

Notice of Public Availability of Modified Text and Availability of Additional Documents

Proposed Amendments to the Small Off-Road Engine Regulations: Transition to Zero Emissions

Public Hearing Date: December 9, 2021
Public Availability Date: March 30, 2022
Deadline for Public Comment: April 14, 2022

At its December 9, 2021, public hearing, the California Air Resources Board (CARB or Board) approved for adoption the proposed amendments to sections 2400, 2401, 2402, 2403, 2404, 2405, 2405.1, 2405.2, 2405.3, 2406, 2407, 2408, 2408.1, 2750, 2752, 2753, 2754, 2754.1, 2754.2, 2755, 2756, 2757, 2758, 2759, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2767.1, and 2771, the adoption of sections 2408.2 and 2754.3, and the repeal of section 2768, Title 13 California Code of Regulations, together the Proposed Amendments to the Small Off-Road Engine Regulations. The Proposed Amendments seek to accelerate the transition from equipment using small off-road engines (SORE) to zero-emission equipment (ZEE).

The Board directed the Executive Officer to determine whether additional conforming modifications to the Proposed Amendments were appropriate and to make any proposed modified regulatory language available for public comment, with any additional supporting documents and information, for a period of at least 15 days, as required by Government Code section 11346.8. The Board further directed the Executive Officer to consider written comments submitted during the public review period and make any further modifications that are appropriate available for public comment for at least 15 days, and present the modifications to the Proposed Amendments to the Board for further consideration if warranted, or take final action to adopt the amended regulations after addressing all appropriate modifications.

The resolution and all other regulatory documents for this rulemaking are available online at the following *CARB website*: <https://ww2.arb.ca.gov/rulemaking/2021/sore2021>

CARB staff proposes modifications to the originally proposed regulatory text, summarized in and attached to this notice, to better ensure a successful transition to zero emissions. The proposed modifications were developed in response to public comments received since the Staff Report: Initial Statement of Reasons (ISOR) was released to the public on October 12, 2021. Written public comments were submitted during the 45-day public review period prior to the December 2021 Board hearing, and oral and written comments were submitted on the day of the hearing. Staff's proposed modifications to the originally proposed regulatory text are sometimes referred to colloquially in this package as the "15-day modifications," and the originally proposed regulatory text is sometimes referred to

as the “ISOR Proposed Amendments.” The 15-day modifications include the following proposed changes:

- Allow more time for pressure washers using engines with displacement of 225 cubic centimeters (cc) or larger to comply with emission standards of zero. This is achieved by setting interim emission standards for model years 2024 through 2027 that are the same as those proposed for generators and setting emission standards of zero for model year 2028 and later for these pressure washers.
- Allow manufacturers to earn evaporative emission credits for all engines with displacement less than or equal to 80 cc before emission standards of zero are implemented for most engines beginning in model year 2024.
- Allow manufacturers to certify all engines with displacement less than or equal to 80 cc to the existing diurnal emission standards through model year 2023.
- Other changes to improve clarity and consistency.

The text of the modified regulatory language is shown in Attachments A through F as follows:

- Attachment A: 15-day modifications to the Proposed Amendments to the Small Off-Road Engine Exhaust Emission Regulations, California Code of Regulations, Title 13, Division 3, Chapter 9. Off-Road Vehicles and Engines Pollution Control Devices, Article 1. Small Off-Road Engines
- Attachment B: 15-day modifications to the Proposed Amendments to the Small Off-Road Engine Evaporative Emission Regulations, California Code of Regulations, Title 13, Division 3, Chapter 15. Additional Off-Road Vehicles and Engines Pollution Control Requirements, Article 1. Evaporative Emission Requirements for Off-Road Equipment
- Attachment C: 15-day modifications to the Proposed Amendments to Small Off-Road Engine Evaporative Emissions Test Procedure, TP-901, Test Procedure for Determining Permeation Emissions from Small Off-Road Engine Fuel Tanks
- Attachment D: 15-day modifications to the Proposed Amendments to Small Off-Road Engine Evaporative Emissions Test Procedure, TP-902, Test Procedure for Determining Evaporative Emissions from Small Off-Road Engines
- Attachment E: 15-day modifications to the Proposed Amendments to the California Exhaust Emission Standards and Test Procedures for New 2013 and Later Small Off-Road Engines; Engine-Testing Procedures (Part 1054)
- Attachment F: 15-day modifications to the Proposed Amendments to the California Exhaust Emission Standards and Test Procedures for New 2013 and Later Small Off-Road Engines; Engine-Testing Procedures (Part 1065)

CARB staff does not propose any modifications for the originally proposed regulatory text for Small Off-Road Engine Evaporative Emission Control System Certification Procedure, CP-902, Certification Procedure for Evaporative Emission Control Systems on Small Off-Road Engines, and, therefore, it is not included in this notice of proposed modifications.

The originally proposed regulatory language in Attachments A through F is shown in ~~strikethrough~~ to indicate deletions and underline to indicate additions. New deletions and additions to the proposed language that are made public with this notice are shown in ~~double-strikethrough~~ and double underline format, respectively.

In addition, CARB staff has proposed adding updated zero-emission professional lawn mower price information to the rulemaking record in response to comments received since the ISOR was released, as well as additional references. Staff has updated the emission benefits, health benefits, and economic analyses described in the ISOR to reflect the 15-day modification to emission standards for pressure washers that use engines with displacement 225 cc or larger and updated lawn mower price information. This notice contains a description of these updates, and Attachment G shows the annualized results of the updated analyses.

In the Final Statement of Reasons, staff will respond to all comments received on the record during the comment periods. The Administrative Procedure Act requires that staff respond to comments received regarding all noticed changes. Therefore, staff will only address comments received during this 15-day comment period that are responsive to this notice, documents added to the record, or the changes detailed in Attachments A through G.

Summary of Proposed Modifications

The following summary does not include all modifications to correct typographical or grammatical errors, changes in numbering or formatting, nor does it include all of the non-substantive revisions made to improve clarity.

A. Modifications to SORE Exhaust Emission Regulations

1. In sections 2401(a)(7), 2401(a)(25), 2403(c)(4)(C), 2403(e)(1), 2404(l)(1), 2407(b)(4)(B), 2407(b)(4)(C), 2407(b)(5)(B)3., 2407(c)(2)(B)1., 2407(c)(3)(A)1., 2407(c)(4)(E)3., 2408(b)(5), 2408(f)(1), 2408(h)(1)(B), 2408.1(b)(4), 2408.1(h)(1)(B) and 2408.2(b)(4) staff proposes to replace "family emissions levels," and "family emission levels," with "family emission limits," and to replace "family emission level" with "family emission limit." This change is in response to public comments. In the ISOR Proposed Amendments, staff proposed to change the term "Family Emission Limit" to "Family Emission Level" to restore consistency of term usage throughout the exhaust emission regulations and increase clarity for manufacturers and other readers. The California SORE regulations traditionally use the term "Family Emission Level" while federal regulations for small nonroad spark-ignition engines use the term "Family Emission Limit." The term "Family Emission Limit" has inadvertently been used interchangeably with "Family Emission Level" because, as noted on ISOR page 155, their definitions are virtually identical. However, manufacturers commented that they prefer to make the term usage consistent with federal regulations. This change to use the term "Family Emission Limit" throughout the exhaust emission regulations does not affect SORE emission standards nor testing requirements, and satisfies clarity requirements under California regulations (Title 1, California Code of Regulations [CCR], section (§) 16(a)(4)).

