TECHNICAL SUPPORT DOCUMENT (TSD)

I. GENERAL COMMENTS:

NRG Energy Center Tucson LLC (Community Center) provides combined heat and power and district energy to several buildings within downtown Tucson, Arizona.

A. Company Information

1. Source Name: NRG Energy Center Tucson, LLC (NRG)
2. Source Address: 260 S. Church Ave, Tucson Arizona 85701
3. Mailing Address: (Same as source address)

B. Background

The source have been operating under air pollution/operating permit since January 1977.

On May 10, 2006, PDEQ received a Class II, Individual permit application. The affected sources at the facility to which the air quality operating permit applies are identified in the following sections of the permit:

Section A National Emissions Standards for Hazardous Air Pollutants (NESHAP) Stationary Reciprocating Internal Combustion Engines (RICE) (40 CFR Part 63 Subpart ZZZZ)

Section B New and Existing Stationary Source Performance Standards for Fossil-Fuel Fired Industrial and Commercial Equipment.

Section C General Facility-Wide Specific Standards

Historical records indicate that TDE does not currently have any air quality violations. Past compliance evaluations worth noting are presented in III.A of this TSD.

C. Attainment Classification

NRG is located within an area that is in attainment for all pollutants.

II. SOURCE DESCRIPTION

The physical plant and associated facilities currently have five natural gas boilers/hot water heaters and one continuous operating generator. The plant supplies hot and chilled water to police and fire headquarters, and the City of Tucson Convention Center complex (including the Music Hall and Leo Rich Theater).

III. REGULATORY HISTORY

A. Testing and Inspections

The most recent full compliance evaluation was conducted at the facility on June 6, 2011. Upon review of the inspection results and compliance history for this source, PDEQ management determined that NRG was in substantial compliance with regulatory requirements.

There have been no complaints or reports of permit deviations since the last compliance evaluation.

B. Excess Emissions

None.

IV. EMISSIONS ESTIMATES

The following emission rates are for reference purposes only and are not intended to be enforced by direct measurement unless otherwise noted in the Specific Conditions of the permit.

Pollutant	Potential Emissions (Tons per Year)
Nitrogen Oxides (NO_X)	30.43
Carbon Monoxide (CO)	6.78
Volatile Organic Compounds (VOC)	0.58
Particulate Matter (as PM_{10})	0.53
Sulfur Oxides (SO_X)	0.04
Hazardous Air Pollutants (HAPs – total)	0.20

The following methods have been used to determine the referenced potential combustion emissions:

Boilers

All regulated emissions determined using EPA AP-42 Emission Factors (Table 3.2-2)

Generator

NO_X	Propriety information (presented on Page 2 of the General Electric technical specification document).
CO	Manufacturer technical information and the catalyst efficiency test report dated March 2014.
VOC	EPA AP-42 Emission Factors (Table 3.2-2)
PM_{10}	EPA AP-42 Emission Factors (Table 3.2-2)
SO_X	EPA AP-42 Emission Factors (Table 3.2-2)
HAP	EPA AP-42 Emission Factors (Table 3.2-2)

V. APPLICABLE REQUIREMENTS

Code of Federal Regulations (CFR):

40 CFR Part 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants (NESHAP) Stationary Reciprocating Internal Combustion Engines.

Pima County Code (PCC)

This is not meant to be an exhaustive list of every regulation to which the Permittee is subject, but represents those cited in the permit. It is the responsibility of the Permittee to comply with all applicable regulations.

PCC 17.16.040 Visible Emission Standards – Standards and Applicability (includes NESHAP).
PCC 17.16.165 Standards of Performance for Fossil Fuel Fired Industrial and Commercial Equipment.
PCC 17.16.340 Standards of Performance for Stationary Rotating Machinery.
PCC 17.20.010 Emission Source Testing and Monitoring.

VI. PERMIT CONTENTS

Section A – Specific Conditions for NESHAP Stationary Reciprocating Internal Combustion Engines (RICE).

