



**TECHNICAL REVIEW AND EVALUATION  
OF APPLICATION FOR  
AIR QUALITY PERMIT No. 90238**

**I. INTRODUCTION**

This Class I Renewal permit is for the continued operation of Griffith Energy, LLC's power generating plant. Permit No. 90238 renews and supersedes Permit No. 64101.

**A. Company Information**

Facility Name: Griffith Energy, LLC  
Mailing Address: P.O. Box 3519  
Kingman, AZ 86402  
Facility Location: 35° 3' 6.06", -114° 8' 0.27"  
3375 W. Navajo Dr.  
Golden Valley, AZ 86413

**B. Attainment Classification**

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

**II. PROCESS DESCRIPTION**

**A. Process Equipment**

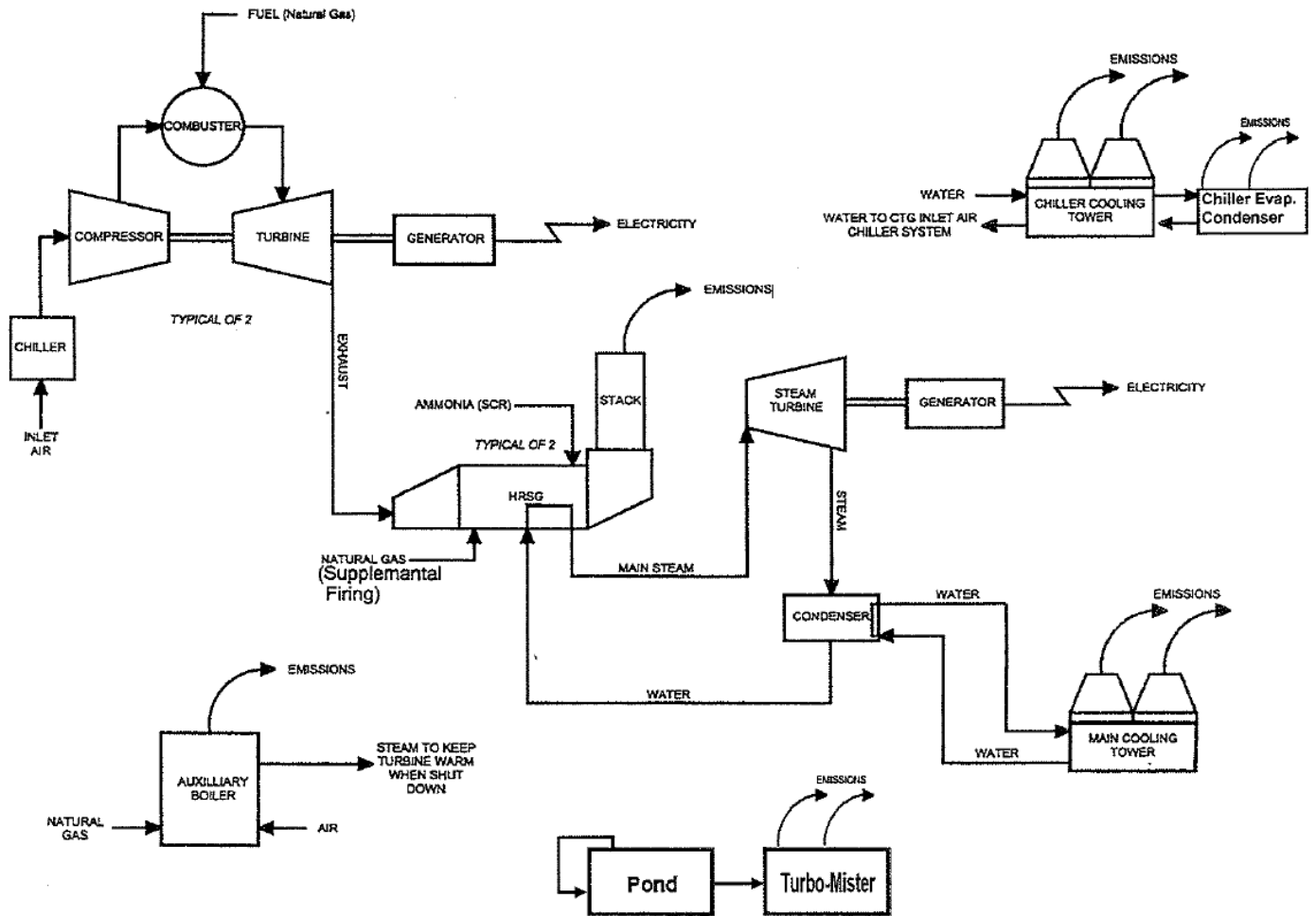
The Griffith Energy power plant is a 600 megawatt (MW) natural gas fired, combined cycle electric generating facility. The facility consists of two combustion turbine generators (CTGs) operated in conjunction with two heat recovery steam generating units (HRSGs) and one steam turbine. The facility also includes an auxiliary boiler, cooling towers, evaporative condenser and an emergency diesel fire pump.