2. In section 2401(a)(19), the definition of “engine,” staff proposes to replace the text, “...a complete, operational engine. Any engine block or kit with the parts necessary to assemble an engine block with or without an installed crankshaft is also considered an engine. Gas turbine engines are excluded from this definition.” with the text, “...an engine block with an installed crankshaft. Gas turbine engines are excluded from this definition. The term engine does not include engine blocks without an installed crankshaft, nor does it include any assembly of reciprocating engine components that does not include the engine block. (Note: For purposes of this definition, any component that is the primary means of converting an engine's energy into usable work is considered a crankshaft, whether or not it is known commercially as a crankshaft.)” This change is in response to public comments. In the ISOR Proposed Amendments, staff proposed a new definition of “engine.” Commenters requested the definition of “engine” in the SORE regulations be harmonized with the definition of “engine” in federal regulations. This change will largely harmonize the two definitions. Gas turbine engines will continue to be excluded from the definition of “engine,” as described on ISOR page 157. This change to the definition of “engine” does not affect SORE emission standards nor testing requirements, and satisfies clarity requirements under California regulations (Title 1, CCR, § 16(a)(4)).
3. In section 2401(a)(32), staff proposes to remove criteria beyond engine displacement for the proposed definition of “handheld,” changing it to read ““Handheld” means relating to off-road equipment using an engine with displacement less than or equal to 80 cc.” This change is in response to public comments regarding potential conflicts between federal and California definitions of “handheld.” In the ISOR Proposed Amendments, staff proposed a new definition of “handheld” in section 2401(a)(32) of the exhaust emission regulations and replaced the existing definition of “handheld” in Part 1054 with a reference to section 2401, as described on ISOR pages 158-159 and 305-308. Although the federal definition specifies criteria that must be met for equipment to be considered handheld, federal 40 CFR Part 1054 also specifies in section 1054.101(e), in part, “For purposes of the requirements of this part, engines at or below 80 cc are considered handheld engines, but may be installed in either handheld or nonhandheld equipment.” The existing California definition in Part 1054 similarly read “*Handheld* means equipment that contains an engine with a displacement of less than 80cc.” This change is necessary to ensure the definitions of “handheld” in California and federal regulations are harmonized and ensure regulatory certainty for manufacturers when testing and certifying their engines. This change to the definition of “handheld” does not affect SORE emission standards, will ensure testing requirements for handheld engines remain applicable to engines with displacement less than or equal to 80 cc, and satisfies clarity requirements under California regulations (Title 1, CCR, § 16(a)(4)).
4. In Section 2401(a), staff proposes to add a new definition for “pressure washer engine”, “(39) “Pressure washer engine” means an engine installed exclusively in a pressure washer,” and to renumber definitions (39) through (60) in the ISOR Proposed Amendments to (40) through (61) accordingly. The addition of a definition for pressure washer engine is necessary to support and improve

regulatory certainty for the proposed modification of emission standards for pressure washer engines with displacement greater than or equal to 225 cc in section 2403(b)(1) described in the next paragraph in this notice. Renumbering the definitions that were previously included in this section is necessary to maintain a correctly numbered, alphabetical list of definitions and to increase clarity for the reader.

5. In section 2403(b)(1), staff proposes to add language to one of the exhaust emission standards tables, and to add a new exhaust emission standards table, which would implement for pressure washers with engine displacement greater than or equal to 225 cc the same emission standards proposed for generators for model years 2024 through 2027. The emission standards for pressure washers with engine displacement greater than or equal to 225 cc for model year 2028 and later would be zero, as are the emission standards proposed for generators for model year 2028 and later. These modifications are necessary to allow more time for higher-power pressure washers used by professional cleaning services to comply with emission standards of zero. The proposed modifications are in response to public comments asking for more time to allow the zero-emission commercial pressure washer market to develop. Chapter I of the ISOR discusses technological feasibility of the Proposed Amendments and potential challenges for ZEE deployment. A transition to ZEE is technologically feasible, as discussed in the ISOR. As described in the ISOR Appendix I Standardized Regulatory Impact Assessment (SRIA) (pages 44-45), there are challenges with zero-emission pressure washers, including a lack of availability of cordless zero-emission pressure washers. More than 30 commenters stated that the initial proposal would significantly impact the ability of professional cleaners to provide sanitation in public areas because they often use pressure washers in places where outlets are not available to plug in a corded unit, and the pressure washers they use have high power demands. The proposed modifications allow more time for the specific engine displacement category of 225 cc and larger to comply with emission standards of zero because pressure washers with such engines have greater pressure ratings and water flow rates that are used in professional cleaning work. As a result of these features, pressure washers with engine displacement greater than or equal to 225 cc cost significantly more to purchase than pressure washers with engine displacement less than 225 cc. The cost and size of pressure washers with engine displacement greater than or equal to 225 cc make them less practical for users other than professional cleaning services, so users such as residential users are less likely to purchase or use them. The unique features of pressure washers with engine displacement greater than or equal to 225 cc and the high cost of professional zero-emission pressure washers set them apart from other equipment types and necessitate this proposed change. Emission standards of zero would apply to pressure washers with engine displacements less than 225 cc for model years 2024 and later, consistent with the requirements under the Proposed Amendments described in the ISOR for all other SORE equipment except generators. Such pressure washers are more likely to be used by users other than professional cleaning services.

Staff expects this change in emission standards for pressure washer engines with displacement greater than or equal to 225 cc will result in fewer emission reductions being achieved than those that were described in the ISOR. The ISOR listed summer average emission reductions in 2031 of 7.9 tons per day (tpd) of oxides of nitrogen (NO_x) and 64.5 tpd of reactive organic gases (ROG). Summer average emission reductions in 2031 with this change would be 7.7 tpd of NO_x and 64.1 tpd of ROG. Although these emission reductions are fewer than those under the ISOR Proposed Amendments, they would exceed the expected emission reductions of NO_x and ROG in the 2016 State SIP Strategy measure for SORE of 4 and 36 tons per day (tpd), respectively, in 2031. These emission reductions are needed to help California attain National Ambient Air Quality Standards (NAAQS).

6. In section 2405.3(a)(1)(B), staff proposes to remove the text "Subchapter 1.25," which is part of a reference to hearing provisions that was replaced in the ISOR Proposed Amendments. The reference to Subchapter 1.25 was inadvertently not removed in the ISOR Proposed Amendments. The new reference, to Article 1, Chapter 15, Title 13, California Code of Regulations, Section 2771, does not contain a Subchapter 1.25. This change is necessary to increase clarity for the reader.
7. In section 2408.2(b)(4)(B), staff proposes to correct the reference 2408.2(b)(5)(C) to 2408.2(b)(4)(C). Section 2408.2(b)(4)(B) requires the zero-emission generator engine family to meet durability requirements, unless they cannot achieve the full durability period. Section 2408.2(b)(4)(C) describes the requirements for a zero-emission generator engine family that cannot achieve the full durability period. Therefore, this change is necessary to provide consistency with section 2408.2(b)(4)(B).

B. Modifications to SORE Evaporative Emission Regulations

1. In section 2751(c)(1), staff proposes to add language to clarify that, although the evaporative emission regulations do not usually apply to engines or equipment powered with compressed natural gas (CNG), propane, liquefied petroleum gas (LPG), or liquefied natural gas (LNG), a manufacturer may voluntarily certify and label its engines pursuant to the evaporative emission regulations. This change is in response to public comments. In the ISOR Proposed Amendments, staff proposed to allow manufacturers to generate evaporative emission credits for engines powered by CNG, propane, LPG, or LNG, as described on ISOR page 230. This change is necessary to provide consistency with the ISOR Proposed Amendments, and satisfies clarity requirements under California regulations (Title 1, CCR, § 16(a)(4)).
2. In section 2752(a)(22), staff proposes to remove language from the definition of "passively-purged carbon canister." This change is in response to public comments. In the ISOR Proposed Amendments, staff proposed to add a definition for "passively-purged carbon canister," as described on ISOR page 216. The definition specified that a passively-purged carbon canister draws in ambient air to purge adsorbed compounds using a vacuum created within the fuel tank by normal diurnal temperature variations. Commenters stated that passively-purged carbon

canisters are also purged during engine operation. Staff proposes to remove the text, "by normal diurnal temperature variations" from the definition to increase clarity for readers. This change is necessary to provide clarity in the definition of "passively-purged carbon canister."

