Montana Department of
ENVIRONMENTAL QUALITY
Brian Schweitzer, Governor
P. O. Box 200901 Helena, MT 59620-0901 (406) 444-2544 Website: www.deq.mt.gov

August 7, 2009

Mr. Frank Giacalone, President
Montgomery Great Falls Energy Partners, LP
403 Corporate Woods
Magnolia, Texas 77354

Dear Mr. Giacalone:

Montana Air Quality Permit #3154-06 is deemed final as of August 7, 2009, by the Department of Environmental Quality (Department). This permit is for the Montgomery Great Falls Energy Partners, LP – Great Falls Energy Center. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Vickie Walsh
Air Permitting Program Supervisor
Air Resources Management Bureau
(406) 444-9741

Paul Skubinna
Environmental Engineer
Air Resources Management Bureau
(406) 444-6711

VW:PS
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #3154-06

Montgomery Great Falls Energy Partners, LP
Great Falls Energy Center
403 Corporate Woods
Magnolia, Texas 77354

August 7, 2009

MONTANA AIR QUALITY PERMIT

Issued To: Montgomery Great Falls Energy Partners LP
403 Corporate Woods
Magnolia, Texas 77354

Permit: #3154-06
Application Complete: 5/8/09
Preliminary Determination Issued: 6/17/09
Department Decision: 7/22/09
Permit Final: 8/7/09
AFS #: 013-0033

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Montgomery Great Falls Energy Partners LP (Montgomery), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq*., as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

Montgomery is permitted to construct and operate a 262 megawatt (MW) natural gas-fired electrical power generation facility and is proposing an additional 128 MW in generation capacity and ancillary equipment, to be located approximately 2 miles north of Great Falls, Montana, and east of U.S. Highway 87. The legal description of the site location is Section 30, Township 21 North, Range 4 East, in Cascade County, Montana.

B. Current Permit Action

On May 8, 2009, the Department of Environmental Quality (Department) received complete application materials from Montgomery to modify MAQP #3154-05. The application proposed addition of two Rolls-Royce Trent 60 simple cycle combustion turbines for peaking operation and other ancillary emitting units including building heaters, emergency generator and diesel fuel storage tank. Application materials included a best available control technology (BACT) analysis and air quality demonstration for particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$).

The addition of the proposed equipment without limitations would have rendered the facility a Major Stationary Source subject to Title V permitting requirements. The Montgomery facility is a listed source with respect to New Source Review (NSR)/Prevention of Significant Deterioration (PSD). Therefore, the inclusion of the ancillary equipment necessary to operate the original facility without limitations would have put the original facility over 100 tons of potential emissions, making it a major stationary source that had not gone through PSD permitting. The Department has preserved and modified the appropriate existing permit conditions and limitations to maintain Title V and PSD synthetic minor status and make the existing conditions practically enforceable. The Department has also established emission and operational limitations on the proposed Trent 60 peaking turbines and ancillary facilities; such that, the Title V and PSD synthetic minor status is maintained. The Department has placed short term limits, annual emission limitations and operational limitations on the Trent 60 peaking turbines to control oxides of nitrogen (NO_x), carbon monoxide (CO) and particulate matter emissions on the facility based on the worst case emissions from either steady state operation or start-up and shut-down operations, BACT, and the ambient air quality analysis. Montgomery is also required to comply with all applicable New Source Performance Standards (NSPS) and Maximum Achievable Control Technology (MACT) standards.

SECTION II: Conditions and Limitations – Simple Cycle Turbines

The conditions and limitations in this section are applicable during the first two year period of operations after start-up or until the facility commences combined cycle operations, whichever is sooner.

A. Operational and Emission Limitations

1. Montgomery shall operate no more than two 80 MW simple cycle natural gas turbines for up to 2 years after initial start-up. The combined hours of operation for the two turbines shall not exceed 4620 hours facility-wide during any 12-month rolling time period; the combined hours of operation in start-up and shut down mode shall not exceed 480 hours during any 12-month rolling time period (ARM 17.8.749, ARM 17.8.752, and ARM 17.8.1204).

2. Each 80 MW simple cycle turbine shall exhaust into one of two stacks that are at least 92-feet tall (ARM 17.8.749).

3. Montgomery shall operate and maintain an integral dry low (NO_x) burner on each of the 80 MW turbines (ARM 17.8.749 and ARM 17.8.752).

4. Emissions from each of the two simple cycle 80 MW natural gas powered turbines shall not exceed the following limits (in pounds per hour (lb/hr)):

NOx		
NOx-	4-hour rolling average (ARM 17.8.749)	39.3 lb/hr
NOx-	1-hour limit, excluding startup (ARM 17.8.752)	34.9 lb/hr
CO		
CO-	30-day rolling average (ARM 17.8.749)	34.8 lb/hr
CO-	1-hour limit, excluding startup (ARM 17.8.752)	21.3 lb/hr
Volatile Organic Compounds (VOC)		
VOC-	30-day rolling average (ARM 17.8.749)	8.1 lb/hr
VOC-	1-hour limit (ARM 17.8.752)	9.5 lb/hr

5. Montgomery shall limit the hours of operation, the capacity, and/or the fuel consumption such that the sum of the NO_x emissions from the facility is less than 100 tons per rolling 12-month time period. Any calculations used to establish NO_x emissions shall be approved by the Department and shall be based on the NO_x data from the continuous emission monitor system (CEMS) for each turbine and the hours of operation for each piece of equipment (ARM 17.8.749 and ARM 17.8.1204).

6. Montgomery shall limit the hours of operation, the capacity, and/or the fuel consumption such that the sum of the CO emissions from the facility is less than 100 tons per rolling 12-month time period. Any calculations used to establish CO emissions shall be approved by the Department and shall be based on the average hourly temperature from the National Weather Service office in Great Falls, the average hourly load for each turbine, and the hours of operation for each piece of equipment (ARM 17.8.749 and ARM 17.8.1204).

7. Montgomery shall only combust pipeline quality natural gas in the combustion turbines. (ARM 17.8.749, ARM 17.8.752, and 40 Code of Federal Regulations (CFR) 60, Subpart KKKK).

8. Montgomery shall operate and maintain the 80 MW turbines, and their respective monitoring equipment, and ancillary equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times (ARM 17.8.340 and 40 CFR 60, Subpart KKKK).

9. Montgomery shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart KKKK (ARM 17.8.340 and 40 CFR 60, Subpart KKKK).

10. Montgomery shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements of the Acid Rain Program contained in 40 CFR 72-78 (40 CFR 72 through 40 CFR 78).

11. The requirements of Section II of this permit shall apply for a period of 2 years from initial startup of the 80 MW simple cycle turbines, or until the Montgomery facility begins operating in a combined cycle mode, whichever comes first. Upon commencement of operation in the combined cycle mode, Montgomery shall comply with the conditions identified in Section III of this permit (ARM 17.8.749).

B. Testing Requirements

1. Montgomery shall test each of the two 80 MW simple cycle turbines to demonstrate compliance with the steady-state NO_x and CO emission limits contained in Section II.A.4. Testing shall be conducted concurrently for NO_x and CO, within 180 days of initial start-up of each of the simple cycle turbines, and shall conform with the requirements contained in 40 CFR 60, Subpart KKKK (ARM 17.8.105, ARM 17.8.749, and 40 CFR 60, Subpart KKKK).

2. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

3. The Department may require further testing (ARM 17.8.105).

C. Continuous Emissions Monitoring Systems

1. Montgomery shall install, operate, calibrate, and maintain CEMS as follows:

   a. Montgomery shall operate a CEMS for the measurement of NO_X on each simple cycle stack, and use the data to monitor compliance with the NO_x emission limits contained in Section II.A.4 and Section II.A.6 (ARM 17.8.105; 17.8.749; 40 CFR 60, Subpart KKKK; and 40 CFR 72-78).

   b. A CEMS for the measurement of oxygen (O_2) or carbon dioxide (CO_2) content shall be operated on each simple cycle stack (ARM 17.8.105; ARM 17.8.749; and 40 CFR 60, Subpart KKKK).

2. All continuous monitors required by this permit and by 40 CFR Part 60 shall be operated, excess emissions reported as per Attachment #2 of this permit, and performance tests conducted in accordance with the requirements of 40 CFR Part 60, Subpart A; 40 CFR Part 60, Appendix B (Performance Specifications #1, #2, and #3); 40 CFR 60, Subpart KKKK and 40 CFR Part 72-78, as applicable (ARM 17.8.749, 40 CFR Part 60, and 40 CFR 72-78).

3. Montgomery shall develop and keep on-site a quality assurance plan for all the CEMS (ARM 18.7.340 and 40 CFR 60, Subpart KKKK).

4. On-going quality assurance for the CEMS must conform to 40 CFR Part 60, Appendix F (ARM 17.8.749 and 40 CFR Part 60, Appendix F).

5. Montgomery shall maintain a file of all measurements from the CEMS, and performance testing measurements: all CEMS performance evaluations; all CEMS or monitoring device calibration checks and audits; and adjustments and maintenance performed on these systems or devices, recorded in a permanent form suitable for inspection. The records shall be retained on site for at least 5 years following the date of such measurements and reports. Montgomery shall supply these records to the Department upon request (ARM 17.8.749).

D. Operational Reporting Requirements

1. Montgomery shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. Montgomery shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include ***the addition of a new emissions unit,*** change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745).

3. Montgomery shall document, by month, the hours of steady state, and start-up and shut-down operation for each of the two simple cycle turbines. By the 25th day of each month, Montgomery shall total the hours of operation for each of the two simple cycle turbines, during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.1. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).

4. Montgomery shall document the amount of NO_x emissions from each turbine at least once per hour. In addition, at least once per hour Montgomery shall calculate the previous 4-hour rolling average emission rate for each of the turbines, in conformance with the requirements contained in 40 CFR 60 Subpart KKKK. These emission rates will be used to verify compliance with the limitations in Section II.A.4. (ARM 17.8.749 and 40 CFR 60, Subpart KKKK).

5. Montgomery shall document, by month, the amount of NO_x emissions from the facility. By the 25th day of each month, Montgomery shall total the amount of NO_x emissions from the facility during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.5. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749 and ARM 17.8.1204).

6. Montgomery shall document, by month, the amount of CO emissions from the facility. By the 25th day of each month, Montgomery shall total the amount of CO emissions from the facility during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.6. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749 and ARM 17.8.1204).

7. All records compiled in accordance with this permit must be maintained by Montgomery as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

8. Montgomery shall annually certify that its emissions are less than those that would require the facility to obtain an air quality operating permit as required by ARM 17.8.1204(3)(b). The annual certification shall comply with the certification requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emissions inventory information (ARM 17.8.749 and ARM 17.8.1204).

E. Notification

Montgomery shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.749):

1. Commencement of construction of the power generation facility within 30 days after commencement of construction;

2. Actual start-up date of each of the 80 MW turbines within 15 days after the actual start-up of the turbine.

SECTION III: Conditions and Limitations – Combined Cycle

The conditions and limitation in this section replace those listed in Section II, after the authorized two year simple cycle start up period or upon start-up of Combined Cycle operations, whichever is sooner.

A. Operational and Emission Limitations

1. Montgomery shall operate and maintain two combined cycle electric generating systems. Each system will consist of a natural gas-fired 80 MW turbine and a heat recovery steam generator (HRSG) with a 121.9 million British thermal unit per hour (MMBtu/hr) natural-gas fired duct burner. The combined hours of operation for the two 80 MW combined cycle turbines shall not exceed 15,240 hours facility-wide during any 12-month time period (ARM 17.8.749 and ARM 17.8.1204).

2. Exhaust from each turbine/HRSG shall exhaust into one of two stacks that are at least 120-feet tall (ARM 17.8.749).

3. Montgomery shall operate and maintain the integral dry low NO_X burner on each of the 80 MW turbines (ARM 17.8.749 and ARM 17.8.752).

4. Montgomery shall operate and maintain a selective catalytic reduction (SCR) unit and a catalytic oxidizer on each combined cycle turbine/HRSG stack (ARM 17.8.749 and ARM 17.8.752).

5. Montgomery shall operate and maintain both Trent 60 turbines, both 80 MW turbines, HRSG systems and respective air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practice for minimizing emissions at all times including during startup, shutdown, and malfunctions (ARM 17.8.340 and 40 CFR 60, Subpart KKKK).

6. Emissions from each of the combined turbine/HRSG stacks shall not exceed the following limits:

NO_X		
NO_X-	30-day rolling average (ARM 17.8.749)	8.9 lb/hr
NO_X-	1-hour limit, excluding startup (ARM 17.8.752)	9.7 lb/hr
CO		
CO-	30-day rolling average (ARM 17.8.749)	10.9 lb/hr
CO-	1-hour limit, excluding startup (ARM 17.8.752)	11.8 lb/hr
VOC		
VOC-	1-hour limit (ARM 17.8.752)	2.7 lb/hr
Particulate Matter less than or equal to 10 microns (PM_{10})		
PM_{10}-	Turbine only – 1-hour limit (ARM 17.8.752)	10.0 lb/hr
PM_{10}-	Turbine plus duct burner – 1-hour limit (ARM 17.8.752)	11.2 lb/hr
Sulfur Dioxide (SO_2)		
SO_2-	1-hour limit (ARM 17.8.752)	1.4 lb/hr

7. Montgomery shall limit the hours of operation, the capacity, and/or the fuel consumption of the equipment such that the sum of the NO_x emissions from the facility is less than 100 tons per rolling 12-month period. Any calculations used to establish NO_x emissions from the turbines shall be approved by the Department and shall be based on the NO_x data from the CEMS for each turbine unit (ARM 17.8.749 and ARM 17.8.1204).

8. Montgomery shall limit the hours of operation, the capacity, and/or the fuel consumption of the equipment such that total CO from the facility is less than 100 tons per rolling 12-month period. Any calculations used to establish CO emissions from the turbines shall be approved by the Department and shall be based on the CO data from the CEMS for each turbine (ARM 17.8.749 and ARM 17.8.1204).

9. Montgomery shall limit the hours of operation, the capacity, and/or the fuel consumption such that the total PM_{10} from the facility is less than 100 tons per rolling 12-month period. Any calculations used to establish PM emissions shall be approved by the Department (ARM 17.8.749 and ARM 17.8.1204).

10. Montgomery shall limit the combined hours of operation of the two duct burners to no more than 12,000 hours per rolling 12-month period (ARM 17.8.749).

11. Montgomery shall only combust pipeline quality natural gas in both Trent 60 turbines, both 80 MW turbines and the HRSG duct burners (ARM 17.8.749, ARM 17.8.752, and 40 CFR 60, Subpart KKKK).

12. Montgomery is required to operate and maintain high efficiency drift eliminators on the cooling tower so drift emissions are limited to no more than 0.002% of circulating water flow (ARM 17.8.752).

13. Montgomery shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart KKKK (ARM 17.8.340 and 40 CFR 60, Subpart KKKK).

14. Montgomery shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements of the Acid Rain Program contained in 40 CFR 72-78 (40 CFR 72 -78).

15. Montgomery is authorized to operate no more than two 64 MW simple cycle turbines. The total hours of operation of each turbine shall not exceed 1752 hours including start-up and shut-down operations during any 12-month time period; the number of start-up and shut-down events shall not exceed 175 during any 12-month rolling time period (ARM 17.8.749, ARM 17.8.752, and ARM 17.8.1204).

16. Montgomery shall combust ultra-low sulfur diesel or biodiesel fuel in the Trent 60 simple cycle turbines, and diesel fuel combustion time shall not exceed 200 hrs, including start-up and shut-down time during any 12-month rolling time period; the number of start-up and shut-down events firing diesel fuel shall not exceed 20 during any 12-month rolling period (ARM 17.8.749, ARM 17.8.752, and ARM 17.8.1204).

17. NO_x emissions from each of the Trent 60 simple cycle turbines shall not exceed 13.75 lb/hr or 5.05 tons per year (tpy) during any rolling 12-month period (ARM 17.8.749, ARM 17.8.752, and ARM 17.8.1204).

18. CO emissions from each of the Trent 60 simple cycle turbines shall not exceed 6.28 lb/hr or 5.30 tons per year (tpy) during any rolling 12-month period (ARM 17.8.749, ARM 17.8.752, and ARM17.8.1204).

19. PM_{10} emissions from each of the Trent 60 simple cycle Turbines shall not exceed 15.04 lb/hr or 5.41 tpy during any 12-month rolling period (ARM 17.8.749, ARM 17.8.752, and ARM 17.8.1204).

20. Montgomery shall install, operate, and maintain water injection and SCR emission control technologies on each of the Trent 60 simple cycle turbines (ARM 17.8.749 and ARM 17.8.752).

21. Each Trent 60 simple cycle turbine shall exhaust into one of two stacks that are at least 75-feet tall (ARM 17.8.749).

