BEFORE THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

In the Matter of California's Request for Authorization Action Pursuant to Clean Air Act Section 209(e) for 2016 and 2021 Amendments to California's Small Off-Road Engine Regulations	)

CLEAN AIR ACT § 209(e)(2) AUTHORIZATION SUPPORT DOCUMENT SUBMITTED BY THE CALIFORNIA AIR RESOURCES BOARD

[December 22, 2022]

I. Introduction and Summary of Request

Pursuant to Clean Air Act (CAA) section 209(e)(2), the California Air Resources Board (CARB or Board) requests that the Administrator of the United States Environmental Protection Agency (EPA) confirm that CARB's 2016 amendments to its Small Off-Road Engine (SORE) regulation and test procedures (2016 Amendments) are within the scope of the existing SORE authorization,[1] and additionally requests that the Administrator grant California a new authorization for the 2021 Amendments to its SORE regulation and associated test procedures (2021 Amendments).[2,3]

CARB does not project that the 2016 Amendments will achieve emissions reductions beyond the reductions associated with the preexisting SORE program, but projects that the 2016 Amendments will more effectively ensure that the preexisting SORE program will achieve the emissions reductions associated with the preexisting evaporative emission standards. CARB projects that the 2021 Amendments will cumulatively reduce statewide emissions by approximately 58,844 tons of oxides of nitrogen (NOx), 2030 tons of particulate matter (PM2.5), 421,924 tons of reactive organic gases (ROGs), and 13.8 million metric tons of greenhouse gases (GHGs) between 2023 to 2043.[4]

Section II of this document discusses the background of California's SORE regulation, including the authorizations that EPA has previously granted for that regulation. Section III provides a brief description of the Board's rulemaking actions. Section IV presents a summary of the elements of the 2016 Amendments that require authorization action. Section V presents a summary of the elements of the 2016 Amendments that require authorization action. Section VI discusses the principles applicable to authorizations, and Sections VII and VIII demonstrate that EPA has no basis to deny granting the requested authorization actions.

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[1] The 2016 Amendments amended California Code of Regulations (Cal. Code Regs.) tit. 13, §§ 2750, 2751, 2752, 2753, 2754, 2754.1, 2755, 2756, 2757, 2758, 2759, 2760, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2767.1, 2768, 2769, 2770, 2771, 2772, 2773, and amended the following documents incorporated by reference therein: "CP-901, Certification and Approval Procedure for Small Off-Road Engine Fuel Tanks," adopted July 26, 2004; "CP-902, Certification and Approval Procedure for Evaporative Emission Control Systems," adopted July 26, 2004; "TP-901, Test Procedure for Determining Permeation Emissions From Small Off Road Engine and Equipment Fuel Tanks," adopted July 26, 2004; "TP-902, Test Procedure for Determining Diurnal Evaporative Emissions From Small Off-Road Engines and Equipment," adopted July 26, 2004. Unless otherwise noted, all subsequent section references are to Cal. Code Regs., title 13; and adopt section 2774.

[2] The 2021 Amendments amended sections 2400, 2401, 2402, 2403, 2404, 2405, 2405.1, 2405.2, 2405.3, 2406, 2407, 2408, 2408.1, 2750, 2751, 2752, 2753, 2754, 2754.1, 2754.2, 2755, 2756, 2757, 2758, 2759, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2767.1, and 2771. The 2021 Amendments also adopted sections 2408.2 and 2754.3 and repealed preexisting section 2768. The 2021 Amendments additionally proposed several amendments to the exhaust and evaporative emissions test procedures- please see Updated Informative Digest for the 2021 Amendments, pp. 1-4.

[3] In this request the term "off-road" is used interchangeably with the federal term "nonroad".

[4] CARB, 2021 Amendments, Final Statement of Reasons, August 2, 2022 (2021 FSOR), Attachment D, p. D-2.

II. Background on California's Small Off-Road Engine Regulation

A. California's Longstanding Emission Standards and Associated Test Procedures Applicable to Small Off-Road Engines (SOREs)

SOREs are spark-ignition engines rated at or below 19 kilowatts (25.5 horsepower) that are not used to propel a licensed on-road motor vehicle, an off-road motorcycle, an all-terrain vehicle, a marine vessel, a snowmobile, a model airplane, a model car, or a model boat.[5] SOREs are predominantly used in lawn and garden equipment such as lawn mowers, string trimmers, and leaf blowers, as well as in other small off-road equipment such as portable generators, pressure washers, and air compressors.[6] The vast majority of SOREs are fueled by gasoline, but some are powered by compressed natural gas (CNG), propane, liquefied petroleum gas (LPG), or liquefied natural gas (LNG). Small off-road equipment powered by SORE are known as SORE equipment. The use and storage of SORE equipment results in significant emissions of air pollutants, including ROG and NOx. These air pollutants contribute to particulate matter (PM) and ground level ozone formation (elements of smog) in California. The California SORE regulation has resulted in substantial emission reductions.[7][8]

CARB first adopted emissions standards and associated test procedures for small off-road engines in 1990. In April 1993, in response to a petition from industry, CARB amended the SORE regulation to include exhaust emission standards for compression ignition (CI) and spark ignition (SI) engines, associated test procedures, and provisions for warranty and production compliance programs. The 1993 amendments established two tiers of exhaust emissions standards, applicable to 1995 and 1999 model years SOREs, respectively. EPA granted California authorization to enforce the initially adopted SORE regulation, as amended in 1993, in 1995.[9]

CARB subsequently amended the SORE regulation in 1994, 1995, and 1996 to clarify certification and implementation procedures, exempt military tactical equipment, and relax emissions standards for certain engines. With respect to certification, the 1994 amendments updated the certification test fuel requirements to allow test fuels consistent with those used for testing on-road motor vehicles.[10] CARB requested and

[5] Section 2401(a)(45).
[6] Ibid.
[7] CARB, 2021 Amendments, Initial Statement of Reasons, Staff Report (2021 ISOR), October 12, 2021, p. 2.
[8] Note that the SORE Regulation is distinct from CARB's Portable Equipment Registration Program (PERP) regulation. Title 13, Cal. Code Regs. §§ 2450 through 2465. As described in this document, the SORE regulation establishes emissions standards and other emissions-related requirements for new SOREs. The PERP regulation establishes a program that allows owners of portable engines and equipment, including owners of SI powered SOREs, to register such engines and equipment with CARB and to then operate those engines and throughout the State without needing to obtain individual permits from local air districts.
[9] 60 Fed. Reg. 37,440 (July 20, 1995).
[10] The amendments allowed manufacturers to use either one of two federal certification test fuels, Indolene, or California Phase 2 Reformulated Gasoline (CaRFG2). CaRFG2 fuel is oxygenated with methyl tertiary-butyl ether (MTBE) to decrease emissions.

received EPA's confirmation that these amendments fell within the scope of the initially granted SORE authorization in 2000.[11]

In 1998, CARB revised its SORE standards in several ways. CARB retained some of the Tier 2 standards, relaxed others,[12] delayed their implementation by one year to 2000, and created a credit trading program. The amendments applied to all engines rated less than 19kw used in off-road applications based on engine displacement rather than whether the engine is used in a handheld device. The amendments required manufacturers to meet the emission standards for the useful life of the engine, not just when the engines are new. The amendments established an averaging, banking, and trading provision that provided manufacturers flexibility in complying with applicable hydrocarbons and oxides of nitrogen standards. EPA found these amendments, except as to durability, to be within the scope of the existing authorization.[13] In 2003, EPA issued a new authorization for the durability requirements.[14]

In 2000, CARB re-codified the SORE regulations applicable to new CI engines less than 19 kW into a different regulatory article. This change collected all off-road CI engine categories into the same article to conform to the codification of federal regulations for these kinds of engines.[15]

In 2004, CARB amended the SORE exhaust emission standards and associated test procedures. CARB also adopted evaporative emission standards and associated test procedures for SI engines. The evaporative emission regulations required performance-based certification for evaporative emission control systems on walk-behind lawn mowers with engine displacement greater than 80 cc and less than 225 cc, which is the most common application for SORE.[16] Evaporative emission control systems for other engines with displacement greater than 80 cc could be certified using either performance-based certification or design certification.[17] Fuel tank permeation testing was required for engines with displacement less than or equal to 80 cc.[18] EPA granted CARB a new authorization for the 2004 SI amendments in 2006.[19]

In 2008, CARB amended the SORE SI regulation and associated test procedures to address the excessive accumulation of credits generated under the existing emission credits program. The amendments also provided manufacturers the option to use a certification fuel with up to ten percent ethanol content if they used the same fuel for

[11] 65 Fed. Reg. 69763 (November 20, 2000).
[12] These emission standards aligned with emission standards adopted by EPA in its final rule for "Control of Emissions of Air Pollution from Nonroad Diesel Engines," 62 Fed. Reg. 200 (January 2, 1997).
[13] 65 Fed. Reg. 69,767 (Nov. 20, 2000).
[14] 68 Fed. Reg. 65,702 (Nov. 21, 2003).
[15] The requirements for new CI engines less than 19 KW are set forth in sections 2420 et seq.; the requirements for new SI engines less than 19 kW are set forth in hereafter, section 2400 et seq., which will hereafter be referred to as the SORE SI regulation. U.S. EPA granted an authorization for these standards in 2010. 75 Fed. Reg. 8,056 (Feb. 23, 2010).
[16] 2016 ISOR p. 6
[17] 2016 ISOR p. 6
[18] 2016 ISOR p. 6
[19] 71 Fed. Reg. 75,536 (December 15, 2006).

certification with EPA. This harmonized California's SORE certification procedures with EPA's nonroad engine certification procedures. EPA confirmed these amendments were within the scope of its prior authorization.[20]

In 2011, CARB updated California's SORE and Off-Road CI engine test procedures to avoid imposing unreasonable compliance cost burdens on manufacturers, such as requiring duplicative California and federal emission certification testing or requiring manufacturers to produce and certify separate California and 49-state engines. The 2011 amendments modified existing test procedures to provide better harmonization with corresponding federal requirements. EPA confirmed these amendments fell within the scope of the existing SORE authorization in 2015.[21]

B. Outside California, Federal Emission Standards and Test Procedures Apply

When California's SORE evaporative emission standards were adopted in 2004, no comparable federal standards existed.[22] In 2008, EPA adopted exhaust and evaporative emission standards for small nonroad engines, which roughly aligned with some of CARB's SORE design standards for evaporative emissions adopted in 2004.[23]
The EPA evaporative emissions related requirements include controlling fuel tank permeation, fuel line permeation, and running losses, which may involve using a carbon canister. [24] In addition, manufacturers must meet a fuel cap standard, or test fuel tanks for permeation sealed with a fuel cap to ensure the tank and cap meet the standard.[25] EPA also allows certification to the current CARB diurnal emission standards as an alternative to the fuel tank and fuel line requirements (40 CFR 1060.105(e)).[26] In addition, the EPA rule includes a bond requirement to ensure specific manufacturers cover enforcement obligations.[27]

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[20] 80 Fed. Reg. 26,041 (May 6, 2015).
[21] 80 Fed. Reg. 76,971 (Dec. 11, 2015).
[22] *See* 2016 ISOR, p. 8. In 2001, U.S. EPA adopted Part 1065, as a "united" test procedure for both nonroad engines and equipment and on-highway heavy-duty CI engines. Part 1065 is the technical part of U.S. EPA's regulations that specifies emissions measurement methodologies, criteria for selecting analytical instrumentation, calibration procedures, and specifications for virtually all engine categories. Since its adoption, Part 1065 has been amended repeatedly to both improve and to expand its applicability for the nonroad engine categories. In addition, EPA adopted specific "standard-setting" parts for each engine/equipment and vehicle category. Besides the actual emission standards, these standard-setting parts contain other provisions, such as certification protocols, production-line testing requirements, credit-generation allowances, etc. In 2008, EPA adopted Part 1068, which contains the general compliance, special provisions, and defect reporting requirements of EPA's regulations. Since 2005, U.S. EPA has adopted several amendments to its nonroad CI engine regulations contained in Parts 1039, 1065, and 1068. Part 1039 is the standard-setting part of EPA's regulations for nonroad CI engines, and also contains provisions regarding certification procedures, labeling, credit generation, emissions averaging, equipment flexibility options, and hardship relief.
[23] The applicable small nonroad engine test procedures are now contained in Part 1065; the standard-setting provisions for small nonroad engines are in Part 1054; and the small nonroad engine general compliance requirements are in Part 1068.
[24] 2016 ISOR p. 8
[25] 2016 ISOR p. 8
[26] 2016 ISOR p. 8
[27] 2016 ISOR p. 8

III. OVERVIEW OF CARB'S RULEMAKING ACTIONS

A. 2016 Amendments

At its November 17, 2016, public hearing, CARB approved for adoption the 2016 Amendments by Resolution 16-14 (Enclosure P). CARB directed the Executive Officer to determine if additional conforming modifications to the regulation 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 Executive Officer issued Executive Order R-17-004 (Enclosure Q) on September 18, 2017, to adopt the 2016 Amendments after addressing all appropriate modifications made available for public comment.

