

**GENERAL AIR QUALITY PERMIT FOR FUEL BURNING EQUIPMENT**

**(BOILERS, HEATERS, AND GENERATORS)**

**TECHNICAL SUPPORT DOCUMENT (TSD)**

**I. GENERAL COMMENTS:**

This general air quality permit (hereinafter referred to as “permit”) covers combinations of industrial, commercial, and institutional boilers, heaters, fuel fired equipment, generators (hereinafter referred to as internal combustion engines (ICE) or reciprocating internal combustion engines (RICE)), and a number of ancillary operations and activities located at a “source” and required to be permitted in accordance with PCC 17.12.140.B.3.a through c. The equipment, operations and activities covered by this permit must fall under a single Major Group (same two digit SIC code).

This permit is designed to cover the following:

- 1) Qualified fossil fuel fired commercial and industrial equipment subject to NSPS, NESHAP or County standards; (Covered equipment must have a capacity of less than 100 MMBtu/hr individually and must only combust natural gas or fuel oil meeting the respective fuel sulfur limitations in this permit)
- 2) Qualified engines subject to NSPS, NESHAP, and/or County standards; (Covered engines must either be exempt from NESHAP, Subpart ZZZZ requirements based on the facilities SIC code, or must otherwise be in an engine class that is not required to install post combustion control devices or conduct performance tests).
- 3) Other qualified ancillary operations and activities, as applicable, subject to NSPS, NESHAP, or County standards (See applicable ATO Attachments in condition 119.f of the permit for qualified ancillary operations).

Owners and operators that qualify for coverage under this permit, as laid out in the permit application, may obtain an *Authorization to Operate* (ATO) that lists the covered equipment, operations and activities along with the corresponding operating limitations on the allowable fuels, hours of operation, fuel usage limits, and/or operational throughputs.

This permit imposes permit-wide limits that assure that the “source” remains a non-major source with emission rates below the major source thresholds for criteria and hazardous air pollutants and in order to avoid certain federal or other applicable requirements. In order to obtain coverage, the applicant must qualify for coverage as laid out in the permit application. In addition to the criteria in the permit application, in order to qualify for coverage, the covered fuel burning equipment within a Major Group (same two digit SIC code) must be below the limits in Table 1, as stated below.

This permit does not apply to new sources required to obtain a permit under Title IV of the Act (Acid Deposition Control), or Title V of the Act (Permits), or to “major” sources of HAP(s), or which are subject to NSPS or NESHAP standards other than; NSPS, Subparts Dc, IIII, & JJJJ; or NESHAP Subparts JJJJJ, ZZZZ, or CCCCC; or additional standards the Control Officer does not intend to include in this permit.

**Table 1: Permit Emission Limits**

Maximum Permitted Emissions / Controlled Potential to Emit, tons/year								
Conventional or Criteria Air Pollutant								HAP(s)
PM <sub>2.5</sub>	PM <sub>10</sub>	PM	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub>	Lead	Total
< 90	< 90	< 90	< 90	< 90	< 90	< 90	< 0.6	< 10

## II. SOURCE DESCRIPTION

### A. Process Description

Facilities eligible for coverage under this permit may contain various combinations of boilers, heaters, other fuel fired equipment, engines, and other operations. The fuel fired equipment eligible for coverage must fire only natural gas, LPG – Propane, LPG – Butane, or fuel oil (including diesel).

Currently the permit covers the following additional operations and activities:

1. Sources of fugitive dust, provided the source is not otherwise required to obtain an activity permit in accordance with PCC 17.12.470.
2. Gasoline storage and dispensing operations with a throughput more than 1000 gallons and less than 100,000 gallons per month.
3. Surface coating and abrasive blasting operations.

Attachments to the ATO for other operations and activities subject to local rules or federal regulations may be developed and added by the Control Officer on a case-by case basis.

### B. Operating Capacity and Schedule

The operating schedules of facilities covered by this permit will not be limited, however individual emission sources may be restricted in their hours of operation or fuel throughput and required to demonstrate compliance with the limits through monitoring and recordkeeping to comply with the permit-wide emission limitations.

