



MAJOR SOURCE OPERATING PERMIT

Permittee: **Morgan Energy Center, LLC**
Facility Name: **Morgan Energy Center**
Facility No.: 712-0080
Location: Decatur, Morgan County, Alabama

In accordance with and subject to the provisions of the Alabama Air Pollution Control Act of 1971, Ala. Code §§ 22-28-1 to 22-28-23, as amended, the Alabama Environmental Management Act, Ala. Code §§ 22-22A-1 to 22-22A-17, as amended, and rules and regulations adopted there under, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to construct, install and use the equipment, device or other article described above.

*Pursuant to the **Clean Air Act of 1990**, all conditions of this permit are federally enforceable by EPA, the Alabama Department of Environmental Management, and citizens in general. Those provisions which are not required under the **Clean Air Act of 1990** are considered to be state permit provisions and are not federally enforceable by EPA and citizens in general. Those provisions are contained in separate sections of this permit.*

Issuance Date: *January 26, 2021*
Modification Date: *Draft*
Expiration Date: *January 24, 2026*

Summary Page for Three Combustion Turbines and Three Heat Recovery Steam Generators with Duct Burners and Selective Catalytic Reduction (SCR)

Permitted Operating Schedule: 8760 Hrs/yr

Emission limitations:

Emission Point #	Description	Pollutant	Emission limit (per CT)	Regulation
Stacks #1, #2 & #3	CT1, CT2, & CT3, each w/duct burner & SCR	NO _x	0.013 lb/MM Btu & 31.2 lb/hr 112 ppmvd at 15% O ₂	Rule 335-3-14-.04 (BACT) 40 CFR Part 60, Subpart GG
		CO ¹	0.1 lb/MM Btu & 232.0 lb/hr	Rule 335-3-14-.04 (BACT)
		CO ²	0.117 lb/MM Btu & 156.0 lb/hr	Rule 335-3-14-.04 (BACT)
		VOCs	0.0131 lb/MM Btu & 30.0 lb/hr	Rule 335-3-14-.04 (BACT)
		PM	0.005 lb/MM Btu & 11.0 lb/hr	Rule 335-3-14-.04 (BACT)
		SO ₂	0.8 % S by weight in fuel	Rule 335-3-10-.02(33) 40 CFR Part 60, Subpart GG
		Opacity	10%	Rule 335-3-14-.04 (BACT)

¹ These limits are for times when power augmentation is in operation.

² These limits are for times when only the turbine is being operated.

Provisos for Three Combustion Turbines and Three Heat Recovery Steam Generators with Duct Burners and Selective Catalytic Reduction (SCR)

Federally Enforceable Provisos	Regulations
<u>Applicability</u>	
1. These sources are subject to the applicable requirements of ADEM Admin. Code r. 335-3-16, "Major Source Operating Permits."	RULE 335-3-16-.03
2. These sources are subject to the applicable requirements of ADEM Admin. Code R. 335-3-14-.04, "Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration]."	RULE 335-3-14-.04 (BACT)
3. The three duct burners are subject to the NSPS regulations for Electric Utility Steam Generating Units, Subpart Da of 40 CFR Part 60.	Rule 335-3-10-.02(a) 40 CFR 60.40Da(a)
4. The three gas-fired turbines are subject to the NSPS regulations for Stationary Gas Turbines, 40 CFR Part 60 Subpart GG.	Rule 335-3-10-.02(33) 40 CFR 60.630(a)-(b)
5. The turbines and duct burners are subject to the applicable requirements of Subpart A, the General Provision of 40 CFR Part 60.	Rule 335-3-10-.02(1) 40 CFR 60.1(a)
6. These units are subject to the Acid Rain Rules contained in Rule 335-3-18 and 40 CFR Part 72, 75, and 76. The applicable Acid Rain Permit is contained in the Acid Rain portion of this Operating Permit.	Rule 335-3-18 and 40 CFR Parts 72, 75, and 76
7. Where an applicable requirement of the Act is more stringent than an applicable requirement of regulations promulgated under Title IV of the Act, both provisions are incorporated as enforceable conditions of this permit.	Rule 335-3-16-.05(a)2
8. These sources are subject to the applicable provisions of the Cross-State Air Pollution Rule found in ADEM Admin. Code r. 335-3-5-.06 through 335-3-5-.36 and ADEM Admin. Code r. 335-3-8-.07 through 335-3-8-.70.	Rules 335-3-5-.06 through 335-3-5-.36 and Rules 335-3-8-.07 through 335-3-8-.70
<u>Emission Standards</u>	
1. The nitrogen oxide (NO _x) emission rate from each combined turbine/duct burner stack shall not exceed 0.013 lb/MMBtu and 31.2 lb/hr. The nitrogen oxide emission rate shall be monitored using a rolling three-hour average computed by the continuous emission monitor system.	Rule 335-3-14-.04 BACT