On November 13, 2017, the California Office of Administrative Law (OAL) issued a Decision of Approval for the 2016 Amendments, and filed the 2016 Amendments with California's Secretary of State. The 2016 Amendments became operative under state law on January 1, 2018.

B. 2021 Amendments[28]

On December 9, 2021, CARB approved for adoption the 2021 Amendments by Resolution 21-28 (Enclosure 13). In accordance with California Government Code section 11346.8, the Board directed the Executive Officer to adopt the 2021 Amendments after making any appropriate conforming modifications, as well as any additional supporting documents and information, available to the public for a period of at least 15 days. The Board further provided that the Executive Officer shall consider such written comments as may be submitted during this period, shall make such modifications as may be appropriate in light of the comments received, and shall present the Proposed Amendments to the Board for further consideration if warranted.

Subsequent to the hearing, CARB staff proposed modifications (15-day modifications) to the ISOR's proposed amendments to the SORE regulations to address the direction given by the Board as well as the comments received. On March 30, 2022, CARB released a "Notice of Public Availability of Modified Text and Availability of Additional Documents" (March 2022 15-Day Notice), which was available for public comment from March 30, 2022, through April 14, 2022. On May 27, 2022, CARB released a "Notice of Public Availability of Additional Documents and Information" (May 2022 15-Day Notice), which was available for public comment from May 27, 2022, through June 13, 2022.

On August 1, 2022, CARB's acting Executive Officer adopted the 2021 Amendments in Executive Order R-22-04 (Enclosure 34). On August 2, 2022, CARB submitted the

[28] 2021 FSOR pp. 3-4 (entire overview section)

rulemaking package to the California Office of Administrative Law (OAL) for review and approval pursuant to California Government Code section 11349.1. On September 14, 2022 OAL approved and filed the 2021 Amendments with the California Secretary of State with an effective date of January 1, 2023.

IV. SUMMARY OF 2016 AMENDMENTS

This section of the support document provides an overview of the emissions-related and accompanying enforcement provisions of the 2016 Amendments for which CARB is requesting authorization action. More detailed descriptions of these provisions are provided in the Initial Statement of Reasons (Staff Report, Enclosure B), the Notice of Public Availability of Modified Text and Additional Documents (Enclosures I), and the Final Statement of Reasons (FSOR, Enclosure R).

The 2016 Amendments include improvements to evaporative emissions certification procedures, revise the compliance testing procedure, update the evaporative emissions certification test fuel to represent commercially available gasoline, and align aspects of the SORE requirements with the corresponding federal requirements, while retaining elements of the evaporative emission standards previously adopted by CARB, which are more stringent than federal requirements.[29] The 2016 Amendments are designed to increase SORE equipment compliance with the diurnal emission standards, will require evaporative emissions certification test fuel to be formulated to reflect motor vehicle fuel currently dispensed at California gasoline stations, will enable SORE manufacturers to obtain both CARB and EPA certification for fuel tanks based on a common set of test results, and will enable CARB to more readily identify and remedy violations of the evaporative emissions standards.[30] The 2016 Amendments do not increase the stringency of the preexisting SORE evaporative emission standards, but will ensure that manufacturers will more fully comply with those standards.

A. The 2016 Amendments Improve Compliance with Diurnal Emission Standards

When CARB initially proposed SORE evaporative emission standards in 2003, the running loss, permeation, and venting emissions from all engines with displacement greater than 80 cc would be tested over a period of one day (diurnal emissions) using a sealed housing for evaporative determination (SHED) that met the federal requirements in 40 C.F.R. section 86.107-96. This was referred to as the performance-based method or performance certification, since a diurnal (or per-day) emission standard is a performance standard.[31] Evaporative emissions from engines with displacement less than 80 cc would be subject to fuel tank permeation standards only.[32]

[29] See, CARB, Updated Informative Digest for the 2016 Amendments, pp. 4-5.
[30] 2016 ISOR pp. x-xi.
[31] 2016 ISOR p. 5
[32] 2016 ISOR p. 5

The SORE industry expressed concerns regarding the cost and feasibility of SHED testing, and proposed an alternative design-based standard for evaporative emissions from engines with displacement greater than 80 cc based on emission testing for fuel lines, fuel tanks, and carbon canisters.[33] The design-based standard was intended to be a simple and inexpensive method that would allow evaporative emission control systems to demonstrate compliance with diurnal emission standards without SHED testing, and that would provide equivalent or better emission reductions than the performance-based standard that required SHED testing.[34]

The 2003 regulations adopted a compromise.[35] Performance certification was required for evaporative emission control systems on walk-behind lawn mowers with engine displacement greater than 80 cc and less than 225 cc, which is the most common application for SORE.[36] Evaporative emission control systems for other engines with displacement greater than 80 cc could be certified using either performance certification or design certification.[37] Fuel tank permeation testing was required for engines with displacement less than or equal to 80 cc.[38] This was the first CARB program with a design-based certification option for evaporative emissions.[39]

Because design-based certification was a new option, the 2003 regulations required two validation studies to assess its effectiveness.[40] The results of those studies indicated that more than half of SORE equipment using engines with displacement greater than 80 cc do not comply with the diurnal emission standards,[41] and accordingly indicate that the emissions reductions that were expected as a result of the SORE evaporative emissions regulations are not being achieved.[42] The discrepancy between certification data and the validation study results indicates that certification tests do not accurately estimate diurnal emissions of small off-road engines. [43]

The 2016 Amendments accordingly retain design-based and performance certification as options, but clarify that—regardless of certification method—all engines with displacement greater than 80 cc must meet the diurnal emission standards.[44] The 2016 Amendments further clarify that applicants may submit either diurnal emission test data or test data that shows that the fuel tank and carbon canister meet design standards.[45] This ensures CARB may enforce the diurnal emission standards on all engines with displacement greater than 80 cc and may conduct compliance testing on a greater

[33] 2016 ISOR p. 5
[34] 2016 ISOR p. 6
[35] 2016 ISOR p. 6
[36] 2016 ISOR p. 6
[37] 2016 ISOR p. 6
[38] 2016 ISOR p. 6
[39] 2016 ISOR pp. 6-7
[40] 2016 ISOR p. 6
[41] 2016 ISOR p. 81
[42] 2016 ISOR p. 82
[43] 2016 ISOR p. 82
[44] 2016 ISOR p. 18, citing section 2750
[45] Section 2754(c)

number of evaporative families.[46]

To ensure that these clarifications were implemented, several other provisions in the regulations required conforming changes. The definition of “equivalent fuel line” in section 2752(a)(5) was modified by adding a requirement that it must have lower permeation emissions than the nominal fuel line being replaced and by updating the referenced test procedure and fuel used for measuring permeation emissions.[47] Requiring an equivalent fuel line to have lower permeation emissions than the nominal fuel line being replaced ensures that diurnal emissions from the engine do not increase because of using an equivalent fuel line. [48]

Section 2753(b) was modified to clarify that an applicant must demonstrate that the model of engine expected to exhibit the highest diurnal emission rates relative to the applicable diurnal emission standard meets that standard. This entails submitting 1) diurnal emission test results; 2) fuel tank, fuel line, and 3), either (i) carbon canister test results or (ii) Executive Order numbers for the fuel tank, fuel lines, and carbon canister used on the engine.[49] These changes ensure that the models tested for certification are those most likely to have the greatest actual emissions relative to the applicable diurnal emission standard, rather than the model with the highest diurnal emissions.[50] This distinction is important because emission standards depend on fuel tank size, while various other factors (fuel line length and type, induction type, tank material, component configuration, etc.) may substantially affect actual emissions.[51]

Section 2753(f) was added to require entities that have had previously-issued Executive Orders suspended or revoked to submit diurnal emission test results when they apply for certification of an evaporative system on engines with displacement greater than 80 cc, beginning in model year 2020.[52] This amendment gives greater assurance that the manufacturer can produce evaporative systems which meet the diurnal emission standards.

A fuel line permeation emission standard was added in section 2755, requiring fuel lines to meet the requirements laid out in section 2754(b)(2).[53] This aligns with the EPA requirements in 40 C.F.R., section 1060 and ensures greater control of evaporative emissions from engines with displacement less than or equal to 80 cc.[54] A distinct permeation emission standard for fuel lines used on chainsaws was added to section 2755.[55] Data documenting the permeation rate for fuel lines must be included in the

[46] 2016 ISOR p. 12
[47] 2016 ISOR p. 19
[48] 2016 ISOR p. 21
[49] 2016 ISOR p. 24 citing section 2753(b)
[50] 2016 ISOR p. 25
[51] 2016 ISOR p. 25
[52] 2016 ISOR p. 24
[53] Section 2754(b)(2) specifies the fuel line permeation standard and was amended to clarify that US EPA test fuel is an alternative test fuel for fuel line permeation testing; *see* ISOR p. 32.
[54] 2016 ISOR p. 32
[55] 2016 FSOR p. 86

certification application.[56]

The compliance testing requirements were amended to replace the preexisting 95 percent confidence interval calculation for determining a passing test to require all tested units to meet the emission standards.[57] The 2016 Amendments also specify that any sign of visual leakage constitutes a failure of compliance testing.

The Amendments require certification renewal every four years for evaporative components.[58] This change does not result in additional testing of evaporative components beyond what was already required but requires manufacturers to determine whether any changes to the components or raw materials supplies could affect their evaporative emissions. Manufacturers must declare to CARB that any changes do not affect emissions.[59] These periodic assessments of evaporative components to confirm they still meet emission standards should increase manufacturers' compliance with the diurnal emission standards.[60]
The evaporative emission certification averaging and banking provisions were amended to prevent manufacturers from indefinitely banking credits. Commencing with the 2018 model year, any banked diurnal emission credits and any new diurnal emission credits earned may be used for up to five years before expiration.[61] The 2016 Amendments also clarify that, in calculating diurnal emissions credits, the worst-case model of engine or equipment is defined as the model of engine or equipment within an evaporative family expected to exhibit the highest diurnal emission rate relative to the applicable diurnal emission standard.