### C. Air Pollution Control Equipment

No post combustion air pollution control equipment is required for fuel fired equipment eligible for coverage under this general permit.

Spray application of surface coatings, other than architectural coating and spot painting, must be conducted in an enclosed area equipped with controls containing no less than ninety-six percent of the overspray.

General odor, material handling, and control standards apply to all sources as required (See Section 2.14 through 2.16 of the permit).

## IV. EMISSIONS ESTIMATES

Controlled emissions are estimated in accordance with generally accepted EPA emission factors from EPA's white papers and using EPA's AP-42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources. The factors are supplemented with required limits where applicable. A summary of the controlled emissions from sources covered by this permit is provided on each individual ATO.

### Emergency Designated Internal Combustion Engines

Federal requirements currently limit NSPS/ NESHAP "emergency" designated generators to operate no more than 100 hours of operation for maintenance and readiness testing and demand response purposes while there is no limit on hours of operation during true emergencies. PDEQ estimates the uncontrolled potential to emit of emergency generators using 500 hours of operation as recommended by the EPA. The permitted controlled potential to emit is estimated at 100 hours, there is no limit on hours of operation during true emergencies.

**APPLICABLE REQUIREMENTS**

**40 CFR, Part 60 Standards of Performance for New Stationary Sources:**

Subpart A	General Provisions
Subpart Dc	NSPS for Small Industrial-Commercial-Institutional Steam Generating Units
Subpart IIII	NSPS for Compression Ignition Internal Combustion Engines
Subpart JJJJ	NSPS for Stationary Spark Ignition Internal Combustion Engines
Appendix A	Test Methods

**40 CFR, Part 63 National Emissions Standards for Hazardous Air Pollutants for Source Categories:**

Subpart A	General Provisions
Subpart JJJJJ	NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources
Subpart ZZZZ	NEHSHAP for Stationary Reciprocating Internal Combustion Engines

**Pima County Code Title 17, Chapter 17.12 – Permits and Permit Revisions:**

**Article I – General Provisions:**

17.12.010	Statutory Authority
17.12.020	Planning, Constructing, or Operating Without a Permit
17.12.040	Reporting requirements
17.12.045	Test methods and procedures
17.12.050	Performance tests
17.12.080	Permit Display or Posting

**Article II – (Stationary) Source Permits:**

17.12.185	Permit contents for Class II and Class III permits
17.12.235	Facility Changes that require a permit revision
17.12.240	Procedures for certain changes that do not require a permit revision Class II or Class III
17.12.255	Minor Permit Revision
17.12.260	Significant Permit Revision
17.12.270	Permit Reopenings – Revocation and reissuance – Termination
17.12.350	Material permit condition

**Article III – General Permits for Individual Sources:**

17.12.400	Fees related to Class II and Class III permits
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**Pima County Code Title 17, Chapter 17.16 – Emission Limiting Standards:**

**Article I – General Provisions:**

17.16.010	Local rules and standards; Applicability of more than one standard
17.16.020	Noncompliance with applicable standards
17.16.030	Odor limiting standards

**Article II – Visible Emission Standards:**

17.16.040	Standards and applicability (includes NESHAP)
17.16.050	Visibility limiting standard

**Article III – New and Existing Stationary Source Performance Standards:**

17.16.130	Applicability
17.16.165	Standards of performance for fossil-fuel fired industrial commercial equipment
17.16.230	Standards of performance for storage vessels for petroleum liquids
17.16.340	Standards of performance for stationary rotating machinery
17.16.400	Organic solvents and other organic materials
17.16.430	Standards of performance for unclassified sources

**Pima County Code Title 17, Chapter 17.20 – Emissions Source Testing and Monitoring:**

17.20.010	Source sampling, monitoring and testing
17.20.040	Concealment of emissions

**Pima County Code Title 17, Chapter 17.24 – Emission Source Recordkeeping and Reporting:**

17.24.020	Recordkeeping for compliance determination
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**Additional applicable regulations for attachments to the ATO will be included in the attachments as necessary.**

**VI. REQUIREMENTS SPECIFICALLY IDENTIFIED AS NON-APPLICABLE**

Fossil Fuel Fired Industrial and Commercial Equipment

Performance testing requirements for steam generating units or boilers subject to NSPS Subpart Dc and NESHAP JJJJJ are not applicable to sources eligible for coverage by this permit. Should sources desire to fire fuels other than natural gas, LPG (propane/butane), diesel, or distillate fuel oil, sources will be required to obtain an individual permit. Boilers subject to NSPS, Subparts D through Db are not eligible for coverage by this permit and are required to obtain an individual permit.