3. In section 2753(c), staff proposes to add language that would allow an applicant to certify an evaporative emission control system for engines with displacement less than or equal to 80 cc to the diurnal emission standards in section 2754 in lieu of the permeation emission standards in section 2755 and follow the certification procedures outlined in CP-902, adopted July 26, 2004, and amended September 18, 2017. Similarly, staff proposes to add language in section 2754(a)(1) that would allow engines with displacement less than or equal to 80 cc to certify to the existing diurnal emission standards through model year 2023. These proposed modifications are necessary for manufacturers to be able to earn more evaporative emission credits than could occur under the Proposed Amendments in the ISOR. The proposed modifications are in response to public comments expressing the desire to be able to earn evaporative emission credits for engines with displacement less than or equal to 80 cc before emission standards of zero are implemented for most engines in model year 2024. Under staff's proposal, generators may certify to the proposed hot soak plus diurnal emission standards in model year 2022 or 2023 to earn credits. However, engines with displacement less than or equal to 80 cubic centimeters are not currently subject to the existing diurnal emission standards. The proposed hot soak plus diurnal emission standards for engines with displacement less than or equal to 80 cc other than generator engines for model year 2024 and later are zero. The option proposed in the ISOR to certify to the hot soak plus diurnal emission standards through model year 2023 does not enable manufacturers to earn evaporative emission credits for engines with displacement less than or equal to 80 cc other than generator engines. Staff proposes to allow all engines with displacement less than or equal to 80 cc to certify to the existing diurnal emission standards and follow the certification procedures outlined in CP-902, adopted July 24, 2004, and amended September 18, 2017, through model year 2023.
4. In the text of section 2754(a)(3), staff proposes to change "except for generator engines" to "except for generator engines and ≥ 225 cc pressure washer engines," and in the title of Table 2, staff proposes to change "Except Generator Engines" to "Except Generator Engines and ≥ 225 cc Pressure Washer Engines." Staff proposes to add new subsections 2754(a)(7) and 2754(a)(8), including a new Table 4 in 2754(a)(7). These changes would implement for pressure washers with engine displacement greater than or equal to 225 cc the same emission standards proposed for generators for model years 2024 through 2027. The emission standards for pressure washers with engine displacement greater than or equal to 225 cc for model year 2028 and later would be zero, as are the emission standards proposed for generators for model year 2028 and later. These modifications are necessary to allow more time for higher-power pressure washers used by professional cleaning services to comply with emission standards of zero. The proposed modifications are in response to public comments asking for more time to allow the zero-emission commercial pressure washer market to develop. See the

rationale for the proposed modifications to section 2403(b)(1) included in the "A. Modifications to SORE Exhaust Emission Regulations" subsection of this notice for additional explanation.

5. In sections 2754(f) and 2754(g), staff proposes to add language to clarify the applicability of the fuel line testing in accordance with ANSI/OPEI B71.10-2013 and ANSI/OPEI B71.10-2018. This is in response to public comments. The scope of ANSI/OPEI B71.10-2013 and ANSI/OPEI B71.10-2018, described in section 1 of each standard, includes "gasoline fuel systems for off-road ground-supported outdoor power equipment with spark ignition engines of less than one liter displacement." ANSI/OPEI B71.10-2013 section 4.4 and ANSI/OPEI B71.10-2018 section 4.2.1. state that all fuel line connection designs except fuel lines of less than 50 mm (2 inches) in length and which are held in place by compression after assembly and fuel line assembly connections which cannot be exposed to a tensile pull in the end use shall be qualified. This change is necessary to clarify that fuel line assembly testing is required only for engines and fuel lines for which ANSI/OPEI B71.10-2013 or ANSI/OPEI B71.10-2018 is applicable.
6. In section 2754(h), staff proposes to add language to clarify that approval of a determination that running loss emissions are controlled from being emitted into the atmosphere is not required for engines with displacement less than or equal to 80 cc. This change is in response to public comments. This change is necessary because engines with displacement less than or equal to 80 cc use sealed fuel tanks and do not use carbon canisters. As a result, the test procedures in TP-902 for demonstrating that running loss emissions are controlled from being emitted into the atmosphere are not suited to engines with displacement less than or equal to 80 cc. The use of sealed fuel tanks on these engines also results in some control of running loss emissions. This change does not affect SORE emission standards, will ensure requirements for demonstrating control of running loss emissions remain applicable to engines with displacement greater than 80 cc that do not use actively-purged carbon canisters meeting the requirements of the regulations, and satisfies clarity requirements under California regulations (Title 1, CCR, § 16(a)(4)).
7. In section 2754.1(f)(1), staff proposes to modify language to clarify that evaporative emission credits must be rounded to the nearest hundredth of a gram. This change is in response to public comments. In the ISOR Proposed Amendments, staff proposed to delete the requirement for emission credit calculation results to be rounded to the nearest tenth of a gram, as described on page 234. Commenters stated that the proposed text was unclear with regards to handling rounding of digits. Replacing text that specifies the requirement for rounding credits and requiring rounding to the nearest hundredth of a gram is necessary to ensure credit calculations will reflect the same number of decimal places as the emission standards for model year 2024 and subsequent model years. Thus, the modification will ensure that credits are accurately used to meet the SORE emission standards during the certification process. This change is also necessary to provide clarity.
8. In section 2755, staff proposes to add a new subsection (c) that is necessary to clarify that engines that optionally certify to the diurnal emission standards set forth in section 2754 do not need to meet the requirements of section 2755.

Section 2755 is specific to engines with displacement less than or equal to 80 cc, so if manufacturers choose to optionally certify to the diurnal emission standards in section 2754 (which are for engines with displacement greater than 80 cc) to earn evaporative emission credits, they do not need to also certify to the emission standards in section 2755.

9. In section 2765(a)(5), staff proposes to add language to clarify that the hot soak test shall be performed at the temperature at which the hot soak test was performed during certification testing. This change is in response to public comments. In the ISOR Proposed Amendments, staff proposed to provide the option to perform the hot soak test at 40.6 °C to enable passively-purged carbon canisters to experience a greater amount of purging during the forced cooling, as described on pages 268-269 of the ISOR. Commenters asked whether during compliance testing the hot soak test would be performed at the same temperature at which the manufacturer performed the hot soak test during certification testing. This change is necessary to provide regulatory certainty to manufacturers that the hot soak test will be performed at the temperature at which the hot soak test was performed during certification testing.

C. Modifications to SORE Evaporative Emissions Test Procedure, TP-901, Test Procedure for Determining Permeation Emissions from Small Off-Road Engine Fuel Tanks

1. In section 7, staff proposes to remove language providing an example circumstance in which balance manufacturer's calibration instructions may require calibration more frequently than annually. This change is in response to public comments. In the ISOR Proposed Amendments, staff proposed to add "or more often as needed per the manufacturer instructions (e.g., if the balance is moved)," as described on ISOR pages 254-255. The changes to specify that instruments and equipment shall be calibrated more often as needed per manufacturer instructions are necessary to provide certainty for testers who need to calibrate instruments or equipment more frequently than annually and to ensure that instruments and equipment are properly calibrated and produce valid data. Commenters stated that balances may be moved for calibration purposes. This section requires calibration per manufacturer instructions, so it is not necessary to provide an example circumstance in which balance manufacturer instructions may require calibration more frequently than annually. This change is necessary to increase clarity for those who will be performing testing according to TP-901.
2. In section 9, staff proposes to add language to clarify the temperature range required during section 8.2 through 8.5 of the durability demonstration for the time of the durability demonstration to be counted as part of the preconditioning procedure. This change is in response to public comments. The preconditioning procedure may be conducted concurrently with section 8.2 through 8.5 of the durability demonstration if the temperature remains within the specified temperature range. Section 9 requires that the temperature never falls below 38 °C during preconditioning. Commenters suggested specifying the temperature range as greater than or equal to 38 °C in the sentence that discusses counting the time of the durability demonstration in section 8.2 through 8.5 as part of the

preconditioning procedure. This change is necessary to increase clarity for those who will be performing testing according to TP-901.

