

**MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
OPERATING PERMIT TECHNICAL REVIEW DOCUMENT**

**Air, Energy & Mining Division
1520 E. Sixth Avenue
P.O. Box 200901
Helena, Montana 59620-0901**

**Basin Electric Power Cooperative
Culbertson Generating Station
Section 5, Township 28 North, Range 57 East, Roosevelt County
1717 East Interstate Avenue
Bismarck, North Dakota**

The following table summarizes the air quality programs testing, monitoring, and reporting requirements applicable to this facility.

Facility Compliance Requirements	Yes	No	Comments
Source Tests Required	X		Including Methods 7, 10 and 18/25
Ambient Monitoring Required		X	
COMS Required		X	
CEMS Required	X		NO _x
Schedule of Compliance Required		X	
Annual Compliance Certification and Semiannual Reporting Required	X		As Applicable
Monthly Reporting Required		X	
Quarterly Reporting Required		X	
Applicable Air Quality Programs			
ARM Subchapter 7 – Montana Air Quality Permit (MAQP)	X		MAQP #4256-01
New Source Performance Standards (NSPS)	X		40 CFR 60, Subpart A and Subpart KKKK
National Emission Standards for Hazardous Air Pollutants (NESHAPS)		X	
Maximum Achievable Control Technology (MACT)		X	
Major New Source Review (NSR) – includes Prevention of Significant Deterioration (PSD) and/or Non-attainment Area (NAA) NSR		X	
Risk Management Plan Required (RMP)		X	
Acid Rain Title IV	X		40 CFR Part 72-78
Compliance Assurance Monitoring (CAM)	X		Appendix F of #OP4256-04
State Implementation Plan (SIP)	X		General State

			SIP
--	--	--	-----

TABLE OF CONTENTS

SECTION I. GENERAL INFORMATION..... 3

A. PURPOSE 3

B. FACILITY LOCATION 3

C. FACILITY BACKGROUND INFORMATION..... 3

D. CURRENT PERMIT ACTION 4

E. TAKING AND DAMAGING ANALYSIS 4

F. COMPLIANCE DESIGNATION 5

SECTION II. SUMMARY OF EMISSIONS UNITS..... 6

A. FACILITY PROCESS DESCRIPTION 6

B. EMISSIONS UNITS AND POLLUTION CONTROL DEVICE IDENTIFICATION..... 6

C. CATEGORICALLY INSIGNIFICANT SOURCES/ACTIVITIES 6

SECTION III. PERMIT CONDITIONS 7

A. EMISSION LIMITS AND STANDARDS 7

B. MONITORING REQUIREMENTS 8

C. TEST METHODS AND PROCEDURES 8

D. RECORDKEEPING REQUIREMENTS 9

E. REPORTING REQUIREMENTS 9

F. PUBLIC NOTICE 9

G. DRAFT PERMIT COMMENTS 9

SECTION IV. NON-APPLICABLE REQUIREMENT ANALYSIS 10

SECTION V. FUTURE PERMIT CONSIDERATIONS 11

A. MACT STANDARDS..... 11

B. NESHAP STANDARDS 11

C. NSPS STANDARDS..... 11

D. RISK MANAGEMENT PLAN 11

E. CAM APPLICABILITY 11

F. PREVENTION OF SIGNIFICANT DETERIORATION AND TITLE V GREENHOUSE GAS TAILORING
RULE 12

SECTION I. GENERAL INFORMATION

A. Purpose

This document establishes the basis for the decisions made regarding the applicable requirements, monitoring plan, and compliance status of emissions units affected by the operating permit proposed for this facility. The document is intended for reference during review of the proposed permit by the Environmental Protection Agency (EPA) and the public. It is also intended to provide background information not included in the operating permit and to document issues that may become important during modifications or renewals of the permit. Conclusions in this document are based on information provided in the original application submitted by Basin Electric Power Cooperative (Basin Electric) on September 4, 2008, additional submittals on November 6, 2008, and December 11, 2008; administrative requests received on September 5, 2014, and October 20, 2014, the renewal application received on June 8, 2015, supplemental information received on January 5, 2016, the renewal application received on January 27, 2020 and the modification application received on September 29, 2020.

B. Facility Location

The station is located 7 miles northeast of Culbertson, Montana within Section 5, Township 28 North, Range 57 East, Roosevelt County.

