

**TECHNICAL SUPPORT DOCUMENT
AIR QUALITY PERMIT NO. 53024
GRIFFITH ENERGY, LLC**

I. INTRODUCTION

This Class I (Title V) renewal permit for Griffith Energy, LLC is for the continued operation of the Griffith Energy power plant located at 3375, West Navajo Drive, in Golden Valley, Arizona. This permit renews and supersedes Permit No. 31910.

A. Company Information

Facility Name: Griffith Energy, LLC

Mailing Address: P.O. Box 3519
Kingman, AZ 86402

Facility Address: 3375 W. Navajo Drive
Golden Valley, AZ 86413

B. Attainment Classification

The facility is located in an area which is classified as attainment or unclassified for all criteria pollutants.

C. Learning Sites Evaluation

In accordance with ADEQ's Environmental Permits and Approvals Near Learning Sites Policy, the Department conducted an evaluation to determine if any nearby learning sites would be adversely impacted by the facility. Learning sites consist of all existing public schools, charter schools and private schools the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

There are no learning sites within 2 miles of the facility.

II. BACKGROUND INFORMATION

The facility was issued an initial Title V permit (Number 1000940) on August 31, 1999. The facility was subject to the Prevention of Significant Deterioration (PSD) program and a best available control technology (BACT) analysis was performed at the time of the initial permit. The facility was issued a renewal Title V permit (Permit No. 31910) on February 3, 2006. The facility was issued a minor permit revision (Permit No. 46713) on June 17, 2008 for the addition of an evaporative condenser.

III. FACILITY DESCRIPTION

The Griffith Energy power plant is a 600 megawatt (MW) natural gas fired, combined cycle electric generating facility. The facility consists of two combustion turbine generators (CTGs) operated in conjunction with two heat recovery steam generating units (HRSGs) and one steam turbine. The facility also includes an auxiliary boiler, cooling towers, evaporative condenser and a emergency diesel fire pump. NO_x emissions from the facility are controlled by using low-NO_x burners and selective catalytic reduction (SCR) units for the two CTG/HRSGs, and low-NO_x burners for the auxiliary boiler.

IV. EMISSIONS

The facility burns natural gas in the CTGs, HRSGs and auxiliary boiler, and diesel in the emergency fire pump. Maximum heat inputs and fuel consumption for the plant's major emission sources are presented in Table 1. Facility-wide Potential-to-emit from the facility is presented in Table 2. The facility is a major source for criteria pollutants and an area source for federal hazardous air pollutants.

Table 1: Maximum Heat Input and Fuel Consumption*

	Heat Input MMBtu/hr	Heat Input MMBtu/yr	Natural Gas Usage MMscf/hr	Natural Gas Usage MMscf/yr
2 CTGs	3,318	2.91E+07	3.26	28,496
2 HRSGs with Supplemental Duct Firing	1,152	1.01E+07	1.12	9,894
Auxiliary Boiler	43.5	3.81E+05	0.043	374
Total	4,514	3.96E+07	4.42	38,764

*Natural gas heating value assumed to be 1020 Btu/scf.

Table 2: Facility-Wide Potential to Emit (PTE)

Pollutants	Total
	Tons/year
PM ₁₀	282
PM _{2.5}	282
NO _x	268
CO	872
SO ₂	50
VOC	311
Total HAPs	8.6

Table 3: Facility-Wide Greenhouse Gas Emissions

Emission Unit	Total Greenhouse Gas Emissions
	(CO ₂ equivalent Metric Tons)
CTG/HRSG1	1,039,075
CTG/HRSG2	1,039,075
Aux. Boiler	20,224

Diesel Fire Pump	24
TOTAL	2,098,398

V. COMPLIANCE HISTORY

There have been 37 air quality inspections (26 file reviews and 11 facility inspections) associated with this facility since 2006. No air quality cases or violations have been developed for this facility as a result of the inspections.

VI. APPLICABLE REGULATIONS

Following table identifies the applicable regulations for the facility.