New optional evaporative emission standards that are more stringent than the evaporative emission standards set out in sections 2754 and 2755 were added in section 2757.[62] Several evaporative systems have achieved diurnal emissions and permeation emission rates below the optional standards.[63]

B. The 2016 Amendments Update Certification Test Fuel

The 2016 Amendments update the certification test fuels to reflect motor vehicle pump fuel available in California, which often contains 10 percent ethanol (E10). Testing may be performed using either LEV III certification E10 gasoline, or EPA's low-level ethanol-gasoline blend defined in 10 C.F.R. Part 1065.515(a)(2). Allowing usage of the federal test fuel or E10 fuel provides flexibility for Executive Order of Certification Holders[64] and

[56] 2016 ISOR p. 32
[57] 2016 FSOR p. 61
[58] 2016 ISOR p. 82 see §2767.1(g) and (h)
[59] 2016 ISOR p. 82
[60] 2016 ISOR p. 82
[61] Section 2754.1(d)(4)
[62] 2016 ISOR p. 33
[63] 2016 ISOR p. 33-34
[64] "Holder" means the person to whom the Executive Order of Certification is issued. (Section 2752(a)(15).) The Holder is typically an equipment manufacturer. The Holder can also be the manufacturer of the evaporative emission control system, which is defined as "the fuel system and associated components that are designed to control evaporative emissions." (Section 2752(a)(9).)

fuel line manufacturers, as long as it can be demonstrated that the equivalent fuel line would permeate less than the nominal fuel line with LEV III certification gasoline.[65]

The previous certification procedures specify fuels that do not contain ethanol. The 2016 Amendments accordingly ensure certification testing will provide more accurate emission rates from small off-road engines. While higher emissions were generally observed with E10 fuel for units tested in both the validation studies and testing conducted by CARB with E10 fuel, "the E10 study," most units still met the existing diurnal emission standards with E10 fuel.[66] The E10 study results indicate that engines with well-designed and constructed evaporative emission control systems will meet the existing diurnal emission standards with E10 fuel. [67]

These updates phase in over time. California Phase II certification fuel may continue to be used through model year 2019.[68] The update to E10 certification test fuel for evaporative emissions for model year 2020 coincides with the requirement to use this same fuel for exhaust emissions for model year 2020 adopted by CARB in 2011.[69]

C. The 2016 Amendments Update Fuel Tank Testing Procedures

The 2016 Amendments clarify that an applicant must demonstrate that the model of fuel tank with the highest permeation rate relative to the permeation emission standard meets that standard by including permeation data for that fuel tank in the certification application. [70] These changes ensure that the fuel tank models tested for certification are those most likely to have emissions above its diurnal emission standard, rather than simply the fuel tank model with the highest overall diurnal emissions.[71]

The 2016 Amendments align CARB's fuel tank testing requirements with EPA's while maintaining their stringency. This reduces the requirements on engine manufacturers to comply with the evaporative emission standards for engines typically used in handheld equipment.[72] This also ensures that all parts that produce and control evaporative emissions are included in the emission warranty.[73] This is consistent with EPA requirements in 40 C.F.R., section 1060.[74]

The 2016 Amendments also clarify the criteria used to determine which fuel tanks in the evaporative family are expected to have the highest and lowest permeation rates relative to the permeation emission standards. [75] This ensures the Executive Officer can verify that all fuel tanks in a family are expected to meet the permeation emission

[65] 2016 ISOR p. 21
[66] 2016 FSOR p. 69
[67] 2016 FSOR p. 69
[68] Section 2754; TP-902, section 6.
[69] 2016 FSOR p. 24
[70] 2016 ISOR p. 24 citing 2753(b)(3) renumbered 2753(c)
[71] 2016 ISOR p. 25
[72] 2016 ISOR p. 24
[73] 2016 ISOR p. 25
[74] 2016 ISOR p. 25
[75] 2016 ISOR p. 24 citing 2753(b)(3) renumbered 2753(c)

standards. [76]

Certification procedures apply based on the model year as specified in section 2753(a). Under section 2753(a), applicants must use the amended versions of CP-901 and CP-902 beginning in model year 2020.[77]

The 2016 Amendments delete the preexisting exemptions for metal, coextruded multilayer, and structurally integrated nylon fuel tanks on engines with displacement less than or equal to 80 cc.[78] Manufacturers must demonstrate these tanks meet the emission standards to be certified. [79] This enables CARB to enforce the emission standards for all fuel tanks on these engines.

The preexisting Small Production Volume Tank Exemption was also deleted after model year 2019.[80] CARB initially enacted this exemption when California was the only state in the nation with applicable evaporative emission standards for SORE equipment. However, when EPA also adopted comparable evaporative emission requirements for SORE equipment, the exemption was no longer needed, because the same fuel tanks can now be used to meet both California and federal requirements.

The preexisting provisions in section 2767(c) for innovative product "equivalent" fuel tanks were deleted because they are no longer necessary given that replacement of a "nominal fuel tank" with an "equivalent fuel tanks" is no longer allowed.[81] Under the 2016 Amendments, all tanks are subject to permeation testing and must meet the standard, regardless of the tank material or construction method.[82] Merely meeting the fuel tank permeation standards does not makes the fuel tank innovative.[83] The preexisting provisions for using "equivalent fuel tanks" have also been deleted, so the innovative product "equivalent" determination would have no further use. Holders of Executive Orders for these fuel tanks can pursue Executive Orders for fuel tanks via the conventional pathway. [84]

D. The 2016 Amendments Update Recordkeeping, Reporting, Labeling, and Other Administrative Requirements

The 2016 Amendments update equipment and component labeling requirements. The labeling requirements for fuel lines, fuel tanks, and carbon canisters are largely aligned with the corresponding federal requirements in 40 C.F.R., § 1060.137.[85] However, CARB must ensure certification and identification of components can be confirmed.[86]

[76] 2016 ISOR p. 25
[77] 2016 ISOR p. 23
[78] 2016 ISOR p. 43 re §2766
[79] 2016 ISOR p. 43 re §2766
[80] 2016 ISOR p. 43 re §2766
[81] 2016 ISOR p. 44
[82] 2016 ISOR p. 44
[83] 2016 ISOR p. 44
[84] 2016 ISOR p. 44
[85] 2016 FSOR p. 110
[86] 2016 FSOR p. 110

Therefore, CARB declined to completely align component labeling requirements with 40 C.F.R., § 1060.137.[87] These components must instead be labeled with the Executive Order holder's name, the Executive Order number, and model or part number.[88]

Any components of an evaporative emission control system subject to the SORE regulations introduced into California commerce must be certified and labeled as required, under the amendments to Section 2751.[89] This clarification ensures that using replacement parts will not result in an increase in evaporative emissions versus the certified configuration.[90]

The 2016 Amendments now require production volume reports for each equipment type by evaporative family and fuel tank volume.[91] These reports assist CARB in updating the emissions inventory for SORE and in determining the number of affected evaporative emission control systems when remedying defects and violations.[92] Production volume reporting is not required for zero-emission SORE equipment.[93]

The 2016 Amendments specify that CARB may periodically inspect the facilities of entities issued an Executive Order and that failure to allow inspection shall be grounds for suspension or revocation of an Executive Order.[94] This is an important clarification because inspections may be necessary to verify that entities are producing compliant evaporative emission control systems.[95] This is not a new requirement, but reiterates CARB's existing inspection authority.

The 2016 Amendments requires entities issued Executive Orders to post a bond, obligated to CARB, that may be called to satisfy a penalty for violating the SORE regulations, unless the entity has sufficient long-term U.S. assets that could satisfy a penalty.[96] The bond requirements deter violations and guard against entities that exit the California market or dissolve.[97] Because the cost of the bond rises if called to pay penalties, it will deter violations.[98]

The 2016 Amendments subject all parts whose failure would increase evaporative emissions to the warranty requirements of SORE regulations, regardless of whether

[87] 2016 FSOR p. 110
[88] 2016 FSOR p. 110
[89] 2016 ISOR p. 18
[90] 2016 ISOR p. 18
[91] 2016 ISOR p. 38 required sales reporting– changed to production volume reporting in 15-day changes. See FSOR p. 115
[92] 2016 ISOR p. 38
[93] 2016 FSOR p. 117
[94] 2016 ISOR p. 46
[95] 2016 ISOR p. 46
[96] 2016 ISOR p. 48
[97] 2016 ISOR p. 48
[98] 2016 ISOR p. 12-13

they are subject to emission standards.[99] This aligns with EPA evaporative emission warranty requirements in 40 C.F.R., § 1060.120. [100]

The 2016 Amendments further clarify that abuse, neglect, or improper maintenance leading to failure of the evaporative system may be case for disallowing a warranty claim.[101] The 2016 amendments also remove the limitation of the warranty for engines with displacement less than or equal to 80 cc so it applies to all of parts of whose failure would increase evaporative emissions rather than only to the fuel tank. These amendments align the SORE warranty with comparable federal warranty requirements and provide a warranty for parts whose failure would increase evaporative emissions. [102]

The 2016 Amendments prohibit warranty statements, other than the emissions warranty, from implying a limitation on the evaporative emissions warranty period or its applicability to subsequent owners of the SORE equipment, after the ultimate purchaser.[103] This amendment prevents subsequent purchasers of the SORE equipment from being misinformed that their evaporative emissions warranty lasts fewer than two years.[104]

V. SUMMARY OF 2021 AMENDMENTS

The 2021 Amendments primarily establish exhaust and evaporative emission standards and associated test procedures for 2024 and subsequent model SORE engines and equipment that are significantly more stringent than preexisting exhaust and evaporative emission standards and associated test procedures.[105] The 2021 Amendments establish SORE emission standards in two phases. First, the exhaust emission standards for most 2024 and subsequent model year (MY) SOREs is zero (0.00 grams per kilowatt-hour) for hydrocarbons and oxides of nitrogen. Under the 2021 Amendments, carbon monoxide (CO) emission standards for MY 2024 and later engines are more stringent than the existing emission standards for some displacement categories, but they are not zero. The evaporative emission standards for most 2024 and subsequent MY SOREs is zero (0.00 grams per test). The evaporative emission standards include “hot soak” emissions (representing emissions that occur when placing a hot engine in storage after use on a hot summer day) to better evaluate emissions from real world use of SORE equipment.

[99] 2016 FSOR p. 103 re section 2760
[100] 2016 FSOR p. 103
[101] 2016 ISOR p. 40
[102] 2016 ISOR p. 40
[103] 2016 ISOR p. 37
[104] 2016 ISOR p. 37
[105] The 2021 Small Off-Road Engine Amendments updated sections 2400, 2401, 2402, 2403, 2404, 2405, 2405.1, 2405.2, 2405.3, 2406, 2407, 2408, 2408.1, 2750, 2751, 2752, 2753, 2754, 2754.1, 2754.2, 2755, 2756, 2757, 2758, 2759, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2767.1, and 2771; added new sections 2408.2 and 2754.3; repealed section 2768, and amended associated test procedures.

The above-mentioned emission standards apply for all categories of SORE except pressure washer engines with displacements greater than or equal to 225 cubic centimeters (cc) and portable generator engines. The emission standards for the latter category of engines are more stringent than the preexisting emission standards starting in MY 2024, but are not zero.

The second phase of the emissions standards will be implemented beginning in the 2028 MY, when the exhaust and evaporative emission standards for engines used in pressure washer with displacements greater than or equal to 225 cc and portable generators will be aligned with the zero-emission standards for other categories of SOREs.

A. Summary of 2021 Amendment's Emissions Standards and Other Emissions-Related Requirements[106]

1. The 2021 Amendments' Exhaust and Evaporative Emission Standards

The exhaust and evaporative emission standards for new 2024 and subsequent MY SOREs manufactured for sale and use in California are specified in the tables below.

Exhaust Emission Standards for Spark-Ignition Engines, Except Generator Engines and ≥ 225 cc Pressure Washer Engines (grams per kilowatt-hour)[107]

Model Year	Displacement Category	Durability Periods (hours)	Hydrocarbon plus Oxides of Nitrogen(2,6,7)	Carbon Monoxide(7)	Particulate Matter(7)
2024 and subsequent	< 50 cc	300	0.00	536	0.00(4)
2024 and subsequent	50-80 cc, inclusive	300	0.00	536	0.00(4)
2024 and subsequent	> 80 cc - < 225 cc	500	0.00	549	NA
2024 and subsequent	225-825 cc, inclusive	1,000	0.00	549	NA
2024 and subsequent	> 825 cc	1,000	0.00	20.6	NA

Exhaust Emission Standards for Generator Engines (grams per kilowatt-hour)[108]

[106] 2021 FSOR pp. 1-2 (entire subsection D, except as indicated with additional footnotes)
[107] Section 2403(b)(1).
[108] Section 2403(b)(1).

Model Year	Displacement Category	Durability Periods (hours)	Hydrocarbon plus Oxides of Nitrogen(2,8)	Carbon Monoxide(8)	Particulate Matter(8)
2024 through 2027	< 50 cc	500	6.0	400	2.0(4)
2024 through 2027	50-80 cc, inclusive	500	6.0	400	2.0(4)
2024 through 2027	> 80 cc - < 225 cc	500	6.0	400	NA
2024 through 2027	225-825 cc, inclusive	1,000	3.0	200	NA
2024 through 2027	> 825 cc	1,000	0.80	20.6	NA
2028 and subsequent	< 50 cc	300	0.00	400	0.00(4)
2028 and subsequent	50-80 cc, inclusive	300	0.00	400	0.00(4)
2028 and subsequent	> 80 cc - < 225 cc	500	0.00	400	NA
2028 and subsequent	225-825 cc, inclusive	1,000	0.00	200	NA
2028 and subsequent	> 825 cc	1,000	0.00	20.6	NA

Exhaust Emission Standards for ≥ 225 cc Pressure Washer Engines (grams per kilowatt-hour)[109]

Model Year	Displacement Category	Durability Periods (hours)	Hydrocarbon plus Oxides of Nitrogen(2,9)	Carbon Monoxide(9)	Particulate Matter(9)
2024 through 2027	225-825 cc, inclusive	1,000	3.0	200	NA
2024 through 2027	> 825 cc	1,000	0.80	20.6	NA
2028 and subsequent	225-825 cc, inclusive	1,000	0.00	200	NA
2028 and subsequent	> 825 cc	1,000	0.00	20.6	NA

(1) "Class I" means small off-road engines greater than 65 cc to less than 225 cc in displacement.
"Class II" means small off-road engines greater than or equal to 225 cc in displacement.
"Class III" means small off-road engines less than 20 cc in displacement.
"Class IV" means small off-road engines 20 cc to less than 50 cc in displacement.
"Class V" means small off-road engines greater than or equal to 50 cc to 65 cc in displacement.