3. In section 9, staff proposes to change two instances of "fresh fuel" to "fresh test fuel." This change is in response to public comments on the use of "fresh fuel" in TP-902. The ISOR Proposed Amendments included new sentences in section 9 that refer to "fresh fuel." Commenters stated that the ISOR Proposed Amendments introduced a new term, "fresh fuel," and suggested the use of "test fuel" instead. The term "fresh test fuel" is used in section 8.5 of the ISOR Proposed Amendments to TP-901 and in the current text of section 5.1 of TP-902. The test fuels that may be used for testing according to TP-901 are specified in section 6. Using "fresh test fuel" rather than "fresh fuel" is necessary to increase clarity for those who will be performing testing according to TP-901.

D. Modifications to SORE Evaporative Emissions Test Procedure, TP-902, Test Procedure for Determining Evaporative Emissions from Small Off-Road Engines

1. In section 4.3, staff proposes to remove language providing an example circumstance in which balance manufacturer's calibration instructions may require calibration more frequently than annually. This change is in response to public comments. In the ISOR Proposed Amendments, staff proposed to add "or more often as needed per the manufacturer instructions (e.g., if the balance is moved)," as described on ISOR pages 274-276. The changes to specify that instruments and equipment shall be calibrated more often as needed per manufacturer instructions are necessary to provide certainty for testers who need to calibrate instruments or equipment more frequently than annually and to ensure that instruments and equipment are properly calibrated and produce valid data. Commenters stated that balances may be moved for calibration purposes. This section requires calibration per manufacturer instructions, so it is not necessary to provide an example circumstance in which balance manufacturer instructions may require calibration more frequently than annually. This change is necessary to increase clarity for those who will be performing testing according to TP-902.
2. In sections 5.1 and in section 5.2, staff proposes to change three instances of "fresh fuel" to "fresh test fuel." This change is in response to public comments. The ISOR Proposed Amendments included new sentences in sections 5.1 and 5.2 that refer to "fresh fuel." Commenters stated that the ISOR Proposed Amendments introduced a new term, "fresh fuel," and suggested the use of "test fuel" instead. The term "fresh test fuel" is used in section 2.1(f) of the ISOR Proposed Amendments to TP-902 and in the current text of section 5.1. The test fuels that may be used for testing according to TP-902 are specified in section 6. Using "fresh test fuel" rather than "fresh fuel" is necessary to increase clarity for those who will be performing testing according to TP-902.
3. In section 5.2 and 5.4, staff proposes to add language to make measuring and recording the carbon canister mass optional. This change is in response to public comments. In the ISOR Proposed Amendments, staff proposed to add requirements to measure and record the carbon canister mass during the test sequence, as described on ISOR pages 279-283. Commenters stated that canister

removal and reinstallation may damage the hoses of an evaporative emission control system. Commenters did not provide data to support this assertion. Measuring and recording carbon canister mass can provide useful information regarding the ability of carbon canisters to capture and store venting emissions until they are purged to help understand emission test results. However, the test sequence in section 5 may be conducted without such information. Information on the change in mass of a carbon canister is most useful when an engine fails to meet the applicable emission standard. In such a case, a tester may choose to measure and record the mass of the carbon canister to help determine whether the canister may be malfunctioning. When an engine does meet the applicable emission standard, information on the change in mass of its carbon canister can be useful but is not needed to complete the test sequence in section 5 of TP-902. This change is necessary to provide flexibility to those who will be performing testing according to TP-902.

4. In section 7, staff proposes to remove the word “diurnal” from the phrase “such as the use of a mini-SHED to measure diurnal evaporative emissions” to increase clarity. This change is in response to public comments. Commenters suggested that “diurnal” should be deleted from this sentence. The proposed evaporative emission standards for model year 2024 and subsequent model years include hot soak emissions, and TP-902 is used to measure hot soak emissions. This change is necessary to clarify the example of a circumstance that would necessitate the approval of an alternative test procedure, and satisfies clarity requirements under California regulations (Title 1, CCR, § 16(a)(4)).
5. In Attachment 1 section 6.2, staff proposes to change language to specify that actively-purged carbon canisters would be purged with “air” rather than “dry air or nitrogen.” This is in response to public comments. This change accounts for different canister designs and ensures the test procedure allows for purging canisters by drawing ambient air into the purge port, as engines do when carbon canisters are installed, as described on ISOR pages 279-282. Commenters stated that the requirement to use “dry air or nitrogen” in section 6.2 of Attachment 1 to TP-902 and the requirement to use “air” in the ISOR Proposed Amendments to section 5.2 of TP-902 were inconsistent. This change is necessary for consistency with TP-902 section 5.2, which includes the sentence, “Purging for an actively-purged carbon canister consists of drawing 400 bed volumes of air through the canister at the canister manufacturer’s recommended purge rate,” in the ISOR Proposed Amendments.

E. Modifications to California Exhaust Emission Standards and Test Procedures for New 2013 and Later Small Off-Road Engines; Engine-Testing Procedures (Part 1054)

Staff proposes to change language in Part 1054 to align with language in federal test procedures. As described in the ISOR (pages 49-50 and 300-305), CARB staff proposed updates to the CARB exhaust test procedures in Part 1054 to harmonize with federal test procedures adopted by the U.S. Environmental Protection Agency (U.S. EPA) in Title 40, Code of Federal Regulations, Part 1054 (“federal Part 1054”). Subsequent to CARB’s adoption in 2012 of Part 1054 into the California Code of

Regulations, U.S. EPA has made a number of terminology changes and other amendments to federal Part 1054. This harmonization simplifies testing for manufacturers and allows for easier comparison of the test procedures. Changes to federal Part 1054 were not incorporated in the ISOR Proposed Amendments if they were less stringent than CARB's SORE requirements. The following modifications are in response to public comments. Commenters stated that additional changes are needed to provide consistency with federal Part 1054 per the amendments published in the United States Federal Register Volume 86, Issue 122, on June 29, 2021. None of these modifications affects the stringency of CARB's SORE requirements.

1. In Part 1054.2, staff proposes to move a sentence defining the party responsible for compliance with evaporative emission requirements from paragraph (b) to paragraph (a).
2. In Part 1054.30, paragraphs (a) through (d), staff proposes to replace text which is redundant with the requirements specified in 1054.825 with a requirement to send all reports and requests for approval to the Designated Compliance Officer, unless otherwise specified, along with a reference to additional requirements in section 1054.825.
3. In Part 1054.103(c) and Part 1054.105(c), staff proposes to change the text "emission standards for hydrocarbons" to "emission standards for hydrocarbon."
4. In Part 1054.125(c), staff proposes to add the sentence, "All special maintenance instructions must be consistent with good engineering judgment."
5. In Part 1054.125(e), staff proposes to reword a sentence to read, "You may not perform this nonemission-related maintenance on emission-data engines more often than the least frequent intervals that you recommend to the ultimate purchaser."
6. In Part 1054.205(p), staff proposes to change the text "Report all test results involving measurement of pollutants for which emission standards apply. Indicate whether there are test results from invalid tests" to "Report all valid test results involving measurement of pollutants for which emission standards apply. Also indicate whether there are test results from invalid tests."
7. In Part 1054.220, staff proposes to change the section title to "How do I amend my maintenance instructions?"
8. In Part 1054.225, staff proposes to change the section title to "How do I amend my application for certification?"
9. In Part 1054.230(a)(9), staff proposes to change two instances of "family emission levels" to "family emission limits."
10. In Part 1054.235(c)(3), staff proposes to change the text to read, "We may set the adjustable parameters of your engine to any point within the physically adjustable ranges (see section 1054.115(b))."
11. In Part 1054.235(c)(4), staff proposes to change text describing actions CARB may take to calibrate an engine before testing it.

