

**NOTICE OF FINAL RULEMAKING**  
**MARICOPA COUNTY AIR POLLUTION CONTROL REGULATIONS**  
**REGULATION III – CONTROL OF AIR CONTAMINANTS**  
**RULE 324: STATIONARY INTERNAL COMBUSTION (IC) ENGINES**

**PREAMBLE**

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|------------------|--|--|
| <b><u>1.</u></b> | <b><u>Rule affected</u></b>  | <b><u>Rulemaking action</u></b>        |
|                  | Rule 324: Stationary Internal Combustion (IC) Engines  | Amended                                |
| <b><u>2.</u></b> | <b><u>Statutory authority for the rulemaking:</u></b>  |  |
|                  | Authorizing statutes: A.R.S. §§ 49-474, 49-479, and 49-480   |  |
|                  | Implementing Statute: A.R.S. § 49-112  |  |
| <b><u>3.</u></b> | <b><u>The effective date of the rule:</u></b>  |  |
|                  | Date of adoption: November 2, 2016   |  |
| <b><u>4.</u></b> | <b><u>List of public notices addressing this rulemaking:</u></b>   |  |
|                  | Notice of Briefing to Maricopa County Manager: May 2015  |  |
|                  | Notice of Stakeholder Workshops: August 3, 2015, November 19, 2015, and January 27, 2016                           |  |
|                  | Notice of Maricopa County Board of Health Meeting: April 25, 2016  |  |
|                  | Notice of Proposed Rulemaking: 22 A.A.R. 1145, May 13, 2016  |  |
| <b><u>5.</u></b> | <b><u>Name and address of department personnel with whom persons may communicate regarding the rulemaking:</u></b> |  |
|                  | Name:  | Johanna M. Kuspert or Hether Krause    |
|                  |  | Maricopa County Air Quality Department |
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| <b><u>6.</u></b> | <b><u>Explanation of the rule, including the department's reasons for initiating the rulemaking:</u></b>           |  |

**Summary:**

Rule 324 (Stationary Internal Combustion (IC) Engines) limits the discharge of carbon monoxide, nitrogen oxides (NO<sub>x</sub>), sulfur oxides, volatile organic compounds (VOCs), and particulate matter emissions from stationary internal combustion (IC) engines. Revisions to Rule 324 addressed the requirements of the State Implementation Plan (SIP) for “moderate” nonattainment for the 2008 eight-hour ozone national ambient air quality standard (NAAQS). Rule 324 revisions included Reasonably Available Control Technology (RACT) for NO<sub>x</sub>.

In addition, the amendments corrected typographical or other clerical errors; made minor grammatical changes to improve readability or clarity; modified the format, numbering, order, capitalization, punctuation, or syntax of certain text to increase standardization within and among rules; or made various other minor changes of a purely editorial nature. As these changes did not alter the sense, meaning, or effect of the rules, they are not described in detail here, but can be readily discerned in the “underline/strikeout” version of the rules contained in Item 14 of this notice.

**Issues Raised and Discussed During this Rulemaking Process:**

Stakeholders expressed a general understanding for the need for rule revisions based on the department’s nonattainment status; however, Stakeholders were concerned about the emission limitations and what is considered “RACT” and what is considered “beyond RACT”. In addition, questions were raised regarding the following:

- The correlation of Rule 324 with New Source Performance Standards (NSPS)
- The emission limitations for existing engines and new engines
- The compliance schedule for equipment being removed from service

**Description of Amendments:**Regarding the Title of the Rule:

The title of the rule was changed to “Stationary Reciprocating Internal Combustion Engines (RICE)”. The term “stationary internal combustion (IC) engine” was changed to “stationary reciprocating internal combustion engine (RICE)” in the definitions and throughout the rule.

Regarding Applicability:

- Section 102 (Applicability): Rule 324 continues to apply to spark-ignition engines or compression-ignition engines including stationary RICE used in cogeneration, with a rated brake horsepower (rated bhp) of greater than 250 and to also apply to a combination of stationary RICE each with a rated bhp greater than 50 used at a source, whose maximum aggregate rated bhp is greater than 250. Rule 324 was revised to also apply to stationary RICE that are subject to federal standards of performance.
- Section 102.3 (Applicability): Rule 324 included new Section 102.3 (per a Stakeholder’s comment) a provision that states that engines subject to Rule 324 may be subject to New Source Performance Standards (NSPS) and/or National Emission Standards for Hazardous Air Pollutants (NESHAP). This text is similar to text in Rule 322 (Power Plant Operations) and Rule 323 (Fuel Burning Equipment from Industrial/Commercial/Institutional (ICI) Sources).

Regarding Exemptions:

- Section 103.2 (Exemptions): Rule 324 clarified that nonroad internal combustion (IC) engines are not considered stationary RICE; included nonroad internal combustion (IC) engines in new Section 103.2; and added that a nonroad internal combustion (IC) engine must be operated and approved by the Control Officer as a nonroad internal combustion (IC) engine in order for such engine to be exempt from all of the requirements of Rule 324.
- Sections 104, 105, and 106 (Partial Exemptions): Rule 324 added “as defined in this rule” after “emergency engine” to clarify that the provision that an emergency engine shall not exceed 500 hours of operation applies to the definition of “emergency engine” and applies to an emergency engine subject to Section 104; clarified which provisions in Rule 324 apply to low usage non-emergency engines; and added a partial exemption for engines subject to 40 CFR Part 63, Subpart ZZZZ.

Regarding Definitions:

- The requirements in Rule 324 now harmonize with New Source Performance Standards (NSPS) III, JJJJ, and Most Achievable Control Technology (MACT) ZZZZ. The definitions of “existing engine” and “new engine” were deleted from Rule 324; the terms are not used in the rule. Rule 324 references the dates before and after which NSPS were promulgated. Rule 324 applies to spark-ignition engines and compression-ignition engines with a rated brake horsepower of greater than 250 and to any

stationary reciprocating internal combustion engine subject to the federal standards of performance set forth in 40 CFR 60, Subpart IIII for compression-ignition engines or 40 CFR 60, Subpart JJJJ for spark-ignition engine.

- The definition of “Identical Replacement Engine” was made consistent with the definition of “Equivalent Replacement Engine”. The definition of “Internal Combustion (IC) Engine, Nonroad” was clarified so the text corresponds with the introductory text and corresponds with the definition of “Nonroad” in 40 CFR 1068.30. The U.S. Environmental Protection Agency (EPA) commented that the proposed text that a nonroad IC engine must be approved by the Control Officer (Section 212.1(d)) allows discretion to the Control Officer without guidance or restriction on how the Control Officer shall make the determination. The EPA commented that this text/discretion should be removed. Accordingly, the definition of “nonroad IC engine” now includes an introductory statement that the requirements of a nonroad IC engine must be met and approved by the Control Officer in order for the engine to be determined to be a nonroad IC engine; the intent is that even if the engine meets the definition of a “nonroad IC engine”, it is not a nonroad IC engine until the Control Officer approves it.
- The term “Prime Engine” was changed to “Non-Emergency Engine” and the definition of “Non-Emergency Engine” was added, which is the same definition as the definition of “Prime Engine”. The term “prime engine” was changed to “non-emergency engine” throughout the rule.
- The definition of “Internal Combustion (IC) Engine, Nonroad” was changed to “Nonroad Internal Combustion (IC) Engine”, since “nonroad” is the most important term.
- The definition of “Internal Combustion (IC) Engine, Stationary” was changed to “Stationary Internal Combustion Engine (RICE)”, since “stationary” is the most important term.

Regarding Good Combustion Practices:

- Section 302 (Good Combustion Practices/Tuning Procedure for Stationary RICE): Rule 323 now includes a provision that a handheld monitor may be used by the Control Officer to determine compliance.

Regarding Limitations for Non-Emergency Engines:

- Section 304 (Limitations for Non-Emergency Engines): Rule 324 clarified the three options that non-emergency engines have for complying with Rule 324. A source can comply with (1) the provisions

for add-on control equipment for non-emergency engines, (2) the current emission limitations, or (3) the federal standards of performance for non-emergency engines. The current emission limits in Rule 324 are retained; such limits apply to:

- Engines manufactured prior to October 22, 2003 (the date when Rule 324 was adopted)
- Engines manufactured on or after October 22, 2003 but prior to July 11, 2005 (the date the New Source Performance Standards were adopted for compression-ignition engines)
- Engines manufactured on or after October 22, 2003 but prior to June 12, 2006 (the date the New Source Performance Standards were adopted for spark-ignition engines)
- Rule 324 was revised to include a requirement that spark-ignition engines manufactured after June 12, 2006 and compression-ignition engines manufactured after July 11, 2005 comply with federal standards of performance. Per Stakeholders' comments, Section 304.2, Table 2 does not include a footnote regarding test methods for PM; Section 500 includes test methods for PM.
- Section 306 (Equivalent Replacement Engine or Identical Replacement Engine): Rule 324 clarified when an equivalent replacement engine or an identical replacement engine is to be treated as the original stationary RICE. Section 306.2 was removed; the text is captured in Section 307 (Modification to a Stationary RICE).
- Section 307 (Modification to a Stationary RICE): Rule 324 added Section 307 to address if a modification is made to a stationary RICE.
- Section 308 (Non-Resetting Totalizing Hour Meter): Rule 324 added Section 308 to require the installation, operation, and maintenance of non-resetting totalizing hour meter.

Regarding Administrative Requirements:

- Section 401 (Compliance Schedule-Stationary RICE Being Removed from Service) was revised to require that if a stationary RICE must be removed from service because such engine does not comply with the emission limits in Rule 324, then the stationary RICE that replaces such engine must comply with all applicable provisions of Rule 324, e.g., limitations for fuel, limitations for opacity, and with the federal standards of performance for non-emergency engines.
- Section 402 (Compliance Schedule-Non-Resetting Totalizing Hour Meter) was added; a non-resetting totalizing hour meter must be installed, operated, and maintained on a stationary RICE.