Internal Combustion Engines

Internal Combustion engines subject to NSPS or NESHAP requirements that are required to install post combustion control equipment or conduct regular performance testing are not normally eligible for coverage under this general permit. The permit contains conditions relating to engine modification or reconstruction, or the operation of an engine in a manner that is not consistent with the manufacturer's recommendations that could trigger the requirement to conduct performance testing. The Control Officer may revoke the eligibility for coverage under this general permit and require the source to obtain an individual permit, should the permittee be required to conduct periodic performance testing on an engine.

Attachment 3 to the ATO – Gasoline Fuel Storage and Dispensing Requirements

PCC 17.16.230.A and E do not apply to sources eligible for coverage by this permit. Diesel and fuel oil are not considered petroleum liquids in accordance with PCC and gasoline storage tanks eligible for coverage must be less than 40,000 gallons in size.

Attachment 4 to the ATO – Surface Coating and Abrasive Blasting

PCC 17.16.400.C.5 does not apply to sources eligible for coverage by this permit unless the Control Officer develops and adds an Attachment to the ATO for facilities engaged in the surface coating of miscellaneous metal parts and products as defined in PCC. These standards and specific conditions would apply to facilities that are classified in the Major Groups (two digit SIC codes) 34 through 39, that are not otherwise subject to an NSPS or NESHAP industrial category standard.

## **VII. PERMIT APPLICABILITY DETERMINATIONS**

### **A. Permit and Permit Summary**

The Specific Conditions have been organized into permit sections specific to the equipment and emission source categories at the facility.

### **B. General Conditions**

This section includes the General Conditions that are applicable to all class II and III sources in Pima County.

### **C. General Applicability (Section 1):**

This Section of the permit provides a reference for the statutory authority, permit classification, permitted sources, and permit sections. Specific Conditions relating to the applicability of permitted sources are included in Section 5.

### **D. Permit - Wide Operations (Section 2):**

This Section incorporates the permit-wide provisions applicable to all sources at the facility and is used to streamline provisions applicable to the specific sources and operations in other Sections of the permit. The permit-wide provisions include the following: permit-wide operating limitations, general control standards, materials handling standards, odor limiting standard, opacity standards, visibility limiting standard, disposition of portable sources, and asbestos requirements for demolition and renovation activities. This Section also includes the permit-wide provisions for monitoring, recordkeeping, reporting requirements, facility changes, and testing requirements.

### **E. Fossil Fuel Fired Industrial and Commercial Equipment (Boilers and Heaters) (Section 3):**

This Section incorporates and imposes operating limits for boilers, heaters, and fuel fired equipment to avoid certain requirements in PCC 17.16.165, 40 CFR Part 60, NSPS Subpart Dc, and 40 CFR Part 63, NESHAP Subpart JJJJJ for certain classes of boilers. The specific applicability provisions for the boilers and heaters are included in Section 5 and indicated in the equipment list in Attachment 2.

The listed boilers and heaters in the equipment list are limited to firing natural gas or distillate fuel oil (including diesel). Distillate fuels are limited by the permit to contain no more than 0.5 % wt. Sulfur. Certain new oil fired boilers are further restricted to firing only ultra-low-sulfur fuel oil or diesel ( $\leq 15$  ppm S). The specific definition for natural gas in this Section is taken from the NESHAP standard and is a broad definition that also includes synthetic natural gas, and LPG – Propane/Butane for use in temporary boilers or as an alternate fuel. The equipment listed in the ATO is limited to fire the fuel indicated in the ATO.

Oil fired boilers identified in the ATO must follow the requirements in Attachment 1 to the ATO titled “NESHAP JJJJJ Requirements for Oil Fired Boilers”.