22. The requirements of Section III of this permit shall apply after the 2 years initial start-up period for the 80 MW simple cycle turbines, or when the Montgomery facility begins operating in a combined cycle mode, whichever is sooner. Until commencement of operation in the combined cycle mode, Montgomery shall comply with the conditions identified in Section II of this permit (ARM 17.8.749).

B. Testing Requirements

1. Montgomery shall test each of the Trent 60 simple cycle turbines and each of the two combined cycle turbine/HRSG units to demonstrate compliance with the NO_x and CO emission limits contained in Sections III.A.6, 7, 8, 17 and 18. Testing shall be conducted concurrently, for NO_x and CO, within 180 days of initial start-up of each combined cycle system, and shall conform with the requirements contained in 40 CFR 60, Subpart KKKK (ARM 17.8.105, ARM 17.8.749, 40 CFR 60.8, and 40 CFR 60 Subpart KKKK).

2. Montgomery shall test each of the Trent 60 simple cycle turbines and each of the two combined cycle turbine/HRSG units for PM_{10} to demonstrate compliance with the emission limits contained in Sections III.A.6, 9 and 19. Testing shall be conducted within 180 days of initial start-up and continue on an every 5-year basis or another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and ARM 17.8.749).

3. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

4. The Department may require further testing (ARM 17.8.105).

C. Continuous Emissions Monitoring Systems

1. Montgomery shall install, operate, calibrate, and maintain CEMS as follows:

   a. Montgomery shall operate a CEMS for the measurement of NO_X emissions from each Trent 60 simple cycle turbine and each combined turbine/HRSG stack, and use the data to monitor compliance with the NO_x emission limits contained in Section III.A. 6, 7, and 17 (ARM 17.8.105; ARM 17.8.749; 40 CFR 60, Subpart KKKK, and 40 CFR 72-78).

   b. Montgomery shall operate a CEMS for the measurement of CO on each Trent 60 simple cycle turbine and each combined turbine/HRSG stack, and use the data to monitor compliance with the CO emission limits contained in Section III.A.6, 8 and 18 (ARM 17.8.105 and 17.8.749).

   c. A CEMS for the measurement of oxygen (O_2) or carbon dioxide (CO_2) content shall be operated on each simple cycle turbine and each combined turbine/HRSG stack (ARM 17.8.105, ARM 17.8.749, and 40 CFR 6,0 Subpart KKKK).

2. All continuous monitors required by this permit and by 40 CFR Part 60 shall be operated, excess emissions reported as per Attachment #2 of this permit, and performance tests conducted in accordance with the requirements of 40 CFR Part 60, Subpart A; 40 CFR Part 60, Subpart KKKK; 40 CFR Part 60, Appendix B (Performance Specifications #1, #2, and #3); and 40 CFR Part 72-78, as applicable (ARM 17.8.749, 40 CFR 60, and 40 CFR 72-78).

3. Montgomery shall develop and keep on-site a quality assurance plan for all the CEMS (40 CFR Part 60, Subpart KKKK).

4. On-going quality assurance for the CEMS must conform to 40 CFR Part 60, Appendix F (ARM 17.8.749).

5. Montgomery shall maintain a file of all measurements from the CEMS, and performance testing measurements: all CEMS performance evaluations; all CEMS or monitoring device calibration checks and audits; and adjustments and maintenance performed on these systems or devices, recorded in a permanent form suitable for inspection. The records shall be retained on site for at least 5 years following the date of such measurements and reports. Montgomery shall supply these records to the Department upon request (ARM 17.8.749).

6. Montgomery shall develop a custom schedule for determination of total sulfur content by either using the fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract or conducting representative fuel sampling (40 CFR Part 60, Subpart KKKK).

D. Operational Reporting Requirements

1. Montgomery shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. Montgomery shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include ***the addition of a new emissions unit,*** change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745).

3. Montgomery shall document, by month, the amount of NO_x emissions from the facility. By the 25th day of each month, Montgomery shall total the amount of NO_x emissions from the facility during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section III.A.7 and 17. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).

4. Montgomery shall document, by month, the amount of CO emissions from the facility. By the 25th day of each month, Montgomery shall total the amount of CO emissions from the facility during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section III.A.8 and 18. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).

5. Montgomery shall document, by month, the amount of PM and PM_{10} emissions from the facility. By the 25th day of each month, Montgomery shall total the amount of PM and PM_{10} emissions from the facility during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section III.A.9 and 19. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).

6. Montgomery shall document, by month, the total hours of operation of the 80 MW combined cycle turbines and HRSG duct burners. By the 25th day of each month, Montgomery shall total the combined hours of operation of the HRSG duct burners from the facility during the previous month. The monthly information will be used to

verify compliance with the rolling 12-month limitation in Section III.A.1 and 10. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).

7. Montgomery shall document, by month, the total hours of operation of each Trent 60 simple cycle turbines, including start-up and shut-down operations, and the total number of start-up and shut-down events that occurred. By the 25th day of each month, Montgomery shall total the hours of operation and the number of start-up and shut-down events that occurred for each Trent 60 simple cycle turbines during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section III.A.15. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).

8. Montgomery shall document by month the total hours, including start-up and shut-down operations, and the number of start-up and shut-down events that occurred for each Trent 60 simple cycle turbine while combusted diesel fuel. By the 25th day of each month, Montgomery shall total the hours and the number of start-up and shut-down events that occurred for each Trent 60 simple cycle turbine while combusted diesel fuel during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section III.A.16. For dual fuel combustion turbines firing a combination of diesel and natural gas, the hours of operation firing diesel fuel shall be calculated pursuant to 40 CFR 60.4325. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).

9. Montgomery shall annually certify that its emissions are less than those that would require the facility to obtain an air quality operating permit as required by ARM 17.8.1204(3)(b). The annual certification shall comply with the certification requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emissions inventory information (ARM 17.8.749 and ARM 17.8.1204).

10. All records compiled in accordance with this permit must be maintained by Montgomery as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

E. Notification

Montgomery shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.749 and 40 CFR 60 Subpart KKKK):

1. Commencement of construction of the Trent 60 simple cycle turbines and the HRSG units within 30 days after commencement of construction; and

2. Actual start-up date of each of the Trent 60 simple cycle turbines and combined turbines/HRSG units within 15 days after the actual start-up of each turbine/HRSG unit.

SECTION IV: Conditions and Limitations

The conditions and limitations in this section are effective upon issuance of this permit.

A. Operational and Emission Limitations

1. Montgomery is authorized to construct and operate one diesel-fired fire pump with name plate power rating capacity not to exceed 265 hp; hours of operation of the fire pump engine shall not exceed 500 hours per rolling 12-month period (ARM 17.8.749).

2. Montgomery is authorized to construct and operate one diesel-fired emergency generator with name plate power rating capacity not to exceed 268 hp; hours of operation of the emergency generator shall not exceed 500 hours per rolling 12-month period (ARM 17.8.749 and ARM 17.8.752).

3. Montgomery shall comply with all applicable standards and limitations, and the reporting, recordkeeping and notification requirements contained in 40 CFR 60, Subpart A and Subpart IIII (ARM 17.8.340 and 40 CFR 60, Subpart IIII).

4. Montgomery is authorized to construct and operate one diesel fuel storage tank with a storage capacity not to exceed 250,000 gallon, annual diesel fuel storage tank throughput shall not exceed 822,341 gallons per any rolling 12-month rolling period (ARM 17.8.752).

5. Montgomery is authorized to operate up to 5 building heaters with combined heat input capacity not to exceed 44 MMBtu/hr; total heat input to the building heaters shall not exceed 105,600 MMBtu/yr during any rolling 12-month period (ARM 17.8.749 and ARM 17.8.1204).

6. Montgomery 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).

7. Montgomery shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

8. Montgomery shall treat all unpaved portions of the haul roads, access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.11 (ARM 17.8.749).

B. Testing Requirements

1. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

2. The Department of Environmental Quality (Department) may require further testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. Montgomery shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. Montgomery shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include ***the addition of a new emissions unit,*** change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745).

3. All records compiled in accordance with this permit must be maintained by Montgomery as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

4. Montgomery shall document, by month, the total hours of operation of the emergency fire pump. By the 25th day of each month, Montgomery shall total the combined hours of operation of the emergency water pump during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section IV.A.1. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).

5. Montgomery shall document, by month, the total hours of operation of the emergency generator. By the 25th day of each month, Montgomery shall total the combined hours of operation of the emergency generator during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section IV.A.2. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).

6. Montgomery shall document, by month, the total number of building heaters operated, the total volume of gas combusted by the building heaters and total heat input to the building heaters. By the 25th day of each month, Montgomery shall total the number of building heaters that operated the previous month, the volume of gas combusted by the building heaters and the heat input to the building heaters assuming a 1,000 million British thermal unit per million standard cubic foot (MMBtu/MMscf) heat content for the combusted natural gas. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section IV.A.5. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749 and ARM 17.8.1204).

SECTION V: General Conditions

A. Inspection – Montgomery shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if Montgomery fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Montgomery of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*. (ARM 17.8.756).

D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties, or other enforcement action as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.

G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by Montgomery may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Duration of Permit – Construction or installation of the two 80 MW simple cycle natural gas turbines and the two combined cycle electric generating systems (each system will consist of a natural gas-fired 80 MW turbine and an HRSG with a 121.9 MMBtu/hr natural-gas fired duct burner) must begin or contractual obligations entered into that would constitute substantial loss within 3 years of issuance of MAQP #3154-04 and proceed with due diligence until the project is complete or the permit shall expire. Construction or installation of the two Trent 60 simple cycle turbines and ancillary equipment listed in MAQP #3154-06 must begin or contractual obligations entered into that would constitute substantial loss within 3 years of issuance of MAQP #3154-06 and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Attachment 1

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Attachment 2

INSTRUCTIONS FOR COMPLETING EXCESS EMISSION REPORTS (EER)

PART 1 Complete as shown. Report total time during the reporting period in hours. The determination of plant operating time (in hours) includes time during unit start up, shut down, malfunctions, or whenever pollutants of any magnitude are generated, regardless of unit condition or operating load.

Excess emissions include all time periods when emissions, as measured by the CEMS, exceed any applicable emission standard for any applicable time period.

Percent of time in compliance is to be determined as:

$$\left(1 - (\text{total hours of excess emissions during reporting period} / \text{total hours of CEMS availability during reporting period})\right) \times 100$$

PART 2 Complete as shown. Report total time the point source operated during the reporting period in hours. The determination of point source operating time includes time during unit start up, shut down, malfunctions, or whenever pollutants (of any magnitude) are generated, regardless of unit condition or operating load.

Percent of time CEMS was available during point source operation is to be determined as:

$$\left(1 - (\text{CEMS downtime in hours during the reporting period}^{a} / \text{total hours of point source operation during reporting period})\right) \times 100$$

a - All time required for calibration and to perform preventative maintenance must be included in the CEMS downtime.

PART 3 Complete a separate sheet for each pollutant control device. Be specific when identifying control equipment operating parameters. For example: number of TR units, energizers for electrostatic precipitators (ESP); pressure drop and effluent temperature for baghouses; and bypass flows and pH levels for scrubbers. For the initial EER, include a diagram or schematic for each piece of control equipment.

PART 4 Use Table I as a guideline to report <u>all</u> excess emissions. Complete a separate sheet for each monitor. Sequential numbering of each excess emission is recommended. For each excess emission, indicate: 1) time and duration, 2) nature and cause, and 3) action taken to correct the condition of excess emissions. Do not use computer reason codes for corrective actions or nature and cause; rather, be specific in the explanation. If no excess emissions occur during the quarter, it must be so stated.

PART 5 Use Table II as a guideline to report all CEM system upsets or malfunctions. Complete a separate sheet for each monitor. List the time, duration, nature and extent of problems, as well as the action taken to return the CEM system to proper operation. Do not use reason codes for nature, extent or corrective actions. Include normal calibrations and maintenance as prescribed by the monitor manufacturer. Do not include zero and span checks.

PART 6 Complete a separate sheet for each pollutant control device. Use Table III as a guideline to report operating status of control equipment during the excess emission. Follow the number sequence as recommended for excess emissions reporting. Report operating parameters consistent with Part 3, Subpart e.

PART 7 Complete a separate sheet for each monitor. Use Table IV as a guideline to summarize excess emissions and monitor availability.

PART 8 Have the person in charge of the overall system and reporting certify the validity of the report by signing in Part 8.

EXCESS EMISSIONS REPORT

PART 1

a. Emission Reporting Period _____

b. Report Date _____

c. Person Completing Report _____

d. Plant Name _____

e. Plant Location _____

f. Person Responsible for Review and Integrity of Report _____

g. Mailing Address for 1.f. _____

_____

h. Phone Number of 1.f. _____

i. Total Time in Reporting Period _____

j. Total Time Plant Operated During Quarter _____

k. Permitted Allowable Emission Rates: Opacity _____

SO_2 _____ NO_x _____ TRS _____

l. Percent of Time Out of Compliance: Opacity _____

SO_2 _____ NO_x _____ TRS _____

m. Amount of Product Produced During Reporting Period _____

n. Amount of Fuel Used During Reporting Period _____

PART 2 - Monitor Information: Complete for each monitor.

a. Monitor Type (circle one)

Opacity SO_2 NO_x O_2 CO_2 TRS Flow

b. Manufacturer _____

c. Model No. _____ _____

d. Serial No. _____

e. Automatic Calibration Value: Zero _____ Span _____

f. Date of Last Monitor Performance Test _____

g. Percent of Time Monitor Available:

1) During reporting period _____

2) During plant operation _____

h. Monitor Repairs or Replaced Components Which Affected or Altered Calibration Values _____

i. Conversion Factor (f-Factor, etc.)

j. Location of monitor (e.g. control equipment outlet)

PART 3 - Parameter Monitor of Process and Control Equipment. (Complete one sheet for each pollutant.)

a. Pollutant (circle one):

Opacity SO_2 NO_x TRS

b. Type of Control Equipment _____

c. Control Equipment Operating Parameters (i.e., delta P, scrubber water flow rate, primary and secondary amps, spark rate)

_____

d. Date of Control Equipment Performance Test _____

e. Control Equipment Operating Parameter During Performance Test

_____

_____

_____

_____

PART 4 - Excess Emission (by Pollutant)

Use Table I: Complete table as per instructions. Complete one sheet for each monitor.

PART 5 - Continuous Monitoring System Operation Failures

Use Table II: Complete table as per instructions. Complete one sheet for each monitor.

PART 6 - Control Equipment Operation During Excess Emissions

Use Table III: Complete as per instructions. Complete one sheet for each pollutant control device.

PART 7 - Excess Emissions and CEMS performance Summary Report

Use Table IV: Complete one sheet for each monitor.

PART 8 - Certification for Report Integrity, by person in 1.f.

THIS IS TO CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE, THE INFORMATION PROVIDED IN THE ABOVE REPORT IS COMPLETE AND ACCURATE.

SIGNATURE _____

NAME _____

TITLE _____

DATE _____

TABLE I

EXCESS EMISSIONS

Date	Time From	To	Duration	Magnitude	Explanation/Corrective Action

TABLE II

CONTINUOUS MONITORING SYSTEM OPERATION FAILURES

Date	Time From	To	Duration	Problem/Corrective Action

TABLE III

CONTROL EQUIPMENT OPERATION DURING EXCESS EMISSIONS

Date	Time From	Time To	Duration	Operating Parameters	Corrective Action

TABLE IV

Excess Emission and CEMS Performance Summary Report

Pollutant (circle one): SO_2 NO_x TRS H_2S CO Opacity

Monitor ID

Emission data summary [1]	**CEMS performance summary** [1]
1. Duration of excess emissions in reporting period due to: a. Startup/shutdown b. Control equipment problems c. Process problems d. Other known causes e. Unknown causes 2. Total duration of excess emissions 3. $\left[\frac{\text{Total duration of excess emissions}}{\text{Total time CEM operated}} \times 100 = \right]$	1. CEMS[2] downtime in reporting due to: a. Monitor equipment malfunctions b. Non-monitor equipment malfunctions c. Quality assurance calibration d. Other known causes e. Unknown causes 2. Total CEMS downtime 3. $\left[\frac{\text{Total CEMS downtime}}{\text{Total time source emitted}} \times 100 = \right]$

[1] For opacity, record all times in minutes. For gases, record all times in hours. Fractions are acceptable (e.g., 4.06 hours)

[2] CEMS downtime shall be regarded as any time CEMS is not measuring emissions.

Permit Analysis
Montgomery Great Falls Energy Partners LP
MAQP #3154-06

I. Introduction/Process Description

Montgomery Great Falls Energy Partners LP (Montgomery) is permitted to construct and operate a 262 megawatt (MW) natural gas-fired electrical power generation facility and is proposing an additional 128 MW in generation capacity and ancillary equipment located in Section 30, Township 21 North, Range 4 East, approximately two miles north of the city of Great Falls, in Cascade County, Montana.