(2) The Executive Officer may allow gaseous-fueled (i.e., propane, natural gas) engine families, that satisfy the requirements of the regulations, to certify to either the hydrocarbon plus oxides of nitrogen or

[109] Section 2403(b)(1).

hydrocarbon emission standard, as applicable, on the basis of the non-methane hydrocarbon (NMHC) portion of the total hydrocarbon emissions.

(3) Applicable to all diesel-cycle engines.

(4) Applicable to all two-stroke engines.

(5) Engines used exclusively in snowthrowers and ice augers need not certify to or comply with the HC and NO_x standards or the crankcase requirements at the option of the manufacturer.

(6) Engines used exclusively to power products which are used exclusively in wintertime, such as snowthrowers and ice augers, at the option of the engine manufacturer, need not certify to or comply with standards regulating emissions of $HC+NO_x$ or $NMHC+NO_x$, as applicable. If the manufacturer exercises the option to certify to standards regulating such emissions, such engines must meet such standards. If the engine is to be used in any equipment or vehicle other than an exclusively wintertime product such as a snowthrower or ice auger, it must be certified to the applicable standard regulating emissions of $HC+NO_x$ or $NMHC+NO_x$ as applicable.

(7) Applicable to all small off-road engines, except generator engines engines and ≥ 225 cc pressure washer engines.

(8) Applicable only to generator engines. The CO emission standards for marine generator engines in all displacement categories are 4.5 $g \cdot kWh^{-1}$.

(9) Applicable only to ≥ 225 cc pressure washer engines.

Hot Soak Plus Diurnal Emission Standards for Small Off-Road Engines, Except Generator Engines and ≥ 225 cc Pressure Washer Engines[110]

Displacement Category	Effective Date Model Year	Hot Soak Plus Diurnal Emission Standards[1] (g organic material hydrocarbon equivalent·test^{-1})
≤ 80 cc	2024	0.00
> 80 cc - < 225 cc Walk-Behind Mowers	2024	0.00
> 80 cc - < 225 cc (except Walk-Behind Mowers)	2024	0.00
≥ 225 cc	2024	0.00

[1] The standards for hot soak plus diurnal emissions are measured in grams of organic material hydrocarbon equivalent per test, which includes both the hot soak test and the 24-hour diurnal test, as specified in TP-902.

Hot Soak Plus Diurnal Emission Standards for Generator Engines[111]

Displacement Category	Effective Date Model Year	Hot Soak Plus Diurnal Emission Standards[1] (g organic material hydrocarbon equivalent·test^{-1})
≤ 80 cc	2024	0.50
	2028	0.00
> 80 cc - < 225 cc	2024	0.60
	2028	0.00
≥ 225 cc	2024	0.70
	2028	0.00

[110] Section 2754(a)(3).
[111] Section 2754(a)(5).

1 The standards for hot soak plus diurnal emissions are measured in grams of organic material hydrocarbon equivalent per test, which includes both the hot soak test and the 24-hour diurnal test, as specified in TP-902.

Hot Soak Plus Diurnal Emission Standards for ≥ 225 cc Pressure Washer Engines[112]

Displacement Category	Effective Date Model Year	Hot Soak Plus Diurnal Emission Standards[1] (g organic material hydrocarbon equivalent·test^{-1})
≥ 225 cc	2024	0.70
	2028	0.00

[1] The standards for hot soak plus diurnal emissions are measured in grams of organic material hydrocarbon equivalent per test, which includes both the hot soak test and the 24-hour diurnal test, as specified in TP-902.

The 2021 Amendments' evaporative emission standards include "hot soak" plus diurnal evaporative emission standards for generators for MY 2024 through MY 2027 (representing emissions that occur when placing a hot engine in storage after use on a hot summer day) to better evaluate emissions from real world use of SORE equipment. The preexisting evaporative emission standards only include diurnal evaporative emission standards. The new evaporative emissions test procedure includes operating generators for fifteen minutes to heat the engine. Then the hot soak period occurs, which involves holding the equipment at 95 degrees for one hour.[113] Section XI.B of the 2021 ISOR has further description of the hot soak and diurnal test procedures. Manufacturers are already required to measure and report hot soak emissions when performing a test on a complete engine, so including hot soak emissions would not add any testing burden or cost. This change will reduce the potential that generators will emit higher-than-expected hot soak emissions.

2. The 2021 Amendments' Changes to the Emission Credit Program

The 2021 Amendments amend the preexisting emission reduction credit programs to improve consistency and to add flexibility for manufacturers. The preexisting exhaust emission regulations included an emission reduction credit averaging, banking, and trading (ABT) program, where manufacturers can generate credits by certifying engines that emit below the emission standards and use those credits to produce and certify engines that emit above the emission standards. Exhaust emission reduction credits may be banked for up to five years, to be used later, or may be traded with other manufacturers. The preexisting *evaporative* emission reduction credit program only includes averaging and banking, but the 2021 Amendments now allow manufacturers to trade evaporative emission reduction credits and to earn evaporative emission credits for all engines with displacements less than or equal to 80 cc before emission standards

[112] Section 2754(a)(7).
[113] 2021 ISOR pp.32-33

of zero are implemented for most engines beginning in MY 2024. Furthermore, new zero-emission generator credit programs are now added to the ABT programs, which now allows manufacturers to earn emission reduction credits for zero-emission generators.

3. 2021 Amendments to Test Procedures

The 2021 Amendments amend the preexisting evaporative emission test procedures by adding additional instructions for a fuel tank pressure test, adding a new fuel cap and tether test, a tilt test to check for fuel leaks, and instructions for accelerated preconditioning of engines. The 2021 Amendments additionally amend preexisting evaporative emissions test procedure TP-901 to ensure fuel tank testing configurations are more representative of production fuel tanks by requiring the hole for a fuel line and grommet system to be present in the fuel tanks and requiring fuel tanks to be tested with the same production fuel cap throughout testing, and will now require all engines to use evaporative emission control system certification procedure CP-902, whereas engines with displacements less than 80 cc were previously required to use a different certification procedure. In addition, the 2021 Amendments allow manufacturers to certify all engines with displacement less than or equal to 80 cc to the diurnal emission standards that currently exists for engines with displacement greater than and less than 225cc through the MY 2023.

Most of the 2021 Amendments align the California exhaust emission test procedures with updates to the corresponding federal test procedures that have been adopted since CARB last amended its SORE test procedures. The 2021 Amendments also include California-specific changes necessary to maintain the stringency of California emission standards, provide consistency with other California SORE regulations, prevent redundant effort and confusion for testers, and provide manufacturers additional flexibility. For example, the requirements for exhaust emission compliance testing are changed from testing “a reasonable number of engines” to “one or more engines.” References to National Institute of Standards and Technology (NIST)-traceable standards are changed to Système International d'Unités (SI)-traceable standards to allow flexibility for manufacturers around the world to use other recognized international standards while still maintaining the consistency necessary to ensure test data accuracy, precision, and comparability to the emission standards.

4. Other 2021 Amendments

Other 2021 Amendments include sunsetting the voluntary “Blue Sky Series” engine requirements and repealing the variance provisions in the preexisting evaporative emission requirements. CARB adopted the Blue Sky Series engine requirements to allow manufacturers to receive recognition for certifying to lower emission standards, but CARB has no record of any manufacturer taking advantage of that program for any engines.

Under the preexisting evaporative emission regulations, a manufacturer that was unable to meet one or more requirements, due to extraordinary reasons beyond the manufacturer's reasonable control, could apply for a variance. Repealing the variance provisions ensures equity for all manufacturers, because all manufacturers are now required to meet the requirements of the regulations. Moreover, the 2021 Amendments now allow manufacturers to trade evaporative emissions credits, which afford manufacturers flexibility previously provided by the variance provisions.

VI. AUTHORIZATION CRITERIA AND PRINCIPLES

A. Criteria for Granting Authorizations Under CAA Section 209(e)

Section 209(e)(2) of the CAA sets forth the protocol for the Administrator to grant California an authorization to adopt and enforce standards and other requirements relating to controlling emissions from new and in-use nonroad engines that are not conclusively preempted by section 209(e)(1)—new engines less than 175 hp used in farm and construction equipment and vehicles and new engines used in new locomotives and locomotive engines.

Closely tracking the new motor vehicle waiver process set forth in section 209(b), section 209(e)(2) directs the Administrator to grant an authorization to California for emissions standards and other emissions-related requirements for all other nonroad engines if California determines that the state's standards will be, in the aggregate, at least as protective of public health and welfare as applicable federal standards, unless he finds that: (1) the protectiveness finding of the state is arbitrary and capricious; (2) California does not need separate state standards to meet compelling and extraordinary conditions; or (3) the state standards and accompanying enforcement procedures are not consistent with section 209 of the CAA.[114] The criteria for reviewing a California request for authorization under section 209(e)(2) are nearly identical to the criteria that the Administrator must consider under section 209(b). In light of these almost identical protocols, EPA has confirmed that it would similarly interpret sections 209(b) and (e) where the language is similar.[115]

One deviation in language is that CAA section 209(e)(2) requires the Administrator to consider consistency with other subsections of section 209. In its *209(e) Final Rule,* EPA interpreted this provision to require that California's standards and accompanying enforcement provisions must also be consistent with sections 209(a), 209(e)(1), and 209(b)(1)(C).[116] As the Administrator has stated:

[114] 82 Fed. Reg. 6525, 6256 (Jan. 19, 2017).
[115] *Air Pollution Control; Preemption of State Regulation for Nonroad Engine and Vehicle Standards (Final 209(e) Rule)*, 59 Fed. Reg. 36969 (July 20, 1994), Decision Document accompanying 60 Fed. Reg. 37440 (July 20, 1995) at p. 11; 65 Fed. Reg. 69763, 69764 (Nov. 20, 2000).
[116] 59 Fed. Reg. 36969, 36983 (July 20, 1994).