### **F. NON-NSPS/NESHAP ICE (Emergency Designated Engines)(Section 4A):**

This section of the permit contains County requirements for older engines that are not subject to NSPS or NESHAP requirements for facilities whose SIC codes designate them as residential, commercial, or institutional facilities which are not subject to NESHAP subpart ZZZZ. These engines are limited to no more than 100 hours of operation for maintenance and readiness testing. There is no time limit on the use of emergency designated engines in emergency situations.

**G. NESHAP for CI and SI RICE (Sections 4B and 4G)**

These sections of the permit apply to emergency and non-emergency designated engines that are subject to NESHAP, Subpart ZZZZ.

Emergency designated engines that are eligible for coverage are limited by the federal requirements to operate less than 100 hour per calendar year for maintenance and readiness testing and less than 50 of the 100 hours per year can be used for limited qualified non-emergency situations. There is no time limit on the use of emergency designated engines in emergency situations.

Non-emergency engines that are eligible for coverage are limited to those engines that can be operated at area sources and subject only to maintenance management practices in the federal requirements and not otherwise required to install post combustion controls and/or conduct performance testing.

**H. NSPS for CI ICE (Sections 4C and 4E):**

These sections of the permit apply to emergency, fire pump, and non-emergency designated engines that are subject to NSPS, Subpart IIII.

Emergency designated engines that are eligible for coverage are limited by the federal requirements to operate less than 100 hour per calendar year for maintenance and readiness testing and less than 50 of the 100 hours per year can be used for limited qualified non-emergency situations. There is no time limit on the use of emergency designated engines in emergency situations.

Non-emergency engines that are eligible for coverage must meet the tiered emissions standards for the designated engine power and model year required by the federal regulations.

**I. NSPS for SI ICE (Sections 4D and 4F):**

These sections of the permit apply to emergency and non-emergency designated engines respectively that are subject to NSPS, Subpart JJJJ.

Emergency designated engines that are eligible for coverage are limited by the federal requirements to operate less than 100 hour per calendar year for maintenance and readiness testing and less than 50 of the 100 hours per year can be used for limited qualified non-emergency situations. There is no time limit on the use of emergency designated engines in emergency situations.

Non-emergency engines that are eligible for coverage must meet the tiered emissions standards for the designated engine power and model year required by the federal regulations.

**J. Specific Applicability Provisions (Section 5):**

This Section of the permit includes specific conditions on the applicability of permitted facility sources to include provisions related to the source categories, affected facilities, equipment, emission sources, installations, activities and operations covered by this permit.

**K. Attachment 1 to the ATO – Fugitive Dust Requirements**

This attachment to the ATO applies to fugitive dust emissions from facilities with more than 1 acre of open area, including unpaved roadways, which have the potential to generate airborne particulates or fugitive dust. This attachment contains fugitive dust control standards and prescribes reasonably necessary and feasible precautions for the control of fugitive dust and airborne particulate matter. The Applicants subject to this Attachment are required to maintain a fugitive dust activity log and record the dates on which controls are taken and the type of control measures taken, and corrective actions as necessary.

**L. Attachment 2 to the ATO – NESHAP Subpart JJJJJ Requirements for Oil Fired Boilers**

This attachment to the ATO applies to oil fired boilers at a facility that are eligible for coverage that are subject to work practice standards, emission reduction measures, and management practices (tune-up procedures). Boilers eligible for coverage are limited to firing distillate fuels that do not require performance testing.

**M. Attachment 3 to the ATO – Gasoline Fuel Storage and Dispensing Requirements**

This attachment to the ATO applies to gasoline storage tanks and fuel dispensing facilities at a facility with a throughput greater than 1000 gallons/month. Gasoline storage tanks are subject to PCC 17.16.230.B and dispensing facilities are subject to NESHAP, Subpart CCCCC. Individual fuel storage tanks eligible for coverage are required to have a capacity of less than 40,000 gallons. Fuel tanks greater than 250 gallons must be equipped with submerged fill devices in accordance with NESHAP, Subpart CCCCC. Storage tanks and dispensing facilities are required to comply with applicable standards, and recordkeeping and maintain throughput records.