A. Permitted Equipment

The facility's primary equipment will consist of the following:

Simple Cycle Turbines

- Two simple cycle 80 MW natural gas-fired turbines (EU1a and EU2a) to produce electrical power. Each turbine is a General Electric PG7121EA gas-fired turbine. Emissions of oxides of nitrogen (NO_x) and carbon monoxide (CO) will be controlled by dry low NO_x combustors that are integral to the design of the turbines.
- Two simple cycle 64 MW Rolls-Royce Trent 60 natural gas or diesel-fired turbines (EU5 and EU6) to produce electrical power. Emissions of NO_x and CO will be controlled using water injection and selective catalytic reduction (SCR).

Combined Cycle Systems

- Heat recovery steam generator (HRSG) with two natural gas-fired duct burners (EU1b and EU2b) firing natural gas at a rate of 0.12 million standard cubic feet per hour (MMSCF/hr). Emissions of NO_x and CO will be controlled by SCR units installed on each stack.
- One 102 MW steam turbine powered by the two HRSG units.
- A 5-cell cooling tower (EU4) with drift eliminators to control particulate emissions.

Ancillary Facilities

- One Emergency Fire Pump Engine (EU3) consisting of a 265 horsepower (hp) diesel-fired internal combustion engine.
- One Emergency Generator (EU7) consisting of a 268 hp diesel-fired internal combustion engine.
- One 250,000 gallon diesel storage tank (EU8).
- Five building heaters including the Water Treatment Building Heater (19.5 million (MM) British thermal unit (Btu) per hour (hr) – EU9), the Turbine Building Heater (18.0 MMBtu/hr – EU10), the Administrative Building Heater (2.64 MMBtu/hr – EU11), the Emergency Generator building Heater (0.96 MMBtu/hr – EU12), and the Main Electrical Building Heater (2.88 MMBtu/hr – EU13).

B. Source Description

A gas turbine is an internal combustion engine that operates with rotary rather than reciprocating motion. Within each combustion turbine unit, a mixture of compressed air and natural gas is fired in the combustor to produce compressed hot combustion gases. Expansion of these gases in the turbine rotates the turbine shaft that turns a generator to produce electricity.

In stationary applications, the hot combustion gases are directed through one or more fan-like turbine wheels to generate shaft horsepower. A simple cycle turbine is the most basic operating cycle of a gas turbine, with thermal efficiency ranging from 15-42%. It functions with only three primary sections: a compressor, a combustor, and a turbine.

The compressor draws in ambient air and compresses it to a pressure of up to 30 times ambient pressure. The compressed air is then directed to the combustor section where fuel is introduced, ignited, and burned. The hot combustion gases are then diluted with additional cool air from the compressor section and directed to the turbine section. Energy is recovered in the turbine section in the form of shaft horsepower; typically greater than 50 percent of the horsepower is required to drive the internal compressor section. The balance of the recovered shaft energy is available to drive the external load unit. The compressor and turbine sections can be a single fan-like wheel assembly, but are usually made up of a series of stages. The compressor and turbine sections may be associated with one or several connecting shafts. In a single shaft gas turbine, all compressor and turbine stages are fixed to a single continuous shaft and operate at the same speed. The single shaft configuration is typically used to drive electric generators.

The addition of an HRSG to a simple cycle turbine unit creates a combined cycle unit. Heat energy in the turbine exhaust gases is recovered by the HRSG to create steam. This steam energy is then converted to mechanical and electrical energy when it passes through a steam turbine generator unit. Additional heat for the creation of steam can be supplied by duct burners, which increase the turbine exhaust gas temperature. HRSG operation is not dependent upon the firing of the duct burners. The thermal efficiency of a combined cycle turbine is between 38-60%.

Montgomery's facility includes two General Electric Model PG7121EA natural gas turbines that will be operated in both simple cycle mode and combined cycle mode. The gas turbines are equipped with dry low NO_x combustors, which are integral to the design. The nominal power output of these turbines is 80 MW each. The facility is permitted to operate these turbines in simple cycle mode for up to 2 years, until the combined cycle infrastructure is constructed.

For the combined cycle operations, the facility will install additional equipment. The HRSG units, manufactured by Deltak, will include a heat exchange system to recover heat from the General Electric turbines and use it to heat water generating steam. Additionally, two natural gas-fired duct burners will be included in the system to provide additional heat to increase steam production efficiency. The duct burners will be equipped with an SCR to further reduce potential NO_x and CO emissions. The steam generated within the HRSG will be used to turn a single electrical generation turbine. The combined cycle steam turbine has a gross power output of 102 MW.

Montgomery's facility also will include two simple cycle Rolls-Royce Trent 60 dual fuel turbines capable of being fired by either natural gas or diesel fuel. The Trent 60 turbines may be operated in steady state mode, but are intended to be operated during daily peak power demand and are capable of achieving frequent start-up and shut-down in relatively short timeframes (10 minutes and 12 minutes, respectively). The gas turbines are equipped with water injection and SCR emission controls, which are integral to the design. The maximum power output of the Trent 60 turbines is 64 MW each.

Total electrical power generation capacity of the facility will be 390 MW upon full development.

C. Permit History

On October 12, 2001, NorthWestern Energy (NorthWestern) was issued Montana Air Quality Permit **(MAQP) #3154-00** for the construction and operation of a nominal 160 MW power generation facility. The permitted facility consisted of two 80 MW General Electric PG7121EA simple cycle gas turbines. Since emissions from the General Electric turbines vary with temperature and load, the Department of Environmental Quality (Department) placed limitations on the NorthWestern facility based on temperature and load. Specifically, the NO_x emissions from the facility increase at times of peak load, so the Department established separate emission limits for those times when the unit is operating at peak load. Furthermore, the Department added a limit to the permit on the amount of time that the facility could operate at peak load. In general, peak load reflects the combustion mode when internal combustion turbine firing temperature is increased by more than 100.0°F above the nominal 100% baseload combustion firing temperature. The firing temperature is a combination of measured and calculated results to determine the true firing temperature in the combustion liner.

The Department also placed limits in the permit to keep the NorthWestern facility below the New Source Review (NSR) thresholds. Annual NO_x and CO emissions were each limited to 245 tons. NorthWestern was required to track the NO_x and CO emissions according to a rolling 12-month time period, using data taken from continuous emission monitors, weather service data, and/or actual power output.

After issuance of the Department's Decision, the permit was appealed to the Board of Environmental Review. Prior to the hearing date scheduled for the NorthWestern appeal, NorthWestern reached a settlement with the appellants. The appellants agreed to drop their appeal if NorthWestern would commit to taking additional actions to counteract the emissions from this facility. NorthWestern agreed to the conditions, but the conditions were not included as part of MAQP #3154-00. Instead, the settlement conditions represent an additional agreement between the appellants and NorthWestern.

On January 23, 2002, NorthWestern was issued MAQP #3154-01 for the modification of MAQP #3154-00. After issuance of the original permit, NorthWestern discovered that equipment modifications could be incorporated into the two turbines that would result in an equal or lower amount of CO emissions, without the use of a CO catalyst. Based on the information that NorthWestern received regarding the equipment modifications, NorthWestern requested that the permit be modified to remove the requirement to install CO catalysts and that the existing emission limits remain the same. The Department agreed with the change and modified the permit to reflect the change. **MAQP #3154-01** replaced MAQP #3154-00.

On May 28, 2002, the Department received a request from NorthWestern to alter MAQP #3154-01 to add an HRSG to each of the existing 80 MW natural gas-fired simple cycle combustion turbines. The addition of the HRSGs converts the simple cycle turbines into combined cycle systems. The exhaust heat generated from the simple cycle turbines in conjunction with two added duct burners would produce steam, which would drive a steam turbine. NorthWestern anticipated an additional 102 MW of power generation from the installation of the two HRSGs and one steam turbine, for a total of 262 MW from the facility. The Department placed NO_x emission limits on the facility and required the installation and operation of an SCR unit on each turbine/HRSG unit.

Based on comments during the public comment period, the Department included conditions to allow NorthWestern to operate simple cycle turbines while construction of the HRSG and steam turbine was in progress. Once the combined cycle turbines are constructed and operating, Section II of this permit will no longer apply. **MAQP #3154-02** replaced MAQP #3154-01.

On September 24, 2004, the Department received correspondence from NorthWestern requesting to modify MAQP #3154-02 to change the company name from NorthWestern Montana First Megawatts, LLC to Montana Megawatts I (MMI). This permitting action included the name change and updated the permit to reflect current permit language and rule references used by the Department. **MAQP #3154-03** replaced MAQP #3154-02.

The Department received correspondence dated August 7, 2005, from NorthWestern, requesting that the Department re-issue MAQP #3154-03 for MMI.

The Department determined that a full preconstruction review was required since the 3-year commencement of construction timeframe expired on August 10, 2005. The Department requested additional information in correspondence dated September 22, 2005. On December 26, 2005, the Department received a revised permit application that included an updated BACT analysis. After further correspondence, the application was deemed complete on July 13, 2006.

The permitting action re-authorized MMI to operate two simple cycle gas turbines, each rated at 80 MW. Within 2 years, MMI was required to add additional equipment to convert the two simple cycle gas turbines into combined cycle gas turbines, for a total power production 262 MW.

The Department placed annual NO_x, CO, and Particulate Matter less than or equal to 10 microns (PM_{10}) limits in the permit to keep MMI below the New Source Review (NSR) and Title V threshold of 100 tons per year (tpy). MMI was required to track the NO_x and CO emissions according to a rolling 12-month time period, using data taken from continuous emission monitors. MMI was also required to limit the hours of operation for the duct burners, to demonstrate compliance with the PM_{10} limitation.

The Department also placed short-term NO_x and CO emission limits on the facility. The worst-case one hour NO_x limit is based on stack test data for start-up at similar GE turbine stations, and represents the highest one-hour during a cold start, before the SCR unit is able to operate. The worst-case one hour CO limit was based on theoretical engineering calculations using climatic conditions for Montana. The Department also placed Best Available Control Technology (BACT) limits during normal operating conditions for NO_x, CO, PM_{10}, SO_2, and VOC. **MAQP #3154-04** replaced MAQP #3154-03.

The Department received correspondence on March 28, 2007, regarding the transfer of ownership of Montana Megawatts I, LLC (MMI) to Montgomery. The permit action was an administrative amendment to reflect the change in ownership. **MAQP #3154-05** replaced MAQP #3154-04.

D. Current Permit Action

On May 8, 2009, the Department received complete application materials from Montgomery to modify MAQP #3154-05. The application proposed addition of two Rolls-Royce Trent 60 simple cycle combustion turbines for peaking operation and other ancillary emitting units including building heaters, emergency generator and diesel fuel storage tank. Application materials included a best available control technology (BACT) analysis and air quality demonstration for particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$).

The addition of the proposed equipment without limitations would have rendered the facility a Major Stationary Source subject to Title V permitting requirements. The Montgomery facility is a listed source with respect to New Source Review (NSR)/Prevention of Significant Deterioration (PSD). Therefore, the inclusion of the ancillary equipment necessary to operate

the original facility without limitations would have put the original facility over 100 tons of potential emissions, making it a major stationary source that had not gone through PSD permitting. The Department has preserved and modified the appropriate existing permit conditions and limitations to maintain Title V and PSD synthetic minor status and make the existing conditions practically enforceable. The Department has also established emission and operational limitations on the proposed Trent 60 peaking turbines and ancillary facilities; such that, the Title V and PSD synthetic minor status is maintained. The Department has placed short term limits, annual emission limitations and operational limitations on the Trent 60 peaking turbines to control oxides of nitrogen (NO_x), carbon monoxide (CO) and particulate matter emissions on the facility based on the worst case emissions from either steady state operation or start-up and shut-down operations, BACT, and the ambient air quality analysis. Montgomery is also required to comply with all applicable New Source Performance Standards (NSPS) and Maximum Achievable Control Technology (MACT) standards.

MAQP #3154-06 replaces MAQP #3154-05.

E. Additional Information

Additional information, such as applicable rules and regulations, BACT/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 – General Provisions, including but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., Montana Code Annotated (MCA).

   Montgomery shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 – Ambient Air Quality, including, but not limited to the following:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}

Montgomery must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 – Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, Montgomery shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.

6. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. (4) Commencing July 1, 1972, no person shall burn liquid or solid fuels containing sulfur in excess of 1 pound of sulfur per million Btu fired. (5) Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions. Montgomery will burn pipeline quality natural gas, ultra low sulfur diesel and/or biodiesel, which will meet this limitation.

7. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.

8. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). Montgomery is considered an NSPS affected facility under 40 CFR Part 60 and is subject to the requirements of the following subparts.

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

   b. 40 CFR 60, Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units. This subpart does not apply to either of the duct burners because they are subject to Subpart KKKK. Otherwise, the duct burners would be subject to Subpart Db because they are over 100 million British thermal units per hour (MMBtu/hr) and constructed since June 19, 1984 (40 CFR60.4305(b)).

   c. 40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984. This subpart applies to applies to is each storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. Exemption from applicability include storage vessels with a capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15.0 kPa. The proposed diesel storage tank is 250,000 gallons or 946 m^3 and will store diesel fuel which has a maximum vapor pressure at 100 °F of 0.152 kPa. Therefore, the diesel storage tank is exempt from Subpart Kb.

   d. 40 CFR 60, Subpart GG - Standards of Performance for Stationary Gas Turbines. This subpart does not apply to either of the combined cycle turbines or the simple cycle turbines because the turbines are subject to Subpart KKKK. Otherwise, the turbines would be subject to Subpart GG because they were constructed after October 3, 1977, and because the turbines will have a heat input capacity of greater than 10.7 gigajoules per hour (40 CFR60.4305(b)).

   e. 40 CFR 60, Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. This subpart applies to any new or reconstructed stationary compression ignition (CI) internal combustion engines (ICE) that commence construction after July 11, 2005, where the stationary CI ICE are manufactured after April 1, 2006, and are not fire pump engines, and stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005 (40 CFR 60, Subpart IIII). The facility has not yet been constructed and the Emergency Generator (EU7) has not yet been purchase; however, this standard is applicable to EU7 if it meets the requirement upon procurement. Subpart III is not applicable to the Emergency Fire Pump Engine (EU3) because it is a fire pump engine.

   f. 40 CFR 60, Subpart KKKK Standards of Performance for Stationary Combustion Turbines. This subpart applies to the combined cycle turbine units (including duct burners) and simple cycle turbines because they are stationary combustion turbines with a heat input at peak load equal to or greater than 10 MMBtu/hr that commenced construction, modification, or reconstruction after February 18, 2005.

9. ARM 17.8.341 Emission Standards for Hazardous Air Pollutants. This section incorporates, by reference, 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAP). Since the emission of Hazardous Air Pollutants (HAP) from the Montgomery power generation facility is less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAP combined, the Montgomery facility is not subject to the provisions of 40 CFR Part 61.

10. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. This section incorporates, by reference, 40 CFR Part 63, NESHAP for Source Categories. When the emission of HAP from a facility is less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAP combined, the facility is not subject to the provisions of 40 CFR Part 63. Therefore, since the emission of HAP from the Montgomery power generation facility is less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAP combined, the facility will not be subject to any of these standards, including:

    a. 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to an NESHAP Subpart as listed below:

    b. 40 CFR 63, Subpart Q Standards of Performance for Industrial Process Cooling Towers. This subpart applies to all new and existing Industrial Process Cooling Towers (IPCT) at major sources that are operated with chromium-based water treatment chemicals on or after September 8, 1994. The regulation states that no owner or operator shall use chromium-based water treatment chemicals in an IPCT. Montgomery does not intend to use chromium-based water treatment chemicals in the cooling tower water. Furthermore, Montgomery is not a major source of HAPs, and as such is not subject to this regulation.

D. ARM 17.8, Subchapter 5 – Air Quality Permit Application, Operation, and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. Montgomery submitted the appropriate permit application fee for the current permit action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.

E. ARM 17.8, Subchapter 7 – Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification to construct, modify, or use any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year of any pollutant. Montgomery has a PTE greater than 25 tons per year of PM_{10} NO_x, and CO; therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. Montgomery submitted the required permit application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. Montgomery submitted an affidavit of publication of public notice for the October 2, 2008, issue of the *Great Falls Tribune*, a newspaper of general circulation in the Town of Great Falls in Cascade County, as proof of compliance with the public notice requirements.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Montgomery of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8 – Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications – Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

The facility is a "listed facility". The Prevention of Significant Deterioration (PSD) Major Stationary Source threshold for listed facilities is 100 tons per year. Based on current federally enforceable limitations, this facility is not currently a Major Stationary Source and because of the proposed limits on hours of operations the proposed changes do not constitute a Major Modification; therefore, this permitting action does not require PSD review. The net emissions increases for the proposed permit modification are presented in the following table.