The Facility uses a Turbo-Mister at its evaporation pond to maintain the minimum freeboard required by the facility's aquifer protection permit. The Turbo Mister generates particulate matter, which accounts for about 13 tons per year of total facility wide PM emissions.

**B. Control Devices**

NO<sub>x</sub> emissions from the facility are controlled by using low-NO<sub>x</sub> burners for the auxiliary boiler and selective catalytic reduction (SCR) units for the two CTG/HRSGs.

C. Process Flow Diagram



III. LEARNING SITE EVALUATION

This Class I Renewal Permit will not result in an increase in emissions. Hence, the facility is exempt from the learning sites evaluations.

IV. COMPLIANCE HISTORY

During the permit term Griffith, LLC submitted nine (9) compliance certifications associated with Permit No. 64101 to ADEQ certifying compliance with the permit. The facility submitted twenty-seven (27) monitoring reports. The compliance certifications and monitoring reports resulted in no Notices of Violation (NOV) or Notices of Opportunity to Correct (NOC). There were no air quality cases against the Permittee during Permit No. 64101.

ADEQ inspected the facility four (4) times during the permit term. The inspections resulted in no NOV or NOC.

There was one excess emission report during the permit term from an excess emission on December 31, 2020. The excess emission was the result of incomplete combustion due to a duct burner element being inoperable that led to a CO excess emission of 1 ppm. An operator corrected the excess emission in less than 1 hour, and corrective as well as preventative measures were taken to prevent a reoccurrence of the same issue. The excess emission resulted in no NOV or NOC. There were no permit deviations during the permit term.

The Permittee conducted six (6) performance tests during the permit term. Five of the performance tests were relative accuracy performance tests. The sixth performance test included both relative accuracy and emission compliance performance testing. Table 1 summarizes the results of the relative accuracy performance tests. Table 2 shows the results of the emission compliance performance test. The performance tests resulted in no NOV or NOC.

Table 1: Performance Test Results

Emission Unit	Date of Test	Results of Performance Test	
CTG 1 & 2	August 23, 2021	RATA	pass
CTG 1 & 2	August 27, 2020	RATA	pass
CTG 1 & 2	May 27, 2020	RATA	pass
CTG 1 & 2	June 25, 2019	RATA	pass
CTG 1 & 2	March 26, 2019	RATA	pass
CTG 1 & 2 and Auxiliary	June 20-23, 2017	RATA	pass

Table 2: Emission Compliance Performance Test Report June 20-23, 2017

Unit	Pollutant	Tested emission rate	Permitted emission rate	Pass/Fail
CTG1 with DB	PM	7.5 lb./hr. 0.0031 lb./MMBTU	$\leq 28.2$ lb./hr. or $\leq 0.012$ lb./MMBTU	Pass
	NO <sub>x</sub>	2.9 lb./hr. 23 ppmvd@15%O <sub>2</sub>	$\leq 28.6$ lb./hr. or $\leq 3.0$ ppmvd@15%O <sub>2</sub>	Pass
	CO	2.2 lb./hr. 11 ppmvd@15%O <sub>2</sub>	$\leq 98.5$ lb./hr. or $\leq 20$ ppmvd@15%O <sub>2</sub>	Pass
	SO <sub>2</sub>	0.78 lb./hr. 0.00036 lb./MMBTU	$\leq 5.7$ lb./hr. or $\leq 0.0023$ lb./MMBTU	Pass
	VOC	0 lb./hr. 0.00 lb./MMBTU	$\leq 35.2$ lb./hr. $\leq 0.015$ lb./MMBTU	Pass
	Opacity	0.00%	$\leq 20\%$	Pass
CTG1 without DB	PM	3.0 lb./hr. 0.0019 lb./MMBTU	$\leq 17.8$ lb./hr. or $\leq 0.011$ lb./MMBTU	Pass
	NO <sub>x</sub>	2.7 lb./hr. 15 ppmvd @15%O <sub>2</sub>	$\leq 21.1$ lb./hr. or $\leq 3.0$ ppmvd@15%O <sub>2</sub>	Pass
	CO	1.2 lb./hr. 4.1 ppmvd@15%O <sub>2</sub>	$\leq 29.5$ lb./hr. or $\leq 10$ ppmvd@15%O <sub>2</sub>	Pass