Standard	Discussion	Authority
I.	Applicability – This rule became effective on October 19, 2013, and includes requirements to regulate emissions from new and reconstructed stationary reciprocating internal combustion engines (RICE) at area sources. Owners/operators have several options to demonstrate compliance with the final rule. For the most part, owners/operators will purchase an engine certified for stationary use by the manufacturer. The final rule requires owners/operators of certified engines to follow emission-related maintenance of the engine according to the manufacturer's instructions. If a non-certified engine is purchased, then the owners or operators will be required to develop and follow a maintenance plan and perform emission testing to demonstrate compliance.	40 CFR 63.6590(a)(1)(iii)
II.	Compliance Dates – Additional time has been provided for owners, operators and manufacturers to comply with the final rule.	40 CFR 63.6595(a)(1)
III.	Emission Limitations and Standards – The numerical emission standards for each applicable existing stationary RICE, is identified within this Section B. The permit is structured so it follows the numerical subsections of the Subpart ZZZZ. This allows for a methodical approach to determine the applicable regulations.	40 CFR 63.6603
III.A.	Compliance Determination – Identification of the compliance procedures for applicable RICE engines. The reference section IV.C and IV.A of the permit correspond to the applicable requirements in 40 CFR 66.6620 and Table 4 of the Subpart ZZZZ.	40 CFR 63.6603, and 40 CFR 63.6620
III.B.	Applicable Compliance Requirements – Each applicable emission unit has been found to be subject to a carbon monoxide limitation.	40 CFR 63.6603(a) and 40 CFR Subpart ZZZZ, Table 2d

Section A – Continued

Standard	Discussion	Authority
III.C.	Carbon Monoxide (CO) Limitation – Applicable CO limitation as referenced to regulate HAP emissions. The HAP which have been measured in emission tests conducted on SI stationary RICE include: formaldehyde, acetaldehyde, acrolein, methanol, benzene, toluene, 1,3-butadiene, 2,2,4-trimethylpentane, hexane, xylene, naphthalene, PAH, methylene chloride, and ethylbenzene. EPA has demonstrated that the concentration of CO can be used as a surrogate for determining the HAP for stationary RICE. In addition to reducing HAP, the emission control technologies that will be installed on stationary RICE to reduce HAP will also reduce CO and VOC.	40 CFR Subpart ZZZZ: Table 5, 13.a.i & Table 6, 14 and 40 CFR Subpart ZZZZ: Table 6, 14.a.i & Table 5, 13.a.i.
III.D.	Hazardous Air Pollutant (HAP) Limitation The Permittee shall install an oxidation catalyst to reduce HAP emissions from the stationary RICE.	40 CFR Subpart ZZZZ: Table 2d, 9, Table 6, 14 & Table 5, 13
III.E	During Periods of Startup: Permittee required to minimize engine time spent idle and startup time.	40 CFR 63.6640(a), Table 2d
III.F.	General Requirements – Provided to ensure that the Permittee operates and maintains any applicable unit in a manner consistent with safety and good air pollution control practices for minimizing emissions	40 CFR 63.6605
IV.A.	Testing and Initial Compliance Requirements – This section of the permit requires the Permittee to determine compliance with the CO or formaldehyde emission limitation through direct measurement. Specific testing methods are provided to demonstrate compliance with the established emissions limitations.	40 CFR 63.6612(a), 40 CFR 63.6595, 40 CFR 63.7(a)(2) and 40 CFR Subpart ZZZZ : Table 4 and Table 5
V.A	Continuous Compliance Requirements – This subsection provides the requirements for demonstrating compliance under Subpart ZZZZ. Evaluation of a sources continuing compliance program is essential to both determining that appropriate response to an emission limit violation and in assessing the sources compliance with specific operation and maintenance requirements.	40 CFR 63.6635
V.B.	Monitoring and Collection of Data to Demonstrate Continuous Compliance. - Specific monitoring provisions provided to demonstrate compliance with the established emissions limitations	40 CFR 63.6635
V.C.	Demonstration of Continuous Compliance with the emission limitations and operating limitations – Specific monitoring and testing methods are provided to demonstrate compliance with the established emissions limitations	40 CFR 63.6640

Standard	Discussion	Authority
VI.	Notifications, Reports and Records – This component of Subpart ZZZZ provides specific timeframes for notifications to support the initial compliance demonstration.	40 CFR 60.6645
VII.	Submission of Reports – Most engines affected by Subpart ZZZZ will be subject to reporting requirements i.e. submitting an initial notification, submitting a notification of performance test(s), and submitting a compliance report.	40 CFR 63.6650
VII.A.	A semiannual schedule has been established for the submission of reports under Subpart ZZZZ.	40 CFR 63.6650(a) & (b)
VII.B.	To aid the Compliance Officer to accurately determine compliance of a source; the compliance report submitted by the Permittee shall contain specific information i.e. reporting period and details of malfunctions (if any).	40 CFR 63.6650(c) 40 CFR 63.6650(d) 40 CFR 63.6650(e)
VII.C and D.	A compliance report of deviations for RICE using a continuous monitoring system is required under Subpart ZZZZ to contain calibration data during the reporting period.	40 CFR 63.6650(c)(6) and 40 CFR 63.8(c)(7)
V.II.E.	A semiannual schedule has been established for the submission of deviation reports under Subpart ZZZZ.	40 CFR 6650(f)
VIII.A.	Recordkeeping – This section details the record retention requirements that are required under Subpart ZZZZ. Records of notifications, malfunctions, performance tests and maintenance are specified to be retained. Allowance has been provided to allow records to be kept off-site at a central location.	40 CFR 63.6655
VIII.B.	Specific recordkeeping provisions under Subpart ZZZZ are detailed in this section for each CEMS or CPMS.	40 CFR 6655(b)
VIII.C	Additional recordkeeping requirement to determine whether the Permittee is complying with each emission or operating limitation that applies.	40 CFR 60.6655(d)
VIII.D	Additional recordkeeping requirement to determine whether the Permittee is operating and maintaining the RICE according to the Permittee's own maintenance plan.	40 CFR 6655(e) and 40 CFR 6655(e)(3)
IX.	Structure and Retention of Records – To aid the Compliance Officer to accurately determine compliance of a source; all information (including reports and notifications) are required to be readily available for expeditious review. This requirement is taken directly from Subpart ZZZZ.	40 CFR 6660 and 40 CFR 63.10(b)(1)