Regarding Compliance Determinations:

- Section 501 (Compliance Determination) was clarified regarding the compliance determination requirements for stationary RICE, an engine family, and engines with a displacement of greater than or equal to 30 liters per cylinder. Also, the compliance determination for low sulfur oil verification (Section 501.3) was changed to a compliance determination for ultra low sulfur diesel verification consistent with federal standards. Due to the EPA's comments, additional language was added to clarify that sulfur content verification documents must provide accurate values and utilize enforceable test methods to determine the sulfur content. Also, the test method for determining sulfur content of waste gas was added in Sections 501.4 and 504.16 (Compliance Determination-Test Methods Incorporated by Reference).
- Section 501.1(d) (Compliance Determination-Stationary RICE) was added. Rule 324 was revised to include a requirement that sources that choose add-on control equipment for non-emergency engines (Section 304.1) shall demonstrate compliance by installing, operating, and maintaining in calibration, devices that continuously monitor the operational characteristics of the engine and any NO<sub>x</sub> emission reduction system.
- Section 503 (Compliance Determination-Test Methods Incorporated by Reference) was clarified to allow alternative test methods.
- Section 504.12 (Compliance Determination-Test Methods Incorporated by Reference): The test method "American Society of Testing Materials, ASTM Method D1266-98, ("Standard Test Method for Sulfur in Petroleum Products - Lamp Method"), 1998" was deleted. The EPA commented that the test method may not be appropriate; its range is 0.01-0.4% which will not be able to verify compliance with the definition of ultra low sulfur diesel fuel at <0.0015%.

**7. Demonstration of compliance with A.R.S. §49-112:**

Under A.R.S. § 49-479(C), a county may not adopt a rule or ordinance that is more stringent than the rules adopted by the Director of the Arizona Department of Environmental Quality (ADEQ) for similar sources unless it demonstrates compliance with the applicable requirements of A.R.S. §49-112.

§ 49-112 County regulation; standards

§ 49-112(A)

When authorized by law, a county may adopt a rule, ordinance or other regulation that is more stringent than or in addition to a provision of this title or rule adopted by the director or any board or commission authorized to adopt rules pursuant to this title if all of the following conditions are met:

1. The rule, ordinance or other regulation is necessary to address a peculiar local condition.
2. There is credible evidence that the rule, ordinance or other regulation is either;
  - (a) Necessary to prevent a significant threat to public health or the environment that results from a peculiar local condition and is technically and economically feasible.
  - (b) Required under a federal statute or regulation, or authorized pursuant to an intergovernmental agreement with the federal government to enforce federal statutes or regulations if the county rule, ordinance or other regulation is equivalent to federal statutes or regulation.
3. Any fee or tax adopted under the rule, ordinance or other regulation will not exceed the reasonable costs of the county to issue and administer that permit or plan approval program.

§ 49-112(B)

When authorized by law, a county may adopt rules, ordinances or other regulations in lieu of a state program that are as stringent as a provision of this title or rule adopted by the director or any board or commission authorized to adopt rules pursuant to this title if the county demonstrates that the cost of obtaining permits or other approvals from the county will approximately equal or be less than the fee or cost of obtaining similar permits or approvals under this title or any rule adopted pursuant to this title. If the state has not adopted a fee or tax for similar permits or approvals, the county may adopt a fee when authorized by law in the rule, ordinance or other regulation that does not exceed the reasonable costs of the county to issue and administer that permit or plan approval program.

The department complies with A.R.S. § 49-112(A) in that Maricopa County fails to meet the National Ambient Air Quality Standards for both ozone and particulates. The County failed to meet 2008 8-hour ozone standard by the marginal area attainment date of July 20, 2015. The EPA issued a final rule, effective June 3, 2016, reclassifying the Maricopa County area to “moderate” (published at 86 FR 26697, May 4, 2016). Further, a portion of the County was classified as a serious ozone nonattainment area under the previous 1-hour ozone standard requiring the County to continue to maintain the measures and requirements that allowed the County to attain that standard. Currently, a portion of Maricopa County and

Apache Junction in Pinal County is designated serious nonattainment for the PM<sub>10</sub> 24-hour standard. This is the only serious PM<sub>10</sub> nonattainment area in Arizona. Revisions to Rule 324 are being proposed to address the requirements of the State Implementation Plan (SIP) for “moderate” nonattainment for the 2008 eight-hour ozone national ambient air quality standard (NAAQS). The proposed amendments in Rule 324 include Reasonably Available Control Technology (RACT) for NO<sub>x</sub>.

The department complies with A.R.S. § 49-112(B) in that the amendments to Rule 324 are not more stringent than or in addition to a provision of Title 49 or rule adopted by the director or any board or commission authorized to adopt rules pursuant to Title 49; address the peculiar local conditions in Maricopa County; are authorized under A.R.S. Title 49, Chapter 3, Article 3; and are not in lieu of a state program.

**8. Documents or studies referenced and/or reviewed for this rulemaking:**

Not applicable

**9. Showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision:**

Not applicable

**10. Summary of the economic, small business, and consumer impact:**

The following discussion addresses each of the elements required for an economic, small business and consumer impact statement under A.R.S. § 41-1055.

**An identification of the rulemaking.**

This rulemaking revised Rule 324 (Stationary Internal Combustion (IC) Engines).

**An identification of the persons who will be directly affected by, bear the costs of or directly benefit from the rulemaking.**

The persons who are directly affected by and bear the costs of this rulemaking will be facilities in Maricopa County that use stationary spark- or compression-ignited RICE including stationary RICE used in cogeneration with a rating of greater than 250 brake horsepower (rated bhp), and facilities that use a combination of stationary RICE each with a rated bhp greater than 50 used at a source, whose maximum aggregate rated bhp is greater than 250. The department has issued permits to more than 590 facilities.

**A cost benefit analysis of the following:**



**(a) The probable costs and benefits to the implementing agency and other agencies directly affected by the implementation and enforcement of the rulemaking.**

Because this rulemaking did not impose any new compliance burdens on regulated entities or introduce additional regulatory requirements, the department deemed that none of the revisions have potentially significant economic impacts. It is expected that the department will benefit from the increased clarity of the rule with decreased time to inspect a facility or prepare a permit. In addition, the rulemaking will not impose increased monetary or regulatory costs on other state agencies, political subdivisions of this state, persons, or individuals so regulated.

The benefits of the rule revision are anticipated to be a result of the following changes:

- Changing the title of the rule to: Stationary Reciprocating Internal Combustion Engines (RICE);
- Adding a requirement that spark-ignition engines manufactured after June 12, 2006 and compression-ignition engines manufactured after July 11, 2005 comply with the federal standards of performance;
- Adding a compliance schedule for installing, maintaining, and operating a non-resetting totalizing hour meter;
- Reformatting Tables 1, 2, and 3 to clarify emission limits and retain current emission limits;
- Clarifying the compliance schedule for stationary RICE being removed from service;
- Clarifying that alternative test methods may be used if approved by the Control Officer.

The requirement that spark-ignition engines and compression-ignition engines must comply with existing federal standards of performance and the compliance schedule for a non-resetting totalizing hour-meter are revisions that now align Maricopa County requirements with existing federal standards.

Based on observations by department inspectors, all facilities subject to this rule as revised should already be in compliance with this requirement; therefore, no incremental costs are associated with the Rule 324 revisions.

**(b) The probable costs and benefits to a political subdivision of this state directly affected by the implementation and enforcement of the rulemaking**

The rule revisions do not impose increased monetary or regulatory costs on other state agencies, political subdivisions of this state, persons, or individuals so regulated.

**(c) The probable costs and benefits to businesses directly affected by the rulemaking, including any anticipated effect on the revenues or payroll expenditures of employers who are subject to the rulemaking.**

The department anticipates that increased clarity provided by the Rule 324 revisions will provide a benefit to the regulated community; it will take less time for sources subject to the rule to understand and comply with the rule, which leads to increased compliance, which leads to decreased costs of compliance to the regulated community. The department does not anticipate these rule revisions to have a significant impact on a person's income, revenue, or employment in this state related to this activity. The rule revision did not impose increased monetary or regulatory costs on individuals so regulated.

**A general description of the probable impact on private and public employment in businesses, agencies and political subdivisions of this state directly affected by the rulemaking.**

The rule revisions did not impose increased monetary or regulatory costs on other state agencies, political subdivisions of this state, persons, or individuals so regulated.

**A statement of the probable impact of the rulemaking on small businesses.**

The rule revisions did not impose increased monetary or regulatory costs on any business, persons, or individuals so regulated.

**(a) An identification of the small businesses subject to the rulemaking.**

Small businesses subject to this rulemaking are those facilities in Maricopa County that use stationary spark- or compression-ignited RICE including stationary RICE used in cogeneration with a rating of greater than 250 brake horsepower (rated bhp), and facilities that use a combination of stationary RICE each with a rated bhp greater than 50 used at a source, whose maximum aggregate rated bhp is greater than 250.

**(b) The administrative and other costs required for compliance with the rulemaking.**

This rulemaking updated and clarified existing rule provisions and definitions to be consistent with federal performance standards to reduce confusion and improve understanding and readability. The department considered the implications of the amendments to the regulated entities and the

implementing agency and deemed that none of the rule revisions have potentially significant economic impacts.

**(c) A description of the methods that the agency may use to reduce the impact on small businesses.**

**(i) Establishing less costly compliance requirements in the rulemaking for small businesses.**

By correcting and clarifying existing rule provisions and definitions, this rulemaking lessens or eases the regulatory burden for small businesses.

