PERMITTEE

City of Jacksonville
Public Works Department
117 West Duval Street, St. James Building, 4th Floor
Jacksonville, FL 32202

PERMITTING AUTHORITY

Florida Department of Environmental Protection (Department)
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

PROJECT

Air Permit No. 0310358-013-AV
Title V Revision Permit
Trail Ridge Energy, LLC

The permittee proposes the installation and operation of four new Caterpillar Model No. G3520C engine generator sets and modifies the CO emissions standard as Best Available Control Technology (BACT) for the proposed and existing engine generator sets. The applicant requested a concurrent revision of the Title V air operation permit with the construction permit modification.

NOTICE AND PUBLICATION

The Department distributed a draft Title V permit revision package on August 19, 2011. The applicant published the Public Notice in the Financial News and Daily Record on August 26, 2011. The Department received the proof of publication on September 6, 2011.

COMMENTS

Applicant

On August 30, 2011, the Department received comments from the applicant. The Department made corrections to clerical errors. The following summarizes the comments and the Department's response.

1. *Comment*: The mailing address specified on page 47 for Trail Ridge Energy, LLC should be updated to 46280 Dylan Dr, Suite 200, Novi MI 48377.

   Response: The address has been changed as follows:

   Trail Ridge Energy, LLC
   46280 Dylan Dr, Suite 200 ~~29261 Wall Street~~
   Novi ~~Wixom~~, Michigan 48377 ~~48393~~

2. *Comment*: Condition E.1 specify a 20 cylinder engine as opposed to a 4 cylinder engine.

   Response: The condition has been changed as follows:

   Landfill Gas Engine/Generator Sets: The permittee is authorized to install and operate a total of ten (Caterpillar Model G3520C or equivalent) spark-ignited reciprocating internal combustion engines. Each engine is a ~~4~~ 20-cylinder engine with a total displacement of approximately 86.3 liters. Each engine has a maximum rating of 2,233 bhp and is coupled to a 1,600 kW generator (nominal rating) for the generation of up to a total of 16 MW of electricity. The maximum rating when coupled to the electrical

generator is 2,233 bhp. Each engine will fire LFG. The LFG will pass through a gas treatment system prior to combustion in the engines.

3. *Comment*: Trail Ridge Energy requests that the reference in condition E.1.b. to the landfill flares be removed from the permit for the landfill gas (LFG) fueled engines. LFG collection and control requirements are adequately addressed in Title V air operation permit issued to the landfill owner/operator.

   Response: This condition has been changed as follows:

   Each engine shall be equipped with an automatic fail-safe block valve which must be designed to stop the flow of landfill gas in the event of an engine failure. ~~Excess landfill gas not fired in the engines shall be flared in accordance with the requirements of Subpart WWW in 40 CFR 60.~~

4. *Comment*: Trail Ridge Energy requests that *LFG shall be directed to the new engines, the existing flares or some other appropriate treatment or control system* be removed from condition E.2.

   Response: This condition has been changed as follows:

   LFG Treatment System: The permittee shall design, install, operate and maintain a LFG Treatment System including equipment for: gas compression (blowers/compressors), de-watering (knock-out and chilling system) and particulate removal (filtration). Specifically, the permittee shall design, install, maintain and operate 1 micron primary and polishing filters to remove particulate matter from the LFG prior to combustion in the engines. The LFG treatment system shall not be equipped with atmospheric vents. ~~LFG shall be directed to the new engines, the existing flares or some other appropriate treatment or control system.~~ [Application Nos. 0310358-004-AC and 0310358-012-AC; and Rule 62-212.400, F.A.C.]

5. *Comment*: Remove Condition E.3, LFG Flaring, from the Trail Ridge Energy section of the permit.

   Response: The condition has been removed as it was already specified in Condition E.1.b.

6. *Comment*: Condition E.7. and E.8. specify that the *permittee shall set the air-to-fuel ratio for each engine based on the most recent emissions tests*. The air-to-fuel ratio is adjusted electronically based on constantly monitoring the inlet gas methane content (i.e., heat value) and other engine parameters that indicate efficient fuel combustion. Therefore, the air-to-fuel ratio is not "set" by the engine operator; rather it is controlled by the electronic engine control module. A more accurate requirement is to operate each engine within 0.5% of the exhaust gas oxygen content measured during the performance test.