Emitting Unit (EU)	NO_x (tpy)	$PM_{10}/PM_{2.5}$ (tpy)	SO_x (tpy)	CO (tpy)	VOC (tpy)
GE 80 MW Turbine (Simple Cycle – EU1a)	-3.75	-1.0	-0.11	-3.32	-0.73
GE 80 MW Turbine (Simple Cycle – EU2a)	-3.75	-1.0	-0.11	-3.32	-0.73
Combined Cycle System (EU1a + EU1b)	-4.65	-5.70	-0.68	-5.67	-1.30
Combined Cycle System (EU2a + EU2b)	-4.65	-5.70	-0.68	-5.67	-1.30
Trent 60 Turbine (EU5)	5.05	5.35	0.13	5.30	1.07
Trent 60 Turbine (EU6)	5.05	5.35	0.13	5.30	1.07
Emergency Generator (EU7)	2.08	0.15	0.14	0.45	0.17
Water Treatment Building Heater (EU8)	2.34	0.18	0.01	1.96	0.13
Turbine Building Heater (EU9)	2.16	0.16	0.01	1.81	0.12
Administrative Building Heater (EU10)	0.32	0.02	0.002	0.27	0.02
Emergency Generator Building Heater (EU11)	0.12	0.01	0.001	0.10	0.006
Main Electrical Building (EU12)	0.35	0.03	0.002	0.29	0.02
Diesel Storage Tank (EU13)					0.01
Net Simple Cycle Operations Increase	-0.13	-1.35	-0.06	-1.76	-0.99
Net Combined Cycle Operations Increase	7.53	-0.14	-0.92	3.92	-0.05

G. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:

   a. PTE > 100 tons/year of any pollutant;

   b. PTE > 10 tons/year of any one hazardous air pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or

   c. PTE > 70 tons/year of particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #3154-06 for Montgomery, the following conclusions were made:

   a. The facility's PTE is less than 100 tons/year for PM_{10} NO_x and CO.

   b. The facility's PTE is less than 10 tons/year for any one HAP and less than 25 tons/year for all HAPs.

c. This source is not located in a serious PM_{10} nonattainment area.

d. This facility is subject to a current NSPS (40 CFR 60, Subpart KKKK).

e. This facility is not subject to any current NESHAP standards.

f. This source is a Title IV affected source,

g. This source is not a solid waste combustion unit.

h. This source is not an EPA designated Title V source.

i. As allowed by ARM 17.8.1204(3), the Department may exempt a source from the requirement to obtain an air quality operating permit by establishing federally enforceable limitations which limit that source's PTE.

i. In applying for an exemption under this section, the owner or operator of the source shall certify to the Department that the source's PTE does not require the source to obtain an air quality operating permit.

ii. Any source that obtains a federally enforceable limit on PTE shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit.

Montgomery has taken federally enforceable permit limits to keep potential emissions below major source permitting thresholds. Therefore, the facility is not a major source and, thus a Title V operating permit is not required.

The Department determined that the annual reporting requirements contained in the permit are sufficient to satisfy this requirement. However, if minor sources subject to NSPS are required to obtain a Title V Operating Permit, Montgomery will be required to obtain a Title V Operating Permit.

3. ARM 17.8.1207 Certification of Truth, Accuracy, and Completeness. Montgomery shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204 (3)(b). The annual certification shall comply with requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information.

III. BACT Determination

A BACT determination is required for each new or modified source. Montgomery shall install on the new or modified sources the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized.

A BACT analysis was submitted by Montgomery via Terracon Consultants, Inc. (Terracon) in permit application #3154-06, addressing some available methods of controlling emissions from some of the proposed sources. The submitted analysis is included as the following sections. The Department has reviewed the proposed BACT determinations, as well as, previous BACT determinations.

A. Trent 60 Simple Cycle Turbines

For the simple cycle turbines, Terracon reviewed BACT analyses conducted on other combustion turbines. Terracon used the U.S. EPA's Technology Transfer Network, Clean Air Technology Center, Reasonably Available Control Technology/ BACT/Lowest Achievable

Emission Rate Clearinghouse (hereinafter referred to as RBLC) to identify similar simple cycle combustion turbines and associated control technology BACT analyses. The BACT analysis is included in the following paragraphs.

Terracon evaluated BACT for the natural gas and backup fuels (i.e., diesel fuel and biodiesel) based on information provided by Paul Skubinna of the Department.

1. *Identification of Pollutants of Concern*

Terracon ran a query on the RBLC database for BACT analyses for simple cycle combustion turbine operations at power plants. Terracon summarized the pollutants identified as part of the BACT analysis. The summary is included on the following table.

Pollutants Identified for Similar BACT Analyses

Pollutant	Number of BACT Determinations
Acid Mist / Gases	6
Ammonia	23
Carbon Monoxide	250
Hydrogen Sulfide	1
Formaldehyde	20
Lead and Lead Compounds	2
Nitrogen Oxides	261
Particulate Matter	63
Particulate Matter less than 10 microns	191
Sulfur Dioxide	185
Sulfuric Acid (mist, vapors, etc)	44
Visible Emissions	95
Volatile Organic Compounds	180

The primary pollutants of concern identified by the RBLC query were CO, NOx and PM10, and to a lesser extent SOx and VOCs. For the Facility's simple cycle combustion turbines, CO and NOx were also the pollutants with the highest emission rates. Therefore, the simple cycle combustion turbine BACT analysis will focus on CO, NOx and PM_{10}.

2. Control Technologies

For the identification of control technologies, Terracon evaluated control technologies used on similar operations (e.g., demonstrated technologies at other power generating facilities with simple cycle turbines). Terracon used the RBLC for the identification of the control technologies.

Terracon reviewed available RBLC BACT data for simple turbine generators and compiled the data according to the control technologies chosen as BACT. A summary of this information is included on the following table.

Occurrences Where Control Technology are Employed

Control Technology	BACT Occurences	Percent (%)
Good Combustion Practices	304	45
Clean Fuel	114	17
No Controls or Data	96	14
Dry Low NOx	161	24
Limited Throughput	53	7.9
Catalysts	94	14
Water Injection	62	9.2
Design	19	2.8
Total BACT Analyses	673	

Some BACT determinations may include more than one control technology (i.e., the number of BACT occurrences does not equal the total BACT Analyses). Additionally, several of these control technologies overlap (e.g., Dry Low NOx could be considered a design control technology) although the RBLC identifies these as separate control technologies.

Terracon did not identify a specific BACT analysis for biodiesel. Terracon assumes the diesel fuel BACT will be similar to a biodiesel BACT.

3. Identification of Control Technologies and Technical Feasibility

For simple cycle turbine power production, Terracon reviewed the following demonstrated technologies:

- Good Combustion Practices
- Catalysts
- Dry Low NOx
- Design
- Limited Throughput
- Clean Fuel
- Water Injection

The following sections provide additional information on these technologies.

Good Combustion Practices

Good combustion practices may include, but are not limited to the following:

- Training of operators
- Preparing and implementing standard operating procedures
- Conducting preventative maintenance
- Monitoring parameters and adjusting combustion controls
- Analyzing fuel

Good combustion practices will limit emissions of criteria pollutants and HAPs through the following:

- Providing for efficient combustion thus limiting fuel use
- Reducing incomplete combustion (i.e., reducing the generation of CO, VOCs and HAPs)

Terracon did not identify specific information on the pollutant control efficiency and costs associated with good combustion practices. However, the costs associated with good combustion practices may be offset by reduced fuel use and increased combustion turbine life. Terracon did not identify other environmental impacts from good combustion practices.

The operation of the proposed simple cycle combustion turbine can incorporate good combustion practices.

Catalysts
The use of catalysts includes Selective Catalytic Reduction (SCR) and some innovative catalytic technologies (ICT). The catalysts are primarily used to control CO and NOx.

SCR reduces the NOx in the turbine exhaust with ammonia or urea. The following equations depict the reaction between NOx and ammonia:

$$4NO + 4NH_3 + O_2 \text{ -----> } 4N_2 + 6H_2O$$

$$2NO_2 + 4NH_3 + O_2 \text{ -----> } 3N_2 + 6H_2O$$

As indicated the products of the reactions are diatomic nitrogen and water. Optimum temperature ranges vary depending on the type of catalyst. This technology works well for lean burning, oxygen rich exhausts and NOx emissions have a reduction potential greater than 90%. Additional costs associated with this technology include initial equipment and maintenance, ammonia supply, and the energy required to operate the system. Potential environmental impacts from the SCR include potential ammonia releases to the atmosphere.

The ICT have only been proven on smaller generation units and may not operate effectively at the high temperatures emitted from the proposed simple cycle combustion turbine[1].

The proposed simple cycle combustion turbine uses SCR and a CO catalyst that converts CO to carbon dioxide.

Dry Low NOx
Dry low combustion systems reduce NOx formation by controlling the mixing of fuel and air to provide low excess air firing or off-stoichiometric combustion. These burners are designed to reduce peak flame temperature and/or reduce the residence time at high temperatures. In gas turbines, the high temperature combustion gases are cooled with dilution air that is added sooner than with standard combustors. This dilution air promptly cools the hot gases to temperatures below the thermal NOx formation threshold. Terracon did not identify additional direct capital costs for dry low NOx, but the turbine efficiency and power output may be affected.

The proposed simple cycle combustion turbine does not use dry low NOx.

Design
The combustion turbine design can limit the pollutants emitted. Efficient combustion turbines will require less fuel and will therefore generate less pollutants. Combustion turbines can also be designed to limit pollutant generation during combustion (e.g., dry low NOx could also be considered a design control technology) and limit incomplete combustion that can generate CO, VOCs and HAPs. Emissions reduction will vary depending upon the combustion turbine design.

1 "Evaluation of Nitrogen Oxide Emissions During Startup of Simple Cycle Combustion Turbines" Thesis By Cynthia E. Mulkey, the Florida State University FAMU-FSU College of Engineering, 2003, pages 16 and 17.

Terracon did not identify other environmental impacts associated with combustion turbine design. The costs will vary for the initial purchase and operation of the combustion turbine.

The simple cycle combustion turbine design incorporates several pollutant limiting items including:

- A short timeframe between cold start to full power[2]
- An on-line monitoring system
- High efficiency[3]

Limited Throughput
For a combustion turbine, limited throughput involves accepting a federally enforceable permit limit on the hours of operation or quantity of fuel combusted. Throughput limits on a combustion turbine will limit the pollutants emitted due to the reduction in fuel combustion.

Terracon did not identify other environmental impacts and costs, but limiting throughput may impact the amount of energy that can be generated and thus profit made from the operation of the combustion turbine.

The proposed simple cycle combustion turbines will use limited throughput: this air permit application is proposing to limit the hours of operation to approximately 1,750 hours per year.

Clean Fuel
The use of clean fuel includes using pipeline quality natural gas in lieu of off-specification natural gas, diesel fuels or coal. Pipeline quality natural gas, with limited sulfur and nitrogen content, will limit the amount of SOx and NOx generated during combustion.

The emissions reduction will vary depending upon the fuel alternative. Terracon did not identify other environmental impacts. The various fuel costs vary depending upon fuel accessibility and heating value.

The proposed simple cycle combustion turbines will use pipeline quality natural gas. The simple cycle combustion turbines will also use diesel and biodiesel that meets 40 CFR 60.333 Part b limits (i.e., sulfur fuel content to 0.8 percent by weight). Diesel used as a backup fuel would be low sulfur or ultra-low sulfur diesel. Since biodiesel sulfur content varies, the Great Falls Energy Center will purchase and use biodiesel with a low sulfur content.

Water Injection
Water or steam injection technology can suppress NOx emissions from gas turbines. The injected fluid increases the thermal mass by dilution and thereby reduces peak temperatures in the flame zone.

Water purity is essential to control erosion and the formation of deposits in the hot section of the turbine. While manufacturers typically offer water injection systems, a steam injection system is not offered by the manufacturer Rolls Royce.

2 "The Trent 60 Gas Turbine for Power Generation and Mechanical Drives", Rolls Royce PLC, document number ET100NA-5/05-3M, 2005, page 2.
3 "The Industrial Trent 60 (Wet Low Emissions) Gas Turbine for Power Generation Fact Sheet", Rolls Royce PLC, document number EG111-11/03-3M, 2003, page 1.

NOx reduction efficiency increases as the water-to-fuel ratio increases. F or maximum efficiency, the water must be atomized and injected with homogeneous mixing throughout the combustor. This technique reduces the thermal NOx, but may actually increase the production of fuel NOx. CO and VOC emissions may increase while using water injection. In general, the highest percent reduction of NOx emissions obtained by using wet controls is still higher than the resulting NOx emissions from the base case.

Costs associated with implementing this technology include water usage and purification, the capital and maintenance cost of the water purification system, and the energy required to run the system. The turbine's efficiency may also be reduced.

The proposed simple cycle combustion turbines incorporate water injection.

4. BACT Conclusion

The review of BACT analyses conducted for similar facilities shows that the most common BACT for the simple cycle combustion turbines is good combustion practices. Therefore, Montgomery Great Falls Energy Partners LP proposes to incorporate good combustion practices including:

- Training of operators
- Preparing and implementing standard operating procedures
- Conducting preventative maintenance
- Monitoring parameters and adjusting combustion controls
- Analyzing fuel

Additionally, the proposed simple cycle turbines incorporate several other items that are identified as BACT by the RBLC database including:

- Clean fuels
- Design
- Limited throughput
- SCR and CO catalyst
- Wet controls

The Department has determined the control options selected for the each Trent 60 turbines have controls and control costs comparable to other recently permitted similar sources and are capable of achieving the appropriate emission standards. Based on conclusions of the BACT analysis and manufacturer emission data for steady state operation and start-up and shut-down for the Trent 60 Turbines using the proposed controls, the Department has determined that the following hours of operation and clean fuel limits are applicable.

- Montgomery shall not operate each Trent 60 turbine in excess of 1752 hrs per rolling 12 months including start-up and shut-down operations,
- Montgomery shall install, operate and maintain water injection and SCR emission controls on each of the Trent 60 turbines
- Montgomery shall combust pipeline quality natural gas, ultra-low sulfur diesel or biodiesel fuel in the Trent 60 turbines, and
- Diesel fuel combustion time shall not exceed 200 hrs, including start-up and shut-down time, during any 12-month rolling period.

Additionally, the following emission limits shall apply:

- NO_x emissions shall not exceed 13.75 lb/hr or 5.05 tpy per any rolling 12-month period,
- CO emissions shall not exceed 6.28 lb/hr or 5.30 tpy per any rolling 12-month period, and
- PM_{10} emissions shall not exceed 15.04 lb/hr or 5.41 tpy per any 12-month rolling period.

B. Emergency Generator

Montgomery submitted the following BACT analysis for the Emergency Generator.

For the emergency generator, Terracon reviewed BACT analyses conducted on other emergency generators firing diesel fuel. Terracon used RBLC to identify similar emergency generators and associated control technology BACT analyses. The BACT analysis is included in the following paragraphs.

1. Identification of Pollutants of Concern

Terracon ran a query on the RBLC database for BACT analyses for emergency generators firing diesel fuel. Terracon summarized the pollutants identified as part of the BACT analysis. The summary is included on the following table.

Pollutants Identified for Similar BACT Analyses

Pollutant	Number of BACT Determinations
Carbon Monoxide	15
Methane	1
Nitrogen Oxides	13
Particulate Matter	2
Particulate Matter less than 10 microns	14
Particulate Matter less than 2.5 microns	2
Sulfur Dioxide	10
Sulfuric Acid (mist, vapors, etc)	1
Total Suspended Particulates	4
Visible Emissions	3
Volatile Organic Compounds	13

The primary pollutants of concern identified by the RBLC query were CO, NOx, PM_{10}, SOx and VOCs. Therefore, the emergency generator BACT analysis will focus on CO, NOx, PM_{10}, SOx and VOCs.

2. Control Technologies

For the identification of control technologies, Terracon evaluated control technologies used on similar operations (e.g., demonstrated technologies on other emergency generators). Terracon used the RBLC for the identification of the control technologies.

Terracon reviewed available RBLC BACT data for emergency generators and compiled the data according to the control technologies chosen as BACT. A summary of this information is included on the following table.

Occurrences Where Control Technology are Employed

Control Technology	BACT Occurences	Percent (%)
Good Combustion Practices	14	18
Clean Fuel	2	3
No Controls or Data	60	77
Limited Throughput	3	4
Design	8	10
Total BACT Analyses	673	

Some BACT determinations may include more than one control technology (i.e., the number of BACT occurrences does not equal the total BACT Analyses). Additionally, several of these control technologies overlap (e.g., good combustion practices could be considered a design technology and a clean fuel technology) although the RBLC identifies these as separate control technologies.