**(ii) Establishing less costly schedules or less stringent deadlines for compliance in the rulemaking.**

This rulemaking corrected or clarified existing rule provisions and definitions to reduce confusion and improve understanding and readability. Although the revised rule does include a schedule for compliance with installation of non-resetting totalizing hour meters, based on department inspector observations, the subject sources should already be in compliance with this requirement; therefore, no cost impacts on businesses, including small businesses, are anticipated.

**(iii) Exempting small businesses from any or all requirements of the rulemaking.**

This rulemaking corrected or clarified existing rule provisions and definitions to reduce confusion and improve understanding and readability.

**(d) The probable cost and benefit to private persons and consumers who are directly affected by the rulemaking.**

This rulemaking did not impose any new compliance burdens on regulated entities or introduce additional regulatory requirements and will not impose increased monetary or regulatory costs on any business, persons, or individuals so regulated. As such, there are no costs to pass through to consumers which means there are no impacts on consumers.

**A statement of the probable effect on state revenues.**

The rule revisions did not impose increased monetary or regulatory costs on other state agencies, political subdivisions of this state, persons, or individuals so regulated. Without costs to pass through to customers, there is no projected change in consumer purchase patterns and, thus, no impact on state revenues from sales taxes.

**A description of any less intrusive or less costly alternative methods of achieving the purpose of the rulemaking.**

This rulemaking corrected or clarified existing rule provisions and definitions to reduce confusion and improve understanding and readability.

**11. Name and address of department personnel with whom persons may communicate regarding the accuracy of the economic, small business, and consumer impact:**

Name:               Johanna M. Kuspert or Hether Krause  
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**12. Description of the changes between the proposed rule, including supplemental notices and final rule:**

Since the Notice of Proposed Rulemaking was published on May 13, 2016 (22 A.A.R 1145), the department made the following additional amendments:

- Section 103.2 (Exemptions): Did not include proposed new text “a piece of equipment that is approved by the Control Officer as a nonroad IC engine” in Section 103.2(b), per comments from the Salt River Project Agricultural Improvement and Power District (SRP) and the U.S. Environmental Protection Agency (EPA).
- Sections 104, 105, 106 (Partial Exemptions): Revised the introductory statements to state in part “...shall comply only with the provisions of...”, per comments from SRP.
- Sections 105.1 and 105.2 (Partial Exemptions for Low Usage Non-Emergency Engines): Changed proposed new text “hours in any 12 consecutive-calendar-month period” to “hours per calendar year” to be consistent with text in Section 104.5 (Partial Exemptions for Emergency Engines) and to be consistent with text in 40 CFR Part 60, Subpart IIII and 40 CFR Part 60, Subpart JJJJ.

- Section 207.3 (Definition of “Equivalent Replacement Engine”): Included new text “for the purpose of this rule” to the end-of the first sentence, per comments from the EPA.
- Section 212.1 (Definition of “Nonroad Internal Combustion (IC) Engine”): Did not include proposed new text “upon approval by the Control Officer” in Section 212.1, per comments from the Arizona Public Service Company (APS), SRP, and the EPA.
- Section 304.1 (Limitations for Non-Emergency Engines 250 Rated Bhp or Greater-Add-on Control Equipment for Non-Emergency Engines): Did not include proposed new text regarding add-on control equipment for non-emergency engines - “The uncontrolled NO<sub>x</sub> emissions from the non-emergency engines shall be reduced with add-on control equipment in compliance with Table 1 (engine category and weight percent reduction)”.
- Section 501.1(d) (Compliance Determination-Stationary RICE): Did not include proposed new text “An owner or operator of a stationary RICE shall demonstrate compliance with Section 304.1 of this rule, by installing, operating, and maintaining in calibration, devices that continuously monitor the operational characteristics of the engine and any NO<sub>x</sub> emission reduction system”, because the department did not include proposed new text in Section 304.1 regarding add-on control equipment for non-emergency engines.
- Section 501.3 (Compliance Determination-Ultra Low Sulfur Diesel Verification): Revised the new text after the list of items in Sections 501.3 (a)-(f) to change “and utilize” to “or be based on” and added “as approved by the Administrator” after “test methods”.
- Section 501.3 (Compliance Determination-Ultra Low Sulfur Diesel Verification): Revised the new text from “sulfur content of the fuel oil to demonstrate the 0.0015% limits” to “sulfur content of the fuel to demonstrate the 0.0015% limit”. Revised the new text in Section 501.3(f) from “testing of the fuel oil for sulfur content” to “test results of the fuel for sulfur content”
- Section 501.3(d) (Compliance Determination-Ultra Low Sulfur Diesel Verification): Removed Safety Data Sheets (SDS)/Material Safety Data Sheets (MSDS) from the list of documentation of the sulfur content of the fuel oil, per the EPA’s comments.

- Section 503 (Compliance Determination-Test Methods Incorporated By Reference): Deleted the provision allowing test methods to be used upon sole approval by the Control Officer and added text that allows test methods as approved by the Administrator to be used, per the EPA's comments.

**13. Summary of the comments made regarding the rule and the department response to them:**

Since the Notice of Proposed Rulemaking was published on May 13, 2016 (22 A.A.R. 1145), the department received comments from the Arizona Public Service Company (APS), Salt River Project Agricultural Improvement and Power District (SRP), and the U.S. Environmental Protection Agency (EPA). The comments and the department's responses are provided below.

Comment #1: Section 103.2 (Exemptions)

In the proposed revisions to Rule 324, MCAQD is proposing to remove portions of Section 103.2, which provided exceptions for nonroad IC engines and Section 104, which provides partial exemptions for emergency IC engines. Based on language contained in the preamble, the details in the formatting of the modified text, which includes overlapping underline and strikethrough, and the structure of the remaining portions of those sections, SRP believes that MCAQD has inadvertently deleted those partial sections. Accordingly, SRP suggests MCAQD reinstate the rule language for Section 103.2 and 104 as contained in the April 25, 2016 Board of Health Staff Report.

Response #1: Section 103.2 (Exemptions)

The department corrected the overlapping underline and strikethrough in Section 103 (Exemptions) and did not include proposed new text "a piece of equipment that is approved by the Control Officer as a nonroad IC engine" in Section 103.2(b).

Comment #2: Section 103.2(b) (Exemptions)

This section allows discretion to the Control Officer on the definition of "nonroad engine" without guidance or restriction on how the Control Officer shall make that determination. The EPA recommends that MCAQD remove this discretion.

Response #2: Section 103.2(b) (Exemptions)

The department did not include proposed new text "a piece of equipment that is approved by the Control Officer as a nonroad IC engine" in Section 103.2(b).

Comment #3: Sections 104, 105, and 106 (Partial Exemptions)

In the proposed revisions to Sections 104, 105, and 106, which provide partial exemptions for emergency engines, low use non-emergency engines, and non-emergency engines subject to 40 CFR Part 63, Subpart ZZZ, respectively, MCAQD does not indicate which sections of Rule 324 the affected engines are exempt from. SRP suggests that MCAQD revise Sections 104, 105, and 106 to indicate which sections the affected engines are exempt from.

Response #3: Sections 104, 105, and 106 (Partial Exemptions)

The department revised the introductory statements in Sections 104, 105, and 106 to state in part "...shall comply only with the provisions of...".

Comment #4: Section 212.1 (Definition of "Nonroad Internal Combustion (IC) Engine")

The proposed revisions to the definition of "Nonroad Internal Combustion (IC) Engine" now indicates that an engine must first receive approval from MCAQD prior to fully qualifying as a nonroad IC engine. Qualifying as a nonroad IC engine is critical since all nonroad IC engines are fully exempt from the requirements of Rule 324. The requirement to receive prior approval from MCAQD for all nonroad IC engines will place a substantial amount of burden on both industry and MCAQD. Given that nonroad IC engines encompass a wide array of equipment including tractors, cranes, bull dozers, fork lifts, portable generators and many other portable engines, the number of IC engines requiring approval from MCAQD will be significant, likely in the thousands. Given that nonroad IC engines have historically been exempt from Rule 324 based on meeting the definition alone, there is likely a great number of IC engine owners and operators that are unaware of the proposed requirements to obtain approval from MCAQD as they are not tracking the rulemaking process. Lastly, MCAQD has not explained why requiring approval for nonroad IC engines is necessary. If MCAQD has reason to believe that sources are inappropriately claiming stationary IC engines as nonroad IC engines in order to claim a rule exemption, this is best addressed through MCAQD's compliance and enforcement divisions, rather than through a change to the provisions of Rule 324. The change would have significant implications to owners and operators of nonroad IC engines and SRP strongly urges MCAQD to not finalize such approval requirements in the final rule.

Response #4: Section 212.1 (Definition of "Nonroad Internal Combustion (IC) Engine")

The department did not include proposed new text "upon approval by the Control Officer" in Section 212.1.

Comment #5: Section 212.1 (Definition of “Nonroad Internal Combustion (IC) Engine”)

Section 212 of Rule 324 states “upon approval by the Control Officer...”. Does this mean we now have to have all nonroad engines approved by the Control Officer? APS has dozens, if not hundreds, of nonroad engines located within Maricopa County. This includes portable light fixtures, air compressors, nonroad engines used throughout the County to provide power at construction sites. It is unrealistic and unnecessary to have approval on these units since they clearly meet the definition of “nonroad engine”.

Response #5: Section 212.1 (Definition of “Nonroad Internal Combustion (IC) Engine”)

The department did not include proposed new text “upon approval by the Control Officer” in Section 212.1.

Comment #6: Section 212.1 (Definition of “Nonroad Internal Combustion (IC) Engine”)

This section allows discretion to the Control Officer on the definition of “nonroad engine” without guidance or restriction on how the Control Officer shall make that determination. The EPA recommends that MCAQD remove this discretion.