Unit	Pollutant	Tested emission rate	Permitted emission rate	Pass/Fail
CTG1 without DB (con.)	SO <sub>2</sub>	1.5 lb./hr. 0.00094 lb./MMBTU	≤ 4.2 lb./hr. or ≤ 0.0023 lb./MMBTU	Pass
	VOC	0 lb./hr. 0.00 lb./MMBTU	≤ 7.4 lb./hr. ≤ 0.0041 lb./MMBTU	Pass
	Opacity	0.00%	≤ 20%	Pass
CTG2 with DB	PM	1.31 lb./hr. 0.0047 lb./MMBTU	≤ 28.2 lb./hr. or ≤ 0.012 lb./MMBTU	Pass
	NO <sub>x</sub>	2.3 lb./hr. 18 ppmvd@15%O <sub>2</sub>	≤ 28.6 lb./hr. or ≤ 3.0 ppmvd@15%O <sub>2</sub>	Pass
	CO	4.9 lb./hr. 20 ppmvd@15%O <sub>2</sub>	≤ 98.5 lb./hr. or ≤ 20 ppmvd@15%O <sub>2</sub>	Pass
	SO <sub>2</sub>	1.2 lb./hr. 0.00055 lb./MMBTU	≤ 5.7 lb./hr. or ≤ 0.0023 lb./MMBTU	Pass
	VOC	0 lb./hr. 0.00 lb./MMBTU	≤ 35.2 lb./hr. ≤ 0.015 lb./MMBTU	Pass
	Opacity	0.00%	≤ 20%	Pass
CTG2 without DB	PM	1.6 lb./hr. 0.00083 lb./MMBTU	≤ 17.8 lb./hr. or ≤ 0.011 lb./MMBTU	Pass
	NO <sub>x</sub>	2.5 lb./hr. 14 ppmvd @15%O <sub>2</sub>	≤ 21.1 lb./hr. or ≤ 3.0 ppmvd@15%O <sub>2</sub>	Pass
	CO	1.0 lb./hr. 3.5 ppmvd@15%O <sub>2</sub>	≤ 29.5 lb./hr. or ≤ 10 ppmvd@15%O <sub>2</sub>	Pass
	SO <sub>2</sub>	1.1 lb./hr. 0.00074 lb./MMBTU	≤ 4.2 lb./hr. or ≤ 0.0023 lb./MMBTU	Pass
	VOC	0 lb./hr.0.00 lb./MMBTU	≤ 7.4 lb./hr.≤ 0.0041 lb./MMBTU	Pass
	Opacity	0.00%	≤ 20%	Pass
Aux	PM	0.0050 lb./hr. 0.0000018 lb./MMBTU	≤ 0.19 lb./hr. or ≤ 0.0050 lb./MMBTU	Pass
	NO <sub>x</sub>	2.2 lb./hr. 0.067 lb./MMBTU	≤ 3.5 lb./hr. or ≤ 0.092 ppmvd@15%O <sub>2</sub>	Pass
	CO	0.0080 lb./hr. 0.00024 lb./MMBTU	≤ 2.1 lb./hr. or ≤ 0.0024 ppmvd@15%O <sub>2</sub>	Pass
	SO <sub>2</sub>	0.011 lb./hr. 0.00034 lb./MMBTU	≤ 0.09 lb./hr. or ≤ 0.0023 lb./MMBTU	Pass
	VOC	0 lb./hr. 0.00 lb./MMBTU	≤ 0.49 lb./hr. ≤ 0.013 lb./MMBTU	Pass

Unit	Pollutant	Tested emission rate	Permitted emission rate	Pass/Fail
	Opacity	0.00%	≤ 20%	Pass

## V. EMISSIONS

The facility burns natural gas in the CTGs, HRSGs and auxiliary boiler, and diesel in the emergency fire pump. The facility has a potential-to-emit (PTE) more than the major source thresholds of NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO and VOC. The facility's PTE is provided in Table 3 below:

**Table 3: Potential to Emit (tpy)**

Pollutant	Emissions
NO <sub>x</sub>	268.0
PM <sub>10</sub>	264.2
PM <sub>2.5</sub>	263.7
CO	872.5
SO <sub>2</sub>	50.5
VOC	310.7
HAPs	8.6
GHG (CO <sub>2</sub> e)	2,098,501

The emissions for the CTGs and the auxiliary boiler were calculated based on the permitted hourly emission limits. Cooling tower emissions were calculated based on the maximum rating of the cooling towers and measured total dissolved solids (TDS) concentration provided by the Permittee. Emissions for the emergency fire pump engine were calculated based on emission factors from AP-42 Table 3.3-1. Emissions from the pond evaporation system were calculated based on the evaporation rate and the TDS concentration.