C. Facility Background Information

Basin Electric owns and operates a combustion turbine power generation facility approximately 7 miles northeast of Culbertson, Montana. The generation plant houses a single, simple-cycle, General Electric (GE) LMS100 aeroderivative combustion turbine and an electric generator driven by the turbine. Gross generation capacity of the turbine is 100 megawatts (MW). The turbine combusts natural gas which will be supplied by an existing pipeline running through the Basin Electric property.

Montana Air Quality Permit History

On January 1, 2009, the Department of Environmental Quality (Department) issued **Montana Air Quality Permit (MAQP) #4256-00** to Basin Electric to construct the previously described 100 MW natural gas combustion turbine electrical power generation facility. The proposed facility would consist of a single, simple-cycle, General Electric (GE) LMS100 aeroderivative combustion turbine.

On September 8, 2015, the Department received a letter from Basin Electric requesting an amendment to MAQP #4256-00. BEPC requested that the permit language be changed to reflect the correct emission limit averaging period for Oxides of Nitrogen during start-up, operation, and shut-down of the power generating unit. The permit was also updated to reflect the current language used by the Department. **MAQP#4526-01** replaced MAQP#4526-00.

On October 16, 2020, the Montana Department of Environmental Quality (Department) received a complete Montana Air Quality Permit (MAQP) application from Basin Electric Power Cooperative (Basin Electric) requesting a modification to MAQP #4256-01. Basin Electric requested that the annual operating capacity be changed to use a fuel flow rate rather

than hours of operation for the limitation. The MAQP was also updated to reflect the current language used by the Department. **MAQP #4256-02** replaced MAQP #4256-01.

Title V Operating Permit

The initial Title V **Operating Permit #OP4256-00** was issued on December 14, 2010, for the operation of the Culbertson Generating Station.

On October 20, 2014 the Department received an Administrative Amendment (AA) request from Basin Electric proposing a change in the designated responsible official for the Culbertson Generating Station. **Operating Permit #OP4256-01** replaced Operating Permit #OP4256-00.

On June 8, 2015, the Department received an application for renewal of Operating Permit #4256-01, from Basin Electric. Included in the permit renewal, Basin Electric requested that during periods of startup, a pound per hour limit be included in the permit conditions. Basin also requested that RATA performance testing schedule of CGS to be modified to reflect conditions located in 40 CFR 75, Appendix B, as allowed for with Administrator approval in 40 CFR 60, Subpart KKKK. A Compliance Assuring Monitoring (CAM) Plan was established for demonstrating reasonable assurance of continuous compliance with the carbon monoxide limitation from the turbine. **Operating Permit #OP4256-02** replaced Operating Permit #OP4256-01.

On January 27, 2020, the Department received an application for renewal of Operating Permit #OP4256-02, from Basin Electric. There were no changes to applicable requirements as part of this operating permit renewal. **Operating Permit #OP4256-03** replaced Operating Permit #OP4256-02.

D. Current Permit Action

On September 29, 2020, the Department received an application for a modification of Operating Permit #OP4256-03, from Basin Electric. Basin Electric proposes to change the operational limit from a “hours per rolling 12-month basis” to a fuel flow rate limit based on 3,233 million standard cubic feet (MMscf) of natural gas consumption per rolling 12-month period. The increase in operation equates to the fuel flow rate required for 4,200 hours of operation per 12-months at the maximum generating capacity. **Operating Permit #OP4256-04** replaces Operating Permit #OP4256-03.

E. Taking and Damaging Analysis

HB 311, the Montana Private Property Assessment Act, requires analysis of every proposed state agency administrative rule, policy, permit condition or permit denial, pertaining to an environmental matter, to determine whether the state action constitutes a taking or damaging of private real property that requires compensation under the Montana or U.S. Constitution. As part of issuing an operating permit, the Department is required to complete a Taking and Damaging Checklist. As required by 2-10-101 through 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

F. Compliance Designation

The Department completed an evaluation of the BEPC facility on October 31, 2016. Based upon the information gathered during the facility inspection, the observations made at the facility, and the review of facility records and latest source test reports, Department believes that the BEPC facility is in compliance with the applicable air quality regulations and applicable requirements.

SECTION II. SUMMARY OF EMISSIONS UNITS

A. Facility Process Description

The generation plant houses a single, simple-cycle, aeroderivative combustion turbine and an electric generator driven by the turbine. The turbine draws in combustion air which is compressed and mixed with natural gas. The fuel-air mixture is ignited to produce compressed hot combustion gases which expand and rotate a shaft which turns a generator to produce electricity. The turbine combusts only natural gas which is supplied by a pipeline running through the Basin Electric property.