Response #6: Section 212.1 (Definition of “Nonroad Internal Combustion (IC) Engine”)

The department did not include proposed new text “upon approval by the Control Officer” in Section 212.1.

Comment #7: Section 304.3 (Limitations for Non-Emergency Engines 250 Rated BHP or Greater-Federal Standards of Performance for Non-Emergency Engines)

Limits for engines subject to NSPS are not automatically considered RACT by EPA for the purposes of SIP approval. MCAQD must provide analysis that NSPS requirements cited here meet RACT or provide the intended numerical limits and operational requirements explicitly within this rule for EPA to review for SIP approval purposes.

Response #7: Section 304.3 (Limitations for Non-Emergency Engines 250 Rated BHP or Greater-Federal Standards of Performance for Non-Emergency Engines)

A review was conducted by Eastern Research Group, Inc. (ERG) to compare the emissions limits in Rule 324 to other similar rules in other similar jurisdictions, as well as national standards and data sources. ERG reviewed and compared State Implementation Plan (SIP) rules for IC engines in several areas of California to the NSPS Subparts IIII and JJJJ limits incorporated under the revisions to Rule 324. Specifically, IC



engine rules for these areas were reviewed: Placer County Air Pollution Control District, Sacramento Metropolitan Air Quality Management District, Ventura County Air Pollution Control District, and South Coast Air Quality Management District. In addition, ERG searched the RACT/BACT/LAER Clearinghouse (RBLC) to locate applicable control technologies. ERG's search of the RBLC specified processes in the Internal Combustion Engines categories, including Large Internal Combustion Engines greater than 500 horsepower (hp) (all fuel types) and Small Internal Combustion Engines less than 500 hp (all fuel types), with permits dating back to 2000. The search results included the following data fields: RBLC ID, facility name and state, permit date, process name, throughput, pollutant, control technology, and percent efficiency of control. Based on searches conducted for facilities in the IC engine category, ERG found 283 recent RACT, BACT, and LAER decisions for CO, NO<sub>x</sub>, and VOC emissions that had sufficient information to be included in this analysis. While the initial RBLC query returned thousands of records, RBLC records were only used if the engine size could be determined and if the emission limits were in units of (g/HP-hr). The majority of the RBLC determinations represent PSD-BACT determinations and some represent LAER determinations.

The engine rules in NSPS Subparts IIII and JJJJ are complex and provide numerous subcategories of engines subject to different emission limits. However, the NSPS rules are generally consistent with both the California SIP rules and recent RBLC determinations, with the exception of the SIP rules for the Los Angeles nonattainment area. The Los Angeles area area of California has been classified as being in serious, severe, and extreme nonattainment with the 2008 8-hour ozone standard. Therefore, because these areas have worse nonattainment statuses as compared to Maricopa County, it is expected that their IC engine limits would be more restrictive than for a moderate nonattainment area such as Maricopa County. The RBLC results represent 283 records that had sufficient information to be useful for comparison, Of the 283 records evaluated, 10 were for smaller compression-ignition engines (less than 250 hp). The NO<sub>x</sub> and CO limits for these smaller engines are lower than the corresponding NSPS Subpart IIII limits for larger engines (greater than 250 hp), while the VOC limits are higher. For the larger engines, the NSPS limits fell within the range of the RBLC limits for most pollutants and engine types, the only exception being VOC limits for spark-ignition engines manufactured between July 1, 2008 and January 1, 2011. A comparison of the emission limits in Rule 324 revisions and NSPS Subparts IIII and JJJJ with the range of limits found in

RBLC and the California SIP rules shows that the emission limits in revised Rule 324 are within the range of values found in the RBLC and as required under the California SIP rules. Therefore, the department has determined that the NSPS requirements cited in Rule 324 meet RACT.

Comment #8: Section 306 (Equivalent Replacement Engine or Identical Replacement Engine)

New language at Section 306 treats equivalent and identical replacement engines the same as the engines they are replacing for the purposes of rule compliance. However, the definition of “Equivalent Replacement Engine” would allow for an engine that could be up to 20% larger than the original engine, with the requirement that such larger replacement must also decrease NO<sub>x</sub> emissions by at least 20%.

While this does not pose an approvability issue for draft Rule 324, the EPA requests that MCAQD clarify that this definition only applies in this context and does not have broader implications.

Response #8: Section 306 (Equivalent Replacement Engine or Identical Replacement Engine)

The department included new text “for the purpose this rule” to the end-of the first sentence in Section 207.3 (Definition of “Equivalent Replacement Engine”).

Comment #9: Section 501.3 (Compliance Determination-Ultra Low Sulfur Diesel Verification)

This section allows for various documents to verify compliance with the ultra low sulfur diesel fuel limit. MCAQD should ensure the documents listed give accurate values and use enforceable test methods. For example, EPA generally has not approved the use of SDS/MSDS to determine compliance in SIP rules, unless the SDS/MSDS specifies that the compound of interest was determined by an approved EPA method.

Response #9: Section 501.3 (Compliance Determination-Ultra Low Sulfur Diesel Verification)

The department deleted Safety Data Sheets (SDS)/Material Safety Data Sheets (MSDS) from the list of documentation of the sulfur content of the fuel oil in Section 501.3(d). The department revised the new text after the list of items in Sections 501.3 (a)-(f) to change “and utilize” to “or be based on” and added “as approved by the Administrator” after “test methods”.

Comment #10: Section 503 (Compliance Determination-Test Methods Incorporated By Reference)

Alternative test methods may not be used upon sole approval by the Control Officer. The EPA asks the County to remove this provision or include language that also requires EPA approval for alternative methods.

Response #10: Section 503 (Compliance Determination-Test Methods Incorporated By Reference)

The department deleted the provision allowing test methods to be used upon sole approval by the Control Officer and added text that allows test methods as approved by the Administrator to be used.

**14. Any other matters prescribed by statute that are applicable to the specific department or to any specific rule or class of rules:**

Not applicable

**15. Incorporations by reference and their location in the rule:**

The department incorporated by reference sections of the Code of Federal Regulations in Section 503 (Compliance Determination-Test Methods Incorporated by Reference)

**16. Was this rule previously an emergency rule?**

No

**17. Full text of the rule follows:**

**MARICOPA COUNTY**

**AIR POLLUTION CONTROL REGULATIONS**

**REGULATION III - CONTROL OF AIR CONTAMINANTS**

**RULE 324**

**STATIONARY RECIPROCATING INTERNAL COMBUSTION ~~(IC)~~ ENGINES (RICE)**

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~~Revised 10/17/07~~

Adopted 10/22/2003; Revised 10/17/2007; Revised 11/02/2016

**MARICOPA COUNTY**  
**AIR POLLUTION CONTROL REGULATIONS**  
**REGULATION III - CONTROL OF AIR CONTAMINANTS**  
**RULE 324**

**STATIONARY RECIPROCATING INTERNAL COMBUSTION ~~(IC)~~ ENGINES (RICE)**

**SECTION 100 – GENERAL**

**101 PURPOSE:** To limit carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), volatile organic compounds (VOCs), and particulate matter (PM) emissions from stationary reciprocating internal combustion (~~IC~~) engines (RICE).

**102 APPLICABILITY:** ~~The provisions of this rule apply to any single existing or new stationary spark or compression ignited reciprocating IC engine including stationary IC engines used in cogeneration, with a rating of greater than 250 brake horsepower (bhp). The provisions of this rule also apply to a combination of IC engines each with a rated brake horsepower greater than 50 bhp used at a single source, whose maximum aggregate rated brake horsepower is greater than 250 bhp.~~

**102.1** This rule applies to a spark-ignition engine or compression-ignition engine including stationary RICE used in cogeneration, with a rated brake horsepower (rated bhp) of greater than 250. This rule also applies to a combination of stationary RICE each with a rated bhp greater than 50 used at a source, whose maximum aggregate rated bhp is greater than 250.

**102.2** A stationary RICE subject to this rule that is also subject to the federal standards of performance set forth in 40 CFR Part 60, Subpart IIII for compression-ignition engines or 40 CFR Part 60, Subpart JJJJ for spark-ignition engines shall comply with the most stringent requirements. Whenever more than one provision in this rule applies to such engine or whenever a provision in this rule and a provision in the federal standards apply to such engine, the provision or combination of provisions resulting in the lowest rate of emissions shall apply, unless otherwise specifically exempted or designated.

**102.3** **NSPS & NESHAP:** In addition to this rule, a stationary RICE may be subject to New Source Performance Standards (NSPS) in Rule 360 and/or National Emission Standards for Hazardous Air Pollutants (NESHAP) in Rule 370 of these rules. Whenever more than one provision in this rule applies to such engine or whenever a provision in this rule and a provision in the federal standards apply to such engine, the provision or combination of provisions resulting in the lowest rate of emissions shall apply, unless otherwise specifically exempted or designated.