12. In Part 1054.235(d)(1), staff proposes to change the text "We may waive this criterion" to "We may waive this paragraph (d)(1)."
13. In the section title of Part 1054.255, staff proposes to change the text "my Executive Order" to "an Executive Order."
14. In Part 1054.255(a), Part 1054.255(b), and Part 1054.255(d), staff proposes to change the text "this part 1054" to "this part."
15. In Part 1054.255(a), staff proposes to change the text "your engine family" to "the emission family."
16. In Part 1054.255(b) and Part 1054.255(f), staff proposes to change the text "your application" to "an application."
17. In Part 1054.255(b), staff proposes to change the text "your engine family" to "an emission family."
18. In Part 1054.255(c)(2), staff proposes to remove a reference to paragraph (e) of the same section and add the sentence, "This includes doing anything after submitting an application that causes submitted information to be false or incomplete."
19. In Part 1054.255(c)(3), staff proposes to change the text "Render inaccurate any test data" to "Cause any test data to become inaccurate."
20. In Part 1054.255(d), Part 1054.255(e), and Part 1054.255(f), staff proposes to change the text "your Executive Order" to "an Executive Order."
21. In Part 1054.255(d), staff proposes to change the text "do not keep the records we require or do not give us information as required under" to "fail to keep records, send reports, or give us information as required under."
22. In Part 1054.501(b)(2), staff proposes to change a sentence to read, "Use gasoline specified for general testing except as specified in paragraph (d) of this section."
23. In Part 1054.505(b)(2), staff proposes to change the text "cycle-validation criteria in Part 1065.514" to "cycle-validation criteria in paragraph (a)(1) of this section" and "this paragraph (a)(2)" to "this paragraph (b)(2)."
24. In Part 1054.601(d), staff proposes to change the text "either of those defined terms" to "the definitions in this part of either dual-fuel or flexible-fuel."
25. Staff proposes to remove section 1054.640, relating to special provisions for branded engines.
26. In Part 1054.655, staff proposes to change the text "as long as it is done consistent with the manufacturer's instructions" to "if it is done consistent with the manufacturer's instructions."
27. In Part 1054.801, staff proposes to change the text "Family emission level" to "Family emission limit."

28. In Part 1054.801, in the definition entry for Fuel type, staff proposes to change the text “such as low-temperature or all-season gasoline” to “such as premium gasoline, regular gasoline, or low-level ethanol-gasoline blends.”
29. In Part 1054.805, staff proposes to change the text “Family Emission Level” to “Family Emission Limit.”

F. Modifications to California Exhaust Emission Standards and Test Procedures for New 2013 and Later Small Off-Road Engines; Engine-Testing Procedures (Part 1065)

Staff proposes to change language in Part 1065 to align with language in federal test procedures. As described in the ISOR (pages 49-50 and 336-379), CARB staff proposed updates to the CARB exhaust test procedures in Part 1065 to harmonize with federal test procedures adopted by U.S. EPA in Title 40, Code of Federal Regulations, Part 1065 (“federal Part 1065”). Subsequent to CARB’s adoption in 2012 of Part 1065 into the California Code of Regulations, U.S. EPA has made a number of terminology changes and other amendments to federal Part 1065. This harmonization simplifies testing for manufacturers and allows for easier comparison of the test procedures. Changes to federal Part 1065 were not incorporated in the ISOR Proposed Amendments if they were less stringent than CARB’s SORE requirements. The following modifications are in response to public comments. Commenters stated that additional changes are needed to provide consistency with federal Part 1065 per the amendments published in the United States Federal Register Volume 86, Issue 122, on June 29, 2021. None of these modifications affects the stringency of CARB’s SORE requirements.

1. In Part 1065.2(c), staff proposes to change the text “this would also apply” to “this paragraph (c) would also apply.”
2. In Part 1065.15(a)(3), staff proposes to change the text “Particulate mass, PM” to “Particulate matter, PM.”
3. In Table 1 of 1065.190, staff proposes to delete “(percent)” after “Expected sulfuric acid fraction of PM,” add percentage symbols to the values below “Expected sulfuric acid fraction of PM,” delete trailing zeroes to the right of the decimal point from temperatures specified in several cells, and make corresponding changes to two headings.
4. In Part 1065.275(b)(4), staff proposes to delete the text “You may use a photoacoustic analyzer that has compensation algorithms that are functions of other gaseous measurements. T”.
5. In Part 1065.280(a), staff proposes to change the text “You may use O₂ measurements with intake air or fuel flow measurements to calculate exhaust flow rate according to § 1065.650” to “You may use good engineering judgment to develop calculations that use O₂ measurements with a chemical balance of fuel, intake air, and exhaust to calculate exhaust flow rate.” The most recent federal regulations also reference diesel exhaust fluid (“DEF”), in the federal text “...a chemical balance of fuel, DEF, intake air, and exhaust...” To increase clarity per the rationale on pages 380-381 of the ISOR, the proposed text in Attachment F does

not incorporate the federal text “, DEF” because California SORE regulations are not applicable to diesel engines.

6. In Part 1065.307(d)(6)(i), staff proposes to change the text “Connect a span gas to the gas-divider inlet” to “Connect a span gas containing only a single constituent of interest with balance of purified air or purified N₂ to the gas-divider inlet.”
7. In Part 1065.307(e)(3), staff proposes to change the text “during the linearity verification” to “during linearity verification.”
8. In Part 1065.307(f), staff proposes to add the subsection title “Performance criteria for measurement systems.”
9. In Part 1065.309(d)(2), staff proposes to change the text “water” to “H₂O,” add a comma after “N₂” in the clause “We recommend humidifying your NO-CO-CO₂-C₃H₈-CH₄, balance N₂ blended gas,” change the text “flowing the gas mixture through a sealed vessel that humidifies the gas by bubbling it through distilled water” to “bubbling the gas mixture that meets the specifications in § 1065.750 through distilled H₂O in a sealed vessel,” correct the second instance of the text “If the sample does not pass through a dryer” to “If the sample passes through a dryer,” and change the text “humidify your span gas to an H₂O at or above the level determined in § 1065.145(e)(2)” to “humidify your span gas to an H₂O level at or above the level determined in § 1065.145(e)(2) for that dryer.”
10. In the introductory paragraph of Part 1065.341, staff proposes to change the text “It may also apply” to “The first method may also apply.”
11. In Part 1065.341(a), staff proposes to change the text “§ 1065.640 and § 1065.642” to “§§ 1065.640 and 1065.642” in two places.
12. In Part 1065.341(f), staff proposes to add the table title “Table 1 of § 1065.341 - Troubleshooting Guide for Propane Checks.”
13. In Part 1065.350(d)(7), staff proposes to change the text “(0 ±0.4) mmol/mol” to “(0.0 ±0.4) mmol/mol.”
14. In Part 1065.365(f), staff proposes to revert the proposed deletion of a comma, to match most recent federal text.
15. In Part 1065.365(f)(9), staff proposes to change the text “C₂H₆ combined response factor and penetration fraction” to “combined C₂H₆ response factor and C₂H₆ penetration fraction” and the text “§ 1065.660(b)(2)(iii), § 1065.660(d)(1)(iii), or § 1065.665” to “§ 1065.660(b)(2)(iii) or (d)(1)(iii) or § 1065.665.”
16. In Part 1065.375(d)(7), staff proposes to add the sentence “When performed with all the gases simultaneously, this is the combined interference.”
17. In Part 1065.410(c), staff proposes to change the text “update your application” to “update your application for certification” and the text “bad engine components” to “malfunctioning components.”