B. Emissions Units and Pollution Control Device Identification

Emissions from the turbine are limited by permit conditions that restrict operation of the turbine to no more than 3,400 hours per year. Oxides of nitrogen (NO_x) emissions are controlled by the combustion of pipeline quality natural gas and water injection during combustion. The facility does not incorporate add-on controls for emissions of sulfur dioxide (SO₂), particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀), or particulate matter with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}). Basin Electric is required by permit to combust only pipeline quality natural gas, which results in reduced SO₂ and PM₁₀ emissions. A catalytic oxidizer treats post-combustion exhaust emissions to reduce carbon monoxide (CO) and volatile organic compounds (VOC).

Emissions Unit ID	Emission Unit Description	Pollution Control Device/Practice
EU001	General Electric (GE) LMS100 aeroderivative combustion turbine.	NO _x – water/steam injection; SO ₂ , PM/PM ₁₀ /PM _{2.5} and Opacity– pipeline quality gas; CO and VOC – catalytic oxidation.

C. Categorically Insignificant Sources/Activities

Pursuant to ARM 17.8.1201(22)(a), an insignificant emission unit means any activity or emissions unit located within a source that: (i) has a potential to emit (PTE) less than 5 tons per year (TPY) of any regulated pollutant; (ii) has a PTE less than 500 pounds per year of lead; (iii) has a PTE less than 500 pounds per year of hazardous air pollutants listed pursuant to Section 7412 (b) of the FCAA; and (iv) is not regulated by an applicable requirement, other than a generally applicable requirement that applies to all emission units subject to Subchapter 12.

Basin Electric proposed one insignificant sources and/or activities, fugitive emissions from haul roads. Because there are no requirements to update such a list, the status of such emission units and/or activities may change.

SECTION III. PERMIT CONDITIONS

A. Emission Limits and Standards

The following emission limits and standards are applicable to Basin Electric facility operations:

The Department determined that the emission limits that apply to EU001 – simple-cycle, General Electric (GE) LMS100 aeroderivative combustion turbine are as follows:

- Emissions limits for NO_x were established through the Best Available Control Technology (BACT) analysis required by Administrative Rules of Montana (ARM) 17.8.752. NO_x emissions from the turbine generator shall not exceed 78.50 pounds per hour (lb/hr) based on a 1-hour average, effective during all periods of operation, including startup and shutdown; and shall be controlled by water/steam injection into the turbine within 10 minutes of turbine startup and shall continue until 10 minutes or less prior to shut down.
- This facility is an affected facility under 40 CFR 60, Subpart KKKK, which is applicable via ARM 17.8.340. Accordingly, Basin Electric shall comply with all applicable standards and limitations, and the reporting, recordkeeping and notification requirements contained in 40 CFR 60, Subpart KKKK; and, emissions of NO_x from the turbine generator shall not exceed 25 parts per million dry volume (ppmvd) at 15% oxygen (O₂), based on a 1-hour average calculated over a rolling 4 hour period effective during all periods of operation, including startup and shutdown.
- Emissions limits for CO were established through the BACT analysis required by ARM 17.8.752. Emissions of CO from the turbine generator shall not exceed 21.50 lb/hr based on a 3-hour average, effective during all periods of operation, including startup and shutdown; and CO emissions shall be controlled through proper installation, operation, and maintenance of a catalytic oxidation emissions control system.
- Emissions limits for VOC were established through the BACT analysis required by ARM 17.8.752. Emissions of VOCs from the turbine generator shall not exceed 1.33 lb/hr based on a 1-hour average, effective during all periods of operation, including startup and shutdown; and VOC emissions shall be controlled through proper installation, operation, and maintenance of a catalytic oxidation emissions control system.
- Emissions limits for particulate matter (PM\PM₁₀\PM_{2.5}) were established through the BACT analysis required by ARM 17.8.752. The combined sum of filterable and condensable emissions of PM₁₀ from the turbine generator shall not exceed 6.00 lb/hr based on a 1-hour average, effective during all periods of operation, including startup and shutdown; and, particulate emission shall be controlled through combustion of pipeline quality natural gas only.
- Work practice emissions limits for SO_x were established through the BACT analysis required by ARM 17.8.752. SO_x emissions shall be controlled through combustion of pipeline quality natural gas only.