Terracon did not identify a specific BACT analysis for biodiesel. Terracon assumes the diesel fuel BACT will be similar to a biodiesel BACT.

3. Identification of Control Technologies and Technical Feasibility

For emergency generators, Terracon reviewed the following demonstrated technologies:

- Good Combustion Practices
- Design
- Limited Throughput
- Clean Fuel

The following sections provide additional information on these technologies.

Good Combustion Practices

Good combustion practices may include, but are not limited to the following:

- Training of operators
- Preparing and implementing standard operating procedures
- Conducting preventative maintenance
- Monitoring parameters and adjusting combustion controls
- Analyzing fuel

Good combustion practices will limit emissions of criteria pollutants and HAPs through the following:

- Providing for efficient combustion thus limiting fuel use
- Reducing incomplete combustion (i.e., reducing the generation of CO, VOCs and HAPs)

Terracon did not identify specific information on the pollutant control efficiency and costs associated with good combustion practices. However, the costs associated with good combustion practices may be offset by reduced fuel use and increased emergency generator life. Additionally, the emergency generator will be subject to 40 CFR 60 Subpart IIII, which requires on-going maintenance to keep emissions below applicable emission limits. Therefore, the emergency generator will incorporate good combustion practices.

Terracon did not identify other environmental impacts from good combustion practices.

The operation of the proposed emergency generator can incorporate good combustion practices.

Design
The emergency generator design can limit the pollutants emitted. Efficient emergency generators will require less fuel and will therefore generate less pollutants. Emergency generators can also be designed to limit pollutant generation during combustion. Emissions reduction will vary depending upon the emergency generator size and use.

Terracon did not identify other environmental impacts associated with combustion turbine design. The costs will vary for the initial purchase and operation of the combustion turbine. The emergency generator will be subject to 40 CFR 60 Subpart IIII, which requires manufacturers to design the emergency generators to meet certain emission limits. Therefore, the emergency generator will incorporate design factors.

Limited Throughput
For emergency generators, limited throughput involves accepting a federally enforceable permit limit on the hours of operation or quantity of fuel combusted. Throughput limits on a combustion turbine will limit the pollutants emitted due to the reduction in fuel combustion.

Terracon did not identify other environmental impacts and costs.

The proposed simple cycle combustion turbines will use limited throughput: this air permit application is proposing to limit the hours of operation to approximately 1,750 hours per year.

Clean Fuel
Clean fuels involve using fuels with limited contaminants such as pipeline quality natural gas, propane and low sulfur diesel fuels in lieu of off-specification natural gas, regular diesel and coal. The emissions reduction will vary depending upon the fuel alternative.

Terracon did not identify other environmental impacts associated with clean fuels. The various fuel costs vary depending upon fuel accessibility and energy content. Since the emergency generator will supply electricity during emergency situations, an on-site supply of fuel is needed since pipeline fuels may be curtailed. Due to the limited space for fuel storage, diesel fuel has an advantage due to its higher heating value per volume than natural gas and propane. The emergency generator will be subject to 40 CFR 60 Subpart IIII, which requires operators to use fuel that meets non-road diesel fuel standards [40 CFR 80.510].

4. BACT Conclusion

The review of BACT analyses conducted for similar facilities shows that the most common BACT for the emergency generators is good combustion practices. Therefore, Montgomery Great Falls Energy Partners LP proposes to incorporate good combustion practices by maintaining and operating the emergency generator to maintain emissions below the 40 CFR Subpart IIII emission standards.

Additionally, the emergency generator will incorporate several other items that are identified as BACT by the RBLC database including:

- Clean fuels
- Design, and
- Limited throughput.

The Department has determined the control options selected for the Emergency Generator have controls and control costs comparable to other recently permitted similar sources and are capable of achieving the appropriate emission standards. Based on conclusions of the BACT analysis for the Emergency Generator and the proposed controls emissions, the Department has determined that the following limits are applicable.

- Montgomery shall not operate the Emergency Generator in excess of 500 hrs per rolling 12 month period, and
- Montgomery shall not operate more than one Emergency Generator with a name plate power rating not to exceed 268 hp.

C. Diesel Storage Tank

Montgomery submitted the following BACT analysis for the Diesel Storage Tank.

For the diesel tank, Terracon reviewed BACT analyses conducted on other tanks storing diesel. Terracon used RBLC to identify similar diesel tanks and associated control technology BACT analyses. The BACT analysis is included in the following paragraphs.

1. Identification of Pollutants of Concern

Working, breathing and standing storage losses from the diesel tank will result in emissions of VOCs.

2. Control Technologies

For the identification of control technologies, Terracon evaluated control technologies used on similar operations (e.g., demonstrated technologies on other diesel tanks). Terracon used the RBLC for the identification of the control technologies.

Terracon reviewed available RBLC BACT data for diesel tanks and compiled the data according to the control technologies chosen as BACT. A summary of this information is included on the following table.

Occurrences Where Control Technology are Employed

Control Technology	BACT Occurrences	Percent (%)
Controlled Venting	1	2
Fixed Roof Tank	1	2
NSPS Subpart Kb	10	24
Submerged Fill Pipe	1	2
Limited Throughput	1	2
Recordkeeping	7	17
No Control or Data	27	66
Total BACT Analyses	41	

Some BACT determinations may include more than one control technology (i.e., the number of BACT occurrences does not equal the total BACT Analyses).

3. Identification of Control Technologies and Technical Feasibility
For diesel tanks, Terracon reviewed the following demonstrated technologies:

- NSPS Subpart Kb
- Recordkeeping

The following sections provide additional information on these technologies.

NSPS Subpart Kb
NSPS Subpart Kb applicability is discussed in Section 5.4. The diesel storage tank is not subject to the NSPS Subpart Kb standard. Although the RBLC BACT data identifies NSPS Subpart Kb as BACT, the RBLC information clarifies that the facility should keep records identifying the size of the tanks and the vapor pressure of the tank contents (i.e., whether the tank is subject to the NSPS Subpart Kb standard).

The NSPS Subpart Kb standard will limit emissions of VOCs by requiring the following:

- Floating roof tanks or a capture and control system
- Closure devices, seals and valves that limit emissions,
- Inspections of the tank prior to filling to identify potential leak areas
- Records of tank dimensions and contents

Terracon did not identify specific information on the pollutant control efficiency and costs associated with NSPS Subpart Kb. Although, the costs associated with NSPS Subpart Kb may be partially offset by reduced fuel purchases, complying with NSPS Subpart Kb may not be economically feasible due to the low annual emissions from the diesel storage tank. The potential VOC emissions from the diesel storage tank are 267 pounds or 0.13 tons per year. Therefore, the cost per ton pollutant removed will be high for most control options. For example, a thousand dollar control option will result in at least 7,700 dollars per ton pollutant removed (i.e., conservatively assuming it removes 100 percent of the VOC emissions).

Terracon did not identify other environmental impacts from NSPS Subpart Kb.

Recordkeeping
Recordkeeping can identify inventory discrepancies (i.e., inventory reconciliation) that may indicate leaks or malfunctioning ventilation systems.

Terracon did not identify other environmental impacts associated with recordkeeping. Recordkeeping is typically a standard business practice. Therefore, the diesel tank will incorporate recordkeeping.

4. BACT Conclusion

The review of BACT analyses conducted for similar facilities shows that the most common BACT for the diesel tanks is compliance with NSPS Subpart Kb. However, the diesel storage tank is not subject to NSPS Subpart Kb (i.e., due to the low volatility of the diesel) and NSPS Subpart Kb is not economically feasible for the diesel storage tank. Therefore, Montgomery Great Falls Energy Partners LP proposes to incorporate recordkeeping to identify potential leaks and ventilation system issues.

The Department has determined the control options selected for the Diesel Storage Tank have controls and control costs comparable to other recently permitted similar sources and are capable of achieving the appropriate emission standards. Based on conclusions of the BACT analysis the Department has determined that the following limits are applicable.

- Diesel Storage Tank throughput shall not exceed 822,341 gallons per any rolling 12 month rolling period, and
- The Diesel Storage Tank capacity shall not exceed 250,000 gallons.

IV. Emission Inventory

SIMPLE CYCLE

	Ton/Year				
Source	$PM/PM_{10}/PM_{2.5}$	NO_x	CO	VOC	SO_x
GE 7EA 80-MW Gas Turbine (EU1a)*	11.55	45.42	40.13	9.36	1.40
GE 7EA 80-MW Gas Turbine (EU2a)*	11.55	45.42	40.13	9.36	1.40
Diesel Fire Pump (265-hp – EU3)	0.01	0.98	0.04	0.03	0.14
Emergency Generator (268 hp – EU7)	0.15	2.08	0.45	0.17	0.14
Water Treatment Building Htr (19.49 MMBtu/hr – EU8)	0.18	2.34	1.96	0.13	0.01
Turbine Building Heater (18.00 MMBtu/hr – EU9)	0.16	2.16	1.81	0.12	0.01
Administrative Building Heater (2.64 MMBtu/hr –EU10)	0.02	0.32	0.27	0.02	0.002
Emergency Generator Bldg Htr (0.96 MMBtu/hr – EU11)	0.01	0.12	0.10	0.01	0.001
Main Electrical Building Htr (2.88 MMBtu/hr – EU12)	0.03	0.35	0.29	0.02	0.002
Diesel Storage Tank (250,000 gallon – EU13)				0.01	
Totals	23.66	99.17	85.18	19.23	3.10

COMBINED CYCLE

	Ton/Year				
Source	$PM/PM_{10}/PM_{2.5}$	NO_x	CO	VOC	SO_x
GE 7EA 80-MW Gas Turbine #1 w/duct burner (EU1a + EU1b)	41.76	34.45	41.95	9.62	5.01
GE 7EA 80-MW Gas Turbine #2 w/duct burner EU2a + Eu2b)	41.76	34.45	41.95	9.62	5.01
Diesel Fire Pump (265-hp – EU3)	0.01	0.98	0.04	0.03	0.14
Cooling Tower (EU4)	4.20				
Rolls-Royce Trent 60 Turbine (EU5)	5.35	5.05	5.19	1.04	0.13
Rolls-Royce Trent 60 Turbine (EU6)	5.35	5.05	5.19	1.04	0.13
Emergency Generator (268 hp – EU7)	0.15	2.08	0.45	0.17	0.14
Water Treatment Building Htr (19.49 MMBtu/hr – EU8)	0.18	2.34	1.96	0.13	0.01
Turbine Building Heater (18.00 MMBtu/hr – EU9)	0.16	2.16	1.81	0.12	0.01
Administrative Building Heater (2.64 MMBtu/hr –EU10)	0.02	0.32	0.27	0.02	0.002
Emergency Generator Bldg Htr (0.96 MMBtu/hr – EU11)	0.01	0.12	0.10	0.01	0.001
Main Electrical Building Htr (2.88 MMBtu/hr – EU12)	0.03	0.35	0.29	0.02	0.002
Diesel Storage Tank (250,000 gallon – EU13)				0.01	
Totals	98.99	87.34	99.20	21.82	10.60

(SOURCES EU1a & EU2a)

Simple Cycle GE 7EA 80 MW Gas Turbine (2 Turbines)

Size = 80 MW

Hours of Operation = 4,620 hr/yr combined turbine

Hours of Typical Operation = 2,070 hr/yr each turbine

Hours of Startup Operation = 240 hr/yr each turbine

NO_x Emissions

Typical Operation

Emission Factor: 29.39 lb/hr {Manufacturer's Guarantee of 9 ppm NO_x @ 15% O_2}

Calculations: 29.39 lb/hr * 2070 hr/yr * 0.0005 ton/lb = 30.42 ton/yr

Startup Operation

Emission Factor: 125 lb/hr {Manufacturer's Stack Test Info}

Calculations: 125 lb/hr * 240 hr/yr * 0.0005 ton/lb = 15.00 ton/yr

TOTAL NOx:

30.42 ton/yr typical operations + 15.00 ton/yr startup = 45.42 ton/yr

CO Emissions

Typical Operation

Emission Factor: 17.9 lb/hr {Manufacturer's Guarantee of 9 ppm CO @ 15% O_2}

Calculations: 17.9 lb/hr * 2070 hr/yr * 0.0005 ton/lb = 18.53 ton/yr

Startup Operation

Emission Factor: 180 lb/hr {Manufacturer's Stack Test Info}

Calculations: 180 lb/hr * 240 hr/yr * 0.0005 ton/lb = 21.60 ton/yr

TOTAL CO:

18.53 ton/yr typical operations + 21.60 ton/yr startup = 40.13 ton/yr

VOC Emissions

Typical Operation

Emission Factor: 7.95 lb/hr {Manufacturer's Info}

Calculations: 7.95 lb/hr * 2070 hr/yr * 0.0005 ton/lb = 8.23 ton/yr

Worst-Case Operation

Emission Factor: 9.45 lb/hr {Manufacturer's Info}

Calculations: 9.45 lb/hr * 240 hr/yr * 0.0005 ton/lb = 1.13 ton/yr

TOTAL VOC:

8.23 ton/yr typical operations + 1.13 ton/yr worst-case = 9.36 ton/yr

SO_2 Emissions

Emission Factor: 1.314 lb SO_2/MMSCF {Montgomery Info}

Typical Operation

Firing Rate: 0.904 MMSCF/hr average

Calculations: 1.314 lb SO2/MMSCF * 0.904 MMSCF* 2070 hr/yr * 0.0005 ton/lb = 1.23 ton/yr

Worst-Case Operation

Firing Rate: 1.074 MMSCF/hr average

Calculations: 1.314 lb SO2/MMSCF * 1.074 MMSCF* 240 hr/yr * 0.0005 ton/lb = 0.17 ton/yr

TOTAL SO_2:

1.23 ton/yr typical operations + 0.17 ton/yr worst-case = 1.40 ton/yr

PM/PM_{10} Emissions

Emission Factor: 10.0 lb/hr {Manufacturer's Information}

Calculations: 10.0 lb/hr * 2310 hr/yr * 0.0005 ton/lb = 11.55 ton/yr

(SOURCES EU1a + EU1b & EU2a+EU2b)

Combined Cycle GE 7EA 80 MW Gas Turbine plus HRSG unit duct burner (2 systems)

Size = 131 MW (80 MW turbine + 50% 102 MW steam generator)

Hours of Operation =

Turbines 7,620 hr/yr each

Duct Burners 12,000 hr/yr combined (show 6,000 hrs/yr per DB for calculations)

NO_x Emissions (DLN and SCR):

Typical Operation with Duct Burner

Emission Factor: 9.28 lb/hr {Manufacturer's Guarantee of 2.5 ppm NOx @ 15% O_2}

Calculations: 9.28 lb/hr * 6,000 hr/yr * 0.0005 ton/lb = 27.84 ton/yr

Turbine w/o Duct Burner

Emission Factor: 8.16 lb/hr {Manufacturer's Guarantee of 2.5 ppm NOx @ 15% O_2}

Calculations: 8.16 lb/hr * 1,620 hr/yr * 0.0005 ton/lb = 6.61 ton/yr

TOTAL NOx:

27.84 ton/yr typical operations + 6.61 ton/yr turbine only = 34.45 ton/yr

CO Emissions (DLN and SCR):

Typical Operation with Duct Burner

Emission Factor: 11.30 lb/hr {Manufacturer's Guarantee of 2.5 ppm CO @ 15% O_2}

Calculations: 11.30 lb/hr * 6,000 hr/yr * 0.0005 ton/lb = 33.90 ton/yr

Turbine w/o Duct Burner

Emission Factor: 9.94 lb/hr {Manufacturer's Guarantee of 2.5 ppm CO @ 15% O_2}

Calculations: 9.94 lb/hr * 1,620 hr/yr * 0.0005 ton/lb = 8.05 ton/yr

TOTAL CO:

33.90 ton/yr typical operations + 8.05 ton/yr turbine only = 41.95 ton/yr

VOC Emissions (DLN and SCR):

Typical Operation with Duct Burner

Emission Factor: 2.59 lb/hr {Manufacturer's Information}

Calculations: 2.59 lb/hr * 6,000 hr/yr * 0.0005 ton/lb = 7.77 ton/yr

Turbine w/o Duct Burner
Emission Factor: 2.28 lb/hr {Manufacturer's Information}
Calculations: 2.28 lb/hr * 1,620 hr/yr * 0.0005 ton/lb = 1.85 ton/yr
TOTAL VOC:
7.77 ton/yr typical operations + 1.85 ton/yr turbine only = 9.62 ton/yr

