

STATEMENT OF BASIS
Air Pollution Control
Title V Permit to Operate
Permit No.: V-PI-2704900084-2012-10

The purpose of this document is to set forth the legal and factual basis for permit conditions, including references to applicable provisions of the Clean Air Act (CAA or Act) and implementing regulations. This document also gives the derivation of conditions as required by 40 C.F.R. § 71.11(b).

1.0 GENERAL INFORMATION

(A). Applicant and Stationary Source Information

Owner	Facility (SIC Code: 4911)
NRG Backup Generation Services 17685 Juniper Path, Suite 301 Lakeville, Minnesota 55044	Treasure Island Resort & Casino 5734 Sturgeon Lake Road Red Wing, Minnesota 55066

Responsible Official	Facility Contact
Phil Kairis (651) 341-2244	Vern Hollar (651) 341-2242

(B). Facility Description

Treasure Island Resort & Casino (the facility) is a hotel and gambling casino located on the banks of the Mississippi River on the Prairie Island Indian Community in Red Wing, Minnesota.

The U. S. Environmental Protection Agency issued an Air Quality Construction Permit (No. PSD-PI-R50003-00-01) to the facility on December 20, 2000, that allowed the construction of four internal combustion diesel engines and subjected the facility to the requirements of 40 C.F.R. Part 71. An initial Title V Permit to Operate was issued to the facility on February 23, 2004.

The facility commenced construction on the diesel engines on January 15, 2001. Energy Alternatives, Inc. owns and operates the engines which are installed northeast of the Treasure Island Resort & Casino at the Prairie Island Community Wastewater Treatment Facility. The engines produce electricity used for peak load management and backup power for the facility. The total generation capacity of the engines is 7.3 megawatts. Electricity generated at the facility is not sold for distribution.

NRG Energy, Inc. Purchased Energy Alternatives, Inc. As a result, EPA has replaced Energy Alternatives, Inc., with NRG Backup Generation Services throughout the Title V permit and this statement of basis. As of September 20, 2012, NRG Backup Generation Services is the owner and operator of the engines.

(C). Area Classification

The Prairie Island Indian Community is located in Goodhue County, an area considered to be attaining the national ambient air quality standards for all criteria pollutants. Since the facility is located in Indian Country, the EPA is primarily responsible for issuing and enforcing any air quality permits for the source until such time that the tribe has EPA approval to do so.

(D). Major Source Status

The potential to emit criteria pollutants from all units at the facility (EU-01, EU-02, EU-03, and EU-04) exceeds 100 tons per year for nitrogen oxides (NOx). Therefore, the facility must obtain a Title V permit.

(E). Enforcement Issues

The EPA is not aware of any pending enforcement issues at the facility.

(F). Permit History

On December 20, 2000, the EPA issued a PSD permit for the installation of four internal combustion engines.

On February 23, 2004, the EPA issued an initial Title V permit for the operation of four internal combustion engines.

2.0 PROCESS DESCRIPTION

(A). Summary

The four engines installed at the facility are 16-cylinder Caterpillar Model 3516B turbocharged engines. Each engine operates at a rated speed of 1,800 revolutions per minute and produces shaft power of 2,563 brake horsepower. Each engine burns approximately 130.2 gallons of diesel fuel per hour when operated at capacity. The shaft power of each engine drives a 1,825 kilowatt generator to produce electricity.

Unit	Fuel Type	Emission Unit ID	Manufacturer/ Unit type	Date Installed	Maximum Design Heat Input (MMBtu/hr)
Internal Combustion Engine	Diesel	EU-01	Caterpillar 3516B	05/25/01	16.76
Internal Combustion Engine	Diesel	EU-02	Caterpillar 3516B	05/25/01	16.76
Internal Combustion Engine	Diesel	EU-03	Caterpillar 3516B	05/25/01	16.76
Internal Combustion Engine	Diesel	EU-04	Caterpillar 3516B	05/25/01	16.76

A 10,000-gallon underground diesel fuel tank is located adjacent to the building and is subject to underground storage tank regulations under the Resource Conservation and Recovery Act.

(B). Insignificant Activities

Unit/Activity	Basis
Crankcase blowby that vents organic compounds from the oil pan into the engine room	40 CFR 71.5(c)(11)(ii)(A)
Access road	40 CFR 71.5(c)(11)(ii)(A)

(C). Potential Emissions

Potential to Emit (PTE) Summary ^{a,b} Tons Per Year (tpy)							
Emission Unit	VOC ^c	NOx ^d	CO ^d	PM ^d	PM10 ^{c,d}	SO ₂ ^d	Total HAPs ^c
EU-01	5.08	163.99	13.36	3.81	3.13	3.99	0.11
EU-02	5.08	163.99	13.36	3.81	3.13	3.99	0.11
EU-03	5.08	163.99	13.36	3.81	3.13	3.99	0.11
EU-04	5.08	163.99	13.36	3.81	3.13	3.99	0.11
Total PTE	20.32	655.96	53.44	15.24	12.52	15.96	0.44

^a Calculations are based on 100 percent load and 8760 hours of operation per year.