- Limits in hours of operation were proposed by Basin Electric. Accordingly, operation of the turbine generator, including startup and shutdown, shall not exceed 3233 million standard cubic feet (MMSCF) of natural gas per rolling 12-month time period.
- In order to maintain good dispersion to maintain compliance with the Montana and Federal Clean Air Act(s), the turbine shall exhaust into a stack that is at least 85.6-feet tall from grade.
- Pursuant to the general emission standards at ARM 17.8.304 Basin Electric shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).
- The Basin Electric facility is an affected facility under Title IV of the Federal Clean Air Act (Acid Rain Program) as defined at 40 CFR Parts 72-78; therefore pursuant to ARM 17.8.1234 Basin Electric shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements of the Acid Rain Program contained in 40 CFR Parts 72-78.

B. Monitoring Requirements

ARM 17.8.1212(1) requires that all monitoring and analysis procedures or test methods required under applicable requirements are contained in operating permits. In addition, when the applicable requirement does not require periodic testing or monitoring, periodic monitoring must be prescribed that is sufficient to yield reliable data from the relevant time period that is representative of the source's compliance with the permit.

The requirements for testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance do not require the permit to impose the same level of rigor for all emissions units. Furthermore, they do not require extensive testing or monitoring to assure compliance with the applicable requirements for emissions units that do not have significant potential to violate emission limitations or other requirements under normal operating conditions. When compliance with the underlying applicable requirement for an insignificant emissions unit is not threatened by lack of regular monitoring and when periodic testing or monitoring is not otherwise required by the applicable requirement, the status quo (**i.e., no monitoring**) will meet the requirements of ARM 17.8.1212(1). Therefore, the permit does not include monitoring for insignificant emissions units.

The permit includes periodic monitoring or recordkeeping for each applicable requirement. The information obtained from the monitoring and recordkeeping will be used by the permittee to periodically certify compliance with the emission limits and standards. However, the Department may request additional testing to determine compliance with the emission limits and standards.

C. Test Methods and Procedures

The operating permit may not require testing for all sources if routine monitoring is used to determine compliance, but the Department has the authority to require testing if deemed

necessary to determine compliance with an emission limit or standard. In addition, the permittee may elect to voluntarily conduct compliance testing to confirm its compliance status.

D. Recordkeeping Requirements

The permittee is required to keep all records listed in the operating permit as a permanent business record for at least five years following the date of the generation of the record.

E. Reporting Requirements

Reporting requirements are included in the permit for each emissions unit and Section V of the operating permit "General Conditions" explains the reporting requirements. However, the permittee is required to submit semi-annual and annual monitoring reports to the Department and to annually certify compliance with the applicable requirements contained in the permit. The reports must include a list of all emission limit and monitoring deviations, the reason for any deviation, and the corrective action taken as a result of any deviation.

F. Public Notice

In accordance with ARM 17.8.1232, a public notice will be published in the Wolf Point Herald newspaper on or before September 25, 2020. The Department shall provide a public comment period on the draft operating permit from September 25, 2020, through October 25, 2020. ARM 17.8.1232 requires the Department to keep a record of both comments and issues raised during the public participation process.

Summary of Public Comments

Person/Group Commenting	Comment	Department Response
No Public Comments Received		

G. Draft Permit Comments

Summary of Permittee Comments

Permit Reference	Permittee Comment	Department Response
No Permittee Comments Received		

Summary of EPA Comments

Permit Reference	EPA Comment	Department Response
No EPA Comments Received		

SECTION IV. NON-APPLICABLE REQUIREMENT ANALYSIS

The permit application for Basin Electric's Title V Operating Permit #OP4256-04 identified applicable requirements: non-applicable requirements for individual or specific emission units and facility-wide operations were not listed.

SECTION V. FUTURE PERMIT CONSIDERATIONS

A. MACT Standards

As of the date of the draft issuance of #OP4256-04 the emission of hazardous air pollutants (HAPs) from the Basin Electric Culbertson Generating Station facility is less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAPs combined; therefore, the Basin Electric facility is not a major source of HAPs and not subject to the requirements of 40 CFR 63, Subpart YYYY.

B. NESHAP Standards

As of the date of the draft issuance of #OP4256-04 Basin Electric is not subject to any standards listed under 40 CFR Part 61, with the possible exception of Subpart M – Asbestos, as applicable.

C. NSPS Standards

40 CFR 60, Subpart A – General Provisions. This subpart applies to all equipment or facilities subject to an NSPS Subpart as listed below:

40 CFR 60, Subpart KKKK – Standards of Performance for Stationary Combustion Turbines. This subpart applies to the proposed facility because Basin Electric proposes to install and operate a stationary combustion turbine with a heat input greater than 10 million British thermal units (MMBtu) per hour, which commenced construction, modification, or reconstruction after February 18, 2005.