SO_2 Emissions:
Typical Operation with Duct Burner
Emission Factor: 1.35 lb/hr {Manufacturer's Information}
Calculations: 1.35 lb/hr * 6,000 hr/yr * 0.0005 ton/lb = 4.05 ton/yr
Turbine w/o Duct Burner
Emission Factor: 1.19 lb/hr {Manufacturer's Information}
Calculations: 1.19 lb/hr * 1,620 hr/yr * 0.0005 ton/lb = 0.96 ton/yr
TOTAL SO_2:
4.05 ton/yr typical operations + 0.96 ton/yr turbine only = 5.01 ton/yr

PM/PM10 Emissions:
Typical Operation with Duct Burner
Emission Factor: 11.22 lb/hr {Manufacturer's Information}
Calculations: 11.22 lb/hr * 6,000 hr/yr * 0.0005 ton/lb = 33.66 ton/yr
Turbine w/o Duct Burner
Emission Factor: 10.0 lb/hr {Manufacturer's Information}
Calculations: 10.0 lb/hr * 1,620 hr/yr * 0.0005 ton/lb = 8.10 ton/yr
TOTAL PM/PM10:
33.66 ton/yr typical operations + 8.10 ton/yr turbine only = 41.76 ton/yr

(SOURCE EU3)
John Deere Diesel-fired Emergency Water Pump
Size = 265 hp
Hours of Operation 500 hr/yr

PM/PM_{10} Emissions
Emission Factor: 0.000155 lb/hp-hr {Vendor Information}
Calculations: 265 hp * 0.000155 lb/hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.01 ton/yr

NO_x Emissions
Emission Factor: 0.0148 lb/hp-hr {Vendor Information}
Calculations: 265 hp * 0.0148 lb/hp-hr * 500 hr/yr 0.0005 ton/lb = 0.98 ton/yr

CO Emissions
Emission Factor: 0.000638 lb/hp-hr {Vendor Information}
Calculations: 265 hp * 0.000638 lb/hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.04 ton/yr

VOC Emissions
Emission Factor: 0.000506 lb/hp-hr {Vendor Information}
Calculations 265 hp * 0.000506 lb/hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.03 ton/yr

SO_x Emissions
Emission Factor: 0.00205 lb/hp-hr {AP-42 Table 3.3-1, 10/96}
Calculations 265 hp * 0.00205 lb/hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.14 ton/yr

(SOURCE EU4)
Cooling Towers
Recirculation Rate = 64,450 gal/min
TDS concentration = 1488 ppm

PM/PM_{10} Emissions
Emission Factor: 0.002% drift rate {Manufacturer's Guarantee}
Calculations: 64,450 gal/min x 60 min/hr x 8.34 lb H_2O/gal x 0.002% drift = 645 lb H_2O/hr
645 lb H_2O drift/hr x 1488 lb PM/MM lbs H_2O = 0.96 lb/hr
0.96 lb/hr x 8760 hr/yr x 1 ton/2000 lb = 4.20 ton/yr

(SOURCE EU5 and EU6)

Rolls-Royce Trent 60 Turbines (two units with SCR and Water Injection)

Size: 64 MW
Hours of Operation (including SU& SD): 1752 hrs (200 hrs firing Diesel and 1552 firing Natural Gas)
Number of SU and SD Events firing Natural Gas: 155 Events
Number of SU an SD Event firing Diesel: 20 Events
Time per SU Event: 0.166667 hrs
Time per SD Event: 0.20 hrs

NO_x Emissions (Steady State)
Diesel Emission Factor: 10.31 lb/hr (Manufacturer Information)
Natural Gas Emission Factor: 4.95 lb/hr (Manufacturer Information)
Calculations: ((10.31 lb/hr * 192.67 hrs/yr) + (4.95 lb/hr * 1495.167hrs/yr)) * 0.0005 ton/lb = 4.69 tpy

NO_x Emissions (Start-up and Shut-down)
Diesel Start-up Emission Factor: 2.5 lb/event (Manufacturer Information)
Diesel Shut-down Emission Factor: 2.5 lb/event (Manufacturer Information)
Natural Gas Start-up Emissions Factor: 2.0 lb/event (Manufacturer Information)
Natural Gas Shut-down Emission Factor: 2.0 lb/event (Manufacturer Information)
Calculations: (2.5 lb/event * 40 events/yr) + (2.0 lb/event * 310 events/yr)) * 0.0005 ton/lb = 0.36 ton/yr

Total NO_x Emissions:
Calculations: 0.36 ton/yr + 4.69 ton/yr = 5.05 ton/yr

Worst-Case Short-Term NO_x Emissions
Unlike the other pollutants emitted form the Trent 60 turbines NOx emissions are greater during start-up and shut-down than steady state run. Therefore, worst case short-term emissions (in terms of 1-hour duration) occur during continuous start-up and shut-down sequences.
Diesel Start-up Emissions Factor: 2.5 lb/event (Manufacturer Information)
Diesel Shut-down Emissions Factor: 2.5 lb/event (Manufacturer Information)
Calculations: (2.5 lb/event * 3 start-ups events/hr) + (2.5 lb/event * 2.5 shut-down events/hr) = 13.75 lb/hr

$PM/PM_{10}/PM_{2.5}$ Emissions (Steady State)
Diesel Emission Factor: 15.04 lb/hr (Manufacturer Information)
Natural Gas Emission Factor: 5.03 lb/hr (Manufacturer Information)
Calculations: ((15.04 lb/hr * 192.67 hrs/yr) + (5.03 lb/hr * 1495.167hrs/yr)) * 0.0005 ton/lb = 5.21 tpy

$PM/PM_{10}/PM_{2.5}$ Emissions (Start-up and Shut-down)
Diesel Start-up Emission Factor: 1.23 lb/event (Manufacturer Information)
Diesel Shut-down Emission Factor: 3.33 lb/event (Manufacturer Information)
Natural Gas Start-up Emissions Factor: 0.45 lb/event (Manufacturer Information)
Natural Gas Shut-down Emission Factor: 0.8 lb/event (Manufacturer Information)
Calculations: ((1.23 lb/event * 20 events/yr) +(3.33 lb/event * 20 events/yr) + (0.45 lb/event * 155 events/yr) + (0.8 lb/event * 155 events/yr)) * 0.0005 ton/lb = 0.14 ton/yr

Total $PM/PM_{10}/PM_{2.5}$ Emissions:
Calculations: 0.14 ton/yr + 5.21 ton/yr = 5.35 ton/yr

CO Emissions (Steady State)
Diesel Emission Factor: 6.28 lb/hr (Manufacturer Information)
Natural Gas Emission Factor: 6.02 lb/hr (Manufacturer Information)
Calculations: ((6.28 lb/hr * 192.67 hrs/yr) + (6.02 lb/hr * 1495.167hrs/yr)) * 0.0005 ton/lb = 5.11 tpy

CO Emissions (Start-up and Shut-down)
Diesel Start-up Emission Factor: 0.8 lb/event (Manufacturer Information)
Diesel Shut-down Emission Factor: 0.6 lb/event (Manufacturer Information)
Natural Gas Start-up Emissions Factor: 0.6 lb/event (Manufacturer Information)
Natural Gas Shut-down Emission Factor: 0.3 lb/event (Manufacturer Information)
Calculations: ((0.8 lb/event * 20 events/yr) +(0.6 lb/event * 20 events/yr) + (0.6 lb/event * 155 events/yr) + (0.3 lb/event * 155 events/yr)) * 0.0005 ton/lb = 0.08 ton/yr

Total CO Emissions:
Calculations: 0.08 ton/yr + 5.11 ton/yr = 5.19 ton/yr

SO_x Emissions (Steady State)
Diesel Emission Factor: 1.19 lb/hr (Manufacturer Information)
Natural Gas Emission Factor: 0.02 lb/hr (Manufacturer Information)
Calculations: ((1.19 lb/hr * 192.67 hrs/yr) + (0.02 lb/hr * 1495.167hrs/yr)) * 0.0005 ton/lb = 0.13 tpy

SO_x Emissions (Start-up and Shut-down)

Diesel Start-up Emission Factor: 0.04 lb/event (Manufacturer Information)
Diesel Shut-down Emission Factor: 0.1 lb/event (Manufacturer Information)
Natural Gas Start-up Emissions Factor: 0.0 lb/event (Manufacturer Information)
Natural Gas Shut-down Emission Factor: 0.0 lb/event (Manufacturer Information)
Calculations: ((0.04 lb/event * 20 events/yr) +(0.1 lb/event * 20 events/yr)) + (0.0 lb/event * 155 events/yr) + (0.0 lb/event * 155 events/yr)) * 0.0005 ton/lb = 0.0014 ton/yr

Total SO_x Emissions:

Calculations: 0.13 ton/yr + 0.0014 ton/yr = 0.13 ton/yr

VOC Emissions (Steady State)

Diesel Emission Factor: 1.85 lb/hr (Manufacturer Information)
Natural Gas Emission Factor: 1.14 lb/hr (Manufacturer Information)
Calculations: ((1.85 lb/hr * 192.67 hrs/yr) + (1.14 lb/hr * 1495.167hrs/yr)) * 0.0005 ton/lb = 1.03 tpy

VOC Emissions (Start-up and Shut-down)

Diesel Start-up Emission Factor: 0.1 lb/event (Manufacturer Information)
Diesel Shut-down Emission Factor: 0.1 lb/event (Manufacturer Information)
Natural Gas Start-up Emissions Factor: 0.07 lb/event (Manufacturer Information)
Natural Gas Shut-down Emission Factor: 0.1 lb/event (Manufacturer Information)
Calculations: ((0.1 lb/event * 40 events/yr) + (0.07 lb/event * 155 events/yr) + (0.1 lb/event * 155 events/yr)) * 0.0005 ton/lb = 0.015 ton/yr

Total VOC Emissions:

Calculations: 0.015 ton/yr + 1.03 ton/yr = 1.04 ton/yr

(SOURCE EU7)

Emergency Generator

Size: 268 hp
Hours of Operation: 500 hr/yr

NO_x Emissions:

Emission Factor: 0.031 lb/hp-hr AP-42 3.3-1
Calculations: 268 hp * 0.031 lb/hp-hr * 500 hr/yr *0.0005 lb/ton = 2.08 ton/yr

PM_{10} Emissions:

Emission Factor: 0.0022 lb/hp-hr AP-42 3.3-1
Calculations: 268 hp * 0.0022 lb/hp-hr * 500 hr/yr *0.0005 lb/ton = 0.15 ton/yr

CO Emissions:

Emission Factor: 0.00668 lb/hp-hr AP-42 3.3-1
Calculations: 268 hp * 0.00668 lb/hp-hr * 500 hr/yr *0.0005 lb/ton = 0.45 ton/yr

SO_x Emissions:

Emission Factor: 0.002050 lb/hp-hr AP-42 3.3-1
Calculations: 268 hp * 0.002050 lb/hp-hr * 500 hr/yr *0.0005 lb/ton = 0.14 ton/yr

VOC Emissions:

Emission Factor: 0.00247 lb/hp-hr AP-42 3.3-1
Calculations: 268 hp * 0.00247 lb/hp-hr * 500 hr/yr *0.0005 lb/ton = 0.17 ton/yr

(SOURCE EU8)

Water Treatment Building Heater

Size: 19.488 MMBtu/hr
Hours of Operation: 2,400 hr/yr
Heat Content of Gas: 1,000 MMBtu/MMscf

NO_x Emissions:

Emission Factor: 100 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 100 lb/MMscf * 19.488 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 2.34 ton/yr

$PM/PM_{10}/PM_{2.5}$ Emissions:

Emission Factor: 7.6 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 7.6 lb/MMscf * 19.488 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.18 ton/yr

CO Emissions:
Emission Factor: 84 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 84 lb/MMscf * 19.488 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 1.96 ton/yr

SO_x Emissions:
Emission Factor: 0.6 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 0.6 lb/MMscf * 19.488 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.01 ton/yr

VOC Emissions:
Emission Factor: 5.5 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 5.5 lb/MMscf * 19.488 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.13 ton/yr

(SOURCE EU9)
Turbine Building Heater
Size: 18.00 MMBtu/hr
Hours of Operation: 2,400 hr/yr
Heat Content of Gas: 1,000 MMBtu/MMscf

NO_x Emissions:
Emission Factor: 100 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 100 lb/MMscf * 18.00 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 2.16 ton/yr

$PM/PM_{10}/PM_{2.5}$ Emissions:
Emission Factor: 7.6 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 7.6 lb/MMscf * 18.00 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.16 ton/yr

CO Emissions:
Emission Factor: 84 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 84 lb/MMscf * 18.00 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 1.81 ton/yr

SO_x Emissions:
Emission Factor: 0.6 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 0.6 lb/MMscf * 18.00 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.01 ton/yr

VOC Emissions:
Emission Factor: 5.5 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 5.5 lb/MMscf * 18.00 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.12 ton/yr

(SOURCE EU10)
Administrative Building Heater
Size: 2.64 MMBtu/hr
Hours of Operation: 2,400 hr/yr
Heat Content of Gas: 1,000 MMBtu/MMscf

NO_x Emissions:
Emission Factor: 100 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 100 lb/MMscf * 2.64 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.32 ton/yr

$PM/PM_{10}/PM_{2.5}$ Emissions:
Emission Factor: 7.6 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 7.6 lb/MMscf * 2.64 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.02 ton/yr

CO Emissions:
Emission Factor: 84 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 84 lb/MMscf * 2.64 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.27 ton/yr

SO_x Emissions:
Emission Factor: 0.6 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 0.6 lb/MMscf * 2.64 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.002 ton/yr

VOC Emissions:
Emission Factor: 5.5 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 5.5 lb/MMscf * 2.64 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.02 ton/yr

(SOURCE EU11)
Emergency Generator Building Heater

Size: 0.96 MMBtu/hr
Hours of Operation: 2,400 hr/yr
Heat Content of Gas: 1,000 MMBtu/MMscf

NO_x Emissions:
Emission Factor: 100 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 100 lb/MMscf * 0.96 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.12 ton/yr

$PM/PM_{10}/PM_{2.5}$ Emissions:
Emission Factor: 7.6 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 7.6 lb/MMscf * 0.96 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.01 ton/yr

CO Emissions:
Emission Factor: 84 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 84 lb/MMscf * 0.96 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.10 ton/yr

SO_x Emissions:
Emission Factor: 0.6 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 0.6 lb/MMscf * 0.96 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.001 ton/yr

VOC Emissions:
Emission Factor: 5.5 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 5.5 lb/MMscf * 0.96 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.01 ton/yr

(SOURCE EU12)
Main Electrical Building Heater

Size: 2.88 MMBtu/hr
Hours of Operation: 2,400 hr/yr
Heat Content of Gas: 1,000 MMBtu/MMscf

NO_x Emissions:
Emission Factor: 100 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 100 lb/MMscf * 2.88 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.35 ton/yr

$PM/PM_{10}/PM_{2.5}$ Emissions:
Emission Factor: 7.6 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 7.6 lb/MMscf * 2.88 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.03 ton/yr

CO Emissions:
Emission Factor: 84 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 84 lb/MMscf * 2.88 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.29 ton/yr

SO_x Emissions:
Emission Factor: 0.6 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 0.6 lb/MMscf * 2.88 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.002 ton/yr

VOC Emissions:
Emission Factor: 5.5 lb/MMscf (AP-42 1.4-1 and 1.4-2)
Calculations: 0.001 MMscf/MMBtu * 5.5 lb/MMscf * 2.88 MMBtu/hr * 2,400 hr/yr * 0.0005 ton/lb = 0.02 ton/yr

(SOURCE EU13)
Diesel Fuel Storage Tank

Size: 250,000 gallons
Fuel Throughput: 822,341 gallons/yr

VOC Emissions:
Emission Factor: 26.2180 lb/yr (Tanks 4.0.9d – Application Information)
Calculation 26.2180 lb/yr * 0.0005 ton/lb = 0.013 ton/yr

V. Existing Air Quality

The Montgomery facility is located east of Highway 87 approximately 2 miles north of Great Falls in Section 30, Township 21 North, Range 4 East, in Cascade County, Montana. The facility sits on a relatively flat plain at an elevation of 3,520 feet with mountain ranges approximately 30 miles or more to the east, south, and west of the facility and lower hills (buttes) to the north and northwest. The closest Class I area is the Gates of the Mountains wilderness area located approximately 75 kilometers (km) southeast of the site.

The air quality classification for the Montgomery project area is "Unclassifiable or Better than National Standards" (40 CFR 81.327) for the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants. A narrow area of Great Falls along 10th Avenue South (bounded by 9th Avenue South on the north, 11th Avenue South on the south, 54th Street South on the east and 2nd Street South on the west) was previously classified as a non-attainment area for CO, but was redesignated as attainment under a Limited Maintenance Plan in May of 2002.