18. In Part 1065.514(f)(3), staff proposes to revert a change from the ISOR Proposed Amendments so the text "paragraph (f)(1) or (f)(2)" will revert to "paragraph (f)(1) or (2)."
19. In Part 1065.530(a)(2)(iii), staff proposes to change the text "either as the point at which the engine thermostat controls engine temperature or as the point at which the engine coolant, block, or head absolute temperature is within $\pm 2\%$ of its mean value for at least 2 min" to "as the point at which the engine thermostat controls engine temperature or as the point at which measured operating temperature has stayed within $\pm 2\%$ of the mean value for at least 2 min."
20. In Part 1065.543(b)(2)(ii), staff proposes to change the text " $L_{\epsilon aCrates} = 0.31 \cdot 230.0 = 71.300 \text{ g/hr}$ " to " $L_{\epsilon aCrates} = 71.300 \text{ g/hr}$."
21. In Part 1065.640(d)(1), staff proposes to correct the text "1.837" in an example to "1.838."
22. In Part 1065.640(d)(2), staff proposes to delete the text "versus $Re^{\#}$, using paired values of ($Re^{\#}$, C_d)."
23. In the section title of Part 1065.642, staff proposes to change the text "SSV, CFV, and PDP" to "PDP, SSV, and CFV."
24. In Part 1065.642(b), staff proposes to add a comma after " \dot{n} " in the text "Calculate SSV molar flow rate, \dot{n} as follows" and update the text " $C_f =$ flow coefficient, as determined in §1065.640(c)(2)(ii)" to reflect renumbering of the section in which C_f is defined to § 1065.640(c)(3)(ii).
25. In Part 1065.642(c), staff proposes to delete the sentence, "Some CFV flow meters consist of a single venturi and some consist of multiple venturis, where different combinations of venturis are used to meter different flow rates," and change the text "the ratio of the square root of the sum of the active venturi throat diameters, d_t , to the diameter of the common entrance to all the venturis, D " to "the ratio of the square root of the sum of the active venturi throat diameters (d_t) to the diameter of the common entrance to all the venturis (D)."
26. In Part 1065.642(c)(1), staff proposes to change the text " $R = 8.314472 \text{ J}/(\text{mol}\cdot\text{K})$ " in an example to " $R = 8.314472 \text{ J}/(\text{mol}\cdot\text{K}) = 8.314472 (\text{m}^2\cdot\text{kg})/(\text{s}^2\cdot\text{mol}\cdot\text{K})$."
27. In the introductory paragraph of Part 1065.644, staff proposes to delete the text "Eq." referring to an equation number that was replaced by the text "the following equation" in the ISOR Proposed Amendments.
28. In Part 1065.650(c)(3)(ii), staff proposes to separate instructions for calculations into subparagraphs "(A)," "(B)," and "(C)," to change text in the new subparagraph (B) to "Calculate M for PM or any other analysis of a batch sample that yields a mass per mole of sample using the following equation," to add the text "The following example illustrates a calculation of m_{PM} :" after "(C)," and to delete the label "Example:" prior to the example in the new subparagraph (C).
29. In Part 1065.650(d)(7), staff proposes to change the text " $C_{rev} = 2\cdot\pi \text{ rad/rev}$ " in an example calculation to " $C_{rev} = 2\cdot\pi \text{ rad/r}$."

30. In Part 1065.655(b)(1), staff proposes to update a reference to subsection 1065.650(e) to refer to 1065.650(f).
31. In Part 1065.655(d), staff proposes to change the text " $M_H = 1.01$ " to " $M_H = 1.00794$ " and to change the text " $w_c = 0.8205$ " to " $w_c = 0.8206$."
32. In the introductory paragraph of Part 1065.655(e), staff proposes to update a reference to "Table 1 of this section" to refer to "Table 2 of this section."
33. In Part 1065.655(f)(3), staff proposes to change the text "Based on \dot{m}_{fuel} , calculate \dot{n}_{exh} as follows" to "Calculate \dot{n}_{exh} based on \dot{m}_j using the following equation," to update equation 1065.255-25, to change the text " \dot{m}_{fuel} " to " \dot{m}_1 " in the accompanying example calculation, and to add the indexing subscript "1" to four other terms in the accompanying example calculation.
34. In 1065.660(c)(2), staff proposes to change the text " $145.6—0.970 \times 18.9—1.02 \times 10.6$ " in an example to " $145.6 - 0.970 \cdot 18.9 - 1.02 \cdot 10.6$."
35. In Part 1065.1001, staff proposes to change the text "*Test interval* means a duration of time over which you determine brake-specific emissions" to "*Test interval* means a duration of time over which you determine mass of emissions."
36. In the introductory paragraph of Part 1065.1005, staff proposes to update a reference to § 1065.25 to refer to § 1065.20.
37. In Part 1065.1005, staff proposes to add titles for Tables 1, 3, 4, 5, 7, and 10 to match the latest federal Part 1065.
38. In Table 1 of Part 1065.1005(a), staff proposes to change the symbol for "atomic hydrogen-to-carbon ratio" from "A" to " α ," to add entries for "power-specific carbon mass error coefficient," c, "power-specific carbon mass rate absolute error coefficient," d, "atomic sulfur-to-carbon ratio," γ , and "differential static pressure," Δp , to change the text "brake-specific basis" to "brake-specific emission or fuel consumption," to update the unit symbol for "brake-specific emission or fuel consumption" from "g/(kW·h)" to "g/(kW·hr)," to update the units in terms of SI base units for "brake-specific emission or fuel consumption" to " $3.6^{-1} \cdot 10^{-9} \cdot m^{-2} \cdot s^2$," and to change the footnotes a and b back to 1 and 2 to match the most recent federal text.
39. In Table 5 of Part 1065.1005, staff proposes to add entries for "absolute," a, "ambient," amb, "carbon mass," C, "related to a difference or error quantity," ϵ , "fluid stream," fluid, "relative (e.g., relative difference or error)," r, and "slip," s.
40. In Table 7 of Part 1065.1005, staff proposes to add an entry for the molar mass of ethane, $M_{C_2H_6}$, to change the footnotes a, b, and c back to 1, 2, and 3 to match the most recent federal text, and to add periods at the ends of the footnotes.
41. In the section title of Part 1065.1010, staff proposes to change the text "Reference materials" to "Incorporation by Reference."

G. Modifications to Emissions and Economic Analyses

Staff has updated the emission benefits analysis conducted using SORE2020 described in the ISOR to reflect the 15-day modification to emission standards for pressure washers that use engines with displacement 225 cc or larger. Table 1 in Attachment G shows the resulting annual emission reductions for NO_x, ROG, particulate matter with diameter of 2.5 micrometers or less (PM_{2.5}), and carbon dioxide (CO₂). In 2031, the annual average emission reductions are expected to be approximately 7.2 tpd of NO_x and 54.6 tpd of ROG. These are 2.7 percent and 0.73 percent lower than under the ISOR Proposed Amendments. The emission reductions are 42 percent and 50 percent of NO_x and ROG emissions under the Baseline Scenario, respectively. These emission reductions, although fewer than those in the ISOR, would exceed the expected emission reductions of NO_x and ROG in the 2016 State SIP Strategy measure for SORE of 4 and 36 tons per day (tpd), respectively, in 2031, as compared to the Baseline Scenario emissions described in the ISOR. The cumulative total emission reductions from 2023 through 2043 as a result of the Proposed Amendments with 15-day modifications are approximately 58,844 tons of NO_x and 421,924 tons of ROG compared to the Baseline Scenario emissions.

The updated emission reductions were used to update the health benefits analysis. Table 2 in Attachment G shows the updated annual statewide avoided premature mortality and morbidity incidents under the Proposed Amendments with 15-day modifications. Overall, premature cardiopulmonary mortality would decrease by 887 over the regulatory horizon under the Proposed Amendments with 15-day modifications. The number of avoided premature deaths would be 5 fewer than under the ISOR Proposed Amendments.

In response to public comments, and in light of the 15-day modifications listed above, staff have made two modifications to the economic analysis.