**N. Attachment 4 to the ATO – Surface Coating and Abrasive Blasting Requirements**

This attachment to the ATO applies to surface coating and abrasive blasting operations at a facility that use more than 320 gallons per year of surface coatings and solvents combined or more than 12, 000 lbs/year of abrasive blasting media. Surface coating operations and/or use of solvents at a facility are subject to PCC 17.16.400.

**O. [Reserved for Future Additional Attachments]**

Future additional attachments to the authorization to operate under this general permit, that contain Specific Conditions, may be written and adopted by the Control Officer without public notice, provided that any such attachments are limited to either promulgated federal or local requirements applicable to source categories, operations, and activities currently covered by this permit; or to future operations or activities that are not currently covered by this permit and which have a combined potential to emit (PTE), with controls, less than 10 tons/year of any conventional pollutant and less than 1 ton/year of HAP(s), except those operations or activities that emit significant quantities of the non-conventional pollutants listed in PCC 17.04.340.A (212) (i.e. at the time of issuance of this permit, the activity or operations has a combined emission rate determined by the Control Officer, due to its size, to be an insignificant activity in accordance with PCC 17.04.340.A.114).

**VII. Periodic Monitoring**

This is a Class II/III permit and as such does not include a mandatory submittal of a semiannual summary report of required monitoring or an annual compliance certification to the Control Officer. The permit requires the facility to maintain the required periodic monitoring records on site. An annual report is required to be sent to the EPA electronically for stationary emergency designated engines greater than 100 HP that operate for non-emergency purposes in accordance with the applicable federal regulations (See Section 4B through 4D).

**IX. Control Technology Determination**

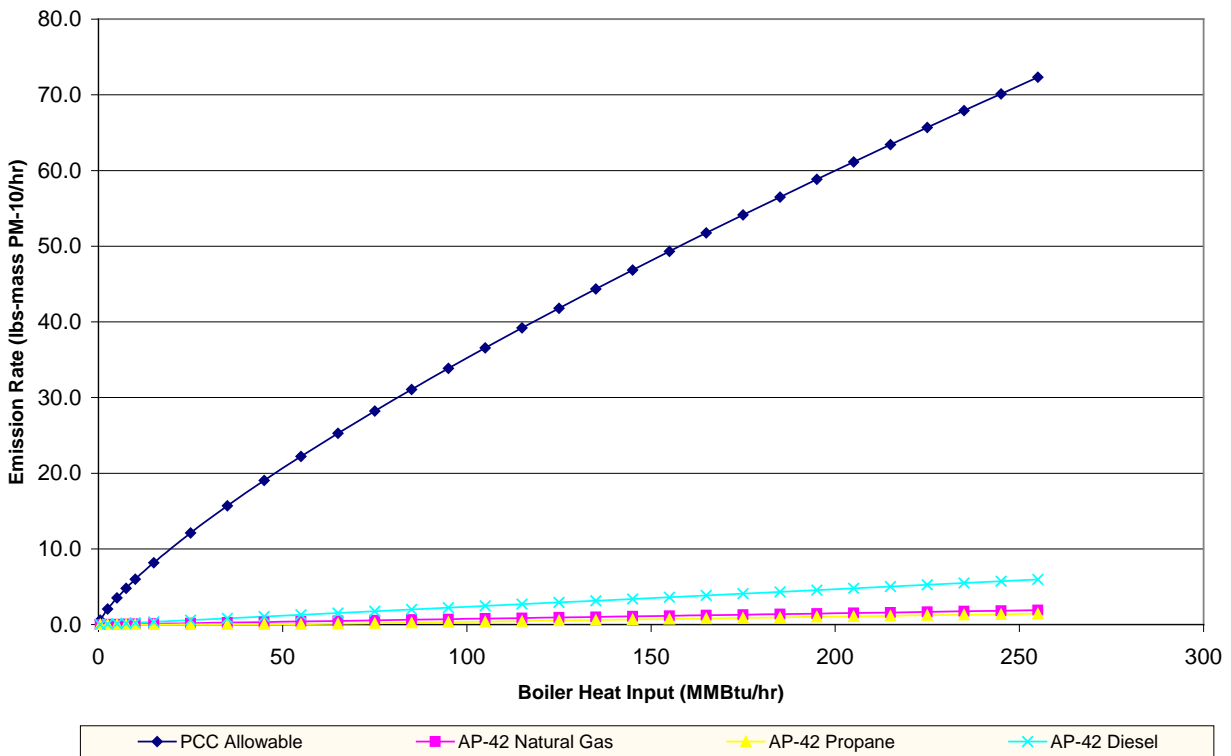
No control technologies needed to be determined; the permitted facility sources not subject to RACT, BACT or LAER.