VI. Ambient Air Impact Analysis

Montgomery submitted modeling results on May 8, 2009. The Department worked with Montgomery to establish a complete dispersion modeling analysis for demonstration of compliance with applicable increments and standards; and also conducted its own increment, NAAQS/MAAQS and significant impact analysis. The Trinity Consultants BREEZE for Windows (Version 7) was used with the AERMOD modeling system. The AERMOD system included AERMOD PRIME (version 07026), AERMET (version 06341), and AERMAP (version 09040). The AERMOD modeling system was used in the regulatory default mode; no wet or dry depletion was assumed. The results of the ambient air quality modeling for this permitting action are summarized in the following seciton, a complete description of the modeling conducted are on file with the Department.

A. Aermod NAAQS/MAAQS $PM_{2.5}$ Modeling Results

Malteurop North America is closely located to Montgomery Energy and the Montgomery Energy emissions must not violate any ambient air quality standard within this facility's boundaries since this domain is considered ambient air. Therefore, Montgomery had to model twice: (1) to determine the impacts from Montgomery Energy emissions within Malteurop North America facility boundaries including all off-site facilities $PM_{2.5}$ emissions except Malteurop North America, and (2) to determine the impacts from all facility $PM_{2.5}$ emissions outside any facility boundaries.

The resulting modeled 24-hour and annual $PM_{2.5}$ concentrations with and without Malteurop North America emissions are listed in the table below. To determine NAAQS compliance, the high-eighth-high (H8H) modeled concentrations were selected for the 24-hour averaging period whereas the highest (H1H) concentrations were chosen for the annual averaging period. The $PM_{2.5}$ background concentrations were added to these modeled concentrations for comparison to the applicable $PM_{2.5}$ NAAQS. These background concentrations were selected from the "Potential Montana PM2.5 Non-Attainment PM2.5 Non-Attainment Areas," March 2008 Draft (http://www.deq.state.mt.us/AirQuality/WhatsNew/PM25_NAAQS_MT_Review_Mar_2008.pdf). These monitored concentrations were measured at the Great Falls High School from 2004 through 2006 and were used for the Great Falls $PM_{2.5}$ attainment demonstration submitted to the USEPA.

It should be noted although the modeling document stated that only the Malteurop North America (MALT) grain loading and receiving emissions were excluded in the first modeling run, all of the estimated MALT $PM_{2.5}$ emissions were not included.

Modeled $PM_{2.5}$ Results and Percentages of Corresponding NAAQS.

Averaging Period	NAAQS ($\mu g/m^3$)[1]	Modeled Concentration ($\mu g/m^3$)	Default MDEQ Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	Percent of NAAQS (%)	UTM NAD 27[2] Zone 12 (mE)[3]	UTM NAD 27[2] Zone 12 (mN)[4]	Elevation (m)[5]
With Malteurop North America								
24-Hour[6]	35	22	15	37	106	480441.8	5265544.5	1055.22
Annual[7]	15.0	8.2	5.3	13.5	90	480441.8	5265544.5	1055.22
Without Malteurop North America								
24-Hour	35	18	15	33	94	484220.0	5262696.0	1049.3
Annual	15.0	4.4	5.3	9.7	65	484720.0	5262969.0	1047.8

1. $\mu g/m^3$ = micrograms per cubic meter.
2. UTM NAD27 = Universal Transverse Mercator North American Datum 1927.
3. mE = meters Easting.
4. mN = meters Northing.
5. m = meter.
6. H8H = high-eighth-high.
7. H1H = highest.

The location of both the highest 24-hour and annual average $PM_{2.5}$ concentrations with MALT occurred on the MALT east fenceline. The Montgomery Energy $PM_{2.5}$ emission contribution to the 24-hour concentration (22 $\mu g/m^3$) was 0.8 $\mu g/m^3$ or less than 4%. To reiterate, the Malteurop North America $PM_{2.5}$ emissions was estimated using the corresponding PM_{10} emissions since $PM_{2.5}$ emission factors were not available. Therefore, the $PM_{2.5}$ emissions are very conservative estimates and the fugitive emissions at MALT are about 40% of the total PM_{10} emissions. Without MALT, the locations of the receptors for the highest concentrations occurred by the Montana Ethanol Project, LLC facility. The Montgomery Energy $PM_{2.5}$ emissions contributed about 0.002 $\mu g/m^3$ or less than 0.01% of the modeled 18 $\mu g/m^3$.

B. MDEQ AERMOD Significant Impact Area (SIA) Analysis

The Department performed modeling analysis to determine the significant impact levels for CO, PM_{10}, and NO_x. The Department used the same BREEZE AERMOD modeling. The Department developed a short-and long-term emission rates as listed in the table below based on application materials and emission inventory in the existing permit. For the SIA analysis, the same Montgomery meteorological and receptor modeling files were used with the following emission rates.

Montgomery Energy CO, PM_{10}, and NOx Emission Rates.

Source ID	Description	Hours Per Year (hr/yr)[1]	CO Emissions (lb/hr)[2]	PM_{10} Emissions		NOx Emissions	
				Pounds Per Hour (lb/hr)	Tons Per Year (tpy)[3]	Pounds Per Hour (lb/hr)	Tons Per Year (tpy)
CCT1	GE 7EA 80-MW[4] Gas Turbine #1 with duct burner	6,000	11.3000	11.2200	47.4600	9.2800	39.1000
CCT2	GE 7EA 80-MW Gas Turbine #2 with duct burner	6,000	11.3000	11.2200	47.4600	9.2800	39.1000
FIREPMP	Diesel Fire Pump (265 bhp[5])	500	0.1691	0.0411	0.0100	3.9220	0.9800
CTWRCEL1	Cooling Tower 1	8,760	0.0000	0.1920	0.8400	0.0000	0.0000
CTWRCEL2	Cooling Tower 2	8,760	0.0000	0.1920	0.8400	0.0000	0.0000
CTWRCEL3	Cooling Tower 3	8,760	0.0000	0.1920	0.8400	0.0000	0.0000
CTWRCEL4	Cooling Tower 4	8,760	0.0000	0.1920	0.8400	0.0000	0.0000
CTWRCEL5	Cooling Tower 5	8,760	0.0000	0.1920	0.8400	0.0000	0.0000
EP-5	Trent 60 64-MW Gas Turbine #1	1,752	6.2782	15.0450	5.4095	13.7500	5.0517
EP-6	Trent 60 64-MW Gas Turbine #2	1,752	6.2782	15.0450	5.4095	13.7500	5.0517
EMERGENA	Emergency Generator	500	1.7900	0.5900	0.1500	8.3100	2.0800
ADMNBDHT	Administration Building Heater	8,760	0.2218	0.0200	0.0879	0.2640	1.1600
GENBLDHT	Emergency Generator Building Heater	8,760	0.0806	0.0073	0.0320	0.0960	0.4200
ELBLDHT	Main Electrical Building Heater	8,760	0.2419	0.0219	0.0959	0.2880	1.2600
TRBBLDHT	Turbine Building Heater	8,760	1.5120	0.1368	0.6000	1.8000	7.8800
BLDHTWT	Water Treatment Building Heater	8,760	1.6369	0.1481	0.6500	1.9488	8.5400

1. hr/yr = hours per year.
2. lb/hr = pounds per hour.
3. tpy = tons per year.
4. MW = megawatts.
5. bhp = brake horsepower.

The high-first-high (H1H) modeled concentrations were selected and the results of the significance level analysis are listed in the table below. These results are gross estimates due to the questionability of the receptors elevations and surface roughness values calculated for a site other than the Great Falls International Airport and Montgomery Energy. These factors would affect the results since AERMOD is sensitive to these values.

Montgomery Energy Significant Impact Area Results for CO, PM_{10}, and NO_x.

Pollutant	Averaging Period	Selected Modeled Concentration	Met Year	Significance Impact Level ($\mu g/m^3$)[1]	Radius of Impact (km)[2]
CO	1-Hour	H1H[3]	NA[4]	2,000	0.0
	8-Hour	H1H		500	0.0
PM_{10}	24-Hour	H1H	1988	5	0.1
	Annual	H1H	1989	1	0.1
NOx	Annual	H1H	1987	1	0.1

1. $\mu g/m^3$ = micrograms per cubic meter.
2. km = kilometers.
3. H1H = high-first-high.
4. NA = Not Applicable.

None of the highest hourly CO concentrations exceeded the 1- or 8-hour significance levels. The 24-hour and annual average PM_{10} concentrations occurred on the east and west fenceline, respectively, to about 0.15 kilometer radius of impact. The highest annual NOx concentration also occurred on the fenceline in northeastern corner, about 0.1 km away from Montgomery Energy.

C. NAAQS/MAAQS/CLASS II PSD AERMOD MODELING

For the next phase, the Department corrected the terrain elevations and calculated the Albedo, Bowen Ratios, and Surface Roughness values for AERMET using the correct coordinates for the Great Falls International Airport (47.473, 111.381 NAD27) and AERSURFACE seasonal selection of months.

Terrain: The elevations of the receptors, sources, and buildings were determined from imported Digital Elevation Models (DEM) files. These files were in North American Datum 1927 (NAD27) datum, the same datum as the project. The169 DEMs files were obtained from a SME AERMOD modeling demonstration dated 04/24/09. A user domain was defined as SW X, Y (412175, 5202600) and NE X, Y (550842, 5314341).

Receptors: Receptors representing the Montgomery Energy and Malteurop North America fencelines were included. One hundred (100) receptors were placed around Montgomery Energy at about 0.15 km radius.

The 1-hour and annual NOx modeled concentrations were adjusted using the Ozone Limiting Method (OLM) and Ambient Ratio Method (ARM), respectively, for conversion to NO_2. The high-second-high hourly concentrations were selected whereas the highest concentrations were selected for the annual averaging period. The results of the NAAQS/MAAQ/Class II PSD modeling are listed in the table below. In this analysis, the modeled PM_{10} emissions were all maximum permitted PM_{10} emissions; no actual emissions of any operating facility were involved, which is the common procedure for a PSD modeling analysis, so this is a conservative demonstration.

Modeled PM_{10} and NO_2 Results and Percentages of Corresponding NAAQS.

Pollutant	Averaging Period	NAAQS/MAAQS ($\mu g/m^3$)[1]	Modeled Concentration ($\mu g/m^3$)	Default Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	Percent of NAAQS MAAQS (%)	Class II PSD Increment ($\mu g/m^3$)	Percent of Class II PSD Increment (%)	Date (YY.MM.DD)	UTM NAD 27[2] Zone 12 (mE)[3]	UTM NAD 27[2] Zone 12 (mN)[4]	Elevation(m)[5]
PM_{10}	24-Hour[6]	150	24.3	30	54.3	36	30	81	910315	480441.8	5265544.5	1053.8
	Annual[7]	NA[8]/50	8.2	8	16.2	32	17	48	1991	480441.8	5265544.5	1053.8
NO_2	1-Hour[9]	NA/564	91.1[9]	75	166.1	NA/30	NA	NA	881216	479933.1	5266069.5	1065.5
	Annual[10]	100/94	18.6[10]	6	24.6	25/26	25	74	1987	480254.7	5265728.0	1053.4

1. $\mu g/m^3$ = micrograms per cubic meter.
2. UTM NAD27 = Universal Transverse Mercator North American Datum 1927.
3. mE = meters Easting.
4. mN = meters Northing.
5. m = meter.
6. High-second-high modeled concentrations were selected.
5. Highest modeled concentrations were selected.
8. NA = Not Applicable.
9. The modeled 1-hour NOx concentration was adjusted using the OLM for conversion to NO_2.
10. The modeled annual NOx concentration was adjusted using the ARM for conversion to NO_2.

None of the NAAQS/MAAQS or Class II PSD increments were violated. The PM_{10} concentrations were located in the same site as previously identified in the $PM_{2.5}$ analysis. The high-second-high 1-hour NO_2 concentration was located in the northeast corner of the Montgomery Energy fenceline whereas the highest annual NO_2 concentration was located on the middle of the northern Malteurop North America fenceline.

The modeling results for Montgomery's natural gas-fired power plant project demonstrate compliance with the NAAQS, MAAQS and PSD increments. The conducted modeling analysis did not incorporate permit limits reducing allowable emissions in order to achieve synthetic minor status relative to Title V permitting requirement; therefore, the Department believes this analysis is conservative of air quality and the facility will not cause or contribute to a violation of any ambient air quality standard.

VII. Taking or Damaging Implication Analysis

As required by 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.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Resources Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Montgomery Great Falls Energy Partners LP

Montana Air Quality Permit Number: 3154-06

Preliminary Determination Issued: June 17, 2009
Department Decision Issued: July 22, 2009
Permit Final: August 7, 2009

1. *Legal Description of Site*: Section 30, Township 21 North, Range 4 East, in Cascade County, Montana

2. *Description of Project*: Montgomery Great Falls Energy Partners LP (Montgomery) proposed to construct and operate a 390 megawatt (MW) natural gas-fired electrical power generation facility. Currently Montgomery is authorized under MAQP #3154-05 to construct and operate two simple cycle gas turbines and ancillary equipment. Each turbine is rated at 80 MW. Construction at the facility has not yet begun. Within 2 years of construction, Montgomery is required to add additional equipment to convert the two simple cycle gas turbines into combined cycle gas turbines, for a total power production 262 MW. On May 8, 2009, the Department received a complete application from Montgomery to modify MAQP #3154-05. The application proposed addition of two Rolls-Royce Trent 60 simple cycle combustion turbines for peaking operation, and other ancillary emitting units including building heaters, emergency generator and diesel fuel storage tank.

3. *Objectives of Project*: Adding the two Rolls-Royce Trent 60 simple cycle combustion turbines would allow for the Montgomery facility to provide peaking power to the electrical grid. The addition of the ancillary emitting units would support the operation of the proposed and previously permitted units.

4. *Alternatives Considered*: In addition to the proposed action, the Department also considered the "no-action" alternative. The "no-action" alternative would deny issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the "no-action" alternative to be appropriate because Montgomery demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the "no-action" alternative was eliminated from further consideration.

5. *A Listing of Mitigation, Stipulations, and Other Controls*: A list of enforceable conditions, including a BACT analysis, would be included in MAQP #3154-06.

6. *Regulatory Effects on Private Property*: The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

7. The following table summarizes the potential physical and biological effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Terrestrial and Aquatic Life and Habitats			X			Yes
B	Water Quality, Quantity, and Distribution			X			Yes
C	Geology and Soil Quality, Stability and Moisture			X			Yes
D	Vegetation Cover, Quantity, and Quality			X			Yes
E	Aesthetics			X			Yes
F	Air Quality			X			Yes
G	Unique Endangered, Fragile, or Limited Environmental Resources			X			Yes
H	Demands on Environmental Resource of Water, Air and Energy			X			Yes
I	Historical and Archaeological Sites				X		Yes
J	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS: The following comments have been prepared by the Department.

A. Terrestrial and Aquatic Life and Habitats

No additional impacts to terrestrial and aquatic life habitats would result from on-site construction authorized by this permitting action. Construction of the new turbines and ancillary facilities are within the footprint of the area previously analyzed for construction impacts. Similarly the proposed project would not result in discharges of waste to local terrestrial or aquatic habitats.

Minor impacts to local aquatic and terrestrial habitats would result due to the proposed increase in air pollutant emissions which would result in an increase of deposition. Impacts would be minor because ambient air quality analysis indicated none of the air quality increments or standards would be exceeded. The increments and standard are designed to mitigate deterioration of air quality such that it would result in adverse impacts to habitats. Therefore, the increased amount to deposition resulting from the project would be minor.

Overall, the impacts from the proposed action to terrestrial and aquatic life and habitats would be minor.

B. Water Quality, Quantity and Distribution

The proposed action would not result in impacts to water quality in the area. No direct discharge of process wastewater is proposed from the facility. Water quality impacts resulting from air pollutant emission deposition would be negligible.

The required air quality emissions controls include water injection. Water requirement for each of the proposed turbines is approximately 65 gallons per minute. All water for the facility would be obtained from the Great Falls municipal water supply, and all spent water would be discharged to the Great Falls city sewer. Therefore, a minor increase in demand on the city water and wastewater utilities would occur that may have a minor effect on the quantity and distribution of water resources in the area. Overall impacts to water quality, quantity and distribution would be minor.

C. Geology and Soil Quality, Stability and Moisture

Impacts to soil quality, stability and moisture content would be minor. Construction of the proposed turbines and ancillary emitting units would impact a relatively small portion of an area already analyzed for environmental impact due to industrial development. Construction activities for footings, foundations, general site grading and earthwork would disturb soil and potentially disturb the geology of the area which would in turn influence moisture content. However, proper general construction practices would mitigate short term and permanent adverse affects of construction activities. The relatively permanent existence of structures on the site may influence moisture content of underlying soils and geology but impacts would be minor.

D. Vegetation Cover, Quantity, and Quality

The proposed project would result in minor impacts to vegetative cover in the immediate area of the proposed facility. The main physical disturbance of the area would be during to construction of the facility; however, the 30-acre area designated for construction purposes would be impacted during the construction and/or operation of the proposed facility. Because of the agricultural history of this parcel and the disturbances that come from annual agricultural practices, the development of the property would not be disproportionately significant due to the proposed change in use.