   Response: The conditions regarding operating each engine within 0.5% of the exhaust gas oxygen has been added as follows:

   <u>Operating Requirements (Emission Unit ID Nos. 004-009)</u>: The permittee shall set the air-to-fuel ratio for each engine based on the most recent emissions tests <u>or each engine shall be operated within 0.5 percent of the oxygen content in the exhaust gas at the air-to-fuel ratio operated at during the most recent performance test</u> demonstrating compliance with the standards specified in this permit and other operating conditions. [Rule 62-212.400(BACT), F.A.C. and Appendix F of Construction Permit Application; Construction Permit No. 0310358-004-AC/PSD-FL-374]

   <u>Operating Requirements (Emission Unit ID Nos. 012-015)</u>: The permittee shall set the air-to-fuel ratio for each engine based on the most recent emissions tests <u>or each engine shall be operated within 0.5 percent of the oxygen content in the exhaust gas at the air-to-fuel ratio operated at during the most recent performance test</u> demonstrating compliance with the standards specified in this permit and other operating conditions identified in NSPS 40 CFR 60, Subpart JJJJ. [Rule 62-212.400(BACT), F.A.C., NSPS Subpart JJJJ in 40 CFR 60 and Appendix F of Construction Permit Application; Construction Permit No. 0310358-004-AC/PSD-FL-374]

7. *Comment*: The references to diesel and biodiesel fuels should be deleted from Condition E.13.

Response: The references to diesel/biodiesel have been removed.

8. *Comment*: In condition E.14. only specify the most stringent VOC emission limit, 0.28 g/bhp-hr.

   Response: The condition has been revised as follows:

   Volatile Organic Compounds (VOC): The emission rate of total VOC from each engine/generator set exhaust shall not exceed ~~1.0 g/bhp-hour~~ 0.28 g/bhp-hr and a maximum of 1.4 lb/hr. *{Permitting Note: 1.0 g/bhp-hour limit is the NSPS Subpart JJJJ standard for Emission Unit ID Nos. 012-015, however the "g/bhp-hour" and "lb/hour" limits allow the project to avoid PSD preconstruction review for VOC emissions.}* [NESHAP Subparts A and JJJJ in 40 CFR 63 and Rules 62-204.800 and 62-212.400(12), F.A.C.]

9. *Comment*: Please modify Condition E.15. for consistency with the annual chlorine sampling requirement.

   Response: The sampling of the chlorine content is to be done semiannually while the reporting of HCl emissions is to be done annually. The HCl emissions limit are close to the hazardous air pollutant (HAP) threshold, therefore the conditions were clarified to be consistent with the requirement for a 12-month rolling total.

10. *Comment*: Remove Condition E.18.b requiring the use of fuel with at least 90% LFG.

    Response: Condition E.18.b has been changed as the fuel will be 100% LFG:

    ~~Upon completing startup, each engine shall operate with a LFG fraction at 90% or greater; and~~

11. *Comment*: Trial Ridge Energy requests that VOC testing be removed from Condition 14 or that Condition 14 include the option to use USEPA alternate method 78 (ALT-078) for the direct measurement of VOC emissions from internal combustion engine exhausts.

    Response: The alternative method, USEPA-ALT-078, is acceptable and has been added to the condition.

12. *Comment*: Condition E.24. specifies ASTM Method D3588 or equivalent for measuring LFG Lower Heating Value (LHV). Please remove this condition referencing LHV and ASTM Method D3588.

    Response: The requirement to determine lower heating value has been removed.

13. For condition E.26., add the option to record operating information and emission calculations electronically.

    Response: This condition has been changed as follows:

    Monthly Records: Within ten calendar days following each month, the permittee shall observe and record the following information in a written log or electronic format accessible to a compliance inspector:

The Department

The Department made corrections to clerical errors and the following changes.

1. *Comment*: Recording the HCl and SO_2 emissions has been made consistent for 12 months, rolling total, as these pollutants are PSD pollutants. Also, condition 25 in Section 3.E. has been clarified as follows:

   Monthly Records: Within ten calendar days following each month, the permittee shall observe and record the following information in a written log or electronic format accessible to a compliance inspector: number of hours of operation of each engine; total monthly landfill gas flow rate to all engines combined; and HCl and SO_2 emissions for the month and previous 12 months, rolling total. Emissions of HCl and SO_2 shall be calculated from the monthly fuel consumption as well as the analytical results for the chlorine and sulfur contents of the landfill gas representative of the given month of operation based on the semiannual sampling for that period. [Rule 62-210.200 (232), F.A.C.]

CONCLUSION

The final action of the Department is to issue the permit with the minor changes, corrections and clarifications as described above.