**103 EXEMPTIONS:** ~~The following types of stationary IC engines are exempt from all of the requirements of this rule but shall comply with Rule 300:~~

~~103.1 Any rotary engine, including gas turbines, jet engines.~~

- ~~103.2 An IC engine operated as a nonroad engine.~~
- ~~103.3 A laboratory IC engine used directly and exclusively for engine research including engine development, and subsequent engine performance verification for the purpose of either engine emission control techniques or engine efficiency improvements.~~
- ~~103.4 A prime engine when it is operated for purposes of performance verification and testing by the owner or operator or by a manufacturer or distributor of such equipment for the purpose of performance verification and testing at the production facility.~~
- ~~103.5 A compressed gas IC engine used for solar testing and research programs.~~
- ~~103.6 An IC engine operated as an emergency generator or other equipment at a nuclear power plant that must run for safety reasons and/or operational tests to meet requirements imposed by the Nuclear Regulatory Commission.~~
- ~~103.7 An IC engine test stand used for evaluating engine performance. ; and~~
- ~~103.8 An IC engine used for training purposes as long as the total number of hours of the operation does not exceed 100 hours per calendar year per engine.~~
- 103.1** The following types of stationary RICE are exempt from all of the requirements of this rule but shall comply with Rule 300 (Visible Emissions) of these rules:
- a.** A rotary engine, including gas turbines, jet engines.
  - b.** A stationary RICE used directly and exclusively for engine research including engine development, and subsequent engine performance verification for the purpose of either engine emission control techniques or engine efficiency improvements.
  - c.** A non-emergency engine when it is operated for purposes of performance verification and testing by the owner or operator or by a manufacturer or distributor of such equipment for the purpose of performance verification and testing at the production facility.
  - d.** A compressed gas stationary RICE used for solar testing and research programs.
  - e.** A stationary RICE operated as an emergency engine or other equipment at a nuclear power plant that must run for safety reasons and/or operational tests to meet requirements imposed by the Nuclear Regulatory Commission.
  - f.** A stationary RICE test stand used for evaluating engine performance.

g. A stationary RICE used for training purposes as long as the total number of hours of the operation does not exceed 100 hours per calendar year per engine.

**103.2** An IC engine operated as a nonroad IC engine is exempt from all of the requirements of this rule but shall comply with Rule 300 (Visible Emissions) of these rules.

**104** **PARTIAL EXEMPTIONS FOR EMERGENCY ENGINES:** ~~Any A stationary IC engine RICE~~ operated as an emergency engine, as defined in this rule, for any of the following reasons ~~is exempt from all of the provisions of this rule, except for the provisions in Sections 301, 303, and subsections 502.1 and 502.4;~~ shall comply only with the provisions in Sections 301, 303, 306, 307, 400, 502.1 and 502.4 of this rule when:

**104.1** Used only for power when normal power service fails from the serving utility or if onsite electrical transmission or onsite power generation equipment fails.

**104.2** Used only for the emergency pumping of water resulting from a flood, fire, lightning strikes, police action or for any other essential public services which affect ~~the~~ public health and safety.

**104.3** Used for lighting airport runways.

**104.4** Used for sewage overflow mitigation and/or prevention.

**104.5** Used for reliability-related activities such as engine readiness, calibration, or maintenance or to prevent the occurrence of an unsafe condition during electrical system maintenance, as long as the total number of hours of the operation does not exceed 100 hours per calendar year per engine as evidenced by an installed non-resettable hour meter.

**104.6** Used as the ~~prime non-emergency~~ engine when the ~~prime non-emergency~~ engine has failed, but only for such time as is needed to repair the ~~prime non-emergency~~ engine, ~~or~~

**104.7** Used to operate standby emergency water pumps for fire control that activate when sensors detect low water pressure.

**105** **PARTIAL EXEMPTIONS FOR LOW USAGE NON-EMERGENCY, LOW USAGE PRIME ENGINES:** The following low usage non-emergency engines, ~~low usage prime engines~~ ~~are exempt from all of the provisions of this rule except for the provisions in Sections 301, 303, and subsections 502.1 and 502.4;~~ shall comply only with the provisions in Sections 301, 303, 306, 307, 400, 502.1 and 502.4 of this rule for:



**105.1** Each engine with a rated bhp at or below 1000 bhp that operates less than 200 hours ~~in any 12-~~  
~~consecutive month period~~ per calendar year as evidenced by an installed non-resettable hour meter.

**105.2** Each engine with a rated bhp above 1000 bhp that operates less than 100 hours ~~in any 12-~~  
~~consecutive month period~~ per calendar year as evidenced by an installed non-resettable hour meter.

**106** **PARTIAL EXEMPTION FOR NON-EMERGENCY ENGINES SUBJECT TO 40 CFR PART 63,**  
**SUBPART ZZZZ: A stationary RICE subject to the federal standards of performance set forth in 40 CFR**  
**Part 63, Subpart ZZZZ shall comply only with the provisions in Sections 502.1, 502.2, and 502.3 of this**  
**rule.**

**SECTION 200 – DEFINITIONS:** For the purpose of this rule, the following definitions shall apply, in addition to  
those definitions found in Rule 100 (General Provisions and Definitions) of these rules. In the event of any inconsistency  
between any of the Maricopa County Air Pollution Control Rules, the definitions in this rule take precedence. See Rule  
100 (General Provisions and Definitions) of these rules for definitions of terms that are used but not specifically defined  
in this rule.

**201** **AFTERCOOLER / INTERCOOLER:** A system that cools the engine intake air or air/fuel mixture after the  
air exits the turbocharger and prior to the introduction into the cylinder, thereby lowering NO<sub>x</sub> emissions.

**202** **COGENERATION UNIT:** ~~Internal combustion engine unit~~ A stationary RICE unit that burns fuel to  
simultaneously produce electricity and heat in a single thermodynamic process and is usually located in close  
proximity to the equipment requiring the heat energy.

**203** **COMPRESSION-IGNITION ENGINE:** ~~A reciprocating internal combustion engine~~ A stationary RICE with  
operating characteristics wherein the principal mechanism of igniting the fuel and air mixture in the cylinders is  
the compression of air in the cylinder until it is so hot that any fuel injected into the air or mixed with the air  
ignites. In this type of engine, a separate ignition source, such as a spark plug, is not used.

**204** **DIESEL ENGINE:** A type of ~~compression-ignited IC engine~~ compression-ignition engine.

**205** **EMERGENCY ENGINE:** ~~Any stationary standby IC engine~~ A stationary RICE whose sole function is to  
provide back-up power when electric power from the local utility is interrupted or when operated solely for any  
of the reasons listed in Section 104 of this rule. An emergency engine, for the purposes of this rule, shall not be  
used to supply standby power due to a voluntary reduction in power by a utility or power company, supply  
power for distribution or sale to the grid, or supply power at a source in order to avoid peak demand charges

or high electric energy prices during on-peak price periods and shall not exceed 500 hours of operation per calendar year including the 100 hours listed in ~~subsection~~ Section 104.5 of this rule.

**206 ENGINE FAMILY:** A group of ~~engines~~ stationary RICE with similar design features such as fuel type, cooling medium, method of air aspiration, combustion chamber design including cylinder bore and stroke, exhaust after treatment (if any), method of fuel admission, and method of control. These engines are also expected to have similar emission and operating characteristics throughout their useful lives.

**207 EQUIVALENT REPLACEMENT ENGINE:** ~~An engine~~ A stationary RICE that is substituted for ~~a another stationary IC engine~~ RICE that is intended to perform the same or similar function as the original ~~engine~~ stationary RICE and where all of the following conditions exist:

**207.1** The equivalent replacement engine results in equal or lower air contaminant emissions than the ~~existing engine~~ original stationary RICE; and

**207.2** The equivalent replacement engine meets the emission control technology standards contained in ~~either Table 1 or Table 2~~ Section 304 of this rule; and

**207.3** The rated bhp of the equivalent replacement engine does not exceed the rated bhp of the ~~existing engine~~ original stationary RICE (or sum of ~~existing engines~~ original stationary RICE) by more than 20 percent, for the purpose of this rule. For every percentage point increase of the rated ~~brake horsepower~~ bhp, there shall be an associated decrease in emissions of nitrogen oxides, expressed as a mass per unit time, equal to or exceeding two percentage points.

**208 EXISTING ENGINE:** ~~An engine that commenced operation prior to October 22, 2003 or an engine on which the construction or modification has commenced prior to October 22, 2003, including the contractual obligation to undertake and complete an order for an engine.~~

**209 208 IDENTICAL REPLACEMENT ENGINE:** ~~An engine that is substituted for an existing stationary IC engine that has the same manufacturer type, model number, manufacturer's maximum rated capacity (bhp), and that is intended to perform the same or similar function as the original stationary IC engine that it replaces and has equal or lower emissions or meets the emission control technology requirements in Section 304, Table 1, 2, or 3.~~ A stationary RICE that is substituted for another stationary RICE that is intended to perform the same or similar function as the original stationary RICE and where all of the following conditions exist:

208.1 The identical replacement engine results in equal or lower air contaminant emissions than the original stationary RICE; and

208.2 The identical replacement engine meets the emission control technology standards contained in Section 304 of this rule; and

208.3 The identical replacement engine has the same manufacturer type, model number, and manufacturer's rated bhp as the original stationary RICE.

210 ~~INTERNAL COMBUSTION (IC) ENGINE, NONROAD:~~

~~210.1 An IC engine:~~

- ~~a. In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or~~
- ~~b. In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or~~
- ~~c. That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include but are not limited to, wheels, skids, carrying handles, dollies, trailers, or platforms.~~

~~210.2 An internal combustion engine is not a nonroad engine if:~~

- ~~a. The engine used to propel a motor vehicle or a vehicle used solely for competition, or is subject to standards promulgated under Section 202 of the Clean Air Act; or~~
- ~~b. The engine regulated by a federal New Source Performance Standard promulgated under Section 111 of the Clean Air Act; or~~
- ~~c. The engine otherwise included in paragraph (c) above of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replace(s) an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine~~

that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e. at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location.

211 ~~INTERNAL COMBUSTION (IC) ENGINE, STATIONARY~~ : Any reciprocating, piston-driven IC engine that is operated or intended to be operated at one specific location for more than 12 consecutive months or that is attached to a foundation at the location. Any engine that replaces an engine at a location and is intended to perform the same or similar function as the engine being replaced will be included in calculating the consecutive time period. A stationary IC engine is not a nonroad engine.

212 **209** ~~LEAN-BURN ENGINE~~: A spark-ignited engine A spark-ignition engine with an air-to-fuel operating range that has more air present than is needed to burn the fuel present and cannot be adjusted to operate with an exhaust oxygen concentration of less than or equal to 2%.