Table 4: Applicable Regulations Verification

Unit	Control Device	Rule	Verification
Combustion Turbine Generators	Low-NO _x burners and SCR	40 CFR 60 Subpart GG	<p>The gas turbines were constructed after October 3, 1977, and are, therefore, subject to New Source Performance Standard (NSPS) Subpart GG.</p> <p>NSPS Subpart KKKK is applicable to stationary combustion turbines that commenced construction, modification or reconstruction after February 18, 2005. These stationary combustion turbines were constructed prior to this date and, hence, are not subject to NSPS Subpart KKKK.</p> <p>National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart YYYYY is applicable to stationary combustion turbines located at major sources of HAPs. Since the facility is not a major source of HAPs, this subpart is not applicable.</p>
Heat Recovery Steam Generators (HRSGs) supplementary firing duct burners	N/A	40 CFR 60 Subpart Da	<p>This subpart is applicable to electric utility steam generating units capable of combusting more than 250 MMBtu/hr heat input of fossil fuel, and commenced construction after September 18, 1978.</p>
Auxiliary Boiler	Natural gas Low NO _x burner	40 CFR 60 Subpart Dc	<p>NSPS 40 CFR 60 Subpart Dc is applicable to boilers between 10 and 100 MMBtu/hour. As the boiler is natural gas-fired, only recordkeeping and reporting requirements under subpart Dc are applicable.</p> <p>NESHAP 40 CFR 63 Subpart JJJJJ requirements are not applicable to gas-fired boilers</p>

Unit	Control Device	Rule	Verification
Cooling Tower and Evaporative Condenser	High Efficiency Drift Eliminator	A.A.C.R18-2-730	Cooling towers are regulated under the Standards of Performance for Unclassified Sources, A.A.C.R18-2-730.
Emergency Fire pump		A.A.C. R18-2-719 40 CFR 63 Subpart ZZZZ	A.A.C. R18-2-719 is applicable to existing stationary rotating machinery. NSPS Subpart IIII is applicable to stationary engines manufactured after 2005. The engine was constructed prior to this date, and hence, is not subject to NSPS Subpart IIII. NESHAP 40 CFR 63 Subpart ZZZZ is applicable to reciprocating internal combustion engines located at major and area sources of HAPs
Fugitive dust sources	Water and other reasonable precautions.	A.A.C. R-18-2, Article 6 A.A.C. R18-2-702	These standards are applicable to all fugitive dust sources at the facility.
Mobile sources	Water Sprays/Water Truck for dust control	A.A.C. R-18-2, Article 8	These standards are applicable to off-road mobile sources, which either move while emitting air pollutants or are frequently moved during the course of their utilization.
Abrasive Blasting	Wet blasting, Dust collecting equipment or other approved methods	A.A.C. R-18-2-726	This standard is applicable to any abrasive blasting operation at the facility.
Spray Painting	N/A	A.A.C. R-18-2-727	This standard is applicable to any spray painting operation at the facility.
Demolition or Renovation Operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

VII. PREVIOUS PERMITS AND PERMIT CONDITIONS

A. PREVIOUS PERMITS

PERMIT NUMBER	DATE PERMIT ISSUED	DESCRIPTION
31910	February 3, 2006	Title V Renewal permit
46713	June 17, 2008	Minor Permit Revision

B. PREVIOUS PERMIT CONDITIONS

Following table compares the conditions in Permit No. 31910 with the conditions in this renewal permit.

Condition # in Permit No. 31910	Determination				Comments
	Deleted	Kept	Revised	Streamlined	
Attachment "A"			x		This Attachment has been revised and the most recent Attachment "A" is used for this permit.
Attachment "B"					
Section I		x			The facility-wide requirements for an EPA Method 9 certified observer, and submittal of compliance certifications are retained.
Condition II.A			x		The opacity standards under 40 CFR 60 Subpart Da are applicable to HRSG duct burners only, and are moved to a separate Section for duct burner (Section III).
Conditions II.B.1.a and b				x	The PSD particulate matter emission standards are retained. The particulate matter emission standards under Arizona SIP R9-3-503 are deleted as the PSD standards are more stringent.
Condition II.B.2			x		The opacity monitoring requirements under 40 CFR 60 Subpart Da are applicable to HRSG duct burners only, and are moved to a separate Section for duct burner (Section III).
Condition II.B.3		x			Particulate matter testing requirement for CGTs is retained.
Condition II.C.1			x		The NO _x emission standards are revised to include the standards for CGTs under 40 CFR 60 Subpart GG.
Condition II.C.2		x			The NO _x air pollution control requirement for CGTs is retained.
Condition II.C.3			x		The monitoring, recordkeeping and reporting requirements for NO _x are revised to include the requirements under 40 CFR 60 Subpart GG.