> "In [o]rder to be consistent with section 209(a), California's [nonroad] standards and enforcement procedures must not apply to new motor vehicles or new motor vehicle engines. Secondly, California's nonroad standards and enforcement procedures must be consistent with section 209(e)(1), which identifies the categories permanently preempted from state regulation. California's nonroad standards and enforcement procedures would be considered inconsistent with section 209 if they applied to the categories of engines or vehicles identified and preempted from State regulation in section 209(e)(1). Finally, and most importantly in terms of application to nonroad [authorization requests], California's nonroad standards and enforcement procedures must be consistent with section 209(b)(1)(C). EPA will review nonroad authorization requests under the same "consistency" criteria that are applied to motor vehicle waiver requests. Under section 209(b)(1)(C), the Administrator shall not grant California's motor vehicle waiver if she finds that California 'standards and accompanying enforcement procedures are not consistent with section 202(a)' of the [CAA]…."[117]

Consistency with section 202(a) "relates in relevant part to technological feasibility and to federal certification requirements."[118] "The 'technological feasibility' component of section 202(a) obligates California to allow sufficient lead time to permit manufacturers to develop and apply the necessary technology."[119] "The federal certification component ensures that the Federal and California test procedures do not 'impose inconsistent certification requirements.'"[120]

Thus, EPA has long understood the reference to Section 202(a) in Section 209(b)(1)(C) as referring to Section 202(a)(2)'s requirement that EPA's standards provide "such period as … necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period."[121] Under this long-standing interpretation, California's standards are consistent with Section 202(a) if they allow "sufficient lead time to permit manufacturers to develop and apply the necessary technology."[122] Thus, EPA can deny an authorization under Section 209(e)(2) only if "the state's regulations … provide 'inadequate lead time to permit the development of the technology necessary to implement the new procedures, giving appropriate consideration to the cost of compliance within the time frame.'"[123]

In considering whether to grant authorizations for accompanying enforcement procedures tied to standards for which an authorization has already been granted, Administrators have long held that they will only address questions as to (1) whether the

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[117] 65 Fed. Reg. 69763, 69764 fn. 5 (Nov. 20, 2000).
[118] *Motor & Equip. Mfrs. Ass'n v. Nichols*, 142 F.3d 449, 463 (D.C. Cir. 1998) (quoting *Ford Motor Co. v. EPA,* 606 F.2d 1293, 1296 n. 17 (D.C.Cir.1979)).
[119] *Id.*
[120] *Id.* (quoting 46 Fed.Reg. 26,371, 26,372 (1981)).
[121] 49 Fed. Reg. 18,887, 18,892 (May 3, 1984) (citation omitted).
[122] *MEMA II*, 142 F.3d at 463.
[123] *Id.* at 463 n.13 (quoting 46 Fed. Reg. 26,371-02, 26,372 (May 12, 1981)); *see also e.g.,* 43 Fed. Reg. 25,729 (June 14, 1978); 82 Fed. Reg. 6500, 6502, (Jan. 19, 2017).

enforcement procedures are so lax that they threaten the validity of California's determination that its standards are as protective of public health and welfare as applicable federal standards, and (2) whether the enforcement procedures are consistent with section 202(a).[124] The Administrator has applied a similar analysis in confirming that amendments to a CARB standard or regulation are within the scope of a previously granted authorization:

> EPA can make such a confirmation if certain conditions are present. Specifically, if California acts to amend a previously authorized standard or accompanying enforcement procedure, the amendments may be considered within the scope of a previously granted authorization provided that it does not undermine California's determination that its standards in the aggregate are as protective of public health and welfare as applicable Federal standards, does not affect the consistency with section 209 of the Act, and raises no new issues affecting EPA's previous authorization determination. [Citation omitted.][125]

It is also well established that EPA may only consider the three aforementioned criteria set forth in section 209(e)(2), that EPA shall give substantial deference to California's policy judgments, and that the burden is on those who oppose the granting of the authorization to show why it should not be granted.[126]

VI. VII. The 2016 Amendments are Entitled to Authorization Action Under Section 209(e)

A. The 2016 Amendments Fall within the Scope of The Previously Granted SORE Authorization

As described above in Section IV., the 2016 Amendments encompass several elements that will both individually and collectively ensure that the SORE evaporative emissions standards are more effectively enforced, including elements that align California's fuel line permeation emission standards with the corresponding federal standards, and requirements that will enable CARB to more readily identify and remedy violations of the evaporative emission standards. Other elements of the 2016 Amendments essentially harmonize California and federal test requirements, including updates to certification test fuel, and fuel tank testing requirements.

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[124] *Motor and Equipment Manufacturers Association v. EPA* (MEMA I) (D.C. Cir. 1979) 627 F.2d 1095, 1111, 1113. EPA applies this standard in CAA section 209 requests on both on road waivers (209 (b) and off-road authorizations (209 (e), see 77 Fed.Reg. 72851, 72853 (December 6, 2012).

[125] 65 Fed.Reg. 69767, 69768 (November 20, 2000).

[126] MEMA I, 627 F.2d 1095, 1121; 40 Fed. Reg. 23102, 23103-23104 (May 28, 1975); Decision document accompanying 58 Fed. Reg. 4166 (Jan. 7, 1993), at p.20; 82 Fed. Reg. 6500, 6502 (Jan. 19. 2017).

CARB requests that the Administrator confirm that the 2016 Amendments detailed above fall within the scope of the previously granted authorization for the SORE regulation.

1. The 2016 Amendments Do Not Cause California's Nonroad Emissions Control Program to be Less Protective Than the Federal Nonroad Emissions Control Program

Section 209(e)(2)(A)(i) mirrors Section 209(b)(1)(A), and allows EPA to deny California an authorization for nonroad vehicle or engine emission standards if the State's "determin[ation] that California standards will be, in the aggregate, at least as protective of public health and welfare as applicable Federal standards" is arbitrary and capricious.[127] As with emission standards for new on-road motor vehicles and engines, California evaluates the protectiveness of its nonroad emission standards "in the aggregate," assessing whether the State's standards, as a whole regulatory program, are at least as protective as EPA's standards. That assessment also occurs against the backdrop of prior grants of authorizations in which California determined, and EPA affirmed, that California's existing nonroad emissions program is at least as protective as EPA's.[128] California's protectiveness determination accordingly focuses on whether the new or amended standards for which it seeks an authorization would alter the protectiveness of the State's nonroad emissions control program– that is, whether the new or amended standards would cause the State's standards "in the aggregate" to become less protective than EPA's.[129]

In adopting the 2016 SORE amendments, the Board approved Resolution 16-14 (Enclosure P), in which it declared:

> BE IT FURTHER RESOLVED that the Board hereby determines that the regulations adopted herein will not cause California off-road engine emissions standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards.

These findings were reaffirmed by CARB's Executive Officer in formally adopting the SORE amendments on November 17, 2016.[130]

The Administrator has no basis to find that the Board's protectiveness determination is arbitrary or capricious. The Administrator has previously determined that CARB's SORE emissions standards and related test procedures are at least as protective of public

[127] 42 U.S.C. § 7543(e)(2)(A)(i).
[128] *E.g.*, 44 Fed. Reg. 38,660, 38,661 (July 2, 1979) ("[T]he public record did not contain any evidence that this regulation would cause the California standards, in the aggregate, to be less protective of public health and welfare than the applicable Federal standards."); 70 Fed. Reg. 50,322, 50,323 (Aug. 26, 2005).
[129] 68 Fed. Reg. 65,702, 65,704 (Nov. 21, 2003) ("[T]he various amendments will not cause the California nonroad standards, in the aggregate, to be less protective of public health and welfare than the applicable Federal standards."); 75 Fed. Reg. 8056, 8059 (Feb. 23, 2010) (same).
[130] Executive Order R-17-004 (Enclosure Q)

health and welfare as the federal nonroad emissions standards and test procedures.[131] The 2016 Amendments do not affect that previous determination, as they do not reduce the stringency of either the preexisting exhaust emissions standards or evaporative emission standards, but instead will ensure that the preexisting SORE evaporative emissions standards will be more effectively enforced.[132]

It is consequently clear that there is no way that the 2016 Amendments, which will ensure the preexisting evaporative standards will be more effectively enforced, will cause California's off-road engine emissions standards, in the aggregate, to be less protective of the public health and welfare than applicable federal standards. Accordingly, the Board's determination of protectiveness is clearly well founded.

2. The 2016 Amendments are Consistent with Section 209

a. The 2016 Amendments are Consistent with Section 209(a) and Section 209(e)(1)

The 2016 Amendments are consistent with CAA sections 209(a) and 209(e)(1) because they do not regulate new motor vehicles[133] or new motor vehicle engines, or new nonroad engines less than 175 hp used in farm and construction vehicles and equipment or new locomotives or locomotive engines.

b. The 2016 Amendments are Consistent with Section 209(b)(1)(C)

CAA section 209(b)(1)(C) provides that no waiver (authorization) shall be granted if the Administrator finds that California's standards and accompanying enforcement procedures are not consistent with section 202(a) of the CAA. As discussed above in Section VI., "[t]he 'technological feasibility' component of section 202(a) obligates California to allow sufficient lead time to permit manufacturers to develop and apply the necessary technology."[134]

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[131] 71 Fed. Reg. 75536 (December 15, 2006).

[132] It must also be noted that the California SORE exhaust emission standards include an emission standard for PM for two-stroke engines while EPA's small nonroad engine standards do not (see 80 Fed. Reg. 76976 (Dec. 11, 2015)), and the California SORE exhaust and evaporative emissions standards were first adopted in 1990 and 2004, respectively, while the federal small nonroad exhaust and evaporative emission standards were first adopted in 1995 and 2008, respectively. Furthermore, California's SORE evaporative emissions standards are more stringent than the comparable federal evaporative emissions standards. For instance, the California fuel tank permeation emission standards at 40 °C are 1.5 g ROG·m-2·day-1 for engines with displacement greater than 80 cc and 2.0 g ROG·m-2·day-1 for engines with displacement less than or equal to 80 cc, whereas the federal fuel tank permeation emission standard at 40 °C is 2.5 g ROG·m-2·day-1. (40 CFR § 1060.103(b)). In addition, California's evaporative emissions standards include diurnal emission standards that control all sources of emissions from SORE, whereas the federal evaporative emissions requirements only control fuel tank permeation, fuel line permeation, and running loss emissions.

[133] The regulated engines are not "self-propelled vehicles designed for transporting persons or property on a street or highway" CAA section 216(2).

[134] Motor & Equip. Mfrs. Ass'n v. Nichols, 142 F.3d 449, 463 (D.C. Cir. 1998) (MEMA II), (quoting Ford Motor Co. v. EPA, 606 F.2d 1293, 1296 n. 17 (D.C.Cir.1979)).

Section 202(a) accordingly requires EPA to determine if technology needed to comply with the requirements presently exists, and if does not, whether there is adequate time to develop and apply the technology before the standards go into effect. The latter scenario also requires EPA to determine whether the cost of developing and applying the technology within that timeframe is feasible.[135]

As demonstrated below, the 2016 Amendments present no issues regarding technical feasibility or lead times.

i. The 2016 Amendments are Technically Feasible

The 2016 Amendments present no issues regarding technical feasibility or lead time, as they primarily amend preexisting certification procedures and align California test requirements with corresponding federal test procedures. Furthermore, the fuel line permeation standards established by the 2016 Amendments present no issues regarding technical feasibility because those standards are identical to existing federal fuel line permeation standards. Moreover, engine manufacturers have been submitting certification applications consistent with the 2016 Amendments since their effective date in 2018. Consequently the 2016 Amendments do not require the development or utilization of new technology and accordingly present no issue of technical feasibility or lead times.

ii. The 2016 Amendments are Feasible, Considering their Costs

A key element in consideration of costs is whether manufacturers can pass regulatory costs onto consumers or absorb the costs without incurring significant economic disruption. The 2016 Amendments are not expected to have a significant adverse economic impact on businesses,[136] as they primarily only entail incremental costs for additional testing.[137] Installation and operation costs of SHEDs were fully accounted for in the 2003 SORE Amendments. [138]

As provided in the Form 399 (Enclosure Y), the statewide total cost of the 2016 Amendments, in 2016 dollars, is approximately $25.6 million over five years. Certifying entities may incur costs associated with testing, certification, labeling, reporting, and evaporative emissions control system components up to approximately $14.7 million over 5 years (2016 dollars); but after accounting for SORE unit sales in California and assuming SORE manufacturers mark-up such costs by 75 percent, CARB estimated

[135] 82 Fed. Reg. 6500, 6505 (Jan. 19, 2017); 76 Fed. Reg. 77521, 77526 (Dec. 13, 2011) 49 Fed. Reg. 1887, 1895 (May 3, 1984); 43 Fed. Reg. 32182, 32183 (July 25, 1978); 41 Fed. Reg. 44209, 44213 (October 7, 1976).
[136] 2016 ISOR p. 87
[137] Board meeting testimony by MONITORING AND LAB DIVISION CHIEF BENJAMIN Page 94
[138] Board meeting testimony by MONITORING AND LAB DIVISION CHIEF BENJAMIN Page 94

that the maximum increase in price for SOREs sold in California associated with the 2016 Amendments would be $2.72 per unit.[139]

Moreover, by aligning CARB certification and test procedures with comparable federal procedures, the 2016 Amendments will allow SORE manufacturers to reduce costs by conducting a single set of fuel tank certification tests to demonstrate compliance with both California and federal requirements.

iii. The 2016 Amendments Maintain Consistent Test Procedures

No issues exist regarding inconsistency between federal and California evaporative emission test procedures that preclude manufacturers from meeting both California and federal requirements with the same test engines. Instead, CARB specifically enacted the 2016 Amendments, in part, to more closely align the SORE evaporative emission test requirements with the corresponding federal requirements.

c. The 2016 Amendments Do Not Present New Issues

CARB is not aware of any new issues presented by the 2016 Amendments that affect the Administrator's prior authorization determinations for SOREs.