^b tons per year = emission factor (lb/hr) * 8760 hr/year * (1 ton/2000 lbs)

^c Calculations are based on emission factors from EPA AP-42, Chapter 3.3 for large stationary diesel engines, dated 10/96.

^d Equipment-specific emission factors for a Caterpillar 3516B dry engine manifold from Ziegler were used in place of AP-42 default emission factors.

(D). Projected Emissions

Projected Emission Summary [*]							
Emission Unit	VOC tpy	NOx tpy	CO tpy	PM tpy	PM10 tpy	SO ₂ tpy	Total HAPs tpy
EU-01	0.32	10.30	0.84	0.24	0.20	0.25	0.01
EU-02	0.32	10.30	0.84	0.24	0.20	0.25	0.01
EU-03	0.32	10.30	0.84	0.24	0.20	0.25	0.01
EU-04	0.32	10.30	0.84	0.24	0.20	0.25	0.01
Total Projected Emissions	1.28	41.20	3.36	0.96	0.80	1.00	0.04

* Emission estimates are based on 550 hours of operation per year.

(E). Hazardous Air Pollutants Summary

Hazardous Air Pollutants Summary (per engine)				
HAP	Emission Factor lb/MMBtu	PTE ^a lbs/hr	PTE ^b tpy	Projected Emissions ^c tpy
Benzene	7.76 E-04	0.0130	0.0569	0.00357
Toluene	2.81 E-04	0.00470	0.0206	0.00129
Xylenes	1.93 E-04	0.00323	0.0141	0.000888
Formaldehyde	7.89 E-05	0.00132	0.00578	0.000363
Acetaldehyde	2.52 E-05	0.000422	0.00185	0.000116
Naphthalene	1.30 E-04	0.00217	0.00953	0.000598
Acrolein	7.88 E-06	0.000132	0.000578	0.0000363
Total HAPs		0.0250	0.109	0.007

^a lbs/hr = (130 gal/hr)*(71 lb/gal) * (18,390 BTU/lb) * (10⁻⁶ MMBtu)* Emission Factor

^b tpy = (lb/hr)*(8760 hr/yr) * (1 ton/2000 lbs)

^c Projected emission estimates are based on 550 hours of operation per year in accordance with Permit Condition 2.0(A)(2).

(F). Emission Factors

Emission Factors							
Emission Unit(s)	VOC ^{a,b} lb/MMBtu	NOx ^a lb/hr	CO ^a lb/hr	PM ^a lb/hr	PM10 ^c lb/hr	SO ₂ ^d lb/hr	HAPs ^{e,f} lb/hr
EU-01 through EU-04	1.16	37.44	3.05	0.87	0.715	0.911	0.0250

^a Emission factors were provided by Ziegler for a Caterpillar 3561B dry engine manifold, as stated in the permit application, and are based on 100 percent load.

^b VOC measured as hydrocarbons.

^c PM10 is calculated based on the fraction of PM10 in PM (provided in AP-42, Table 3.4-2) multiplied by the emission factor for PM provided by the engine manufacturer.

3.0 APPLICABLE REGULATIONS

(A). Title V Permitting

In accordance with 40 C.F.R. § 71.3(a)(1), all major stationary sources are required to obtain a Title V operating permit. "Major source" is defined in 40 C.F.R. § 71.2 as any stationary source belonging to a single major industrial grouping that directly emits or has the potential to emit 100 tons per year or more of any criteria pollutant. Since this facility has the potential to emit more than 100 tons per year of NOx, it is considered a major stationary source and therefore subject to Title V.

(B). Prevention of Significant Deterioration (PSD)

The EPA issued a PSD permit (permit number PSD-PI-R50003-00-01) allowing the facility to install four internal combustion engines on December 20, 2000.

PSD permit modification number PSD-PI-2704900084-2012-02 modifies PSD permit number PSD-PI-R50003-00-01 by reducing the required frequency of Periodic Performance Testing for NOx emission from three years to five years. In accordance with 40 C.F.R. § 71.6(a)(1), the applicable PSD permit limitations were included in this permit.

