
    - 8.2. During each periodic stack test on each boiler, the ammonia or urea reagent injection rate and the ammonia to nitrogen oxides ratio for each sampling run shall be determined, recorded and reported as part of the testing report.
    - 8.3. During plant operation between periodic stack testing, compliance with the ammonia emission limitation will be indicated by:
      - 8.3.1. Injecting ammonia or urea reagent at the injection rate for ammonia or urea reagent used during the most recent stack sampling at the appropriate operating rate; and
      - 8.3.2. Meeting the nitrogen oxides emission limit.
9. Coal Quality Monitoring
    - 9.1. Coal nitrogen and sulfur content will be determined by taking a sample of the coal from the transfer belts between the coal pile and coal silos. An alternate location that provides a sample representative of the coal fired by the boilers may be proposed to Ecology by TransAlta for approval for use.
    - 9.2. A sample of coal for nitrogen and sulfur content analysis will be taken at least once per week when at least one coal fired boiler is in operation. The sample must be taken following ASTM Method D2234/D2234M-07.
    - 9.3. Coal nitrogen and sulfur content will be determined using ASTM Method D3176-89 (as reapproved in 2002). Note, other ASTM methods related to sample collection and preparation may need to be followed in order to perform this test.

- 9.4. As an alternate to coal nitrogen and sulfur content testing at the plant, certified results of testing by the coal mine operator of coal actually sent to the Centralia Power Plant may be used. Testing frequency should be no less frequent than required above.

### Reporting Requirements

10. A letter reporting of achievement of each compliance date in the schedule in Conditions 3 and 4 must be submitted to the Washington State Governor, Ecology, and SWCAA within 30 days of achieving the milestone.
11. Emissions above the emission limitations in this order due to malfunctions must, at a minimum, be documented in writing and submitted to SWCAA and Ecology with the emissions monitoring data per Condition 12. Additional recordkeeping and notifications related to excess emissions may also be required by SWCAA or Ecology regulation. Excess emissions that TransAlta believes are unavoidable must be documented as required in WAC 173-400-107 (or section 109 after that section is approved into the Washington SIP) and SWCAA's unavoidable excess emissions requirements.
12. Emission monitoring data will be reported to Ecology and to the SWCAA.
  - 12.1. Continuous emission monitoring reports will be submitted within 30 days after the end of each calendar quarter. The reports must contain the following information:
    - 12.1.1. The 30 operating day rolling average pound nitrogen oxides/MMBtu for each operating day in the reporting period. The 30 day rolling average nitrogen oxides emission rate shall be reported in units of lb/MMBtu, utilizing at least 2 significant figures;
    - 12.1.2. The cumulative short tons of nitrogen oxides per unit and combined that has been emitted during the current calendar year. The cumulative tons shall be rounded to the nearest ton;
    - 12.1.3. Periodic stack testing for ammonia emissions shall be submitted within 45 days of completion of the test.

If TransAlta elects to use continuous emission monitoring of ammonia instead of periodic stack testing, the quarterly report shall contain the 30 operating day rolling average ammonia concentration for both units averaged together for each operating day in the reporting period. Average ammonia concentrations shall be reported in units of ppm<sub>dv</sub> to 2 significant figures.
    - 12.1.4 For each hour of boiler operation, the ammonia or urea injection rate in units of pounds of ammonia or urea/hour, , the boiler temperature at the point of injection, injection level in use, and the estimated ammonia emission concentration.

12.2. The emission monitoring report will be sent to SWCAA and Ecology electronically in a format acceptable to the SWCAA. Reporting to Ecology under this condition will end January 1, 2018.

13. Coal nitrogen and sulfur content information must be submitted to SWCAA and Ecology within 30 days of the end of each calendar quarter.

13.1. Coal nitrogen and sulfur reporting must include the date each coal sample is taken, the nitrogen and sulfur content of each coal sample analyzed, the average sulfur and nitrogen concentrations for the calendar quarter, and the maximum and minimum concentrations found during the calendar quarter.

13.2. After June 30, 2011, the report will include the rolling annual averages for nitrogen and sulfur content plus the maximum and minimum concentrations in the prior year.

13.2.1. The weekly coal sample test results will be retained for at least 5 years and available for review by Ecology or SWCAA upon request.

13.2.2. Coal quality reporting to Ecology will end the earlier of:

13.2.2.1. January 1, 2018, or

13.2.2.2. The decommissioning of either unit BW21 or BW22, or

13.2.2.3. The date monitoring of the quality of coal fired in units BW21 and BW22 is required by a regulation issued by EPA under the authority of Section 112 of the federal Clean Air Act.

Failure to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order. Ecology shall enforce the terms of this Order only until such time as SWCAA incorporates the terms of the Order into the Centralia Power Plant's Air Operating Permit or except as provided by RCW 70.94.785.

You have a right to appeal this Order. To appeal you must:

- File your appeal with the Pollution Control Hearing Board within 30 days of the "date of receipt" of this document. Filing means actual receipt by the Board during regular office hours.
- Serve your appeal on the Department of Ecology within 30 days of the "date of receipt" of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). "Date of receipt" is defined at RCW 43.21B.001(2).

If you appeal you must:

- Include a copy of this document with your Notice of Appeal.
- Serve and file your appeal in paper form; electronic copies are not accepted.

To file your appeal with the Pollution Control Hearing Board:

Mail appeal to:

The Pollution Control Hearings Board  
PO Box 40903  
Olympia, WA 98504-0903

OR

Deliver your appeal in person to:

The Pollution Control Hearings Board  
4224-6th Avenue SE Rowe Six, Bldg 2  
Lacey, WA 98503

To serve your appeal on the Department of Ecology:

Mail appeal to:

Department of Ecology  
Appeals Coordinator  
PO Box 47608  
Olympia, WA 98504-7608

OR

Deliver your appeal in person to:

Department of Ecology  
Appeals Coordinator  
300 Desmond Drive SE  
Lacey, WA 98503

And send a copy of your appeal packet to:

Alan Newman  
Department of Ecology  
Air Quality Program  
PO Box 47600  
Olympia, WA 98504-7600

For additional information, go to the Environmental Hearings Office website at <http://www.eho.wa.gov>.

To find laws and agency rules, go to the Washington State Legislature website at <http://www1.leg.wa.gov/CodeReviser>.

Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320. These procedures are consistent with Chapter 43.21B RCW.

DATED this 13 day of Dec, 2011\_\_ at Olympia, Washington.

  
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Jeff Johnston, Ph.D.  
Manager, Science and Engineering Section  
Department of Ecology  
Air Quality Program