1. Staff updated the economic analysis to account for the longer transition period in light of the 15-day modification to emission standards for pressure washers that use engines with displacement 225 cc or larger. The population of SORE and ZEE pressure washers in the regulatory scenario was updated to account for the continued sale of pressure washers that use engines with displacement 225 cc or larger in 2024-2027. The price used in the economic analysis for a pressure washer that would meet the MY2024 emission standards is the price for this equipment type in Alternative 2 described in the ISOR.
2. In response to public comments, staff updated the price estimate for the professional ZEE lawn mower used in the economic analysis using new information (Husqvarna, 2020; Husqvarna, 2022a¹). Commenters stated that the professional

¹ The cost information for the new professional ZEE lawn mower was obtained from the following two documents, which CARB staff added to the rulemaking record as described in the next section of this Notice: Husqvarna. 2020. Husqvarna Battery BLi300. <https://www.husqvarna.com>. 2020; archived at Wayback Machine: <http://web.archive.org/web/20200921141137/https://www.husqvarna.com/us/accessories/battery/battery-bli300/967071901/>; citing a capture dated September 21, 2020.

ZEE lawn mower used in the economic analysis was “low-end” and was being compared to a “high-end” professional SORE lawn mower. The characteristics of the updated professional ZEE lawn mower more closely match those of the professional SORE lawn mower used in the economic analysis.

Staff determined that the other 15-day modifications described above would have negligible effects and do not warrant further modifications to the economic or emissions analyses.

Given these updates, resultant total costs and benefits have changed. The net direct cost of the Proposed Amendments increased \$323.59 million over the regulatory horizon as compared to the ISOR Proposed Amendments due to the change to the professional ZEE lawn mower. The net direct cost of the Proposed Amendments increased \$4.40 million over the regulatory horizon as compared to the ISOR Proposed Amendments due to the 15-day modification to emission standards for pressure washers that use engines with displacement 225 cc or larger. Overall, the Proposed Amendments with 15-day modifications have a net direct cost of \$4.40 billion accrued through 2043. Professional users are expected to experience a total net direct cost through 2043 of \$1.44 billion, while residential users are expected to experience a total net direct cost of \$2.96 billion. Annual net direct costs are shown in Tables 3 through 5 in Attachment G. When the valuation of health impacts is considered, through 2043 (shown in Table 6 of Attachment G), the Proposed Amendments with 15-day modifications are estimated to have a net benefit of \$3.93 billion and a benefit-cost ratio of 1.27. The net benefit is eight percent lower than under the ISOR Proposed Amendments. The resulting economic effects are summarized and compared to the results in the ISOR in Table 7 of Attachment G.

In addition to the modifications described above, additional modifications correcting capitalization, formatting, numbering of sections, grammar, punctuation, and spelling have been made throughout the proposed changes. These changes are non-substantive. Below is a summary of the non-substantive changes staff made.

1. In the title of Part 1065.260, staff proposes to change “Flame ionization” to “Flame-ionization”.
2. In Part 1065.260(a), staff proposes to change “flame ionization” to “flame-ionization”.
3. In Part 1065.307(e)(3)(vii), staff corrected the omission of an overdot for flow rate \dot{n}_{max} .
4. In Part 1065.341(e)(3), staff corrected the text “instead the effective molar mass of HC” to read “instead of the effective molar mass of HC.”

Husqvarna. 2022a. Husqvarna W520i Push Walk-Behind Mower. (Web link: <https://www.husqvarna.com/us/walk-behind-mowers/w520i/>. Last accessed: February 10, 2022.)

These prices were then combined with the price of the battery charger already included in the ISOR:

Husqvarna. 2020d. Husqvarna QC330. (Web link: <https://www.husqvarna.com/us/accessories/battery/qc330-battery-charger/967091403/?q=967326812>. Last accessed: November 6, 2020.)

5. In Part 1065.543(b)(2)(ii), staff proposes to delete an erroneous period from the text "If measured. P_{max} is not available, use a manufacturer-declared value for P_{max} ."
6. In Part 1065.642(c)(2), staff proposes to include the entirety of Equation 1065.642-6, which did not display correctly in the ISOR Proposed Amendments.
7. In Part 1065.650(c)(3)(ii)(C), staff proposes to delete the "g" unit erroneously appended to the text " $m_{PM} = 144.0 \cdot 10^{-6} \cdot 57.692 \cdot 1200$ " in the example calculation.
8. In Part 1065.655(e), staff proposes to delete an erroneous semicolon in the introductory paragraph introduced as a typographical error.
9. In Part 1065.655(e)(4), staff proposes to add an erroneously-omitted overdot in the variable " \dot{m}_j " in the text " $\dot{m}_j =$ the mass flow rate of the fuel or any injected fluid j."
10. In Part 1065.750(a)(2)(iii), staff proposes to change "flame ionization" to "flame-ionization".
11. In Table 10 of Part 1065.1005, staff proposes to change "flame ionization" to "flame-ionization" in the definition of FID.

The modifications described throughout this Notice do not change implementation of the regulations in any way that affects the conclusions of the environmental analysis included in the Staff Report. The modifications primarily consist of revisions that allow manufacturers to earn more emissions credits through certification of certain engines, allow more time for pressure washer manufacturers that produce units which use engines with displacement 225 cc or larger to develop zero-emission technology, and provide clarifying language to ensure internal and federal regulatory consistency, none of which alter the compliance responses.

The Staff Report includes compliance responses for the transition of SORE to zero-emission equipment; the later transition of pressure washers that use engines with displacement 225 cc or larger merely delays the pressure washer manufacturers' compliance response implementation since the zero-emission standard for these engines will be effective starting in model year 2028 instead of model year 2024. Thus, the modifications would not create the potential for any new or more severe significant environmental impacts which were not previously examined in the Staff Report. None of the modifications has the potential to increase emissions above the Baseline Scenario emissions or otherwise cause any significant environmental impacts, as the proposed regulations would remain more stringent than under existing regulatory conditions. While one element of the modifications would allow pressure washers that use engines with displacement 225 cc or larger to follow the Proposed Amendments' emission standards schedule for portable generators which are less stringent than the standards originally proposed for pressure washers of this size, emission standards for portable generators in the Proposed Amendments are still significantly more stringent than what is allowed under California's existing standards. The existing environmental analysis remains applicable to and adequate for the project. Therefore, no additional environmental analysis is required for the modifications identified in this Notice.

Additional Documents Added to the Record

In the interest of completeness and in accordance with Government Code section 11347.1, subdivision (a), staff has also added to the rulemaking record and invites comments on the following additional documents.

1. Call2Recycle. 2022. Battery & Cellphone Dropoff Locations. Available at: <https://www.call2recycle.org/locator/?l=95814>. Last accessed: February 10, 2022.
2. Department of Toxic Substance Control. 2021. How is California Doing with Recycling Rechargeable Batteries? October 5, 2021.
3. Department of Toxic Substance Control. 2007. DTSC AB 1125: Rechargeable Battery Recycling Act Fact Sheet. April 2007
4. Edelstein, Stephen. 2021. Report: EV battery costs hit another low in 2021, but they might rise in 2022. Green Car Reports. December 1, 2021.
5. EGO. 2022. POWER+ 42" Z6 Zero Turn Riding Mower (ZT4204L). Available at: <https://egopowerplus.com/zero-turn-riding-mower-zt4204l/>. Last accessed: February 9, 2022.
6. Husqvarna. 2020. Husqvarna Battery BLi300. <https://www.husqvarna.com>. 2020; archived at Wayback Machine: <http://web.archive.org/web/20200921141137/https://www.husqvarna.com/us/accessories/battery/battery-bli300/967071901/>; citing a capture dated September 21, 2020.
7. Husqvarna. 2022a. Husqvarna W520i Push Walk-Behind Mower. Available at: <https://www.husqvarna.com/us/walk-behind-mowers/w520i/>. Last accessed: February 10, 2022.
8. Husqvarna. 2022b. Husqvarna BLi950X. Available at: <https://www.husqvarna.com/us/battery-series-accessories/bli950x/>. Last accessed: February 9, 2022.
9. Stihl. 2022a. AR 3000 Backpack Battery. Available at: <https://www.stihlusa.com/products/batteries-chargers/batteries/ar3000/>. Last accessed: February 9, 2022.
10. Stihl. 2022b. AP 300 Lithium-Ion Battery. (Redesign). Available at: <https://www.stihlusa.com/products/batteries-chargers/batteries/ap300redesign/>. Last accessed: February 10, 2022.
11. Towa Industries. 2022. TOWA PDM 20-8 SmartCharger. Available at: www.towatools.com/towa-pdm-smart-charger/. Last accessed: February 10, 2022.
12. CARB. 2003a. OFFROAD Modeling Change Technical Memo, Addition of Evaporative Emissions for Small Off-Road Engines. Revised April 21, 2003.
13. CARB. 2003b. OFFROAD Modeling Change Technical Memo, Change in Population and Activity Factors for Lawn and Garden Equipment. Revised June 13, 2003.