A. Alternatively, the Administrator Must Grant a New Authorization for the 2016 Amendments

Should the Administrator determine that a within-the-scope determination cannot be granted for any of the above-identified 2016 Amendments, he must grant CARB a new authorization for those amendments based on the same record CARB has set forth here, and in the rulemaking record for the 2016 Amendments. No basis exists to deny an authorization.

As described above, no issue regarding protectiveness or consistency with CAA sections 209(a), 209(e)(1), or 209(1)(c) exists and as demonstrated below, California satisfies the compelling and extraordinary criterion.

1. California Needs the 2016 Amendments to Address Compelling and Extraordinary Conditions

The Administrator has consistently recognized that California satisfies the second criterion for waivers and authorizations —that the State has "compelling and extraordinary conditions" and therefore continues to need its own motor vehicle and motor vehicle engine, and nonroad engine and equipment emissions control programs, respectively.

[139] 2016 ISOR, xi to xii

a. Traditional Interpretation of Compelling and Extraordinary Criterion

EPA has traditionally interpreted CAA sections 209(b)(1)(B) and 209(e)(2)(A)(ii) as requiring an inquiry regarding California's need for a separate motor vehicle and nonroad engine and equipment emissions control program, respectively, to meet compelling and extraordinary conditions, and not whether any given standard is necessary to meet such conditions.[140] EPA has expressed this as an inquiry into "the existence of 'compelling and extraordinary' conditions" of the kind for which a separate state program of controls remains warranted.[141] In other words, "review … under section 209(b)(1)(B) is not based on whether California has demonstrated a need for the particular regulations, but upon whether California needs standards to meet compelling and extraordinary conditions."[142,143]

As demonstrated below, under either EPA's traditional interpretation of this criterion, or under an alternative interpretation that considers California's need for particular standards, EPA has no basis to deny this authorization request under this criterion.

California, particularly in the South Coast and San Joaquin Valley Air Basins, continues to experience some of the worst air quality in the nation and the South Coast and San Joaquin Valley Air Basins, in particular, continue to be in extreme non-attainment with national ambient air quality standards for ozone and in serious non-attainment with national ambient air quality standards for particulate matter.[144]

In the California Clean Air Act of 1988, the California Legislature found that:

> [D]espite the significant reductions in vehicle emissions which have been achieved in recent years, continued growth in population and vehicle miles traveled throughout California have the potential not only to prevent attainment of the state standards, but in some cases, to result in worsening of air quality.[145]

In response to the undisputed severe air quality problems in California, the California Legislature authorized CARB to consider adopting, *inter alia*, standards and regulations for nonroad engines.[146] Given the serious air pollution problems California faces and the

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[140] 87 Fed. Reg. at 35,767; 80 Fed. Reg. at 76,689.
[141] 40 Fed. Reg. at 23,103; see also *id.* at 23,104 (concluding "[c]ompelling and extraordinary conditions continue to exist in the State of California"). See also 41 Fed. Reg. 44,209 44,210 (Oct. 7, 1976) ("[T]he question of whether *these particular standards* are actually required by California all fall within the broad area of public policy [left to] California's judgment … consistent with the Congressional intent behind the California waiver provision.").
[142] 44 Fed. Reg. at 38,660, 38,661 (July 2, 1979).
[143] The Administrator has recognized that even if such a standard-by-standard test were applied to California, it "would not be applicable to its fullest stringency due to the degree of discretion given to California in dealing with its mobile source pollution problems." 41 Fed. Reg. 44209, 44213, (October 7, 1976); 49 Fed. Reg. 18887, 18892 (May 3, 1984) (finding Congressional intent precludes EPA from viewing adopted California vehicular particulate matter standard in isolation).
[144] 78 Fed. Reg. 2112, 2130 (Jan. 9, 2013); 82 Fed. Reg. 4867, 4871 (Jan. 17, 2017).
[145] California Health and Safety Code section 43000.5.
[146] California Health and Safety Code sections 43013 and 43018.

resultant need to achieve the maximum reductions in emissions, the California Legislature and CARB believe it is necessary to develop emission controls for nonroad sources as well as for motor vehicles.[147] By adding federal and state authority to regulate nonroad engines, Congress and California's Legislature, respectively, acknowledged the increasing importance of reducing emissions from all mobile sources, including nonroad engines. The Administrator has repeatedly agreed with CARB that California's continuing extraordinary conditions justify separate California nonroad emission control programs.[148] Nothing in these conditions has changed to warrant a change in this determination. Accordingly, for all the aforementioned reasons, there can be no doubt of the continuing existence of compelling and extraordinary conditions justifying California's need for its own nonroad engine and equipment emissions control program.

b. Alternative Interpretation of the Compelling and Extraordinary Criterion

Even if EPA applies a narrower standards-specific inquiry, the record demonstrates that California "needs" the emissions-related requirements of the 2016 Amendments to reduce criteria emissions in California. As discussed below, such a showing is sufficient to establish that California "needs" the 2016 Amendments.

As discussed in the Initial Statement of Reasons (ISOR) (Enclosure B), evaporative emissions from gasoline-powered SORE equipment are a significant source of reactive organic gas (ROG) and toxic air contaminant (TAC) emissions.[149] ROG emissions contribute to the formation of ground-level ozone, and the nonattainment of national ambient air quality standards (NAAQS) for ozone in California, including the South Coast and San Joaquin Valley Air Basins, which are designated extreme nonattainment areas for ozone, and emissions of TACs such as benzene pose a near-source health risk and contribute to increased morbidity and mortality in California.[150] CARB estimated there were approximately 16.5 million SORE units in California with combined ROG evaporative emissions totaling approximately 45 tons per day in 2016.[151]

CARB adopted the 2016 Amendments, in part, because data indicated that over half of in-use SORE equipment tested under validation studies failed to demonstrate compliance with applicable diurnal standards, and because emissions from failing equipment exhibited emissions as high as 14 times the applicable emissions standards.[152] The 2016 Amendments establish numerous procedures to ensure SORE equipment complies with applicable diurnal emission standards, and to enable CARB to more readily identify and remedy violations of the evaporative emissions standards and will accordingly assist California in attaining the national and state ambient air quality

[147] *See* California Health and Safety Code sections 41750, 41754, 43000.5, 43013 and 43018.
[148] 60 Fed. Reg. 37440 (July 20, 1995); 61 Fed. Reg. 69093 (Dec. 31, 1996); 71 Fed. Reg. 29623 (May 23, 2006); 76 Fed. Reg. 77521 (Dec. 13, 2011).
[149] 2016 ISOR, p. ix.
[150] Ibid.
[151] 2016 ISOR p. 1-2
[152] 2016 ISOR p. x

standards for ozone, and to reduce serious risks to the health and welfare of Californians.

The primary air quality benefit associated with the 2016 Amendments is the reduction of ambient ozone concentrations through facilitating the elimination of SORE equipment that does not comply with the diurnal emission standards.[153] The 2016 Amendments contribute to the attainment of previously committed emissions reductions by elimination of any evaporative families or components that do not meet the existing emissions standards.[154] These emissions reductions are necessary to meet the 8-hour ozone NAAQS throughout California, and especially in California's two extreme non-attainment areas, namely the South Coast and San Joaquin Valley Air Basins. [155]

A co-benefit of the 2016 Amendments is reducing public exposure to toxic air pollutants, specifically benzene, which makes up about one percent of current blends of gasoline.[156] Most of the evaporative emissions from the current fleet of SOREs in California occur when SOREs are stored, often in a garage attached directly to a residential structure.[157] SOREs equipped with evaporative emissions controls compliant with the emissions standards will reduce not only ROG emissions, but also the exposure of residential occupants to benzene and other hazardous air pollutants.[158]

EPA has consistently found that California "needs" emissions standards to address the compelling and extraordinary conditions resulting from criteria pollutants,[159] and therefore has no basis to find that the 2016 Amendments do not satisfy the "compelling and extraordinary" criterion under this alternative interpretation. Indeed, at a minimum, California "needs" these standards to produce any and all reductions in criteria pollution emissions, especially in areas of extreme non-attainment and other areas overburdened by unhealthy air quality.[160]

B. Conclusion for 2016 Amendments

Based on the foregoing, CARB respectfully requests that the Administrator grant California's request for authorization action for the 2016 Amendments.

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[153] ISOR p 83
[154] ISOR p 83
[155] ISOR p. ix
[156] ISOR p. 84
[157] ISOR p. 84
[158] ISOR p. 84
[159] 53 Fed. Reg. 7022 (Mar. 4, 1988); 55 Fed. Reg. 43029, 43031 (Oct. 25, 1990); 69 Fed. Reg. 60995 (Oct. 14, 2004); 79 Fed. Reg. 46256, 46261-262 (Aug. 7, 2014); 84 Fed. Reg. 51344, 51346 (Sept. 27, 2019).
[160] *See*, *e.g.*, 41 Fed. Reg. 44,209-02, 44,210 (Oct. 7, 1976) (rejecting claims of only "marginal improvements in air quality" as grounds to deny waiver); *see also* 36 Fed. Reg. 17,458 (Aug. 31, 1971) (granting waiver where California standards "may result in some further reduction in air pollution in California" and finding it "not legally pertinent" that the improvement might be "only marginal").

VII. VIII. The 2021 Amendments Are Entitled to Authorization under Section 209(e)

CARB submits that for the reasons set forth below, and in the documents associated with the 2021 Amendments' rulemaking action, the Administrator must also grant California a new authorization for the 2021 Amendments, as the Administrator has no basis under the criteria of CAA section 209(e)(2) to deny California's request.

A. Protectiveness

As explained above in Section VII, Section 209(e)(2)(A)(i) allows EPA to deny California an authorization if the State's determination that its nonroad emissions control program is at least as protective of public health and welfare as the federal nonroad emissions control program is arbitrary and capricious, and that assessment occurs against the backdrop of prior authorization grants for which California determined, and EPA affirmed, that California's existing nonroad emissions program is at least as protective as EPA's nonroad emissions program. California's protectiveness determination accordingly focuses on whether the new or amended standards for which it seeks an authorization would alter the protectiveness of the State's nonroad emissions control program– that is, whether the new or amended standards would cause the State's standards "in the aggregate" to become less protective than EPA's.[161]

In adopting the 2021 Amendments, the Board approved Resolution 21-28 (Enclosure 13), in which it expressly declared:

> "Be it further resolved that the Board hereby determines that the requirements related to the control of emissions associated with the amendments adopted herein will not cause California off-road engine and vehicle emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards."[162]

No basis exists for the Administrator to find that the Board's determination is arbitrary and capricious. As discussed in Section II, the Administrator has previously determined that CARB's preexisting SORE emissions standards and associated test procedures are at least as protective of public health and welfare, in the aggregate, as the federal nonroad emissions standards and test procedures.[163] As discussed above in section IV, the 2016 Amendments do not disturb the Administrator's prior protectiveness determination, but rather establish additional requirements that will ensure that the California SORE evaporative emissions standards are more effectively enforced.

As further discussed in Section V, the 2021 Amendments now additionally establish evaporative and exhaust emissions standards that are significantly more stringent than the comparable federal nonroad emissions standards, and test procedures to ensure

[161] 68 Fed. Reg. 65,702, 65,704 (Nov. 21, 2003) ("[T]he various amendments will not cause the California nonroad standards, in the aggregate, to be less protective of public health and welfare than the applicable Federal standards."); 75 Fed. Reg. 8056, 8059 (Feb. 23, 2010) (same).
[162] Resolution 21-28, p. 15.
[163] 71 Fed. Reg. 75536 (December 15, 2006).

that fuel tanks on test engines more accurately represent the fuel tanks actually used with production engines. There is therefore no question that the 2021 Amendments will not cause California's off-road engine emissions control program to be less protective of the public health and welfare than the federal nonroad emissions control program. Accordingly, the Board's determination of protectiveness is clearly well founded

B. Compelling and Extraordinary Circumstances

As discussed above, the Administrator has consistently recognized that California satisfies the second criterion for waivers and authorizations—that the State has "compelling and extraordinary conditions" and therefore continues to need its own motor vehicle and motor vehicle engine, and nonroad engine and equipment emissions control programs, respectively.