Federally Enforceable Provisos**Regulations**

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| 2. The NO _x emission rates from each combustion turbine shall not exceed 112 ppmvd at 15 percent O ₂ . | 40 CFR 60.332 |
| 3. The carbon monoxide (CO) emission rate from each combined turbine/duct burner stack during power augmentation shall not exceed 0.1 lb/MM Btu and 232.0 lb/hr. When firing the combustion turbine only, the carbon monoxide emission rate from each combined turbine/duct burner stack shall not exceed 0.117 lb/MM Btu and 156.0 lb/hr. | Rule 335-3-14-.04
(BACT) |
| 4. The volatile organic compound (VOC) emission rate from each combined turbine/duct burner stack shall not exceed 0.0131 lb/MM Btu and 30.0 lb/hr. | Rule 335-3-14-.04
(BACT) |
| 5. The particulate matter (PM) emission rate from each combined turbine/duct burner stack shall not exceed 0.005 lb/MM Btu and 11.0 lb/hr. | Rule 335-3-14-.04
(BACT) |
| 6. Visible emission from the combined turbine and duct burner stack shall not exceed 10% opacity. | Rule 335-3-14-.04
(BACT) |
| 7. No owner or operator shall burn in any stationary gas turbine any fuel which contains sulfur in excess of 0.8 percent by weight. | Rule 335-3-10-.02(34)
40 CFR 60 Subpart GG |
| 8. Exceptions to the Rules and Regulations for provisos 1-5 above are granted for startup, shutdown, load change, and maintenance as defined below: | Rule 335-3-4-.01(c) |
| (a) Startup – Exemptions due to startup shall cease 35-minutes after the combustion turbine meets the Department approved start-up point based on megawatts and an average flue gas temperature exiting the catalyst. The Department must approve in writing any change to the start-up point prior to modifying such point. | |
| (b) Shutdown – Exemptions due to shutdown shall commence upon initiation of shutdown or due to a failure of the unit. | |
| (c) Load Change – Exemptions due to combustion turbine load change shall commence when the combustion turbine increases or decreases in load at a rate approved by the Department. The Department must approve in writing any change to the load rate point prior to modifying such point. | |

The permittee shall take all reasonable actions to minimize the magnitude and duration of emissions during the periods listed above.

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| 9. All emission limits (lb/MMBtu) are base on the Higher Heating Value (HHV). | Rule 335-3-14-.04
(BACT) |
| 10. The turbines and duct burners shall fire only natural gas. | Rule 335-3-14-.04
(BACT) |
| 11. Emissions exceeding any allowances that the source lawfully holds under Title IV of the Act or the regulations promulgated thereunder are prohibited. | Rule 335-3-16-.05(d) |
| 12. Except for periods of startup and shutdown, each turbine may operate at the lowest load for which the turbine has been verified by compliance tests to meet the emission standards in this section for carbon monoxide, nitrogen oxides and volatile organic compounds, provided that the owner or operator has completed ambient air modeling using the stack parameters at that load that confirms that all ambient air standards would be met. | Rule 335-3-14-.04
(BACT) |

The Department must approve in writing of any change to the lowest load of a turbine prior to operating at such load.

Compliance and Performance Test Methods and Procedures

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| 1. The continuous emissions monitor system (CEMS) required by Proviso 1 of the Emissions Monitoring section shall be used to determine compliance the NOx limits in Proviso 1 of the Emission Standards section. Method 20 of Appendix A in 40 CFR Part 60 may also be used to determine the nitrogen oxides and oxygen concentrations. | Rule 335-3-10-.02(33)
40 CFR 64.2(b)(1)(iv)
40 CFR 60.335(c)(3)
Rule 335-3-14-.04
(BACT) |
| 2. The owner or operator shall determine compliance with the sulfur content standard in Proviso 6 of the Emission Standards Section as follows: ASTM D 1072-80 or 90 (Reapproved 1994), D 3031-81, D 4084-82 or 94, or D 3246-81, 92, or 96, or the latest editions, or in accordance with approved 40 CFR 75 methods shall be used for the sulfur content of gaseous fuels. The applicable ranges of some ASTM methods mentioned above are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator. | Rule 335-3-10-.02(33)
40 CFR 60.335(d) |
| 3. Method 9 of Appendix A in 40 CFR Part 60 shall be used to determine the opacity from the combined turbine and duct burner stacks. | Rule 335-3-1-.05(1) |