## X. Exclusion of PCC Particulate Matter Discharge Rate Standards

The applicable PCC rules for the maximum particulate discharge rates are not normally included for Class II area source permits as explained below.

- For particulate matter sources, the calculated maximum particulate matter discharge rate, as provided in Title 17, yields maximum rates that far exceed the emissions expected from most typical area sources. For example a 200 ton/hour process source, which is typical for an average construction aggregate, screening operation, would be limited to a maximum particulate matter discharge rate of 40.4 lbs/hour or 177 tons/year. This limit far exceeds estimated emissions from typical sources using EPA AP-42 emission factors and the source is far more likely to exceed opacity and visibility limiting standards well before reaching this limit.
- With regard to fuel burning equipment, PCC 17.16.165.C limits the emissions of particulate matter from commercial and industrial fossil-fuel fired equipment (including but not limited to boilers). This limit is not normally included in permits because allowable emissions are consistently over an entire order of magnitude higher than EPA AP-42 estimated potential emissions. The chart below, illustrates the point.

**Comparison of Emissions of PM-10 for Boilers: PCC Allowable vs AP-42 Estimated**



Comparative Chart of Allowable Particulate Emissions Under Pima County Code, Title 17, and Estimated Potential Emissions based on EPA AP-42 Estimates for External Combustion Sources. Allowable emissions are consistently over ten times estimated potential emissions. Therefore, it is not necessary to include the standard in the permit explicitly, but by reference in Attachment 1.



## **XI. Exclusion of PCC Sulfur Dioxide Emission Standards**

Compliance with the fuel sulfur limitation requirements in the permit shall ensure compliance with the Sulfur Dioxide Standards of PCC 17.16.165.E and PCC 17.16.340.F; which limit the emission of SO<sub>2</sub> to 1.0 pound per million BTU of heat input when burning low sulfur fuel. The definition of low sulfur fuel (PCC 17.04.340.A. “Low Sulfur Fuel”) is fuel oil containing less than 0.9 percent sulfur by weight. “High Sulfur Fuel” is defined as fuel oil containing 0.9% wt. or more Sulfur. In accordance with EPA AP-42 Appendix A, page A-5, the heating value of diesel fuel is estimated at 137,000 BTU per gallon. Thus, 1 million BTU of heat input is equivalent to 7.3 gallons of diesel. At 7.05 lbs per gallon, 51.47 lbs of diesel will produce 1 million BTU. At 0.9% 51.47 lbs of diesel contains 0.46 lbs of sulfur. Combined with Oxygen to form SO<sub>2</sub>, and assuming 100% of the sulfur in the fuel forms SO<sub>2</sub>, this would yield 0.92 lb SO<sub>2</sub> per 1MMBtu. Thus, low sulfur fuel oil will produce 0.92 lbs of SO<sub>2</sub> per million BTU of heat input. This is roughly 8% less than the prescribed 1.0 pound SO<sub>2</sub> per million BTU limit.

An excess emissions report is required to be submitted to the Control Officer should the fuel oils fired in fuel burning equipment, to include non NSPS / non NESHAP rotating machinery, contain 0.9% wt. Sulfur or greater since the permit explicitly prohibits the use of high sulfur oil by the Permittee.

Jet fuel, natural gas, gasoline, and No. 1 and 2 distillate fuel oils and diesel delivered to Pima County consistently show sulfur levels below this limit as shown in fuel supplier certifications which verify the sulfur content of the fuel fired. The equipment specific sulfur content limitations in the permit and the prohibition to use high sulfur oil assures compliance with PCC 17.16.165.E and PCC 17.16.340.F. These rules are incorporated by reference in Attachment 1 of the permit.