

Appendix D

Quantifiable, Verifiable, Permanent, and Enforceable

Standards of performance for designated facilities included under the plan must be demonstrated to be quantifiable, verifiable, permanent, and enforceable with respect to each designated facility. The plan submittal must include the methods by which each standard of performance meets each of the requirements in 40 C.F.R. §§ 60.5755a(c) through (f).

Quantifiable

The standards of performance for Longview Power LLC (LVP) from the SB1 unit are quantifiable because the variables included in the calculation to demonstrate compliance with the weighted average CO₂ limit for LB-1 through LB-5 and LB-0 in accordance with conditions 4.4.4 and 4.4.5 of Permit R13-3495 can be reliably measured in a manner that can be replicated.

The standards of performance were established using load bins which are defined using the gross generation from the unit with compliance demonstrated on a weighted average based on the actual operating hours in the respective bin during the compliance period. A continuous emission monitoring system (CEMS) must directly measure the hourly average CO₂ concentrations in the exhaust gas, and a flow monitoring system must measure the hourly average stack gas flow rate, according to 40 C.F.R. § 75.10(a)(3)(i). If LVP measures CO₂ concentration on a dry basis, a continuous moisture monitoring system is required to be installed, certified, operated, maintained, and calibrated according to 40 C.F.R. § 75.11(b). (Permit condition 4.2.1.a.)

For each continuous monitoring system used to determine the CO₂ mass emissions, LVP must meet the applicable certification and quality assurance procedures in 40 C.F.R. § 75.20 and Appendices A and B to 40 C.F.R. Part 75. (Permit condition 4.2.1.b.)

LVP must select an appropriate reference method to setup (characterize) the flow monitor and perform on-going Relative Accuracy Test Audits (RATAs) in accordance with 40 C.F.R. Part 75. (Permit condition 4.2.1.d.)

Only “valid operating hours” are used to calculate the hourly CO₂ mass emissions as defined in 40 C.F.R. § 60.5540(a)(1). (Permit condition 4.2.1.e)

LVP must measure the length of time that the SB1 unit operated within each load bin. (Permit condition 4.2.1.f.) LVP must install, calibrate, maintain, and operate a sufficient number of watt meters to continuously measure and record measure the hourly gross and net electric output (Permit condition 4.2.2.).

LVP must maintain and operate a system that measures, records operational data of the EGU and calculate the unit heat rate in terms of Btu per kilowatt-hour based on using a Rankine cycle model

of the permitted unit in accordance with latest version of the American Society of Mechanical Engineers (ASME) Performance Test Code Performance Monitoring Guidelines for Power Plant (ASME PTC PM-2010) or future test method developed by ASME to the measure heat rate from power plant. (Permit condition 4.2.3.).

LVP must evaluate the data as required to be collected under permit condition 4.2.1. to determine if the data is “valid data” using the criteria set forth in permit condition 4.2.4. “Valid data” is defined as quality-assured data generated by continuous monitoring systems that are installed, operated, and maintained according to 40 C.F.R. Part 75. For CEMS, the initial certification requirements in 40 C.F.R. § 75.20 and Appendix A to 40 C.F.R. Part 75 must be met before quality-assured data are reported under this permit. For on-going quality assurance, the daily, quarterly, and semiannual/annual test requirements in sections 2.1, 2.2, and 2.3 of Appendix B to 40 C.F.R. Part 75 must be met and the data validation criteria in sections 2.1.5, 2.2.3, and 2.3.2 of Appendix B to 40 C.F.R. Part 75 apply. For fuel flow meters, the initial certification requirements in section 2.1.5 of Appendix D to 40 C.F.R. Part 75 must be met before quality-assured data are reported under this permit, and for on-going quality assurance, the provisions in section 2.1.6 of Appendix D to 40 C.F.R. Part 75 apply. For each compliance period, at least 95 percent of the operating hours in the compliance period must be valid operating hours. At times when the CEMS CO₂ emission data fall below the above threshold during the compliance period, the permittee shall use the procedures from Appendix G to 40 C.F.R. Part 75, *Determination of CO₂ Emissions* to determine the CO₂ emissions where CO₂ emissions data is missing in the compliance demonstration. (Permit condition 4.2.4)

If a coal adjustment factor (CAF) is applied to the CO₂ limits as a result of a fuel switch in accordance with the requirements specified in condition 4.1.1.d of Permit R13-3495, the testing must be performed in accordance with section 4.3.1 of the permit.

Additional detail for each of the above referenced permit conditions are in the Permit R13-3495 that is provided in Appendix I of this State Plan.

Verifiable

The standards of performance for the SB1 unit are verifiable because adequate monitoring, recordkeeping and reporting requirements are in place to enable the State and the Administrator to independently evaluate, measure, and verify compliance with the standard of performance. The WV DAQ established the monitoring, recordkeeping, and reporting requirements in Permit R13-3495 based primarily on 40 C.F.R. 60, Subpart TTTT, *Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units* because there exists established procedures for monitoring carbon dioxide emissions to show compliance with a carbon dioxide emission rate.

The source specific monitoring, recordkeeping and reporting requirements are established as permit conditions in sections 4.2, 4.4, and 4.5 of Permit R13-3495. General recordkeeping and reporting requirements are established in permit sections 3.4 and 3.5.