14. CARB. 2018. 2012 California Survey of Residential Lawn and Garden Equipment Owners: Population and Activity. Prepared by staff of the Air Quality Planning and Sciences Division. Revised October 1, 2018.
15. The Freedonia Group. 2018. Power Lawn & Garden Equipment. Industry Study #3674. September 2018.
16. Gabele, Peter. 1997. Exhaust Emissions from Four-Stroke Lawn Mower Engines, *Journal of the Air & Waste Management Association*, 47:9, 945-952, DOI: 10.1080/10473289.1997.10463951.
17. Hubert, Mia, and E. Vandervieren. 2008. An adjusted boxplot for skewed distributions. *Computational Statistics & Data Analysis*, 52(12), 5186-5201. DOI: 10.1016/j.csda.2007.11.008.
18. Lela, Chad C. and Jeff J. White. 2004. Durability of Low-Emissions Small Off-Road Engines. Report prepared by the Southwest Research Institute for the California Air Resources Board, Final Report SwRI 08.05734, April 2004.
19. Melka, Brian. 2019. Presentation to OPEESA. March 4, 2019.
20. Seo, Songwon. 2006. A review and comparison of methods for detecting outliers in univariate data sets. Master of Science Thesis, University of Pittsburgh.
21. State of California, Department of Finance. 2021. E-5 Population and Housing Estimates for Cities, Counties, and the State, January 2011-2021, with 2010 Benchmark. Sacramento, California, May 2021.
22. U.S. EPA. 2006. EPA Technical Study on the Safety of Emission Controls for Nonroad Spark-Ignition Engines < 50 Horsepower. Assessment and Standards Division, Office of Transportation and Air Quality, EPA420-R-06-006. March 2006.
23. U.S. EPA. 2007. Updates to Phase 2 Technology Mix, Emission Factors, and Deterioration Rates for Spark-Ignition Nonroad Nonhandheld Engines at or below 19 Kilowatts for the NONROAD Emissions Inventory Model. Docket EPA-HQ-OAR-2004-0008. Office of Air and Radiation. March 6, 2007.
24. U.S. EPA. 2010. Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling. Assessment and Standards Division, Office of Transportation and Air Quality, Report No. NR-005d, EPA-420-R-10-016, July 2010.
25. Welch, William and Thomas D. Durbin. 2004. Emissions and Demonstration of an Emission Control Technology for Small Two-Stroke Utility Engines, *Journal of the Air & Waste Management Association*, 54:2, 200-206, DOI: 10.1080/10473289.2004.10470890.
26. CARB. 2022a. Technical Support Document: Model Year 2018 Small Off-Road Engine Generator California Production Volume Based on Production Line Testing Reports, Redacted. Summary table prepared by staff of the Monitoring and Laboratory Division. March 2022.

27. LAO. 2021. The 2021-22 California Spending Plan: Transportation. California Legislative Analyst's Office (LAO) Budget and Policy Post. October 1, 2021. Available at: <https://lao.ca.gov/Publications/Report/4458>. Last accessed: March 14, 2022.
28. Automotive Testing Laboratories. 2003. Collection of Evaporative Emissions Data from Off-Road Equipment. Report prepared by the Automotive Testing Laboratories, Inc. for the California Air Resources Board and California Environmental Protection Agency, Air Resources Board Contract #00-315. November 24, 2003.
29. Energy and Environmental Analysis. 1997. Documentation of Input Factors for the New Off-Road Mobile Source Emissions Inventory Model. Report prepared by Energy and Analysis, Inc., for the California Air Resources Board. February 1997.
30. USCPSC. 2015a. Letter to Greg Knott, OPEI. Letter written by Han Lin, staff of the U.S. Consumer Product Safety Commission (USCPSC), Division of Combustion and Fire Sciences, Directorate for Engineering Sciences. December 3, 2015.
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42. CSUF SSRC. 2019a. Technical Support Document: Telephone Survey of SORE Population and Usage in California, Vendor Survey Results. Data prepared for CARB and the California Environmental Protection Agency by CSUF SSRC. Workbook prepared by CARB staff. May 10, 2019.
43. CSUF SSRC. 2019b. Technical Support Document: Telephone Survey of SORE Population and Usage in California, Business Survey Results. Data prepared for CARB and the California Environmental Protection Agency by CSUF SSRC. Workbook prepared by CARB staff. May 30, 2019.

In addition to the documents listed above, staff has also added to the rulemaking record the following revised version of a document that was previously included in the record and invites comments on the revisions:

44. CARB. 2022c. Technical Support Document: Compilation and Evaluation of Small Off-Road Engine Certification and Research Test Data. Microsoft Excel workbook prepared by staff of the Monitoring and Laboratory Division. October 2021, revised March 2022.

These documents are available for inspection at the California Air Resources Board, 1001 I Street, Sacramento, California, 95814, between the hours of 9:00am to 4:00pm, Monday through Friday (excluding holidays). To inspect these documents please contact [Bradley Bechtold](mailto:Bradley.Bechtold@arb.ca.gov), Regulations Coordinator, at Bradley.Bechtold@arb.ca.gov or (916) 322-6533.

Agency Contacts

Inquiries concerning the substance of the additional documents added to the record may be directed to Dorothy Fibiger, Air Resources Engineer, Testing and Certification Section, at (279) 208-7448 or (designated back-up contact) Chris Burford, Air Resources Engineer, Testing and Certification Section, at (279) 208-7341.

Public Comments

Written comments will only be accepted on the modifications identified in this Notice. Comments may be submitted by postal mail or by electronic submittal no later than the due date to the following:

Postal mail: Clerks' Office, California Air Resources Board
1001 I Street, Sacramento, California 95814

Electronic submittal: <https://www.arb.ca.gov/lispub/comm/bclist.php>

Please note that under the California Public Records Act (Gov. Code § 6250 et seq.), your written and verbal comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request.

In order to be considered by the Executive Officer, comments must be directed to CARB in one of the two forms described above and received by CARB no later than the deadline date for public comment listed at the beginning of this notice. Only comments relating to the above-described modifications to the text of the regulations shall be considered by the Executive Officer.

If you need this document in an alternate format or another language, please contact the Clerks' Office at (916) 322-5594 or by facsimile at (916) 322-3928 no later than five (5) business days from the release date of this notice. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Si necesita este documento en un formato alternativo u otro idioma, por favor llame a la oficina del Secretario del Consejo de Recursos Atmosféricos al (916) 322-5594 o envíe un fax al (916) 322-3928 no menos de cinco (5) días laborales a partir de la fecha del lanzamiento de este aviso. Para el Servicio Telefónico de California para Personas con Problemas Auditivos, ó de teléfonos TDD pueden marcar al 711.

California Air Resources Board



Richard W. Corey
Executive Officer

Date: March 30, 2022

Attachments

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see [CARB's website](http://www.arb.ca.gov) (www.arb.ca.gov).