1. Traditional Interpretation of Compelling and Extraordinary Criterion

California, particularly in the South Coast and San Joaquin Valley Air Basins, continues to experience some of the worst air quality in the nation. Several areas within California exceed the NAAQS for both ozone and fine particulate matter with diameter of 2.5 micrometers or smaller (PM2.5). Currently, 19 areas within California, including the South Coast, San Francisco Bay Area, and Sacramento County air basins, are nonattainment areas for NAAQS for ozone.[164] Four areas in California are in nonattainment with the NAAQS for PM2.5.[165] California's South Coast and San Joaquin Valley Air Basins, in particular, continue to be in extreme non-attainment with NAAQS for ozone and in serious non-attainment with NAAQS for particulate matter.[166]

In the California Clean Air Act of 1988, the California Legislature found that:

> [D]espite the significant reductions in vehicle emissions which have been achieved in recent years, continued growth in population and vehicle miles traveled throughout California have the potential not only to prevent attainment of the state standards, but in some cases, to result in worsening of air quality.[167]

In response to the undisputed severe air quality problems in California, the California Legislature authorized CARB to consider adopting, *inter alia*, standards and regulations for nonroad engines.[168] Given the serious air pollution problems California faces and the resultant need to achieve the maximum reductions in emissions, the California Legislature and CARB believe it is necessary to develop emission controls for nonroad sources as well as for motor vehicles.[169] By adding federal and state authority to regulate nonroad engines, Congress and California's Legislature, respectively, acknowledged the increasing importance of reducing emissions from all mobile sources,

[164] 2021 ISOR p. 1.
[165] 2021 ISOR p. 1
[166] 78 Fed. Reg. 2112, 2130 (Jan. 9, 2013); 82 Fed. Reg. 4867, 4871 (Jan. 17, 2017).
[167] Cal. Health and Saf. Code, § 43000.5.
[168] Cal. Health and Saf. Code, §§ 43013, 43018.
[169] *See* Cal. Health and Saf. Code, §§ 41750, 41754, 43000.5, 43013 and 43018.

including nonroad engines. The unique geographical and climatic conditions, and the tremendous growth in on-road motor vehicle and off-road vehicle and equipment populations, that moved Congress to authorize California to establish separate on-road motor vehicle standards in 1967 and nonroad engine standards in 1990, still exist today.[170] The Administrator has repeatedly agreed with CARB that California's continuing extraordinary conditions justify separate California nonroad emission control programs.[171] Nothing in these conditions has changed to warrant a change in this determination. Accordingly, for all the aforementioned reasons, there can be no doubt of the continuing existence of compelling and extraordinary conditions justifying California's need for its own nonroad engine and equipment emissions control program.

2. Alternative Interpretation of the Compelling and Extraordinary Criterion

Even if EPA applies a narrower standards-specific inquiry, the record demonstrates that California "needs" the emissions-related requirements of the 2021 Amendments to address compelling and extraordinary conditions in California.

California must significantly reduce emissions of ozone and particulate matter in order attain compliance with the federal NAAQS and state ambient air quality standards established to protect the public health and safety. The most recent federal ozone NAAQS standard is a level of 70 parts per billion, with a required attainment date in the South Coast Air Basin by 2037.[172] The federal PM NAAQS also requires action in California for attainment, with a deadline of 2024 for the 35 micrograms per cubic meter (ug/m^3) 24-hour standard and 2025 for the 12 ug/m^3 annual standard.[173] Both NOx and reactive organic gases (ROGs) are critical precursors to ozone, and NOX is a precursor to secondary PM formation.

As discussed in the 2021 ISOR, the SOREs regulated by the 2021 Amendments are significant sources of harmful air pollutants, especially NOx and ROG.[174] It is especially noteworthy that SOREs emit greater amounts of NOx and ROG in California than light-duty passenger cars, both in summer and annually.[175] California needs to achieve significant reductions of NOx, $PM_{2.5}$ and ROG in order to attain the NAAQS for ozone and particulate matter, and the 2021 Amendments are measures in California's 2016 State Implementation Plan (SIP) that are is designed to achieve the emissions reductions needed to allow California to attain those NAAQS. The 2021 Amendments are projected to reduce cumulative statewide emissions from SORE by approximately 58,844 tons of NOx, 421,924 tons of reactive organic gases (ROGs), 2,030 tons of fine

[170] See 74 Fed.Reg. 32744, 32762-32763 (July 8, 2009); 79 Fed.Reg. 6584, 6588-590 (February 4, 2014).
[171] 60 Fed. Reg. 37440 (July 20, 1995); 61 Fed. Reg. 69093 (Dec. 31, 1996); 71 Fed. Reg. 29623 (May 23, 2006); 76 Fed. Reg. 77521 (Dec. 13, 2011).
[172] 2021 ISOR, p. 1.
[173] 2021 ISOR, pp. 1, 9
[174] 2021 ISOR, pp. ES-3, 2.
[175] 2021 ISOR, p. 2.

particulate matter (PM2.5), and 13.8 million metric tons of carbon dioxide (CO_2) from 2023 to 2043.[176]

These emissions reductions will assist California in attaining the national and state ambient air quality standards for ozone and particulate matter, to address climate-change-induced harms, and to reduce serious risks to the health and welfare of Californians.[177] Specifically, the emission reductions are projected to reduce 887 premature deaths due to cardiopulmonary causes, 436 emergency room (ER) visits for asthma, and 168 and 141 acute respiratory and cardiovascular hospitalizations, respectively, between 2023 and 2043.[178] The monetized impacts of these avoided adverse health benefits is approximately $8.8 billion through 2043 (2019 dollars).[179]

EPA has consistently found that California "needs" emissions standards to address the compelling and extraordinary conditions resulting from criteria pollutants,[180] and therefore has no basis to find that the regulations do not satisfy the "compelling and extraordinary" criterion.

C. Consistency with CAA Section 209

As previously stated, section 209(e)(2) requires consistency with the several subsections of section 209; that is the Administrator must consider not only consistency with section 202(a)—as required under section 209(b)(1)(C)—but also other subsections of section 209. In its 209(e) Final Rule, EPA interpreted this provision to require that California's standards and accompanying enforcement provisions must also be consistent with sections 209(a) and 209(e)(1).[181]

1. Consistent with CAA Section 209(a)

The 2021 Amendments are consistent with section 209(a), which preempts states and political subdivisions from adopting or attempting to enforce any standard relating to the control of emissions from new motor vehicles or new motor vehicle engines. SOREs are not preempted under section 209(a) because they are neither new motor vehicles[182] nor

[176] Attachment D to 2021 FSOR, p.D-2.
[177] NOx emissions pose serious risks to the health and welfare of Californians, because NOx emissions not only irritate the respiratory system and aggravate respiratory diseases, they also react in the atmosphere to form additional pollutants - ozone and particulate matter that are harmful to respiratory systems (2021 ISOR, pp. 70, 75). PM, in particular, poses serious risks to the health and environment of Californians, including respiratory ailments that can increase cardiopulmonary mortality, hospitalizations for cardiovascular illness and respiratory illness, and ER visits for asthma. (2021 ISOR, p. 70, 73). .
[178] Attachment D to 2021 FSOR, p.D-3.
[179] Id. at p. D-7.
[180] 53 Fed. Reg. 7022 (Mar. 4, 1988); 55 Fed. Reg. 43029, 43031 (Oct. 25, 1990); 69 Fed. Reg. 60995 (Oct. 14, 2004); 79 Fed. Reg. 46256, 46261-262 (Aug. 7, 2014); 84 Fed. Reg. 51344, 51346 (Sept. 27, 2019).
[181] Air Pollution Control; Preemption of State Regulation for Nonroad Engine and Vehicle Standards ("Section 209(e) Rule"), 59 Fed. Reg. 36969, 36983 (July 20, 1994).
[182] The regulated engines are not "self-propelled vehicles designed for transporting persons or property on a street or highway." CAA § 216(2), 42 U.S.C. § 7550(2).

new motor vehicle engines, and clearly fall within the definition of nonroad engine established by Congress.[183]

2. Consistent with CAA Section 209(e)(1)

The 2021 Amendments are also consistent with section 209(e)(1), which prohibits states and local subdivisions from adopting or enforcing any standard or other requirement relating to the control of emissions of new engines used in farm and construction equipment or vehicles that are smaller than 175 hp or engines used in new locomotives. Nothing in the 2021 Amendments applies to locomotives or to new engines used in farm and construction equipment or vehicles that are smaller than 175 hp.[184] Therefore, the regulations are not inconsistent with section 209(e)(1).

3. Consistent with CAA Section 209(b)(1)(C)

CAA section 209(b)(1)(C) provides that no waiver (authorization) shall be granted if the Administrator finds that California's standards and accompanying enforcement procedures are not consistent with section 202(a) of the CAA. As discussed above in Section VI, "[t]he 'technological feasibility' component of section 202(a) obligates California to allow sufficient lead time to permit manufacturers to develop and apply the necessary technology."[185]

a. Technical Feasibility and Lead Time[186]

The 2021 Amendments present no issues regarding technical feasibility because the required technology already exists. As described in the 2021 Amendments' rulemaking record, zero-emissions equipment (ZEE) is widely available for most small off-road equipment categories, including lawn and garden equipment and utility equipment, for both residential and professional use. There are currently at least 35 brands of zero-emission lawn mowers available, with several brands directed at professional users, and advancements in technologies, such as brushless electric motors, have led to a significant increase in the efficiency of equipment. Furthermore, currently available ZEE exhibit performance characteristics that are comparable to their internal combustion engine powered counterparts.

Currently, approximately 52 percent of SORE equipment used in California is already ZEE, although the fraction of that equipment that is ZEE varies across the type of equipment. Approximately 99 percent of pumps are ZEE, and 5 percent of riding mowers are ZEE. The fraction of SORE equipment that is ZEE also varies by user type,

[183] A "nonroad engine" is defined as "an internal combustion engine (including the fuel system) that is not used in a motor vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under section 111 or section 202." CAA § 216(10), 42 U.S.C. § 7550(10).
[184] "All engines and equipment that fall within the scope of the preemption of Section 209(e)(1)(A) of the Federal Clean Air Act, as amended, and as defined by regulation of the Environmental Protection Agency, are specifically not included" within the category of SOREs. Section 2401(a)(45).
[185] *Motor & Equip. Mfrs. Ass'n v. Nichols*, 142 F.3d 449, 463 (D.C. Cir. 1998) (quoting *Ford Motor Co. v. EPA*, 606 F.2d 1293, 1296 n. 17 (D.C.Cir.1979)).
[186] 2021 ISOR, pp. ES-7, ES-8 and11-26 (entire section VIII.C.3.a., except as otherwise indicated by additional footnotes)

from 55 percent for residential users to 6 percent for professional landscapers. However, at least 12 brands of zero-emission lawn and garden equipment are currently offering ZEE designed for professional users.

The 2021 Amendments provide manufacturers of generators additional time to comply with the zero- emission standards. While zero-emission generators are currently available, the 2021 Amendments establish exhaust and evaporative emission standards for MY 2024 through 2027 generators that are more stringent than the preexisting standards, but that are not zero, to provide manufacturers additional time to incorporate needed technology into their products. These interim emission standards are technically feasible, since manufacturers have already certified SOREs capable of powering generators to these emissions levels.[187] The emissions standards for 2028 and subsequent MY generators present no issues of technical feasibility since they provide manufacturers over five years to implement currently available compliance technology into their products.

The 2021 Amendments additionally allow manufacturers of pressure washers powered by engines with displacements of 225 cc or higher to meet the zero-emission standard in 2028, instead of 2024. No issues of technical feasibility arise with these standards because the technology needed to produce zero-emitting, lower power rated pressure washers currently exists – indeed, zero emitting pressure washers within this category are currently commercially available, and the 2021 Amendments additionally provide manufacturers over five years to implement currently available compliance technology into their products, while also accounting for the high-power demands of such washers.[188]

In conclusion, the 2021 Amendments are consistent with section 202(a) because the required technology is already commercially available, and the 2021 Amendments additionally provide manufacturers of generators and high-power pressure washers over five years to implement currently available compliance technology into their products.

b. Compliance Costs

CARB appropriately considered the compliance costs of the 2021 Amendments by estimating the costs and savings associated with every element of the 2021 Amendments that affects the costs of SOREs.