(C). 40 C.F.R. Part 63, Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)

In accordance with 40 C.F.R. § 63.6585, a source is subject to the RICE MACT if it operates a stationary reciprocating internal combustion engine (RICE) at an area source of hazardous air pollutant (HAP) emissions. The facility is an area source for HAP emissions because it emits less than 10 tpy of any single HAP and emits less than 25 tpy of total HAPs. For the purpose of this subpart, each of the four RICE are existing, non-

emergency, non-black start, compression ignition RICE as defined in 40 C.F.R. §§ 63.6590 and 63.6675.

The following provisions from 40 C.F.R. Part 63, Subpart ZZZZ have been referenced as the underlying requirement in several conditions within the permit:

- 40 C.F.R. § 63.6585 applies because each of the engines operated by the source are stationary RICE at an area source of HAP emissions.
- 40 C.F.R. § 63.6590 applies because the affected source is defined as any existing stationary RICE located at an area source of HAP emissions. Specifically, section 63.6590(a)(1)(iii) establishes that each engine is an existing stationary RICE because the engines were constructed before June 12, 2006.
- 40 C.F.R. § 63.6595(a)(1) applies because the source is affected by Subpart ZZZZ and operates an existing stationary compression ignition (CI) RICE at an area source of HAP emissions.
- 40 C.F.R. § 63.6603 applies because the source operates an existing stationary RICE at an area source of HAP emissions. Specifically, this provision directs the source to comply with Table 2d to 40 C.F.R. Part 63, Subpart ZZZZ.
- Entry 3 of Table 2d to 40 C.F.R. Part 63, Subpart ZZZZ applies because each engine is an existing engine located at an area source of HAP emissions and each engine is a non-emergency, non-black start CI stationary RICE greater than 500 HP.
- 40 C.F.R. § 63.6604 applies because each engine is an existing non-emergency, non-black start, diesel-fired CI stationary RICE with a site rating of more than 300 brake HP and displaces more than 30 liters per cylinder.
- 40 C.F.R. § 63.6605 applies because the source is subject to 40 C.F.R. Part 63, Subpart ZZZZ.
- 40 C.F.R. § 63.6612(a) applies because the source operates existing stationary RICE at an area source of HAP emissions.
- 40 C.F.R. § 63.6615 applies because the source must comply with carbon monoxide (CO) emission or operating limitations per 40 C.F.R. § 63.6603. Specifically, this provision references Table 3 to 40 C.F.R. Part 63, Subpart ZZZZ.
- Entry 4 of Table 3 to 40 C.F.R. Part 63, Subpart ZZZZ applies because the source operates existing, non-emergency, non-black start CI stationary RICE rated at more than 500 brake horsepower. Each engine is not a limited use stationary RICE.

- 40 C.F.R. § 63.6620(a) applies because each engine must conduct performance tests per 40 C.F.R. §§ 63.6612 and 63.6615. Specifically, this provision references Table 4 to 40 C.F.R. Part 63, Subpart ZZZZ.
- Entries 1 and 3 of Table 4 to 40 C.F.R. Part 63, Subpart ZZZZ apply to the source because the source operates stationary CI RICE and the source has the option to either limit the concentration of CO emissions in the exhaust or reduce CO emissions.
- Entries 3 and 4 of Table 5 to 40 C.F.R. Part 63, Subpart ZZZZ apply because the source operates existing, non-emergency stationary RICE at an area source of HAPs and must comply with either reducing CO emissions or limiting CO concentration in the exhaust.
- 40 C.F.R. § 63.6625(h) applies because the source operates existing stationary engines.
- 40 C.F.R. § 63.6630(a) applies because the source is subject to conditions in Table 5 of Subpart ZZZZ.
- 40 C.F.R. § 63.6640 applies because the source is subject to CO emission or operating limitations per 40 C.F.R. § 63.6603.
- 40 C.F.R. § 63.6645 applies because the source operates an existing stationary RICE at an area source of HAP emissions.
- 40 C.F.R. § 63.6650(a) applies because the source operates existing, non-emergency, non-black start stationary CI RICE of more than 300 HP at an area source of HAP and is subject to a condition in Table 7 of 40 C.F.R. Part 63, Subpart ZZZZ.
- Entry 1 of Table 7 to 40 C.F.R. Part 63, Subpart ZZZZ applies because the source operates existing, non-emergency, non-black start stationary CI RICE of more than 300 HP at an area source of HAP.
- 40 C.F.R. § 63.6655 applies because the source must comply with emission and operating limitations.
- 40 C.F.R. § 63.6660 applies because the source must maintain any records for expeditious review per 40 C.F.R. § 63.10(b) (1).
- 40 C.F.R. § 63.6675 applies because it contains definitions of specific terms used in Subpart ZZZZ.