## VI. MINOR NEW SOURCE REVIEW (NSR)

Minor new source review was not required for this permitting action since there is no increase in emissions or changes to the method of operations being implemented with this permitting action.

## VII. APPLICABLE REGULATIONS

Table 4 identifies applicable regulations and verification as to why that standard applies. The table also contains a discussion of any regulations the emission unit is exempt from.

**Table 4: Applicable Regulations**

<b>Unit &amp; year</b>	<b>Control Device</b>	<b>Rule</b>	<b>Discussion</b>
Combustion Turbine Generators & 2002	Low-NO <sub>x</sub> 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>These stationary combustion turbines were constructed prior to February 18, 2005 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 & 2002	N/A	40 CFR 60 Subpart Da	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.
Auxiliary Boiler & 2002	Natural gas Low NO <sub>x</sub> 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>
Cooling Tower and Evaporative Condenser & 2002	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.

Unit & year	Control Device	Rule	Discussion
Emergency Fire pump & 1999		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 III is applicable to stationary engines manufactured after 2005. The engine was constructed prior to this date, and hence, is not subject to NSPS Subpart III.  NESHAP 40 CFR 63 Subpart ZZZZ is applicable to reciprocating internal combustion engines located at major and area sources of HAPs.
Turbo-Mister & 2012	N/A	A.A.C. R18-2-702.B A.A.C. R18-2-702.C A.A.C. R18-2-730.D  A.A.C. R18-2-730.G	The opacity standards from A.A.C R18-2-702 applicable to existing stationary point sources.  The standards from A.A.C. R18-2-730 are applicable to unclassified sources.
Fugitive dust sources	Water Trucks, Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2-702	These standards are applicable to all fugitive dust sources at the facility.
Abrasive Blasting	Wet blasting; Dust collecting equipment; Other approved methods	A.A.C. R-18-2-702 A.A.C. R-18-2-726	These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R-18-2-727	These standards are applicable to any spray-painting operation.
Demolition/renovation Operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

## VIII. PREVIOUS PERMIT CONDITIONS

### A. Changes to Current Renewal

Table 5 addresses the changes made to the sections and conditions from Permit No. 64101:

**Table 5: Previous Permit Conditions**

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "A"		X		General Provisions: Revised to represent the most recent template language
Att. "B" Section I		X		Facility Wide Requirements: Revised to represent the most recent template language
Att. "B" Section VIII			X	Evaporative water spray systems: This section was removed from the permit as it was replaced by the Turbo-Mister section.
Att. "C"		X		Equipment List: Revised to reflect the most recent equipment operating at the facility and to include equipment information provided.



**IX. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS**

Table 6 contains an inclusive but not an exhaustive list of the monitoring, recordkeeping and reporting requirements prescribed by the air quality permit. The table below is intended to provide insight to the public for how the Permittee is required to demonstrate compliance with the emission limits in the permit. The table lists the CTG emission limits with supplemental duct firing and without supplemental duct firing respectively.

**Table 6: Permit No. 90238**

<b>Emission Unit</b>	<b>Pollutant</b>	<b>Emission Limit</b>	<b>Monitoring Requirements</b>	<b>Recordkeeping Requirements</b>	<b>Reporting Requirements</b>
Combustion Turbine Generators (w, w/o duct firing)	PM	28.2 lb./hr., 17.8 lb./hr. based on a 3-hr rolling average	Conduct emission compliance performance test.		Submit emission compliance performance test results.
	NO <sub>x</sub>	28.6 lb./hr., 21.1 lb./hr., based on a 3-hr rolling average	Conduct emission compliance performance test.		Submit emission compliance performance test results.
	CO	98.5 lb./hr., 29.5 lb./hr., based on a 3-hr rolling average	Operate CEMS		Submit quarterly excess emission and monitoring system (EE-MSP) report.
	SO <sub>2</sub>	5.7 lb./hr., 4.2 lb./hr., based on a 3-hr rolling average	Conduct emission compliance performance test.		Submit emission compliance performance test results.
	VOC	35.2 lb./hr., 7.4 lb./hr., based on a 3-hr rolling average			
Duct Burners	PM	13 ng/J	Conduct emission compliance performance test.		Submit emission compliance performance test results.