As stated in the Form 399 (Enclosure 41), staff estimated that the current incremental capital cost of new zero-emission professional-grade small off-road equipment would range from a $165 cost savings for a zero-emission snow blower to a $9,828 incremental cost increase for a zero-emission riding mower as compared to SORE equipment, with these costs declining over time, due to decreasing battery costs. Staff

[187] See Executive Orders U-U-169-0318 (exhaust emissions EO), U-U-003-0337 (evaporative emissions EO), U-U-003-0333 (exhaust emissions EO), U-U-017-0355 (evaporative emissions EO), 2021 ISOR, pp. 56, 165.
[188] CARB's Second Notice of Availability of Modified Text and Availability of Additional Documents, March 30, 2022, p. 5. (entire paragraph), 2021 ISOR, pp. 14-16, 17.

also estimated that the current incremental capital cost of new zero-emission residential-grade small off-road equipment would range from a $43 cost savings for a zero-emission pressure washer to a $1,309 incremental cost increase for a zero-emission generator set as compared to SORE equipment, with these costs declining over time. Staff expects the price of many of the residential-grade and professional-grade zero-emission equipment to be equal to or less than the price of similar SORE equipment by 2030.

CARB staff also performed a total cost of ownership (TCO) analysis to evaluate the cost to residential owners and professional operators of SORE associated with purchasing SORE equipment purchases and all other related costs including electricity costs and maintenance. Those analyses found that residential owners can see a positive TCO for certain SORE categories in one year, and that professional operators can see a positive TCO for most categories of SORE equipment between one to five years.[189]

CARB additionally determined that the 2021 Amendments would provide professional users overall statewide net savings beginning in 2035 because of the net savings due to lower operational costs compared to the preexisting standards.[190]
It bears repeating that the Administrator has long deferred to California's policy judgments, including judgments on costs, stating: "The issue of whether a proposed California requirement is likely to result in only marginal improvement in air quality not commensurate with its cost or is otherwise an arguably unwise exercise of regulatory power is not legally pertinent to [a] decision under section 209" of the CAA.[191] Based on the above reasons, the 2021 Amendments are feasible within the time provided for compliance, giving appropriate consideration of costs.

c. Consistency with Federal Test Procedures

The 2021 Amendments raise no issues regarding the incompatibility of California and federal test procedures. The elements of the 2021 Amendments that amend the California SORE exhaust and evaporative emissions test procedures harmonize California's certification test requirements with the corresponding federal certification test requirements,[192] and CARB is not aware of any instances in which a manufacturer is precluded from conducting one set of tests to determine compliance with both California and federal requirements.

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[189] 2021 ISOR, p. 104-107.
[190] 2021 FSOR, Attachment D, p. D-5.
[191] 36 Fed.Reg. 17458 (August 31, 1971); *See also* 40 Fed.Reg. 23102, 23104; 58 Fed.Reg. 4166 (January 7, 1993), Decision Document, at p. 20 ["Since a balancing of these . . . costs against the potential benefits from reduced emissions is a central policy decision [of CARB in adopting the regulation] I believe I am required to give very substantial deference to California's judgments on this score."].
[192] Even where there is incompatibility between the California and federal test procedures, EPA has granted CARB a waiver (authorization) under circumstances where EPA accepts a demonstration of federal compliance based on California test results, thus obviating the need for two separate tests. (43 Fed .Reg. 1829, 1830 (Jan. 12, 1978); 40 Fed. Reg. 30311, 30314 (July 18, 1975).).

D. Conclusion

Based on the foregoing, CARB respectfully requests that the Administrator grant California's requests for authorization action for both the 2016 and the 2021 Amendments as described in this document pursuant to CAA section 209(e)(2). To assist you in reviewing the requests, CARB is enclosing one CD-ROM containing the referenced documents to be included in the record of this authorization proceeding.

CARB Contacts:

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IX. Materials from the 2016 and 2021 SORE Amendments

2016 Amendments

A. Public Hearing Notice dated September 13, 2016. (Enclosure A)

B. CARB Staff Report: Initial Statement of Reasons for Proposed Rulemaking, dated September 27, 2016 (Enclosure B)

C. CARB Staff Report Appendix A: Proposed Regulation Order (Enclosure C)

D. CARB Staff Report Appendix B: Proposed Amendments to CP-901 (Enclosure D)

E. CARB Staff Report Appendix C: Proposed Amendments to CP-902 (Enclosure E)

F. CARB Staff Report Appendix D: Proposed Amendments to TP-901 (Enclosure F)

G. CARB Staff Report Appendix E: Proposed Amendments to TP-902 (Enclosure G)

H. CARB Staff Report Appendix F: Public Process Notices (Enclosure H)

I. Notice of Public Availability of Modified Text and Availability of Additional Documents, May 23, 2017. (May 2017 Notice) (Enclosure I)

J. Attachment 1 to May 2017 Notice: Proposed Changes to the Regulation Order (Enclosure J)

K. Attachment 2 to May 2017 Notice: Proposed Changes to CP-901 (Enclosure K)

L. Attachment 3 to May 2017 Notice: Proposed Changes to CP-902 (Enclosure L)

M. Attachment 4 to May 2017 Notice: Proposed Changes to TP-901 (Enclosure M)

N. Attachment 5 to May 2017 Notice: Proposed Changes to TP-902 (Enclosure N)

O. Transcript of November 17, 2016 Public Hearing (Enclosure O)

P. CARB Board Resolution 16-14, dated November 17, 2016 (Enclosure P)

Q. Executive Order R-17-004, dated September 18, 2017 (Enclosure Q)

R. Final Statement of Reasons for Rulemaking, Including Summary of Comments and Agency Response (Enclosure R)

S. Addendum to the Final Statement of Reasons. (Enclosure S)

T. Final Regulation Order (Enclosure T)

U. Final Adopted Test Procedures – TP-901 and TP-902 (Enclosure U)

V. Final Certification Procedures – CP-901 and CP-902 (Enclosure V)

W. Updated Informative Digest for the 2016 Amendments (Enclosure W)

X. "Endorsed Approved" Form 400, showing OAL approval and "Endorsed Filed" with the Office of the Secretary of State on November 13, 2017 (Enclosure X)

Y. Form 399 and Attachment,2016 Amendments (Enclosure Y)

2021 Amendments

1. Notice of Public Hearing, Dated September 28, 2021 (Enclosure A)

2. Staff Report: Initial Statement of Reasons for Proposed Rulemaking, dated October 12, 2021 (Enclosure 2)

3. Appendix A to Staff Report: Proposed Amendments to the Small Off-Road Engine Exhaust Emission Regulations, Off Road Vehicles and Engines Pollution Control Devices (Enclosure 3)

4. Appendix B to Staff Report: Proposed Amendments to the Small Off Road Engine Evaporative Emission Regulations, Evaporative Emission Requirements for Off Road Equipment (Enclosure 4)

5. Appendix C to Staff Report: TP-901, Test Procedure for Determining Permeation Emissions from Small Off-Road Engine Fuel Tanks (Enclosure 5)

6. Appendix D to Staff Report: TP 902, Test Procedure for Determining Evaporative Emissions from Small Off Road Engines (Enclosure 6)

7. Appendix E to Staff Report: CP 902, Certification Procedure for Evaporative Emission Control Systems on Small Off Road Engines (Enclosure 7)

8. Appendix F to Staff Report: California Exhaust Emission Standards and Test Procedures for New 2013 and Later Small Off Road Engines; Engine Testing Procedures (Part 1054) (Enclosure 8)

9. Appendix G to Staff Report: Exhaust Emission Standards and Test Procedures for New 2013 and Later Small Off-Road Engines; Engine-Testing Procedures (Part 1065) (Enclosure 9)

10. Appendix H to Staff Report: Final Environmental Analysis for the Revised Proposed 2016 State Strategy for the State Implementation Plan (Enclosure 10)

11. Appendix I to Staff Report: Standardized Regulatory Impact Assessment (SRIA) (Enclosure 11)

12. Appendix J to Staff Report: Pre-Rulemaking Workshop Notices and Email Soliciting Alternatives (Enclosure 12)

13. Resolution 21-28, dated December 9, 2021 (Enclosure 13)

14. Transcript of December 9, 2021, Public Hearing, agenda item number 21-13-2 (Enclosure 14)

15. Notice of Public Availability of Documents and Information and Attachment 1, posted November 12, 2021. (Enclosure 15)

16. Notice of Public Availability of Modified Text and Availability of Additional Documents, posted March 30, 2022 (March 2022 Notice) (Enclosure 16)

17. Attachment A to March 2022 Notice: 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. (Enclosure 17)

18. Attachment B to March 2022 Notice: 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 (Enclosure 18)

19. Attachment C to March 2022 Notice: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 (Enclosure 19)

20. Attachment D to March 2022 Notice: 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 (Enclosure 20)

21. Attachment E to March 2022 Notice: 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) (Enclosure 21)

22. Attachment F to March 2022 Notice: 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) (Enclosure 22)

23. Attachment G to March 2022 Notice: Data Tables Resulting from the 15-Day Modifications to the Emissions and Economic Analyses for the Proposed Amendments to the Small Off-Road Engine Regulations (Enclosure 23)

24. Third Notice of Public Availability of Additional Documents and Information, posted May 27, 2022. (Enclosure 24)

25. Final Statement of Reasons (FSOR) for Rulemaking, Including Summary of Comments and Agency Response (Enclosure 25)

26. Attachment A to FSOR – OPEI Annex A Comments to CARB's 45-Day Proposed Amendments to Regulation Orders, Test Procedures, Certification Procedures and Part 1054 and CARB Responses (Enclosure 26)

27. Attachment B to FSOR – EMA Exhibit F Comments to CARB's 45-Day Proposed Amendments to Regulation Orders, Test Procedures, Certification Procedures and Part 1054 and CARB Responses (Enclosure 27)

28. Attachment C to FSOR – Honda's Spreadsheet Comments to CARB's Proposed Amendments to Regulation Orders, Test Procedures, and Certification Procedures, and CARB Responses (Enclosure 28)

29. Attachment D to FSOR – Updated Emissions and Economic Analysis Results for the Proposed Amendments to the Small Off-Road Engine Regulations (Enclosure 29)

30. Addendum to the FSOR (Enclosure 30)

31. Attachment 1 to FSOR Addendum: Final Regulation Order for Amendments to the Small Off-Road Engine Exhaust Emission Regulations, Off-Road Vehicles and Engines Pollution Control Devices (Enclosure 31)

32. Attachment 2 to FSOR Addendum: Final Regulation Order for Amendments to the Small Off-Road Engine Evaporative Emission Regulations, Evaporative Emission Requirements for Off-Road Equipment (Enclosure 32)

33. Attachment 6 to FSOR Addendum: Final Regulation Order Test Procedures for the California Exhaust Emission Standards and Test Procedures for New 2013 and Later Small Off-Road Engines; Engine Testing Procedures (Part 1054) (Enclosure 33)

34. Executive Order R-22-004 dated August 1, 2022 (Enclosure 34) (Attachments 1, 2 and 6 for Executive Order R-22-004 were revised in the Addendum to the FSOR, linked above)

35. Executive Order R-22-004 Attachment 3: Incorporated Test Procedures for the Amendments to the Small Off-Road Engine Evaporative Emissions Test Procedure, TP-901, Test Procedure for Determining Permeation Emissions from Small Off-Road Engine Fuel Tanks (Enclosure 35)

36. Executive Order R-22-004 Attachment 4: Incorporated Test Procedures for the Amendments to Small Off-Road Engine Evaporative Emissions Test Procedure, TP 902, Test Procedure for Determining Evaporative Emissions from Small Off-Road Engines (Enclosure 36)

37. Executive Order R-22-004 Attachment 5: Incorporated Certification Procedures for the Amendments to Small Off-Road Engine Evaporative Emission Control System Certification Procedure, CP 902, Certification Procedure for Evaporative Emission Control Systems on Small Off-Road Engines (Enclosure 37)

38. Executive Order R-22-004 Attachment 7: Final Regulation Order Test Procedures for the Amendments to the California Exhaust Emission Standards and Test Procedures for New 2013 and Later Small Off-Road Engines; Engine-Testing Procedures (Part 1065) (Enclosure 38)

39. Updated Informational Digest (Enclosure 39)

40. Fully endorsed STD 400 face sheet as approved by OAL and filed with the Secretary of State DATE (Enclosure 40)

41. Form 399 and Attachment, 2021 Amendments (Enclosure 41)