LVP must determine hourly CO₂ mass emissions in pounds based on a CO₂ CEMS that directly measures and records hourly average CO₂ concentrations in the exhaust gas and a flow monitoring system to measure hourly average stack gas flow rates in accordance with permit condition 4.2.1. For each CO₂ CEMS, LVP must meet the applicable certification and quality assurance procedures in 40 C.F.R. § 75.20 and Appendices A and B to 40 C.F.R. Part 75. Only unadjusted exhaust gas volumetric flow rates are allowable to determine the hourly CO₂ mass emission rate and bias adjustment factors are not allowed. LVP is required to select an appropriate reference method to setup (characterize) the flow monitor and to perform on-going RATAs, in accordance with 40 C.F.R. Part 75. The hourly CO₂ mass emissions must be calculated only for valid operating hours, which must be evaluated against the criteria provided in permit condition 4.2.4. The length of time the SB1 unit operated in each load bin must be monitored and recorded. Additionally, records of maintenance performed, calibrations, performance evaluations, and CEMS data must be maintained.

Permit condition 4.2.2 requires LVP to install, calibrate, maintain, and operate enough watt meters to continuously measure and record the hourly gross and net electric output, as applicable. Records of maintenance performed, calibrations, performance evaluations, and data within a data collection system are also required.

LVP is required to maintain and operate a system that measures, records operational data of the EGU and calculate the unit heat rate in terms of Btu per kilowatt-hour based on using a Rankine cycle model of the unit in accordance with latest version of the American Society of Mechanical Engineers (ASME) Performance Test Code Performance Monitoring Guidelines for Power Plant (ASME PTC PM-2010) or future test method developed by ASME to the measure heat rate from power plant. Records of the calculated heat rate reduced to hourly values and maintenance performed on the system is required to be maintained. (Permit condition 4.2.3)

In accordance with permit condition 4.2.4, LVP is required to evaluate the data required to be collected under permit condition 4.2.1 to determine if the data is “valid data”. Each compliance period shall include only “valid operating hours” in the compliance period.

Records are required to be maintained for monitoring (permit condition 4.4.1), maintenance of air pollution control equipment (permit condition 4.4.2), malfunctions of air pollution control equipment (permit condition 4.4.3), calculations of the CO₂ weighted average limit in accordance with permit condition 4.4.4, compliance demonstrations in accordance with 4.4.5, and other records specified in permit condition 4.4.6.

If the SB1 unit at the LVP experiences an equipment failure that requires the unit to be operated at a higher heat rate, the Level 2 CO₂ limits may be triggered if the conditions in 4.1.1.b of Permit R13-3495 are met. If the Level 2 CO₂ limits are triggered, the associated recordkeeping and reporting requirements are established under the same permit condition (4.1.1.b).

If the CAF is applied to the CO₂ limits as a result of a fuel switch, the monitoring, testing, recordkeeping, and reporting requirements are specified under condition 4.3.1 of Permit R13-3495.

An annual compliance report and applicable reports required under Subpart G of 40 C.F.R. Part 75 are required under permit conditions 4.5.1 and 4.5.2.

Additional detail for each of the above referenced permit conditions are in the Permit R13-3495 that is provided in Appendix I of this State Plan.

Permanent

The standards of performance for the SB1 unit are permanent because the standards of performance must be met for each compliance period.

The standards of performance are established as condition 4.1.1 of Permit R13-3495 that was issued to LVP on December 23, 2020. The compliance determination and compliance periods are established as conditions 4.4.4 and 4.4.5 of Permit R13-3495. The initial compliance period began on January 1, 2021 and ends on December 31, 2021. Subsequent compliance periods shall follow thereafter on a calendar year basis. Compliance demonstrations are required no later than March 1 following the compliance period.

Enforceable

The standards of performance for emission unit SB1 is enforceable because it is:

- (1) A technically accurate limitation or requirement and the time period for the limitation or requirement are specified;
- (2) Compliance requirements are clearly defined;
- (3) The responsible official (responsible for compliance and liable for violations) is identified in the permit application;
- (4) Each compliance activity or measure is enforceable as a practical matter; and
- (5) The Administrator, the State, and third parties maintain the ability to enforce against violations and secure appropriate corrective actions.

The standards of performance are technically accurate limitations and requirements provided in section 4.1.1 of permit R13-3495 using a load-bin approach to capture CO₂ emissions over all ranges of operation.

CO₂ emissions released to the atmosphere from Emission Point EA1 are not allowed to exceed the weighted average limit calculated using Equations 3 or 4. in section 4.4 of Permit R13-3495. This limit includes all CO₂ emissions from the source and compliance is based on a calendar year basis. The limits for each respective load bin used in Equations 1 and 2 from section 4.4 of Permit R13-3495 to determine the Level 1 and/or Level 2 CO₂ weighted average limits as appropriate. The Level 1 limits defined in 4.1.1.a of Permit R13-3495 applies at all times unless the permittee

satisfies the requirements of 4.1.1.b of this condition in which case, the Level 2 limits would go into effect once the required notification(s) have been submitted. Compliance with LB-0 is determined in accordance with permit condition 4.4.5.

The technically accurate limitations and requirements include provisions for degradation for LVP because of its age and for a coal adjustment factor in the event of a fuel switch in the future. Additional information for the technical basis used to establish the standard is provided in Appendix C of this State Plan and in the Engineering Evaluation corresponding to Permit R13-3495 provided in Appendix I of this State Plan.

The time period for the limitations and requirements are specified as compliance on a calendar year basis. The compliance requirements are clearly defined in sections 4.4.4 and 4.4.5 of Permit R13-3495 that is provided in Appendix I of this plan.

The responsible official for LVP was identified in the R13-3495 permit application that was submitted to the West Virginia DAQ on June 1, 2020. Each compliance activity or measure is enforceable as a practical matter because the compliance demonstration requirements are clearly defined. The requirements for the annual compliance report are established as condition 4.5.1 of Permit R13-3495. The legal authority in section 4.9 of this State Plan expands on enforceability and identifies the ability of the Administrator, the State, and third parties to enforce against violations and secure appropriate corrective actions.