Condition # in Permit No. 31910	Determination				Comments
	Deleted	Kept	Revised	Streamlined	
Condition II.D		x			The CO emission standards and monitoring, reporting & recordkeeping requirements for CGTs are retained.
Condition II.E			x		The SO ₂ emission standards and monitoring, reporting & recordkeeping requirements are revised to include the requirements under 40 CFR 60 Subpart GG.
Condition II.F		x			The VOC requirements for CGTs are retained.
Condition II.G		x			The fuel limitation requirement for CGTs is retained.
Condition III.A		x			The particulate matter and opacity requirements for auxiliary boiler are retained.
Condition III.B				x	The NO _x emission standards under Arizona SIP R9-3-503 are deleted as the PSD standards are more stringent. All other requirements for NO _x are retained.
Condition III.C		x			The requirements for CO for auxiliary boiler are retained.
Condition III.D		x			The requirements for SO ₂ for auxiliary boiler are retained.
Condition III.E		x			The requirements for VOCs for auxiliary boiler are retained.
Condition III.F		x			The fuel limitations for auxiliary boiler are retained.
Section IV and Section VIII		x			The requirements for cooling towers and evaporative condenser are retained, and are now located under Section VI of Permit No. 53024.
Section V	x				Requirements for various chemical storage tanks are deleted as these activities do not emit any VOCs or HAPs, and are considered insignificant activities.

Condition # in Permit No. 31910	Determination				Comments
	Deleted	Kept	Revised	Streamlined	
Section VI		x			This Section for fugitive dust requirements is replaced with the most recent version of the language currently used in ADEQ permits.
Section VII		x			This Section for other periodic activities requirements is replaced with the most recent version of the language currently by used in the ADEQ permits.

VIII. MONITORING, RECORDKEEPING & REPORTING REQUIREMENTS

A. Combustion Turbine Generators Units 1 and Units 2

1. NO_x

The Permittee is required to monitor nitrogen oxide emissions using continuous emission monitoring system (CEMS).

For the purpose of PSD emission limits, the Permittee is required to report any exceedance based on 3-hour average emissions.

For the purpose of 40 CFR 60 Subpart GG emission limitations, the Permittee is required report any exceedance based on 4-hour rolling average NO_x concentration.

2. Carbon Monoxide

The Permittee is required to monitor CO emissions using CEMS.

3. Fuel

The Permittee is required to maintain records of tariff agreement containing the sulfur content and lower heating value of natural gas.

B. Duct Burner

40 CFR 60 Subpart Da is applicable to HRSGs with supplemental duct burners above 250 MMBtu per hour.

1. Opacity

The Permittee is required to conduct initial and subsequent performance tests to demonstrate compliance with the opacity standards for duct burners using EPA Reference Method 9, or, alternately using EPA Reference Method 22 as provided in 40 CFR 60.49Da(a)(3).

2. NO_x

The Permittee is required to demonstrate compliance with NO_x emission standard on a rolling 30-day average basis using NO_x CEMS and as provided in 40 CFR 60.49Da(k)(2).

C. Auxiliary Boiler

1. Opacity

The Permittee is required to conduct a quarterly survey of visible emissions from the stack of auxiliary boiler, when in operation, using EPA Reference Method 9. The Permittee must keep records of the observations, and corrective action taken, if any.

2. Fuel

The Permittee is required to maintain records of tariff agreement containing the sulfur content and lower heating value of natural gas. The Permittee is also required to maintain a record of monthly natural delivered to the auxiliary boiler.

D. Fire Pump engine

1. The Permittee is required to conduct a monthly survey of visible emissions from the stack of the fire pump engine, when in operation.

2. The Permittee is required to record the hours of operation of the engine recorded through the non-resettable hour meter. The Permittee must document the hours for emergency and non-emergency operation.

E. Cooling Towers/Evaporative Condenser

1. The Permittee is required to conduct annual drift eliminator inspections and monitor monthly the delta T (difference between inflow temperature and outflow temperature) of the cooling tower during normal operations. If delta T is less than or equal to 6 degrees, then a drift eliminator inspection must be scheduled as soon as practicable.

2. The Permittee is required to maintain records of the monthly analysis of the total dissolved solids (TDS) for the circulating cooling water for each cooling tower and the evaporative condenser.

3. The Permittee is required to perform calculations for particulate matter emissions every month for main cooling tower, chilling cooling tower and the evaporative condenser. The emission calculations must be based on the average cooling water circulation rate for the month, the TDS analysis for that month, and drift rates of 0.0005, 0.003 and 0.002 for the main cooling tower, chilling cooling tower and evaporative condenser respectively. The Permittee must maintain records of these calculations.

VIII. TESTING REQUIREMENTS

A. Combustion Turbine Generators Unit 1 and Unit 2

1. The Permittee is required to conduct a performance test in the first year of the permit term to determine particulate matter emissions using EPA Reference Method 5 or equivalent.

2. The Permittee is required to conduct a performance test in the first year of the permit term to determine the sulfur dioxide emissions using EPA Reference Method 19.
3. The Permittee is required to conduct a performance test in the first year of the permit term to determine the VOC emissions using EPA Reference Method 25A to test for total gaseous organic compounds and EPA Reference Method 18 to measure both the methane and ethane emissions.