213 **210** **LOCATION**: Any single site at a building, structure, facility or installation.

214 ~~LOW SULFUR OIL~~: Fuel oil containing less than or equal to 0.05 % sulfur by weight.

215 ~~NEW ENGINE~~: An engine that is not an existing engine.

**211** **NON-EMERGENCY ENGINE**: A stationary RICE that is dedicated to a process or processes for the purpose of supplying primary mechanical or electrical power.

**212** **NONROAD INTERNAL COMBUSTION (IC) ENGINE**:

**212.1** Equipment that meets the following requirements are nonroad IC engines:

- a.** An internal combustion engine that is (or will be) used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or
- b.** An internal combustion engine that is (or will be) used in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or
- c.** An internal combustion engine that by itself or in or on a piece of equipment is portable or transportable, meaning designed to be and capable of being carried or moved from one

location to another. Indicia of transportability include but are not limited to, wheels, skids, carrying handles, dollies, trailers, or platforms.

**212.2** The following are not nonroad IC engines:

- a.** An engine used to propel a motor vehicle, an aircraft, or equipment used solely for competition; or
- b.** An engine regulated by a federal New Source Performance Standard promulgated under Section 111 of the Clean Air Act; or
- c.** An engine otherwise included in Section 212.1(c) of this rule that remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replace(s) an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e. at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location.

246 **213** **PART(S) PER MILLION, DRY VOLUME (PPMDV):** A unit of proportion equal to  $10^{-6}$  that is measured on a dry basis (minus water) at 15% oxygen.

247 ~~**PRIME ENGINE:** A principal or main use engine that is dedicated to a process or processes for the purpose of supplying primary mechanical or electrical power, as opposed to an emergency engine.~~

248 **214** **RATED BRAKE HORSEPOWER (RATED BHP):** The maximum brake horsepower (bhp) specified by the engine manufacturer for the engine application, usually listed on the nameplate of the engine. If the engine has been altered so that the maximum brake horsepower is different than the rated brake horsepower on the nameplate, then the maximum brake horsepower shall be considered the rated brake horsepower.

249 **215** ~~**RICH-BURN ENGINE:** Any spark-ignited IC engine~~ A spark-ignition engine that is not a lean-burn engine.

~~220~~ **216** **SPARK-IGNITION ENGINE:** ~~An IC engine~~ A stationary RICE wherein the fuel is usually mixed with intake air before introduction into the combustion chamber resulting in a relatively homogeneous air/fuel mixture in the combustion chamber, at which time a spark plug, or other device, then ignites the air/fuel mixture.

**217** **STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINE (RICE):** A reciprocating, piston-driven internal combustion engine that is operated or intended to be operated at one specific location for more than 12 consecutive months or that is attached to a foundation at the location. An engine that replaces an engine at a location and is intended to perform the same or similar function as the engine being replaced will be included in calculating the consecutive time period. A stationary RICE is not a nonroad engine.

~~224~~ **218** **SULFUR OXIDES (SO<sub>x</sub>):** Oxides of sulfur calculated as equivalent sulfur dioxide.

**219** **ULTRA LOW SULFUR DIESEL:** Fuel oil containing less than or equal to 0.0015 % sulfur by weight.

~~222~~ **220** **WASTE DERIVED FUEL GAS:** ~~Any~~ A gaseous fuel that is generated from the biodegradation of solid or liquid waste including, but not limited to, ~~sewage sludge~~, digester gas and landfill gas.

#### SECTION 300 – STANDARDS:

**301** **~~LIMITATIONS FOR NEW AND EXISTING STATIONARY IC ENGINES~~ STATIONARY RICE - FUEL:** An owner or operator of ~~any~~ an engine that meets the criteria listed in Section 102 of this rule shall comply with either of the following:

**301.1** Use any fuel that contains no more than ~~0.05%~~ 0.0015% sulfur by weight, alone or in combination with other fuels.

**301.2** Use any waste derived fuel gas that contains no more than 0.08% sulfur by weight, alone or in combination with other fuels.

**302** **GOOD COMBUSTION PRACTICES / TUNING PROCEDURE FOR STATIONARY RICE:** An owner or operator of an engine that meets the criteria listed in Section 102 of this rule shall conduct preventative maintenance or tuning procedures as recommended by the engine manufacturer to ensure good combustion practices to minimize NO<sub>x</sub> emissions. A handheld monitor may be used if so desired by the owner or operator for measurement of NO<sub>x</sub> and CO ~~and~~ concentrations in the effluent stream after each adjustment is made. ~~This;~~ this may assist in determining that the proper adjustment has been made

~~to ensure NO<sub>x</sub> and CO minimization~~ minimize NO<sub>x</sub> and CO emissions. A handheld monitor may be used by the Control Officer to determine compliance with this section. In lieu of a manufacturer's procedure, a different procedure specified by any other maintenance guideline may be used as a default procedure.

~~The owner or operator shall include all of the following in the tuning procedures~~ procedure shall include all of the following, if the engine is so equipped, and if such procedures are appropriate to the type of engine:

**302.1** Lubricating Oil and Filter: Change once every three months or after no more than 300 hours of operation, whichever occurs last.

**302.2** Inlet Air Filter: Clean once every three months or after no more than 300 hours of operation and replace every 1,000 hours of operation or every year, whichever occurs last.

**302.3** Fuel Filter: Clean once every year or replace (if cartridge type) once every 1,000 hours of operation, whichever occurs last.

**302.4** Check and adjust the following once every year or after no more than 1,000 hours of operation, whichever occurs last:

- a. Intake and exhaust valves
- b. Spark plugs (if so equipped)
- c. Spark timing and dwell or fuel injection timing (if adjustable), and
- d. Carburetor mixture (if adjustable).

**302.5** Spark Plugs and Ignition Points: Replace after 3,000 hours of operation or every year whichever occurs last

**302.6** Coolant: Change after 3,000 hours of operation or every year whichever occurs last.

**302.7** Exhaust System: Check for leaks and/or restrictions after 3,000 hours of operation or every year whichever occurs last.

**303** **LIMITATIONS FOR STATIONARY RICE – OPACITY:** ~~No~~ An owner or operator of an engine that meets the criteria in Section 102 of this rule shall not discharge into the ambient air from any single source of emissions such engine any air contaminant, other than uncombined water, in excess of 20% opacity.

**304** **ADDITIONAL LIMITATIONS FOR PRIME NON-EMERGENCY ENGINES > 250 RATED BHP OR GREATER:** ~~In addition to meeting the standards in Sections 301, 302, and 303, each existing or new prime engine greater than 250 rated bhp that is not listed in Sections 103, 104, or 105, shall comply with~~

~~the emission limits or control technology requirements listed in Section 304, Table 1, 2, or 3, dependent upon the type of engine. In addition to meeting the standards in Sections 301, 302 and 303 of this rule, an owner or operator of a non-emergency engine that meets the criteria in Section 102 of this rule shall comply with Sections 304.1 or 304.2 of this rule.~~

**304.1 Engine Requirements for Non-Emergency Engines:** The emissions in parts per million by dry volume (ppmdv) or grams per bhp (g/bhp) from the non-emergency engines shall comply with either Table 1 or Table 2 of this rule.

**TABLE 1**  
**COMPRESSION-IGNITION ENGINES**

<b><u>MANUFACTURED OR MODIFIED</u></b>	<b><u>RATED BHP</u></b>	<b><u>ENGINE REQUIREMENTS</u></b>
<u>Prior to October 22, 2003</u>	<u>250-399</u>	<u>770 ppmdv or 10 g/bhp-hr. NO<sub>x</sub> or turbocharger with aftercooler/intercooler or 4-degree injection timing retard</u>
<u>Prior to October 22, 2003</u>	<u>400 plus</u>	<u>550 ppmdv or 7.2 g/bhp-hr. NO<sub>x</sub> or turbocharger with aftercooler/intercooler or 4-degree injection timing retard</u>
<u>On or after October 22, 2003 but prior to July 11, 2005</u>	<u>&gt;250</u>	<u>530 ppmdv or 6.9 g/bhp-hr. NO<sub>x</sub> or turbocharger with aftercooler/intercooler or 4-degree injection timing retard; 1,000 ppmdv CO; 0.40 g/bhp-hr PM</u>

**TABLE 2**  
**SPARK-IGNITION ENGINES**



**LEAN-BURN ENGINES**

<b><u>MANUFACTURED OR MODIFIED</u></b>	<b><u>RATED BHP</u></b>	<b><u>OXIDES OF NITROGEN (NO<sub>x</sub>)</u></b>	<b><u>VOLATILE ORGANIC COMPOUND (VOC)</u></b>	<b><u>CARBON MONOXIDE (CO)</u></b>
<u>Prior to October 22, 2003</u>	<u>&gt;250</u>	<u>280 ppmdv or 4.0 g/bhp-hr</u>	<u>800 ppmdv or 5.0 g/bhp-hr</u>	<u>4,500 ppmdv</u>
<u>On or after October 22, 2003 but prior to June 12, 2006</u>	<u>&gt;250</u>	<u>110 ppmdv or 1.5 g/bhp-hr</u>	<u>800 ppmdv or 5.0 g/bhp-hr</u>	<u>4,500 ppmdv</u>

**RICH-BURN ENGINES**

<b><u>MANUFACTURED OR MODIFIED</u></b>	<b><u>RATED BHP</u></b>	<b><u>OXIDES OF NITROGEN (NO<sub>x</sub>)</u></b>	<b><u>VOLATILE ORGANIC COMPOUND (VOC)</u></b>	<b><u>CARBON MONOXIDE (CO)</u></b>
<u>Prior to October 22, 2003</u>	<u>&gt;250</u>	<u>280 ppmdv or 4.0 g/bhp-hr or three-way catalyst*</u>	<u>800 ppmdv or 5.0 g/bhp-hr or three-way catalyst*</u>	<u>4,500 ppmdv or three-way catalyst*</u>
<u>On or after October 22, 2003 but prior to June 12, 2006</u>	<u>&gt;250</u>	<u>20 ppmdv or 0.30 g/bhp-hr or three-way catalyst*</u>	<u>800 ppmdv or 5.0 g/bhp-hr or three-way catalyst*</u>	<u>4,500 ppmdv or three-way catalyst*</u>

\* The three-way catalyst shall provide a minimum of 80% control efficiency for NO<sub>x</sub> and CO for those engines fueled with natural gas, propane or gasoline. In addition, the three-way catalyst shall also provide a minimum of at least 50% control efficiency for VOC for those engines fueled by gasoline.