D. Risk Management Plan

As of the date of the draft issuance of #OP4256-04, this facility does not exceed the minimum threshold quantities for any regulated substance listed in 40 CFR 68.115 for any facility process. Consequently, this facility is not required to submit a Risk Management Plan.

If a facility has more than a threshold quantity of a regulated substance in a process, the facility must comply with 40 CFR 68 requirements no later than June 21, 1999; three years after the date on which a regulated substance is first listed under 40 CFR 68.130; or the date on which a regulated substance is first present in more than a threshold quantity in a process, whichever is later.

E. CAM Applicability

An emitting unit located at a Title V facility that meets the following criteria listed in ARM 17.8.1503 is subject to Subchapter 15 and must develop a CAM Plan for that unit:

- The emitting unit is subject to an emission limitation or standard for the applicable regulated air pollutant (unless the limitation or standard that is exempt under ARM 17.8.1503(2));
- The emitting unit uses a control device to achieve compliance with such limit; and

- The emitting unit has potential pre-control device emission of the applicable regulated air pollutant that is greater than major source thresholds.

ARM 17.8.1501(5) defines ‘control device’ and excludes inherent combustion controls such as water injection. Because the Culbertson Generating Station turbine uses water injection to intrinsically limit NO_x formation, NO_x emission limits for the combustion turbine are not subject to CAM rules.

The turbine meets the CAM applicability criteria for CO. The CO CAM plan can be found in Appendix F of #OP4256-04.

F. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

On May 7, 2010, EPA published the “light duty vehicle rule” (Docket # EPA-HQ-OAR- 2009-0472, 75 FR 25324) controlling greenhouse gas (GHG) emissions from mobile sources, whereby GHG became a pollutant subject to regulation under the Federal and Montana Clean Air Act(s). On June 3, 2010, EPA promulgated the GHG “Tailoring Rule” (Docket # EPA-HQ-OAR-2009-0517, 75 FR 31514) which modified 40 CFR Parts 51, 52, 70, and 71 to specify which facilities are subject to GHG permitting requirements and when such facilities become subject to regulation for GHG under the PSD and Title V programs.

Under the Tailoring Rule, any PSD action (either a new major stationary source or a major modification at a major stationary source) taken for a pollutant or pollutants other than GHG that was not final prior to January 2, 2011, would be subject to PSD permitting requirements for GHG if the GHG increases associated with that action were at or above 75,000 TPY of carbon dioxide equivalent (CO_{2e}) emissions. Similarly, if such action were taken, any resulting requirements would be subject to inclusion in the Title V Operating Permit. Starting on July 1, 2011, PSD permitting requirements would be triggered for modifications that were determined to be major under PSD based on GHG emissions alone, even if no other pollutant triggered a major modification. In addition, sources that exceed the 100,000 TPY CO_{2e} threshold under Title V would be required to obtain a Title V Operating Permit if they were not already subject.

Starting on July 1, 2011, PSD permitting requirements would be triggered for modifications that were determined to be major under PSD based on GHG emissions alone, even if no other pollutant triggered a major modification. In addition, sources that are not considered PSD major sources based on criteria pollutant emissions would become subject to PSD review if their facility-wide potential emissions equaled or exceeded 100,000 TPY of CO_{2e} and 100 or 250 TPY of GHG on a mass basis depending on their listed status in ARM 17.8.801(22) and they undertook a permitting action with increases of 75,000 TPY or more of CO_{2e} and greater than 0 TPY of GHG on a mass basis. With respect to Title V, sources not currently holding a Title V permit that have potential facility-wide emissions equal to or exceeding 100,000 TPY of CO_{2e} and 100 TPY of GHG on a mass basis would be required to obtain a Title V Operating Permit.

The Supreme Court of the United States (SCOTUS), in its *Utility Air Regulatory Group v. EPA* decision on June 23, 2014, ruled that the Clean Air Act neither compels nor permits EPA to require a source to obtain a PSD or Title V permit on the sole basis of its potential emissions of GHG. SCOTUS also ruled that EPA lacked the authority to tailor the Clean Air Act’s unambiguous numerical thresholds of 100 or 250 TPY to accommodate a CO_{2e} threshold of

100,000 TPY. SCOTUS upheld that EPA reasonably interpreted the Clean Air Act to require sources that would need PSD permits based on their emission of conventional pollutants to comply with BACT for GHG. As such, the Tailoring Rule has been rendered invalid and sources cannot become subject to PSD or Title V regulations based on GHG emissions alone. Sources that must undergo PSD permitting due to pollutant emissions other than PSD may still be required to comply with BACT for GHG emissions.