B. Duct Burner

The performance tests conducted to demonstrate compliance with the PSD emission limits for particulate matter and sulfur dioxide for the CTGs must be utilized for determining the compliance with particulate matter and sulfur dioxide emission standards for duct burners under 40 CFR 60 Subpart Da.

C. Auxiliary Boiler

1. The Permittee is required to conduct a performance test in the first year of the permit term to determine the particulate matter in accordance with EPA Reference Method 5.
2. The Permittee is required to conduct a performance test in the first year of permit term to determine NO_x in accordance with EPA Reference Method 7E.
3. The Permittee is required to conduct a performance test in the first year of permit term to determine CO in accordance with EPA Reference Method 10.
4. The Permittee is required to conduct a performance test in the first year of permit term to determine the sulfur dioxide concentration using EPA Reference Method 6.
5. The Permittee is required to conduct a performance test in the first year of permit term determine the VOC concentration using EPA Reference Method 25A to test for total gaseous organic compounds.

IX. INSIGNIFICANT ACTIVITIES

The applicant has requested the following activities to be deemed as “insignificant”. According to A.A.C. R18-2-101.57, for an activity to be deemed “insignificant”, there should be no applicable requirement for the activity. This was the basis used to determine if the activities in the following list qualify as an “insignificant” activity under Arizona law.

Table 5-Insignifiacnt Activities

Activity	Insignificant Yes/No	Reason and Applicable Regulation
Landscaping, building maintenance or janitorial activities.	Yes	A.A.C. R18-2-101.57.a
Diesel fuel storage tanks with capacity of 40,000 gallons or less.	Yes	A.A.C. R18-2-101.57.c
Hand-held or manually operated equipment used for buffing, polishing, carving, cutting, drilling,	Yes	A.A.C. R18-2-101.57.f

Activity	Insignificant Yes/No	Reason and Applicable Regulation
machining, routing, sanding, sawing, surface grinding or turning.		
Internal combustion engine-driven compressors, generators and water pumps used only for emergency replacement or standby services.	No	IC engines are subject to A.A.C. R18-2-719, and 40 CFR 63 Subpart ZZZZ
Lab equipment used exclusively for chemical or physical analysis.	Yes	A.A.C. R18-2-101.57.i
Sulfuric acid, sodium hydroxide, sodium hypochlorite, anhydrous ammonia, corrosion inhibitor and coagulant tanks, Soda ash, magnesium oxide, and hydrated lime silos.	Yes	A.A.C. R18-2-101.57.j

IX. COMPLIANCE ASSURANCE MONITORING (CAM) (40 CFR 64)

The CAM rule applies to "pollutant-specific emission units" (PSEU) at a major Title V source if the unit meets all of the following criteria:

1. The unit is subject to an emission limit or standard for the applicable regulated air pollutant;
2. The unit uses a control device to achieve compliance with the emission limit or standard; and
3. The unit has "potential pre-control device emissions" of the applicable regulated air pollutant equal to or greater than 100% of the amount (tons/year) required for a source to be classified as a major source. "Potential pre-control device emissions" means potential to emit (PTE, as defined in Title V) except emissions reductions achieved by the applicable control device are not taken into account.

NO_x, CO, SO₂, PM, and VOC potential to emit for the CTGS is above 100 ton per year. There are no controls installed for controlling CO, PM, VOC, and SO₂. Therefore CAM does not apply for these pollutants. The facility uses add-on-control for NO_x emissions. The permit requires the Permittee to operate a continuous monitoring system (CEMS) for measuring NO_x emissions to demonstrate compliance with the NO_x emission limits. Since the facility uses CEMS to demonstrate compliance with an applicable requirement, the facility is exempt from CAM requirements as per 40 CFR 64.2(b)(vi).

X. LIST OF ABBREVIATIONS

- A.A.C..... Arizona Administrative Code
- ADEQ..... Arizona Department of Environmental Quality
- AQDAir Quality Division
- BACTBest Available Control Technology
- CAM.....Compliance Assurance Monitoring
- CEMS Continuous Emission Monitoring System
- CFRCode of Federal Regulations
- CTG.....Combustion Turbine Generator
- EPAUnited States Environmental Protection Agency
- HAPHazardous Air Pollutant

HRSG	Heat Recovery Steam Generator
MW	Mega-watts
NO _x	Nitrogen Oxide
NOV	Notice of Violation
NESHAPS	National Emission standards for Hazardous Air Pollutants
NSPS	New Source Performance Standards
PM ₁₀	Particulate Matter Nominally less than 10 Micrometers
PM _{2.5}	Particulate Matter Nominally less than 2.5 Micrometers
PSD.....	Prevention of Significant Deterioration
PTE.....	Potential-to-Emit
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
TDS	Total Dissolved Solids
TPY	Tons per Year
VOC.....	Volatile Organic Compound