Federally Enforceable Provisos

Regulations

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| 4. Method 10 of Appendix A in 40 CFR Part 60 shall be used to determine the carbon monoxide emissions from the combined turbine and duct burner stacks. | Rule 335-3-1-.05(1) |
| 5. Method 5 or 17 of Appendix A in 40 CFR Part 60 shall be used to determine the particulate matter emissions from the combined turbine and duct burner stacks. | Rule 335-3-1-.05(1) |
| 6. Method 25, 25A, or 25B of Appendix A in 40 CFR Part 60 shall be used to determine the volatile organic compounds emissions from the combined turbine and duct burner stacks. | Rule 335-3-1-.05(1) |
| 7. Any performance tests required shall be conducted and data reduced in accordance with the test methods and procedures contained in each specific permit condition unless the Director (1) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, (2) approves the use of an equivalent method, or (3) approves the use of an alternative method, the results of which he has determined to be adequate for indicating whether a specific source is in compliance. | Rule 335-3-1-.05(1) |

Emissions Monitoring

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| 1. The continuous emissions monitoring system (CEMS) to measure nitrogen oxide emissions shall continue to be operated at a location approved by the Director. The nitrogen oxide emission rate shall be monitored using a rolling three-hour average computed by the continuous emission monitor system. The CEMS shall meet the specifications and procedures of 40 CFR Part 75 and will be certified and maintained in accordance with 40 CFR Part 75. | Rule 335-3-14-.04
(BACT)
40 CFR Part 75 |
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Recordkeeping and Reporting Requirements

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| 1. An excess emissions report for the combined turbine/duct burner stack as defined by 40 CFR Part 60, Subpart A, §60.7(c) and (d), will be submitted to the ADEM within 30 days of the end of each calendar quarter in the following format:

NOx:

(A) Source Operating Time (all times and periods in hours)

(B) Time Monitoring System was Able to Record Source Performance*

(C) Monitor Availability (%) = B/A x 100 | Rule 335-3-16-.05(c)
40 CFR 64.9 |
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Federally Enforceable Provisos**Regulations**

(D) Total Emissions Periods where the Monitoring System determines emissions are above standards**

(E) Overall Source Performance (%) = $[(B - D) / B] \times 100$

(F) Exempt Periods (as applicable)- F (x)

(1) F 1 = Startup/Shutdown

(2) F 2 = Load Change

(G) Net Excess Emissions = $D - \sum F(x)$

(H) Net Source Performance (%):

= $[1 - (G / (B - \sum F(x)))] \times 100$

= $[(B - \sum F(x) - G) / (B - \sum F(x))] \times 100$

(I) Overall Exceedances (%) - Percent of time above the standard due to all reasons:

= $(D / B) \times 100$

(J) Net Exceedances (%) - Percent of time above the standard due to non-exempt reasons:

= $[(D - \sum F(x)) / B] \times 100$

(K) Exempt Period Exceedances (%) - Percent of time above the standard due to an exempted reason

SU/SD = $(F1 / B) \times 100$

Load Change = $(F2 / B) \times 100$

* Information identifying each period during which the monitoring systems were inoperative (except for zero and span checks) and the nature of the system repairs or adjustments will be maintained and made available upon request.

** Report date, time, duration, magnitude, cause and corrective action taken for each occurrence.

NOTE: Data recorded during periods of system breakdowns, repairs, adjustments, and calibration checks shall not be included in any of the above data averages.

Federally Enforceable Provisos**Regulations**

NOTE: Equations used to convert Monitoring System data as monitored to the required reporting standard will be provided with the first quarter report of each calendar year.

Acid Rain Requirements

1. These units are subject to the Acid Rain rules contained in 40 CFR Parts 72 and 75. Applicable Acid Rain permits are contained in the Acid Rain portion of this Operating Permit.

Rule 335-3-18
40 CFR Parts 72 and 75

CSAPR Requirements

1. These units are subject to the applicable provisions of Cross-State Air Pollution Rule (CSAPR) to include all applicable provisions of the SO₂ Group 2 Trading Program requirements.
1. These units are subject to the applicable provisions of Cross-State Air Pollution Rule (CSAPR) to include all applicable provisions of the NO_x Annual Trading Program requirements.

Rules 335-3-5-.06
through 335-3-5-.36

Rules 335-3-8-.06
through 335-3-8-.70