Section B – New and Existing Stationary Performance Standards for Fossil-Fuel fired Industrial and Commercial Equipment.

Standard	Discussion	Authority
I.A.	Opacity Standard - By law, the Permittee cannot allow any equipment under his control to emit effluents (such as exhaust from the boiler) that exceed specific values of opacity (the degree to which light cannot pass through the plume of effluent/exhaust.) The value of opacity that cannot be exceeded is stated in the permit for the boiler.	PCC 17.16.040.A
I.B.	Fuel Limitation - Each type of fuel burned in equipment powered by combustion has a unique blend of constituents. When burned, each fuel results in the release of regulated pollutants to the atmosphere at characteristic levels. This permit is written to account for the fuel specified for the boilers (natural gas). Use of fuels other than those specified would result in different rates of pollutant emission. Therefore, the Permittee must only burn the designated fuels identified in the permit to remain in compliance with the conditions of this permit.	PCC 17.12.190.B
II.A	Opacity Monitoring - The Permittee demonstrates compliance with this regulation to PDEQ by checking the exhaust from the boilers under his control quarterly, and keeping complete records of these checks	PCC 17.12.185.A.3
II.B	Fuel Monitoring – The Permittee may demonstrate compliance with the fuel limitation requirement by documenting the specific fuel supplied to the boiler and generator.	PCC 17.12.190.B
III.	Recordkeeping Requirements – Requirement to maintain records that verify compliance with the emission limitations. Records are required to be maintained for five years.	PCC 17.12.185.A.4
IV.	Reporting Requirements – The Permittee is subject to the general reporting requirements in the additional permit conditions section of the permit.	PCC 17.12.185.A.5 PCC 17.12.040
V.	Testing Requirements – The Permittee is provided an avenue to demonstrate compliance with the permit conditions of the permit. NRG may seek approval for the use of alternative test methods to demonstrate compliance with applicable emission limitation standards.	PCC 17.20.010 and PCC 17.12.045.D
VI.	Facility Changes – NRG is provided flexibility to implement material changes and modifications in equipment throughout the permit term. All changes or modifications are required to be accessed against the permit revision conditions established in PCC. When required, the Permittee is required to submit initial notification and/or seek approval to implement changes that may trigger the applicability of additional emission limitations and standards.	PCC 17.12.240, PCC 17.12.255.B or PCC 17.12.260

Section C – Generic Facility-Wide Specific Standards

Standard	Discussion	Authority
I.A.	NRG may make a physical change or change in the method of operation if the conditions identified for a permit revision are met.	PCC 17.16.180.A.2
I.B.	NRG is required to reduce or eliminate the discharge of air pollution to adjoining properties.	PCC 17.16.020.B
I.C.	NRG is required to reduce or eliminate the discharge of air pollution to adjoining properties. Minimizing potential odor emissions form the facility shall be directed by the use of best modern practices including maintenance and taking corrective action as appropriate.	PCC 17.16.030 PCC 17.12.010
II.A. and B.	The record retention requirement is necessary to ensure a full compliance inspection can be fulfilled.	PCC 17.12.180.A.4.b
III.	Self-reporting conditions to ensure all excess emissions are reported.	PCC 17.12.040
IV.	Testing provisions identified within each section of the permit/	PCC 17.20.010

A. Alternate Operating Scenarios:

NRG has not requested any alternate operating scenarios.

B. Miscellaneous Comments:

None.

VII. IMPACTS TO AMBIENT AIR QUALITY

Not a major source so no impact studies are required.

VIII. CONTROL TECHNOLOGY DETERMINATION

No control technologies needed to be determined; source is not subject to BACT or LAER.

IX. PREVIOUS PERMIT CONDITIONS

None.