~~NO<sub>x</sub> EMISSION LIMITS OR CONTROL TECHNOLOGY REQUIREMENTS FOR EXISTING COMPRESSION  
IGNITION ENGINES > 250 bhp~~

TABLE 1

RATED BRAKE HORSEPOWER (bhp)	ENGINE REQUIREMENTS
250-399	770 ppm <sub>dv</sub> or 10 g/bhp-hr. NO <sub>x</sub> or turbocharger with aftercooler/intercooler or 4 degree injection timing retard
400 plus	550 ppm <sub>dv</sub> or 7.2 g/bhp-hr. NO <sub>x</sub> or turbocharger with aftercooler/intercooler or 4 degree injection timing retard

**EMISSION LIMITS OR CONTROL TECHNOLOGY REQUIREMENTS FOR EXISTING APPLICABLE  
SPARK IGNITION ENGINES > 250 RATED BHP**

TABLE 2

OXIDES OF NITROGEN (NO <sub>x</sub> )	VOLATILE ORGANIC COMPOUND (VOC)	CARBON MONOXIDE (CO)
280 ppm <sub>dv</sub> or 4.0 b/bhp-hr or three-way catalyst*	800 ppm <sub>dv</sub> or 5.0 g/bhp-hr or three- way catalyst*	4,500 ppm <sub>dv</sub> or three-way catalyst*

**EMISSION LIMITS FOR NEW SPARK OR COMPRESSION IGNITION ENGINES > 250 BHP**

TABLE 3

ENGINE TYPE	NO <sub>x</sub>	PM*	CO
LEAN BURN (SPARK)	110 ppm <sub>dv</sub> or 1.5 g/bhp-hr.	Not Applicable	4,500 ppm <sub>dv</sub>
RICH BURN (SPARK)	20 ppm <sub>dv</sub> or 0.30 g/bhp-hr.	Not Applicable	4,500 ppm <sub>dv</sub>
COMPRESSION	530 ppm <sub>dv</sub> or 6.9 g/bhp-hr.	0.40 g/bhp-hr	1,000 ppm <sub>dv</sub>

\* A backhalf analysis shall be performed using reference Method 202 (referenced in subsection 504.6) each time a compliance test for particulate matter emissions to meet the limitations listed in Table 3 is performed using Method 5. The results of the Method 202 testing shall be used for emissions inventory purposes.

**304.2 Federal Standards of Performance for Non-Emergency Engines: An owner or operator of an engine listed in Sections 304.2(a) or (b) of this rule shall comply with the federal standards of**

performance for compression-ignition engines set forth in 40 CFR Part 60, Subpart IIII or spark-ignition engines set forth in 40 CFR Part 60, Subpart JJJJ and in all accompanying appendices as incorporated by reference in Rule 360 (New Source Performance Standards) of these rules.

Whenever more than one provision in this rule applies to such engine or whenever a provision in this rule and a provision in the federal standards apply to such engine, the provision or combination of provisions resulting in the lowest rate of emissions shall apply, unless otherwise specifically exempted or designated.

**a.** 40 CFR Part 60, Subpart IIII applies to all of the following non-emergency compression-ignition engines:

**(1)** Any stationary compression-ignition IC engine that was ordered after July 11, 2005 and manufactured after April 1, 2006.

**(2)** Any stationary compression-ignition IC engine that was modified or reconstructed after July 11, 2005.

**b.** 40 CFR Part 60, Subpart JJJJ applies to the following non-emergency spark-ignition engine:

**(1)** Any stationary spark-ignition engine that was ordered after June 12, 2006 and manufactured on or after:

**(a)** July 1, 2007 for engines with a rated bhp greater than or equal to 500 (except lean burn engines with a rated bhp greater than or equal to 500 and less than 1,350)

**(b)** January 1, 2008 for lean burn engines with a rated bhp greater than or equal to 500 and less than 1,350

**(c)** July 1, 2008 for engines with a rated bhp less than 500.

**(2)** Any stationary spark-ignition engine that was modified or reconstructed after June 12, 2006.

**305** **EFFICIENCY ALLOWANCE:** Each emission limit expressed in Tables ~~1, 2 or 3~~ 1 or 2 of this rule may be multiplied by X, where X equals the engine efficiency (E) divided by a reference efficiency of 30 percent. Engine efficiency shall be determined by one of the following methods whichever is higher:

**a.**  $E = (\text{Engine Output}) \times (100) \div (\text{Energy Input})$  where Energy Input is determined by a fuel measuring device accurate to +/- 5 % and is based upon the higher heating value (HHV) of the fuel. Percent

efficiency (E) shall be averaged over 15 consecutive minutes and measured at peak load for the applicable engine.

- b.  $E = (\text{Manufacturers Rated Efficiency [Continuous]} \text{ at (LHV) X (LHV)} \div (\text{HHV}))$  where LHV = the lower heating value of the fuel Engine efficiency (E) shall not be less than 30 percent; an engine with an efficiency lower than 30 percent shall be assigned an efficiency of 30 percent for the purposes of this rule.

**306**     **EQUIVALENT REPLACEMENT ENGINE OR IDENTICAL REPLACEMENT**

**ENGINE REPLACEMENT:** ~~An equivalent or identical replacement engine that replaces an existing engine shall be treated as an existing engine for the purposes of compliance with this rule, unless the engine commenced operation or was constructed or modified after October 22, 2003, including the contractual obligation to undertake and complete an order for an engine, and then it will be considered a new engine for purposes of meeting the standards for a new engine in this rule.~~ An equivalent replacement engine or an identical replacement engine shall be treated as the original stationary RICE that it replaces for the purposes of compliance with this rule.

**307**     **MODIFICATION TO A STATIONARY RICE:** If a modification, including the contractual obligation to undertake and complete an order for an engine, is made to a stationary RICE, then such engine shall comply with all applicable provisions of this rule. The date of the modification shall be the trigger for when the modification is subject to the provisions of Section 304 of this rule. Whenever a provision in this rule and a provision in Section 304 of this rule apply to such engine, the provision or combination of provisions resulting in the lowest rate of emissions shall apply, unless otherwise specifically exempted or designated.

**308**     **NON-RESETTING TOTALIZING HOUR METER:** The owner or operator of a stationary RICE, subject to any provision of this rule, except for those engines being removed from service under Section 401 of this rule, shall install, operate, and maintain a non-resetting totalizing hour meter. If the non-resetting totalizing hour meter is found to be malfunctioning, operation of the engine shall cease until corrective action(s) can be implemented or the function of the meter is restored.

**SECTION 400 - ADMINISTRATIVE REQUIREMENTS**

**401**     **COMPLIANCE SCHEDULE-STATIONARY RICE BEING REMOVED FROM SERVICE:** ~~An owner or operator of an existing a stationary IC engine that must be replaced with a new engine to meet~~

~~emission limits listed in Section 300 shall be in compliance with the emission limits listed in Section 304, Table 3 by October 22, 2007. If a stationary RICE must be removed from service because such engine does not comply with the emission limits listed in Section 300 of this rule, then the stationary RICE shall be removed from service no later than November 2, 2017. The stationary RICE that replaces such engine shall comply with all applicable provisions of this rule and shall comply with Section 304 of this rule upon installation.~~

**402** **COMPLIANCE SCHEDULE-NON-RESETTING TOTALIZING HOUR METER:** The owner or operator of a stationary RICE, subject to any provision of this rule, except for those engines being removed from service under Section 401 of this rule, shall install, operate, and maintain a non-resetting totalizing hour meter on each such engine no later than November 2, 2017.

## **SECTION 500 - MONITORING AND RECORDS**

### **501 COMPLIANCE DETERMINATION:**

~~501.1 Existing Engines: Existing IC engines or engine families shall demonstrate compliance with Section 300 by recordkeeping according to Section 502. Emission testing using the applicable test methods listed in Section 500 shall be performed if the Control Officer requests.~~

~~501.2 Existing Engine Families at a Source: When testing an engine family at one source, the number of engines tested should be the greater of either one engine or one third of all identical engines in the group. If any of the representative engines exceed the emission limits, each engine in the group shall demonstrate compliance by emissions testing.~~

~~501.3 New Engines / New Engine Families: Compliance with the limitations listed in Section 304, Table 3 shall be demonstrated by either:~~

~~a. A statement from the manufacturer that the engine meets the most stringent emissions standards found in 40 CFR Part 89 or 90 applicable to the engine and its model year at the time of manufacture, or~~

~~b. Performance of emission testing using the test methods listed in Section 503.~~

**501.1** **Stationary RICE:** An owner or operator of a stationary RICE shall demonstrate compliance with all of the following, as applicable:

- a. With Section 300 of this rule, by recordkeeping according to Section 502 of this rule. Emission testing using the applicable test methods listed in Section 503 of this rule shall be performed upon the request of the Control Officer.
- b. With Section 304.2 of this rule, by one of the following:
  - (1) A statement from the manufacturer that the engine meets the most stringent emissions standards found in this rule or 40 CFR Parts 89, 90, and 1039 applicable to the engine and its model year at the time of manufacture.
  - (2) Emission testing using the applicable test methods listed in Section 503 of this rule shall be performed upon the request of the Control Officer.
- c. With 40 CFR Part 60.4213, for a stationary RICE with a displacement of greater than or equal to 30 liters per cylinder.