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Duct Burners (con.)	PM	20%	Conduct Method 9 or Method 22 performance test.	Method 9 or Method 22 performance test results.	Quarterly report of each excess emission.
	NO <sub>x</sub>	200 ng/J	Conduct emission compliance performance test.  Operate CEMS.		Submit emission compliance performance test results.  Semiannual written reports or quarterly electronic reports of CEMS.
	SO <sub>2</sub>	340 ng/J and 10% of the potential combustion concentration or 100% of the combustion concentration when emissions are less than 86 ng/J	Conduct emission compliance performance test.		Submit emission compliance performance test results.
Auxiliary Boilers	PM	0.19 lb./hr., based on a 3-hr rolling average	Record of monthly natural gas consumption for the boiler.  Conduct emission compliance performance test.		Submit emission compliance performance test results.

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Auxiliary Boilers (con.)	PM (con.)	10% opacity based on a 6-minute average	Quarterly visible emissions survey		
	NO <sub>x</sub>	3.5 lb./hr., based on a 3-hr rolling average	Conduct emission compliance performance test.		Submit emission compliance performance test results.
	CO	2.1 lb./hr., based on a 3-hr rolling average			
	SO <sub>2</sub>	0.99 lb./hr., based on a 3-hr rolling average			
	VOC	0.49 lb./hr., based on a 3-hr rolling average			
Internal Combustion Engine	PM	40% opacity – for any period greater than 10 seconds	Conduct monthly visible emission survey.	Maintain records of the lower heating value of the fuel.	Report all 6-minute periods which the opacity exceeded 40%.
	SO <sub>2</sub>	1.0 lb./MMBtu		Record the daily sulfur content of the fuel used in the engines.	Report to the Director any daily period in which the sulfur content exceeds 0.8%.
Cooling towers	PM	Main: 5.9 lb./hr. Chiller: 1.4 lb./hr.	Calculate the particulate matter emissions. Conduct annual drift eliminator inspections and monthly TDS analysis to support calculations.		

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Cooling towers (con.)	PM (con.)	Main and chiller: 5% opacity Evaporative condenser: 20% opacity	Conduct quarterly visible emissions survey.		
Turbo-Mister	PM	20% opacity	Conduct quarterly visible emissions survey.		
Fugitive Dust	PM	40% Opacity	Conduct monthly survey of visible emissions.	Record of the dates and types of dust control measures employed, and if applicable, the results of any Method 9 observations, and any corrective action taken to lower the opacity of any excess emissions.	
Abrasive Blasting	PM	20% Opacity		Record the date, duration and pollution control measures of any abrasive blasting project.	
Spray Painting	VOC	20% Opacity Control 96% of the overspray		Maintain records of the date, duration, quantity of paint used, any applicable MSDS, and pollution control measures of any spray-painting project.	

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Demolition/ Renovation	Asbestos			Maintain records of all asbestos related demolition or renovation projects including the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents	

**X. COMPLIANCE ASSURANCE MONITORING (CAM)**

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:

- A. The unit is subject to an emission limit or standard for the applicable regulated air pollutant;
- B. The unit uses a control device to achieve compliance with the emission limit or standard; and
- C. 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.

The potential to emit NO<sub>x</sub>, CO, SO<sub>2</sub>, PM, and VOC for the CTGs is above 100 ton per year. There are no controls installed for controlling CO, PM, VOC, and SO<sub>2</sub>. Therefore, CAM does not apply for these pollutants. The facility uses add-on-control for NO<sub>x</sub> emissions. The permit requires the Permittee to operate a continuous monitoring system (CEMS) for measuring NO<sub>x</sub> emissions to demonstrate compliance with the NO<sub>x</sub> 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)(1)(vi).

**XI. LIST OF ABBREVIATIONS**

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	CO <sub>2</sub> equivalent basis
GHG	Greenhouse Gases
HAP	Hazardous Air Pollutant
Hr	Hour
MW	Megawatts
NO <sub>x</sub>	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter less than 10 µm nominal aerodynamic diameter
PM <sub>2.5</sub>	Particulate Matter less than 2.5 µm nominal aerodynamic diameter
SO <sub>2</sub>	Sulfur Dioxide Significant Impact Levels
TPY	Tons per Year
TDS	Total Dissolved Solids
VOC	Volatile Organic Compound
Yr	Year