The utility corridor includes a small area of new disturbances. These areas would experience temporary impacts during the installation of utilities. After installation, disturbed areas would then be restored to pre-project conditions with grading and seeding. Construction impacts would be mitigated by minimizing the area disturbed and use of recommended best management practices during construction.

Establishment of the vegetation would be conducted in accordance with storm water pollution prevention plan requirements which would limit the timeframe that the soils area exposed. Clearing of vegetation/trees would be the minimum necessary to accomplish the proposed activity.

Diesel would be stored on-site as a backup fuel. Although a diesel spill has the potential to cause harm to plant species, the facility would implement a SPCC plan, as required by the EPA regulations that would limit the likelihood of a spill occurring and limit the consequence of a spill.

E. Aesthetics

Overall the proposed facility would alter the natural landscape from a rural, agricultural setting to a more industrial environment. However, the project site is located in an agricultural environment that includes existing industrial and commercial land uses in the surrounding viewshed. Several industrial structures and commercial facilities are located within five miles of the proposed facility. A malting plant is located less than a half a mile away and has a taller profile than the simple cycle combustion turbines. The impacts to the aesthetics because of the size of the structures proposed for the facility would be relatively small. The impacts to the viewshed were assessed from recreational locations and locations in the human environment near the project site. The facility would be negligibly visible from gathering places along the Missouri River. The Montgomery facility would be visible from Highway 87, which is adjacent to the site and may be partially visible from the Lewis and Clark Interpretive Center approximately 1.8 miles from the proposed facility. Giant Springs Heritage State Park, approximately 1.9 miles from the facility, would also have partial visibility. The proposed

action would have minor impacts to the viewshed because the proposed structures and stacks would be shorter than the stacks that have already been analyzed and permitted for this industrial facility.

Sound levels are measured in units called decibels (dB). Because the human ear does not respond equally to all frequencies (or pitches) measured, sound levels are often adjusted or weighted to correspond to the frequency response of human hearing and the human perception of loudness. The weighted sound level is expressed in units called A-weighted decibels (dBA) and is measured with a calibrated sound level meter. Sound levels that correlate with the human perception are also expressed with the descriptor L_{eq}, which is defined as energy-equivalent sound level.

During the construction phase of the project, noise from on-site construction equipment and construction activities, would add to the noise environment in the immediate area. The driving and operation of construction equipment would also generate ground vibrations. The vibrations would not be of a sufficient magnitude to affect normal activities of occupants or visitors to the project site.

Construction activities would be temporary in nature and would occur during normal daytime working hours and potentially outside of normal working hours if an accelerated schedule is preferred. Noise would also be generated during the construction phase by increased truck traffic on area roadways associated with transport of heavy materials and equipment. The noise increase and vibrations from construction activities would be of short duration. Equipment operating at the project site would conform to contractual specifications requiring the contractor to comply with local noise control rules, regulations, and ordinances.

The operation of the two proposed combustion turbines at the facility is anticipated to result in additional noise for the surrounding area. The sound level at the Trent 60 sources are estimated to be approximately 85 dB, which is the same as the already permitted larger turbines and thus would cause minor impacts to aesthetics from noise.

To evaluate cumulative and secondary impacts caused by the increase in noise levels, available sound level information for the proposed combustion turbines provided by Cullum Detuners Limited were combined with already permitted equipment at the facility, and the calculated noise levels at various points along the property boundaries. Calculated noise levels were compared to regulatory standards to identify a potential for adverse impact.

The reported noise levels contributed from each of the four proposed combustion turbines and the cooling tower were used. Since the emergency generator and fire pump would operate during emergency situations, they were not included in the noise level calculations. Additional noise sources were not used since they are considered insignificant for this study. Distances from the closest side or corner of the noise emitting units to the property line were also measured. Because of the potential variables associated with the project (e.g., building materials of construction, ground surface characteristics, etc.) and the surrounding area, potential reflection and attenuation by buildings and attenuation by ground cover were ignored.

Standard noise attenuation formulas for point sources were used as the basis to calculate predicted noise levels at the property boundaries. The results vary from 39 dBA at the southeast corner of the property to 53 dBA along the northern property line close to the northern simple cycle combustion turbine (EU5). The calculated noise results are provided in following table.

Location	Total Sound Level at Receptor (dBA)
Northeast Corner	44
North Side Closest to EU5	53
Northwest Corner	47
West Side Closest to EU1	45
Southwest Corner	39
South side Closest to EU1 and EU2	45
South side Closest to EU4	44
Southeast Corner	41
East Side Closest to EU4	45
East Side Closese to EU5 and EU6	45

Specific noise regulations that would apply to the facility are not readily apparent because facility is several miles from Great Falls in a largely undeveloped or rural area with another industrial operation, farm land, and the distance to the nearest current residence is approximately ½ mile away. For comparison purposes, predicted noise levels were compared to City of Great Falls Code to evaluate possible noise standards for the facility. Although the facility may not be in the city limits at this time, the standards may apply as the city expands. City Code Title 8, Chapter 56, Section 40 Noise [8.56.040] has a table of maximum allowable noise levels (Table I Limitations for structures and open spaces) which is reproduced below:

Districts	Time of Day	
	8 a.m. to 8 p.m.	8 p.m. to 8 a.m.
Residential	55 dBA	50 dBA
Light commercial	65 dBA	60 dBA
Heavy commercial	70 dBA	65 dBA
Industrial	80 dBA	75 dBA

dBA = decibels on an "A-weighted" scale

The Great Falls noise standards require noise to be measured at a distance of twenty-five feet from the source or at the boundary of the lot, whichever is the greater distance, which is consistent with the provided calculated noise levels.

The calculations show one predicted noise level of 53 dBA exceeds the night-time residential standard of 50 dBA. The location of this exceedence is on the north side of the property. The remaining calculated noise levels were below 50 dBA. Each of the calculated noise levels are below the light and heavy commercial and industrial noise level limitations indicating that a noise impact would not exist for industrial and commercial areas.

Although one calculated noise level exceeded the night-time residential standard, the area is not platted for residential development. Additionally, it is unlikely that the area north of the facility would be developed as residential since industrial and residential developments are typically buffered with commercial developments or an undeveloped buffer area is left in place.

F. Air Quality

Potential impacts to ambient air quality have been evaluated for the proposed project, see Section VI of the Permit Analysis. In summary based on the dispersion characteristic of the area, the proposed increases in air pollutant emission would not violate any air quality standard or increment. The standards and increments have been set to protect human health and mitigate deterioration of the air quality and the environment. See Section VI of the Permit Analysis.

G. Unique Endangered, Fragile, or Limited Environmental Resources

Previous environmental analysis for this project identified two species of concern within a one mile buffer of the project site. The Entosthodon Moss (*Entosthodon rubiginosus*) and American Funaria Moss (*Funaria americana*). For this permitting action different species of concern were identified. The known range of the Burrowing Owl (*Athene cunicularia*) and Swainson's Hawk (*Buteo swainsoni*), as well as, occurrences of the Little Indian Breadroot (*Psoralea hypogaea*) have been reported within one mile of the project site.

The Burrowing Owl is uncommon globally but not vulnerable, while in Montana it is at risk of extirpation possibly because of decline in breeding population or breeding habitat. The Swainson's Hawk is common and widespread globally; however, locally it is potentially at risk because of limited or potentially declining numbers in breeding population or habitat in some areas while abundant in others. The Little Indian Breadroot is common widespread and abundant globally and infraspecific taxon are uncommon but not rare globally. Locally the Little Indian Breadroot is at risk because of very limited and potentially declining numbers, extent and/or habitat vulnerable to extirpation in some areas of the state while abundant in other portions of the state.

Impacts to these fauna would be minor because the project area does not overlap with known occurrences of these identified species' of concern range. The project area would be included in the known occurrence range of the Little Indian Breadroot; however, impacts to this flora would be minor because of the relatively small area of project within the entire local range of this flora. Overall impacts to unique endangered, vulnerable and limited environmental resource would be minor.

H. Demands on Environmental Resource of Water, Air and Energy

The proposed simple cycle combustion turbines would require natural gas and diesel for combustion fuel as well as water for NO_x control (i.e., water injection). Therefore, the project would require a supply of natural gas, diesel and water. Water consumed would be sourced from the City of Great Falls and is therefore presumed to be within its existing water availability and capacity, resulting in minor impacts on water demand.

The impacts to the energy resource from this facility would be minor because the facility would consume relatively small amounts of natural gas and smaller amounts of diesel fuel in comparison to the natural gas consumed nationally, and the facility would produce relatively small amounts of electrical power in comparison to the electrical power that is produced nationally. Furthermore, in comparison to other recently permitted similar sources in the nation, the natural gas consumption and electrical production are again, minor.

I. Historical and Archaeological Sites

The Department contacted the Montana Historical Society State Historic Preservation Office (SHPO) in an effort to identify any historical, archaeological, or paleontological sites or findings near the proposed project. SHPO's records indicate that no previously recorded cultural properties are within the project site. Because of the fact that agricultural activities have occurred in the area, the likelihood of finding undiscovered or unrecorded historical properties is negligible.

J. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the physical and biological aspects of the human environment would be minor. The modeling analysis indicates that the cumulative emissions from Montgomery and other industrial facilities would not violate the MAAQS, NAAQS or Class II PSD increments.

8. The following table summarizes the potential economic and social effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Social Structures and Mores				X		Yes
B	Cultural Uniqueness and Diversity				X		Yes
C	Local and State Tax Base and Tax Revenue			X			Yes
D	Agricultural or Industrial Production			X			Yes
E	Human Health			X			Yes
F	Access to and Quality of Recreational and Wilderness Activities			X			Yes
G	Quantity and Distribution of Employment			X			Yes
H	Distribution of Population			X			Yes
I	Demands for Government Services			X			Yes
J	Industrial and Commercial Activity			X			Yes
K	Locally Adopted Environmental Plans and Goals			X			Yes
L	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores
B. Cultural Uniqueness and Diversity

The proposed action would not cause a disruption to any native or traditional lifestyles or communities (social structures or mores, or cultural uniqueness and diversity) in the area because the proposed turbines and ancillary equipment would be located with the footprint of the already analyzed and permitted industrial facility. The larger area surrounding the proposed site would remain agricultural.

C. Local and State Tax Base and Tax Revenue

The proposed peaking turbines and ancillary facilities are not expected to result in creation of significant new tax base. Minor amounts of additional property tax may be required as the facilities property value would increase due to the further development of the site. Similarly, the peaking turbines will result in generation of additional power available; however, peak power is frequently unregulated and not subject to many state and local taxes. The number of permanent employees at the plant as a result of the proposed action is also expected to be nominal resulting in minor impacts to income tax base. Over-all the proposed action would results in nominal increase in state and local tax revenue.

Impacts the proposed action would have on local property values in the area would also be minor. The proposed turbines would be located within the footprint of a previously permitted industrial facility that is approximately ½ mile (2640 feet) from the nearest residence and would not be aesthetically out of character given other industrial activity and facilities in the area. Other factors that are traditionally associated with a decrease in property values such as odors, fumes, or significant increases in traffic, dust, vibration, or noise would not be present at this location. An appraisal of individual tracts is beyond the scope of environmental analysis required for the proposed action.

D. Agricultural or Industrial Production

The impacts to agricultural and industrial production in the area from this facility would be negligible because the proposed turbines and ancillary equipment would be located within the footprint of previously analyzed industrial facility; therefore no additional agricultural production losses would occur from the proposed action. The impact from the air emissions on the land would be small, and the amount of additional electricity produced by the proposed turbines would be to accommodate peak and would be relatively small to that produced to satisfy base-load.

E. Human Health

As described in Section 7.F of the EA, the impacts from this facility, including the current proposed project, on human health would be minor because the impact from the air emissions would be greatly dispersed before reaching an elevation where humans were exposed. Also, as described in Section 7.F, the modeled impacts from this facility, taking into account other dispersion characteristics (wind speed, wind direction, atmospheric stability, stack height, stack temperature, etc.), are below the MAAQS, NAAQS, and PSD Increments. The air quality permit for this facility incorporates conditions to ensure that the facility would be operated in compliance with all applicable rules and standards. These rules and standards are designed to be protective of human health.

Besides the criteria pollutants, the impacts from HAPs would also be greatly minimized by the dispersion characteristics of the facility and the area (wind speed, wind direction, atmospheric stability, stack temperature, facility emissions, etc.). Impacts from other common activities (such as fueling your vehicle for example) would have a greater impact on human health for HAPs because of the concentrations at the point of exposure.

F. Access to and Quality of Recreational and Wilderness Activities

The facility would result in a minor impact on the access to and quality of recreational and wilderness activities because

- The air emissions from the facility are relatively small and would disperse before impacting the recreational areas
- The recreational activities in the area are approximately 1½ to 2 miles away
- Most of the nearby recreational activities are upwind of the predominant wind pattern.

Furthermore, the proposed turbines and ancillary equipment will be located on private land owned by Montgomery and within the footprint of the land area previously analyzed for recreation impacts. The property will continue to be private. No significant recreational or wilderness activities exist within the Montgomery property boundaries.

Recreational activities exist in the area surrounding the proposed site location. The closest recreational opportunities appear to be:

- Anaconda Hills Golf Course (closest point approximately 0.7 miles)
- Rivers Edge Trail (closest point approximately 1.4 miles)
- Giant Springs Heritage State Park (approximately 1.9 miles)
- Missouri River (closest point approximately 1.4 miles)
- North Shore Conservation Easement Lands
- Black Eagle Dam
- Rainbow Dam
- Cochrane Dam
- Ryan Dam
- Morony Dam

Based on the modeling analysis performed for the proposed action the impacts to air quality at recreational locations in the area would and Class I airsheds in the region would be minor.

G. Quantity and Distribution of Employment

A limited number of employment opportunities in additional to those previously analyzed may result from the proposed action. Therefore, impacts to quantity and distribution of employment from the proposed action would be minor.

H. Distribution of Population

The Montgomery facility may result in minor impacts to the population distribution. No additional employment opportunities in additional to those previously analyzed would result from the proposed action. Therefore, impacts to quantity and distribution of employment from the proposed action would be minor. Any employment opportunities that do occur from the proposed action are expected to be filled by local workforce; therefore, limited immigration to the Great Falls would occur in response to the proposed action.

I. Demands for Government Services

Minor increases may occur in traffic on existing roads in the area while the proposed facilities are operating. However, no significant increase in traffic count is expected from the proposed action. Similarly water for the proposed turbines would be obtained from the Great Falls municipal water supply, and all wastewater would be discharged to the Great Falls city sewer. However, demands on water and wastewater services are relatively small compared to the overall flows accommodated by the City system. Over-all demands on utilities and roadways from the proposed action would be minor.

The acquisition of the appropriate air quality permit modifications and other applicable permits for the proposed would be minor. Compliance verification with those permits would not require significant additional government service in addition to those required by the already permitted facility.

J. Industrial and Commercial Activity

The proposed action would result in a minor impact/increase in industrial and commercial activity. As mentioned previously, the area surrounding the Montgomery facility is agricultural, but other industrial and commercial facilities are located nearby. The Montana Refining Company is located approximately 2 miles away, Montana Ethanol Project, LLC (formerly Agri-Technology Montana, LLC) proposed to locate at a site approximately 3.8 miles away, Malmstrom Air Force Base is located approximately 4 miles away, numerous radio/television towers are nearby, and a bus "yard" is adjacent to the facility. A malting plant is located within a half a mile southeast of the Montgomery Energy Facility. The proposed action would potentially increase electrical power availability and help satisfy peak demand in the Great Falls area that may attract additional industrial or commercial activity to the area.

K. Locally Adopted Environmental Plans and Goals

The City of Great Falls contains an area that was previously classified as nonattainment area for CO along 10th Avenue South. However, the area has been redesignated as attainment. Furthermore, the proposed facility is outside of the former nonattainment area and the prevailing wind pattern in the area would carry the emissions from the facility to the north and east of the plant, away from the nonattainment area.

The Department is unaware of any other locally adopted environmental plans and goals that would be affected by the facility or the other portions of the project as identified at the beginning of this EA.

L. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the social and economic aspects of the human environment would be minor because limited full-time employment opportunities would result, limited construction related employment opportunities would be available, and the proposed project would increase availability of peak time power to other residents and industries in Montana.

Recommendation: No Environmental Impact Statement (EIS) is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for the construction and operation of two peaking turbines and ancillary equipment. MAQP #3154-06 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

Other groups or agencies contacted or which may have overlapping jurisdiction: Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

Individuals or groups contributing to this EA: Department of Environmental Quality – Air Resources Management Bureau, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

EA prepared by: P. Skubinna
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