**501.2 Engine Family:** An owner or operator of an engine family shall demonstrate compliance with all of the following, as applicable:

- a. With Section 300 of this rule, by recordkeeping according to Section 502 of this rule. Emission testing using the applicable test methods listed in Section 503 of this rule shall be performed upon the request of the Control Officer.
- b. When testing an engine family at one source, the number of engines tested should be the greater of either one engine or one third of all identical engines in the group. If any of the representative engines exceed the emission limits, each engine in the group shall demonstrate compliance by emissions testing.
- c. With Section 304.2 of this rule, by one of the following:
  - (1) A statement from the manufacturer that the engine meets the most stringent emissions standards found in this rule or 40 CFR Parts 89, 90, and 1039 applicable to the engine and its model year at the time of manufacture.
  - (2) Emission testing using the applicable test methods listed in Section 503 of this rule shall be performed upon the request of the Control Officer.
- d. With 40 CFR Part 60.4213, for an engine family with a displacement of greater than or equal to 30 liters per cylinder.

501.4 **501.3** Low Sulfur Oil Ultra Low Sulfur Diesel Verification: If the Control Officer requests proof of the sulfur content, the owner or operator shall submit fuel receipts, contract specifications, pipeline meter tickets, Material Safety Data Sheets (MSDS), fuel supplier information or purchase records, if applicable, from the fuel supplier, indicating the sulfur content of the fuel oil. In lieu of these, testing of the fuel oil for sulfur content to meet the 0.05% limit shall be permitted if so desired by the owner or operator for evidence of compliance. If the Control Officer requests documentation of the sulfur content of the fuel to demonstrate the 0.0015% limit, the owner or operator shall submit one of the following:

- a. Fuel receipts, or
- b. Contract specifications, or
- c. Pipeline meter tickets, or
- d. Fuel supplier information, or
- e. Purchase records, or
- f. Test results of the fuel for sulfur content

The items listed above must provide accurate sulfur content values or be based on enforceable test methods as approved by the Administrator to determine the sulfur content.

501.5 **501.4** Waste Derived Fuel Gas - Sulfur Verification: The owner or operator shall submit documentation of the concentration of the sulfur level of the waste derived fuel gas to the Control Officer upon request. The sulfur content of gaseous fuels shall be determined by South Coast Air Quality Management District Method 307-94 Determination of Sulfur in a Gaseous Matrix.

501.6 **501.5** Test Method Conditions: The owner or operator shall use the test methods listed in Section 503 of this rule to determine compliance with the limitations listed in ~~Section 304~~, ~~Tables 4-3 1 or 2~~ of this rule. Testing for ~~stationary IC engines~~ stationary RICE shall be completed under steady state conditions at either the maximum operating load or no less than 80% of the rated ~~brake horsepower rating bhp~~. If the owner or operator of an engine demonstrates to the Control Officer that the engine cannot operate at these conditions, then emissions source testing shall be performed at the highest achievable continuous ~~brake horsepower rating~~ rated bhp or under the typical duty cycle or typical operational mode of the engine.

**502 RECORDKEEPING / RECORDS RETENTION:** The owner or operator of ~~any stationary IC engine a~~ stationary RICE subject to this rule shall comply with the following requirements and ~~keep~~ retain records for a ~~period of at least~~ 5 years:

**502.1 Records Required for a Stationary RICE:** An owner or operator of ~~any IC engine a stationary~~ RICE, including emergency engines, ~~prime engines non-emergency engines and low usage~~ engines low usage non-emergency engines, shall keep a record that includes an initial one time entry that lists the particular engine combustion type (compression-ignition or spark-ignition or rich burn, or lean burn); manufacturer; model designation, rated ~~brake horsepower bhp~~, serial number and where the engine is located on the site.

**502.2 Monthly Records Required for Non-Emergency Engines:** An owner or operator of a ~~prime engine non-emergency engine~~ shall maintain a monthly record for ~~prime engines non-emergency engines~~ which shall include:

- a. Hours of operation; and
- b. Type of fuel used, and
- c. Documentation verifying compliance with sulfur fuel content according to ~~subsection~~ Section 301.1 of this rule.

**502.3 Annual Records Required for Non-Emergency Engines:** An owner or operator of a ~~prime engine non-emergency engine~~ shall maintain an annual record of ~~good combustion procedures according to Section 302.~~ the practices/procedure that are followed in order to comply with Section 302 (Good Combustion Practices/Tuning Procedure for Stationary RICE) of this rule.

**502.4 Records Required for an Emergency Engine or a Low Usage Non-Emergency Engine:** An owner or operator of an emergency engine ~~and or a low usage non-emergency, low usage engine~~ that meets the exemptions listed in Sections 104 and 105 of this rule shall keep an engine record that includes:

- a. Monthly rolling twelve month total of hours of operation, including hours of operation for testing, reliability and maintenance; and
- b. Fuel type and sulfur content of fuel; and
- c. Explanation for the use of the engine if it is used as an emergency engine.



**COMPLIANCE DETERMINATION-TEST METHODS INCORPORATED BY REFERENCE:** The following test methods are approved for use for the purpose of determining compliance with this rule. The test methods The Environmental Protection Agency (EPA) test methods as they exist in the Code of Federal Regulations (CFR) (July 1, 2004) and the American Society of Testing Materials International Methods as listed below, are incorporated by reference in Appendix G of the Maricopa County Rules and Regulations Maricopa County Air Pollution Control Regulations. The When more than one test method is permitted for the same determination, as listed in subsections 503.12, 503.13, 503.14, or 503.15, an exceedance of the limits established in this rule determined by any of the applicable test methods constitutes a violation. Alternative test methods as approved by the Administrator or other EPA-approved test methods may be used upon written approval from the Control Officer. When more than one test method is permitted for the same determination, an exceedance under any method will constitute a violation. Copies of test methods referenced in this section of this rule are available at the Maricopa County Environmental Services Department Air Quality Department, 1001 North Central Avenue, Suite 204 125, Phoenix, Arizona, 85004-1942.

- 503.1** EPA Reference Methods 1 (“Sample and Velocity Traverses for Stationary Sources”) and 1A (“Sample and Velocity Traverses for Stationary Sources with Small Stacks and Ducts”) (40 CFR 60, Appendix A).
- 503.2** EPA Reference Methods 2 (“Determination of Stack Gas Velocity and Volumetric Flow Rate”), 2A (“Direct Measurement of Gas Volume Through Pipes and Small Ducts”), 2C (“Determination of Stack Gas Velocity and Volumetric Flow Rate in Small Stacks or Ducts”), and 2D (“Measurement of Gas Volumetric Flow Rates in Small Pipes and Ducts”) (40 CFR 60, Appendix A).
- 503.3** EPA Reference Methods 3 (“Gas Analysis for the Determination of Dry Molecular Weight”), 3A (“Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)”), 3B (“Gas Analysis for the Determination of Emission Rate Correction Factor of Excess Air”), and 3C (“Determination of Carbon Dioxide, Methane, Nitrogen and Oxygen from Stationary Sources”) (40 CFR 60, Appendix A).

- 503.4** EPA Reference Method 4 (“Determination of Moisture Content in Stack Gases”) (40 CFR 60, Appendix A).
- 503.5** EPA Reference Method 5 (“Determination of Particulate Emissions from Stationary Sources”) (40 CFR 60, Appendix A)
- 503.6** EPA Reference Method 202 (“Determination of Condensable Particulate Emissions from Stationary Sources”) (40 CFR 51, Appendix M).
- 503.7** EPA Reference Methods 7 (“Determination of Nitrogen Oxide Emissions from Stationary Sources”), 7A (“Determination of Nitrogen Oxide Emissions form Stationary Sources - Ion chromatographic method”), 7B (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Ultraviolet Spectrometry”), 7C (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline-Permanganate Colorimetric Method”), 7D (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline – Permanganate Chromatographic Method”), and 7E (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Instrumental Analyzer Method“), (40 CFR 60, Appendix A).
- 503.8** EPA Reference Method 9 (“Visual Determination of the Opacity of Emissions from Stationary Sources”) (40 CFR 60, Appendix A).
- 503.9** EPA Reference Method 10 (“Determination of Carbon Monoxide from Stationary Sources”) (40 CFR 60, Appendix A).
- 503.10** EPA Reference Method 18 (“Measurement of Gaseous Organic Compound Emissions by Gas Chromatography”) (40 CFR 60, Appendix A).
- 503.11** EPA Reference Method 25A (“Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer”) (40 CFR 60, Appendix A).
- ~~503.12 American Society of Testing Materials International, ASTM Method D1266-98 (“Standard Test Method for Sulfur in Petroleum Products (Lamp Method)”), 1998.~~
- ~~503.13~~ **503.12** American Society of Testing Materials International, ASTM Method D2622-98 (“Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-Ray Fluorescence Spectrometry”), 1998.

- 503.14 **503.13** ~~American Society of Testing Materials International, ASTM Method D2880-71~~ D2880-96, 78 or 96 (“Standard Specification for Gas Turbine Fuel Oils”), ~~1971 or 1978 or 1996.~~
- 503.15 **503.14** ~~American Society of Testing Materials International, ASTM Method D4294-98~~ D4294-02 or D4294-03 (“Standard Test Method for Sulfur in Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectroscopy”) ~~1990 or 1998.~~
- 503.16 **503.15** ~~American Society of Testing Materials International, ASTM Method D5504-01 or D5504-08~~ (“Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence”), ~~2006.~~
- 504.16** South Coast Air Quality Management District Method 307-94 Determination of Sulfur in a Gaseous Matrix